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Pennsylvania Public, Utility Commission
v.
Philadelphia Gas Works

Initial Evidentiary Hearing (Call In)

Docket No.: R-2023-3037933

Pages 455 - 612

Judge's Chambers
State Office Building
801 Market Street
Philadelphia, PA

Wednesday, July 12, 2023
Commencing at 10:00 a.m.

INDEX TO EXHIBITS

Docket No. R-2023-3037933

Hearing Date: July 12, 2023

NUMBER	FOR IDENTIFICATION	IN EVIDENCE
PICGUG Exhibit:		
BSL-7	464	465
Document		
BSL-8	464	465
Document		
Grays Ferry and Vicinity Exhibit:		

INDEX TO EXHIBITS (cont.)

Exhibit ___ (BSL-7)

PHILADELPHIA GAS WORKS

Class Cost-of-Service Study at Present Rates

Revised to Recognize the Interruptibility of Rate IT

Line	Description	Cost of Service	Residential	Commercial	Industrial	Municipal	PHA - GS	PHA -Rate 8	NGVS	Interruptible
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Revenues From Tariff Sales and Transportatior	441,310	351,526	61,799	4,920	4,873	1,648	2,614	27	12,773
2	Other Revenues	75,508	52,965	18,027	1,438	1,852	381	818	24	4
3	Total Operating Revenues	516,817	404,490	79,826	6,357	6,724	2,029	3,432	51	12,777
4	Less: Operating Expenses and City Contributior	392,697	309,635	61,943	4,898	5,957	1,571	2,627	46	6,021
5	Income Before Interest and Surplus	124,120	94,856	17,883	1,460	767	458	806	5	6,757
6	Less: Interest and City Contribution	64,310	50,049	10,016	799	1,005	287	449	6	1,699
7	Current Revenue Over/Under Requirements	59,810	44,807	7,868	661	(238)	170	357	(1)	5,057
8	Original Cost Measure of Value (Factor 15)	1,763,900	1,372,748	274,711	21,914	27,563	7,882	12,305	165	46,612
9	Rate of Return before Interest and Surplus	7.04%	6.91%	6.51%	6.66%	2.78%	5.81%	6.55%	3.21%	14.50%
10	Relative Rate of Return	1.00	0.98	0.93	0.95	0.40	0.83	0.93	0.46	2.06
11	Subsidy		(1,740)	(1,447)	(82)	(1,172)	(97)	(60)	(6)	3,477

PHILADELPHIA GAS WORKS

Class Cost-of-Service Study at Present Rates

Revised to Recognize the Interruptibility of Rate IT and 20% of Distribution Mains Recognized as Customer Component

Line	Description	Cost of Service	Residential	Commercial	Industrial	Municipal	PHA - GS	PHA -Rate 8	NGVS	Interruptible
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Revenues From Tariff Sales and Transportatior	441,310	351,526	61,799	4,920	4,873	1,648	2,614	27	12,773
2	Other Revenues	75,508	53,245	17,810	1,413	1,823	381	807	24	4
3	Total Operating Revenues	516,817	404,771	79,610	6,333	6,696	2,029	3,421	51	12,777
4	Less: Operating Expenses and City Contribution	392,697	310,030	61,701	4,870	5,925	1,572	2,614	46	5,939
5	Income Before Interest and Surplus	124,120	94,741	17,909	1,463	771	457	807	5	6,838
6	Less: Interest and City Contribution	64,310	51,482	9,137	699	888	291	403	5	1,404
7	Current Revenue Over/Under Requirements	59,810	43,259	8,771	764	(117)	166	404	(0)	5,434
8	Original Cost Measure of Value (Factor 15)	1,763,900	1,412,050	250,623	19,183	24,362	7,978	11,054	147	38,504
9	Rate of Return before Interest and Surplus	7.04%	6.71%	7.15%	7.63%	3.16%	5.73%	7.30%	3.61%	17.76%
10	Relative Rate of Return	1.00	0.95	1.02	1.08	0.45	0.81	1.04	0.51	2.52
11	Subsidy		(4,620)	273	113	(943)	(104)	29	(5)	4,128

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission	:	R-2023-3037933
Office of Consumer Advocate	:	C-2023-3038846
Office of Small Business Advocate	:	C-2023-3038885
Philadelphia Industrial and Commercial Gas	:	C-2023-3039059
User Group	:	
Grays Ferry Cogeneration Partnership and	:	C-2023-3038727
Vicinity Energy Philadelphia, Inc.	:	
James M. Williford	:	C-2023-3039130
	:	
v.	:	
	:	
Philadelphia Gas Works	:	

Grays Ferry Cogeneration Partnership and	:	C-2021-3029259
Vicinity Energy Philadelphia, Inc.	:	
	:	
v.	:	
	:	
Philadelphia Gas Works	:	

DIRECT TESTIMONY OF JAMES L. CRIST, P.E.

ON BEHALF OF

GRAYS FERRY COGENERATION PARTNERSHIP

AND VICINITY ENERGY PHILADELPHIA, INC.

Statement JC-1
June 2, 2023

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS, AND ON WHOSE BEHALF, YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. a consulting firm focused on regulatory and market issues. My business address is 4226 Yarmouth Drive, Suite 101, Allison Park, Pennsylvania 15101. I am presenting testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity").

Q. DO YOU HAVE ANY QUALIFICATIONS OR OTHER SPECIALIZED KNOWLEDGE THAT WOULD ASSIST THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("COMMISSION") IN ITS DELIBERATIONS IN THIS CASE?

A. Yes. I have a B.S. in Chemical Engineering from Carnegie Mellon University and an M.B.A. from the University of Pittsburgh. Additionally, I am a Registered Professional Engineer in the Commonwealth of Pennsylvania. I have attached a copy of my CV and Regulatory Experience as Appendix I.

Q. BRIEFLY DESCRIBE YOUR RELEVANT BUSINESS QUALIFICATIONS.

A. I have run a consulting practice for the past 25 years focused on regulated and deregulated energy company strategy, market strategy, and regulatory issues. During 2004 and 2005, I undertook a consulting assignment as the Vice President of Consumer Markets for ACN Energy. ACN is a gas and electric marketer that is active in eight states. Prior to my consulting practice, I worked at three major energy companies for a total of 19 years. Most

recently I was Vice President of Marketing for Equitable Resources. In that function I was responsible for the development of the company's deregulated business strategy.

Prior to that I was Vice President of Marketing for Citizens Utilities, responsible for gas, electric, water and wastewater marketing activities in several service territories within the United States. The gas and electric utility operations were in Vermont, Louisiana, Arizona, Colorado, and Hawaii. Under my direction, Citizens initiated commercial and industrial transportation and supply services at its gas operation in Arizona. I also directed significant gas supply contracting activities with large industrial and commercial customers in Citizens' gas operation in Louisiana.

Before that, during 1988 through 1994, I was the Marketing Director at the Peoples Natural Gas Company where I was actively involved in many gas transportation programs as the company relaxed transportation requirements so that customers would have supply choices.

In summary, I have considerable experience in several states involving residential, commercial, and industrial customer energy procurement, regulatory issues and industry restructuring programs.

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

A. Yes, I have appeared before the Commission in numerous gas and electric regulatory proceedings. I presented testimony on behalf of Vicinity in the Philadelphia Gas Works ("PGW") Complaint Case (Docket No. C-2021-3029259) and the ongoing PGW 1307(f) case (Docket No. R-2023-3038069 and C-2023-3038722). Additionally, I have provided testimony on a variety of issues relating to energy procurement, industry restructuring, and demand response before regulatory Commissions in Arizona, Kentucky, Tennessee, Maryland, New Mexico, Illinois, Ohio, Wyoming and the U.S. Virgin Islands.

I. <u>ISSUES</u>

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS TESTIMONY?

A. Specifically, in my direct testimony I will:

1. Refer to the history of the Vicinity cogeneration facility and the Vicinity Energy Philadelphia Inc. ("VEPI") thermal energy district, through the inclusion of my testimony in the Complaint case and the 1307(f) case as Exhibit JC1.

2. Explain the history of the regulatory complaints and proceedings involving Vicinity and PGW which began with the Compliant case, and continues with the ongoing 1307(f) case, and now this case.

3. Explain why the rates and tariffs proposed by PGW violate basic cost of service principles and, in response, propose reasonable cost-based rates that will enable continued patronage of PGW by Vicinity, and will benefit PGW customers.

II. <u>DISCUSSION OF THE ISSUES</u>

Q. WHAT IS THE HISTORY OF THE RATES AND TERMS OF SERVICE AGREED UPON BY PGW AND VICINITY?

A. An accurate summary was presented in the Commission's April 2023 Order in the Complaint case:

> "In 1995, Vicinity actively pursued the available means to by-pass PGW's system by working in cooperation with Texas Eastern Transportation Company (TETCO) in seeking Federal Energy Regulatory Commission (FERC) approval to construct a Vicinity-owned pipeline to connect TETCO's Philadelphia Lateral and Vicinity's facilities at Grays Ferry. Vicinity's plans were to secure a source of natural gas in sufficient volume and pressure to produce both electricity and steam from a single unit of fuel. PGW actively opposed Vicinity's plan to bypass PGW. Despite PGW's opposition, the FERC approved Vicinity's plan. Exc. at 3; citing, St. JC1, 6:1-15.
>
> In order to avoid Vicinity's bypass of its system, PGW negotiated a 25-year agreement with Vicinity whereby Vicinity would agree not to bypass PGW and would abandon the FERC-approved plan to construct a bypass with TETCO. Under the agreement, Vicinity agreed to pay PGW over $10 million to construct a new PGW-owned two-mile segment of pipeline and repurpose a PGW-owned two-mile petroleum products pipeline to provide service to Vicinity at very high pressure directly from TETCO's interstate Philadelphia Lateral, collectively called "the four-mile line." At present, PGW has no scheduling or balancing duties or obligations related to Vicinity's interstate deliveries directly with TETCO. In addition, Vicinity pays PGW a separate annual $160,000 Operation and Maintenance (O&M) charge for the four-mile line. Since PGW's service to Vicinity began, Vicinity has been the only customer ever served from the PGW-owned four-mile line, which is a high-pressure pipeline. Exc. at 2-3, citing Vicinity St. JC-1, 17:16-18:3; St. JC1, 17:13-19; JC1, 8:13-18.
>
> Prior to the Commission's assumption of jurisdiction over PGW, the rates and terms of service between PGW and Vicinity were established under a group of four contracts, referred to as "the 1996 Contracts" or hereafter referred to as "the Agreement." *See* I.D. at 5, F.O.F. No. 9, citing PGW St. 1R at 6.5"[1]

Q. ARE YOU INCLUDING THE 1996 CONTRACT BETWEEN VICINITY AND PGW AS EVIDENCE IN THIS CASE?

A. Yes, because the Commission noted in its April 2023 Order in the Complaint case that the contract was not submitted into evidence,[2] I am including it as Exhibit JC2. That contract demonstrates that Vicinity paid for the dedicated four-mile, high pressure pipeline that delivers all the gas consumed by Vicinity.

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[1] *Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc. v. Philadelphia Gas Works*, Docket C-2021-3029259 ("*Complaint Case*"), (Opinion and Order entered April 20, 2023 at 3).

[2] *Id.* at 4

Q. WHAT ADDITIONAL EVIDENCE FROM THE COMPLAINT CASE AND 1307(F) CASE ARE YOU PROVIDING?

A. All of my testimony from both cases is included as Exhibit JC1.

Q. WHAT WERE THE COMMISSION'S FINDINGS IN THE COMPLAINT CASE?

A. The Commission noted that PGW had never proposed any change to the rate applicable to Grays Ferry, which is rate GTS-F:

> A review of PGW's tariff filings from the time of the Commission's original adoption of PGW Tariff Rate GTS-F by the Commission's *PGW 2003 Restructuring Order*, through five subsequent base rate proceedings brought by PGW, in 2006, 2009, 2017, 2020, and 2023, reflects that PGW has never proposed a change in the Commission-approved PGW Tariff Rate GTS-F. Even though PGW, as a utility can seek a change in rate under the applicable provisions of Chapter 13, PGW failed to do so, either as part of any of its five base rate proceedings between 2006 through 2023 or in any other manner. *(Complaint Case at p.2).*

The Commission also noted that PGW proposed to increase Vicinity's rate by a minimum of 750%. The Commission made it clear in its April 2023 Order that PGW could not just increase Vicinity's rate by 750%, but is required to seek approval from the Commission:

> A utility seeking a change to a rate in effect is required to file for Commission approval in advance of the proposed effective date of the change in rate. (*Id at p.9)*

Therefore, Vicinity's service is still at the rates and terms as agreed to in the 1996 Contract.

Q. WHAT FOUR ITEMS DID THE COMMISSION DIRECT THE ALJ IN THIS PROCEEDING TO ADDRESS?

A. The Commission directed the ALJ to develop a record which includes, but is not limited to, evidence relevant to:

> a) the proper rate class for Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc., including, if necessary, whether a special rate class is appropriate,
>
> b) the appropriate methodology and evidence necessary to apply the methodology, to determine Philadelphia Gas Works' actual cost of service for Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.
>
> c) consideration and resolution of the question of whether and, if so, to what extent Philadelphia Gas Works' transportation service to Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc., utilizes PGW's low pressure distribution system, and if so, what impact does such use have upon the Philadelphia Gas Work's actual cost of service and the resulting "just and reasonable" rate for Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.
>
> d) consideration and resolution of the question whether Philadelphia Gas Works should be held to its prior position in base rate proceedings that Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc., do not utilize Philadelphia Gas Works' distribution system. (*Complaint Case at p. 52).*

I will address each of those topics and provide substantial evidence that shows the realistic possibility of Vicinity constructing a bypass pipeline to TETCO. That bypass pipeline construction project has continued to progress and I will be providing detailed engineering studies that show the feasibility of that project. I will address all the flaws in PGW witness Ms. Heppenstall's Class Cost of Service Study ("CCOSS") and show that Vicinity's rate should be less than the $0.1054/mcf that Ms. Heppenstall calculated, for her method of assigning costs ignored the direct dedicated pipeline connection from TETCO to Grays Ferry. I will explain that the transportation service received by Grays Ferry does not use PGW's low pressure distribution system, as every PGW witness - including Ms. Heppenstall - had agreed and supported in sworn testimony in every previous base rate case. Because the related issue of Philadelphia Lateral capacity is the primary topic I raised in the ongoing 1307(f) case, I will include it here for completeness and show that currently Vicinity's payments to PGW for the use of that capacity creates a subsidy to other PGW customer classes.

Q. WHAT IS THE BIG PICTURE OVERVIEW OF PGW'S ATTEMPT TO INCREASE COSTS IT CHARGES TO GRAYS FERRY?

A. To understand the big picture and the contract negotiation history over the past several years, the starting point is a review of all the charges that Grays Ferry pays to PGW today for the variety of services it receives. I will describe the distinct services received and the cost of each currently. The costs I show are based on the volumes Ms. Heppenstall used in her CCOSS, which were based on the three-year average. They are shown in MCF:

	Annual	Daily
Usage (MCF)	12,286,916	33,663
Transportation	8,465,065	23,192
ARS	3,768,722	10,325
Retail Sales	53,129	146
	12,286,916	33,663

The retail sales gas is a very small amount, less than ½ % of the total consumption and is by design only used when there is an operational issue on the TETCO or PGW system that affects the delivery of gas through the high pressure dedicated four-mile line. In fact, in 2022 there was no retail sales gas consumed by Grays Ferry. For that reason, in this testimony, when I refer to the gas consumed at Vicinity, I mean the high-pressure gas delivered through the four-mile line.

Q. WHAT ARE THE ZONES OF THE TETCO PIPELINE?

A. TETCO'S pipeline is illustrated in Exhibit JC3 which shows the different zones of the pipeline. The access zones are traditionally where gas has been put into the pipe in Texas (East Texas, South Texas) and Louisiana (West Louisiana, East Louisiana). Gas flows to the northeast United States and the route is divided into three market zones (M-1, M-2, M3) and the M-3 zone contains the segment of the pipeline that has interconnections (also known as city gates) with PGW. The Skippack interconnection is the location to which Vicinity delivers gas it has nominated through TETCO in the winter months that is used for PGW's customers as part of the gas swap referred to as ARS. The small segment of pipe that comes off of the TETCO mainline and goes southeast just west of Philadelphia is the Philadelphia Lateral and that is the section of pipe that delivers gas to the interconnection at meter 73060 with the four-mile line that serves Vicinity.

Q. WHAT IS THE RELATIONSHIP OF THE TETCO ZONES AND THE VALUE OF CAPACITY?

A. It is critical to understand that, in general, the more zones a capacity contract covers the greater value it provides. For example, the most valuable capacity contract would entitle the holder to transportation rights from all four access zones all the way through M-1 and M-2 to M-3. The holder of such capacity would be able to source gas at many locations and purchase gas that is the least cost of all the offers. Conversely, holders of only M-3 capacity would only be able to purchase M-3 gas but not gas that might be lower cost and available at M-2, or further upstream. Vicinity holds or can easily obtain capacity to have its gas transported to the intersection of the TETCO mainline and the Philadelphia Lateral, known as Eagle. Vicinity holds 35,000 Dth/day of capacity down the Philadelphia Lateral which is adequate for its needs much of the year, however to move the additional gas down the Philadelphia Lateral in the colder months, it must meet its capacity needs through either PGW release capacity or the ARS gas swap.

Q. WHAT IS THE TRANSPORTATION COST FOR PGW TO DELIVER VICINITY'S GAS THROUGH THE DEDICATED FOUR-MILE, HIGH PRESSURE PIPELINE?

A. The majority of gas (12,233,787 mcf) flows under the transportation rate of $0.08/dth, or $0.0834/mcf.[3] The current annual cost that Vicinity pays is $1,008,064. In addition to the transportation rate, Vicinity also pays an annual pipeline maintenance fee, and monthly ARS, Release Capacity, and Meter charge fees as discussed below.

Q. HOW IS THE PIPELINE MAINTENANCE FEE DETERMINED?

A. Maintenance costs are not based on actual expenses incurred but instead on an annual amount set initially at $100,000 in 1998, and subject to annual escalation. The annual maintenance payment in the most recent year, 2022, was approximately $180,000. Grays Ferry and VEPI have requested an itemization of PGW's actual maintenance costs for the dedicated pipe but PGW admitted it does not track actual expenditures on the four-mile pipe. I have included PGW's replies to my inquiry in the Complaint case Set I-2 as Exhibit JC4.

Q. WHAT IS "BALANCING" AND HOW DOES VICINITY MANAGE THE BALANCING PROCESS?

A. Balancing is the process of forecasting demand and nominating (ordering) the correct amount of gas to meet a facility's needs on a daily and monthly basis. Pipelines, like TETCO, require customers to plan and schedule deliveries within certain tolerances to

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[3] Based on the conversion rate of 1 mcf = 1.043 dth

prevent an imbalance on the pipeline. Because Vicinity connects directly to the Philadelphia Lateral of Texas Eastern Transmission ("TETCO"), Vicinity manages its balancing process itself directly with TETCO. PGW does not provide any balancing support for Grays Ferry, therefore, PGW does not charge a balancing fee to Vicinity.

Q. WHAT IS LOST AND UNACCOUNTED FOR GAS, AND HOW DOES VICINITY MANAGE SYSTEM LOSSES?

A. Vicinity's Lost and Unaccounted for Gas ("LUF") refers to the difference between the total volume of natural gas received at the TETCO station, meter 73060, to the gas recorded at Vicinity's meter. The reason that LUF might occur would be leakage from pipeline cracks, or valves and fittings. Because the four-mile line operates at high pressure (450 psig or greater) any leak would be noticed and repaired promptly. PGW has reported no leaks in the four-mile line, therefore the more probable reasons for any LUF would be metering errors or unauthorized use of Vicinity's gas at PGW's Passyunk Station, which is where the original repurposed liquids pipeline connects to the 16" line that was constructed in 1996 to transport gas onto Vicinity. Further, because Vicinity pays for gas based on the meter at TETCO, Vicinity already bears the financial consequence of any LUF, therefore, PGW does not apply a LUF fee to Vicinity.

Q. WHAT IS RELEASE CAPACITY AND ALTERNATE RECEIPT SERVICE ("ARS")?

A. These two services were the primary topics of my testimony in the ongoing 1307(f) case. Vicinity's peak needs are 56,000 Dth/day which occurs during the winter period. Vicinity holds 35,000 Dth/day capacity of its own on the Philadelphia Lateral. When its needs exceed that capacity, it transports the additional gas using a portion of PGW's capacity on the Philadelphia Lateral. From May through September, PGW will release its firm TETCO capacity that it holds to Grays Ferry. Grays Ferry uses that capacity to meet its needs that exceed the 35,000 Dth/day capacity that Grays Ferry holds. During October through April, PGW does not release capacity to Vicinity but provides up to 21,000 Dth/day of gas to Vicinity through a gas swap, defined in the 1996 contract as Alternative Receipt Service ("ARS") where Vicinity delivers its firm TETCO capacity gas to the PGW city gate station at TETCO meter 70034 in northwestern Philadelphia (Skippack), and – in a like-for-like swap - PGW delivers gas on the Philadelphia Lateral to the interconnection with the four-mile line at meter 73060. Under either scenario, all of the physical gas that flows to Grays Ferry is transported down the four-mile, dedicated high-pressure pipeline paid for by Vicinity. None of the gas consumed by Vicinity transits PGW's low pressure system, nor would it be able to due to the pressure.

Q. HOW MUCH DOES VICINITY PAY PGW FOR RELEASE CAPACITY AND ALTERNATE RECEIPT SERVICE ("ARS")?

A. In 2022 Vicinity paid PGW $2.4 million for 21,000 Dth/day May-September release capacity, per the terms in the 1996 contract. Since 2012, when Vicinity acquired an additional 20,000 Dth/day of capacity of its own on the Philadelphia Lateral, it has not needed the 21,000 Dth/day of PGW's release capacity in those five summer months, yet has continued to pay PGW for it nonetheless. The $2.4 million payment that PGW received in 2022 was applied to the system gas costs. In other words, Vicinity provided a $2.4 million cross subsidy to GCR customers. Vicinity desires to end this subsidy payment, and PGW has agreed and has not included this component in the proposed rate for Vicinity.

Vicinity also pays $54,000/yr to PGW for ARS. This is in excess of the operational cost that PGW incurs to provide ARS. The solution I recommended in the 1307(f) case was that PGW should release Philadelphia Lateral capacity to Vicinity on a recallable basis, at the market price for such capacity. Philadelphia Lateral capacity market value over the past five years is $0.35/Dth-day and the most recent release that PGW conducted was at $0.10/Dth-day.

Q. HOW HAS PGW'S POSITION CHANGED IN THIS BASE RATE CASE COMPARED TO ITS POSITION IN THE COMPLAINT CASE AND PREVIOUS BASE RATE CASES?

A. Since the construction of the dedicated four-mile line serving Vicinity - in base rate cases in 2007, 2009, 2017, and 2020 - PGW witnesses, including Ms. Heppenstall, provided sworn testimony that Vicinity's gas is delivered through the dedicated four-mile line and not through the PGW low pressure distribution system and no distribution system costs were allocated to Vicinity. I provided an abundance of evidence in my Surrebuttal testimony in the Complaint case, so I will present a few brief statements of the PGW witnesses here.

Mr. Kenneth Dybalski, PGW Vice President, stated, "they are served on a separate individual gas main that is not part of PGW's distribution system" and also explained that Vicinity "financed the individual gas main upon installation" (R-2017-2586783, PGW St. No. 6-R, 2:5-17)

Mr. Phillip Hanser, Brattle Group Principal that conducted the CCOSS in 2017, testified that Vicinity is "served on a separate self-financed individual gas main, their distribution mains and supply costs are directly assignable and, thus, they should not be assigned responsibility for distribution system costs in the same way as other customers that receive service via PGW's interconnected distribution system." (R-2017-2586783, PGW St. No. 5-R, 10:25-11:8).

When Ms. Heppenstall conducted the CCOSS in 2020, she remained consistent with those historical CCOSSs and also did <u>not</u> allocate distribution system costs to Grays Ferry. Although no facts have changed from a facilities usage or operational perspective that could justify a departure from the allocation conclusions that PGW witnesses, including Ms. Heppenstall, have sworn to in successive past rate cases, Ms. Heppenstall inexplicably changed positions from her prior sworn testimony. It is obvious the Complaint Order issued on April 20, 2023, that did not look favorably on Ms. Heppenstall's change of position, so in this proceeding Ms. Heppenstall submitted supplemental testimony (after the April 2023 Commission Order) and now changes her position again and produces an alternative CCOSS that "removed all non-high pressure distribution plant costs and overheads, so that only the cost of maintaining the Four Mile line and some overheads are included. This results in a revenue requirement that isolates the costs for transportation…The cost of service, for basic transportation delivery service is $1,295,176 or a rate of $0.1054 per MCF." (PGW No. 5-SD, 5:16-23.) I am pleased that Ms. Heppenstall has reversed her testimony in the Complaint case and agreed with the testimony of the other PGW witnesses in the previous base rate cases, and that she has agreed with herself in the 2020 base rate case. We are now in agreement that the delivery costs for Vicinity's gas should be based on the costs of the dedicated four-mile high pressure line, which Vicinity paid for. However, even with the reduced rate of $0.1054/mcf now calculated by Ms. Heppenstall, she is overstating the cost of service based rate that Vicinity should be charged because she ignored the principle of direct allocation, which clearly applies to Vicinity.

If PGW had made such an offer during the past five years of contract negotiations it is likely that Vicinity and PGW would have reached an agreement, but that did not happen. Unfortunately, after Ms. Heppenstall calculated a rate for transportation service at $0.1054/mcf, she did not stop but instead proceeded to opine that there are low pressure distribution system costs of $8,941,824 that must be allocated to Vicinity to be collected through the charge for ARS. As discussed elsewhere in my testimony, ARS involves only a capacity swap – every molecule of gas consumed by Vicinity is actually transported by the dedicated, four-mile, high pressure pipeline. Any attribution of PGW's costs to maintain its low pressure distribution system to Vicinity is not appropriate.

Q. WHAT IS DIRECT ALLOCATION?

A. During the CCOSS, if costs can be directly attributed to a specific customer or customer groups and not shared with other customer groups then those costs are to be directly allocated to that customer/customer group.

Q. ARE THERE FLAWS IN THE COST-OF-SERVICE STUDY CONDUCTED BY PGW?

A. Yes. The first step of any cost-of-service study is to determine what costs can be directly assigned to a specific customer. The four-mile pipeline to Vicinity is clearly an example of an asset that should be directly assigned. It was constructed for one customer, Vicinity. The costs to construct the pipeline were paid for by one customer, Vicinity. Moreover, the costs to maintain and operate the pipeline have been separately billed to Vicinity for the entirety of the pipeline's existence. Lastly, for the over 25 years of its existence, the pipeline has served one purpose – to transport gas solely to Vicinity. Simply put, the pipeline is a dedicated facility that should be directly assigned to Vicinity. The remaining PGW mainlines collectively are the low pressure distribution system, which Vicinity does not use and has never used and for which it should not be allocated any costs.

Q. DID MS. HEPPENSTALL'S CCOSS DIRECTLY ASSIGN COSTS ASSOCIATED WITH THE DEDICATED FOUR-MILE PIPELINE?

A. No. The one adjustment that Ms. Heppenstall made to remove Vicinity's transportation volumes (8,465,065 mcf out of the 12,286,916 mcf total) from the allocations of mains, however, did include the ARS volumes (3,768,722 mcf) in the allocation of distribution system costs, and included the transportation volumes in allocation of the remaining expenses associated with the operation and maintenance of the low pressure distribution system. It is entirely inappropriate to include ARS volumes in low pressure distribution system allocations, because the ARS does not use PGW's distribution system. ARS is a gas swap arrangement that I addressed thoroughly in the 1307(f) case, because it is a gas supply issue, not a base rate case issue. Ms. Heppenstall's CCOSS continues to allocate a multitude of low pressure distribution costs to Vicinity which are not related to any aspect of service to Vicinity through the four-mile line that Vicinity paid for, and for which it already pays $180,000 annually for maintenance.

Q. WHAT ITEMS DID MS. HEPPENSTALL INCLUDE IN THE COST OF SERVICE FOR THE TRANSPORATION RATE?

A. A review of the costs of Ms. Heppenstall's revised CCOSS that she provided in her supplemental direct testimony filed on May 5 identify many inappropriate costs that would not be included had Ms. Heppenstall directly allocated costs to Vicinity. The components that are included in her $1,295,176 transportation cost of service can be seen in Schedule E. A summary of the categories of expenses is

Distribution Expenses	$784,000
Administrative & General Expenses	$203,000
Depreciation & Amortization Expense	$105,000
Cost of Remove/Regulatory Asset Pandemic	$9,000
Interest and Other Expense	$56,000
City Payment/Net Income	$145,000
Total	$1,295,000

Q. WHAT ARE THE DISTRIBUTION EXPENSES THAT WERE ALLOCATED TO VICINITY?

A. The distribution expenses of $784,000, which is the largest component of the total cost of service, include items solely associated with the low pressure distribution system. Costs of $25,000 were allocated to Vicinity for supervision & engineering and for maintenance supervision despite PGW's failure to provide any evidence of any such work done on the four-mile line. An allocation of $192,000 was made for distribution load dispatching, yet Vicinity does not receive gas from the low pressure distribution system. Charges of $438,000 were assessed for metering & regulator stations in general and city gate and maintenance of measuring stations yet these were not based on Vicinity's meters (for which

Vicinity already pays a separate charge). The entire expense of $784,000 should be removed.

Q. WHAT IS THE COST OF SERVICE IF THOSE LOW PRESSURE DISTRIBUTION EXPENSES ARE REMOVED?

A. Removing the unjustified distribution system expenses will result in the transportation rate cost of service of $511,000 or $0.0415/mcf or $0.0397 at a conversion rate of 1.043 Dth/mcf.

Q. WHY DID PGW SHIFT THE ALLOCATED REVENUE REQUIRMENT COLLECTION FROM THE TRANSPORTATION RATE TO THE ARS RATE?

A. It would appear that PGW now acknowledges my previous testimony explaining that in 1996 Vicinity was intending on constructing a direct connection to TETCO via a bypass pipeline, which had been approved by the FERC. I testified in the Complaint case that Vicinity had resumed their analysis of a bypass line and had completed engineering studies that show the economic costs of a bypass line to be under $20 million. Since my original testimony, Vicinity has gone to market with its studies and received bids. Those bids show that a new bypass line can be constructed for under $26 million – notwithstanding the significant inflationary pressures since my original testimony. I am including the Highly Confidential pricing document as Exhibit JC5. It is easy to understand that investing less than $26 million to save $10,237,000 per year has a simple payback of roughly two and a half years and such a project would be extremely attractive, or in financial lingo, a “no brainer”. With Ms. Heppenstall’s reversal of her 2021 Complaint case position and now wanting to collect $1,295,176 annually, that makes the investment in a bypass line less attractive from a financial point of view, if that was the only cost Ms. Heppenstall and PGW sought to impose on Vicinity.

Q. WHAT REVENUE BENEFITS TO PGW'S CUSTOMERS WOULD BE LOST IF VICINITY CONSTRUCTS A BYPASS PIPELINE?

A. Historically Vicinity annually paid PGW $1,008,064 for transportation and $180,000 for maintenance on the four-mile line that Vicinity paid PGW to construct in 1996. Additionally, Vicinity paid for release capacity in the summer, $2.4 million in 2022, that it does not need. That amount was a generous subsidy to PGW's other customers.

Q. HOW HAS VICINITY PROGRESSED IN ITS ENGINEERING DESIGN FOR A NEW BYPASS LINE TO TETCO?

A. I provided data request responses in the Complaint case explaining that Vicinity's engineering design work had moved ahead and in addition to the completion of the design work that provided capital cost estimates based on 60% completion of engineering. That engineering work is now complete and constructions bids have been solicited and received. While the costs of the competitive bid packages are highly confidential, they are complete and provide substantial credible evidence that construction of a bypass line is a very realistic and economically attractive option for Vicinity.

Q. WHAT IS THE DIFFERENCE BETWEEN THE TRANSPORTION RATE THAT MS. HEPPENSTALL CALCULATED IN THE COMPLAINT CASE AND IN THIS BASE RATE CASE?

A. In the Complaint case Ms. Heppenstall allocated low pressure distribution system costs to Vicinity, even though Vicinity does not use PGW's low pressure distribution system. In the CCOSS in this proceeding Ms. Heppenstall removed the low pressure distribution system costs from the transportation rate, but instead allocated those costs to the provision of ARS. Her move of costs from transportation to ARS still results in the unjustified total cost increase to Vicinity of 750%, except now the bulk of that increase occurs in the charge for ARS. Because she recommends that the basic transportation charge increase from the current $0.0833/mcf to $0.1054/mcf, but recommends that the ARS charges, currently at $54,000/yr increase to $8,941,824, I will address her false assumptions that led to her ARS increase.

Q. DOES MS. HEPPENSTALL PROVIDE ANY REASON THAT EXPENSES IN HER CCOSS IN THIS BASE RATE CASE WERE SHIFTED TO ARS?

A. She did not provide any reasoning that required any judgement on her part. She simply followed the directive of PGW. She said, "At the request of PGW, I prepared a study that isolates the costs assigned to GFCP/VEPI in my original class cost of service study into two separate components: the basic transportation function of delivering gas; and the ARS component" PGW St. No. 5-SD 5:11-13

I explained previously that PGW's apparent strategy in this shift is to make Vicinity's investment in a bypass pipeline a financially unattractive project, while continuing to seek an astronomical overall price increase.

Q. WHAT IS THE COST OF SERVICE OF ARS?

A. Currently Vicinity pays $54,000 for ARS. To determine if there are any justifiable costs that PGW incurs for the provision of ARS, I requested the identification of the actual gas supply employees that perform the services of providing ARS. PGW responded that there are only three employees that perform functions that would include the provision of ARS[4] but that those employees do not track their time separately and specifically for ARS but simply include the ARS nominations as part of their daily job duties. I requested their detailed job descriptions to review if those descriptions included ARS tasks, and have received the descriptions. I reviewed the Highly Confidential job descriptions for the gas transportation coordinators and the manager of gas supply. The five-page job description for Gas Transportation Coordinator I, lists eight essential functions but does not mention ARS. The five-page job description for Gas Transportation Coordinator II, lists ten essential functions but also does not mention ARS. Finally, the seven-page job description for Manager of Gas Supply lists 37 essential functions yet not one of them mentions ARS. It is clear that the provision of ARS does not require any extraordinary time or effort but is merely another component of the supply and nomination process of the system sales customers, transportation customers, and Choice customers.[5] ARS does not impose more than a de minimis cost to PGW.

Q. HOW DO YOU ADDRESS PGW'S CLAIM THAT ARS USES ITS LOW PRESSURE DISTRIBUTION SYSTEM?

A. The provision and cost of ARS was the main topic of my testimony in the 1307(f) case. PGW claims that the simple gas swap, where Vicinity delivers gas to Skippack (meter 73034) for use by PGW's customers and PGW swaps an identical amount of gas and

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[4] In Response to Set IV-RR-2 Mr. Reeves stated that in addition to himself and Mr. Zuk the staff reporting to Mr. Reeves who support Gray's Ferry includes two gas transportation coordinators and the manager of gas supply.

[5] Mr. Ryan Reeves Testimony in the Complaint case is consistent with this conclusion: "So receiving an extra supply of gas there would be a piece of cost slowly tied to it. While that cost might be minimal, it is not no cost." (Complaint Case, TR at 160)

delivers it to the Vicinity delivery point on the Philadelphia Lateral, meter 73060, uses its low pressure distribution system. This is simply false.

In its Main Brief in the Complaint case the OSBA addressed PGW's position that all ARS volumes are implicitly deemed to be transported using PGW's integrated distribution system and OSBA's position was included in the April 2023 Order in the Complaint case:

> **From a cost causation perspective, this assertion is nonsense.** Physically, all of the gas that flows to the GFCP facility under normal operations flows from the Philadelphia Lateral to the customer on what appear to be dedicated mains (which Complainants paid for). As Mr. Knecht explained, the ARS is a gas supply "swap" arrangement which implicitly allows Complainants access to PGW's capacity on the Philadelphia Lateral. This is a gas supply issue, and Complainants should pay for access to that capacity at market rates, to protect the interest of both GCR and base rates ratepayers. However, once Complainants have reasonably compensated PGW ratepayers for use of the gas supply capacity, there is no reason to charge Complainants with the distribution system costs for which they bear no cost causation responsibility. (*Complaint Case*, Order at 21)

OSBA's Mr. Knecht and I agree on both of the points he states. First, the provision of ARS is simply a gas swap arrangement and does not use PGW's low pressure distribution system. Second, Vicinity should pay for access to PGW's capacity on the Philadelphia Lateral at market rates. I provided substantial evidence in the 1307(f) case that demonstrated that capacity on the Philadelphia Lateral has been released for $0.345/Dth-day on average with the most recent release at $0.10/Dth-day. In his supplemental testimony in this proceeding Mr. Teme's Exhibit FT-4 proposes to charge $1.05/mcf for ARS. His rate is three times higher than the average price of released capacity on the Philadelphia Lateral over the past five years and ten times higher than the most recent release of capacity reported by Mr. Reeves during the 1307(f) proceeding. It must be rejected. Just and reasonable rates must be based on the value of Philadelphia Lateral release capacity.

Q. WHAT IS THE BASIS OF THE SUBSTANTIALLY HIGHER CAPACITY RELEASE VALUE THAT PGW CLAIMS?

A. The Company's position is deliberately misleading by referring to capacity releases on TETCO, but not the specific releases on just the Philadelphia Lateral. The TETCO capacity releases that enable customers to access gas from zones M-2 or all the way back to Texas and Louisiana have a much higher value than just a release of Philadelphia Lateral capacity, because customers can seek out less expensive gas from those distant locations. Such access to cheaper gas is the reason that a customer would offer a higher price for release capacity that access upstream TETCO locations. The only TETCO capacity that Vicinity needs is capacity to move gas down the final segment, from the beginning of the Philadelphia Lateral at Eagle, to the interconnection with the four-mile line at meter 73060. The most recent value of Philadelphia Lateral capacity release was \$0.10/Dth-day according to data provided by Mr. Reeves. His response in the 1307(f) case to my interrogatory requesting the data of all capacity releases on the Philadelphia Lateral from 2018 to 2022 identified the release of M3 to M3 capacity from November 1, 2022 to March 31, 2023 for the rate of \$0.10/Dth-day. The higher valuations that PGW propounds about the value of capacity are misleading for they include capacity releases that reach far upstream of M3 and the Philadelphia Lateral and can access much cheaper gas. I include Mr. Reeves' response as Exhibit JC6

Q. HOW HAS YOUR PROJECTION OF THE VALUE OF RELEASE CAPACITY CHANGED?

A. As additional evidence has been obtained through data requests to PGW it has been clear that the rate that PGW had been charging Vicinity is excessive compared to the market value of TETCO M-3 capacity on the Philadelphia Lateral. In the Complaint case I discussed the rate that Vicinity paid PGW for release capacity with totaled \$1.4 million in 2021. Vicinity payments to PGW for release capacity in 2022 increased to \$2.4 million. In the 1307(f) case I cited an example that illustrated that if a customer would purchase 21,000 Dth/day release capacity at the full tariff rate of \$0.80/Dth that cost would be \$6.132 million annually. I then testified that the actual market price for release capacity based on PGW's data response was \$0.35/Dth-day. Further examination of the data to look at the market value of capacity on M-3 including the Philadelphia Lateral was only \$0.10/Dth-day in the recent winter period. PGW can segment its long haul capacity and potentially release just the Philadelphia Lateral component to Vicinity while releasing the balance to another party, and it is such segmentation that will result in a lower market price for just the Philadelphia Lateral capacity. Market rates change, and will continue to change, sometime moving upward and sometimes moving down. My point is that Vicinity should pay a market rate for the release capacity or ARS that it actually needs. Currently that is \$0.10/Dth-day.

Q. WHY HAVE YOU CHANGED YOUR POSITION AND NOW TESTIFY THAT SERVICE TO VICINTY CAN BE INTERRPUTABLE?

A. The 1996 contract described the Vicinity rate as "Gas Transportation Service" and "GTS" and PGW's tariff is titled "Gas Transportation Service- Rate GTS Firm Service", notwithstanding the fact that virtually all of the Contract services had some interruptible/recallable provisions as discussed below. My desire was to have the current service continued with substantially similar operating conditions and reasonable rates. During the Complaint case it became apparent that providing interruptibility should provide more flexibility to PGW in terms of how it manages its capacity portfolio, and that Vicinity had significant assets that allow it to withstand some degree of interruptibility – as it always has. Thus, in the original Contract, Vicinity specifically agreed to allow PGW to interrupt ARS service for up to 15 days each year when temperatures fell below 25 degrees. In PGW's contract renewal proposal in February 2021, PGW retained this same interruptible language. Vicinity's investments in its oil storage and oil inventory, including recent investments in biofuel, allow it to continue to accept interruptible service as previously agreed. Therefore, I am basing my position that Vicinity can be served as an interruptible customer on the actual contractual terms and conditions and the physical plant capabilities of Vicinity.

Q. WHAT MONTHLY METER CHARGES ARE PGW PROPOSING FOR VICINITY?

A. Vicinity has two meters measuring gas delivered through the high pressure line and PGW proposes a monthly charge of $1,100 per meter, or $2,200 total. Currently Vicinity pays $500 total for monthly charges. In comparison the highest monthly charge on PGW's tariff filing is $426.06 "Per Meter Per Month (Parallel Meters are considered one meter)." The April 2023 Commission Order made it clear that PGW may not increase rates without approval and PGW has provided no evidence or justification for its increase, therefore the increase should be denied. I have edited the proposed tariff accordingly, and include my revised tariff as Exhibit JC7.

Q. WHAT SURCHARGES DOES MR. TEME CLAIM SHOULD APPLY TO VICINITY?

A. Mr. Teme proposes to apply the Universal Service and Energy Conservation Surcharge; the Efficiency Cost Recovery Surcharge; Other Post Employment Benefit Surcharge; and the Distribution System Improvement Charge. These programs benefit all customers and application to firm service is consistent with our Commission-approved practices for all other firm services. These charges would not be applied to ARS and Sales Service because these services are interruptible services. As I have already testified that going forward the transportation service provided may be interruptible, that means the surcharges cited by Mr. Teme would not apply to any of the gas consumed by Vicinity. Previous Commission Orders have clarified that riders and surcharges can be waived for customers with the capability to bypass the LDC.

Q. WHAT SURCHARGES DOES PGW APPLY TO VICINITY CURRENTLY?

A. None of the surcharges cited by Mr. Teme apply to Vicinity currently. The surcharge amounts that PGW wishes to collect from Vicinity represent an increase of $25,766,000.[6] Mr. Teme barely mentions surcharges in his testimony and did not include the $25.7 million increase in filing materials, nor did Ms. Heppenstall include it in her CCOSS. Such an omission of a huge increase purposefully misleads all parties. The charges do not apply to Vicinity for several reasons. None of the surcharges are items that Vicinity can qualify for or use. I edited the proposed tariff for Rate GS-XLT that Mr. Teme included

[6] See OSBA Set 03-01 Current v Proposed Rates (Exhibit JC8)

as Exhibit FT-6. My edits reflect the appropriate removal of the four surcharges that Mr. Teme proposed to collect $25.7 million additional revenues annually from Vicinity.

Q. WHAT IS THE UNIVERSAL SERVICE AND ENERGY CONSERVATION SURCHARGE?

A. The surcharge funds programs for income-eligible and age-eligible customers to provide assistance in paying their gas bills, and to fund conservation programs available to residential customers. Vicinity is not eligible to receive such assistance from PGW. The rate effective March 1, 2023 is $1.5461/mcf.

Q. WHAT IS THE EFFICIENCY COST RECOVERY SURCHARGE?

A. The Efficiency Cost Recovery Surcharge recovers costs for the Company's demand side management programs and applies only to firm customer rate classes, as such should not apply to Vicinity.

Q. WHAT IS THE OTHER POST EMPLOYMENT BENEFITS ("OPEB") SURCHARGE?

A. The OPEB surcharge funds PGW's obligations and is adjusted annually through the 1307(f) filing. Currently the surcharge is $0.3789/mcf.

Q. WHAT IS THE DISTRIBUTION SYSTEM IMPROVEMENT ("DSIC") CHARGE?

A. The purpose of DSIC is to recover pipeline repair costs between rate cases. The four-mile line serving Vicinity has not had any repairs in the past twenty-five years. The PGW tariff allows "the Company may reduce or eliminate the DSIC to any customer with competitive alternatives and customers having negotiated contracts with the Company, if it is reasonably necessary to do so." Vicinity's bypass pipeline is certainly a competitive alternative, and DSIC should not be charged.

Q. WHAT COMMISSION RULINGS HAVE DEFINED SURCHARGE APPLICABILITY IN BYPASS SITUATIONS?

A. The logic of surcharge applicability in competitive situations, such a pipeline bypass, is well established. If there is a credible competitive threat or bypass opportunity, then special rates may be used to retain the patronage of the customer that might otherwise leave the LDC altogether. Once that special rate is determined, it makes no sense to believe that additional charges can be added to the rate without making the total rate realized by the customer in excess of the competitive alternative. This is akin to the used car salesman agreeing to a price with the customer, then returning ten minutes later and telling the customer that he needs to add $500 for vehicle preparation. Such a tactic would be rejected in that example and should be rejected here.

Commencing with the Gas Wars of the late 1980s the Commission has allowed the flexing of rates and riders so the affected utility would be able to retain large customers. As stated in the Order in the 2005 Equitable Gas Company 1307(f) case (R-00050272), "For approximately twenty years, this Commission allowed NGDCs to negotiate or flex their tariff rates in order to compete with bypass and energy alternatives. One of the principal goals intended to be achieved was to benefit all customers through the retention of the service to large use customers."[7]

[7] *PA PUC v. Equitable Gas Company*, Docket No. R-00050272 (Opinion and Order entered September 28, 2005, slip op. at 42)

Bypass is specifically included, "There are circumstances in which it may be reasonable to require captive PGC customers to bear the costs of discounted or waived gas delivery-related charges incurred to retain throughput. Those circumstances may include instances in which a customer may obtain service by direct bypass" (*id*, Order at 43)

In the same year, the Commission issued a consistent decision in the Peoples Natural Gas Company 1307(f) case (R-00050267), "we believe that there are circumstances in which it may be reasonable to require captive PGC customers to bear the costs of discounted or waived gas delivery related charges incurred to retain throughput. The circumstances may include instances in which a customer may obtain service by direct bypass."[8]

This principle was confirmed more recently in 2017 in the Order in the Gas Wars investigation[9] where "(t)he ALJ concluded that flex rates for dual fuel, bypass or economic development purposes can be used to further important public policy goals and the continuance of these practices is in the public interest."

Q. IF VICINITY WERE TO RECEIVE GAS THROUGH ITS OWN BYPASS PIPELINE WOULD THAT CHANGE ITS ABILITY TO TRANSPORT ITS GAS ON THE PHILADELPHIA LATERAL?

A. No. The ARS gas swap arrangement would still function as it does now. Vicinity would deliver gas for use by PGW's customers to Skippack and PGW would deliver gas to the new Vicinity bypass line. PGW would be compensated fairly for that service. It has been

[8] *Pennsylvania Public Utility Commission v. Peoples Natural Gas*, Docket R-00050267 (Opinion and Order Entered September 30, 2005, slip op. at 34)
[9] *Generic Investigation Regarding Gas-On-Gas Competition Between Jurisdictional Natural Gas Distribution Companies*, Docket No. I-2012-2320323 (Opinion and Order entered May 4, 2017 at 20-21).

established that the value of Philadelphia Lateral capacity is $0.10/Dth-day, and that PGW's labor costs of managing the nominations were minor as PGW performs this function daily for hundreds of transportation customers.

Q. DID VICINITY APPROACH PGW TO DISCUSS SETTLEMENT AFTER THE 1307(F) HEARING?

A. During the 1307(f) hearing I was questioned by PGW's counsel, Mr. Kennard,

> Q. PGW has - has offered ARS service for 25 years, the same period for which Grays Ferry has been capacity short. PGW has agreed to provide ARS service, continue to provide ARS service. If they continue to provide that ARS service, then there is no need for additional capacity by Grays Ferry. ARS Works and has worked for 25 years.
>
> Why the sudden interest and capacity on 19 the Philadelphia lateral?
>
> A. Well, Mr. Kennard, are you - are you testifying that your client, PGW, will offer ARS service for the future 25-year period under the same arrangement that we've enjoyed for the past 25 years?
>
> Q. I'm - I'm not allowed to testify. We - we established, and you accepted - accepted, subject to check, that PGW has offered to continue to provide ARS-like service to displace that service.
>
> A. Well, again,
>
> Q. If that's true,
>
> A. - if that's true -
>
> Q. - Philadelphia Gas Works and - and ARS just - that displacement transaction has physically worked to supplement Grays Ferry's capacity shortfall, why does Grays Ferry now suddenly need the 21,000 dekatherms of capacity?
>
> A. I'm uncertain as to what the price might be or what the term of that might be that you – of this concept that you're not testifying to, but instead that you're proposing.
>
> Q. So Grays Perry is concerned about the price for ARS service, the prices. Correct?
>
> A. The future price and - and the - and - and the future term that it would be offered. (Tr. at 94)

Based on that line of questioning it would seem that PGW was willing to continue the ARS gas swap under reasonable price and terms. Certainly, the ALJ indicated that settlement discussions would make sense as indicated in her dialog with Vicinity attorney, Mr. Stewart:

> ATTORNEY STEWART: Mr. Kennard is correct, Your Honor. There have been no settlement discussions so far with regard to this particular matter, or with PGW and Vicinity. Although, we would certainly entertain such discussions if PGW is willing.
>
> JUDGE: Oh, it appears they are, based on Mr. Kennard's earlier statement. (Tr. at 106)

Unfortunately, a brief discussion proved fruitless as PGW desired a large increase in ARS charges, and then filed its supplemental testimony the following week on May 5, and Mr. Teme opined that the ARS should increase from $54,000/year to $3.957 million, which is a significant increase and an unconscionable amount that has no cost justification.

Q. WHAT CHANGES ARE NECESSARY IN THE PROPOSED TARIFF FOR RATE GS-XLT?

A. Many changes are necessary to reflect the points I have made. I reviewed and edited Mr. Teme's Exhibit FT-6 and it is presented as Exhibit JC7. The main changes I made were

1. Changed the character of service from "firm" to "interruptible" as I discussed in my testimony

2. Changed Mr. Teme's unsupported customer charge increase to the current rate of $250.00 per month per meter.

3. Increased the maximum amount from 50,000 Dth/day to 60,000 Dth/day to better accommodate design day conditions.

4. Adjusted the transportation charge to $0.0397 consistent with removing low pressure distribution system costs.

5. Clarified that ARS charges should be based on actual capacity release revenues in TETCO zone M-3, and not be priced based on long haul capacity upstream to M-2 or Texas or Louisiana.

6. Replaced the language that would make ARS a monthly quantity election with language substantially similar to the 1996 contract and to PGW's original February 2021 contract renewal proposal that provides ARS as a daily quantity election

7. Clarified that the four surcharges discussed in my testimony will not apply to any transportation, ARS, or sales volumes.

8. Stated that lost and unaccounted for gas, and balancing charges will not be assessed as Vicinity is responsible for both of those functions.

9. Reduced the punitive penalty for violating a flow order from $75/Dth to $5/Dth. PGW provided no mention of support for any such penalties, and Vicinity is not subject to such penalties from PGW, and is responsible for adherence to TETCO OFOs currently.

III. <u>SUMMARY AND RECOMMENDATIONS</u>

Q. WHAT IS THE SUMMARY OF YOUR TESTIMONY?

A. I have addressed the four points of the April 2023 Commission Order

1. I have demonstrated that Vicinity is a unique customer that paid for the dedicated high pressure pipeline that has served it for over twenty five years, and that the construction of

a bypass line directly to TETCO is credible. Vicinity should have a special tariff and I have made the necessary edits to Rate GS-XLT proposed by the Company.

2. I have corrected flaws in Ms. Heppenstall's CCOSS and removed low pressure distribution system allocations from the transportation rate for Rate GS-XLT.

3. I have proved that ARS never flows gas to Vicinity using the low pressure PGW distribution system, therefore should not be allocated distribution system costs. Provision of ARS should be at market rates for delivery in TETCO M-3, and the most recent rate reported by PGW for such capacity was $0.10/Dth.

4. I have agreed with PGW's positions in prior base rate cases and provided support that demonstrates that Vicinity does not use PGW's low pressure distribution system.

There are many details regarding the service to Vicinity but it boils down to first, understanding that Vicinity does not use the PGW low pressure distribution system, and second, that ARS should be priced at the market rate for that service.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

Exhibit	Description
Appendix I	CV and Regulatory Experience
Exhibits JC1.1-JC1.5	James L. Crist testimony in Complaint case(C-2021-3029259) and 1307(f) case (R-2023-3038069 and C-2023-3038722)
Exhibit JC2	Contract
Exhibit JC3	TETCO System Map
Exhibit JC4	PGW Response to Vicinity Set I-2 from Complaint Case
HC Exhibit JC5	Pricing Document for bypass pipeline
Exhibit JC6	Ryan Reeves' response to Vicinity Set II, no. 7 in 1307(f) case regarding Philaldelphia Lateral capacity release prices.
Exhibit JC7	JC proposed edits to PGW tariff for Rate GS-XLT
Exhibit JC8	PGW Response to OSBA Set 03-01, current v. proposed rates.

APPENDIX 1

CV AND REGULATORY EXPERIENCE

JAMES L. CRIST

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DEMONSTRATED AREAS OF EXPERTISE

¨ GENERAL MANAGEMENT	Proven executive-level management expertise with excellent capabilities in developing, implementing, and supervising corporate-wide policies and procedures in areas including sales, marketing, customer service, public relations, rates, regulatory affairs, and administration. Possess a unique combination of abilities to set goals, develop winning business strategies, organize structures and work methods, and train the right people for the right positions to make it all work. Skilled in strategic short and long-term planning and budgeting with effective abilities in reducing the "fat" and increasing organizational efficiency. A creative, decisive leader who can successfully meet challenges and overcome obstacles to achieve profit objectives.
¨ REGULATORY STRATEGY	A thorough strategist with an extensive background in utility business unit operation (electric, natural gas, water/wastewater) the full range of rate and regulatory functions, from tariff development and special contract negotiation. Proven personal testifying skills with an outstanding record of developing and presenting successful written and oral testimony, along with settlement negotiations.
¨ PERSONNEL MANAGEMENT	Effective interpersonal communications skills support outstanding capabilities in recruiting, training, motivating, and directing staff at all levels. Proven ability to build productive, highly motivated teams of sales/marketing, operations, technical, and customer service personnel who contribute to top organizational performance.
¨ PERSONAL ATTRIBUTES	A determined, hardworking, challenge-driven executive with the skills and experience to bring excellence to any business organization. A high-energy mover and shaper ... experienced in successful start-ups and turn-arounds. An excellent communicator - written and verbal. A frequent speaker at professional symposiums, able to interpret and communicate complex concepts for diverse audiences. An engineering/technical specialist and a management generalist. Active in civic and community affairs.

EMPLOYMENT HISTORY

LUMEN GROUP, INC., Pittsburgh, PA — 1996 - Present

President - A consulting practice specializing in strategic planning, business planning, regulatory strategy, marketing and venture development in the electric, natural gas and energy services industries. Please see Addendum for amplification of consulting assignments.

ACN ENERGY, Farmington Hills, MI — 2004-2005

Vice President, Consumer Markets

OPTIRON, Pittsburgh, PA — 2003-2004

Vice President, Marketing

E R I SERVICES, Pittsburgh, PA — 1996

Vice President, Marketing & Product Development

CITIZENS UTILITIES, Harvey, LA & Stamford, CT — 1994 - 1995

Vice President, Marketing

CONSOLIDATED NATURAL GAS, Pittsburgh, PA — 1977 - 1994

Director, Residential & Commercial Marketing (1988 - 1994)
Manager, Technical Sales/Market Development (1985 - 1988)
Market Development Specialist (1982 - 1985)
Project Engineer (1979 - 1982) ... promoted from ... **Process Engineer** (1977 - 1979)

OCCIDENTIAL CHEMICAL CORP., Niagara Falls, NY — 1975 - 1977

Research Engineer

PENNSYLVANIA STATE UNIVERSITY, State College, PA — 1988
CLEVELAND STATE UNIVERSITY, Cleveland, OH — 1984

Instructor (Evening Division) - Economics, Engineering Economics

SELECTED ACCOMPLISHMENTS

VICE PRESIDENT, CONSUMER MARKETS - ACN ENERGY

Retained for a turnaround assignment with an independent energy marketing company. Participated on the executive management team and directed a decentralized 3-person market management staff responsible for sales to 85,000 customers. Worked directly with the parent company executives and business unit management to create market-driven strategies for the corporation. Sharpened marketing and sales efforts of an energy marketing company operating in seven states and packaged company for eventual sale to Commerce Energy.

- Primary executive responsible for sales. Directed a team of market managers that was responsible for all aspects of 11 different markets (electric and natural gas) around the country. Provided direction and support to sales channel organization of commissioned representatives. Turned around five-year annual loss to significant gain in 2004. Tightened focus on market decisions.
- Directed regulatory involvement to insure compliance with market rules. Focused on maintaining positive relationships with state utility regulators to avoid penalties.
- Led weekly operations meetings during absence of COO. This involved direction of call center, provisioning, billing, credit & collection, and marketing.
- Worked in a team setting with other executives (VP Finance, VP Supply, COO) to provide consistent, professional focus to workforce experiencing changing environment.
- Directed development of annual business plan and budget with targets resulting in both goal achievements and income improvements.
- During transition period working with merger partner Commerce Energy's executive team to train and advise incoming executives.
- Directed customer service improvements in the customer acquisition process which resulting in replacing outdated paper/fax process with phone order process.
- Organized and directed trade show presence at national sales convention for alliance sales channel to create awareness of new product and market focus.

VICE PRESIDENT, MARKETING - OPTIRON

Retained as part of executive team in venture capital startup company developing new CIS/CRM software for the energy industry. Worked closely with CEO, COO, and Director of Sales to determine business strategy and develop marketing strategy to create market awareness and brand attributes in medium and small energy companies.

- Added in-house marketing communications function and personnel and revamped all marketing materials.
- Added new website functionality and content.
- Implemented first print advertising campaign in industry publications.
- Using industry contacts, positioned Option as expert presenter at several conferences and trade shows.
- Developed business plan to identify sales prospects and created competitive database of CIS/CRM vendors.
- Participated in development of exit strategy plan resulting in the successful sale to large software company.

VICE PRESIDENT, MARKETING & PRODUCT DEVELOPMENT - ERI Services

Assumed responsibility for creating a new corporate marketing vision and strategy to facilitate entry into new deregulated energy markets nationally.

- Recruited and selected an exceptional management team and integrated marketing and sales activities into one functional operating unit.
- Established the product innovation process to identify and create new and profitable market-driven service offerings.
- Directed strategic branding to launch the new corporate identity; managed a $2 million national advertising campaign; and developed over $1 million of new sales/marketing collateral materials.
- Instituted financial controls that reduced costs 60% in the Iowa market rollout while maintaining 80% market share and high customer satisfaction.

VICE PRESIDENT, MARKETING - Citizens Utilities

Directed a decentralized 20-person sales staff and a five person marketing staff. Worked directly with the Board of Directors, Corporate President, and Sector Vice President to create market-driven sales strategies for the corporation. Revamped and redirected sales efforts of a five-state energy utility with 440,000 customers.

- Increased industrial sales revenues by reorganizing unregulated gas marketing effort.
- Revamped merchandising utilizing inbound telemarketing in Louisiana Gas.
- Revised training programs for entire sales force, identifying and correcting missing technical and equipment training, adding a greater competency in the commercial and industrial sectors.
- Developed first business plan in sales and marketing organization with monthly budget monitoring and

targets resulting in both goal achievements and cost improvements.

- Launched an aggressive direct marketing program that increased sales 500% over previous year.
- Increased share of gas transportation business in Arizona by 15% in first year of operation through marketing efforts.
- Created a telephone long distance business in Louisiana that captured a 20% share (2nd to AT & T).

DIRECTOR, RESIDENTIAL & COMMERCIAL MARKETING - Consolidated Natural Gas

Managed a marketing staff of 12 and a "dotted-line" 24-person field sales force. Directed marketing and sales efforts in consumer, business, and manufacturing markets with $154 million revenue.

- Added $6 million in revenue by developing new products in gas transportation, supply, and agency.
- Directed sales activities in residential, commercial, institutional and governmental accounts for both product sales and technology sales.
- Produced $600,000 annual revenue and doubled competitive project wins by revamping market approaches to residential and commercial new construction.
- Secured 50% increase in customer decisions over 5 gas companies and 4 electric companies.
- Experienced in PUC and Legislature lobbying. Increased revenues $2.3 million through regulatory strategy/testifying and received major competitive program approval.

MANAGER, TECHNICAL SALES / MARKET DEVELOPMENT - Consolidated Natural Gas

Directed new market development and competitive market support.

- Focused on commercial and industrial accounts and increased the depth of relationship beyond the typical utility provider of service to a rich full service information provider and business partner.
- Captured $150,000 in new business annually by competitive pricing analysis, sales tool development, and market approach.
- Developed total advertising and promotional plan launching new market programs.
- Compiled extensive technical database and developed economic model for project analysis, eliminating a $100,000 operating budget expense.
- Led statewide coalition with customers and government agencies for fair treatment of new technology.

EDUCATION - PROFESSIONAL

UNIVERSITY OF PITTSBURGH, Pittsburgh, PA — 1982

M.B.A. Degree

CARNEGIE - MELLON UNIVERSITY, Pittsburgh, PA — 1975

B.S. Degree in Chemical Engineering

Registered Professional Engineer   AGA Hall of Fame, 4/1991

JAMES L. CRIST

Lumen Group, Inc.
Suite 101, 4226 Yarmouth Drive ● Allison Park, PA 15101
Phone: 412.487.9708 ●Cell: 412.613.8886 ●E-mail: JLCrist@AOL.com

AMPLIFICATION OF LUMEN GROUP CONSULTING ASSIGNMENTS

A consulting practice specializing in strategic planning, business planning, marketing and venture development in the telecommunications, energy, and services industries.

REGULATORY

Represented the National Energy Marketers Association and their members in Equitable-Dominion Peoples merger case. Developed strategy, presented written and oral testimony and negotiated on behalf of clients. Worked with other interveners and FTC on anti-competitive issues.

UTILITY RATE NEGOTIATION

Represented large client group seeking to obtain rate reduction from electric utility. Prepared strategy, wrote testimony, and exceeded expectations by achieving a 40% reduction in charges, producing a $2 million annual reduction.

STRATEGIC PLANNING FOR ON-SITE POWER GENERATION

Participated in proposal development for a 27-MW power plant on Kauai. Handled critical customer needs assessment in rapid turnaround fashion to meet proposal deadline. Maintained relationships with clients, vendors and proposal partners. Our proposal was selected as the preferred bidder out of five strong competitors.

NEW BUSINESS START-UP / TARIFF NEGOTIATIONS

Participated in the development of a new gas distribution utility in New York. Handled tariff development, pricing structure, transportation contracting, and operations, maintenance, and emergency manual preparation.

SALES STRATEGY/BUSINESS DEVELOPMENT

Developed sales strategy to focus on profitable accounts and markets. Developed sales training and account management plans and provided consulting to energy marketing organizations to improve overall sales.

BUSINESS STRATEGY/BUSINESS DEVELOPMENT

Developed business strategy to verticalize eCommerce/Customer Relationship Management product for the energy/utility industry. Produced sales training for global applications, product promotion presentations, developed alliance relationships with system integrators and software partners, developed business. Client is market leader in North America.

JOINT VENTURE/PRODUCT DEVELOPMENT

Assembled joint ventures resulting in sales to offer new hedge-based weather risk management retail product. Identified venture partners, and developed business arrangements and closed million-dollar deals

ENERGY PROCUREMENT

Served as energy expert on project team that obtained long-term natural gas supply for major government facilities. Prepared project specifications, negotiated with suppliers, prepared RFP, negotiated major reduction in delivery charges. This project resulted in annual cost reduction of $2.5 million.

NEW BUSINESS DEVELOPMENT - TELECOMMUNICATIONS

Analyzed use of electric utility assets for possible telecommunications business venture. Wrote the business plan that identifies regulatory and non-regulatory issues, marketing plans, financial analysis, and organizational requirements. Launched the new non-regulated business unit in 1996.

JOINT VENTURE DEVELOPMENT - TELECOMMUNICATIONS

Conducted analysis of potential joint venture partners for new unregulated telecommunications venture, bypassing the Bell operating company. Held screening discussions with potential partners and selected lead candidate for venture. Developed working agreement with partners along with business case to launch venture.

JOINT VENTURE DEVELOPMENT - TELECOMMUNICATIONS & ENERGY

Developed strategic plan for joint venture involving gas, electric, and telecommunications partners. Screened potential business partners and held discussions with lead candidates. Assembled justification for top management approval.

PRODUCT DEVELOPMENT - UNREGULATED ENERGY SERVICES

Developed energy products for start-up subsidiary of major energy utility. Identified potential products and selected most likely candidates for further development. Developed market plans and sales plans for products.

MARKET PLAN - DIRECT MARKETING

Developed the market plan for large, global direct marketing agency to enter the energy industry. Identified strategies, strengths, weaknesses, and target prospects. Initiated sales effort and developed new business.

CORPORATE IMAGE DEVELOPMENT

Developed complete business unit identity for a new operations and services company. Produced capabilities brochure for use with prospects.

MARKET RESEARCH

Conducted market research to identify new customer/new business opportunities for major energy utility. Comprehensive project with two additional similar projects were completed. Entailed determination of goals, development of research methodology, script preparation, vendor selection, data analysis, and development of action plan.

MARKET DEVELOPMENT

Organized intervener group in Illinois consisting of retail marketers and intervened in three rate proceedings (Nicor Gas base case, WPS-Peoples merger case, Peoples Gas base case) and secured significant improvements in rules and procedures enabling marketers to increase their business and profitability. Developed strategy and presented written and oral testimony.

PARTIAL LIST OF REGULATORY EXPERIENCE OF JAMES L. CRIST

1. Dominion Energy Ohio Motion, Case No. 18-1419-GA-EXM, Representing Retail Energy Supply Association
2. Aqua America/Peoples Natural Gas Merger, Docket R-2018-3006061, Representing Natural Gas Supplier Parties and Retail Energy Supply Association
3. Peoples Natural Gas General Base Rate Increase, Docket R-2018-3006818, Representing Peoples Industrial Intervenors
4. Duquesne Light Company General Base Rate Increase, Docket R-2018-3000124, Representing the Duquesne Industrial Intervenors
5. Columbia of PA General Base Rate Increase, Docket R-2018-2647577, Representing the Pennsylvania State University
6. West Penn Power Company, Default Service Program, Docket R-2017-2637866, Representing the Pennsylvania State University
7. Vectren Energy Delivery Ohio, Alternative Rate Plan, Case No. 18-0049-GA-ALT, Representing Retail Energy Supply Association
8. Columbia of PA Gas Cost Increase, Docket R-2017-2591326, Representing the Pennsylvania State University
9. West Penn Power Company, General Base Rate Increase, Docket R-2016-2537359, Representing the Pennsylvania State University
10. Columbia of PA General Base Rate Increase, Docket R-2016-2529660, Representing the Pennsylvania State University
11. UGI Utilities General Base Rate Increase, Docket R-2015-2518438, Representing Dominion Retail, Inc., Shipley, Choice, LLC, Interstate Gas Supply, Inc., Amerigreen Energy, and Rhoads Energy
12. Columbia of PA General Base Rate Increase, Docket R-2015-2468056, Representing the Pennsylvania State University
13. West Penn Power Company, General Base Rate Increase, Docket R-2014-2428742, Representing the Pennsylvania State University
14. Herman Oil & Gas Company, General Base Rate Increase, R-2014-2414379, Representing Herman Oil & Gas Company
15. Columbia of PA General Base Rate Increase, Docket R-2014-2406274, Representing the Pennsylvania State University
16. Ameren Gas- General Base Rate Increase, Docket No. 13-0192, Representing Dominion Retail and Interstate Gas Supply of Illinois
17. Columbia of PA General Base Rate Increase, Docket R-2012-2321748, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
18. Columbia of PA Petition for Approval of a Distribution System Improvement Charge Docket R-2012-2338282, Representing the Pennsylvania State University
19. PUC PA Generic Investigation Regarding Gas-On-Gas Competition, Docket No. P-2011-2277868, Representing the Pennsylvania State University
20. Ameren Gas- General Base Rate Increase, Docket 11-0282 (Cons.), Representing Dominion Retail and Interstate Gas Supply of Illinois
21. Water and Power Authority (USVI)- Electric Base Rate Case, Docket 575, June 2009, Representing Frenchman's Reef Marriott
22. Water and Power Authority (USVI)- Water Base Rate Case, Docket 576, June 2009, Representing Frenchman's Reef Marriott
23. Public Service of New Mexico 2010 Base Rate Case, Informal rate design workshops pursuant to the stipulation in NMPRC Case No. 08-00273-UT, Representing City of Albuquerque
24. Public Service of New Mexico, Electric base case at Case No. 08-00273-UT, Representing City of Albuquerque
25. Public Service of New Mexico 2009 Renewable Energy Procurement Plan for 2010, Case No. 09-00260-UT, Representing City of Albuquerque and Santa Fe County
26. Public Service of New Mexico, Gas sale case at Case No. 08-00078-UT, Representing City of Albuquerque
27. UGI Utilities, Central Penn Gas, Penn Natural Gas, Gas Cost Increase, Docket No. R-2011-2238953, Representing Shipley Energy, Rhodes Energy, and CenterPoint Energy
28. UGI Utilities- Gas Division, Gas Cost Increase, Docket No. R-2010-2172933, Representing Shipley Energy
29. Columbia of PA General Base Rate Increase, Docket R-2010-2215623, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
30. Columbia of PA General Base Rate Increase, Docket R-2009-2149262, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
31. Columbia of PA General Base Rate Increase, Docket R-2008-2011621, Representing Hess Energy, Dominion Retail, Interstate Gas Supply, and Shipley Energy
32. Columbia of PA Gas Cost Increase, Docket R-2008-2028039, Representing Dominion Retail, Interstate Gas Supply, and Shipley Energy
33. PPL Electric Utilities Voluntary Purchase of Accounts Receivables Program and Merchant Function Charge, Docket No. P-2009-2129502

34. Nicor Gas Company, Provision of facilities and services and the transfer of assets between Nicor Gas Company and Nicor Inc., Docket No. 09-0301, Representing Dominion Retail
35. North Shore Gas and Peoples Gas Light and Coke Company, General Base Rate Increase, Dockets 09-0166 and 09-0167, Representing Dominion Retail, Interstate Gas Supply and Nicor Advanced Energy
36. Nicor Gas Company, Base Rate Increase, Docket No. 08-0363, Representing Interstate Gas Supply and Dominion Retail
37. North Shore Gas and Peoples Gas Light and Coke Company, General Base Rate Increase, Dockets 07-0241 and 07-0242, Representing Dominion Retail, Interstate Gas Supply and U.S. Energy Savings
38. WPS Resources, Peoples Energy, Peoples Gas Light and Coke Company, North Shore Gas Company, Application pursuant to Section 7-204 of the Public Utilities Act for authority to engage in a Reorganization, Docket 06-0540, Representing Dominion Retail, Interstate Gas Supply, US Energy Savings, MxEnergy, and Direct Energy Services.
39. Allegheny Energy, Approval of Retail Electric Default Service Program and Competitive Procurement Plan, Docket No. P-2008-2021608, Representing the Pennsylvania State University
40. Allegheny Energy, Generation Rate Cap, Docket No. P-2007-2001828, Representing the Pennsylvania State University
41. Equitable Gas Company, Rate Increase, Docket R-2008-2029325, Representing Independent Oil & Gas Association and Hess Corp.
42. Equitable Gas Company and Peoples Gas, Merger Case, Docket A-122250F5000, Representing National Energy Marketers, Hess Corporation, and Constellation New Energy.

EXHIBIT JC1.1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.	:	
Complainants,	:	
	:	Docket No. C-2021-3029259
v.	:	
	:	
Philadelphia Gas Works,	:	
Respondent.	:	

DIRECT TESTIMONY OF JAMES L. CRIST, P.E.

ON BEHALF OF

GRAYS FERRY COGENERATION PARTNERSHIP

AND VICINITY ENERGY PHILADELPHIA, INC.

Statement JC-1
April 22, 2022

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS, AND ON WHOSE BEHALF, YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. a consulting firm focused on regulatory and market issues. My business address is 4226 Yarmouth Drive, Suite 101, Allison Park, Pennsylvania 15101. I am presenting testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity").

Q. DO YOU HAVE ANY QUALIFICATIONS OR OTHER SPECIALIZED KNOWLEDGE THAT WOULD ASSIST THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("COMMISSION") IN ITS DELIBERATIONS IN THIS CASE?

A. Yes. I have a B.S. in Chemical Engineering from Carnegie Mellon University and an M.B.A. from the University of Pittsburgh. Additionally, I am a Registered Professional Engineer in the Commonwealth of Pennsylvania. I have attached a copy of my CV and Regulatory Experience as Exhibits JC1.1 and JC1.2 respectively.

Q. BRIEFLY DESCRIBE YOUR RELEVANT BUSINESS QUALIFICATIONS.

A. I have run a consulting practice for the past 25 years focused on regulated and deregulated energy company strategy, market strategy, and regulatory issues. During 2004 and 2005, I undertook a consulting assignment as the Vice President of Consumer Markets for ACN Energy. ACN is a gas and electric marketer that is active in eight states. Prior to my consulting practice, I worked at three major energy companies for a total of 19 years. Most

recently I was Vice President of Marketing for Equitable Resources. In that function I was responsible for the development of the company's deregulated business strategy.

Prior to that I was Vice President of Marketing for Citizens Utilities, responsible for gas, electric, water and wastewater marketing activities in several service territories within the United States. The gas and electric utility operations were in Vermont, Louisiana, Arizona, Colorado, and Hawaii. Under my direction, Citizens initiated commercial and industrial transportation and supply services at its gas operation in Arizona. I also directed significant gas supply contracting activities with large industrial and commercial customers in Citizens' gas operation in Louisiana.

Before that, during 1988 through 1994, I was the Marketing Director at the Peoples Natural Gas Company where I was actively involved in many gas transportation programs as the company relaxed transportation requirements so that customers would have supply choices.

In summary, I have considerable experience in several states involving residential, commercial, and industrial customer energy procurement, regulatory issues and industry restructuring programs.

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

A. Yes, I have appeared before the Commission in numerous gas and electric regulatory proceedings. Additionally, I provided testimony on a variety of issues relating to energy procurement, industry restructuring, and demand response before regulatory Commissions in Arizona, Maryland, New Mexico, Illinois, Ohio, Wyoming and the U.S. Virgin Islands.

I. ISSUES

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS TESTIMONY?

A. Specifically, in my direct testimony I will:

1. Review the history of the Grays Ferry Cogeneration facility going back twenty-five years and the reason that Grays Ferry entered into an agreement with Philadelphia Gas Works ("PGW").

2. Provide an overview of VEPI covering the history of the thermal energy district and the need to secure firm gas supply to assure that VEPI can fulfill its public utility function. I will explain the energy relationship between Grays Ferry and VEPI.

3. Review the details of the unacceptable negotiations with PGW and my analysis of each of the terms of its rate demands and explain why they are not appropriate and entirely out of line with rate setting standards and practices.

4. Lay out the appropriate and reasonable contractual details for PGW to execute with Grays Ferry so the other customers of PGW can realize their lower rates as Grays Ferry continues to be a customer over the next 25 years, by avoiding the construction of the FERC-approved bypass pipeline to TETCO.

5. Cite several examples of PGW's unfair practices targeting customers of the energy-efficient VEPI steam system, and explain why PGW's actions violate the standards of conduct set by the Commission, and should not be permitted to continue.

II. <u>GRAYS FERRY COGENERATION PLANT</u>

Q. WOULD YOU DESCRIBE THE HISTORY OF THE DEVELOPMENT OF GRAYS FERRY?

A. The Grays Ferry cogeneration plant was constructed in 1997 and consists of a combined cycle plant with a gas combustion turbine-generator ("CT") and a waste heat recovery boiler or heat recovery steam generator ("HRSG"), a 700klb/hr. auxiliary boiler and an extraction steam turbine ("ST"). The outputs of the ST and CT are 58 MW and 135 MW respectively. The CT and HRSG burn only natural gas. The auxiliary boiler burns either natural gas or low sulfur distillate oil ("LSDO"), and the ST can be fed with steam from the HRSG and/or the auxiliary boiler. Initially developed as a partnership of Trigen, Philadelphia Electric ("PECO") and O'Brien Energy, the facility is currently owned by Grays Ferry Cogeneration Partnership, which is in turn owned by Vicinity Energy Inc. ("Vicinity"), parent company of the downtown district energy system owned and operated by Vicinity Energy Philadelphia, Inc. ("VEPI"). The entirety of the electrical power output of the plant is sold into the wholesale market through the PJM Interconnect LLC ("PJM") the regional transmission organization ("RTO") responsible for, among other areas, the Philadelphia market.

Q. HOW MUCH POWER DOES GRAYS FERRY PRODUCE ANNUALLY?

A. The facility is available in excess of 99% of the time and in 2021 sold 958.3 GWH into the PJM. Such sales are structured as firm sales. Additionally, the steam output is 3.64 million Mlbs (1 Mlb equals 1,000 lbs) annually.

Q. WHAT IS THE NATURE OF THE CONTRACT BETWEEN GRAYS FERRY AND PGW?

A. In January 1996, Grays Ferry signed a Service Contract with the Philadelphia Authority for Industrial Development ("PAID") – a City of Philadelphia entity capable of signing this long-term contract on behalf of Philadelphia Gas Works ("PGW"), the City's municipally owned gas utility. The contract is an integral part of Grays Ferry's natural gas transportation assets. The contract has an expiration date of 12/31/2022 and due to considerable uncertainty about renewal prospects, and potentially long lead times needed for certain remedies, Vicinity initiated contract negotiations with PGW in 2017. Those discussions have not resolved critical issues and therefore Grays Ferry found it necessary to file a complaint to address several components of the contract and seek a Commission order making PGW comply with reasonable rates and contract terms proposed by Grays Ferry.

Q. WHAT COMPANIES HAVE OWNED AND OPERATED THE GRAYS FERRY COGENERATION PLANT?

A. The plant was initially a partnership between Trigen, PECO and O'Brien Energy. PECO and O'Brien were later replaced by NRG and then Calpine. In 2005 the facility was sold to Thermal North America, Inc. ("TNAI"), along with a portfolio of other entities owned by Trigen. In 2007, TNAI was sold to Veolia Energy North America Holdings, Inc. In 2019, TNAI was sold to Franklin BidCo, Inc. and changed its name to Vicinity Energy Inc.

Q. WHAT WAS THE ORIGINAL PLAN TO OBTAIN GAS SUPPLY FOR GRAYS FERRY?

A, Recognizing the need for a firm, secure supply of natural gas, in 1996 during the construction phase of the plant, a high-pressure natural gas pipeline was designed and permitted that would connect Grays Ferry directly to the Philadelphia Lateral of Texas Eastern Transmission ("TETCO").

Q. WHAT ENGINEERING WORK WAS CONDUCTED IN 1996?

A. Grays Ferry commissioned the design of a four-mile pipeline to connect the plant directly with TETCO, and transport natural gas at pressures of 350 psig. The pipeline included a crossing over the Schuylkill River. Based on my review of the data request responses including PGW's large project book that contained 122 pages (Exhibit JC2.3), my engineering estimate of the project cost of the four-mile line is in the range of $4-6 million in 1996. PGW has repeatedly claimed it cannot locate the project cost documents of the four-mile pipeline. The engineering firm that designed the pipeline was Pennoni, headquartered in Philadelphia.

Q. WHAT REGULATORY WORK WAS DONE IN 1996?

A. An application was submitted to the Federal Energy Regulatory Commission ("FERC"). The project was approved for construction with a certificate of convenience issued by FERC.

Q. WHY DID GRAYS FERRY ELECT TO OBTAIN GAS SERVICE THROUGH PGW INSTEAD OF CONSTRUCTING ITS OWN DEDICATED LINE?

A. Philadelphia mayor, Ed Rendell, desired that PGW be part of this landmark project and requested the two companies work together to negotiate a contract that would allow PGW to construct the dedicated natural gas pipeline connecting Grays Ferry to TETCO. PGW used an abandoned liquids pipe located near TETCO's Philadelphia Lateral, that it converted to natural gas service, and constructed a 16" high pressure steel pipe to extend that pipe and connect directly to the Grays Ferry facility. Presumably, PGW's TETCO/Grays Ferry connection was less expensive as it reused an existing, albeit abandoned, pipeline and it allowed PGW to remain at least a passive participant in the transportation of gas to a Philadelphia business.

Q. WHAT WAS THE COST OF THE FOUR MILE PIPELINE?

A. The first part of the four-mile pipeline was an abandoned liquids line that PGW converted to a gas pipeline. The second part of the line was a two-mile 16" line from the Passyunk station to Grays Ferry. Costs were requested from PGW in several data requests. I have attached their responses to Set I-1 and Set I-5 as Exhibits JC2.1 and JC2.2. There is not one clear summary of all the costs (engineering, permitting, and construction). In the data responses there are several components of the total project cited but none of them aggregate to more than $2 million.

Q. HOW MUCH DID GRAYS FERRY CONTRIBUTE TO THE CAPITAL COST OF THE FOUR MILE PIPELINE?

A. Grays Ferry made multiple installment payments to PGW totaling $10.1 million. In addition, Grays Ferry has paid PGW $0.08 per dekatherm of natural gas transported through the dedicated pipe for the last 25 years, or roughly $24,000,000 (on a conservative basis of 12M dekatherms a year). Because Grays Ferry pays PGW separate amounts for such things as operations and maintenance costs, it is fair to conclude that the over $34,000,000 paid by Grays Ferry could have been used by PGW to fully depreciate the cost of the construction and rehabilitation of the pipe.

Q. WHAT WAS THE TRANSPORTATION RATE?

A. The transportation rate was, and still is $0.08/Dth.

Q. HOW WERE MAINTENANCE COSTS ADDRESSED?

A. Maintenance costs are not based on actual expenses incurred but instead on an annual amount set initially at $100,000 in 1998, and subject to annual escalation. The annual maintenance payment in the most recent year, 2021, was approximately $160,000. Grays Ferry and VEPI have requested an itemization of PGW's actual maintenance costs for the dedicated pipe but have yet to be provided any meaningful information. I have included PGW's replies to my inquires Set I-2 and Set I-6 as Exhibits JC3.1 and JC3.2

III. VICINITY ENERGY PHILADELPHIA INC.

Q. WOULD YOU DESCRIBE THE HISTORY OF THE THERMAL ENERGY DISTRICT IN DOWNTOWN PHILADELPHIA?

A. The steam system in Philadelphia is over a century old and was originally built and owned by PECO. VEPI's predecessor purchased the steam system from PECO in 1986. The district thermal system provides an essential service to Philadelphia as most downtown buildings rely on it for their essential space heating needs. Most buildings were designed and constructed relying on the steam system.

Q. WHAT SERVICES DOES THE THERMAL ENERGY SYSTEM PROVIDE TODAY?

A. VEPI sells steam to many critical service applications in Philadelphia including universities, residential complexes, hospitals and other medical facilities as well as numerous commercial buildings. The steam is used for space heat, hot water, and various process applications such as food service. laundry and sterilization, including the sterilization of hospital equipment.

Q. WHAT IS THE SOURCE OF STEAM THAT VEPI SELLS?

A. The majority of the steam is produced by Grays Ferry's cogeneration plant and, when necessary, for example, if the cogeneration plant cannot produce enough steam to satisfy the customer demand, steam boilers owned by VEPI or a sister company of VEPI.

Q. WHAT ARE THE ECONOMICS OF PRODUCING STEAM USING NATURAL GAS FIRED BOILERS?

A. The utility-scale boilers operated by VEPI are highly efficient operating at or above an 85% rate.

Q. WHAT ARE THE EFFICIENCIES OF PRODUCING ELECTRICITY AND STEAM USING COGENERATION?

A. Cogeneration systems are highly efficient, producing overall system efficiencies at or above 80%, compared to 30% to 35% of traditional utility fossil-fueled power plants. See www.epa.gov/chp/chp-benefits. This high efficiency makes cogeneration an attractive technology for improving our country's overall energy efficiency.

Q. WHAT ARE THE ENVIRONMENTAL BENEFITS OF PRODUCING STEAM USING COGENERATION?

A. By burning a single unit of fuel, yet producing both electricity and steam, the overall energy output is increased compared to what would be produced separately from a power plant and a stand-alone boiler. See www.epa.gov/chp/chp-benefits. This is accomplished either from waste heat from a combustion turbine being used to make steam, then passing steam through a steam turbine-generator where the steam is then extracted and used as thermal energy. A commercial customer receiving steam from VEPI's process that uses the waste heat of the Grays Ferry cogeneration plant is purchasing highly efficient steam. By the US EPA's calculation and based on a smaller 5 MW CHP, which would have lower efficiency than Grays Ferry, combined heat and power produces roughly half of the CO_2 emissions that would otherwise be required to produce the same electric and thermal outputs if produced separately. See www.epa.gov/chp/chp-benefits. It is a significant contribution to efforts to address climate change.

IV. NEGOTIATIONS WITH PGW

Q. WHEN DID VICINITY APPROACH PGW TO DISCUSS CONTRACT RENEWAL?

A. Vicinity approached PGW in 2017 yet found discussions were fruitless. They re-approached PGW in 2020 and again made no progress on the issues. In February of 2021 PGW provided Vicinity with proposed contract terms that increase the rate by an amount nearly tenfold and reassigned Vicinity to interruptible service. The terms PGW was dictating were so onerous and inadequate for Vicinity's required service needs that Vicinity retained outside counsel and myself to assist with analysis of the offer and development of a fair counteroffer.

Q. WHAT ARE THE KEY COMPONENTS OF PGW'S OFFER TO VICINITY?

A. The major issues that were discussed are listed below. I will address each one of them.

1. Quality of services
2. Variable transportation rate
3. Maintenance fee
4. Release capacity
5. Alternate Receipt Service ("ARS")
6. Sales service gas
7. Imbalance charges
8. Lost and unaccounted for gas

Q. WHAT IS "QUALITY OF SERVICE"?

A. Most utility sales and transportation service is firm, meaning that the customer is able to take the amount of gas necessary for its needs on a daily basis. Residential and essential human needs customers such as hospitals and nursing homes absolutely require firm service as the health and welfare of individuals depends on firm service especially in periods of cold weather. PGW also offers an interruptible service on a voluntary basis to its industrial and commercial customers who can, in the sole judgment of PGW, manage their business without the use of gas during periods of curtailment or interruption. (Tariff Interruptible Transportation- Rate IT). For the past twenty-five years Grays Ferry's service has been firm, and the electricity that Grays Ferry sells into the PJM is offered on a firm basis. The steam that VEPI receives from Grays Ferry which then is sold to residential and commercial customers including hospitals and nursing homes, is also provided on a firm basis. PGW is aware of this yet it did not offer firm transportation service to Grays Ferry. It stated it would provide only interruptible transportation service. Obviously, an interruptible quality of service is not practical for Grays Ferry.

Q. WHAT TRANSPORTATION RATE DID PGW PROPOSE?

A. PGW proposed to increase the rate from the current $0.08/Dth to $0.75/Dth, an increase of about 900%. In my three decades of rate work in the energy utility industry, I have never seen a 900% increase proposed. PGW did not attempt to justify such an increase by providing an explanation of significant work that would be done on the four-mile pipe. When I say "significant work" I mean a project such as replacing the entire line. Even if that were the case a rate of $0.75/Dth applied to the 13,000,000 Dth annual gas throughput would produce $9.75 million, a windfall for PGW. Given that the estimated cost of the original line twenty-five years ago was $4-6 million, which Grays Ferry paid for several times over, PGW's $0.75/Dth is ridiculous and unsupportable under any rational rate structuring basis. Based on my review of the available engineering and cost documents of the four-mile pipe, and the collective capital contribution of $10.1 million during the project development period, Grays Ferry is paying greater than the cost of service. Based on the responses of PGW so far, the range should be at or below the current rate of $0.08/Dth. My recommendation which considers balancing rate and regulatory mechanics with achieving a timely resolution of this matter, would be to keep the rate at $0.08/Dth.

Q. WHAT MAINTENANCE FEE DID PGW DEMAND?

A. As I explained, the original contract stated the maintenance fee of $100,000/yr would be increased with the consumer price index ("CPI") and in the recent year was about $160,000. Because that amount is not trivial, we issued a data request to learn what maintenance work PGW has been conducting on the four-mile line. PGW's Discovery Response to Vicinity's Set I-2 (Exhibit JC3.1) that states that, "The Company does not maintain annual maintenance records by main. However, the cost of service allocates $995,000 of mains and maintenance of mains expenses in Accounts 874 and 887."

Account 874 is Mains and services expenses defined as "This account shall include the cost of labor, materials used and expenses incurred in operating distribution system mains and services" and would include such tasks as walking the line and inspecting for leaks. Account 887 Maintenance of Mains which "shall include the cost of labor, materials used and expenses incurred in the maintenance of distribution mains." This account includes repairing leaks and other similar items involving fixing a broken line.

During the past twenty-five years the four-mile line has never been out of service due to an interruption requiring major maintenance. Therefore the $160,000 that Grays Ferry paid PGW in 2021 was for PGW personnel to walk the line and do routine inspections, hardly justifying an expense of that magnitude. Considering that the response to data request Set I-2 stated that the total expense of accounts 874 and 887 was $995,000, and that amount was for all the maintenance work for all of PGWs 6,000 miles of mains, it is obvious that Grays Ferry's maintenance fee is subsidizing the maintenance work on the entirety of the PGW system.

PGW proposed that the ongoing maintenance fee be continued with the same annual increases, and it is apparent to me that PGW's other customers (all the customers not on the dedicated four-mile line) are benefiting from this cross-class subsidy which is not allowed under long settled Pennsylvania ratemaking principles.

Q. WHAT WOULD A REASONABLE MAINTENANCE RATE BE?

A. Because line maintenance costs vary directly with the length of the line Grays Ferry should be allocated a proportional amount of $995,000. PGW's distribution system has 6,000 miles of pipelines and therefore 4/6000 times $995,000 or $663/yr.

Q. WHAT IS RELEASE CAPACITY?

A. PGW is holding excess capacity, or more than it can reasonably expect to need. It sells the excess capacity to other parties that could use the capacity and charges for that. A portion of those release capacity revenues are retained by PGW.

Q. DOES PGW HAVE EXCESS CAPACITY?

A. Yes. PGW holds 307,395 Dth/day of firm capacity (See PGW's 1307(f) filing at Docket R-2022-3030686). Because PGW's capacity exceeds its needs it engages in the practice of off-system sales and capacity release. Off-system sales involves the sale of gas or capacity to entities outside the PGW service territory; PGW engages in off-system sales perennially. Of the revenues it obtains from off-system sales 75% are credited to the Gas Cost Rate ("GCR") and 25% are retained by PGW. Providing the capacity that Grays Ferry needs to operate should take precedence over capacity release off the PGW system.

Q. WHAT AMOUNT HAS PGW FORECAST FOR OFF SYSTEM SALES, CAPACITY RELEASE CREDITS, AND ASSET MANAGEMENT CREDITS?

A. PGW's witness, Mr. Florian Teme, stated in his direct testimony in Docket R-2022-3030686, "PGW has projected the amount of off system sales, capacity release credits, and asset management credits within the GCR period of 2022-23. This amount is based on a 3-year average. Of that amount, $11,401,002 was credited to the GCR using a 75%/ to GCR/25% to base rates split." (Source: PGW St. 1 12:18-21). PGW controls substantial assets that exceed its needs.

Q. UNDER WHAT ARRANGEMENT DOES GRAYS FERRY OBTAIN THE CAPACITY IT NEEDS?

A. Because Grays Ferry was unable to obtain all of the necessary capacity it needed in 1996 the original contract with PGW provided for PGW to release capacity in the summer, from May through September, to Grays Ferry. In exchange, Grays Ferry pays PGW the market rate for the capacity, and last year that amount was $1.4 million. In 2012 Grays Ferry was able to obtain additional capacity on its own behalf, and therefore no longer is dependent on PGW's release capacity. In the contract renewal discussions with PGW Grays Ferry made it known that it no longer needed the release capacity, and it should be stricken from the new contract. PGW refused, despite knowing it is charging Grays Ferry $1.4 million for capacity, that is not useful to Grays Ferry. PGW should be directed to bear the cost of the excess capacity and not attempt to pawn it off on Grays Ferry.

Q. WHAT IS ALTERNATIVE RECEIPT SERVICE?

A. Recall that in 1996 PGW held the lion's share of capacity on TETCO's Philadelphia Lateral. Grays Ferry was unable to obtain all the capacity it required to meet its peak day because no additional capacity was available on the Philadelphia Lateral. PGW was releasing capacity to Grays Ferry in the summer (May through September, which Grays Ferry no longer needs) but refused to release the same capacity to Grays Ferry in the winter period of October through April. Instead of releasing the needed capacity on the Philadelphia Lateral to Grays Ferry, PGW created the Alternative Receipt Service and charged Grays Ferry $4,500/month or $54,000 annually. Under the program Grays Ferry delivers the gas it needs to a different, unconstrained delivery point known as Skippack Lateral (TETCO station 70034) and that gas flows into the PGW system and is used by PGW to satisfy the needs of its other customers. PGW then allows Grays Ferry to use gas PGW has brought down the Philadelphia Lateral to meet Grays Ferry's needs. Basically it is a simple swap of gas that benefits Grays Ferry and allows PGW to obtain an identical amount of gas for its system. PGW notified Grays Ferry it would charge $0.25/Dth for this service, for which PGW incurs virtually no cost. Using typical volumes expected to be experienced by Grays Ferry, the ARS fee under PGW's demand would be $1,038,750/yr. A cost-based fee would be close to zero.

Q. WHAT IS "SALES SERVICE GAS"?

A. There are rare occasions when there are interruptions on the Philadelphia Lateral and gas cannot be delivered through the high pressure four-mile line to Grays Ferry. During such times it is not possible for Grays Ferry to operate its cogeneration plant which relies on high-pressure gas and lacking waste heat to produce steam, VEPI must produce steam using its gas fired boilers to continue to meet VEPI's customers' demand for steam. PGW sells the gas for the boilers to Vicinity and delivers it through its distribution system. PGW charges Grays Ferry the Weighted Average Cost of Gas ("WACOG") plus a fee of $0.61/Dth. PGW wishes to use the Gas Cost Recovery ("GCR") rate instead of the WACOG. The GCR contains a reconciliation factor that accounts for differences in what PGW collected from customers compared to what it actually paid for purchased gas. I have no objection to using the GCR instead of the WACOG.

Q. WHAT ARE IMBALANCE CHARGES?

A. If Grays Ferry burns a different amount of gas than what is delivered, that creates an imbalance, and the imbalance can be positive, meaning more gas was delivered than consumed, or negative, meaning less gas was delivered than consumed. For twenty-five years Grays Ferry has been managing its consumption and deliveries and balancing on the TETCO system, without relying on the resources of PGW. PGW now wants to impose onerous balancing charges that would cost Grays Ferry an estimated $100,000/yr. Going forward, Grays Ferry would still plan on balancing on the TETCO system, and adhering to the balancing requirements of TETCO and be responsible for any TETCO penalties just as it is now. PGW's attempt to input onerous balancing charges which have no basis in cost must be rejected in entirety.

Q. WHAT ARE "LOST AND UNACCOUNTED FOR" GAS CHARGES?

A. Known by the acronym LUF, such charges are determined by calculating the percent of gas delivered to the customers meter (sales) divided by the gas delivered to the city gate (purchases). The term LUF is often synonymous with "retainage" which is the amount of gas deliveries that are retained by the Company. A typical retainage percentage for a natural gas distribution company is 2 to 4%. PGW's retainage is currently 2.3% per the tariff page I include as Exhibit JC4. However, the amount of gas Grays Ferry receives at the TETCO delivery point is measured not by the PGW meters at the Gray Ferry plant but instead by the TETCO meters at the delivery point on the Philadelphia Lateral. In other words, Grays Ferry determines its quantity of gas at the interstate pipeline, not at its plant. It pays commodity charges to its gas supplier based on the meter reading at TETCO's meter, not PGW's meter. The gas is then transported four miles from TETCO's Philadelphia Lateral to the Grays Ferry plant by the dedicated four-mile pipeline, during which the gas is not co-mingled with PGW-owned gas. If any gas were somehow lost within the four-mile pipe it would have been gas already paid for by Grays Ferry. There simply is no basis for PGW to impose an additional retainage onto Grays Ferry; doing so would be double dipping, and must be rejected.

Q. WHAT IS A RECAP OF THE COMPONENTS OF THE OFFER PGW MADE TO GRAYS FERRY FOR THE RENEWAL OF THE CONTRACT?

A. The recap for each of the components is as follows:

1. Quality of services- PGW desires to switch the firm service to interruptible service, which is unacceptable.

2. Variable transportation rate- PGW desires to increase the rate from $0.08/Dth to $0.75/Dth, which is unacceptable. The rate should remain at $0.08/Dth.

3. Maintenance fee- PGW cannot substantiate any maintenance work on the four-mile line and wants to continue charging a fee of $160,000/yr with escalation. This is unacceptable. The cost-based fee should be $663/yr.

4. Release capacity- Grays Ferry no longer requires the summer release capacity of PGW.

5. Alternate Receipt Service (“ARS”)- This service costs PGW nothing yet it wants to increase the annual fee from $54,000 to $1,038,750/yr. A cost-based fee would be near zero.

6. Sales service gas- PGW wishes to change the price basis from WACOG to GCR, which is acceptable.

7. Imbalance charges- PGW wishes to impose balancing charges, but Grays Ferry has balanced and will continue to balance on TETCO, therefore should not be subject to PGW’s charge. PGW would not be doing any balancing of the Grays Ferry gas supply.

8. Lost and unaccounted for gas- PGW wants to charge Grays Ferry its current retainage of 2.3% but Grays Ferry’s gas is metered at the TETCO meter, therefor Grays Ferry is already paying for the gross amount of gas delivered, not the gas net of losses. PGW’s charge should be rejected.

V. <u>APPROPRIATE CONTRACT TERMS BASED ON COST OF SERVICE PRINCIPLES</u>

Q. HOW SHOULD RATES BE DETERMINED?

A. Cost causation is the pole star of ratemaking. The rates charged to Grays Ferry should be based on the costs that Grays Ferry imposes on the PGW system. PGW is a "cash flow" utility, meaning that its rates must be justified by showing the costs that those rates provide coverage for. It is apparent that the charges that PGW proposed to assess Grays Ferry do not have a basis.

Q. WHAT IS AN ALLOCATED COST OF SERVICE STUDY?

A. An allocated cost of service study ("COSS") reviews the nature of the costs incurred by the utility and assigns those costs to the appropriate customer class based on causal factors. Some costs are straightforward to allocate while others are shared among two or more customer classes, which requires an allocation mechanism based on demand, commodity or customer data.

Q. WHAT IS DIRECT ALLOCATION?

A. During the COSS, if costs can be directly attributed to a specific customer or customer groups and not shared with other customer groups then those costs are directly allocated to that customer/customer group.

Q: HAS PGW CONDUCTED A COSS THAT PGW CLAIMS ADDRESSES THE RATES IT PROPOSES FOR GRAYS FERRY?

A. Yes. It is attached as Exhibit JC5.1.

Q. ARE THERE FLAWS IN THE COST-OF-SERVICE STUDY CONDUCTED BY PGW?

A. Yes. The first step of any cost-of-service study is to determine what costs can be directly assigned to a specific customer. The four-mile pipeline to Grays Ferry is clearly an example of an asset that should be directly assigned. It was constructed for one customer, Grays Ferry. It was paid for by Grays Ferry, and has been operated for 25 years providing gas transportation service solely to Grays Ferry. That line is a dedicated facility that should be directly assigned to Grays Ferry.

Q. IS GRAYS FERRY A UNIQUE CUSTOMER?

A. Yes. It is the largest customer by far on the PGW system. It is supplied by a dedicated, high-pressure pipeline that serves no other customers. The annual load factor for Grays Ferry based on the peak daily quantity of 52,000 Dth/day and an annual consumption of 13.47 million Dth, is over 70%, which is superior to the load profiles of residential or commercial customers. An attempt to include Grays Ferry in customer class allocations does not conform with the accepted methods of conducting a COSS.

Q. WHAT IS A "CASH FLOW" UTILITY?

A. As described in the Pennsylvania PUC Ratemaking Guide (p. 157-160) as a cash flow utility PGW must have rates sufficient to provide debt service coverage along with other prudently incurred operating expenses. In 2010, the Commission issued a policy statement more fully setting forth these criteria and the financial and other considerations that are to be examined in setting PGW's base rates at just and reasonable levels. (52 Pa. Code §§

69.2701-2703). In its Policy Statement, the Commission described the requirements of the Cash Flow Method as follows:

> 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. (see 52 Pa. Code § 69.2702(b)).

Under the Cash Flow method, the rate to be charged to Grays Ferry must provide debt service coverage and the just and reasonable O&M costs. PGW determined that Grays Ferry's annual volume for rate setting purposes is 13.15 million Dth. All but 150,000 Dth or 1.1% of the total volumes were delivered through the four-mile line. The rates for Grays Ferry should be determined by direct assignment for the majority of gas consumed. The only time when gas is not delivered through the four-mile line is when there is an operational issue with TETCO, and in those cases PGW sells gas to Grays Ferry from the PGW low pressure distribution system. PGW claims that because Grays Ferry uses 150,000 Dth/yr that it should be allocated costs of the entire PGW system based on the total gas flow of 13,150,000 Dth. This is flawed. As I have stated previously, the rate for delivery of Grays Ferry's gas through the four-mile line must be set by direct assignment. The 150,000 Dth that is not delivered through the four-mile line should be priced at the WACOG plus $0.61/Dth as PGW has proposed.

Q. HOW DOES GRAYS FERRY MEET ITS CAPACITY NEEDS UNDER THE CURRENT CONTRACT?

A. While Grays Ferry had only 15,000 Dth/day of firm service gas rights of its own capacity when the original contract with PGW began, in 2012 Grays Ferry invested $30 million to acquire an additional 20,000 Dth/day; for a total of 35,000/day. Grays Ferry obtains an additional 21,000 Dth/day through the current PGW contract. Capacity is provided either through the ARS from October through April or via Release Capacity from May through September. Because the current contract allows for the Release Capacity volume of 36,000 Dth/day when combined with Grays Ferry's own capacity, total capacity is 71,000 Dth/day, double what is needed during the summer.

Q. WHAT ARE THE CAPACITY ASSETS HELD BY PGW ON THE PHILADELPHIA LATERAL?

A. As conveyed in its response to Set I-14 (Exhibit JC5.2), on the Philadelphia Lateral PGW holds four capacity contracts of 75,000 Dth/d, 23,822 Dth/d, 18,000 Dth/d, and 18,000 Dth/d, totaling 134,822 Dth/d. This is more than enough capacity required by PGW to satisfy its customers' peak needs. There has never been an instance in the past 25 years when PGW had to interrupt deliveries to Grays Ferry due to lack of capacity on the Philadelphia lateral. There is no good reason that PGW cannot continue providing delivery services to Vicinity for the fair price recommendations I have made.

Q. DOES PGW HOLD EXCESS CAPACITY?

A. Yes. As discussed earlier, in its ongoing 1307(f) gas cost recovery case (Docket No. R-2022-3030686) PGW forecasts $15.2 million in off-system sales, capacity release, and asset management credits within 2022-23 period. Of this $15.2 million, 75% ($11.4 million) is to be credited to the GCR. The remain 25% ($3.8 million) is retained by PGW. The cost of holding excess capacity is significant and if PGW's excess capacity were released it would reduce the costs to its customers. Because I have identified the ongoing need Grays Ferry has during the winter season to be 21,000 Dth/day and PGW holds significantly more than that amount as excess capacity on the Philadelphia Lateral, PGW should release 21,000 Dth/day to Grays Ferry. Grays Ferry's use of and payment for the capacity will benefit the residential and commercial customers of PGW.

Q. WHAT IS BYPASS?

A. Since FERC Order 636 required non-discriminatory access to the interstate pipeline system, large customers located in the proximity of an interstate pipeline have been able to bypass the local distribution company by constructing a line from the interstate pipeline to their facility. When such a bypass occurs, the customer is no longer a customer of the local distribution company and therefore is not providing any distribution revenue.

Q. IS GRAYS FERRY A GOOD CANDIDATE FOR BYPASS?

A. Certainly. In 1996 in fact, that was the plan and engineering drawings were done, and the pipeline from TETCO to Grays Ferry was planned and permitted by the FERC.

Q. DO OTHER GAS UTILITIES HAVE A BYPASS RATE?

A. Columbia Gas of Pennsylvania ("Columbia") has a Main Line Distribution Service rate ("Rate MLDS") that is applicable to customers located in proximity of a transmission line. It designates two classes of customers eligible for Rate MLDS, and they are all large volume customers. The first class ("Class I MLDS Customer") is connected directly through a dual-purpose meter to facilities of an Interstate pipeline supplier of Columbia. The second class ("Class II MLDS Customer") are two (2) miles or less from pipeline facilities of the Company connecting the Customer to facilities of an interstate pipeline supplier of Columbia. These rates are in place to obtain the patronage of customers that would be able to bypass the distribution company and obtain service directly from the interstate pipeline. The rates are significantly lower than the large commercial and industrial rates serving similar sized customers, recognizing that such potential bypass customers are served by a small portion of the distribution system and costs are allocated based on that.

Q. SHOULD PGW OFFER A "BYPASS RATE"?

A. Grays Ferry is a unique customer in terms of its significantly large size and close proximity to TETCO. The most expeditious way to resolve the conflict between PGW and Grays Ferry would be for the parties to reach agreement on terms for the points I have previously discussed. The new contract would govern the terms and relationship between PGW and Grays Ferry going forward for the next 25 years. If the Commission wished, such terms could also serve as the key components of a Bypass Rate in the event there are future customers situated in proximity to an interstate pipeline. The key principle in developing the contract, or a Bypass Rate are the same and have been explained in my testimony. Direction to PGW to reach agreement on a contract with components as I have specified them in this testimony would be my first preference. In Grays Ferry's case, it has provided initial payments and ongoing distribution revenues greatly in excess of the construction cost of the four-mile line. Any contract or Bypass Rate must be based on the actual cost causation of Grays Ferry in a future test year. What PGW has proposed are contract terms greatly in excess of the cost causation and are unreasonable.

Q. IS GRAYS FERRY CURRENTLY SUBSIDIZING OTHER CUSTOMER CLASSES?

A. Apparently so. Considering that Grays Ferry paid for the construction of the four-mile pipe initially, the distribution charges it pays annually are over $1 million, yet there is no ongoing cash flow requirement as the line is not in need of replacement. In addition to that Grays Ferry pays $160,000 for maintenance which exceeds any costs that PGW is incurring. Additionally, Grays Ferry must accept unnecessary release capacity in the summer and pays up to $1.4 million for that service. If Grays Ferry cannot reach a satisfactory agreement with PGW and elects to resurrect the pipeline construction project, PGW would see a revenue decrease of over $2.5 million annually. Because PGW has been unwilling to compromise during discussions, I must assume that it may be indifferent. As a regulated utility, any shortfall in revenues from the historic collection amount could eventually be recovered from the remaining customers. Frankly, I believe PGW should be doing all it can do to retain the patronage of its largest customer.

VI. <u>PGW'S IMPROPER SALES ACTIVITIES</u>

Q. HOW DO THE MAJORITY OF CUSTOMERS IN DOWNTOWN PHILADELPHIA OBTAIN SPACE HEAT AND DOMESTIC HOT WATER?

A. The downtown steam system has been in place since 1889 and a large number of the downtown buildings are connected to the steam system. VEPI has over 160 customers ranging from small commercial shops, to large office buildings, hospitals, multifamily apartment buildings, universities, and manufacturers.

Q. WHAT STEAM PRODUCTION METHOD IS PGW ATTEMPTING TO SELL TO CUSTOMERS?

A. PGW attempts to persuade VEPI customers to abandon the thermal energy system and install natural gas boilers to produce heat themselves. It attempts to "buy" the business by offering discounted rates to customers and offering financial incentives. Because PGW is a regulated cash-flow utility, the incentive and rate discounts it gives to large business customers are funded and subsidized by PGW's residential customers and other existing customers.

Q. WHAT TARIFF RATE IS PGW USING IN ITS STEAM SALES EFFORTS?

A. PGW uses a two-prong approach to poach VEPI's district thermal customers by providing large cash incentive payments and significant rate discounts. PGW utilizes the Technology and Economic Development Rider and Micro-Combined Heat and Power Incentives, which I have included as Exhibit JC6. In addition to the TED Rider, in the response to date request Set VI-3 PGW identified Rule 10 and Rule 2.3 (**HIGHLY CONFIDENTIAL** Exhibit JC8) of its tariff as the provisions that PGW relies upon. It aggressively offers cash payments to large business customers to entice them to install gas boilers and discontinue use of the thermal energy system.

Q. WHAT DOES RULE 10 ALLOW?

A. Rule 10.1.B states, "the Customer or developer shall pay a customer contribution for the amount of the estimated cost in excess of the investment determined by the Company to be warranted by the anticipated revenue to be derived from the extension. Included in the calculation of the above cost may be an appropriate ***allowance for transmission and distribution main extensions*** (emphasis added) required to furnish the Gas supply to local areas where Gas Service is needed." PGW relies on this tariff provision to fund payments to prospective customers, but the critical flexibility is the freedom that PGW uses to make large cash payments that can be found in the language of Rule 2.3.

Q. WHAT DOES RULE 2.3 STATE?

A. This provision is highly subjective and may be applied however PGW sees fit. It states, "Contracts stipulating the negotiated non-scheduled rates and/or terms of Gas Service may also be entered into between the Company and Customer when the Company, in its sole discretion, deems such offerings to be economically advantageous to the Company." Apparently PGW can decide what rate to charge a customer and what amount of cash incentive payment to provide, with great leeway.

Q. WHAT RESTRICTIONS SHOULD BE PLACED ON RULE 10 AND RULE 2.3?

A. Regulated utilities are to provide service in a non-discriminatory manner, yet through Rule 10 and Rule 2.3, PGW is able to select who receives large cash payments and how to determine the amount of the large cash payments. The wording of Rule 2.3 ("in its sole discretion, deems such offerings to be economically advantageous to the Company") provides no objective structure or financial formulae that could be applied fairly and evenly to all customers. Both of these rules buried in the tariff should be rewritten with firm conditions and non-discriminatory applicability. The Commission should review the projects where PGW has made cash contributions and determine if an adjustment to the rates charged is merited to provide fair recovery of the cash incentives provided. On a going forward basis, no cash incentives should be permissible without Commission review of the project economics to determine that all customers of PGW are benefiting from the activities that may otherwise enrich a select few.

Q. WHAT RATE DOES PGW ALSO USE TO LURE A DISTRICT ENERGY SYSTEM CUSTOMER INTO UNDERTAKING A GAS BOILER INSTALLATION?

A. PGW also utilizes its Interruptible Transmission ("IT") rate (Exhibit JC7) to entice large business customers to leave the district energy system by providing a large discount to the rate the customer has been paying. In and of itself, use of the IT rate is appropriate under certain conditions. However, it appears that PGW has offered the IT rate to customers that could not adequately manage their businesses in the event of an interruption of gas. In some cases, PGW appears to have offered such customers undersized electric boilers which could not meet the customer's winter load in the event of an interruption, along with assurances that PGW will not actually interrupt gas supply. Upon reviewing responses to data requests Set VI-1 and VI-3, (**HIGHLY CONFIDENTIAL** Exhibit JC8) it appears PGW is acting in a discriminatory manner by providing preferential treatment of select customers, misusing cash incentives and not adhering to the requirements stated in its tariff and therefore is in violation.

Q. WHAT SUBSIDIES IS PGW USING TO BUY BUSINESS?

A. In the TED Rider the section under heading Micro-Combined Heat and Power Incentives the incentives for combined heat and power technology ("CHP") are described:

> For projects involving micro-CHP units no larger than 50 kW, the following Micro-CHP Incentives may be available for qualifying

> projects: (1) $1,000 per kW installed up to 20 kW; and (2) $750 per kW installed greater than 20 kW and less than or equal to 50 kW. The Incentive is available to those Customers served by the Company that the Company determines, in its sole discretion, have prospective additional gas usage applicable to service for Rate GS Commercial/Industrial customers, Rate MS customers and Rate PHA customers on a pilot basis for a three-year period beginning on the effective date of this tariff supplement. The economic test that will be utilized by the Company to determine eligibility for participation will include the costs of the incentives.

The incentives described in the tariff are specifically for the installation of Micro-CHP up to 50 kW. Based on discovery responses included as Exhibit JC9 PGW is providing incentive to buy business that does not involve CHP at all, or has an incidental use of CHP. PGW has offered financial incentives to customers that convert from steam provided by VEPI to natural gas boilers.

Q. WHAT IS THE OBJECTIVE OF PGW'S TED RIDER REGARDING COGENERATION?

A. The TED Rider is to promote the development of cogeneration, also referred to as Combined Heat and Power ("CHP") technology. Such technology is beneficial as it produces electricity and thermal products more efficiently than producing those energy products separately and individually.

Q. SHOULD COGENERATION BE PROMOTED?

A. I am in agreement that promotion of cogeneration is a desirable undertaking and PGW should apply the TED Rider in cases where customers are procuring electricity from the electric utility, which is PECO, and producing steam using natural gas boilers. In those circumstances the installation of a cogeneration system would improve the overall efficiency of electricity and thermal energy production. The problem arises when PGW uses its TED Rider to replace thermal energy that is already produced by cogeneration.

This is the case anytime PGW approaches the existing customers of VEPI. The majority of VEPI's steam distributed in the thermal energy system is produced by cogeneration, as a byproduct of electric production by Grays Ferry's combustion turbine and steam turbine-generator, nominally a 193 MW facility. It makes no sense to attempt to offset steam produced by the utility-scale Grays Ferry cogeneration plant. Its facility benefits from economies of scale and professional operation and maintenance. The cogeneration systems promoted by PGW are small, ranging up to 50 kW and are less efficient than the Grays Ferry plant. Replacing cogeneration steam from Grays Ferry with cogeneration steam from a micro-CHP system is moving efficiency in the wrong direction and was not the intent of the TED Rider.

Q. WHAT RESTRICTIONS SHOULD APPLY TO THE TED RIDER?

A. The TED Rider should be available for use in promotion of cogeneration in those instances where the customer is currently producing steam using natural gas, oil, coal, or electric boilers. It should not be used to fund a cogeneration system in situations where the customer is already served by cogenerated steam of the thermal energy system. Specifically, the language of the TED Rider should be changed to state: "TED Rider incentives may not be used in cases where the customer currently benefits from steam produced by cogeneration."

Q. HAS PGW'S USE OF THE TED RIDER RESULTED IN DEVELOPMENT OF COGENERATION PROJECTS?

A. Yes. According to PGW's responses to Set II-9 & 10 (Exhibits JC10.1 & JC10.2) there are now only three customers on the TED rate, and only one customer has received a payment for a micro-CHP system. But as the interest in cogeneration project development increases the TED Rider could be instrumental in the loss of VEPI customers, which is why it is important to restrict the use of the TED Rider to projects not already using steam produced by cogeneration.

Q. WHAT ARE THE REQUIREMENTS STATED IN PGW'S INTERRUPTIBLE RATE?

A. The tariff restricts the use of the interruptible rate to customers that can actually withstand an interruption of natural gas service. Such customers must have a backup fuel capability that will enable them to continue business in the event of an interruption. PGW's misuse of its interruptible rate by offering lower prices to customers that do not fit with the tariff requirement is of great concern.

Q. IS PGW USING THE INTERRUPTIBLE RATE TO PROVIDE DISCOUNTS TO CUSTOMERS THAT DO NOT MEET THE REQUIREMENTS STATED IN THE TARIFF?

A. Yes. It appears that PGW is using the rate in circumstances where a customer may have some small capability of continuing its operation but clearly not a capability to fully continue business. One such example would be the American Red Cross, where PGW has offered to install a small electric boiler, that is only sufficient to keep certain lines from freezing. They would still have to send everyone home and not run their business in the event of an interruption. This inappropriate use of the interruptible rate by PGW should not be permitted. To learn of other examples data request Set I-15 was issued, and PGW's response is included as Exhibit JC11. PGW stated that it placed 24 customers on interruptible service over the past four years, yet would not identify what customers or provide any proof that those customers comply with the tariff requirement which states:

"In order to qualify for interruptible daily Transportation Service under this Rate Schedule, a Customer must: (1) have installed and operable alternate fuel equipment, including appropriate fuel storage capacity, capable of displacing the daily quantity of Gas subject to curtailment or interruption; or (2) or in the alternative demonstrate to the Company's sole satisfaction the ability to manage its business without the use of Gas during periods of curtailment or interruption." In its data response PGW also stated, "To protect customer proprietary information PGW is not releasing the specific names of customers. Per the tariff, each of these customers qualified by having dual fuel capability which gives them the ability to shed load during an interruption. There have been no interruptions in the past four years." This answer is revealing of PGW's misuse of its tariff. Whereas the tariff states that the customer must have enough alternate fuel capacity capable of displacing the daily quantity of gas subject to curtailment or interruption, Exhibit JC11 states that the "dual fuel capability which gives them the ability to shed load," substituting what is likely a significantly lesser standard of "the ability to shed load" for the tariff requirement of being "capable of displacing the daily quantity of gas subject to curtailment or interruption", meaning not just a small portion of the load, but the entire load. PGW is making an unapproved interpretation of its tariff language and playing loosely with the rules on providing interruptible service discounts.

Q. WHAT CUSTOMER GROUPS ARE HARMED BY PGW'S IMPROPER USE OF ITS INTERRUPTIBLE RATE?

A. All of the residential customers, because they are prohibited from being on interruptible service, and those commercial customers that do not have alternative fuel capacity, so the majority of commercial customers would be harmed. During PGW's base rate case the revenue loss that PGW has incurred through its generous and unauthorized discounts will be made up by increases on the residential and commercial customers not on the interruptible rate.

Q. WHAT RESTRICTIONS SHOULD BE PLACED ON PGW'S USE OF THE INTERRUPTIBLE RATE?

A. PGW should be required to submit a report on every customer that receives the interruptible rate stating the type and amount of backup fuel that would be used in the event of a PGW interruption. A summary report should be filed with the Commission annually that shows adherence to the tariff. Until such compliance with the tariff is assured, PGW should be directed to refrain from adding additional customers to its interruptible rate.

VII. SUMMARY

Q. WHAT IS THE SUMMARY OF YOUR TESTIMONY?

A. I have these recommendations:

1. PGW should be directed to develop and execute a contract to continue the service to Grays Ferry for the next 25-year period.

2. Contract terms should be as I have specified in this testimony for the eight individual components.

3. Restrictions should be placed on the TED Rider to prohibit the use of the rider in cases where the customer already obtains steam through cogeneration through the district thermal system.

4. Use of Rule 10 and Rule 2.3 to provide incentive payments shall require Commission review in advance of PGW offering such enticements to select customers.

5. Restrictions should be placed prohibiting PGW from using its Interruptible Rate to provide discounts to customers that do not comply with the terms of the tariff by having dual fuel capability to meet the daily gas requirements and PGW should be required to annually file a report on all interruptible customers verifying compliance with the tariff requirements.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

EXHIBIT JC-1.1

James Crist Resume

JAMES L. CRIST

PRESIDENT, LUMEN GROUP, INC.

Suite 101, 4226 Yarmouth Drive ● Allison Park, PA 15101

Phone: 412.487.9708 ● Cell: 412.613.8886 ● E-mail: JLCrist@aol.com

DEMONSTRATED AREAS OF EXPERTISE

- **GENERAL MANAGEMENT** — Proven executive-level management expertise with excellent capabilities in developing, implementing, and supervising corporate-wide policies and procedures in areas including sales, marketing, customer service, public relations, rates, regulatory affairs, and administration. Possess a unique combination of abilities to set goals, develop winning business strategies, organize structures and work methods, and train the right people for the right positions to make it all work. Skilled in strategic short and long-term planning and budgeting with effective abilities in reducing the "fat" and increasing organizational efficiency. A creative, decisive leader who can successfully meet challenges and overcome obstacles to achieve profit objectives.

- **REGULATORY STRATEGY** — A thorough strategist with an extensive background in utility business unit operation (electric, natural gas, water/wastewater) the full range of rate and regulatory functions, from tariff development and special contract negotiation. Proven personal testifying skills with an outstanding record of developing and presenting successful written and oral testimony, along with settlement negotiations.

- **PERSONNEL MANAGEMENT** — Effective interpersonal communications skills support outstanding capabilities in recruiting, training, motivating, and directing staff at all levels. Proven ability to build productive, highly motivated teams of sales/marketing, operations, technical, and customer service personnel who contribute to top organizational performance.

- **PERSONAL ATTRIBUTES** — A determined, hardworking, challenge-driven executive with the skills and experience to bring excellence to any business organization. A high-energy mover and shaper ... experienced in successful start-ups and turn-arounds. An excellent communicator - written and verbal. A frequent speaker at professional symposiums, able to interpret and communicate complex concepts for diverse audiences. An engineering/technical specialist and a management generalist. Active in civic and community affairs.

EMPLOYMENT HISTORY

LUMEN GROUP, INC., Pittsburgh, PA — 1996 - Present

President - A consulting practice specializing in strategic planning, business planning, regulatory strategy, marketing and venture development in the electric, natural gas and energy services industries. Please see Addendum for amplification of consulting assignments.

ACN ENERGY, Farmington Hills, MI — 2004-2005

Vice President, Consumer Markets

OPTIRON, Pittsburgh, PA — 2003-2004

Vice President, Marketing

E R I SERVICES, Pittsburgh, PA — 1996

Vice President, Marketing & Product Development

CITIZENS UTILITIES, Harvey, LA & Stamford, CT — 1994 - 1995

Vice President, Marketing

CONSOLIDATED NATURAL GAS, Pittsburgh, PA — 1977 - 1994

Director, Residential & Commercial Marketing (1988 - 1994)

Manager, Technical Sales/Market Development (1985 - 1988)

Market Development Specialist (1982 - 1985)

Project Engineer (1979 - 1982) ... promoted from ... **Process Engineer** (1977 - 1979)

OCCIDENTIAL CHEMICAL CORP., Niagara Falls, NY — 1975 - 1977

Research Engineer

PENNSYLVANIA STATE UNIVERSITY, State College, PA — 1988

CLEVELAND STATE UNIVERSITY, Cleveland, OH — 1984

Instructor (Evening Division) - Economics, Engineering Economics

SELECTED ACCOMPLISHMENTS

VICE PRESIDENT, CONSUMER MARKETS - ACN ENERGY

Retained for a turnaround assignment with an independent energy marketing company. Participated on the executive management team and directed a decentralized 3-person market management staff responsible for sales to 85,000 customers. Worked directly with the parent company executives and business unit management to create market-driven strategies for the corporation. Sharpened marketing and sales efforts of an energy marketing company operating in seven states and packaged company for eventual sale to Commerce Energy.

- Primary executive responsible for sales. Directed a team of market managers that was responsible for all aspects of 11 different markets (electric and natural gas) around the country. Provided direction and support to sales channel organization of commissioned representatives. Turned around five-year annual loss to significant gain in 2004. Tightened focus on market decisions.
- Directed regulatory involvement to insure compliance with market rules. Focused on maintaining positive relationships with state utility regulators to avoid penalties.
- Led weekly operations meetings during absence of COO. This involved direction of call center, provisioning, billing, credit & collection, and marketing.
- Worked in a team setting with other executives (VP Finance, VP Supply, COO) to provide consistent, professional focus to workforce experiencing changing environment.
- Directed development of annual business plan and budget with targets resulting in both goal achievements and income improvements.
- During transition period working with merger partner Commerce Energy's executive team to train and advise incoming executives.
- Directed customer service improvements in the customer acquisition process which resulting in replacing outdated paper/fax process with phone order process.
- Organized and directed trade show presence at national sales convention for alliance sales channel to create awareness of new product and market focus.

VICE PRESIDENT, MARKETING - OPTIRON

Retained as part of executive team in venture capital startup company developing new CIS/CRM software for the energy industry. Worked closely with CEO, COO, and Director of Sales to determine business strategy and develop marketing strategy to create market awareness and brand attributes in medium and small energy companies.

- Added in-house marketing communications function and personnel and revamped all marketing materials.
- Added new website functionality and content.
- Implemented first print advertising campaign in industry publications.
- Using industry contacts, positioned Option as expert presenter at several conferences and trade shows.
- Developed business plan to identify sales prospects and created competitive database of CIS/CRM vendors.
- Participated in development of exit strategy plan resulting in the successful sale to large software company.

VICE PRESIDENT, MARKETING & PRODUCT DEVELOPMENT - ERI Services

Assumed responsibility for creating a new corporate marketing vision and strategy to facilitate entry into new deregulated energy markets nationally.

- Recruited and selected an exceptional management team and integrated marketing and sales activities into one functional operating unit.
- Established the product innovation process to identify and create new and profitable market-driven service offerings.
- Directed strategic branding to launch the new corporate identity; managed a $2 million national advertising campaign; and developed over $1 million of new sales/marketing collateral materials.
- Instituted financial controls that reduced costs 60% in the Iowa market rollout while maintaining 80% market share and high customer satisfaction.

VICE PRESIDENT, MARKETING - Citizens Utilities

Directed a decentralized 20-person sales staff and a five person marketing staff. Worked directly with the Board of Directors, Corporate President, and Sector Vice President to create market-driven sales strategies for the corporation. Revamped and redirected sales efforts of a five-state energy utility with 440,000 customers.

- Increased industrial sales revenues by reorganizing unregulated gas marketing effort.
- Revamped merchandising utilizing inbound telemarketing in Louisiana Gas.
- Revised training programs for entire sales force, identifying and correcting missing technical and equipment training, adding a greater competency in the commercial and industrial sectors.
- Developed first business plan in sales and marketing organization with monthly budget monitoring and

targets resulting in both goal achievements and cost improvements.
- Launched an aggressive direct marketing program that increased sales 500% over previous year.
- Increased share of gas transportation business in Arizona by 15% in first year of operation through marketing efforts.
- Created a telephone long distance business in Louisiana that captured a 20% share (2nd to AT & T).

DIRECTOR, RESIDENTIAL & COMMERCIAL MARKETING - Consolidated Natural Gas

Managed a marketing staff of 12 and a "dotted-line" 24-person field sales force. Directed marketing and sales efforts in consumer, business, and manufacturing markets with $154 million revenue.

- Added $6 million in revenue by developing new products in gas transportation, supply, and agency.
- Directed sales activities in residential, commercial, institutional and governmental accounts for both product sales and technology sales.
- Produced $600,000 annual revenue and doubled competitive project wins by revamping market approaches to residential and commercial new construction.
- Secured 50% increase in customer decisions over 5 gas companies and 4 electric companies.
- Experienced in PUC and Legislature lobbying. Increased revenues $2.3 million through regulatory strategy/testifying and received major competitive program approval.

MANAGER, TECHNICAL SALES / MARKET DEVELOPMENT - Consolidated Natural Gas

Directed new market development and competitive market support.

- Focused on commercial and industrial accounts and increased the depth of relationship beyond the typical utility provider of service to a rich full service information provider and business partner.
- Captured $150,000 in new business annually by competitive pricing analysis, sales tool development, and market approach.
- Developed total advertising and promotional plan launching new market programs.
- Compiled extensive technical database and developed economic model for project analysis, eliminating a $100,000 operating budget expense.
- Led statewide coalition with customers and government agencies for fair treatment of new technology.

EDUCATION - PROFESSIONAL

UNIVERSITY OF PITTSBURGH, Pittsburgh, PA 1982

M.B.A. Degree

CARNEGIE - MELLON UNIVERSITY, Pittsburgh, PA 1975

B.S. Degree in Chemical Engineering

Registered Professional Engineer AGA Hall of Fame, 4/1991

JAMES L. CRIST

Lumen Group, Inc.
Suite 101, 4226 Yarmouth Drive ● Allison Park, PA 15101
Phone: 412.487.9708 ●Cell: 412.613.8886 ●E-mail: JLCrist@AOL.com

AMPLIFICATION OF LUMEN GROUP CONSULTING ASSIGNMENTS

A consulting practice specializing in strategic planning, business planning, marketing and venture development in the telecommunications, energy, and services industries.

REGULATORY

Represented the National Energy Marketers Association and their members in Equitable-Dominion Peoples merger case. Developed strategy, presented written and oral testimony and negotiated on behalf of clients. Worked with other interveners and FTC on anti-competitive issues.

UTILITY RATE NEGOTIATION

Represented large client group seeking to obtain rate reduction from electric utility. Prepared strategy, wrote testimony, and exceeded expectations by achieving a 40% reduction in charges, producing a $2 million annual reduction.

STRATEGIC PLANNING FOR ON-SITE POWER GENERATION

Participated in proposal development for a 27-MW power plant on Kauai. Handled critical customer needs assessment in rapid turnaround fashion to meet proposal deadline. Maintained relationships with clients, vendors and proposal partners. Our proposal was selected as the preferred bidder out of five strong competitors.

NEW BUSINESS START-UP / TARIFF NEGOTIATIONS

Participated in the development of a new gas distribution utility in New York. Handled tariff development, pricing structure, transportation contracting, and operations, maintenance, and emergency manual preparation.

SALES STRATEGY/BUSINESS DEVELOPMENT

Developed sales strategy to focus on profitable accounts and markets. Developed sales training and account management plans and provided consulting to energy marketing organizations to improve overall sales.

BUSINESS STRATEGY/BUSINESS DEVELOPMENT

Developed business strategy to verticalize eCommerce/Customer Relationship Management product for the energy/utility industry. Produced sales training for global applications, product promotion presentations, developed alliance relationships with system integrators and software partners, developed business. Client is market leader in North America.

JOINT VENTURE/PRODUCT DEVELOPMENT

Assembled joint ventures resulting in sales to offer new hedge-based weather risk management retail product. Identified venture partners, and developed business arrangements and closed million-dollar deals

ENERGY PROCUREMENT

Served as energy expert on project team that obtained long-term natural gas supply for major government facilities. Prepared project specifications, negotiated with suppliers, prepared RFP, negotiated major reduction in delivery charges. This project resulted in annual cost reduction of $2.5 million.

NEW BUSINESS DEVELOPMENT - TELECOMMUNICATIONS

Analyzed use of electric utility assets for possible telecommunications business venture. Wrote the business plan that identifies regulatory and non-regulatory issues, marketing plans, financial analysis, and organizational requirements. Launched the new non-regulated business unit in 1996.

JOINT VENTURE DEVELOPMENT - TELECOMMUNICATIONS

Conducted analysis of potential joint venture partners for new unregulated telecommunications venture, bypassing the Bell operating company. Held screening discussions with potential partners and selected lead candidate for venture. Developed working agreement with partners along with business case to launch venture.

JOINT VENTURE DEVELOPMENT - TELECOMMUNICATIONS & ENERGY

Developed strategic plan for joint venture involving gas, electric, and telecommunications partners. Screened potential business partners and held discussions with lead candidates. Assembled justification for top management approval.

PRODUCT DEVELOPMENT - UNREGULATED ENERGY SERVICES

Developed energy products for start-up subsidiary of major energy utility. Identified potential products and selected most likely candidates for further development. Developed market plans and sales plans for products.

MARKET PLAN - DIRECT MARKETING

Developed the market plan for large, global direct marketing agency to enter the energy industry. Identified strategies, strengths, weaknesses, and target prospects. Initiated sales effort and developed new business.

CORPORATE IMAGE DEVELOPMENT

Developed complete business unit identity for a new operations and services company. Produced capabilities brochure for use with prospects.

MARKET RESEARCH

Conducted market research to identify new customer/new business opportunities for major energy utility. Comprehensive project with two additional similar projects were completed. Entailed determination of goals, development of research methodology, script preparation, vendor selection, data analysis, and development of action plan.

MARKET DEVELOPMENT

Organized intervener group in Illinois consisting of retail marketers and intervened in three rate proceedings (Nicor Gas base case, WPS-Peoples merger case, Peoples Gas base case) and secured significant improvements in rules and procedures enabling marketers to increase their business and profitability. Developed strategy and presented written and oral testimony.

EXHIBIT JC-1.2

James Crist Regulatory Experience

PARTIAL LIST OF REGULATORY EXPERIENCE OF JAMES L. CRIST

1. Duke Energy Ohio, Application for Tariff Approval, Case No. 20-0054-GA-ATA, Representing Retail Energy Supply Association
2. Black Hills Wyoming Gas, Application for Authority to Revise Certain Tariff Provisions, Docket 30026-GA-21, Representing Wyoming Community Gas
3. West Penn Power Company, Default Service Program, Docket P-2021-3030021, Representing the Pennsylvania State University
4. Columbia of PA General Base Rate Increase, Docket R-2021-3025775, Representing the Pennsylvania State University
5. Columbia of PA General Base Rate Increase, Docket R-2020-3018835, Representing the Pennsylvania State University
6. Dominion Energy Ohio Motion, Case No. 18-1419-GA-EXM, Representing Retail Energy Supply Association
7. Aqua America/Peoples Natural Gas Merger, Docket R-2018-3006061, Representing Natural Gas Supplier Parties and Retail Energy Supply Association
8. Peoples Natural Gas General Base Rate Increase, Docket R-2018-3006818, Representing Peoples Industrial Intervenors
9. Duquesne Light Company General Base Rate Increase, Docket R-2018-3000124, Representing the Duquesne Industrial Intervenors
10. Columbia of PA General Base Rate Increase, Docket R-2018-2647577, Representing the Pennsylvania State University
11. West Penn Power Company, Default Service Program, Docket R-2017-2637866, Representing the Pennsylvania State University
12. Vectren Energy Delivery Ohio, Alternative Rate Plan, Case No. 18-0049-GA-ALT, Representing Retail Energy Supply Association
13. Columbia of PA Gas Cost Increase, Docket R-2017-2591326, Representing the Pennsylvania State University
14. West Penn Power Company, General Base Rate Increase, Docket R-2016-2537359, Representing the Pennsylvania State University
15. Columbia of PA General Base Rate Increase, Docket R-2016-2529660, Representing the Pennsylvania State University
16. UGI Utilities General Base Rate Increase, Docket R-2015-2518438, Representing Dominion Retail, Inc., Shipley, Choice, LLC, Interstate Gas Supply, Inc., Amerigreen Energy, and Rhoads Energy
17. Columbia of PA General Base Rate Increase, Docket R-2015-2468056, Representing the Pennsylvania State University
18. West Penn Power Company, General Base Rate Increase, Docket R-2014-2428742, Representing the Pennsylvania State University
19. Herman Oil & Gas Company, General Base Rate Increase, R-2014-2414379, Representing Herman Oil & Gas Company
20. Columbia of PA General Base Rate Increase, Docket R-2014-2406274, Representing the Pennsylvania State University
21. Ameren Gas- General Base Rate Increase, Docket No. 13-0192, Representing Dominion Retail and Interstate Gas Supply of Illinois
22. Columbia of PA General Base Rate Increase, Docket R-2012-2321748, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
23. Columbia of PA Petition for Approval of a Distribution System Improvement Charge Docket R-2012-2338282, Representing the Pennsylvania State University
24. PUC PA Generic Investigation Regarding Gas-On-Gas Competition, Docket No. P-2011-2277868, Representing the Pennsylvania State University
25. Ameren Gas- General Base Rate Increase, Docket 11-0282 (Cons.), Representing Dominion Retail and Interstate Gas Supply of Illinois
26. Water and Power Authority (USVI)- Electric Base Rate Case, Docket 575, June 2009, Representing Frenchman's Reef Marriott
27. Water and Power Authority (USVI)- Water Base Rate Case, Docket 576, June 2009, Representing Frenchman's Reef Marriott
28. Public Service of New Mexico 2010 Base Rate Case, Informal rate design workshops pursuant to the stipulation in NMPRC Case No. 08-00273-UT, Representing City of Albuquerque
29. Public Service of New Mexico, Electric base case at Case No. 08-00273-UT, Representing City of Albuquerque
30. Public Service of New Mexico 2009 Renewable Energy Procurement Plan for 2010, Case No. 09-00260-UT, Representing City of Albuquerque and Santa Fe County
31. Public Service of New Mexico, Gas sale case at Case No. 08-00078-UT, Representing City of Albuquerque
32. UGI Utilities, Central Penn Gas, Penn Natural Gas, Gas Cost Increase, Docket No. R-2011-2238953, Representing Shipley Energy, Rhodes Energy, and CenterPoint Energy
33. UGI Utilities- Gas Division, Gas Cost Increase, Docket No. R-2010-2172933, Representing Shipley Energy

34. Columbia of PA General Base Rate Increase, Docket R-2010-2215623, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
35. Columbia of PA General Base Rate Increase, Docket R-2009-2149262, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
36. Columbia of PA General Base Rate Increase, Docket R-2008-2011621, Representing Hess Energy, Dominion Retail, Interstate Gas Supply, and Shipley Energy
37. Columbia of PA Gas Cost Increase, Docket R-2008-2028039, Representing Dominion Retail, Interstate Gas Supply, and Shipley Energy
38. PPL Electric Utilities Voluntary Purchase of Accounts Receivables Program and Merchant Function Charge, Docket No. P-2009-2129502
39. Nicor Gas Company, Provision of facilities and services and the transfer of assets between Nicor Gas Company and Nicor Inc., Docket No. 09-0301, Representing Dominion Retail
40. North Shore Gas and Peoples Gas Light and Coke Company, General Base Rate Increase, Dockets 09-0166 and 09-0167, Representing Dominion Retail, Interstate Gas Supply and Nicor Advanced Energy
41. Nicor Gas Company, Base Rate Increase, Docket No. 08-0363, Representing Interstate Gas Supply and Dominion Retail
42. North Shore Gas and Peoples Gas Light and Coke Company, General Base Rate Increase, Dockets 07-0241 and 07-0242, Representing Dominion Retail, Interstate Gas Supply and U.S. Energy Savings
43. WPS Resources, Peoples Energy, Peoples Gas Light and Coke Company, North Shore Gas Company, Application pursuant to Section 7-204 of the Public Utilities Act for authority to engage in a Reorganization, Docket 06-0540, Representing Dominion Retail, Interstate Gas Supply, US Energy Savings, MxEnergy, and Direct Energy Services.
44. Allegheny Energy, Approval of Retail Electric Default Service Program and Competitive Procurement Plan, Docket No. P-2008-2021608, Representing the Pennsylvania State University
45. Allegheny Energy, Generation Rate Cap, Docket No. P-2007-2001828, Representing the Pennsylvania State University
46. Equitable Gas Company, Rate Increase, Docket R-2008-2029325, Representing Independent Oil & Gas Association and Hess Corp.
47. Equitable Gas Company and Peoples Gas, Merger Case, Docket A-122250F5000, Representing National Energy Marketers, Hess Corporation, and Constellation New Energy.

EXHIBIT JC-2.1

Set I-1 Line Cost

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-1 Date of Response:
1/28/2022 Response Provided By: Daniel Cassidy

Question:
Provide all documents showing engineering design, costs, and the construction schedule related to the conversion of the liquids pipeline from the Tetco station 060 and the construction of the 16" line from Passyunk station to Grays Ferry. Collectively the two lines shall be referred to as the four-mile line.

Attachments: 0

Response:

Upon reasonable investigation, this project took place approximately 25 years ago and PGW no longer has the information requested.

EXHIBIT JC-2.2

Response to Set I No. 5

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-5 Date
of Response: 1/28/2022 Response
Provided By: Joseph Hawkinson

Question:
Provide the costs for the construction of the metering station at Grays Ferry. Provide all supporting engineering, design, construction, and cost documents.

Attachments: 2
1_5_Original Meter Set_1996.pdf - Contains Confidential Security Information
1_5_New Meter Set Installation_2018.pdf - Contains Confidential Security Information

Response:

The information requested is not tracked and documented in one consolidated location and spans over twenty-five years making definitive records and cost accounting exceedingly difficult to ascertain. The table below represents partial records of the associated costs and includes some estimated encumbrances.

VEP I-5	Provide the costs for the construction of the metering station at Grays Ferry. Provide all supporting engineering, design, construction, and cost documents.
Total Annualized Metering Station Costs	**$ 64,003.07**
One Time Costs - Equipment, Installation	**$ 640,030.66**

EXHIBIT JC-2.3
PGW Project Book

Sent in separate email due to size

EXHIBIT JC-3.1

PGW Response to Set I-2 O&M Costs

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-2 Date
of Response: 1/28/2022 Response
Provided By: Joseph Hawkinson

Question:
Provide annual maintenance documents since the placement into service of the four-mile line. Indicate actual maintenance task, date, and cost.

Attachments: 0

Response:

The Company does not maintain annual maintenance records by main. However, the cost of service allocates $995,000 of mains and maintenance of mains expenses in Accounts 874 and 887.

EXHIBIT JC-3.2

PGW Response to Set I-6 Measuring O&M

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-6 Date of Response: 1/28/2022 Response Provided By: Joseph Hawkinson

Question:
Provide all documentation of annual maintenance undertaken by PGW or contractors at the Grays Ferry metering station. Such records should include task, date, and cost.

Attachments: 0

Response:

The Company does not maintain annual maintenance records by individual metering stations. However, the cost of service allocates $142,000 of measuring station expenses in Accounts 889 and 891.

EXHIBIT JC-4

Tariff Page on Retainage

UNACCOUNTED FOR GAS (for the purpose of calculating retainage) – Unaccounted for gas is the difference in the amount of gas delivered to the Company's distribution system and the amount billed to customers. The current Lost and Unaccounted for Gas and Retainage Rate percentage is 2.3%. The percentage changes annually on December 1st and is based upon actual data for the preceding 12 months ending August 31st. **(D)**

(D) - Decrease

EXHIBIT JC-5.1

Attachment A COSS PGW Response to Set I No. 13

PHILADELPHIA GAS WORKS

COST OF SERVICE ALLOCATION STUDY

AS OF AUGUST 31, 2021

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

C O N T E N T S

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 D 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.

PHILADELPHIA GAS WORKS

COMPARISON OF COST OF SERVICE
BY SERVICE CLASSIFICATION FOR THE TWELVE MONTHS ENDED AUGUST 31, 2021

Service Classification	Pro Forma Cost of Service (in 000's) Amount	Percent
(1)	(2)	(3)
Other Classes	$ 466,711	98.1%
Gray's Ferry	8,858	1.9%
Total	$ 475,569	100.0%
GTS and Other Contract Revenue	733	
Other Surcharges and Revenue	73,105	
Other Operating Revenues	27,525	
Total Other Revenues	101,363	
Total	$ 576,933	

PART II. COST OF SERVICE

BY SERVICE CLASSIFICATION

PHILADELPHIA GAS WORKS
SUMMARY OF COST OF SERVICE BY SERVICE CLASSIFICAITON

Cost of Service (Schedule C)	Residential	Commercial	Industrial	Muncipal	PHA- GS	PHA - Rate 8	NGVS	Interruptible	Gray's Ferry/Veolia
(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$ 181,467	$ 181,467								
43,068		43,068							
3,667			3,667						
4,356				4,356					
947					947				
1,830						1,830			
(2)							(2)		
28,808								28,808	
8,858									8,858
272,999	181,467	43,068	3,667	4,356	947	1,830	(2)	28,808	8,858
172,555	172,555								
24,507		$ 24,507							
1,175			$ 1,175						
2,459				$ 2,459					
1,085					$ 1,085				
						$ 761			
(9)							$ (9)		
37								$ 37	
-									$ -
201,809	172,555	24,507	1,175	2,459	1,085	761	(9)	37	-
$ 474,808	$ 354,022	$ 67,575	$ 4,842	$ 6,815	$ 2,032	$ 2,591	$ (11)	$ 28,845	$ 8,858

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: Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Grays Ferry	Customer Costs: 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)	(20)
	OPERATION AND MAINTENANCE EXPENSES																			
	PRODUCTION EXPENSES																			
	Manufactured Gas Production Expenses																			
701	Operation Labor and Expenses	1	259	203	43	3	3	1	-	-	-	6	-	-	-	-	-	-	-	-
702	Boiler Fuel	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
703	Misc. Steam Expenses	1	350	274	58	4	5	1	-	-	-	8	-	-	-	-	-	-	-	-
706	Maintenance of Structures	1	5	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
707	Maintenance of Boiler Plant Equipment	1	232	182	38	2	3	1	-	-	-	5	-	-	-	-	-	-	-	-
708	Maintenance of Other Production Plant	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
710	Operation Supervision and Engineering	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
712	Other Power Expenses	1	744	582	123	8	10	3	1	-	-	18	-	-	-	-	-	-	-	-
734	Duplicate Charges - Credit	1	(543)	(425)	(89)	(6)	(7)	(2)	(1)	-	-	(13)	-	-	-	-	-	-	-	-
735	Misc. Production Expenses	1	1,367	1,070	225	14	18	6	1	-	-	32	-	-	-	-	-	-	-	-
740	Maintenance Supervision and Engineering	1	373	292	61	4	5	2	-	-	-	9	-	-	-	-	-	-	-	-
741	Maintenance of Structures	1	125	98	21	1	2	1	-	-	-	3	-	-	-	-	-	-	-	-
742	Maintenance of Production Equipment	1	449	351	74	5	6	2	-	-	-	11	-	-	-	-	-	-	-	-
	Total - Manu. Gas Production Expenses		3,361	2,631	555	35	45	15	1	0	0	79	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	3,866	813	52	65	21	5	-	-	117	-	-	-	-	-	-	-	-
808	Purchases Gas Cost Adjustments	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
812	Gas Used for Operations	1	378	296	62	4	5	2	-	-	-	9	-	-	-	-	-	-	-	-
813	Other Gas Supply Expenses	1	2,625	2,056	432	27	35	11	3	-	-	62	-	-	-	-	-	-	-	-
	Total Other Gas Supply Expenses		7,942	6,218	1,307	83	105	34	8	-	-	188	-	-	-	-	-	-	-	-
	Total Natural Gas Production Expenses		**11,303**	**8,849**	**1,862**	**118**	**150**	**49**	**9**	**-**	**-**	**267**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	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	Operation 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

	Account	Factor Ref.	Cost of Service in '000's	Volumetric Costs: Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Grays Ferry	Customer Costs: 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)	(20)
	DISTRIBUTION EXPENSES																			
870	Supervision And Engineering	8	2,042	653	173	15	18	3	8	-	150	44	738	191	13	25	5	7	-	-
871	Distribution Load Dispatching	3A	1,944	1,139	300	26	31	6	14	-	253	176	-	-	-	-	-	-	-	-
874	Mains And Services Expenses																			
	Mains	3	2,606	1,614	429	37	44	8	20	-	373	82	-	-	-	-	-	-	-	-
	Services	6	2,606	-	-	-	-	-	-	-	-	-	2,285	276	3	17	19	6	-	-
875	M & R Station Expenses -General	3A	2,492	1,459	384	33	39	7	18	-	324	226	-	-	-	-	-	-	-	-
877	M & R Station Expenses - City Gate Station	3A	615	360	95	8	10	2	4	-	80	56	-	-	-	-	-	-	-	-
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	3,294	874	76	89	16	41	-	756	223	3,724	961	65	125	23	33	-	-
881	Rents	8	12	4	1	-	-	-	-	-	1	-	4	1	-	-	-	-	-	-
885	Maintenance Super. And Engineering	8	316	101	27	2	3	1	1	-	23	7	114	29	2	4	1	1	-	-
887	Maint. Of Mains	3	29,148	18,048	4,795	415	490	90	225	1	4,171	913	-	-	-	-	-	-	-	-
889	Maint. Of Measuring Station Expenses - General	3A	1,039	608	160	14	16	3	8	-	135	94	-	-	-	-	-	-	-	-
890	Maint. Of Measuring Station Expenses - Industrial	6	62	-	-	-	-	-	-	-	-	-	54	7	-	-	-	-	-	-
891	Maint. Of Measuring Station Expenses - City Gate	3A	534	313	82	7	8	2	4	-	69	48	-	-	-	-	-	-	-	-
892	Maint. Of Services	6	1,815	-	-	-	-	-	-	-	-	-	1,592	192	2	12	13	4	-	-
893	Maint. Of Meters and House Regulators	7	2,957	-	-	-	-	-	-	-	-	-	2,783	145	3	5	12	7	-	2
	Total Distribution Expenses		**86,294**	**27,593**	**7,320**	**633**	**748**	**138**	**343**	**1**	**6,335**	**1,869**	**31,191**	**8,053**	**543**	**1,047**	**192**	**279**	**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	Uncollectible Accounts - CRP Forgiveness	1A	12,950	8,646	2,684	217	250	44	113	-	-	996	-	-	-	-	-	-	-	-
904	Uncollectible Accounts - Other	14	10,731	-	-	-	-	-	-	-	-	-	10,365	280	9	-	77	-	-	-
	Total Customer Accounting Expenses		**65,950**	**17,694**	**2,971**	**225**	**250**	**120**	**113**	**-**	**-**	**996**	**41,283**	**1,887**	**48**	**55**	**207**	**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**

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	Grays Ferry	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)	(20)
	ADMINISTRATIVE AND GENERAL EXPENSES																			
920	Administrative & General Salaries	10	14,931	5,305	1,198	99	117	29	49	-	516	255	6,325	832	49	90	34	30	-	3
920	LIURP Costs	1A	5,808	3,877	1,204	97	112	20	51	-	-	447	-	-	-	-	-	-	-	-
921	Office Supplies and Expenses	10	32,398	11,511	2,600	214	253	63	106	-	1,120	554	13,725	1,805	106	196	75	64	-	6
921	LIURP Costs	1A	2,181	1,456	452	37	42	7	19	-	-	168	-	-	-	-	-	-	-	-
922	Administrative Expenses Transferred-Credit	10	(31,676)	(11,254)	(2,542)	(210)	(248)	(62)	(103)	-	(1,095)	(541)	(13,419)	(1,764)	(103)	(192)	(73)	(63)	-	(6)
923	Outside Services Employed - Other	10	3,059	1,087	245	20	24	6	10	-	106	52	1,296	170	10	19	7	6	-	1
925	Injuries and Damages	11	9,813	4,976	1,249	104	123	25	50	(1)	870	233	1,978	174	7	14	8	5	(1)	-
926	Employee Pensions and Benefits	11	61,467	31,170	7,824	648	769	156	314	(4)	5,447	1,459	12,389	1,089	44	85	50	34	(9)	-
999	OPEB Funding - Surcharge	1A	16,000	10,682	3,316	268	308	55	140	-	-	1,231	-	-	-	-	-	-	-	-
999	OPEB Funding	11	9,422	4,778	1,199	99	118	24	48	(1)	835	224	1,899	167	7	13	8	5	(1)	-
924	Property Insurance	10	1,847	656	148	12	14	4	6	-	64	32	782	103	6	11	4	4	-	-
928	Regulatory Commission Expense	10	5,532	1,965	444	37	43	11	18	-	191	95	2,344	308	18	34	13	11	-	1
929	Duplicate Charges	10	(715)	(254)	(57)	(5)	(6)	(1)	(2)	-	(25)	(12)	(303)	(40)	(2)	(4)	(2)	(1)	-	-
930	General Advertising Expenses	10	8,282	2,943	665	55	65	16	27	-	286	142	3,509	461	27	50	19	16	-	2
	Refunding and Other Savings	10	(753)	(268)	(60)	(5)	(6)	(1)	(2)	-	(26)	(13)	(319)	(42)	(2)	(5)	(2)	(1)	-	-
	Total Administrative & General Expenses		137,596	68,630	17,885	1,470	1,728	352	731	(6)	8,289	4,326	30,206	3,263	167	311	141	110	(11)	7
	Total Operation and Maintenance Expenses		**320,916**	**133,764**	**32,596**	**2,683**	**3,161**	**712**	**1,328**	**(5)**	**14,624**	**7,458**	**107,866**	**13,473**	**764**	**1,422**	**562**	**474**	**(10)**	**42**
	DEPRECIATION AND AMORTIZATION EXPENSE																			
	PRODUCTION PLANT																			
305	Structures and Improvements	1	789	617	130	8	10	3	1	-	-	19	-	-	-	-	-	-	-	-
306	Boiler Plant Equipment	1	88	68	14	1	1	-	-	-	-	2	-	-	-	-	-	-	-	-
307	Other Power Equipment	1	13	11	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
311	LPG Equipment	1	78	61	13	1	1	-	-	-	-	2	-	-	-	-	-	-	-	-
312	Oil Gas Equipment	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
317	Purification Equipment	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
318	Residual Refining Equipment	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
319	Gas Mixing Equpment	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320	Other Equipment	1	806	631	133	8	11	3	1	-	-	19	-	-	-	-	-	-	-	-
	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	22	5	-	1	-	-	-	5	1	18	3	-	-	-	-	-	-
376	Mains	3	17,309	10,718	2,848	247	291	53	133	-	2,477	542	-	-	-	-	-	-	-	-
	Direct Assign mains	DA										-								
377	Compression Station Equipment	3A	26	17	4	-	-	-	-	-	3	2	-	-	-	-	-	-	-	-
378	Measuring & Regulating Equipment - General	3A	444	260	69	6	7	1	3	-	58	40	-	-	-	-	-	-	-	-
380	Services	6	21,736	-	-	-	-	-	-	-	-	-	19,060	2,301	29	142	156	48	-	-
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	1	-	-	-	-	-	-	-	-	48	6	-	-	-	-	-	-
384	House Regulator Installations	4	95	-	-	-	-	-	-	-	-	-	68	21	2	3	-	1	-	-
385	Industrial Measuring & Regulating Equipment	DA	12	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
387	Other Equipment	9	488	180	48	4	5	1	2	-	42	9	166	26	1	2	1	1	-	-
	GENERAL PLANT																			
390	Structures And Improvements	10	2,500	888	203	17	20	5	8	-	86	43	1,059	139	8	15	6	5	-	-
391	Office Furniture And Equipment	10	4,893	1,739	393	32	38	10	16	-	169	84	2,073	273	16	30	11	10	-	1
392	Transportation Equipment	10	6,613	2,351	531	44	52	13	22	-	229	113	2,803	368	22	40	15	13	-	1
393	Stores Equipment	10	22	8	2	-	-	-	-	-	1	-	9	1	-	-	-	-	-	-
394	Tools, Shop And Garage Equipment	10	624	223	50	4	5	1	2	-	22	11	264	35	2	4	1	1	-	-
396	Power Operated Equipment	10	104	37	8	1	1	-	-	-	4	2	44	6	-	1	-	-	-	-
397	Communication Equipment	10	1,003	356	85	7	8	2	3	-	35	17	425	56	3	6	2	2	-	-
398	Miscellaneous Equipment	10	580	209	47	4	5	1	2	-	20	10	246	32	2	4	1	1	-	-
	Total Depreciation & Amortization Expense		**67,934**	**21,498**	**5,306**	**462**	**535**	**107**	**230**	**-**	**3,151**	**916**	**30,276**	**4,521**	**176**	**419**	**217**	**126**	**-**	**2**
	Cost of Removal	**12**	**4,500**	**1,738**	**446**	**39**	**45**	**9**	**20**	**-**	**335**	**83**	**1,510**	**230**	**9**	**21**	**11**	**6**	**-**	**-**
	Total Operating Expenses		**393,350**	**157,000**	**38,348**	**3,185**	**3,741**	**828**	**1,578**	**(5)**	**18,110**	**8,457**	**139,652**	**18,224**	**949**	**1,862**	**790**	**606**	**(10)**	**44**

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	Grays Ferry	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)	(20)
INTEREST AND OTHER EXPENSE																			
Interest on Long Term Debt	12	54,442	20,998	5,391	469	547	106	243	1	4,049	1,002	18,270	2,786	107	259	134	77	-	2
Other	12	(9,612)	(3,707)	(952)	(83)	(97)	(19)	(43)	-	(715)	(177)	(3,226)	(492)	(19)	(46)	(24)	(14)	-	-
AFUDC	12	(2,212)	(853)	(219)	(19)	(22)	(4)	(10)	-	(165)	(41)	(742)	(113)	(4)	(11)	(5)	(3)	-	-
Loss From Extinguishment of Debt	12	4,460	1,720	442	38	45	9	20	-	332	82	1,497	228	9	21	11	6	-	-
Total Interest and Other Expense		47,078	18,158	4,662	405	473	92	210	1	3,501	866	15,799	2,409	93	223	116	66	-	2
CITY PAYMENT	**12**	**18,000**	**6,943**	**1,783**	**155**	**181**	**35**	**80**	**-**	**1,339**	**331**	**6,041**	**921**	**35**	**86**	**44**	**26**	**-**	**1**
NET INCOME	**12**	**118,493**	**45,699**	**11,735**	**1,021**	**1,191**	**232**	**531**	**2**	**8,813**	**2,182**	**39,765**	**6,064**	**233**	**563**	**293**	**168**	**-**	**4**
TOTAL COST OF SERVICE		**576,921**	**227,800**	**56,528**	**4,766**	**5,586**	**1,187**	**2,399**	**(2)**	**31,763**	**11,836**	**201,257**	**27,618**	**1,310**	**2,734**	**1,243**	**866**	**(10)**	**51**
Less: Other Revenues																			
Interest Gain/Loss and Other Income	12	7,400	2,853	733	64	74	14	33	-	550	136	2,483	379	15	35	18	11	-	-
Appliance Repair and Other Revenues	13	7,964	3,208	793	67	78	17	33	-	422	-	2,868	389	19	39	17	12	-	1
Other Revenues	13	1,661	669	165	14	16	4	7	-	88	-	598	81	4	8	4	3	-	-
Late Payment Fees	7	10,500	-	-	-	-	-	-	-	-	-	9,883	514	12	18	41	23	-	9
DSIC Surcharge	13	35,000	14,098	3,484	293	343	74	147	-	1,856	-	12,606	1,712	83	171	76	55	(1)	4
OPEB Surcharge	1A	16,000	10,682	3,316	268	308	55	140	-	-	1,231	-	-	-	-	-	-	-	-
CRP Forgiveness	1A	12,950	8,646	2,684	217	250	44	113	-	-	996	-	-	-	-	-	-	-	-
LIURP	1A	7,989	5,334	1,656	134	154	27	70	-	-	615	-	-	-	-	-	-	-	-
venues Efficiency Cost Recovery	DA	1,166	548	556	36	-	3	23	-	-	-	-	-	-	-	-	-	-	-
Contract Revenues	13	733	295	73	6	7	2	3	-	39	-	264	36	2	4	2	1	-	-
Subtotal		101,363	46,333	13,460	1,099	1,230	240	569	-	2,955	2,978	28,702	3,111	135	275	158	105	(1)	14
TOTAL COST OF SERVICE RELATED TO TARIFF SALES AND TRANSPORTATION		**$ 475,558**	**$ 181,467**	**$ 43,068**	**$ 3,667**	**$ 4,356**	**$ 947**	**$ 1,830**	**$ (2)**	**$ 28,808**	**$ 8,858**	**$ 172,555**	**$ 24,507**	**$ 1,175**	**$ 2,459**	**$ 1,085**	**$ 761**	**$ (9)**	**$ 37**

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	0.78280	95,087	0.66762
Commercial	19,118	0.16469	29,515	0.20723
Industrial	1,212	0.01044	2,387	0.01676
Municipal	1,532	0.01320	2,744	0.01927
PHA GS	487	0.00420	487	0.00342
PHA R8	122	0.00105	1,245	0.00874
NGVS	2	0.00002	2	0.00002
Interruptible	-	-		-
Grays Ferry/Veolia	2,740	0.02360	10,959	0.07694
Total	116,083	1.00000	142,426	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	0.71101	0.77118
Commercial	29,515	107,276	77,761	0.16532	0.17932
Industrial	2,387	9,559	7,172	0.01525	0.01654
Municipal	2,744	11,394	8,650	0.01839	0.01995
PHA GS	487	2,119	1,633	0.00347	0.00376
PHA R8	1,245	5,251	4,006	0.00852	0.00924
NGVS	2	6	4	0.00001	0.00001
Interruptible	37,849	73,696	35,847	0.07621	
Grays Ferry/Veolia	10,959	11,817	858	0.00182	
Total	180,274	650,631	470,357	1.00000	1.00000

Load Factor	0.277076	0.722924

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTORS 2B. 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 2B
(1)	(2)	(3)	(4)=(3)-(2)	(5)
Volumetric Costs				
Residential	95,087	429,513	334,426	0.70805
Commercial	29,515	107,276	77,761	0.16464
Industrial	2,387	9,559	7,172	0.01518
Municipal	2,744	11,394	8,650	0.01831
PHA GS	487	2,119	1,633	0.00346
PHA R8	1,245	5,251	4,006	0.00848
NGVS	2	6	4	0.00001
Interruptible	37,849	73,696	35,847	0.07590
Grays Ferry/Veolia	36,028	38,850	2,822	0.00597
Total	205,344	677,664	472,320	1.00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 3. ALLOCATION OF COSTS ASSOCIATED WITH DISTRIBUTION MAINS

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 0.50000	(5)	(6)=(5)x 0.50000	(7)=(4)+(6)
Volumetric Costs						
Residential	95,087	0.52747	0.26372	0.71101	0.35548	0.61920
Commercial	29,515	0.16372	0.08186	0.16532	0.08266	0.16452
Industrial	2,387	0.01324	0.00662	0.01525	0.00763	0.01425
Municipal	2,744	0.01522	0.00761	0.01839	0.00920	0.01681
PHA GS	487	0.00270	0.00135	0.00347	0.00174	0.00309
PHA R8	1,245	0.00690	0.00345	0.00852	0.00426	0.00771
NGVS	2	0.00001	0.00001	0.00001	0.00001	0.00002
Interruptible	37,849	0.20995	0.10498	0.07621	0.03811	0.14309
Grays Ferry/Veolia	10,959	0.06079	0.03040	0.00182	0.00091	0.03131
Total	180,274	1.00000	0.50000	1.00000	0.50000	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 3A. ALLOCATION OF COSTS ASSOCIATED WITH DISTRIBUTION, OTHER THAN MAINS

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 2B	Weighted Factor*	Allocation Factor 3A
(1)	(2)	(3)	(4)=(3)x 0.50000	(5)	(6)=(5)x 0.50000	(7)=(4)+(6)
Volumetric Costs						
Residential	95,087	0.46308	0.23152	0.70805	0.35401	0.58553
Commercial	29,515	0.14373	0.07187	0.16464	0.08232	0.15419
Industrial	2,387	0.01162	0.00581	0.01518	0.00759	0.01340
Municipal	2,744	0.01336	0.00668	0.01831	0.00916	0.01584
PHA GS	487	0.00237	0.00119	0.00346	0.00173	0.00292
PHA R8	1,245	0.00606	0.00303	0.00848	0.00424	0.00727
NGVS	2	0.00001	0.00001	0.00001	0.00001	0.00002
Interruptible	37,849	0.18432	0.09216	0.07590	0.03795	0.13011
Grays Ferry/Veolia	36,028	0.17545	0.08773	0.00597	0.00299	0.09072
Total	205,344	1.00000	0.50000	1.00000	0.50000	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	$ 682,254,829	0.87688
Commercial	82,378,351	0.10588
Industrial	1,036,743	0.00133
Municipal	5,079,791	0.00653
PHA - GS	5,560,935	0.00716
PHA - Rate 8	1,725,978	0.00222
NGVS	1	-
Interruptible	-	-
		-
Total	$ 778,036,628	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 (1)	Operation Expenses (2)	Allocation Factor (3)
Volumetric Costs		
Residential	$ 23,541	0.31976
Commercial	6,245	0.08483
Industrial	540	0.00734
Municipal	638	0.00867
PHA GS	118	0.00160
PHA R8	293	0.00398
NGVS	1	0.00001
Interruptible	5,405	0.07342
Grays Ferry/Veolia	1,595	0.02167
Customer Costs		
Residential	26,611	0.36149
Commercial	6,871	0.09333
Industrial	463	0.00629
Municipal	893	0.01213
PHA GS	163	0.00221
PHA R8	238	0.00323
NGVS	1	0.00001
Interruptible	2	0.00003
Total	$ 73,618	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	$ 461,352	0.36869
Commercial	122,567	0.09795
Industrial	10,803	0.00863
Municipal	12,523	0.01001
PHA GS	2,303	0.00184
PHA R8	5,745	0.00459
NGVS	15	0.00001
Interruptible	106,564	0.08516
Grays Ferry/Veolia	23,906	0.01910
Customer Costs		
Residential	425,443	0.33999
Commercial	66,720	0.05332
Industrial	2,341	0.00187
Municipal	6,003	0.00480
PHA GS	3,303	0.00264
PHA R8	1,758	0.00140
NGVS	4	-
Interruptible	-	-
Total	$ 1,251,350	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 (1)	Operation & Maintenance Expenses (2)	Allocation Factor (3)
Volumetric Costs		
Residential	$ 65,134	0.3553
Commercial	14,711	0.0803
Industrial	1,213	0.0066
Municipal	1,433	0.0078
PHA GS	360	0.0020
PHA R8	597	0.0033
NGVS	1	0.0000
Interruptible	6,335	0.0346
Grays Ferry/Veolia	3,132	0.0171
Customer Costs		
Residential	77,660	0.4236
Commercial	10,210	0.0557
Industrial	597	0.0033
Municipal	1,111	0.0061
PHA GS	421	0.0023
PHA R8	364	0.0020
NGVS	1	0.0000
Interruptible	35	0.0002
Total	$ 183,316	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	$ 69,580	0.50710
Commercial	17,465	0.12728
Industrial	1,448	0.01055
Municipal	1,716	0.01251
PHA GS	348	0.00254
PHA R8	701	0.00511
NGVS	(8)	(0.00006)
Interruptible	12,158	0.08861
Grays Ferry/Veolia	3,258	0.02374
Customer Costs		
Residential	27,656	0.20156
Commercial	2,432	0.01772
Industrial	99	0.00072
Municipal	191	0.00139
PHA GS	112	0.00082
PHA R8	75	0.00055
NGVS	(19)	(0.00014)
Interruptible	-	-
Total	$ 137,212	1.00000

PHILADELPHIA GAS WORKS

FACTOR 11 - ALLOCATION OF LABOR COSTS TO CUSTOMER CLASS SERVICE CLASSIFICATIONS

				Volumetric Costs									Customer Costs							
	Account	Factor Ref.	Labor Costs	Residential	Commercial	Industrial	Municipal	PHA GS	PHA - R8	NGVS	Interruptible	Grays Ferry/Viola	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)	(20)
	OPERATION AND MAINTENANCE EXPENSES																			
	TOTAL PAYROLL - 2019																			
02	President & CEO	10	$ 92	$ 33	$ 7	$ 1	$ 1	$ -	$ -	$ -	$ 3	$ 2	$ 39	$ 5	$ -	$ 1	$ -	$ -	$ -	$ -
03	Corporate Communications	10	1,067	379	86	7	8	2	3	-	37	18	452	59	3	6	2	2	-	-
04	Officers Salaries	10	4,188	1,488	336	28	33	8	14	-	145	72	1,774	233	14	25	10	8	-	1
05	Legal	10	1,358	482	109	9	11	3	4	-	47	23	575	76	4	8	3	3	-	-
07	Commercial Resource Center	7	959	-	-	-	-	-	-	-	-	-	903	47	1	2	4	2	-	1
09	Gas Control & Acquisition	1	2,314	1,811	381	24	31	10	2	-	-	55	-	-	-	-	-	-	-	-
10	VP Reg. Compliance & Customer Programs	10	3,139	1,115	252	21	25	6	10	-	108	54	1,330	175	10	19	7	6	-	1
11	Human Resources	10	1,002	356	80	7	8	2	3	-	35	17	424	56	3	6	2	2	-	-
13	Chief Operating Officer	10	79	28	6	1	1	-	-	-	3	1	33	4	-	-	-	-	-	-
14	Security	10	188	67	15	1	1	-	1	-	6	3	80	10	1	1	-	-	-	-
15	VP Regulatory & Legislative Affairs	10	96	34	8	1	1	-	-	-	3	2	41	5	-	1	-	-	-	-
16	VP Supply Chain	10	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	VP Budget & Strategic Development	10	594	211	48	4	5	1	2	-	21	10	252	33	2	4	1	1	-	-
20	Gas Planning & Rates	10	546	194	44	4	4	1	2	-	19	9	231	30	2	3	1	1	-	-
21	Customer Review	7	878	-	-	-	-	-	-	-	-	-	826	43	1	1	3	2	-	1
22	By-Pass Bonuses	10	55	20	4	-	-	-	-	-	2	1	23	3	-	-	-	-	-	-
30	Engineering Services	3	911	564	150	13	15	3	7	-	130	29	-	-	-	-	-	-	-	-
31	Chemical Services	1	568	445	94	6	7	2	1	-	-	13	-	-	-	-	-	-	-	-
38	VP Technical Compliance	10	648	230	52	4	5	1	2	-	22	11	275	36	2	4	1	1	-	-
39	SVP HRD, Labor, & Corp Comm	10	245	87	20	2	2	-	1	-	8	4	104	14	1	1	1	-	-	-
40	Chief Financial Officer	10	80	28	6	1	1	-	-	-	3	1	34	4	-	-	-	-	-	-
41	Risk Management	10	914	325	73	6	7	2	3	-	32	16	387	51	3	6	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	-	8
45	Accounting & Reporting	10	1,603	570	129	11	13	3	5	-	55	27	679	89	5	10	4	3	-	-
46	Treasury	10	865	307	69	6	7	2	3	-	30	15	366	48	3	5	2	2	-	-
47	Information Services	10	5,054	1,796	406	33	40	10	16	-	175	86	2,141	282	16	31	12	10	-	1
49	Collections	7	2,119	-	-	-	-	-	-	-	-	-	1,994	104	2	4	8	5	-	2
50	Field Services	3	27,686	17,143	4,555	395	465	86	213	1	3,962	867	-	-	-	-	-	-	-	-
52	Distribution	3	38,863	24,064	6,394	554	653	120	300	1	5,561	1,217	-	-	-	-	-	-	-	-
53	Gas Processing	1	10,862	8,503	1,789	113	143	46	11	-	-	256	-	-	-	-	-	-	-	-
54	Internal Auditing	10	297	106	24	2	2	1	1	-	10	5	126	17	1	2	1	1	-	-
56	SVP Operations & Supply Chain	3	71	44	12	1	1	-	1	-	10	2	-	-	-	-	-	-	-	-
57	SVP Gas Management	3	555	344	91	8	9	2	4	-	79	17	-	-	-	-	-	-	-	-

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	Grays Ferry/Viola	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)	(20)
58	VP Marketing	10	135	48	11	1	1	-	-	-	5	2	57	8	-	1	-	-	-	-
59	Organizational Development	10	936	333	75	6	7	2	3	-	32	16	397	52	3	6	2	2	-	-
60	Marketing	10	2,686	954	216	18	21	5	9	-	93	46	1,138	150	9	16	6	5	-	1
65	Labor Relations	10	259	92	21	2	2	1	1	-	9	4	111	14	1	2	1	1	-	-
67	Corporate Planning	10	550	195	44	4	4	1	2	-	19	9	234	31	2	3	1	1	-	-
68	Customer Programs	7	700	-	-	-	-	-	-	-	-	-	659	34	1	1	3	2	-	1
71	Supply Chain	3	6,208	3,844	1,021	88	104	19	48	-	888	194	-	-	-	-	-	-	-	-
72	Facilities Management	3	2,242	1,388	369	32	38	7	17	-	321	70	-	-	-	-	-	-	-	-
73	Fleet Operations	10	3,286	1,167	264	22	26	6	11	-	114	56	1,392	183	11	20	8	7	-	1
77	Resource Management and Technology	3	1,273	789	209	18	21	4	10	-	182	40	-	-	-	-	-	-	-	-
	TOTAL LABOR RELATED COST FOR ALLOCATION		$ 137,421	$ 69,580	$ 17,465	$ 1,448	$ 1,716	$ 348	$ 701	$ (8)	$ 12,158	$ 3,258	$ 27,656	$ 2,432	$ 99	$ 191	$ 112	$ 75	$ (19)	$ -

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	$ 595,521	0.38570
Commercial	152,900	0.09903
Industrial	13,290	0.00861
Municipal	15,504	0.01004
PHA GS	3,016	0.00195
PHA R8	6,897	0.00447
NGVS	17	0.00001
Interruptible	114,829	0.07437
Grays Ferry/Veolia	28,420	0.01841
Customer Costs		
Residential	518,148	0.33559
Commercial	79,015	0.05118
Industrial	3,046	0.00197
Municipal	7,327	0.00475
PHA GS	3,815	0.00247
PHA R8	2,191	0.00142
NGVS	6	-
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	$ 194,218	0.40280
Commercial	47,994	0.09954
Industrial	4,031	0.00836
Municipal	4,726	0.00980
PHA GS	1,016	0.00211
PHA R8	2,023	0.00420
NGVS	(2)	-
Interruptible	25,562	0.05302
Grays Ferry/Veolia	-	-
Customer Costs		
Residential	173,664	0.36018
Commercial	23,583	0.04890
Industrial	1,148	0.00238
Municipal	2,357	0.00489
PHA GS	1,051	0.00218
PHA R8	752	0.00156
NGVS	(9)	(0.00002)
Interruptible	47	0.00010
Total	$ 482,161	1.00000

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

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

			Volumetric Costs									Customer Costs							
Account (1)	Factor Ref. (2)	Cost of Service in '000's (3)	Residential (4)	Commercial (5)	Industrial (6)	Municipal (7)	PHA - GS (8)	PHA - R8 (9)	NGVS (10)	Interruptible (11)	Grays Ferry (12)	Res (13)	Com (14)	Ind (15)	Muni (16)	PHA - GS (17)	PHA - R8 (18)	NGVS (19)	Interruptible (20)
RATE BASE																			
PRODUCTION PLANT																			
304 Land and Land Rights	1	1,453	1,137	239	15	19	6	2	-	-	34	-	-	-	-	-	-	-	-
305 Structures and Improvements	1	14,148	11,075	2,330	148	187	59	15	-	-	334	-	-	-	-	-	-	-	-
306 Boiler Plant Equipment	1	414	324	68	4	5	2	-	-	-	10	-	-	-	-	-	-	-	-
307 Other Power Equipment	1	135	105	22	1	2	1	-	-	-	3	-	-	-	-	-	-	-	-
311 LPG Equipment	1	511	400	84	5	7	2	1	-	-	12	-	-	-	-	-	-	-	-
312 Oil Gas Equipment	1	78	61	13	1	1	-	-	-	-	2	-	-	-	-	-	-	-	-
317 Purification Equipment	1	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
318 Residual Refining Equipment	1	(0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
319 Gas Mixing Equpment	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320 Other Equipment	1	13,261	10,381	2,184	138	175	56	14	-	-	313	-	-	-	-	-	-	-	-
Total Production Plant		29,999	23,482	4,940	312	396	126	32	-	-	708	-	-	-	-	-	-	-	-
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	37	10	1	1	-	-	-	9	2	34	5	-	-	-	-	-	-
375 Structures And Improvements	9	(21)	(8)	(2)	-	-	-	-	-	(2)	-	(7)	(1)	-	-	-	-	-	-
376 Mains	3	736,129	455,811	121,108	10,490	12,374	2,275	5,676	15	105,333	23,048	-	-	-	-	-	-	-	-
Portion of mains	DA										-								
377 Compression Station Equipment	3A	(33)	(19)	(5)	-	(1)	-	-	-	(4)	(3)	-	-	-	-	-	-	-	-
378 Measuring & Regulating Equipment - General	3A	9,495	5,560	1,464	127	150	28	69	-	1,235	861	-	-	-	-	-	-	-	-
380 Services	6	393,500	-	-	-	-	-	-	-	-	-	345,052	41,664	523	2,570	2,817	874	-	-
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	-	-	-	-	-	-	-	-	-	992	120	2	7	8	3	-	-
384 House Regulator Installations	6	58	-	-	-	-	-	-	-	-	-	51	6	-	-	-	-	-	-
385 Industrial Measuring & Regulating Equipment	DA	186	-	-	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-
387 Other Equipment	9	12,172	4,488	1,192	105	122	22	56	-	1,037	232	4,138	649	23	58	32	17	-	-
Total Distribution Plant		1,263,602	465,869	123,767	10,909	12,646	2,325	5,801	15	107,608	24,140	429,608	67,373	2,364	6,061	3,335	1,775	4	-
GENERAL PLANT																			
389 Land and Land Rights	10	3,713	1,319	298	25	29	7	12	-	128	63	1,573	207	12	22	9	7	-	1
390 Structures And Improvements	10	72,433	25,735	5,813	480	566	142	236	1	2,503	1,238	30,685	4,035	236	439	167	144	1	14
391 Office Furniture And Equipment	10	59,655	21,195	4,787	395	467	117	194	1	2,062	1,020	25,272	3,323	194	362	137	119	1	11
392 Transportation Equipment	10	14,474	5,142	1,162	96	113	28	47	-	500	247	6,132	806	47	88	33	29	-	3
393 Stores Equipment	10	68	26	5	-	1	-	-	-	2	1	29	4	-	-	-	-	-	-
394 Tools, Shop And Garage Equipment	10	5,990	2,129	481	40	47	12	20	-	207	102	2,538	334	20	36	14	12	-	1
396 Power Operated Equipment	10	216	78	17	1	2	-	1	-	7	4	91	12	1	1	-	-	-	-
397 Communication Equipment	10	1,415	504	114	9	11	3	5	-	49	24	599	79	5	9	3	3	-	-
398 Miscellaneous Equipment	10	10,921	3,880	876	72	85	21	36	-	377	187	4,627	608	36	66	25	22	-	2
Total General Plant		168,885	60,008	13,553	1,118	1,321	330	551	2	5,835	2,886	71,546	9,408	551	1,023	388	336	2	32
Total Plant		1,503,865	581,269	149,681	13,024	15,190	2,937	6,766	17	113,443	27,734	501,154	76,781	2,915	7,084	3,723	2,111	6	32
OTHER RATE BASE ELEMENTS																			
Cash Working Capital	10	40,115	14,252	3,219	266	314	79	131	-	1,386	686	16,994	2,234	131	243	92	80	-	8
Total Other Rate Base Elements		40,115	14,252	3,219	266	314	79	131	-	1,386	686	16,994	2,234	131	243	92	80	-	8
Total Measure of Value		**$ 1,543,980**	**$ 595,521**	**$ 152,900**	**$ 13,290**	**$ 15,504**	**$ 3,016**	**$ 6,897**	**$ 17**	**$ 114,829**	**$ 28,420**	**$ 518,148**	**$ 79,015**	**$ 3,046**	**$ 7,327**	**$ 3,815**	**$ 2,191**	**$ 6**	**$ 40**

EXHIBIT JC-5.2

PGW Response to Set I No. 14

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-14
Date of Response: 1/28/2022
Response Provided By: Ryan Reeves

Question:
Provide a list of all capacity that PGW has contracted for to ship gas to the Passyunk Ave. gate station including the date of the first contract, the expiration date of the current contract, the daily volume and the rate paid for the capacity.

Attachments: 4
1_14_800233.pdf
1_14_800514.pdf
1_14_800515.pdf
1_14_800232.pdf

Response:

PGW does not understand the reference to the Passyunk Ave. Gate Station. Please see attached the four Texas Eastern contracts that have the ability to deliver down the Philadelphia Lateral. PGW pays max rate for all four contracts and charges those costs to the GCR.

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1

This Service Agreement, made and entered into this 31st day of December, 1999, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Customer and Pipeline are parties to an executed service agreement dated December 15, 1998, under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800233R); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800233R;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule FT-1, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FT-1, Pipeline agrees to deliver for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Quantity (MDQ) 23,822 dth

provided, however, Customer shall have the option to reduce the MDQ of this Service Agreement by 2,382 dth upon one (1) year prior written notice to Pipeline with such reduction to be effective November 1, 2002. Pipeline and Customer agree that any reduction in MDQ of this Service Agreement will (i)reduce all of Customer's market zone entitlements by the quantity of such reduction; and (ii)reduce Customer's firm rights under this Service Agreement in each of Pipeline's acess area zones by 10%.

Pipeline shall receive for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule FT-1 and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2003 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon one (1) year prior written notice to the other specifying a termination date of October 31, 2003, or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FT-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FT-1 as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FT-1, (b) Pipeline's Rate Schedule FT-1 pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FT-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service

800233K5

agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA GAS WORKS
GAS ACQUISITION & FED. REGULATORY AFFAIRS DEPT.
800 W. MONTGOMERY AVENUE
PHILADELPHIA, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

800233R

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

> service agreement dated December 15, 1998, between Pipeline and Customer under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800233R).

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________ PMT

ATTEST:

Beverly J Fite
Assistant Secretary

PHILADELPHIA GAS WORKS*

By Gary White HAF

ATTEST:

____

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended.

Contract #800233R

R1A1

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA GAS WORKS ("Customer"), DATED 12/31/1999:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	23,822

SIGNED FOR IDENTIFICATION

PIPELINE: JMM

CUSTOMER:

SUPERSEDES EXHIBIT A DATED: ________

800233R

Contract #:800233R1
R1B1

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA GAS WORKS ("Customer"),
DATED 12/31/1999:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi-bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE,PA PHILADELPHIA CO., PA	23,822	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	70034	PHILADELPHIA GAS WORKS - LEVICK ST., PA MONTGOMERY CO., PA	23,822	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
3.	71682	PHILADELPHIA GAS WORKS PENROSE (EASTWICK)-PHILADEL PHILADELPHIA CO., PA	5,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
4.	79513	SS-1 STORAGE POINT	23,822 04/01-10/31 23,822 11/01-03/31	N/A	N/A	N/A	N/A
5.	73060	HARKNESS PT. - PHILADELPHIA, PA PHILADELPHIA CO., PA	23,822	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA GAS WORKS

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	92,073 12/01-02/28 101,073 03/01-11/30
No.2	137,310
No.3	5,000
No.4	26,262
No.5	49,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 101,073 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ______________ Jmm

CUSTOMER: ______________ LAK

SUPERSEDES EXHIBIT B DATED: December 15, 1998

Contract #:800233R
RICI

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/31/1999, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1 BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA GAS WORKS ("CUSTOMER"), DATED 12/31/1999:

ZONE BOUNDARY ENTRY QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX								1696						
ETX					7210		2567							
WLA							781	1696						
ELA						28123								
M1-24									7210					
M1-30										10843				
M1-TXG											3348			
M1-TGC												3393		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														23822
M3														

Contract #:800233R

EXHIBIT C (Continued)
PHILADELPHIA GAS WORKS

ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24									7210					
M1-30										10840				
M1-TXG											3348			
M1-TGC												3393		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														23822
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: [illegible] JMM

CUSTOMER: Gary White [illegible]

SUPERSEDES EXHIBIT C DATED: __________

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1

This Service Agreement, made and entered into this 15th day of December, 1998, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Pipeline and Customer are parties to an executed service agreement dated February 29, 1996, under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800514); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800514;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule FT-1, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FT-1, Pipeline agrees to deliver for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Quantity (MDQ) 18,000 dth

Pipeline shall receive for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule FT-1 and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2003 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon two (2) years prior written notice to the other specifying a termination date of October 31, 2003 or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FT-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FT-1 as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FT-1, (b) Pipeline's Rate Schedule FT-1 pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FT-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service

agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT
2600 Center Square West 15th St. & Market St.
Philadelphia, PA 19102-2126

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

service agreement dated February 29, 1996, between Pipeline and Customer under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800514).

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1
(Continued)

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________ PMT

ATTEST:

____

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

By ______________________

ATTEST:

____

800514R1

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"), DATED 12/15/98:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	18,000

SIGNED FOR IDENTIFICATION

PIPELINE: JMM

CUSTOMER: BCB

SUPERSEDES EXHIBIT A DATED: ________

800514R1

Contract #:800514R

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"),
DATED 12/15/98:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi-bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE, PA PHILADELPHIA CO., PA	18,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	73060	HARKNESS PT. - PA PHILADELPHIA CO., PA	18,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Contract #:800514

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	36,000 12/01-02/28 21,000 03/01-11/30
No.2	36,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 36,000 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ______________________ JMM

CUSTOMER: ______________________ LAF

SUPERSEDES EXHIBIT B DATED: ______________________

800514R1

Contract #:800514R

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/15/98, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1 BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("CUSTOMER"), DATED 12/15/98:

ZONE BOUNDARY ENTRY QUANTITY

Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA						9,360								
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

800514R1

Contract #:800514R

EXHIBIT C (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT
ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: ______________ Jmm

CUSTOMER: ______________ MPLAF

SUPERCEDES EXHIBIT C DATED______________

Contract #: 800515R

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1

This Service Agreement, made and entered into this 15th day of December, 1998, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Pipeline and Customer are parties to an executed service agreement dated February 29, 1996, under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800515); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800515;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule FT-1, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FT-1, Pipeline agrees to deliver for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Quantity (MDQ) 18,000 dth

Pipeline shall receive for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule FT-1 and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2006 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon two (2) years prior written notice to the other specifying a termination date of October 31, 2006 or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FT-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FT-1 as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FT-1, (b) Pipeline's Rate Schedule FT-1 pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FT-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service

agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT
2600 Center Square West 15th St. & Market St.
Philadelphia, PA 19102-2126

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

> service agreement dated February 29, 1996, between Pipeline and Customer under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800515).

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________ PMT

ATTEST:

____

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

By ______________________

ATTEST:

____

Contract #800515R

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"), DATED 12/15/98:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	18,000

SIGNED FOR IDENTIFICATION

PIPELINE: ________ JMM

CUSTOMER: ________ VAF

SUPERSEDES EXHIBIT A DATED: ________

800515R1

Contract #:800515R

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"),
DATED 12/15/98:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi- bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE, PA PHILADELPHIA CO., PA	18,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	73060	HARKNESS PT. - PA PHILADELPHIA CO., PA	18,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Contract #:800515

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	36,000 12/01-02/28 21,000 03/01-11/30
No.2	36,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 36,000 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ______________ JMM

CUSTOMER: ______________

SUPERSEDES EXHIBIT B DATED: ______________

800151R1

Contract #: 800515R

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/15/98, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1 BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("CUSTOMER"), DATED 12/15/98:

ZONE BOUNDARY ENTRY QUANTITY

Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA						9,360								
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

Contract #:800515R

EXHIBIT C (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: ______________________ Jmm

CUSTOMER: ______________________

SUPERCEDES EXHIBIT C DATED______________

800515R1

Contract #: 800232R1

SERVICE AGREEMENT
FOR RATE SCHEDULE CDS

This Service Agreement, made and entered into this 31st day of December, 1999, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Customer and Pipeline are parties to an executed service agreement dated December 15, 1998, under Pipeline's Rate Schedule CDS (Pipeline's Contract No. 800232R); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800232R;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule CDS, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Sections 2.3 and 2.4 of Pipeline's Rate Schedule CDS, Pipeline shall deliver to those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), for Customer's account, as requested for any day, natural gas quantities up to Customer's MDQ. Customer's MDQ is as follows:

Maximum Daily Quantity (MDQ) 75,000 dth

provided, however, Customer shall have the option to reduce the MDQ of this Service Agreement by 7,500 dth upon one (1) year prior written notice to Pipeline with such reduction to be effective November 1, 2002. Pipeline and Customer agree that any reduction in MDQ of this Service Agreement will (i)reduce all of Customer's market zone entitlements by the quantity of such reduction; and (ii)reduce Customer's firm rights under this Service Agreement in each of Pipeline's acess area zones by 10%.

Subject to variances as may be permitted by Sections 2.4 of Rate Schedule CDS or the General Terms and Conditions, Customer shall deliver to Pipeline and Pipeline shall receive, for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) daily quantities of gas equal to the daily quantities delivered to Customer pursuant to this Service Agreement up to Customer's MDQ, plus Applicable Shrinkage as specified in the General Terms and Conditions.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule CDS and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

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ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2003 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon one (1) year prior written notice to the other specifying a termination date of October 31, 2003 or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule CDS and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule CDS as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule CDS, (b) Pipeline's Rate Schedule CDS pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule CDS. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA GAS WORKS
GAS ACQUISITiON & FEDERAL REGULATORY AFFAIRS DEPT.
800 W. MONTGOMERY AVENUE
PHILADELPHIA, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other;

provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

service agreement dated December 15, 1998, between Pipeline and Customer under Pipeline's Rate Schedule CDS (Pipeline's Contract No. 800232R).

SERVICE AGREEMENT
FOR RATE SCHEDULE CDS
(Continued)

WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________

ATTEST:

____
Assistant Secretary

PHILADELPHIA GAS WORKS*

By ______________________

ATTEST:

____

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended

800232R5

Contract #800232R

RIAI

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE CDS
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA GAS WORKS ("Customer"), DATED 12/31/1999:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	75000

SIGNED FOR IDENTIFICATION

PIPELINE: Theven JMM

CUSTOMER: Craig White LAF

SUPERSEDES EXHIBIT A DATED: ________

800232R

Contract #:800232R1
R1B1

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE CDS
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA GAS WORKS ("Customer"),
DATED 12/31/1999:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi-bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE, PA PHILADELPHIA CO., PA	75,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	70034	PHILADELPHIA GAS WORKS - LEVICK ST., PA MONTGOMERY CO., PA	75,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
3.	71682	PHILADELPHIA GAS WORKS PENROSE (EASTWICK)-PHILADEL PHILADELPHIA CO., PA	5,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
4.	79513	SS-1 STORAGE POINT	26,262 04/01-10/31 26,262 11/01-03/31	N/A	N/A	N/A	N/A
5.	73060	HARKNESS PHILADELPHIA PHILADELPHIA CO., PA	49,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Contract #:800232R1

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA GAS WORKS

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	92,073
	12/01-02/28
	101,073
	03/01-11/30
No.2	137,310
No.3	5,000
No.4	26,262
No.5	49,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 101,073 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ____________________ JMM

CUSTOMER: ____________________ GAT

SUPERSEDES EXHIBIT B DATED: December 15, 1998

800232R5

Contract #:800232R

R1C1

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/31/1999, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE CDS BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA GAS WORKS ("CUSTOMER"), DATED 12/31/1999:

ZONE BOUNDARY ENTRY QUANTITY

Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX								2127						
ETX					9040		3218							
WLA							979	2127						
ELA						58727								
M1-24									9040					
M1-30										58727				
M1-TXG											4198			
M1-TGC												4254		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														75000
M3														

800232R4

Contract #: 800232R

EXHIBIT C (Continued)
PHILADELPHIA GAS WORKS

ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24									9040					
M1-30										58727				
M1-TXG											4198			
M1-TGC												4254		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														75000
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: [signature] Jmm

CUSTOMER: [signature] LAC

SUPERCEDES EXHIBIT C DATED

EXHIBIT JC-6

PGW TED Rider

TECHNOLOGY AND ECONOMIC DEVELOPMENT RIDER
MICRO-COMBINED HEAT AND POWER INCENTIVES

AVAILABILITY

TECHNOLOGY AND ECONOMIC DEVELOPMENT RIDER: The Technology and Economic Development (TED) Rider is a negotiated rider available that will be utilized to support the expansion of new technologies such as, but not limited to, combined heat and power (CHP), natural gas vehicles, and fuel cells, to develop brownfields, and support economic development in Pennsylvania by facilitating business retention and attraction, as well as other gas distribution system expansion activities. The TED Rider is available to those Customers served by the Company that the Company determines, in its sole discretion, have prospective additional gas usage applicable to service for firm service non-residential customers on Tariff Rate Schedules for General Service (Rate GS), Municipal Service (Rate MS), Philadelphia Housing Authority Service (Rate PHA) and Developmental Natural Gas Vehicle Service (Rate NGVS) at the time of execution or renewal of a service agreement. The TED Rider is established for the purpose of adjusting the customer's overall distribution charge to address project-specific or competitive issues to gain access to and expand use of natural gas within the Commonwealth of Pennsylvania. The negotiated TED Rider may be either a surcharge or credit depending on project-specific customer and Company economic requirements, such that the overall economics must meet the requirements of Section 10 of this Tariff. As part of its Gas Cost Rate (GCR) filings, PGW will provide data on sales and costs for TED customers. **(C)** **(C)**

GENERAL TERMS

The Customer must execute a TED Rider service agreement.

RATES

Customer Charge: Negotiable
Plus
Delivery Charge (per ccf): Negotiable

AVAILABILITY

MICRO-COMBINED HEAT AND POWER INCENTIVES: For projects involving micro-CHP units no larger than 50 kW, the following Micro-CHP Incentives may be available for qualifying projects: (1) $1,000 per kW installed up to 20 kW; and (2) $750 per kW installed greater than 20 kW and less than or equal to 50 kW. The Incentive is available to those Customers served by the Company that the Company determines, in its sole discretion, have prospective additional gas usage applicable to service for Rate GS Commercial/Industrial customers, Rate MS customers and Rate PHA customers on a pilot basis for a three-year period beginning on the effective date of this tariff supplement. The economic test that will be utilized by the Company to determine eligibility for participation will include the costs of the incentives. **(C)**

(C) - Change

EXHIBIT JC-7

PGW Rate IT Tariff

INTERRUPTIBLE TRANSPORTATION - RATE IT

Rate: Applicable to all Gas transported on or after September 1, 2003

For service under this rate, each meter shall be considered a separate Customer. Parallel meters that serve a single Customer fuel line will be considered as one meter. PGW will transport Gas to a Customer through one meter at one premise. Subject to the above limitations and the requirements of this rate schedule, service will be offered to interruptible Customers, who can in the sole judgment of the Company, manage its business without the use of Gas during periods of curtailment or interruption. Each Customer must contract for a minimum of 15,000 Dth/year or up to 10 Customers may aggregate their loads into a supplier pool that meets the 15,000 Dth/year requirement.

AVAILABILITY

This service is available to any Commercial or Industrial Gas user, subject to the specific requirements set forth in this section. It consists of the receipt of a daily quantity of Gas by the Company from a Gas Supplier under Rate DB, the transportation of Gas through the Company's facilities, and the delivery of an equivalent quantity of Gas to the Customer, adjusted for unaccounted-for Gas. Customers are subject to curtailment or interruption at any times. Customers served under this rate schedule who acquire gas supplies on an individual basis for their own use shall also be subject to all of the Gas Supplier provisions of rate schedule DB (Daily Balancing), except for those provisions related to licensing and bonding requirements.

SPECIAL METERING EQUIPMENT

This service requires the electronic transmission of metering data from the Customer's meter location to the Company on a daily basis. The metering equipment requires electric power supply compatible with the Company's equipment and a dedicated telephone line, both of which shall be provided by the Customer. Each Customer, prior to the initiation of service, shall pay the Company in full for facilities to record and transmit metering data, which payment shall not be subject to refund under any circumstances. Customer shall be responsible for ongoing maintenance of the electric power supply and dedicated telephone line, and shall reimburse the Company for expenses incurred to obtain daily metered usage during periods when the electric power and/or the telephone line is unavailable.

SERVICE AGREEMENT

Customer must execute a service agreement in the form prepared by the Company. Such agreement shall specify, among other things, the maximum daily interruptible transportation quantity or the total daily capacity of the Customer's equipment. The standard agreement shall have a term of not less than one year, and shall continue from month to month thereafter unless terminated by the Customer or the Company upon written notice to the other not less than 60 days prior to the end of a term. The Company may terminate a service agreement at any time as provided by law or by provisions of this Tariff. A service agreement for a period of more or less than one year may be executed only upon the mutual agreement of the Company and the Customer. Service initiation cannot take place until the special metering equipment is installed and operating to the Company's satisfaction. Service will be initiated only on the first day of a calendar month.

INTERRUPTIBLE SERVICE

1. QUALITY OF SERVICE

Company assumes no liability for interruptions caused by failure of supply sources or by third parties such as Suppliers and shall not be obligated to deliver Gas under this rate schedule on any day that Gas is not received at its gate station for the Customer's account except as specified under provisions for Standby Service contained herein. The Company may curtail (reduce) or interrupt deliveries to the Customer whenever, at the Company's sole discretion, it determines that the available capacity in all or a portion of its system is projected to be insufficient to meet the requirements of all Customers or in the event a NGS fails to meet delivery obligations. Although the Company will endeavor to provide as much notice as is reasonable and practical, the Customer shall maintain the ability to curtail or interrupt usage upon eight hours notice. In the event of a system emergency, upon notice by the Company, the Customer shall use its best efforts to curtail or interrupt usage upon less than eight hours notice.

2. INTERRUPTIBLE CAPABILITY

In order to qualify for interruptible daily Transportation Service under this Rate Schedule, a Customer must: (1) have installed and operable alternate fuel equipment, including appropriate fuel storage capacity, capable of displacing the daily quantity of Gas subject to curtailment or interruption; or (2) or in the alternative demonstrate to the Company's sole satisfaction the ability to manage its business without the use of Gas during periods of curtailment or interruption.

3. REQUIREMENTS

Customer is responsible for providing to the Company continuously updated mailing and electronic addresses, as well as fax and voice telephone numbers, for communication of interruption notices on a 24-hour per day, seven-day per week basis. Interruption notices shall be considered received by the Customer upon transmission by the Company to the electronic address and/or telephone number provided by the Customer.

4. PENALTIES FOR UNAUTHORIZED USAGE

During any period of curtailment or interruption, the Company shall have the right to immediate access, without prior notice to the Customer, to inspect the Company's Gas measurement equipment and all Gas-using facilities at the Customer's premises. If the Company determines that the Customer is using or has used a quantity of Gas in excess of the quantity authorized by the notice of curtailment or interruption, the Company shall have the right to impose the following penalties: (a) to take measures to physically restrict the flow of Gas into the Customer's premises, or, if flow restriction is not practical, to terminate service; and, (b) to impose a penalty equal to the greater of any actual cost incurred or penalty imposed upon the Company as a result of the violation by the Customer, or $25.00/Dth, in addition to the Company's cost of the Gas used, for each Dth taken in excess of the quantity authorized in the notice. In addition to the foregoing, the Customer shall hold the Company harmless and defend the Company against any and all claims against the Company arising from service problems caused or materially contributed to by the Customer's violation of the notice of curtailment or interruption.

LEVELS OF SERVICE

Customers will be placed into their corresponding rate class. The Company at its sole discretion will determine the level of service.

An Applicant for service under this rate shall be required to execute a service agreement in which maximum and minimum quantities of Gas to be delivered shall be defined. An Applicant shall not be eligible for an Interruptible Gas Transportation Service rate class unless the minimum volumes set forth directly below are met on an annual basis.

Rate class:	Annual volumes (Dth) – not less than:
IT-A:	2,500
IT-B:	5,000
IT-C:	10,000
IT-D:	25,000
IT-E:	80,000

Customers electing service under this rate shall have and maintain complete and adequate standby non-natural gas energy (e.g., oil, propane, electric, steam) and equipment for alternate operation in the event of interruption of Gas Service.

(This page intentionally left blank for future use.)

CHARGES

1. MONTHLY BILL
The monthly bill shall consist of the sum of the monthly Customer charge and the Distribution Charge as detailed below:

CUSTOMER CHARGE	($) Per Meter Per Month (Parallel Meters are considered one meter)
IT-A:	152.16
IT-B:	273.89
IT-C:	273.89
IT-D:	273.89
IT-E:	426.06

DISTRIBUTION CHARGE	Rate ($) Per Mcf / Dth Delivered*	
IT-A:	2.4146/ 2.3307	(I)
IT-B:	1.1687 / 1.1281	(I)
IT-C:	0.9119 / 0.8802	(I)
IT-D:	0.8091 / 0.7810	(I)
IT-E:	0.7835/ 0.7563	(I)

*The distribution charge may be the product of a negotiated rate and may include long-term contracts of up to five years as mutually agreed to by the Company and the Customer. This negotiated rate may be higher than, but not lower than, the distribution charges set forth above and may include additional minimum take requirements.

(I) – Increase

CONDITIONS OF USE

1. The Company shall not be obligated to incur the cost of additional facilities to provide Transportation Service hereunder for existing load. Nonetheless, in the event the Company elects to provide additional facilities, which in the Company's sole judgment are required to provide Transportation Service, the cost of such facilities shall be the responsibility of the Customer. Customers may Appeal the Company's judgment to the Commission. The Company shall provide, install, own and maintain such facilities. Where applicable, extensions and enlargements of Gas supply facilities for qualifying new load shall be in accordance with Section 10 of this Tariff.

2. The Customer warrants and will provide satisfactory documentation, upon request, that it has good and merchantable title for all Gas delivered to the Company for transportation hereunder. Title shall be free and clear of all liens, encumbrances and claims whatsoever. Customer will indemnify Company and hold the Company harmless from all suits, actions, debts, accounts, damages, costs, losses and expenses arising out of the adverse claims of any or all persons to said Gas and/or to royalties, taxes, license fees or charges thereon, including pipeline transportation and service charges, which are applicable to such Gas and/or the delivery of such Gas to the Company.

3. The Company may retain for unaccounted-for Gas a percentage of the total volume of gas delivered into its system for Customer's account. The percentage of Gas to be retained by the Company shall be equivalent to the percentage of unaccounted-for Gas, as utilized in the Company's currently effective GCR. This condition may be revised as appropriate, by the individual service agreement, where the transported Gas can be delivered directly to the Customer without commingling with other distribution system supplies.

4. In the event that the Company declares an emergency situation it may, at its discretion, divert Customer's Gas for such purposes as Company deems appropriate and Customer will be compensated for such Gas at the cost at which the Customer acquired the Gas, at the Customer's cost of the alternate fuel utilized or at the Company's avoided cost of Gas during the billing month, whichever is highest. The Customer shall demonstrate its cost of Natural Gas or replacement fuel by making a copy of its purchase contract available to Company upon request. All Gas purchased by the Company will be credited to the Customer's account.

DELIVERY QUANTITIES

The Company shall not be obligated to deliver or accept for delivery volumes in excess of the maximum hourly, daily or monthly volumes specified in the service agreement. It is the intent of the Company that the Customer so manage his arrangements for daily deliveries of Gas that they approximately equal his combined daily Gas usage and that volume retained for unaccounted-for Gas adjustment. The quantities of Gas received on Customer's behalf will be balanced monthly and daily on a thermally equivalent basis with those quantities re-delivered or retained for line loss and unaccounted for adjustment. For this thermal correction quantities will be multiplied by a fraction; the numerator of which is the weighted average Btu content per cubic foot of either the Company's system (if commingled) or the individual transporting pipeline (if not commingled), and the denominator is a reference Btu content of 1,000 Btu per cubic foot.

STANDBY SERVICE

Contingent upon the Company's ability to arrange the required supply contracts, a Customer may contract for Standby Service to purchase Gas from the Company under a specified Retail Rate Schedule, in the event that the Customer experiences an interruption or curtailment in Transportation Service by a Supplier. The contract term for Standby Service shall be a minimum of one year. The maximum volume of Gas that the Company is obligated to provide under Standby Service on any Gas day shall be specified in the individual service agreement. Volumes taken in excess of the specified daily standby limits, except for those volumes authorized and supplied by the Company under an applicable retail rate, shall be purchased by the Customer at the higher of: (a) 150% of the average of the two highest Daily Market Index Prices for the monthly period beginning on the first day of the month; or (b) 150% of the Company's highest incremental supply cost for the month.

A Customer contracting for Standby Service shall pay a monthly reservation charge. This charge shall be based on the demand charge paid by the Company to its highest cost pipeline and then applied to the supplier's Standby Service Quantity as specified in the individual Service agreement. The Company may revise the reservation charge no more frequently than monthly to reflect changes in the pipeline demand and related charges. The reservation charge prorated on a daily basis will be credited to all volumes purchased under the standby service. In addition, at the end of each contract year, the Customer will be assessed those minimum bill or take-or-pay charges actually paid by the Company to its own suppliers, which are attributable to the volume reserved but not taken under this Standby Service.

LIABILITY

The Company shall not be liable for curtailment of service under this rate schedule or loss of Gas of the Customer as a result of any steps taken to comply with any law, regulation or order of any governmental agency with jurisdiction to regulate, allocate or control Gas supplies or the rendering of service hereunder, and regardless of any defect in such law, regulation or order.

The Company reserves the right to commingle transport Gas with its other supplies but Gas is and remains the property of the Customer while being transported and delivered by the Company. The Customer shall be responsible for maintaining all insurance it deems necessary to protect its property interest in such Gas before, during and after receipt by the Company. The Company shall not be liable for any loss to the Customer or any other entity or person(s) arising from or out of service under this rate schedule, including loss of Gas in the possession of the Company or any other cause.

COMPANY RULES

The provisions this Tariff shall govern the service under this classification except where noted herein.

The following Riders may apply: **(C)**

(C) – Change

HIGHLY CONFIDENTIAL

EXHIBIT JC-8

PGW Responses to Set VI 1 & 3

REDACTED

EXHIBIT JC-9

Set II-10 CHP Incentives

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: II-10
Date of Response: 2/2/2022 Response
Provided By: Florian Teme

Question:

Provide a list of all TED Rider customers receiving Micro CHP incentives, including kW size, annual gas usage, and the incentive amount paid to the customer.

Response:

Only one customer has received a Micro CHP incentive. The customer installed a 35 kW mCHP unit. PGW anticipates that this customer will use approximately 2300 Mcf per year. The incentive amount was $31,250.

EXHIBIT JC-10.1

Set II-9 TED Customers

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: II-9
Date of Response: 2/2/2022 Response
Provided By: Florian Teme

Question:
Regarding PGW's Tariff TED Rider, provide a list of customers, rate schedule, annual volumes, and specific technology or reason for qualifying for Rider TED. Provide data on sales and costs for each TED customer.

Response:

There are currently three customers on the TED rider firm rate due to each one of them installing CHP at their respective locations. PGW does not have cost breakdowns for these customers.

Customer 1 – Approximately 2650 Mcf

Customer 2 – Approximately 2300 Mcf

Customer 3 – Approximately 2700 Mcf

EXHIBIT JC-10.2
Set II No. 10

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: II-10
Date of Response: 2/2/2022 Response
Provided By: Florian Teme

Question:

Provide a list of all TED Rider customers receiving Micro CHP incentives, including kW size, annual gas usage, and the incentive amount paid to the customer.

Response:

Only one customer has received a Micro CHP incentive. The customer installed a 35 kW mCHP unit. PGW anticipates that this customer will use approximately 2300 Mcf per year. The incentive amount was $31,250.

EXHIBIT JC-11

PGW Response to Set I-15 IT Customers

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-15
Date of Response: 1/28/2022
Response Provided By: Florian Teme

Question:
Provide a list of all customers that PGW has placed on an interruptible service rate within the past four years. Provide the form of proof that was provided by each customer to document that they are appropriately designated as an interruptible customer and the date and time and reason that any such customer's service was interrupted in the past four years.

Attachments: 0

Response:

PGW has added 24 customers within the past four years on the interruptible service rate. To protect customer proprietary information PGW is not releasing the specific names of customers. Per the tariff, each of these customers qualified by having dual fuel capability which gives them the ability to shed load during an interruption. There have been no interruptions in the past four years.

EXHIBIT JC1.2

EXHIBIT JC-2.3

PGW Project Book

PGW - Supplemental Response
Complainants' I-1

SAJC

ATTACHMENT B

P H I L A D E L P H I A   A U T H O R I T Y   F O R

I N D U S T R I A L   D E V E L O P M E N T

B Y

P H I L A D E L P H I A   G A S   W O R K S

P R O J E C T   B O O K

D-96-1

WO# 414090

Trigen Cogeneration Project
28th and Porter Streets
to
26th Street and Grays Ferry Avenue

MNB

C O N T E N T S

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

BY

PHILADELPHIA GAS WORKS

INSTRUCTIONS TO BIDDERS

Job Description: Installation of a 16" steel gas distribution pipeline from 28th and Porter Streets to 26th Street and Grays Ferry Avenue and all appurtenances.

Project Number: D-96-1

Location: 28th and Porter Street to 26th Street and Grays Ferry Avenue

Gentlemen:

You are invited to submit a Proposal for the installation of a 16" steel gas distribution pipeline and all appurtenances at the above listed location in accordance with drawings, specifications and documents listed below.

Your Proposal, in duplicate, should be in our hands not later than the definite time and date stated on our Inquiry Form.

Enclosed are: Proposal
Addendum to General Conditions
General Specifications
Drawings and Appendices
Prevailing Minimum Wage Predetermination

Bidder shall examine the work site before preparing bids.

Please give careful consideration to all of the documents before submitting your Proposal. Any exceptions to any clauses in any documents must be clearly set forth in your Proposal.

12/27/95

The Proposal is divided into two (2) sections. Information requested in both sections is necessary for the evaluation of bids and must be stated with the bid.

The Company reserves the right to reject any or all bids and to make an award to other than the low bidder.

All bids shall remain firm and good for acceptance by the Company for a period of sixty (60) calendar days from the date of bid opening by the Company. If the Company decides to accept any bid within this period, the Contractor agrees to accept the Company's Purchase Order.

The successful bidder will receive and be required to acknowledge receipt of the standard Company Purchase Order. This acknowledgement must be returned before the work can proceed.

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

BY

PHILADELPHIA GAS WORKS

PROPOSAL

For work in connection with the construction of a 16" steel gas distribution pipeline and all appurtenances located at 28th and Porter Streets to 26th Street and Grays Ferry Avenue.

6-10-96
(Date)

FROM: John Meehan & Son
(Bidder's Name)

TO: Philadelphia Gas Works

In Care Of: Mr. Wayne A. Morgan
Manager, Materials Management Department

Gentlemen:

Having carefully examined all Instructions to Bidders and Attachments, General Conditions, Addendum to General Conditions, General Specifications, Special Specifications, Drawings, Prevailing Minimum Wage Predetermination, Drawings and Appendices, the undersigned proposes:

1. To provide labor, equipment and certain materials to install the 16" steel gas distribution pipeline (the "Pipeline") at the above location with all appurtenances as shown on drawings in Part 6 and described in the Specifications entitled D-96-1.

2. To begin work at site by July 1, 1996.

3. To have the Pipeline completely installed and fully operational by October 1, 1996. (See Part 3, Addendum to General Conditions).

4. To complete the work fully by November 1, 1996.

5. To guarantee the work as provided in Paragraph 3.7.3.

6. To execute the Purchase Order Acknowledgement, of which said Instructions to Bidders and all Attachments, Proposal, General Conditions, Addendum to General Conditions, General Specifications, Special Specifications, Prevailing Minimum Wage Predetermination, Drawings and Appendices shall be a part.

The Contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities required, the general and local conditions and all other matters which can in any way affect the work.

It is understood that the Company reserves the right to reject any and all proposals. An award shall be considered completed when the Purchase Order Acknowledgement has been signed by the Contractor and received by the Company.

John Meehan & Son
(Name of Corporation or Partnership)

Signature X Austin A Meehan

Title President

(If Corporation) Attest Austin A. Meehan
(Corporate Seal)

Address 9301 Krewstown Rd. Phila. PA. 19115

Telephone Number 215-673-7800

Important Directions:

1. Individuals - Sign full name.
2. Partnerships - All required partners must sign: full names of all partners must be given.
3. Corporations - An authorized officers must sign under exact corporate name with official title. Give stated in which firm is incorporated.
4. Give address and telephone number in all cases.

5/24/96

PROJECT NUMBER: D-96-1

DATE: 6-10-96

PROPOSAL - SECTION 1

Read "Instructions to Bidders" carefully before preparing this Proposal. Enter "Unit Price" for item only if "Approximate Quantity" is entered for that item.

Item	Description	Approx. Quantity	Unit Price	Total Price
A	PAVING REMOVAL:			
	1. Cut, break, remove, and dispose of 4" concrete sidewalks and 4" driveway paving. Quantity for other thickness's to be adjusted in direct proportion. PER SQUARE YARD	129	10-	6,290.00
	2. Cut, remove, and dispose of or store, where necessary roadway paving without classification. Thickness less than or greater than 12" shall be adjusted in direct proportion. PER SQUARE YARD	3,169	25-	79,225.00
	3. Cut, remove, and dispose of curbing. PER LINEAR FOOT	10	5-	50.00
	4. Remove granite curbing and store PER LINEAR FOOT	20	10-	200.00
B	EXCAVATION:			
	1. Excavate material other than rock (normal excavation)-including temporary shoring and all other appurtenances. PER CUBIC YARD	6,480	10-	64,800.00
	2. Excavate rock. PER CUBIC YARD	132	135-	17,820.00
C	PIPE INSTALLATION:			
	2. Unload, string, clean, install, test repair leaks on steel pipe and all appurtenances.			
	a. 2" PER LINEAR FOOT	-		
	b. 3" PER LINEAR FOOT	-	-	-
	c. 4" PER LINEAR FOOT	-	-	-
	d. 6" PER LINEAR FOOT	-	-	-
	e. 8" PER LINEAR FOOT	-	-	-
	f. 12" PER LINEAR FOOT	-	-	-
	g. 16" PER LINEAR FOOT	11,967	30.00	359,010.00
	h. 20" PER LINEAR FOOT	-	-	-
	i. 24" PER LINEAR FOOT	-	-	-
	j. 30" PER LINEAR FOOT	-	-	-
	k. 36" PER LINEAR FOOT	-	-	-

[signature]

PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description	Approx. Quantity	Unit Price	Total Price
D	ROADWAY PAVING RESTORATION:			
	1. Furnish and lay 8" concrete paving base including sub-grading and all appurtenances. PER SQUARE YARD	1,232	30	36,960.00
	2. Furnish and lay 10" concrete paving base including sub-grading and all appurtenances. PER SQUARE YARD	3,305	33	109,065.00
	3. Furnish and lay 12" concrete paving base including sub-grading and all appurtenances. PER SQUARE YARD	- -	- - -	- - -
	4. Furnish and lay stone base under paving including sub-grading and all appurtenances. PER CUBIC YARD	17	25	425.00
	5. Furnish and place 8" concrete wearing surface. Price for other thickness to be adjusted in direct proportion. PER SQUARE YARD	- -	- - -	- - -
	6. Cut concrete paving with concrete saw. PER LINEAR FOOT	55	10	550.00
	7. Furnish and lay asphalt or macadam surface and binder course. (Maximum 3" thickness) PER SQUARE YARD	5,293	14.25	75,425.25
	8. Reset granite block pavement using existing blocks and furnishing any deficiency in material. PER SQUARE YARD	- -	- - -	- - -
E	FOOTWAY PAVING RESTORATION:			
	1. Furnish and place 4" cement footway paving including removal to nearest joints, placement of sub-grade, and all appurtenances. PER SQUARE YARD	85	40	3,400.00
	2. Furnish and place 6" cement footway paving including removal to nearest joints, placement of sub-grade, and all appurtenances. PER SQUARE YARD	- -	- - -	- - -

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PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description	Approx. Quantity	Unit Price	Total Price
	3. Furnish and place 8" cement footway paving including removal to nearest joints, placement of sub-grade, and all appurtenances. PER SQUARE YARD	44	50	2,200.00
	4. Relay brick footway paving including sand, 4" concrete base, and where required, new bricks. PER SQUARE YARD	- -	- - -	- - -
	5. Relay flagstone paving including cement grouting and new flagstone where required. PER SQUARE YARD	- -	- - -	- - -
	6. Replace curbing (18" x 8"). PER LINEAR FOOT	10	19	190.00
	7. Reset granite curbing PER LINEAR FOOT	20	20	400.00
F	SOD RESTORATION: 1. Replace and maintain sod, or where permitted, seed and maintain. PER SQUARE YARD	- -	- - -	- - -
G	PIPE ZONE: 1. Furnish, haul, and place good earth in pipe zone. PER CUBIC YARD	1,450	20	29,000.00
H	TEMPORARY PAVING: 1. Furnish, install, and maintain temporary paving (cold patch). PER SQUARE YARD	3,352	6	20,112.00
I	SHORING LUMBER: 1. Leave shoring lumber in place as ordered by the Engineer. PER BOARD FOOT	383,809	.01	3,838.09
J	Install "Lily Pad" where required, as shown on Drawing GS 23.3.			
	a. 3" PER PAD	-	-	-
	b. 4" PER PAD	-	-	-
	c. 6" PER PAD	-	-	-
	d. 12" PER PAD	-	-	-
	e. 16" PER PAD	-	-	-
	f. 20" PER PAD	-		
	g. 24" PER PAD	-		
	h. 30" PER PAD	-		
	i. 36" PER PAD	-		

Fuhr [signature]

PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description	Approx. Quantity	Unit Price	Total Price
K	SPECIAL ITEMS:			
K-1	Corrosion Protection System Lump Sum	1		5,000.00
K-2	16" Weld End Valve in Manhole, Southern Terminus Install and coat 16" Weld End valve in 10' x 8' x 7' R.C. manhole and all appurtenances. Refer to Drawing B-2844. Included in this item are two (2) 16" welds, installation of manhole and 4" blow-off assembly. For the scope of this work refer also to Part 5, Special Specifications 5.6.2. Lump Sum	1		5,000.00
K-3	16" Weld End Valve in Manhole, Northern Terminus Install and coat 16" Weld End valve in 10' x 8' x 7' R.C. manhole and all appurtenances. Refer to Drawing B-2844. Included in this item are two (2) 16" welds and installation of manole. For the scope of this work, refer also to Part 5, Special Specifications 5.6.3. Lump Sum	1		5,000.00
K-4	Hydrostatic Test. Test pipe line at 984 psig. Provide all material and labor to successfully complete this item. Provide plan subject to approval for test. Refer to Part 5, Special Specifications 5.6.4. Lump Sum	1		10,000.00
K-5	Contaminated Soil. Remove and dispose of such excavated material properly. Refer to Part 5, Special Specifications 5.6.5 and Appendix D for details. Cubic Yard	150 C.Y.	90	13,500.00
K-6	Modified 2 RC Aggregate. Furnish and install modified as instructured or required by Engineer. Refer to Part 5, Special Specifications 5.6.6 for details. Cubic Yard	2,290 C.Y.	28	64,120.00
K-7	Bonding. Cost of performance and payment bonds for this contract. Refer to General Conditons 1.22 and Addendum to General Conditions 3.20. Lump Sum		.008	7,292.64

Kilw
[illegible]

PROJECT NUMBER: D-95-2

DATE: 6-10-96

Item	Description	Approx. Quantity	Unit Price	Total Price
K	**SPECIAL ITEMS:**			
K-8	Fabricate and install approximately 100' of 16" X-70 pipe and fittings on pipe bridges above ground. Pipe bridges by others. PGW will supply materials as noted on Drawing B-2844. Coordinate this work with Trigen on-site contractor. Refer to Special Specifications 5.6.7 and Drawing B-2844, Sheet 52 for details. Lump Sum	1		5,000.00

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D-96-1.doc,10

KJW

PROJECT NUMBER: D-96-1

DATE: 6-10-96

PROPOSAL - SECTION 2

PRICES AND RATES FOR CONTINGENT WORK

The following prices and rates are for work arising from unforeseen conditions only. Enter unit prices or rates for items where unit price has a clear space.

Item	Description	Unit Price
1-1	Cut, break, remove, and dispose of 4" concrete sidewalks and 4" driveway paving. Quantity for other thickness's to be adjusted in direct proportion. PER SQUARE YARD	---------
1-2	Cut, remove, and dispose of or store, where necessary roadway paving without classification. Thickness less than or greater than 12" shall he adjusted in direct proportion. PER SQUARE YARD	---------
1-3	Cut, remove, and dispose of curbing. PER LINEAR FOOT	---------
2-1	Furnish and lay 8" concrete paving base including sub-grading and all appurtenances. PER SQUARE YARD	---------
2-2	Furnish and lay 10" concrete paving base including sub-grading and all appurtenances. PER SQUARE YARD	---------
2-3	Furnish and lay 12" concrete paving base including sub-grading and all appurtenances. PER SQUARE YARD	95

Keller and Joe

PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description	Unit Price
2-4	Furnish and lay stone base under paving including sub-grading and all appurtenances. PER CUBIC YARD	-----------
2-5	Furnish and place 8" concrete wearing surface. Price for other thickness to be adjusted in direct proportion. PER SQUARE YARD	-----------
2-6	Cut concrete paving with concrete saw. PER LINEAR FOOT	-----------
2-7	Furnish and lay asphalt or macadam surface paving and binder course, (maximum 3" thickness). PER SQUARE YARD	-----------
3-1	Furnish and place 4" concrete footway paving including removal to nearest joints, placement of sub-grade, and of sub-grade, and all appurtenances. PER SQUARE YARD	-----------
3-2	Furnish and place 6" concrete footway paving including removal to nearest joints, placement of sub-grade, and all appurtenances. PER SQUARE YARD	85—
3-3	Furnish and place 8" concrete footway paving including removal to nearest joints, placement of sub-grade, and all appurtenances. PER SQUARE YARD	-----------
3-4	Replace curbing, (18" x 8"). PER LINEAR FOOT	------------

Phil [illegible]

PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description		Unit Price
4-1	Install "Lily Pad", where required, as shown on Drawing GS 23.3.		
	a. 4"	PER PAD	550.00
	b. 6"	PER PAD	600.00
	c. 8"	PER PAD	650.00
	d. 12"	PER PAD	650.00
	e. 16"	PER PAD	700.00
	f. 20"	PER PAD	750.00
	g. 24"	PER PAD	750.00
	h. 30"	PER PAD	800.00
4-2	Cut pipe and bevel steel pipe due to bad ends.	PER CIRCUMFERENTIAL FOOT	180.00
4-3	Weld pipe including preparation of ends.		
	a. 2"	PER JOINT	500.00
	b. 3"	PER JOINT	750.00
	c. 4"	PER JOINT	1,100.00
	d. 6"	PER JOINT	1,250.00
	e. 8"	PER JOINT	1,500.00
	f. 12"	PER JOINT	2,000.00
	g. 16"	PER JOINT	4,500.00
	h. 20"	PER JOINT	4,500.00
	i. 24"	PER JOINT	7,500.00
	j. 30"	PER JOINT	5,000.00

PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description		Unit Price
4-6	Install and coat flange insulating joint with test station, as shown on GS.23.7 where not shown on Project Drawing.		
	a. 2"	PER JOINT	500.00
	b. 3"	PER JOINT	750.00
	c. 4"	PER JOINT	1,000.00
	d. 6"	PER JOINT	1,100.00
	e. 8"	PER JOINT	1,250.00
	f. 12"	PER JOINT	1,500.00
	g. 16"	PER JOINT	2,500.00
	h. 20"	PER JOINT	2,500.00
	i. 24"	PER JOINT	2,800.00
	j. 30"	PER JOINT	2,800.00
5-1	Leave shoring lumber in place as ordered by the Engineer.	PER BOARD FOOT	-----------
6-1	Excavate rock.	PER CUBIC YARD	----------
7-1	Repair damaged coating. Field coat pipe and fittings not shown on drawing.	PER SQUARE FOOT	125.00
7-2	Install 3/16" thick rock shield.	PER SQUARE FOOT	100.00
7-3	Install and fill field jointer for welded joint.	PER JOINT	500.00

D-96-1,13

Kurt Dal [illegible]

PROJECT NUMBER: D-96-1

DATE: 6-10-96

Item	Description	Unit Price
8-1	Furnish and place cinder topping. PER SQUARE YARD	55
8-2.1	Furnish and maintain temporary paving (cold patch). PER SQUARE YARD	----------
8-2.2	Furnish and maintain temporary paving (hot patch). PER SQUARE YARD	75.00
8-3	Furnish and place additional asphalt binder course as required. PER TON	150.00
8-4	Internally clean steel pipe by use of mechanical equipment such as motor driven Wilson pipe cleaner.	
	a. 4" PER LINEAR FOOT	1.50
	b. 6" PER LINEAR FOOT	1.50
	c. 8" PER LINEAR FOOT	1.50
	d. 12" PER LINEAR FOOT	1.70
	e. 16" PER LINEAR FOOT	8.25
	f. 20" PER LINEAR FOOT	8.50
	g. 24" PER LINEAR FOOT	8.75
	h. 30" PER LINEAR FOOT	9.00
8-6	Excavate frozen ground over 6" in depth (excluding paving). PER CUBIC YARD	250

KWit
Ord JR

PROJECT NO: D-96-1

DATE: 6-16-96

PROPOSAL - SECTION 2

Rates on Pages 6 and 7 will only be used when there are no applicable proposed items in Section 1 or on Pages 1, 2, 3, 4, and 5 of Section 2.

STRAIGHT TIME LABOR RATES FOR CONTINGENT WORK

Labor	Rate Per Hour	Labor	Rate Per Hour
Foreman	48.00	Fitter	95.00
Sub-Foreman	46.00	Plumber	85.00
Operating Engineer	57.00	Cement Finisher	50.00
Laborer	43.00		
Teamster	42.00		
Welder	90.00		
Stationary Operator	45.00		
Flagman	42.00		

Others - (List other job titles and rates for labor that may be used on job.)

SuperinTendenT 95.00

Overtime - Specify overtime provisions for contingent work.

AS STipulaTed in UNion ConTRACT.

[signature]

CONTRACTOR: John Mechan & Son

PROJECT NO: D-96-1

DATE: 6-18-96

Part 2
Section 2
Page 7

RATES FOR CONTINGENT WORK

Equipment	Rate Per Day	Equipment	Rate Per Day
Compressor 125 C.F.	800.00	Dump Truck (20.0) cu. yds.	680.00
		Dump Truck (10.0) cu. yds.	600.00
Compressor 300 C.F.	2,500.00	Arc Welding Machine (excluding welder)	250.00
Crane	1,800.00	Water Pump 3"	$150.00
Hydro-Crane	1,800.00	Digger-Loader (pippin or equivalent)	650.00
Gradall	1,900.00	Job Truck 1-1/2 Ton or Larger	125.00
Low Boy Trailer	700.00	3/4 Pick-Up Truck	125.00
Side-Boom Tractor	1,700.00	Barricades	10-
Tractor (Bulldozer)	1,500.00	Steel Deck 4' x 8' each	25-
Sandblasting Machine (including sand and one (1) laborer)	275-	Steel Deck Larger than 4' x 8'	25-
		Portable Lighting Unit	350-
		High Ram	800-
Gasoline Tamper	115-	Track Hoe	1,250.00
		Other	—

Rates are to include the cost of operator driver, oilers, and helpers to do this work for which equipment is required. All contingent rates for the labor and equipment shall include contractor's overhead and profit.

INDEX TO PART 3

ADDENDUM TO GENERAL CONDITIONS

3.1 Note to Part 3

In General, Part 3 modifies and supplements the requirements stated in the General Conditions which are an attachment included in the contract documents. Where the General Conditions are in conflict with this Part 3, the provisions of this Part 3 shall prevail.

3.2 Definitions

3.2.1 Contract Price - The Contract Price is the total amount of Contractor's Proposal for Work in connection with the Construction of the Pipeline as accepted by the Company and awarded to Contractor under the Contract.

3.2.2 Engineer - The term "Engineer" as used in this Part 3; Part 4 - General Specifications; and Part 5 - Special Specifications, is synonomous with the term "Authorized Representative" as defined in Paragraph 1.2.2 of the General Conditions.

3.2.3 In-Service - the term "In-Service" means a fully operational pipeline, as installed by Contractor under this Contract.

3.2.4 In-Service Date - October 1, 1996

3.2.5 Pipeline - The 16" steel gas distribution pipeline and all appurtenances located at 28th and Porter Streets to 26th Street and Grays Ferry Avenue.

3.3 Termination

3.3.1 The Company will give the Contractor ten (10) business days notice before termination as described in the General Conditions, Paragraph 1.42.1 (i) and (iii).

3.4 Interpretation and Change of Plans and Specifications

3.4.1 The Engineer shall decide as to the meaning and intent of any portion of the plans and specifications where the same may be obscure, conflicting, or in dispute. The Engineer shall have the right to correct any errors or omissions, to make changes by altering, adding to, or deducting from the Work, and to increase or decrease scheduled time for performing Work due to any such change.

3.5 Contingent Work

3.5.1 Contingent Work is work not covered by Section 1 of the Proposal.

3.5.2 Payment will be granted for Contingent Work only when authorized by the Engineer.

3.5.3 The Contractor, when billing for Contingent Work, shall submit photocopies of invoices covering purchased material actually used and installed on this work.

3.5.4 When work is done on a contingent basis, no payment will be made for the cost of men and equipment traveling to and from the job.

3.5.5 When prices and rates submitted in the Proposal (Section 1 and Section 2) are not applicable, the Company shall pay the Contractor's quoted cost of labor, plus the quoted cost of equipment used on the Work and the actual cost of materials used. To the above material cost, a 10% fee will be added to compensate the Contractor for the procurement costs.

3.6 Invoicing

3.6.1 For invoicing purposes, feet shall be calculated to the closest foot and other measurements (for such items as contingent time, paving, excavating, etc.) shall be calculated to the closest tenth of a unit (hours, cubic feet, cubic yards, etc.) and billed to the nearest whole unit.

3.7 Final Acceptance and Guarantee

3.7.1 When a job under this project has been completed to the Engineer's satisfaction and has been accepted by the Company, the Company shall make payment as outlined in Paragraph 1.43.1 of the General Conditions. The effective date of acceptance will be the date entered on the Inspector's Report under "date finished". The guarantee period will begin on this date.

3.7.2 If the Contractor is unable to complete final paving restoration, because of conditions beyond the Contractor's control, the Company, on written request of the Contractor, will consider, at the Company's sole discretion, executing acceptance solely with respect to the completed Work and in lieu of withholding the entire 10% retainage, the Company will retain one and one-half times the value of the remaining work as estimated by the Engineer.

3.7.2.1 The Contractor shall proceed with all diligence to perform the unfinished Work as soon as conditions permit.

3.7.2.2 The Contractor shall extend the guarantee provided in Paragraph 3.7.3 of the General Conditions to cover such unfinished portion. The guarantee shall become effective with the date of acceptance of the unfinished portion.

3.7.2.3 The Company will release the one and one-half times value retainage for the unfinished Work upon certification by the Engineer that the unfinished Work has been satisfactorily completed.

3.7.3 The Contractor shall guarantee all Work performed on the pipe and pipe coating and appurtenances against defects in workmanship and material supplied by the Contractor for a period of eighteen (18) months from the date of completion and acceptance by the Company, unless otherwise specifically required for a longer period. Paving restoration, sod restoration, and seeding, where permitted, shall be guaranteed for a period of one year. If, within the period of guarantee, any of the Work shall prove to be defective either in material supplied by the Contractor or workmanship, or if damage occurs by settlement of any backfill performed by Contractor, or Sub-Contractor, under this Contract, the Contractor shall immediately upon demand of the Engineer (whose decision shall be binding and conclusive upon parties hereto) repair and replace the same at the Contractor's cost and expense, to the approval and satisfaction of the Engineer. Damage which occurs after final acceptance of the job, and which is due to error of omission or commission by the Contractor, may be corrected by the Company at the Contractor's expense. In such event, Company shall invoice Contractor for all expenses incurred by Company in performing the correction. Payment of invoices shall be due within ten (10) days of the date of the invoice. Late payments shall be subject to interest at the rate of 1 1/2% per month (or at the highest rate allowed by law whichever is greater) on the unpaid amount until fully paid.

3.8 Insurance Coverage Limits

3.8.1 Refer to the insurance specification attached to this bid package.

3.8.2 The Contractor shall supply such other insurance for the performance of work on publicly-owned property as may be required by any State, Federal or Local Governmental Agency or any other Governmental body of the Commonwealth of Pennsylvania.

3.9 Retention of Financial Records

3.9.1 The Contractor and all Sub-Contractors shall maintain all financial records pertinent to this project for a period of not less than three (3) years from the date that all Work has been certified by the Engineer as completed. Such records will be subject to inspection by the Pennsylvania Department of Transportation, Federal Highway Administration, City of Philadelphia, the Philadelphia Authority for Industrial Development, the Company, or other authorized representatives, and copies thereof shall be furnished to them by the Contractor, if requested.

3.10 Prevailing Minimum Wage Predetermination

3.10.1 The Contractor shall pay its workers the prevailing minimum wage as determined by the Commonwealth of PA (See, attached prevailing minimum wage predetermination package). Certified payroll forms shall be submitted to the Engineer, no less frequently than monthly, for each employee associated with this project for each pay period.

3.11 Commencement of Work

3.11.1 The Contractor shall be ready to start Work within ten (10) days from the date of signing the Purchase Order Acknowledgment.

3.12 Interruption of Project

3.12.1 If the Contractor becomes involved in a labor dispute, strike, work stoppage, or other interference with progress of the job which prevents or interferes with the Contractor's performance of Work under the Contract for more than three (3) consecutive business days, the Company may declare the Contract breached and terminated upon ten (10) days' written notice thereof to the Contractor. In such event, the Company may exercise the remedies set forth in Paragraph 1.42.1 of the General Conditions.

3.13 Pennsylvania Act 38

3.13.1 The Contractor is advised that members of the Pennsylvania One Call System may be contacted by telephoning 1-800-242-1776. The Contractor is also advised that non-members of the Pennsylvania One Call System must be individually notified.

3.13.2 There will be no additional compensation for any work and materials necessary for locating, protecting, supporting, or repairing active underground structures damaged by the Contractor.

3.14 <u>Protection; Security</u>

3.14.1 In addition to the requirements of Paragraph 1.6.4.1 of the General Conditions, Contractor shall provide all security at the pipeline construction sites and shall continuously maintain adequate protection of the Work from all damage and shall protect property at the site of the Work and adjacent thereto from injury or loss from the Contract commencement date up to the date all Work under this Contract is completed.

3.15 <u>Permits, Patent Fees, and Royalties</u>

3.15.1 Contractor shall include the Philadelphia Authority for Industrial Development, and anyone directly or indirectly employed by the Philadelphia Authority for Industrial Development as an additional indemnified party pursuant to the requirements of Paragraph 1.12.5 of the General Conditions.

3.16 <u>Laws and Regulations</u>

3.16.1 Contractor shall include the Philadelphia Authority for Industrial Development as an additional indemnified party pursuant to the requirements of Paragraph 1.13.1 of the General Conditions.

3.17 <u>Specific Laws; Fair Employment Practices</u>

3.17.1 In addition to the requirements of Paragraph 1.20.1 of the General Conditions, the following provisions shall also apply:

3.17.1.1 <u>Non-Discrimination</u>. This Contract is entered into under the terms of the Philadelphia Home Rule Charter, as it may be amended from time to time, and in its performance, the Contractor shall not discriminate or permit discrimination against any person because of race, color, religion, national origin, or sex.

3.17.1.2 Fair Practices. The Contractor agrees, in the performance of this Contract, to comply with the provisions of the Fair Practices Ordinance of The Philadelphia Code (Chapter 9-1100) and the Mayor's Executive Order No. 4-86, as they may be amended from time to time, both of which prohibit, *inter alia*, discrimination against persons with AIDS in employment and services.

3.17.1.3 The Philadelphia Code, Chapter 17-400.

a) In accordance with Chapter 17-400 of The Philadelphia Code, as it may be amended from time to time, the Contractor agrees that it shall not pay or reimburse membership fees or other expenses associated with participation by its employees in an exclusionary private organization, insofar as such participation confers an employment advantage or constitutes or results in discrimination with regard to hiring, tenure of employment, promotions, terms, privileges or conditions of employment on the basis of race, color, sex, sexual orientation, religion, national origin or ancestry.

b) The Contractor further agrees to cooperate with the Commission on Human Relations of the City of Philadelphia in any manner which the Commission deems reasonable and necessary for the Commission to carry out its responsibilities under Chapter 17-400 of The Philadelphia Code.

3.17.1.4 Federal Laws. The Contractor shall comply with the provisions of Title VI of the Civil Rights Act of 1964 (42 U.S.C. Section 200d et seq.), Section 504 of the Federal Rehabilitation Act of 1973 (29 U.S.C. Section 794), The Age Discrimination Act of 1975, (42 U.S.C. Section 6101 et seq.), Title IX of The Education Amendments of 1972, (20 U.S.C. Section 1681), and 45 C.F.R. part 92, as they may be amended from time to time, which together prohibit discrimination on the basis of race, color, national origin, sex, handicap, age and religion.

3.17.1.5 Affirmative Action. If required by the Company, the Contractor agrees to provide to the Company, no later than January 31 of each year, an annual report describing the increase or decrease in numbers of minority and female employees during the preceding calendar year, or contract period if less than a calendar year, in each of the following three categories:

a) rank and file employees (other than supervisors and managers);

b) supervisors (first level supervisors);

c) managers (all managerial personnel other than first level supervisors).

3.17.1.6 Americans With Disabilities Act. The Contractor understands and agrees that no individual with a disability shall, on the basis of the disability, be excluded from participation in this Contract or from activities or services provided under this Contract. As a condition of accepting and executing this Contract, the Contractor shall comply with all provisions of the Americans with Disabilities Act, 42 U.S.C. §12101 et seq., and all regulations promulgaqted thereunder, as the Act and regulations may be amended from time to time, which are applicable a) to the Contractor; b) to the benefits, services, activities, facilities and programs provided in connection with this Contract; c) to the Company; d) to the City, or the Commonwealth of Pennsylvania, and e) to the benefits, services, activities, facilities and programs of City or of the Commonwealth, and, if any funds under this Contract are provided by the federal government, which are applicable to the federal government and its benefits, services, activities, facilities and programs. Without limiting the generality of the preceding sentence, the Contractor shall comply with the "General Prohibitions Against Discrimination", 28 C.F.R. §35.130, and all other regulations promulgated under Title II of "The Americans With Disabilities Act", as they may be amended from time to time, which are applicable to the benefits, services, programs and activities provided by City through contracts with outside Contractors.

3.17.1.7 The Philadelphia Code, Section 17-104. In accordance with Section 17-104 of The Philadelphia Code, the Contractor by execution of this Contract certifies and represents that (i) the Contractor (including any Affiliate) does not have, and will not have at any time during the term of this Contract (including any extensions thereof), any investments, licenses, franchises, management contracts or operations in Northern Ireland and (ii) no product to be provided to the Company under this Contract will originate in Northern Ireland, unless the Contractor has implemented the fair employment principles embodied in the MacBride Principles.

3.18 Certificate of Non-Indebtedness

3.18.1 In addition to the requirements of Paragraph 1.21.4 of the General Conditions, Contractor shall execute the attached Certificate of Non-indebtedness.

3.19 Bonding

3.19.1 In addition to the requirements of Paragraph 1.22.1 of the General Conditions, Contractor shall provide a performance bond with a dual obligee rider guaranteeing completion of the Work and payable to the City acting through PGW and the Philadelphia Authority for Industrial Development in an amount not less than the Contract Price plus ten (10%) percent.

3.20 Liens

3.20.1 Before the execution of a contract or commencement of work by the Contractor, and any Sub-Contractor, and before the issuance of any Purchase Order, Contractor and/or all Sub-Contractors shall execute a waiver of mechanics' liens, in a form satisfactory to the Company, which the Contractor shall file with the Office of the Prothonotary. The Contractor shall include effective waivers of mechanics' liens in all contracts with Sub Contractors and materialmen, and shall execute and require the execution by each Sub-Contractor and materialman of a release of mechanics' liens, in recordable form, upon final payment.

3.20.2 Contractor shall include the Philadelphia Authority for Industrial Development as an additional indemnified party pursuant to the requirements of Paragraphs 1.23.4 and 1.23.6 of the General Conditions.

3.21 Liability and Insurance

3.21.1 Contractor shall include the Philadelphia Authority for Industrial Development, and anyone directly or indirectly employed by the Philadelphia Authority for Industrial Development as an additional indemnified party pursuant to the requirements of Paragraph 1.24.1 of the General Conditions.

3.22 Delay Damages

3.22.1 Subject to Force Majeure, the Contractor shall pay damages in the amount of $5,000.00 per day for each day the Pipeline is not completely installed and fully operational on or before the In-Service Date beginning and including October 2, 1996, and continuing for each calendar day thereafter up to and including the day the Pipeline is certified as In-Service by the Engineer.

3.23 Right to Monitor Construction

3.23.1 Contractor shall permit the Company, or any person, representative or invitee authorized by the Company, at the Company's own cost and expense, to monitor all Work performed by Contractor and all Sub-Contractors under this Contract.

3.24 Reports

3.24.1 Contractor will deliver to the Company, in a form satisfactory to the Company, written monthly progress reports as well as prompt reports of any material problem experienced in the Project. The Company shall have the right to deliver such reports to appropriate third parties as determined solely by the Company.

INDEX TO PART 4
GENERAL SPECIFICATIONS

PART 4
GENERAL SPECIFICATIONS

4.1 Note:

In case of conflict between either Part 3 or Part 3A and Part 4, the provisions of Part 4 shall prevail.

4.2 Scope of Work

4.2.1 The work shall consist of all work necessary to complete the entire construction of the pipelines and appurtenances described in the Project Documents.

4.2.2 The Contractor shall lay out its own work in accordance with the drawings and shall be responsible for its correctness. Deviations from the specifications or drawings shall be made only upon authorization from the Engineer.

4.2.3 The work shall include without limitation such items as the removal of paving where necessary; excavation of trench; laying and joining of pipe with fittings; installation of valves and regulators; installation of corrosion control devices; applying protective coating to joints, fittings, and valves; construction of manholes and valve boxes; backfilling trench; removal of surplus material; and repaving.

4.2.4 The Contractor shall notify all utilities prior to start of construction. The Contractor shall maintain the trench area and adjacent street and sidewalk in a safe condition for pedestrian and vehicular traffic.

4.2.5 When working on roads classified as State Highways the contractor shall follow Pennsylvania State Highway Specification Chapter 459, Occupancy of Highways by Utilities. This Specification is available from the Pennsylvania Department of Transportation. Failure to follow this Specification could result in the contractor being barred from working on any utility projects on state highways.

4.2.6 The Contractor shall protect and preserve or replace as needed, all shrubbery and trees encountered along the line of trench.

4.2.7 In addition to the stipulations in 1.38 of the General Conditions, at the completion of work, the Contractor shall clean up the work site by removing all pipe and construction materials, tools, rubbish and debris due to its operations, and shall leave the work site in perfect order. All salvaged PGW material shall be returned to the Company, or as otherwise provided for in Section 4.17.2.

4.3 <u>Location of Work</u>

4.3.1 The location of work is shown on the drawings, maps and sketches. The Contractor shall be responsible for setting of all lines and grades unless instructed otherwise.

4.3.2 Stakes for lines and grade of curbs where no curbs exist will be provided by the Engineer, and the Contractor shall be responsible for the preservation of such stakes.

4.3.3 Before starting work related to connections with existing gas mains, the Contractor shall dig test holes to verify the location and depth of such mains. No extra payment will be made for the excavation of the test holes. They will be considered part of the cost per-foot for steel mains. However, payment shall be made for paving removal and restoration. The Contractor shall report any variances from the drawings to the Engineer. The Engineer shall determine the changes required before excavation may proceed.

4.3.4 The job location is defined as that area which is described by Drawing Number B-2844 and any other related drawings included in the contract documents.

4.4 Excavation and Backfill

4.4.1 The Contractor shall abide by City, State, and Federal Regulations governing methods of excavation and backfill.

4.4.1.1 Backfilling and making openings safe for traffic shall be completed within five days after the main and/or services have been laid. Reference is made to Paragraph 4.4.22.

4.4.2 Work shall generally be done by open cut and shall be paid according to the items submitted in the Proposal.

4.4.3 Where tunnelling or boring has been agreed to by the Engineer and Contractor, the Contractor shall be paid according to the Proposal items for tunnelling and boring, except as noted in 4.4.3.1.

4.4.3.1 By "Tunnelling" is meant the making of a hole or any cross sectional shape with ordinary hand tools for digging. The tunnel shall not be larger than is necessary to allow the pipe or casing to be installed or to allow minimum construction space. Any such hole 2' or less in length shall be considered as excavation.

4.4.3.2 By "Boring" is meant the making of a cylindrical hole through earth by the use of a special machine or devise designed therefore, and not by use of ordinary hand-digging tools. The hole which is bored shall not be more than 4" greater in diameter than the pipe which is installed.

4.4.4 The Contractor shall limit the length of trench to the minimum required to properly conduct the work, and shall close as much trench as practical at the end of each day. Coated pipe shall not lie exposed in an open trench longer than 24 hours, except with the approval of the Engineer. This length of open trench time shall also conform to City and State regulations.

4.4.5 All excavation and backfill in excess of widths specified in Paragraph 4.4.6 shall be at the Contractor's expense. permission to exceed these trench widths shall be obtained in writing from the Engineer.

4.4.6 Trench widths for various size mains are:

Size of main	Width of Trench (w/o shoring)	Width of Trench with shoring
2" to 8"	18"	26"
12"	22"	30"
16"	26"	34"
20"	30"	38"
24"	34"	42"
30"	40"	48"

4.4.7 Excess and condemned excavation material shall be disposed of by the Contractor at his expense. The proposal price for additional backfill to replace condemned material shall be paid only when earth is trucked from a location other than the work site covered by this project. Condemned material shall be differentiated from contaminated material. Refer to Part 5, Special Speculations 5.6.5 and K-5 for details.

4.4.8 The Contractor shall be paid for cutting, breaking, removing, and disposing of roadway and sidewalk paving for the width of trench as specified in Paragraph 4.4.6. The unit price for roadway paving removal in the proposal shall be applicable for a thickness of 12". Roadway paving removal less than or greater than 12" shall be paid in direct proportion. No additional payments shall be made for roadway paving removal in "cutback" areas as required by the City or State. If base paving removal is required beyond these limits, it will be paid for at prices submitted for roadway removal.

4.4.9 When directed by the Engineer temporary paving shall be placed immediately over any backfilled openings. No payment shall be made for the removal of temporary paving.

4.4.10 Unless otherwise authorized by the Engineer, the Contractor shall remove and preserve sod for replacement. No amount will be paid for sod removal.

4.4.11 No additional amounts will be paid for extra excavation required at joints or welds.

4.4.14.1 Removal of old foundations or underground masses of concrete or shaped stone shall be considered as rock removal or roadway removal as determined by the Engineer.

4.4.14.2 Where the trench must be excavated in fill areas and a substantial amount of rubble, such as brick and loose stone, is encountered, the Contractor may be allowed a trench width in excess of that prescribed in 4.4.6 as determined by the Engineer. Such excess will be paid under the items for normal excavation.

4.4.12 Where excavation consists of condemned material such as ashes, cinders, or rock, the Contractor, at the direction of the Engineer, shall excavate an additional six (6) inches in depth. This six inches extra excavation shall be backfilled with suitable fill and mechanically tamped.

4.4.13 Shoring and sheathing shall be used at the Contractor's discretion in keeping with City, State and Federal Requirements or those of the Engineer.

4.4.14 The unit price for rock excavation and suitable backfill shall apply only to the normal width of trench. Rocks, stones, or boulders within the line of excavation shall not be classed or computed as rock excavation where the cubical content of a single rock, stone, or boulder is less than 1/2 cubic yard. Excavation shall be considered rock excavation only when blasting or paving breakers are required. Rock that is dug by trenching machines or power shovels shall be considered as dirt excavation and will be paid for as part of the cost per foot for main installation.

4.4.14.3 Where the trench must be padded in the areas where extra width is allowed under Paragraph 4.4.14.2, the Contractor will be paid according to what is actually placed in the trench as directed by the Engineer.

4.4.15 The Contractor shall be paid as a separate item in the Proposal for the excavation of frozen ground. Payment shall be made only when the ground is frozen for a depth greater than 6", not including depth of paving. If the ground is frozen for more than 6", payment will be made for the full depth of the frozen ground. Ground will be considered as frozen under this item only when the use of a paving breaker is required. Ground that is dug by trenching machines or power shovels shall be considered as ordinary excavation and shall be paid as part of the cost per foot for main installation.

4.4.16 The trench shall be kept as dry as is practical until the pipe joints are assembled, tested, coated and the pipe is anchored.

4.4.17 The method of backfill shall be acceptable to the Engineer.

4.4.17.1 Backfilling costs shall be included in the Proposal items for main installation.

4.4.18 Backfill shall consist of selected material free from mud, frozen soil, organic material, rubbish, or other objectionable foreign substances. No rock, cinders, or building material shall be used for backfill. When tamping, the backfill shall be placed in layers according to City and/or State regulations, but in no case exceeding 12 inches in depth. Each layer shall be firmly tamped before the next layer is applied. The Contractor shall avoid damage to the gas main or other facilities during backfilling and tamping.

4.4.19 Modified backfill may be required as sub-base due to state highway requirements. If required, the Contractor shall supply and install No. 2 RC aggregate or its equivalent. Modified backfill shall meet the requirements of Pennsylvania Department of Transportation Form 408 specifications in effect as of the date of this proposal.

4.4.19.1 Payment for modified backfill shall be based on cubic yards, Refer to 5.6.6 Where modified is delivered to the jobsite by the ton, it shall be converted to cubic yards by dividing by 1.5.

4.4.20 When sand is used to pad the trench and/or backfill the pipe zone, it shall meet the following specifications:

			U.S. Standard Sieve Analysis
ph	6 to 8	4	100% must pass
Chlorides	less 0.02%	8	99% must pass
Density (Dry & rodded)	95 to 110 lbs./cu. ft.	16	88-97% must pass
Moisture Content	0 to 8%	30	75-83% must pass
Organic Impurities	Must pass ASTM C40-66	50	30-40% must pass
	Organic Impurities Test	100	5-12% must pass
		200	0.5-2% must pass

4.4.21 Additional fill, sand or dirt, shall be furnished by the contractor. This sand or dirt shall be free of cinders, slag, stones, or any foreign matter.

4.4.22 The Contractor agrees to reimburse the Company for all penalties imposed upon the Company for failure to complete the backfill and repaving of openings within the time limits provided, as specified in Item 4.4.1.1 or Item 4.8.8 of the Contract.

4.4.23 Normal excavation is dirt, dirt and cinder, or other material that can be removed by shovel or by machinery.

4.5 Unforeseen Conditions

4.5.1 Unforeseen conditions encountered during the progress of the work are those which are not covered by a specific item in the Proposal, Part 2, Section I. Payment for eliminating the problem encountered shall be made on the basis of prices and rates submitted in the Proposal or according to Paragraph 3A-5 of the Addendum to the General Conditions.

4.6 Installation of Mains

4.6.1 General

4.6.1.1 Pipe shall be ERW API 5L Grade X-70 steel. Pipe shall be supported for the entire length on undisturbed trench bottom at the depth and location shown on drawings. Blocking shall not be used except with the permission of the Engineer. Care shall be taken in unloading and handling pipe. Before the pipe is installed, every defect in the pipe and pipe coating shall be reported to the Engineer. The line shall be kept clear and clean at all times. Installed pipe and appurtenances be shall made watertight at the end of each day, and at all times when the Contractor is not actively working on that pipe. Where valves are required, see Part 5 Special Specifications.

4.6.1.2 In general, the Contractor shall not be permitted to drag pipe. However, in special situations where foreign structures make it extremely impractical to do otherwise, dragging of pipe may be permitted provided it is performed as follows:

a) Obtain permission from the Engineer in each instance, before dragging pipe.

b) Sandpad the entire trench bottom over which the pipe is to be dragged. (Payment will not be made for this sandpadding unless authorized by the Engineer.)

c) Following the dragging operation, rotate the pipe to permit the underside of the pipe coating to be tested for coating faults with an electrical flaw detector. All coating faults shall be repaired at the Contractor's expense.

4.6.1.3 All steel pipe shall be internally hand-brushed and blown clear prior to installation at no additional cost to the Company.

4.6.1.4 Where specified by the Engineer, steel pipe shall be internally cleaned by use of mechanical equipment such as a motor driven Wilson pipe cleaner or its equal. Payment for this mechanical cleaning shall be made according to prices and rates submitted in the Proposal. The cleaning must be completed to a degree acceptable to the Engineer.

4.6.2 Steel Pipe - General

4.6.2.1 Pipe supplied shall be coated and in single or double random lengths. It shall be joined by welding. Welding fittings, provided by the Company, will be standard fittings in accordance with the provisions of the "Standard for Steel Butt Welding Fittings": ANSI B-16.9, latest edition. These welding fittings shall be delivered in the form of standard tees, 45 degree ells, and 90 degree ells. Odd degree bends shall be constructed by cutting and bevelling these standard fittings. No extra will be paid for this work.

4.6.2.2 Welding

All welding, qualifications of welders and the testing and inspection of welds shall be done in accordance with the latest requirements of the Department of Transportation, Office of Pipeline Safety, Part 192, Sub-Part E, "Welding of Steel in Pipelines" using API Standard 1104.

All welding in addition, shall be shielded metal arc welding and shall comply with the Philadelphia Gas Works Revised X-70 Version of "Standard Procedure Specifications, Arc Welding of Gas Pipe and Fittings", GS 20.1 or an acceptable equal.

4.6.2.2.1 All welds shall be radiographically examined by the Company. The Engineer shall approve or reject the welds on the basis of radiographic quality contained in latest edition of API-1104 code. All rejected welds must be repaired by the Contractor, radiographed by the Company at the Contractor's expense.

4.6.2.2.2 The Contractor shall coordinate his work so as to comply with all applicable provisions of Federal State and Municipal Safety Regulations during radiographic examination of welds.

4.6.2.3 Bending of Pipe

4.6.2.3.1 All bent pipe shall conform to Section 192.313 of Part 192 "Minimum Federal Safety Standards" which is quoted in part as follows:

(1) A bend may not impair the serviceability of the pipe.

(2) A bend on pipe that is 12 inches, or more, in nominal diameter must not deflect the pipe more than one and one-half degrees in any length of pipe equal to the diameter.

(3) For pipe more than four inches in nominal diameter, the difference between the maximum ad minimum diameter at a bend may not be more than two and one-half percent of the nominal diameter.

(4) Each circumferential weld of steel pipe that is subjected to stress during bending must be non-destructively tested.

(5) On pipe containing a longitudinal weld, the longitudinal seam must be as near as practicable to the neutral axis of the bend.

4.6.2.3.2 Proper bending equipment is required, and the temperature of the coating must be such, the Engineer's experience indicates that there will be no damage to the coating.

4.6.2.3.3 All mechanically bent pipe shall be hydrostatically tested at 100 psi, and this test shall be held for a period of time sufficient to indicate to the Engineer that the pipe is not leaking. No additional payment shall be made for this testing.

4.6.2.4 Installation of Corrosion Control Devices

4.6.2.4.1 Insulating Flanges

(1) After delivery to the job, insulating flanges shall be protected by the Contractor from all forms of dirt and moisture until finally coated. Wherever possible, they should be stored under cover until the day they are coated.

(2) Insulating flanges shall not be dismantled except at the request of the Engineer.

(3) When welding near an insulating flange, grounding of the welding machine and the welding shall be on the same side of the flange. Never draw an arc across the insulating flange.

(4) During welding the temperature at the outside circumference of the insulating flange shall not become too hot to touch. When this temperature is approached, the welding shall stop until the insulating flange has cooled.

(5) Insulating flanges shall be electrically tested by the Engineer before being approved for backfill.

(6) Test Stations for insulating flanges shall be installed according to Drawing GS 23.7, or similar drawings specified by the Engineer.

4.6.2.4.2 Thermite Welds

(1) Thermite welds shall be tested for bond when completed. The test shall consist of striking the weld with a caulking hammer. Any welds which break loose, shall be rewelded and retested. The charges used for the welds are to be supplied by the Contractor.

(2) Before priming and coating, all portions of the exposed wire, weld metal and adjacent pipe shall be cleaned to a bright metal.

4.6.2.4.3 Electrical Test Stations

Where specified, current test stations shall be installed as shown on Drawing GS 23.6. Test stations shall be installed at the same time as the section of pipe, to which they are attached, is installed.

4.6.2.4.4 Magnesium Anode Installation

Where specified, magnesium anodes shall be installed according to GS 23.1, including with limitations, where applicable, collector wire, test boxes and all appurtenances.

4.6.2.4.5 Impressed Current Anode Installation

Where specified, install Silicon-Iron or Platinum Anodes including test boxes and all appurtenances as shown on Drawing GS 23.4.

4.6.3 Coating of Steel Mains - See Appendix B

4.7 Pressure Test for Leaks

4.7.1 The Contractor shall perform two tests for leaks. The first shall be a hydrostatic test at or above 984 psig. The second test shall be a nitrogen test at approximately 656 psig. Both tests shall be at least eight (8) hours long or a period of time satisfactory to the Engineer. The order of these tests must not change. The hydrostatic test will be paid under K-4. Refer to Part 5, Special Specifications for details. The nitrogen test shall be part of the cost per foot price for installing the pipe. The nitrogen shall be supplied by the Contractor at the Contractor's expense.

4.7.1.1 Both tests shall be performed after the entire underground system to be tested is completed in every detail. the length of the underground system to be tested at any given time shall be determined by the Contractor subject to the Engineer's approval.

4.7.1.2 The pressure tests are to be conducted in the presence of the Engineer. The Contractor shall in advance review with and obtain the Engineer's approval of the method he plans to employ to retain or block exposed pipe ends.

4.7.1.3 Just prior to the nitrogen test, all drips shall be blown clear at 5 psi gauge pressure. Any drips showing evidence of any foreign matter or liquid shall be cleared to the satisfaction of the Engineer.

4.7.1.4 Any defective material discovered by these tests shall be removed and good material substituted.

4.7.2 Nitrogen Pressure Test

4.7.2.1 Nitrogen pressure shall be raised to 656 psi gauge for all X-70 steel pipe. The rise in pressure shall be plotted on the recording gauge chart and when the desired pressure has been reached, the means by which the pressure has been raised shall be disconnected from the system. The time pressure test shall follow and shall be considered as passed when a constant 656 psi gauge for all X-70 steel pipe has been plotted on the recording gauge chart for a period satisfactory to the Engineer but not to exceed 24 hours. The release of pressure shall be plotted on the recording gauge chart. If at any time there is a drop in pressure indicating a leak, the test shall be disconnected until the Contractor locates and corrects the cause of the leak. The time pressure test shall then be repeated.

4.7.2.2 All valves shall be operated after the final time pressure test and then left in the closed position.

4.7.3 Leak Repair

4.7.3.1 Leaks located on any joints made by the Contractor shall be repaired by the Contractor at his expense. Leaks located on material supplied by the Company and found to be defective shall be repaired by the Contractor at the Company's expense.

4.7.4 Safety Requirements

4.7.4.1 The Contractor shall insure that every reasonable precaution is taken to protect his employees and the general public during any of the proceeding pressure tests.

4.7.4.2 The Contractor shall ensure that the test medium is disposed of in a manner that will minimize damage to the environment.

4.8 Paving Restoration

4.8.1 All paving restoration shall be done in accordance with the requirements of the City of Philadelphia's Department of Streets, and where applicable, in accordance with the requirements of Pennsylvania Department of Transportation

4.8.2 Payment for roadway paving restoration shall be based on the area of paving in place less any paving which is in excess of widths specified in paragraph 4.4.8 and which is broken without the Engineer's approval.

4.8.3 Payment for footway paving restoration of the block type shall be for the full width of paving blocks and this payment shall not include removal for blocks which are broken beyond the width specified in paragraph 4.4.6 unless extra width is allowed by the Engineer. The Contractor's unit price should include footway removal to the block seams.

4.8.4 At the discretion of the Engineer, the use of a concrete saw may be required to cut footway, driveway, or roadway concrete.

4.8.5 Payment for footway paving restoration such as brick, shall be for paving restored within the limits of trench widths specified in 4.4.6 unless extra width is allowed by the Engineer.

4.8.6 Payment for brick footway paving restoration shall include sand, 4" concrete base, and where required, new bricks.

4.8.7 No payment shall be allowed for paving restoration of any kind where the paving is broken for the Contractor's convenience or due to his negligence as determined by the Engineer.

4.8.8 Repaving shall be completed, weather permitting, within thirty (30) days after the main and/or services have been laid. Refer to Paragraphs 4.4.22 and 4.8.9.

4.8.9 Trenches not ready for paving 90 days following completion of the contractors main and/or service installation, because of proposed construction by other utilities or agencies, shall be maintained by the Company until released for paving by the Company. The contractor shall be released from liability after the initial 90 day period.

4.9 Sod Restoration

4.9.1 Preserved sod, as specified in paragraph 4.4.10, shall be replaced by the Contractor unless seeding has been approved by the Engineer.

4.9.2 Payment for sodding or seeding shall be made according to prices submitted in the Proposal, and shall be for the trench area within widths specified in Paragraph 4.4.6 unless extra width is allowed by the Engineer.

4.10 Connections to Gas System

4.10.1 The Company shall make all connections to its gas system and place the lines in service.

4.11 Maintenance of Traffic and Access to Property

4.11.1 The Contractor shall follow the maintenance of traffic specifications noted on the construction drawing for each job. Securing lane closure permits is the responsibility of the contractor not PGW. See 1.12.2 of the General Conditions.

4.11.2 Refer to 5.5.13 and Drawing B-2844 for work on Federal Aid to Municipalities (FAM) Routes.

4.11.3 Traffic of all kinds shall be maintained continuously. Suitable bridges shall be built to maintain access to buildings at all times, except where otherwise permitted by the Engineer. Where necessary, proper access to public transportation shall be maintained. Gutters and inlets shall not he obstructed. When access to any adjacent property is temporarily cut off by the Contractor, he shall render assistance to the occupant in handling materials that must be delivered to or removed for such property. No additional payment shall be allowed for the various items of expense noted above, unless otherwise provided for in the proposal.

4.12 Blasting

4.12.1 With the approval of the Engineer, blasting may be used where permitted by the City. Damage to property and other underground structures shall be avoided. Any damage to property and other underground structures shall be the responsibility of the Contractor.

4.13 Protection and Support of Foreign Structures

4.13.1 Care shall be taken in protecting all underground structures and vegetation exposed by or adjacent to the work. The Contractor shall be responsible for damage to these structures and vegetation.

4.13.1.1 Temporary support of foreign structures shall be provided by the Contractor at his expense.

4.13.1.2 Unless otherwise specified, permanent supports for foreign structures shall be provided by the Contractor as directed by the Engineer. Such direction by the Engineer shall not relieve the Contractor for responsibility for any damage. Such supports shall be paid for as a contingency.

4.14 Protection of Trees

4.14.1 Prior to excavation in the vicinity of any public tree-planting area, the Contractor shall notify Ms. Pat Crossan, Park Manager, of the Fairmount Park Commission at 685-0014, between the hours of 8:00 a.m. through 4:30 pm. In the case of an emergency after normal working hours, an arborist can be reached by calling 686-4514.

4.14.2 The Contractor shall be responsible to feed and prune all trees where the pipe trench passes within the periphery of the tree limbs. The work shall be done by a qualified tree surgeon approved by the Fairmount Park Commission. The Contractor shall be paid for this work as a contingency.

4.15 Items Furnished by Company

4.15.1 The Company shall furnish all pipe, fittings, valves, valve boxes, and all other material needed for the pipeline proper.

4.15.2 Materials furnished by the Company shall be hauled to the site by the Company and the Contractor shall unload them at such point as it may select. After these materials are unloaded and inspected, the Contractor shall be responsible for their safekeeping and proper use. Any material furnished by the Company which is found defective in manufacture will be replaced by the Company. If such defective material has already been installed, the Contractor will replace it at the Company's expense, except as provided in paragraph 4.17.1.

4.15.3 Material ordered by the Contractor during normal working hours on any given day will be delivered to the jobsite before the close of the following normal work day.

4.15.3.1 When the Contractor requires material in less time than specified in 4.15.3, it may, upon proper authorization, pick up such material from the applicable Company storage location.

4.16 Items Furnished by the Contractor

4.16.1 The Contractor shall furnish all labor, material, (except the material to be furnished by the Company in accordance with Paragraph 4.15.1), tools, and equipment to complete the construction of the work. Items to be furnished by the Contractor shall include: all labor, mechanical equipment with tools, fuel and supplies for same, shoring material, temporary paving where required, temporary bridges, warning signs, safety devices, welding rods, thermite charges and equipment, temporary fencing, concrete and forms for manholes and paving and all paving materials.

4.17 Inspection of Materials and Responsibility Therefore

4.17.1 All material shall be checked for both quantity and condition upon receipt from the Company by both the Engineer and the Contractor. A written record on the Company's prescribed form shall determine the amount of materials delivered to the Contractor by the Company. Should defective material be delivered and the Contractor fails to inspect the material before installation, it shall be liable to replace it without added cost to the Company, if the Company determines that reasonable inspection should have detected the defect.

4.17.2 Material issued in excess of the particular job requirements remain Philadelphia Gas Works' property. At the completion of the work, it shall be promptly returned by the Contractor. The inspector will initiate the proper record of transfer on the prescribed form and furnish a copy of the completed form to the contractor for his record.

4.17.3 The Contractor shall be solely responsible for the materials after they have been signed for by its representative. Any material lost, stolen, or damaged shall be chargeable to the Contractor at prevailing Company inventory costs. The Contractor shall be held accountable for unused material.

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INDEX TO PART 5
SPECIAL SPECIFICATIONS

PHILADELPHIA GAS WORKS

PART 5

SPECIAL SPECIFICATIONS

5.1 Scope of Work

5.1.1 The work to be done under this project shall include the installation of a 16" steel distribution pipeline and all appurtenances as shown on Drawing No. B-2844.

5.2 Materials

5.2.1 The Company will supply all material under the list of materials shown on Drawing No. B-2844.

5.2.1.1 The various sizes of pipe will be of the lengths and weights as specified on the materials listing.

5.2.1.2 Welding fittings, provided by the Company, will be standard fittings manufactured in Northern America in accordance with the provisions of the ANSI B16.9 Standard for "Factory Made Wrought Steel Butt Welding Fittings, latest edition".

5.3 Debris Removal

5.3.1 The Contractor shall remove debris from the installation area at no cost to the Company.

5.4 Prevalence of Specifications

5.4.1 In case of difference between the Special Specifications and other parts of the contract documents, the requirements of the Special Specifications shall prevail.

5.5 Maintenance of Traffic

5.5.1 Notify Mr. Vincent DeFlavia, Traffic Coordinator, at 686-5524, five (5) working days before starting work.

5.5.2 Excavated material is to be stored on curb side of trench.

5.5.3 During non-working hours, the Contractor shall store all equipment and materials so as not to restrict traffic.

5.5.4 The Contractor shall barricade all trenches left open during non-working hours to assure public safety. Open trenches shall be kept to a minimum.

5.5.5 During non-working hours, the Contractor shall deck with steel plates all roadway crossing trenches.

5.5.6 During non-working hours, the Contractor shall deck with suitable lumber all footway trenches.

5.5.7 During working hours, the Contractor shall provide access for business and residential traffic at all intersecting streets. Normal working hours are 7:00 a.m. to 3:30 p.m., except for FAM routes. Refer to 5.5.13.

5.5.8 During working hours on this project the Contractor shall maintain one (1) 10' wide traffic lane in each direction.

5.5.9 During non-working hours, the Contractor shall deck with steel plates or backfill all roadway excavations.

5.5.10 Inside the plant, west of 28th Street, near Tank 304, may be used to store equipment, materials and debris. Also, 34th Street, south of Maiden Lane and 29th Street, south of Grays Ferry Avenue are available for storage of equipment, materials and debris.

5.5.11 The Contractor shall use traffic control devices and practices as specified in PENNDOT Publication #203, Latest Revision, to effect this Maintenance of Traffic Specification.

5.5.12 Any work which dictates full closure of any thoroughfare shall be done between the hours of 7:00 p.m. and 6:00 a.m. and an approved detour route must be in effect.

5.5.13 Grays Ferry Avenue and Vare Avenue are Federal Aid to Municipalities (FAM) Routes. Road work shall be planned so that no travel lane is restricted or blocked during the morning peak ours of 6:30 a.m. to 9:00 a.m. nor during the even peak hours of 4:00 p.m. to 6:30 p.m. If a lane must be restricted during these hours, a permit shall be obtained from the Philadelphia Department of Streets, Traffic Engineering Division.

5.6 Special K-Items

5.6.1 Corrosion Protection System

1. Installation shall include paving removal, normal excavation and shoring, if required, as shown on Drawing B-2844. Payment for paving removal, excavation and shoring shall be included in the lump sum of Item K-1, Section 1 of the Proposal. Where rock excavation is required, the Contractor will be paid the unit price for rock as quoted in the Proposal. However, the final quantity of normal excavation, Item B-1, will be reduced by an amount equal to that quantity of rock excavation.

2. Protective Coating

   a. The protective coating for this pipe should be in accordance with PGW Standard Specification, Refer to Appendix B

   b. The field coating of welds, valves, etc., should be done in accordance with PGW Standard Specifications, Refer to Appendix B.

3. Insulating Joints

   a. Install three (3), 16-inch insulting flanges, complete with PGW Standard Test Stations GS 23.7; Refer to Drawing B-2844.

4. Current Measuring Test Stations

   a. Install seven (7) PGW Standard Test Stations GS 23.6; Refer to Drawing B-2844.

   b. Install six (6) PGW Standard Test Stations (1/2 GS 23.6); Refer to Drawing B-2844.

5. Electrolysis Bond Stations

   a. Install five (5), 5-wire test stations, two on PGW structure, two on foreign structure and one electrode, Refer to Drawing B-2844.

5.6.1 Corrosion Protection System - Cont'd

6. Impressed Current Anodes

   a. Install two (2) impressed current anode beds per PGW Standard GS 23.4; Refer to Drawing B-2844.

7. Magnesium Anode Ground Bed

   a. Install one (1) Magnesium Anode Ground Bed per PGW Standard GS 23.1; Refer to Drawing B-2844.

8. General

   a. General corrosion control features, such as "lily pads", clean backfill, etc., should be included in the specifications for this main.

   b. Any deviation of these specifications must be approved by the corrosion Engineer.

5.6.2 16" Weld End Valve in Manhole (Southern Terminus)

1. The manholes shown on Drawing B-2844 will be furnished by the Company, pre-fabricated in two (2) sections and ready for installation. The manholes will be delivered to the jobsite and set in place by the fabricator. The Contractor will furnish assistance in placing the manhole. If the fabricator can not install the top section of the manhole when delivered, installation shall be the Contractor's responsibility.

2. The Contractor shall furnish the labor and material necessary in setting the throat for each manhole frame, in bricking knockout openings, and if required, in altering ladder length. Cement splash shall face off the entire throat to prevent weather seepage. Grates over the sump must be loose and not cemented in.

3. In order to assure prompt manhole delivery, the Contractor shall request delivery 72 hours in advance. The Contractor shall be ready for the scheduled delivery. He shall be liable for any costs incurred by PGW as a result of his lack of action.

4. The Contractor shall adhere to the following specifications during installation of pre-fabricated manholes:

a. If the Engineer determines that the sub-base is unstable, remove a minimum of 6" of fill below the grade. Replace and compact with 2A modified stone. Bottom shall be level and free of stones, rubble or debris.

b. All joints shall be free of dust, dirt and foreign matter prior to placing mastic sealer in joints.

c. Care shall be used in handling so as not to drop or chip the sections.

d. Eyelet on floor of manhole shall be burned off at floor level.

e. Ladder bars shall be placed at 12" center starting from surface level. They shall be plumb from top to bottom.

5. Installation shall include paving removal where necessary, excavating and shoring as directed by the Engineer, as shown on Drawing B-2844.

6. The installation of a 4" blow-off assembly will be required with this valve (Southern Terminus only). Approximately 50' of 4" pipe is included in this item. Refer to Drawing B-2844 for details.

5.6.3 <u>16" Weld End Valve in Manhole (Northern Terminus)</u>

Refer to previous section 5.6.2 above except for 4" blow-off assembly which is not needed at this Northern Terminus location.

5.6.4 <u>Hydrostatic Test</u>

The Contractor shall provide a plan, subject to approval by PGW, to hydrostically test the new pipeline at 984 psig. The Contractor shall provide all material and labor to successfully complete the above test.

5.6.5 Contaminated Soil

All contaminated soil which is excavated from trench for installation of the pipeline shall be removed and properly disposed of by the Contractor. The soil inside Trigen's property is known to be of this type. Refer to attached memo labeled Appendix D. Excavation, removal and disposal of this type of soil shall be covered by this item. Clean fill, only if trucked in from another site, shall be paid by Item G-1 in Part 2, Section 1.

5.6.6 Modified 2 RC Aggregate

The use of No. 2 RC Aggregate modified or equal is required on this project as directed by the Engineer. The Contractor shall supply and install modified as required. This unit cost shall be paid under Item K-6 in Section 1 of the proposal.

5.6.7 Fabrication and Installation of Above Ground 16" X-70 Piping

This item shall include the above ground piping beginning at the insulating flange shown. Refer to Drawing B-2844, Sheet 52 for details.

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INDEX TO PART 6

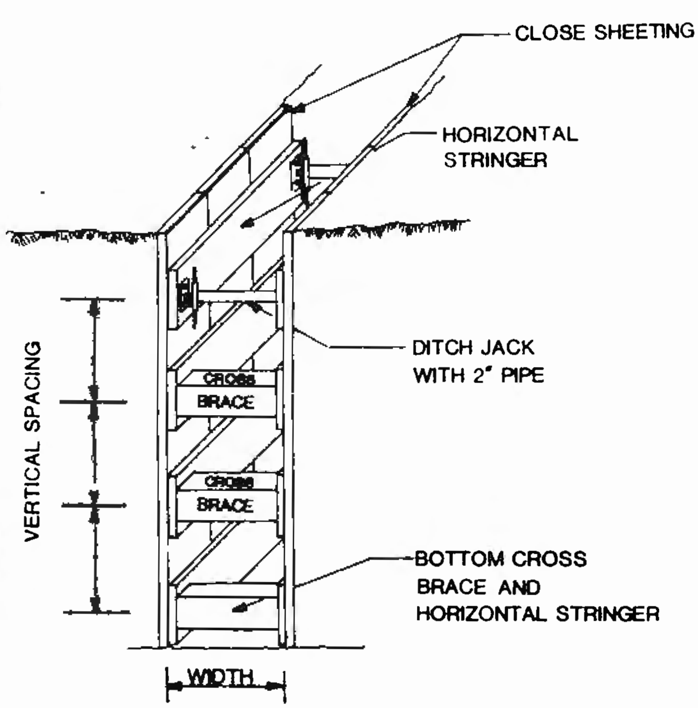
DRAWINGS AND STANDARDS

B-2844	16" steel high pressure gas main Trigen Cogeneration Project 28th and Vare/Porter to 26th and Grays Ferry
GS 15.0	Shoring
GS 20.1X	X-70 Version of "Welding Procedure"
GS 23.1	Magnesium Anode Installation
GS 23.3	Insulation Spacer Installation
GS 23.4	Impressed Current Anode Bed Installation
GS 23.6	Standard Electrolysis Current Test Station
GS 23.7	One box four Wire Test Station
GS 23.9	Type A-A Test Station for Insulating Joint
PA DOT	State Highway Paving Requirements

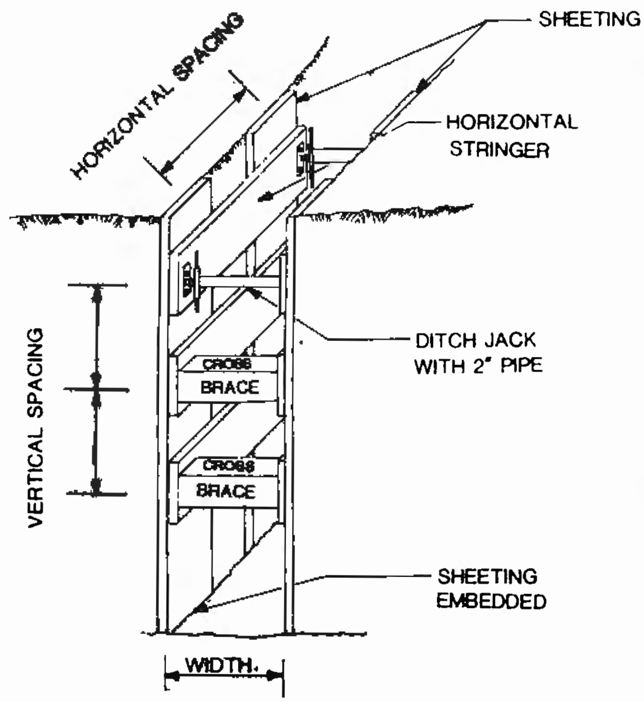
DISTRIBUTION STANDARD

S H O R I N G

SOLID SHORING



SHORING



NOTE: This Distribution Standard is a guide to aid you in maintaining a safe excavation. When you encounter a shoring situation that cannot be answered by the table, contact your supervisor. Always favor safety.

INSTRUCTIONS

1. Shore all trenches 4' deep or deeper and where required by loose or saturated soil conditions.

2. Use sound, straight grained timber free of splits and large loose knots for shoring, sheeting, and bracing.

3. Hold stringers in place with ditch jacks and pipe and with cross braces cleated and wedged into place.

4. Pipe used as a cross brace in trenches up to 42" wide shall be a minimum of 2" in diameter. In trenches greater than 42" wide, pipe shall be of equal strength and stiffness to the timber specified in the table.

5. Ditch jacks shall be fastened to sheeting or stringers with nails.

LATEST REVISION								
NO	DESCRIPTION	APPD	APPD	DATE	DRAWN BY SPINO	DATE 11-16-90	PHILADELPHIA GAS WORKS	DWG NO
					CHECKED BY RJK.	11-16-90		GS 15.0
					APPROVED MHJ	11-16-90		
					APPROVED [illegible]	11-16-90	PHILADELPHIA, PA.	

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6. Cleats shall be used to join the ends of braces to stringers, and to support stringers and cross braces. Cleats shall be a minimum of 1" thick and shall have the same width as the cross braces.

7. 6" x 6" and larger cross braces require 2" thick cleats the same width as the cross braces to which they are fastened. Cleats shall be securely fastened with nails.

8. When stringers and cross braces are the same size, fasten them to each other with nails.

9. Store tools, equipment, pipe and excavated material, a minimum of 24" from the sides of the trench.

10. Provide a ladder for each 25' of trench. The ladder shall extend from the trench bottom to a minimum of 3' above grade.

MATERIALS

COMMON WIRE NAIL	**CODE**
60 d	10-56-2622
40 d	10-56-2621
30 d	10-56-2620

LUMBER

2" x 10" Random Length 8' - 16'	20-61-2530
2" x 12" Random Length 8' - 16'	20-61-2539
6" x 6" Random Length 8' - 16'	20-61-3412
2" x 4" Random Length 8' - 16'	20-61-2513
Ditch Jack (Extensible Trench Brace)	10-58-0617
2" Black Steel Pipe	10-11-0901

DISTRIBUTION STANDARD

SHORING

WIDTH UP TO 42"

		SHEETING		HORIZONTAL STRINGERS		CROSS BRACES		
	DEPTH	SIZE	HORIZONTAL SPACING	SIZE	VERTICAL SPACING	SIZE	HORIZONTAL SPACING	VERTICAL SPACING
HARD SOIL	4'- 10'	2" X 12"	6'	NOT REQUIRED		6" X 6"	6'	4'
	10'- 15'	4" X 10"	6'	NOT REQUIRED		6" X 6"	6'	4'
	15'- 20'	3" X 12"	CLOSE	6" X 8"	4'	6" X 6"	6'	4'
SOIL LIKELY TO CRACK	4'- 10'	2" X 12"	3'	2" X 12"	4'	6" X 6"	6'	4'
	10'- 15'	4" X 10"	2'	8" X 8"	4'	6" X 6"	6'	4'
	15'- 20'	4" X 12"	CLOSE	8" X 10"	4'	8" X 8"	6'	4'
SOFT SANDY SOIL OR FILLED GROUND	4'- 10'	2" X 12"	CLOSE	6" X 6"	4'	6" X 6"	6'	4'
	10'- 15'	3" X 12"	CLOSE	8" X 10"	4'	6" X 8"	6'	4'
	15'- 20'	3" X 12"	CLOSE	10" X 12"	4'	8" X 8"	6'	4'

WIDTH GREATER THAN 42" AND LESS THAN 108"

		SHEETING		HORIZONTAL STRINGERS		CROSS BRACES		
	DEPTH	SIZE	HORIZONTAL SPACING	SIZE	VERTICAL SPACING	SIZE	HORIZONTAL SPACING	VERTICAL SPACING
HARD SOIL	4'- 10'	2" X 12"	6'	6" X 6"	4'	6" X 6"	6'	4'
	10'- 15'	3" X 12"	CLOSE	6" X 6"	4'	6" X 6"	6'	4'
	15'- 20'	3" X 12"	CLOSE	8" X 8"	4'	8" X 8"	6'	4'
SOIL LIKELY TO CRACK	4'- 10'	2" X 12"	4'	6" X 6"	4'	6" X 6"	6'	4'
	10'- 15'	3" X 12"	CLOSE	8" X 8"	4'	6" X 6"	6'	4'
	15'- 20'	4" X 12"	CLOSE	8" X 10"	4'	8" X 8"	6'	4'
SOFT SANDY SOIL OR FILLED GROUND	4'- 10'	2" X 12"	CLOSE	6" X 6"	4'	6" X 6"	6'	4'
	10'- 15'	4" X 12"	CLOSE	10" X 10"	4'	6" X 8"	6'	4'
	15'- 20'	4" X 12"	CLOSE	10" X 12"	4'	8" X 8"	6'	4'

ALL TRENCH WIDTHS

		SHEETING		HORIZONTAL STRINGERS		CROSS BRACES		
	DEPTH	SIZE	HORIZONTAL SPACING	SIZE	VERTICAL SPACING	SIZE	HORIZONTAL SPACING	VERTICAL SPACING
SATURATED OR SUBMERGED SOIL	0'- 8'	2" X 12"	CLOSE TONGUE AND GROOVE	8" X 8"	4'	8" X 8"	6'	4'
	8'- 15'	3" X 12"	CLOSE TONGUE AND GROOVE	8" X 10"	4'	8" X 10"	6'	4'

NOTES:

1. ALL SPACING IS CENTER TO CENTER.
2. INSTALL HORIZONTAL STRINGERS WITH GREATER DIMENSION HORIZONTAL.
3. TOP CROSS BRACE AND HORIZONTAL STRINGERS WHEN REQUIRED SHALL BE NO MORE THAN 2' BELOW TOP OF TRENCH.
4. EMBED SHEETING WHEN DISTANCE FROM BOTTOM OF TRENCH TO BOTTOM CROSS BRACE IS 2'6" OR LESS.
5. INSTALL BOTTOM CROSS BRACE AND HORIZONTAL STRINGERS WHEN DISTANCE FROM BOTTOM OF TRENCH TO BOTTOM CROSS BRACE IS GREATER THAN 2'6".
6. WHEN 12" SHEETING IS NOT AVAILABLE USE 10", 8", OR 6" SHEETING.
7. DITCH JACKS WITH 2" STEEL PIPE MAY BE SUBSTITUTED FOR CROSS BRACES FOR WIDTHS UP TO 42".
8. TRENCHES DEEPER THAN 20' REQUIRE SPECIAL SHORING. CONTACT YOUR SUPERVISOR.

LATEST REVISION						
NO	DESCRIPTION	APPD	APPD	DATE		
					DRAWN BY SPINO	DATE 11-16-90
					CHECKED BY RJK	11-16-90
					APPROVED MJHS	11-16-90
					APPROVED K...	11-16-90

PHILADELPHIA GAS WORKS

PHILADELPHIA, PA.

DWG NO GS 15.0

134737

X-70 VERSION OF DISTRIBUTION STANDARD
STANDARD PROCEDURE SPECIFICATION
FOR ARC WELDING OF GAS PIPE AND FITTINGS

A. Process: Shielded Metal Arc Welding

B. Equipment: Equipment shall be of a size suitable for the job and shall be maintained in such condition as to insure acceptable welds.

C. Number of Welders: For less than 16" diameter pipe, one (1) welder is required. For 16" diameter and larger pipe, two (2) welders are required to the root pass; one (1) welder may weld other passes. Only one welder required for threadolets, all main sizes.

D. Base Material: Base metal shall be carbon steel confirming to:

a. API 5L, butt welded, 2" diameter to 4" diameter.
b. API 5L, Grade B, seamless or electric resistance welded, 6" diameter to 16" diameter.
c. API 5L, Grade B, seamless, or API 5LX, Grade X42, seamless or double submerged arc welded, 20" diameter and 24" diameter.
d. API 5LX, Grade X42, double sub-merged arc welded, 30" diameter and 36" diameter.
e. ASTM A-181, Grade II (slip-on flanges).
f. ASTM A-105 (threadolets).
g. API 5L, Grade X70 ERW.

E. Filler Metal: Fast-freeze mild steel and alloy electrodes. AWS Class 6010. For API 5L, Grade X70 root pass, E6010 5P+, filler and cap E7010-G HYP.

F. Direction of Welding and Pipe Orientation: Vertical down techniques, (where applicable), pipe in horizontal position.

G. Backing Strip: Welded joints shall not use backing strips unless specified by Engineer.

LATEST REVISION					DRAWN BY	DATE	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY			GS 20.1X
	X-70 VERSION			5-17-96	APPROVED SAJC	5-17-96	PHILADELPHIA, PA.	
					APPROVED			

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X-70 VERSION OF DISTRIBUTION STANDARD
STANDARD PROCEDURE SPECIFICATION
FOR ARC WELDING OF GAS PIPE AND FITTINGS

H.	Line Up Clamp:	External type can be used while tacking. For API 5L, Grade X70: Do not remove line-up clamp until root pass is completed.
I.	Number of Passes and Joint Design:	See Sheet 3 of 6 for less than 2 3/8" diameter pipe. See Sheet 4 of 6 for 2 3/8" to 12 3/4" diameter pipe. See Sheet 5 of 6 for over 12 3/4" diameter pipe. See Sheet 6 of 6 for fillet welds, all sizes.
J.	Time Lapse Between Passes:	Five minute maximum between root and second pass. For API 5L, Grade X70: Once welds are started, they shall be continued until their completion or preheated to 300 degrees F. before welding resumes.
K.	Cleaning:	All slag or other foreign material shall be completely removed after each pass by power or manual chipping, grinding or wire brushing.
L.	Safety:	Safety precautions must be observed at all times.
M.	Preheat:	None required for GR-B X42 unless the temperature of the work area is below 40 degrees F. Then, filling shall be heated to remove moisture. For X60 and higher grades, preheat to 300 degrees, when the ambient temperature is 70 degrees or below, or the pipe is wet or moist, or when the Carbon Content (CE) is higher than 0.44, or when weld repair is required. Preheat shall be accomplished for a minimum distance of three (3) inches on either side of the joint or repair.

LATEST REVISION					DRAWN BY	DATE	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY			GS
					APPROVED SAJC	5-17-96		20.1X
					APPROVED		PHILADELPHIA, PA.	

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M. Preheat - Cont'd: Use equation below to calculate CE, where:

Mn is % manganese content
Cr is % chromium content
Mo is % molybedenum content
V is % vanadium content
Ni is % nickel content
Cu is % copper content

$$CE = \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

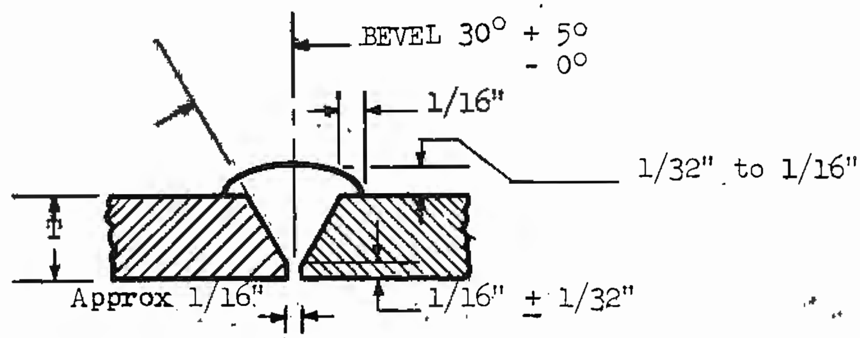
N. Postheat: None required.

O. Arc Strikes: Remove all visible evidence of the arc strike by grinding. Swab the area with a 20% solution of ammonium persulfate, check the area for metallurgical notch. The metallurgical notch will appear as a blackened area where the arc strike was swabbed with ammonium persulfate. After notch removal, verify the remaining wall thickness is not less than 87.5% of the nominal wall specified wall thickness.

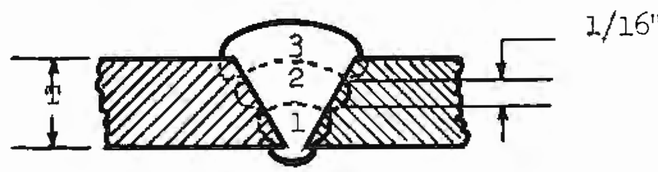
P. Hardness: Weld hardness shall not exceed Rockwell C-22 or equivalent.

DISTRIBUTION STANDARD

"V" BEVEL BUTT JOINT DESIGN FOR LESS THAN 2 3/8" DIAMETER PIPE



STANDARD "V" BEVEL BUTT JOINT



SEQUENCE OF PASSES

SIZE NOMINAL	PIPE WALL THICKNESS	NUMBER OF PASSES 3/32" Electrode	MIN. NUMBER OF PASSES
1 1/4"	0.140"	3	3
1 1/2"	0.145"	3	3

NOTE: ALL PASSES - 3/32" ELECTRODE

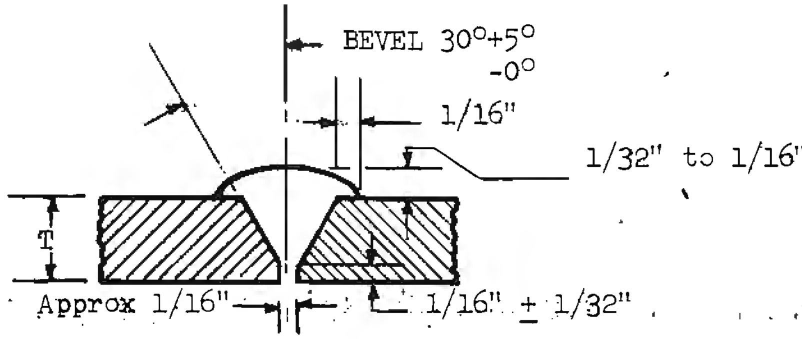
VOLTAGE & AMPERAGE RANGE

ELECTRODE DIAMETER	AMPERAGE	ARC VOLTS
3/32"	70 to 85	18 to 19

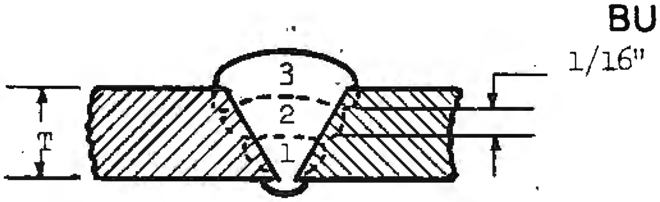
LATEST REVISION							
NO	DESCRIPTION	APPD	APPD	DATE	DRAWN BY E.H.R.	DATE 5-20-73	PHILADELPHIA GAS WORKS
4	ADDED MIN PASSES	WL	JM	1-15-86	CHECKED BY R.K.	5-20-73	Distribution Department
					APPROVED JWM	6-6-73	PHILADELPHIA, PA.
					APPROVED [illegible]	[illegible]	DWG NO GS 20.1X Spec. 141

DISTRIBUTION STANDARD

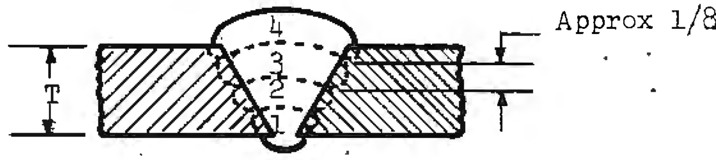
"V" BEVEL BUTT JOINT DESIGN FOR 2 3/8" TO 12 3/4" DIAMETER PIPE



STANDARD "V" BEVEL BUTT JOINT



SEQUENCE OF PASSES



SEQUENCE OF PASSES

SIZE NOMINAL	PIPE WALL THICKNESS	NUMBER OF PASSES 3/32" Electrode	5/32" Electrode	3/16" Electrode	1/8" Electrode	MIN. NUMBER OF PASSES
2"	0.154"	3				3
2½"	0.203"	3				3
3"	0.216"				3	3
4"	0.237"		1		2	3
6"	0.280"		3		1	4
8"	0.322"		3		1	4
12"	0.375"		1	3		4

NOTE:

2" & 2 1/2"	ALL PASSES 3/32" ELECTRODE
3"	ALL PASSES 1/8" ELECTRODE
4"	FIRST PAS 1/8" ELECTRODE, REMAINING PASSES 5/32" ELECTRODE
6" & 8"	FIRST PASS 1/8" ELECTRODE, REMAINING PASSES 5/32" ELECTRODE
12"	FIRST PASS 5/32" ELECTRODE, REMAINING PASSES 3/16" ELECTRODE

VOLTAGE & AMPERAGE RANGE

ELECTRODE DIAMETER	AMPERAGE	ARC VOLTS
3/32"	70 to 85	18 to 19
1/8"	80 to 95	19 to 22
5/32"	100 to 125	22 to 28
3/16"	150 to 180	25 to 35

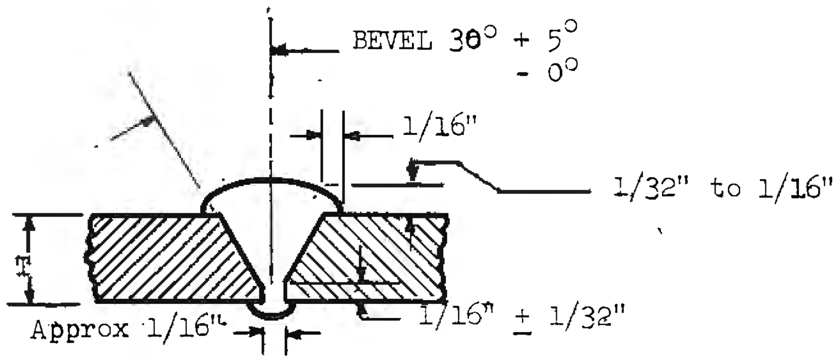
LATEST REVISION					DRAWN BY	E.H.R.	5-20-73
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY	RK	5-20-73
4	ADDED MIN. PASSES	[illegible]	[illegible]	1-15 86	APPROVED	JWM	6-6-73
					APPROVED	[illegible]	[illegible]

PHILADELPHIA GAS WORKS
Distribution Department
PHILADELPHIA, PA.

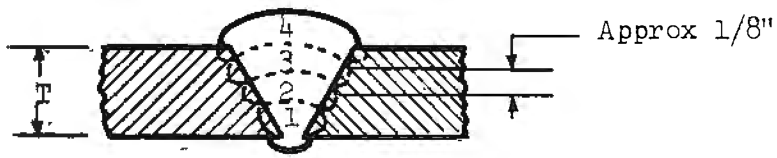
DWG NO GS 20.1 X
Spec. 141

DISTRIBUTION STANDARD

"V" BEVEL BUTT JOINT DESIGN OVER 12 3/4" DIAMETER PIPE



STANDARD "V" BEVEL BUTT JOINT



SEQUENCE OF PASSES

SIZE NOMINAL	PIPE WALL THICKNESS	NUMBER OF PASSES 3/16" Electrode	5/32" Electrode	MIN. NUMBER OF PASSES
16"	0.375"	3	1	4
20"	0.375"	3	1	4
24"	0.375"	3	1	4
30"	0.375"	3	1	4
36"	0.375"	3	1	4

NOTE: FIRST PASS 5/32" Electrode
SECOND OR HOT PASS MAY BE MADE WITH 5/32" Electrode
REMAINING PASSES USE 3/16" Electrode
COVER BEAD MAY BE MADE WITH 5/32" Electrode *

VOLTAGE & AMPERAGE RANGE

ELECTRODE DIAMETER	AMPERAGE	ARC VOLTS
5/32"	125 to 145	22 to 28
3/16"	150 to 180	25 to 35

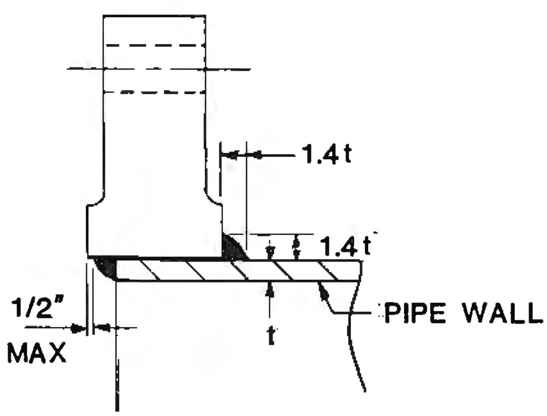
* X-70 pipe shall have the first pass made with E6010 5P+ and all subsequent passes with E7010-G HYP.

LATEST REVISION					DRAWN BY	EHR	DATE 5-20-73	PHILADELPHIA GAS WORKS Distribution Department PHILADELPHIA, PA.	DWG NO GS 20.1X Spec. 141
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY	RK	5-20-73		
4	ADDED MIN PASSES	W/L	JM	1-15-86	APPROVED	JWM	6-6-73		
					APPROVED	[illegible]	[illegible]		

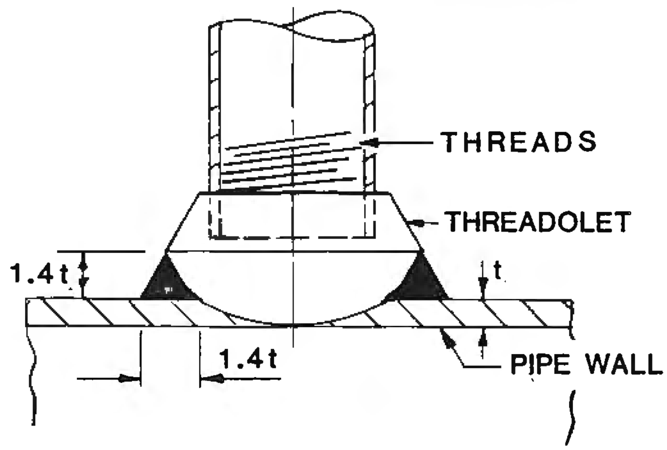
SATC 5-17-96

DISTRIBUTION STANDARD

FILLET WELD JOINT DESIGN



SLIP-ON WELDING FLANGE



THREADOLET TO PIPE

Electrode Size and Number of Passes					
Pipe		Electrode Size (In.)			Min. Number of Passes
Size	Wall	1st pass	2nd pass	3rd pass	
1¼"	0.140"	1/8	1/8	1/8	3
1½"	0.145"	1/8	1/8	1/8	3
2"	0.154"	1/8	1/8	1/8	3
3"	0.216"	5/32	5/32	5/32	3
4"	0.237"	5/32	5/32	5/32	3
6"	0.280"	5/32	3/16	3/16	3
8"	0.322"	5/32	3/16	3/16	3
10"	0.365"	5/32	3/16	3/16	3
12-36"	0.375"	5/32	3/16	3/16	3

Voltage and Amperage Range		
Electrode Size (In.)	Current (Amps)	Arc Volts
3/32	70 to 85	18 to 19
1/8	80 to 95	19 to 22
5/32	100 to 125	22 to 28
3/16	150 to 180	25 to 35

LATEST REVISION						
NO	DESCRIPTION	APPD	APPD	DATE		
1	ADDED MIN PASSES	WL	JM	1-15-86		

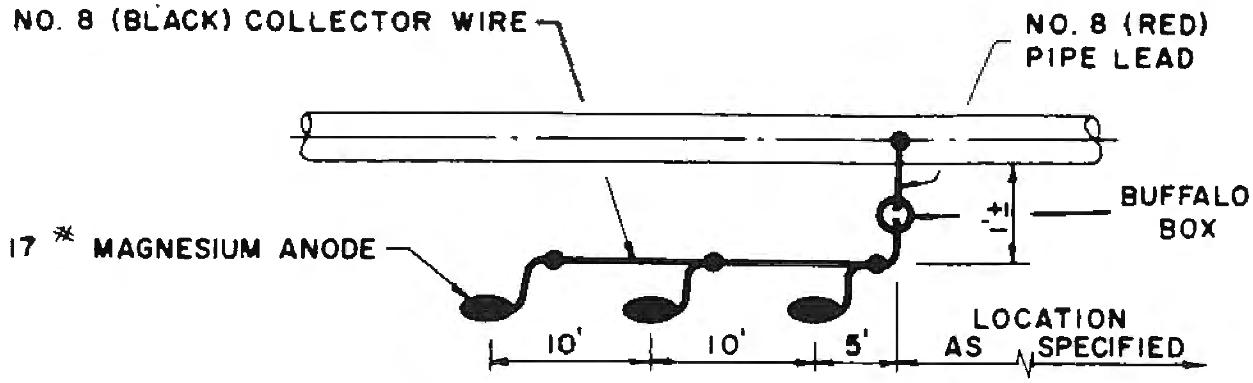
DRAWN BY	RB	DATE 7-18-83
CHECKED BY	RK	7-18-83
APPROVED	J Z	7-19-83
APPROVED	[illegible]	9-21-83

PHILADELPHIA GAS WORKS
Distribution Department
PHILADELPHIA, PA

DWG NO GS 20..

TELEDYNE POST N53782

DISTRIBUTION STANDARD
TYPICAL MAGNESIUM ANODE INSTALLATION



PLAN VIEW

Instructions:

1. Install specified number of 17# magnesium anodes on 10 ft. centers 18" below bottom of pipe and between sides of pipe trench. Anodes are to be backfilled with material removed from ditch. No. sand. Wet anode prior to backfill.
2. Splice anodes to collector wire (black):
   - A. Remove insulation from section of collector wire. Do not nick wire.
   - B. Remove insulation from end of anode wire and wrap around collector wire.
   - C. Solder anode wire to collector wire using resin core solder or uncored solder and resin flux. No acid fluxes are to be used.
   - D. Clean excess flux and solder from connection.
   - E. Wrap joint with three (3) layers of splicing compound (rubber tape) using 50% overlap.
   - F. Wrap joint with two (2) layers of ¾ or 1 inch vinyl electrical tape using 50% overlap.
3. Thermite weld #8 wire (red) to pipe.
4. Test weld by striking it with a three (3) pound (caulking) hammer.
5. Clean loose weld splatter, slag, and other foreign material from the weld area.
6. Prime and coat the weld area with 747 primer and install handy-cap.
7. Terminate red and black wires in Buffalo box. Leave 2' slack in box for each wire.
8. Locate Buffalo box over main where practical, preferably in footway paving. Consideration should be given to access for testing.

Notes:

1. Collector wire to have black insulation.
2. Pipe lead to have red insulation.
3. Use 17# magnesium anodes unless otherwise specified.
4. Use No. 25 cartridge in mold.

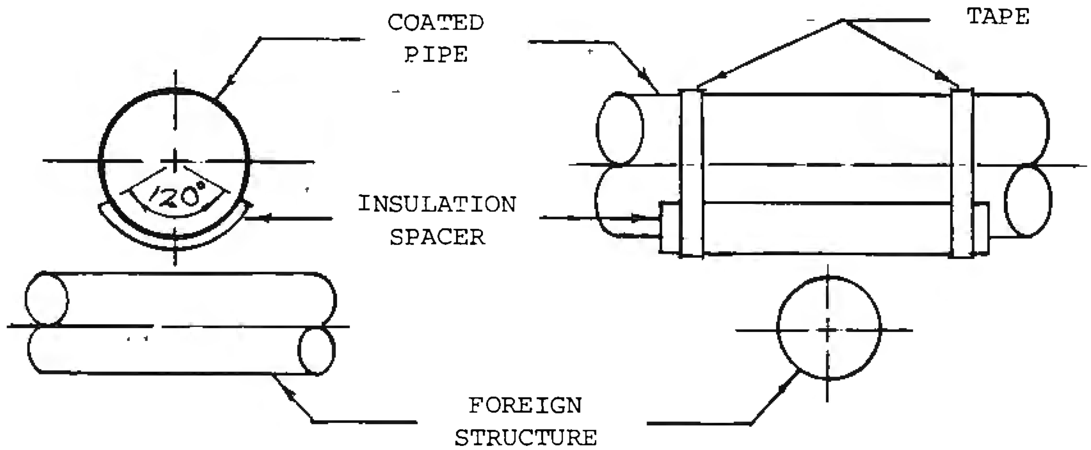
Materials:

1. 17 pound magnesium anodes. (Code 57-4916)
2. Splicing compound (rubber tape). (Code 57-4572)
3. Plastic electrical tape, ¾ inch. (Code 54-4566)
   1 inch. (Code 57-4550)
4. No. 8 wire. Red (Code 57-0917)
   Black (Code 57-0540)
5. Buffalo Box. (Code 10-66-3231
6. 747 Primer (Code 63-1755).
7. "Handy-Cap" (Code 63-1735).

LATEST REVISION								
NO	DESCRIPTION	APPD	APPD	DATE	DRAWN BY LEVITT	DATE 11-5-71	PHILADELPHIA GAS WORKS	DWG NO
4	REVISED NOTE 4	[illegible]		[illegible]	CHECKED BY RK	11-5-71	Distribution Department	GS 23.1
					APPROVED WM	11-16-71		
					APPROVED [illegible]	11-16-71	PHILADELPHIA, PA	

SHEET NO. 1 OF 1

DISTRIBUTION STANDARD
INSULATION SPACER INSTALLATION
(LILY PAD)



INSTRUCTIONS:

1. When the clearance between the gas piping and a foreign structure is less than 6", install an "insulation spacer" as shown above.

2. Secure the spacer to the pipe with primer and tape at two locations as shown above.

MATERIAL:

1. Insulation Spacer

PIPE SIZE	CODE NUMBER
2"	10-39-3912
3"	10-39-3913
4"	10-39-3914
6"	10-39-3915
8"	10-39-3916
12"	10-39-3917
16"	10-39-3918
20"	10-39-3919
30"	10-39-3920

2. Polyken primer, No. 927	63-1755
3. Polyken tape, 2", No. 930-35	63-1779

NOTE:

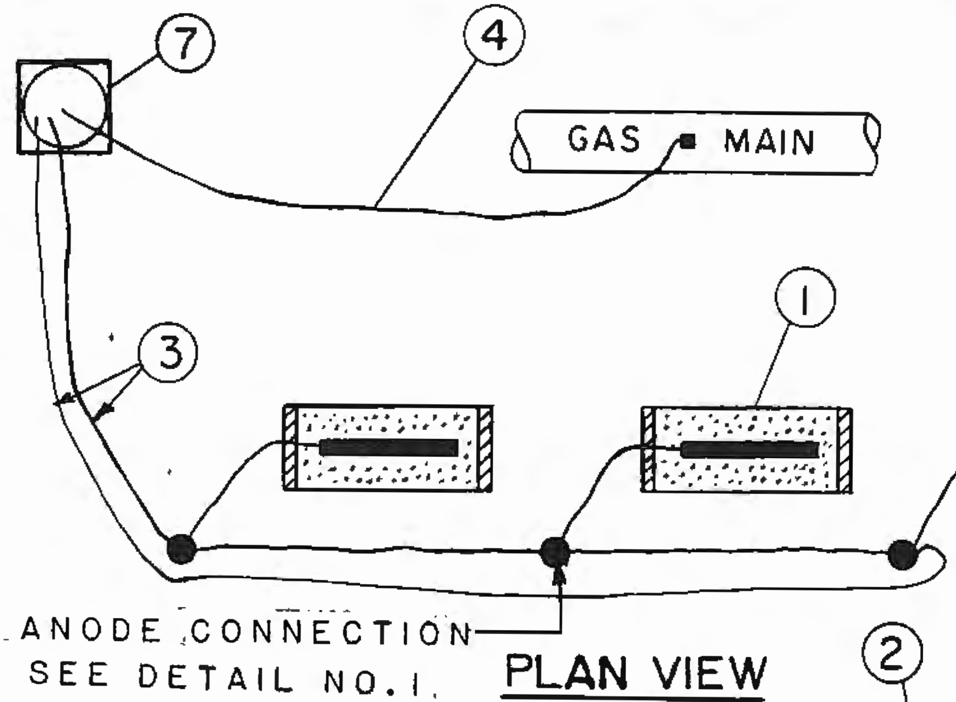
The insulation spacer is preformed and does not require field fabrication.

LATEST REVISION					DRAWN BY P.H.K.	DATE	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY R.J.K.	7-5-83	Distribution Department	GS 23.3
6	REVISED DESIGN	[illegible]	Jm	1-24 85	APPROVED / APPROVED		PHILADELPHIA, PA.	

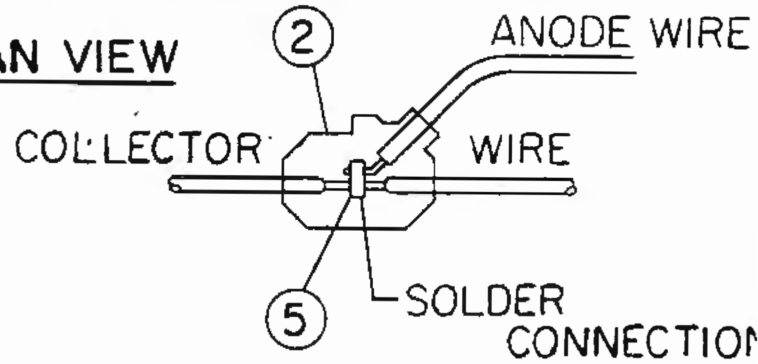
TELEDYNE POST N53782

SHEET NO. 1 OF 1

DISTRIBUTION STANDARD
IMPRESSED CURRENT ANODE BED INSTALLATION



PLAN VIEW



DETAIL No 1

MATERIAL:

Item	Description	Code Number
1	2" x 60" high silicon chromium iron anode in galvanized container	10-57-4925
2	Scotchcast splicing mold No. 90-B1	10-57-4514
3	No. 8 wire, black-anode collector wire	10-57-0540
4	No. 8 wire, black-main wire	10-57-0540
5	3-cable connector "Burndy Servit" No. KS-15	10-57-1030
6	Scotchcast splicing mold No. 82-A1	10-57-4510
7	201 Box	10-66-3233
8	747 Primer	10-63-1753
9	"Handy-Cap"	10-63-1735

LATEST REVISION									
NO	DESCRIPTION	APPD	APPD	DATE	DRAWN BY J. GIVEN	DATE 9-22-78	PHILADELPHIA GAS WORKS	DWG NO GS 23
3	ADDED MAT'L 8 & 9	[illegible]	[illegible]	1-24 85	CHECKED BY RJK	9-22-78	Distribution Department	PHILADELPHIA, PA.
					APPROVED [illegible]	9-24-78		
					APPROVED [illegible]	11-9-78		

SHEET NO. 1 OF 2

INSTRUCTIONS:

Attaching No. 8 Wire to Gas Main

1. Clean pipe to a bright metal finish.
2. Thermite weld No. 8 wire to gas main.
3. Prime pipe and weld with 747 primer and install "Handy-Cap".

Connecting Anode Lead Wire to Collector Wire

1. Pare insulation from anode and collector wire.
2. Clean, then connect anode wire to collector wire with "Burndy" connector. Solder all connections.
3. After completing connection, apply scotchcast mold.

Installing Prepackaged Canister Anode

1. When lowering anode/canister into hole, "Do Not Support Anode by Lead Wire, Use Rope Through Eyelets Provided".
2. All necessary precautions shall be taken to ensure that no damage occurs to anode lead wire, collector wire, and structure wire. Repairs must be made with scotchcast mold No. 82-A1. (Material Item 6)

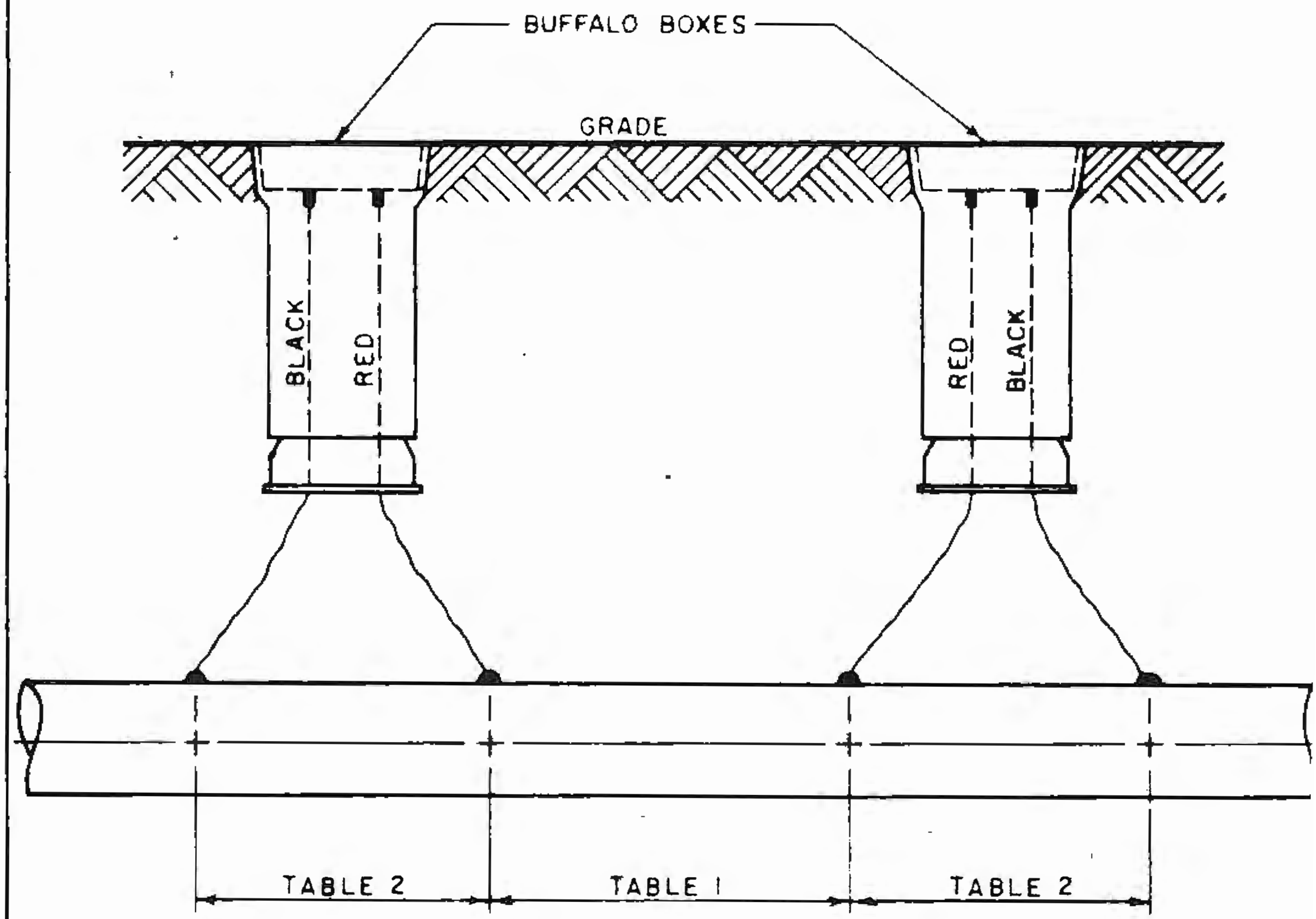
NOTES:

1. Number, location and depth of anodes to be noted on construction drawing.
2. No. 8 collector wire and No. 8 main wire to be terminated as noted on construction drawing.
3. Inspect all wire insulation using "High Voltage Electrical Detector" (Holiday Detector). Voltage for test should be in the 24K to 29K volt range.

LATEST REVISION					DRAWN BY J. GIVEN	DATE 9-22-78	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY RJK.	9-22-78		
2	REV. WIRE INSTR 3	[signature]	[signature]	1-24 85	APPROVED [signature]	9-24-78	Distribution Department	GS 23.4
					APPROVED [signature]	11-9-78	PHILADELPHIA, PA.	

DISTRIBUTION STANDARD

STANDARD ELECTROLYSIS CURRENT TEST STATION



NOTES:

TABLE 1	
Pipe Dia.	Spacing
Less than 16"	100'-0"
16" to 24"	150'-0"
Over 24"	200'-0"

TABLE 2	
Pipe Dia.	Spacing
6" & Smaller	2'-6"
8"	3'-4"
12"	5'-0"
16"	6'-8"
20"	8'-4"
24"	10'-0"
30"	12'-0"
36"	15'-0"

LATEST REVISION				
NO	DESCRIPTION	APPD	APPD	DATE
1	Formerly 8G-337		JWM	1-30-73

DRAWN BY	RJL.	1-10-72
CHECKED BY	R. J. K.	1-29-73
APPROVED	JWM	1-30-73
APPROVED	Hcm	2-16-73

PHILADELPHIA GAS WORKS
Distribution Department
PHILADELPHIA, PA.

DWG NO GS 23.6

SHEET NO. 1 OF 2

Instructions:

1. Thermite weld No. 8 wires to pipe; install copper sleeve on wires before welding. Test weld by striking it with a three (3) pound (caulking) hammer.

2. Clean loose weld splatter, slag, and other foreign material from the weld area.

3. Coat wire connections to pipe with 747 primer and install "Handy-Cap".

4. Leave 2' of slack in wires above top of box.

5. Strip insulation 3/8" long and install insulated electrical spring connector Scotchlock Brand Type R (Red).
Clean etc. GS 23.1 Instr. #5

6. Install Buffalo Boxes.

Material:

1. No. 8 single conductor, stranded copper wire with 600 volt type, approved insulation, Black - Code 10-57-0540

2. No. 8 single conductor, stranded copper wire with 600 volt type, approved insulation, Red - Code 10-57-0917

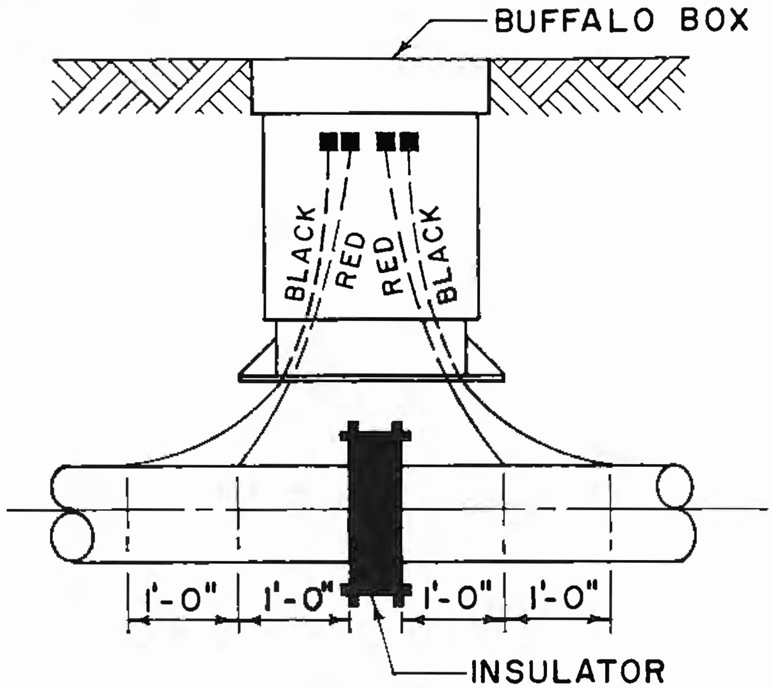
3. Electrical spring connector Scotchlok Brand - Type R (Red) - Code 10-57-1092

4. Buffalo Box Code 66-3231
5. 747 Primer, Code 63-1753.
6. "Handy-Cap", Code 63-1735.

LATEST REVISION					DRAWN BY R J L	DATE 1-10-72	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY R. J. K.	1-29-73	Distribution Department	GS 23.6
2	REV. INSTR. 3; ADDED MAT'L 5 & 6	[signature]	Jm	1-24 85	APPROVED JWM	1-30-73		
					APPROVED Ktm	2-16-73	PHILADELPHIA, PA.	

DISTRIBUTION STANDARD

ONE BOX FOUR WIRE TEST STATION



INSTRUCTIONS:

1. Thermite weld No. 8 wires to pipe; install copper sleeve on wires before welding. Test weld by striking it with a three (3) pound (caulking) hammer.

2. Clean loose weld splatter, slag, and other foreign material from the weld area.

3. Coat wire connections to pipe with 747 primer and install handy cap.

4. Leave 2' of slack in wires above the top of box.

5. Strip insulation 3/8" long and install insulated electrical spring connector Scotchlock Brand Type R (Red).

6. Install Buffalo Box.

7. On cast-iron pipe, black wire can be eliminated.

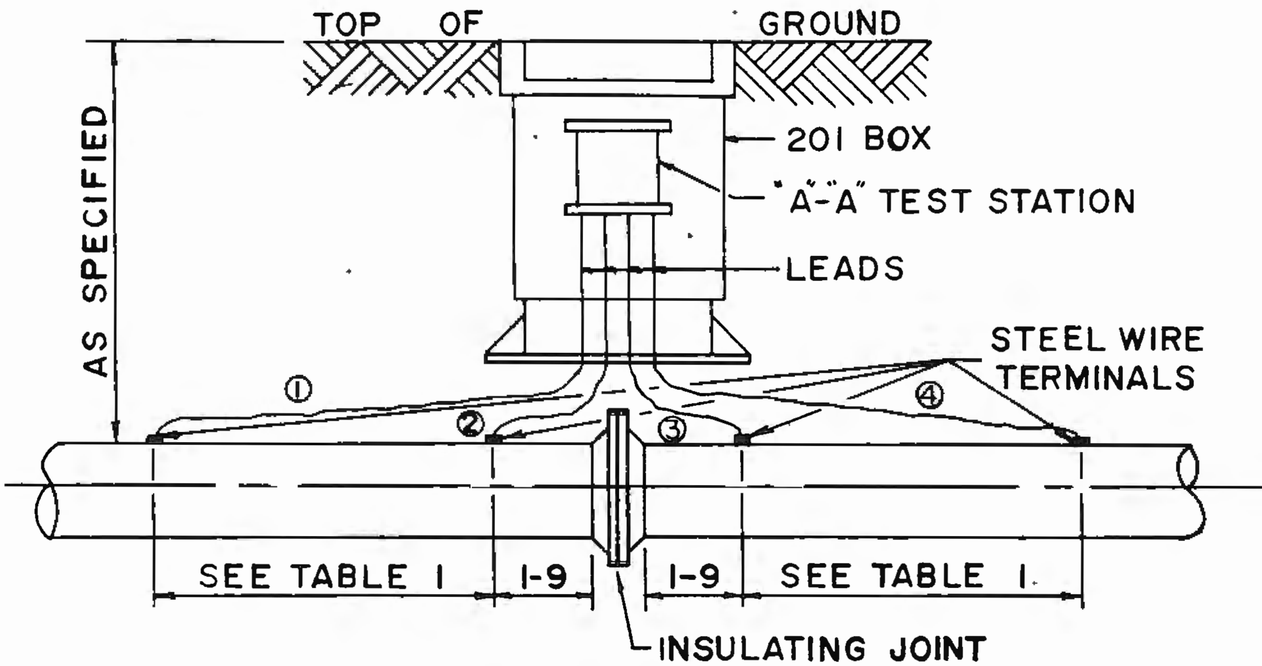
MATERIAL:

1. No.8 single conductor, stranded copper wire with 600 volt type, approved insulation, Black - Code 10-57-0540.
2. No.8 single conductor, stranded copper wire with 600 volt type, approved insulation, Red - Code 10-57-0917.
3. Electrical spring connector - Code 10-57-1092.
4. Buffalo Box Code 66-3231.
5. 747 primer. Code 63 1753.
6. "Handy-Cap", Code 63-1735.

LATEST REVISION					DRAWN BY	DATE	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY RK	9-4-74	Distribution Department	GS.23.7
2	REV INSTR 3; ADDED MAT'L 5 & 6	[illegible]	Jm	1-24 85	APPROVED JWM	9-5-74	PHILADELPHIA, PA.	
					APPROVED HCM	10-3-74		
					M. SMITH	8-23-74		

SHEET NO. 1 OF 1

DISTRIBUTION STANDARD
TYPE "A"-"A" TEST STATION FOR INSULATING JOINT



Material Instructions:

A. Notes:

1. Wire leads to be No. 6 A.W.G., single conductor, stranded copper, 600 volt, approved insulation.
2. Length of wires 1 and 4 to be depth of main plus table 1 plus 1'0". Length of wires 2 and 3 to be depth of main plus 1'0".

TABLE 1

Pipe Diameter	Spacing
6" & smaller	2'6"
8"	3'4"
12"	5'0"
16"	6'8"
20"	8'4"
24"	10'0"
30"	12'6"
36"	15'0"

Installation Instructions:

1. Issue material order for:
   a. Type "A"-"A" test station (Item issued complete with wires)
   b. 1 - 201 Box
2. When connecting wires to main, number on test station shall correspond to wir shown on typical section.
3. Electric weld steel wire terminals to pipe.
4. Coat all welds with 747 primer and install handy cap.
5. Leave sufficient slack in wires to raise test station 1'0" above ground.

LATEST REVISION					DRAWN BY JFF	DATE 9-13-82	PHILADELPHIA GAS WORKS	DWG NO
NO	DESCRIPTION	APPD	APPD	DATE	CHECKED BY WL	9-13-82	Distribution	GS 2:
2	REV INSTL. INSTR. 4			1-24 85	APPROVED	9-14-82	Department	
					APPROVED	9-14-82	PHILADELPHIA, PA.	

TELEDYNE POST N53782

SHEET NO. 1 OF

INDEX TO APPENDIX B

APPENDIX B

COATING - PRITEC

B-1 Coating of Steel Mains

B-1.1 All steel mains shall be completely coated. Individual lengths of pipe will be furnished with a mill applied coating. Pipe joints, fittings and irregular shapes shall be coated in the field.

B-1.1.1 Mill applied coating shall be Pritec and X-Tru-Coat.

B-1.1.2 Field coating material shall be Polyken 927 Primer, Polyken 930-35 tape, Roybond 747 Primer, Handy Caps, asphalt primer, asphalt enamel and coating molds.

B-1.2 The Contractor shall repair, at his expense, all damages to pipe coating which occur after delivery of pipe to site.

B-1.3 Where less than 6" clearance will exist between the steel main and a crossing structure, an insulation spacer to protect the coating shall be fabricated and installed as shown on Dwg. GS 23.3. However, when the main is passing under 1-1/4" services, the required clearance is 3".

B-1.4 The Contractor shall inspect the pipe coating in accordance with NACE Standard RP-02-74 - Recommended Practices entitled "High Voltage Electrical Inspection of Pipe Coating Prior to Installation" with one exception as follows:

Section 4: Grounding

The ground wire shall be insulated for its entire length with an insulated ground clip on the end to be attached to a ground stake when operating the instrument.

The supervisor or foreman in charge of the field operation will notify workmen and other persons on the job site of the potential danger of coming in contact with the ground stake and he will see that the work area is kept clear.

B-1 Coating of Steel Mains - Cont'd

It is the Contractor's responsibility to provide an approved Holiday Detector for the project. Pritec, X-Tru-Coat, and tape coating shall be inspected at 12,000 volts.

B-2 Transporting and Handling Coated Pipe

B-2.1 Coated pipe shall be handled with equipment such as wide reinforced canvas slings and wide padded skids designed to prevent damage to the pipe coating. All handling and hauling equipment shall be approved by the Engineer.

B-2.2 Stored pipe shall be supported by wooden timbers placed under the uncoated ends so as to keep the coated pipe off the ground.

B-2.3 The Contractor shall allow inspection of the coating on the underside of the pipe while suspended from the sling and before lowering into the trench. Damage shall be repaired before laying the pipe.

B-3 Ditching and Backfilling

B-3.1 The ditch bottom shall be free of rocks, welding rod or other debris which would tend to damage the coating during or after laying the pipe.

B-3.2 In rocky areas either the ditch shall be padded with sand or soft fill, or the pipe shall be wrapped with Rock-Stop as determined by the Engineer.

B-3.3 Placing of backfill about pipe shall only be done after final inspection and acceptance of pipe coating.

B-3.4 Damage to pipe coating shall be avoided in backfilling.

B-3.5 Where backfill conditions may cause damage to the coating, the Engineering may elect to have loose backfill placed in the ditch and around the pipe to a height of 6" above the pipe. This backfill shall consist of fine soil and sand.

B-4 Coating of Weld Joints and Fabricated Fittings

B-4.1 Mechanically clean the weld and adjacent bare pipe as follows:

B-4.1.1 Remove all oil and grease on the surface of the exposed metal using suitable solvents and clean burlap.

B-4.1.2 Removal all other foreign materials and adhesive by power brushing and scraping.

B-4.1.3 Power brush (lightly) 6" of Pritec coating adjacent to weld joint or fitting.

B-4.2 Prime pipe surface and coating to 6" beyond joint or fitting to be taped with Polyken 927 primer.

B-4.2.1 Apply primer immediately following joint cleaning.

B-4.2.2 The pipe surface shall be dry at the time the primer is applied. No primer shall be applied during rain or fog unless protected from the weather by a shelter approved by the Engineer.

B-4.2.3 Apply primer by hand-brushing in accordance with manufacturer's instructions.

B-4.2.4 After application, the prime coat shall be uniform and free from runs, drips or bare spots. Such defects shall be eliminated either by retouching or by complete recleaning and repriming at the discretion of the Engineer.

B-4.2.5 Primer shall be dry before application of the tape.

B-4.2.6 Using a spiral wrap, apply a layer of the Polyken 930-35 tape (50% overlap) over entire primed area, using a tension of 10 to 20 pounds.

B-4.2.7 Apply a coat of primer over entire taped area.

B-4.2.8 Spiral wrap (opposite direction from first layer) a second layer of tape with 50% overlap.

B-5 <u>Coating of Insulating Flanges and Bolt Type Couplings</u>

B-5.1 Mechanically clean surface of flanges or couplings as specified for weld joints in Paragraph P-4.1. Factory applied A.-Clad coated bcouplings are exempt from Paragraph B-5. Bolts to be tack taped.

B-5.2 Apply primer as specified in Paragraph B-4.2 through P-4.2.5 with the following exception:

(a) Primer shall be asphalt.

(b) Coating shall be asphalt enamel and coating molds per Dwg. GS 24.7 and GS 24.9.

(c) The filling temperature of the enamel shall be 325 to 375 F.

(d) Asphalt enamel shall be heated in a kettle approved by the Engineer.

B-6 <u>Coating of Posi-Hold Couplings</u>

B-6.1 Refer to Drawing GS 40.4.

B-7 <u>Coating of Valves</u>

B-7.1 Refer to Drawing GS 30.4.

B-7.2 Valves in monitor and district regulator manholes do not require coating.

B-8 Coating of Service to Main Connection and Control and <u>Pressure Test Piping - 1-1/4" and 2"</u>

B-8.1 Remove 4" square area of Pritec coating from main to accommodate tee or threadolet connection.

B-8.2 Mechanically clean the tee and adjacent bare pipe as specified for weld joints in Paragraph B-4.1.

B-8.3 Apply primer as specified in Paragraph B-4.2.

B-8 Coating of Service to Main Connection and Control and Pressure Test Piping - 1-1/4" and 2" - Cont'd

B-8.4 Apply 4" x 4" section of tape over tee (hole cut to accommodate tee). Lap tape up onto tee 1/2". Apply additional tape overlapping Pritect by 2".

B-8.5 Beginning at base of tee, spiral wrap (1" tape - 1/2" overlap) remaining area of tee.

B-9 Coating of Thermite Welds

B-9.1 Remove 3-1/2" x 3-1/2" section of coating to accommodate cadweld mold.

B-9.2 Clean weld and adjacent pipe are using power brush, solvent and scraping tools.

B-9.3 Spray apply Royston Roybond 747 primer on weld and pipe area.

B-9.4 Apply Royston Handy Cap over weld and pipe area. Cap shall overlap adjacent coating by a minimum of 1/2".

B-10 Patching of Coating

B-10.1 Removal of Pritec and X-Tru-Coating

It is generally not necessary to remove coating for minor slits or other similar damage in which the polyethylene backing has not been separated or pulled away from the pipe surface.

(a) Minor Damage

Apply primer and spiral wrap with 50% overlap to cover a minimum of 3" in all directions from the extremities of the damage. (Note: Spiral wrap requires the tape to pass completely around the periphery of the tape.)

(b) Major Damage

To remove disbonded coating, cut the coating with a linoleum knife and remove from the pipe. Remove adhesive from exposed pipe areas using power brush solvent and scraping tools. Apply primer and tape coating by spiral wrapping for a minimum distance of 3" from all extremities of the damage.

B-11 Coating Inspection

B-11.1 Coating of all pipe and fitting shall be tested by the Contractor before backfilling using an electrical flaw detector. All defects shall be patched by the Contractor and approved by the Engineer.

B-11.2 All coating defects discovered after backfilling and which, in the option of the Engineer, are detrimental to the effectiveness of the protective coating, shall be excavated and repaired.

B-11.3 The bond of field coating to the pipe shall be tested on occasions by the Engineer, by removing small sections of the coating from the pie surface. The amount of coating removed shall be at the discretion of the Engineer. The pipe will be recoated according to Paragraph B-11.

B-11.4 At the directions of the Engineer, all uncoated pipe in the ditch shall be made free of physical contact with dirt or water to permit an electrical measurement.

APPENDIX D

MEMORANDUM

May 9, 1996

Subject: Analysis of Trigen Soil Samples from the High Pressure Lateral Site at 26th and Christian Streets

To: Mr. Brian C. Schenk

At: 800 - 2

From: Mr. John A. Bershak JAB

On April 24, 1996 soil samples were obtained from the Trigen Plant at 26th and Christian Streets prior to excavation for the high pressure lateral. Samples were obtained 63 feet west of the east gate (WEG) at a depth of one, two and three feet. Additional samples were taken 118 feet west of the east gate at the surface and at a depth of one, two and three feet.

Toxicity Characteristic Leachate Procedure (TCLP) analysis was performed in accordance with SW 846 methodologies and samples were found to be nonhazardous based on corrosivity, ignitability, reactivity and toxicity. TCLP toxicity testing shows that metals, volatile and semivolatile organics and pesticides were below TCLP limits or not detected in sample extracts. The 2 foot and 3 foot samples 118' WEG, however, do not meet the groundwater protection level for petroleum hydrocarbons established by the Pennsylvania Department of Environmental Protection's "Cleanup Standards for Contaminated Soils", and should be disposed of appropriately. Also, trace levels of non-TCLP volatiles were found in the 3 foot sample 118' WEG. Proper segregation of the aforementioned oil contaminated soil will reduce overall disposal costs.

Some precautionary measures are presented for consideration during excavation and construction activities at this site. If possible do not store contaminated soil onsite. Petroleum hydrocarbon content and coal fines may produce an oily black slick in storm runoff if soil is not properly contained. Provide workers with impermeable boots, gloves and overalls to prevent staining of clothing with petroleum hydrocarbons and coal fines. Dust masks should be used if nuisance dust becomes a problem, and organic vapor monitoring of the excavation site is advisable. Additionally, cover the excavated area with a sand base prior to welding operations. Implementation of these measures should be determined by actual site conditions.

CS/JAB
Attachments
cc: Messrs. Randall J. Gyory
Michael W. Handwerk
Abdol R. Nayak
Dennis E. Stinson
Melville Wong-Shing

Philadelphia Gas Works
Chemical Services

Summary Results Table: Trigen Soil Samples 63' West of the East Gate

Depth	One Foot	Two Foot	Three Foot
pH	7.2	7.2	6.8
Corrosivity *	Non-corrosive Solid	Non-corrosive Solid	Non-corrosive Solid
Ignitability	Non-ignitable Solid	Non-ignitable Solid	Non-ignitable Solid
Reactivity	Non-reactive Solid	Non-reactive Solid	Non-reactive Solid
Toxicity**	Non-toxic Solid	Non-toxic Solid	Non-toxic Solid
Odor	None	None	None
Color	Black	Black/Orange	Black
Visible Oil	None	None	None
Comments	Cinders Coal Fines	Cinders Coal Fines Clay Layer	Cinders Coal Fines

PCB Content Composite sample < 1 PPM

Petroleum Hydrocarbons Composite sample 0.049 %

* Corrosive hazardous waste has a pH value less than 2 or greater than 12.5

** See attached TCLP toxicity reports

PHILADELPHIA GAS WORKS

Chemical Services

Location:	Trigen Plant, 63' West of the East Gate
Sample ID:	Soil Sample, 1' Below the Surface
Operator:	J. Bershak
Date Acquired:	April 24, 1996
Date Analyzed:	April 29, 1996

Sample Weight (gms) 0.965

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards

Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds

1,2-Dichloroethane-d4	0.224
Toluene-d8	0.227
p-Bromofluorobenzene	0.253

All results are expressed as parts per million

M. W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS

Chemical Services

Location:	Trigen Plant, 63' West of the East Gate
Sample ID:	Soil Sample, 2' Below the Surface
Operator:	J. Bershak
Date Acquired:	April 24, 1996
Date Analyzed:	April 29, 1996

Sample Weight (gms) 0.978

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards

Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds

1,2-Dichloroethane-d4	0.223
Toluene-d8	0.235
p-Bromofluorobenzene	0.257

All results are expressed as parts per million

M. W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS

Chemical Services

Location:	Trigen Plant, 63' West of the East Gate
Sample ID:	Soil Sample, 3' Below the Surface
Operator:	J. Bershak
Date Acquired:	April 24, 1996
Date Analyzed:	April 29, 1996

Sample Weight (gms) 1.039

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards	
Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds	
1,2-Dichloroethane-d4	0.225
Toluene-d8	0.236
p-Bromofluorobenzene	0.249

All results are expressed as parts per million

M. W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS
Chemical Services

Sample Location: Trigen Plant, 63' West of the East Gate
Sample ID: Composite Soil Sample, 1' 2' & 3'
Operator: J. Bershak
Date Sampled: April 24, 1996
Date Analyzed: May 6, 1996

Sample Weight (gms) 100.024

TCLP Semivolatiles	Concentration	Regulatory Level
o-Creosol	< 0.005	200.0
m & p-Creosol	< 0.005	200.0
1,4-Dichlorobenzene	< 0.005	7.5
2,4-Dinitrotoluene	< 0.005	0.13
Hexachloroethane	< 0.005	3.0
Hexachlorobutadiene	< 0.005	0.5
Hexachlorobenzene	< 0.005	0.13
Nitrobenzene	< 0.005	2.0
Pentachlorophenol	< 0.005	100.0
Pyridine	< 0.005	5.0
2,4,5-Trichlorophenol	< 0.005	400.0
2,4,6-Trichlorophenol	< 0.005	2.0
TCLP Pesticides and Herbicides		
Chlorodane	< 0.005	0.03
Endrin	< 0.005	0.02
Heptachlor Epoxide	< 0.005	0.008
Heptachlor	< 0.005	0.008
Lindane	< 0.005	0.4
Methoxychlor	< 0.005	10.0
2,4-D	< 0.005	10.0
2,4,5-TP (Silvex)	< 0.005	1.0

All levels are in parts per million

M.W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

Philadelphia Gas Works
Chemical Services

Summary Results Table: Trigen Soil Samples
118' West of the East Gate

	Surface Sample	One Foot	Two Foot	Three Foot
pH	7.3	7.0.	6.8	6.7
Corrosivity *	Non-corrosive Solid	Non-corrosive Solid	Non-corrosive Solid	Non-corrosive Solid
Ignitability	Non-ignitable Solid	Non-ignitable Solid	Non-ignitable Solid	Non-ignitable Solid
Reactivity	Non-reactive Solid	Non-reactive Solid	Non-reactive Solid	Non-reactive Solid
Toxicity**	Non-toxic Solid	Non-toxic Solid	Non-toxic Solid	Non-toxic Solid
Odor	None	None	None	Hydrocarbon Odor
Color	Dark Grey	Black	Black	Black
Visible Oil	Trace	Trace	Present	Present
Comments	Stones Soil	Cinders Soil Coal Fines	Cinders Soil Coal Fines	Cinders Soil Coal Fines

PCB Content Composite sample < 1 PPM

Petroleum Hydrocarbons Composite sample 1.403 %

* Corrosive hazardous waste has a pH value less than 2 or greater than 12.5

** See attached TCLP toxicity reports

PHILADELPHIA GAS WORKS

Chemical Services

Location:	Trigen Plant, 118' West of the East Gate
Sample ID:	Soil Sample at Surface
Operator:	J. Bershak
Date Acquired:	April 24, 1996
Date Analyzed:	April 29, 1996

Sample Weight (gms) 0.806

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards	
Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds	
1,2-Dichloroethane-d4	0.228
Toluene-d8	0.245
p-Bromofluorobenzene	0.263

All results are expressed as parts per million

M.W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS

Chemical Services

Location: Trigen Plant, 118' West of the East Gate
Sample ID: Soil Sample, 1' Below the Surface
Operator: J. Bershak
Date Acquired: April 24, 1996
Date Analyzed: April 29, 1996

Sample Weight (gms) 1.020

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards	
Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds	
1,2-Dichloroethane-d4	0.214
Toluene-d8	0.232
p-Bromofluorobenzene	0.247

All results are expressed as parts per million

M.W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS

Chemical Services

Location: Trigen Plant, 118' West of the East Gate
Sample ID: Soil Sample, 2' Below the Surface
Operator: J. Bershak
Date Acquired: April 24, 1996
Date Analyzed: April 29, 1996

Sample Weight (gms) 0.896

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards	
Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds	
1,2-Dichloroethane-d4	0.233
Toluene-d8	0.243
p-Bromofluorobenzene	0.261

All results are expressed as parts per million

M. W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS

Chemical Services

Location:	Trigen Plant, 118' West of the East Gate
Sample ID:	Soil Sample, 3' Below the Surface
Operator:	J. Bershak
Date Acquired:	April 24, 1996
Date Analyzed:	April 29, 1996

Sample Weight (gms) 0.946

TCLP Volatiles	Concentration	Regulatory Limit
Benzene	< 0.005	0.5
Carbon Tetrachloride	< 0.005	0.5
Chlorobenzene	< 0.005	100.0
Chloroform	< 0.005	6.0
1,4-Dichlorobenzene	< 0.005	7.5
1,2-Dichloroethane	< 0.005	0.5
1,1-Dichloroethane	< 0.005	0.7
1,1-Dichloroethene	< 0.005	0.7
Tetrachloroethene	< 0.005	0.7
Trichloroethene	< 0.005	0.5
Vinyl Chloride	< 0.025	0.2

Internal Standards	
Pentafluorobenzene	0.200
1,4-Difluorobenzene	0.200
Chlorobenzene-d5	0.200
1,4-Dichlorobenzene-d4	0.200

System Monitoring Compounds	
1,2-Dichloroethane-d4	0.219
Toluene-d8	0.233
p-Bromofluorobenzene	0.244

All results are expressed as parts per million

M.W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS
Chemical Services

Sample Location:	Trigen Plant, 118' West of the East Gate
Sample ID:	Composite Soil Sample, 1' 2' & 3'
Operator:	J. Bershak
Date Sampled:	April 24, 1996
Date Analyzed:	May 6, 1996

Sample Weight (gms) 75.373

TCLP Semivolatiles	Concentration	Regulatory Level
o-Creosol	< 0.005	200.0
m & p-Creosol	< 0.005	200.0
1,4-Dichlorobenzene	< 0.005	7.5
2,4-Dinitrotoluene	< 0.005	0.13
Hexachloroethane	< 0.005	3.0
Hexachlorobutadiene	< 0.005	0.5
Hexachlorobenzene	< 0.005	0.13
Nitrobenzene	< 0.005	2.0
Pentachlorophenol	< 0.005	100.0
Pyridine	< 0.005	5.0
2,4,5-Trichlorophenol	< 0.005	400.0
2,4,6-Trichlorophenol	< 0.005	2.0

TCLP Pesticides and Herbicides		
Chlorodane	≤ 0.005	0.03
Endrin	< 0.005	0.02
Heptachlor Epoxide	< 0.005	0.008
Heptachlor	< 0.005	0.008
Lindane	< 0.005	0.4
Methoxychlor	< 0.005	10.0
2,4-D	< 0.005	10.0
2,4,5-TP (Silvex)	< 0.005	1.0

All levels are in parts per million

M. W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

PHILADELPHIA GAS WORKS
Chemical Services

Sample Location: Trigen Plant
Sample ID: Composite Soil Sample
Operator: William Jackson
Date Sampled: April 24, 1996
Date Analyzed: May 2, 1996

TCLP Metals	Concentration	EPA Max. Allowed	Detection Limit
Arsenic	<0.002	5.0	0.002
Barium	3.87	100.0	0.1
Copper	0.17	3.0	0.004
Cadmium	0.66	1.0	0.025
Chromium	0.19	5.0	0.25
Lead	1.10	5.0	0.5
Mercury	< 0.0002	0.2	0.0002
Molybdenum	0.07		0.03
Nickel	0.16	3.0	0.15
Selenium	< 0.002	1.0	0.002
Silver	< 0.06	5.0	0.06
Zinc	0.260	30.0	0.001

All results are expressed as parts per million

M.W. Handwerk

MICHAEL W. HANDWERK
Supervisor, Chemical Laboratory

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF LABOR AND INDUSTRY
HARRISBURG, PA 17120

PREVAILING WAGE DIVISION
1301 LABOR AND INDUSTRY BUILDING
(717) 787-4763

Date of Request: May 7, 1996

Serial Number: 96-2401(7)

Determination Date: May 10, 1996

PREVAILING MINIMUM WAGE DETERMINATION

Project Name: TRIGEN COGENERATION PROJECT

Project Number: D-96-1

Project Location: PHILADELPHIA County: PHILADELPHIA

Awarding Authority/Agency: AUTH./PHILADELPHIA GAS WORKS

Attached is the prevailing minimum wage predetermination for the project identified above. These rates are applicable to:

- [ ] Building Construction
- [ ] Heavy Construction
- [x] Highway Construction

A new request for predetermined prevailing wage rates must be made if the contract is not awarded within 120 days from the determination date shown above.

By Direction of the
Secretary of Labor and Industry

Michael J. Acker

Deputy Secretary for
Safety and Standards

PHILADELPHIA COUNTY

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL
IRONWORKERS			
Ironworkers(Riggers)			
07/01/89	19.20	7.70	26.90
IRONWORKERS (STRU & ORN)			
Ironworkers (Orn., Struc.)			
07/01/95	25.35	12.65	38.00
07/01/96	26.35	12.65	39.00
07/01/97	27.60	12.65	40.25
IRONWORKERS (RODSETTER)			
RODSETTERS			
07/01/93	21.67	10.65	32.32
PLUMBERS			
PLUMBER			
05/01/96	25.84	11.50	37.34
05/01/97	26.74	11.50	38.24
05/01/98	27.74	11.50	39.24
STEAMFITTERS			
STEAMFITTERS			
05/01/96	26.98	10.38	37.36
05/01/97	27.88	10.38	38.26
LANDSCAPE LABORERS			
BUILDING AND GENERAL LANDSCAPE LABORER			
01/01/96	14.48	8.67	23.15
01/01/97	15.38	8.67	24.05
BUILDING AND GENERAL FARM TRACTOR DRIVER HYDRO-SEEDER NOZZLE MAN MULCHER NOZZLE MAN, BACKHOE (TO DIG HOLES TO PLANT TREES) BULLDOZER CRAWLER TYPE LOADER, TREE CRANE			
01/01/96	14.98	8.67	23.65
01/01/97	15.88	8.67	24.55
HEAVY AND HIGHWAY LANDSCAPE LABORER			
01/01/96	14.83	7.72	22.55
01/01/97	15.73	7.72	23.45
HEAVY AND HIGHWAY			

CONTINUED ON NEXT PAGE.
SERIAL NO. 962401

PHILADELPHIA COUNTY

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL

FARM TRACTOR DRIVER
HYDRO-SEEDER NOZZLE MAN
MULCHER NOZZLE MAN, BACKHOE (TO DIG HOLES TO PLANT TREES)
BULLDOZER CRAWLER TYPE LOADER, TREE CRANE

01/01/96	15.33	7.72	23.05
01/01/97	16.23	7.72	23.95

HEAVY AND HIGHWAY CARPENTERS

CARPENTERS, PARTY CHIEF

05/01/96	20.72	12.09	32.81

INSTRUMENT MAN

05/01/96	17.82	12.09	29.91

RODMAN (I)

05/01/96	12.85	12.09	24.94

RODMAN (II), (CHAINMAN)

05/01/96	10.36	12.09	22.45

TEAMSTERS - CLASS II

DUMP TRUCKS, TANDEM AND BATCH TRUCKS, SEMI-TRAILERS,AGITATOR MIXER TRUCKS, READY MIX AND DUMPCRETE TYPEVEHICLES, ASPHALT DISTRIBUTORS, FARM TRACTOR - WHEN USEDFOR TRANSPORTATION, STAKE BODY TRUCK (TANDEM).

05/01/94	17.10	5.63	22.73

TEAMSTERS - CLASS III

EUCLID TYPE, OFF-HIGHWAY EQUIPMENT, (BACK OR BELLY DUMPTRUCKS AND DOUBLE-HITCHED EQUIPMENT), STRADDLE (ROSS)CARRIER, LOW-BED TRAILERS.
**WATER TANK, SPRINKLER TRUCK, WINCH TRUCKS, AND FUELTRUCKS SHALL BE GOVERNED BY THE APPROPRIATE CLASSIFICATIONAS LISTED ABOVE.

05/01/94	17.35	5.63	22.98

CEMENT MASONS

05/01/96	19.55	12.24	31.79

HEAVY/HIGHWAY CONST. ENGINEERS

WAGE GROUP I

HANDLING STEEL AND STONE IN CONNECTION WITH ERECTION, CRANES DOING HOOK WORK, ANY MACHINES HANDLING MACHINERY, HELICOPTERS, CABLE SPINNING MACHINES, ALL REMOTE CONTROL EQUIPMENT WITHIN THIS CLASSIFICATION, MACHINES SIMILAR TO THE ABOVE.
* ON ALL MACHINES WITH BOOMS. JIBS, MASTS, AND LEADS 100 FEET FROM THE

CONTINUED ON NEXT PAGE.

PHILADELPHIA COUNTY

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL

GROUND UP, FIFTY CENTS ($.50) PER HOUR ADDITIONAL WILL BE PAID FOR EACH INCREMENT OF TWENTY-FIVE FEET OVER 100 FEET. SEVENTY FIVE CENTS ($.75) PER HOUR FOR EACH INCREMENT OF TWENTY-FIVE FEET OVER 200 FEET.

NOTE: ON HAZARDOUS WASTE REMOVAL WORK, ON A STATE DESIGNATED HAZARDOUS WASTE SITE, WHERE THE EQUIPMENT OPERATOR IS IN DIRECT CONTACT WITH HAZARDOUS MATERIAL AND WHEN PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED FOR RESPIRATORY, SKIN AND EYE PROTECTION, THE EQUIPMENT OPERATOR SHALL RECEIVE THE HOURLY RATE PLUS AN ADDITIONAL TWENTY PERCENT (20%) OF THAT WAGE.

05/01/96	22.98	11.54	34.52

WAGE GROUP II

ALL TYPES OF CRANES, ALL TYPES OF BACKHOES, CABLEWAYS, DRAGLINES, KEYSTONES, ALL TYPES OF SHOVELS, PAVERS 21E AND OVER (CONCRETE & BLACKTOP), TRENCHING MACHINES, GRADALLS, DERRICKS, CARRYALLS, SCRAPERS, TOURNAPULLS, SPREADERS (ASPHALT), MECHANIC WELDER, CONCRETE PUMP, BLDG. HOISTS-DOUBLEDRUM (UNLESS USED AS A SINGLE DRUM), FRONT-END LOADERS, BOAT CAPTAIN, PIPPIN TYPE BACKHOES, TANDEM SCRAPERS, TOWER TYPE CRANE OPERATIONS, ERECTING, DISMANTLING, JUMPING, OR JACKING, DRILLS, SELF-CONTAINED (DRILLMASTER TYPE), FORKLIFT (20 FT. AND OVER), MOTOR PATROLS (FINE GRADE), BATCH PLANT WITH MIXER ROLLERS (HIGH GRADE FINISHING), BULLDOZERS AND TRACTORS, CONVEYOR LOADER (WHEEL), MILLING MACHINE, MUCKING MACHINES IN TUNNEL, ALL TYPES OF OVERHEAD CRANES, TRENCH SHOVELS, BUNDLE PULLERS/EXTRACTORS (TUBULAR), ALL AUTO GRADE AND CONCRETE FINISHING MACHINES. SIDE BOOM, BOB CAT TYPE (ALL ATTACHMENTS), VERMEER SAW TYPE MACHINES (OTHER THAN HAND HELD), DIRECTIONAL BORING MACHINE, CHIPPER WITH BOOM, TRUCK MOUNTED HYDRO AX, MACHINES SIMILAR TO THE ABOVE, ALL REMOTE CONTROL EQUIPMENT WITHIN THIS CLASSIFICATION.
* ON ALL MACHINES WITH BOOMS, JIBS, MASTS AND LEADS OVER 100 FEET FROM GROUND UP, FIFTY CENTS ($.50) PER HOUR ADDITIONAL WILL BE PAID FOR EACH INCREMENT OF TWENTY-FIVE FEET OVER 100 FEET. SEVENTY FIVE CENTS ($.75) PER HOUR FOR EACH INCREMENT OF TWENTY-FIVE FEET OVER 200 FEET.

**TOXIC/HAZARDOUS WASTE REMOVAL - ADD 20%

05/01/96	22.73	11.46	34.19

WAGE GROUP III

ASPHALT PLANT ENGINEERS, DITCH WITCH (TYPE TRENCHER), FORKLIFT TRUCKS OF ALL TYPES, ROLLERS (GRADE FILL AND STONE BASE), FINE GRADE MACHINES WELL DRILLERS, MOTOR PATROL, CONVEYORS (EXCEPT BUILDING CONVEYORS), TEN TON ROLLERS, CONCRETE BREAKING MACHINES, (GUILLOTINE TYPE ONLY), HIGH OR LOW PRESSURE BOILERS, STUMP GRINDER, MACHINES SIMILAR TO THE ABOVE. ALL REMOTE CONTROL EQUIPMENT WITHIN THIS CLASSIFICATION.

**TOXIC/HAZARDOUS WASTE REMOVAL ADD 20%

05/01/96	19.26	9.64	28.90

WAGE GROUP IV

SEAMAN PULVERIZING MIXER, FARM TRACTORS, GREASE TRUCK, SEED SPREADER, FORMLINE GRADERS, ROAD FINISHING MACHINES, POWER BROOM (SELF-CONTAINED), CONCRETE SPREADERS, MACHINES SIMILAR TO THE ABOVE, ALL REMOTE CONTROL EQUIPMENT WITHIN THIS CLASSIFICATION.

**TOXIC/HAZARDOUS WASTE REMOVAL ADD 20%

05/01/96	18.95	9.56	28.51

WAGE GROUP V

COMPRESSORS, WELLPOINTS, CONVEYORS (BUILDING), HEATERS, PUMPS, WELDING

CONTINUED ON NEXT PAGE.

PHILADELPHIA COUNTY

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL

MACHINES, MISCELLANEOUS EQUIPMENT OPERATOR, TIREMAN ON POWER EQUIPMENT, MAINTENANCE ENGINEER (POWER BOAT) MACHINES SIMILAR TO THE ABOVE, ALL REMOTE CONTROL EQUIPMENT WITHIN THIS CLASSIFICATION.

**TOXIC/HAZARDOUS WASTE REMOVAL ADD 20%

05/01/96	17.23	9.05	26.28

WAGE GROUP VI

FIREMAN, OILERS AND DECK HANDS (PERSONNEL BOATS).

**TOXIC/HAZARDOUS WASTE REMOVAL ADD 20%

05/01/96	16.24	8.76	25.00

HEAVY AND HIGHWAY LABORERS

LABORERS, POWDER MEN

05/01/96	18.16	8.84	27.00

FREE AIR TUNNELS

MINERS, BLASTERS, DRILLERS, PNEUMATIC SHIELD OPERATORS,WELDERS, BURNERS, MINERS, BORE DRIVER

05/01/96	18.41	8.84	27.25

TRACKMEN, BRAKEMEN, GROUTMEN, BOTTOM SHAFT MEN, ALL OTHERMEN IN FREE AIR TUNNELS

05/01/96	18.11	8.84	26.95

WELDERS, BURNERS

05/01/96	18.66	8.84	27.50

UNDERPINNING

WHEN AN UNDERPINNING EXCAVATION IS DUG EIGHT (8) FEET ORMORE BELOW THE NATURAL GRADE OR WHERE AN EXCAVATION FOR APIER HOLE OF FIVE (5) FEET SQUARE OR LESS AND EIGHT (8)FEET OR MORE DEEP IS DUG, THE RATE SHALL APPLY ONLY AFTERA DEPTH OF EIGHT (8) FEET IS REACHED, TO THE MEN WORKINGIN THE BOTTOM.

05/01/96	18.16	8.84	27.00

CIRCULAR CAISSONS

WHERE EXCAVATIONS FOR CIRCULAR CAISSONS ARE DUG EIGHT (8)FEET OR MORE BELOW THE NATURAL GRADE LEVEL ADJACENT TO THESTARTING POINT OF THE CAISSON HOLE, AT GROUND LEVEL, FORTHE MEN WORKING IN THE BOTTOM.

05/01/96	18.26	8.84	27.10

ALL OTHER PNEUMATIC TOOL OPERATORS, LABORERS STRIPPINGCONCRETE FORMS, CARRYING OR HANDLING LUMBER OR OTHERCONCRETE MATERIAL, LABORERS CARRYING AND

CONTINUED ON NEXT PAGE.

PHILADELPHIA COUNTY

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL
HANDLING STEELAND STEEL MESH, FORM PINNERS, MORTAR MIXERS, POURING CONCRETE, GRADE MEN, ASPHALTSHOVELERS, MEN WORKING IN SHEETING, SHORING, AND LAGGING,HOD CARRIERS, SCAFFOLD BUILDERS AND RELIEF JOINTS, ANDAPPROACH SLABS. LABORERS ASSISTING IN THE SETTING OF CUTSTONE, GRANITE OR ARTIFICIAL STONE, ASSEMBLING AND PLACING GABIONS			
05/01/96	17.86	8.84	26.70
LABOR FOREMAN			
05/01/96	18.86	8.84	27.70
LABORERS AND ALL OTHER LABORERS ON CONSTRUCTION WORK, WITHTHE EXCEPTION OF WORKERS IN COMPRESSED AIR.			
05/01/96	17.86	8.84	26.70
WAGON DRILL OPERATORS			
05/01/96	18.01	8.84	26.85
MULTIPLE WAGON DRILL OPERATORS			
05/01/96	18.16	8.84	27.00
YARD WORKERS INCLUDING LABORERS, SCALE MIXERMEN, BURNER MEN, FEEDERS,AND DUST MEN			
05/01/96	17.76	8.84	26.60
WELDERS, BURNERS, AIR TUGGER			
05/01/96	18.26	8.84	27.10
FLAG PERSON			
05/01/96	12.56	8.84	21.40
FORM SETTERS			
05/01/96	18.26	8.84	27.10
EXPERIENCED FINISHED SURFACE ASPHALT RAKERS, EXPERIENCED JACKHAMMER OPERATORS, EXPERIENCED PAVING BREAKER OPERATORS, EXPERIENCED PIPELAYER OR CAULKER, CONDUIT AND DUCT LAYERS, VIBRATORS.			
05/01/96	17.96	8.84	26.80
TOXIC AND HAZARDOUS WASTE HANDLERS			
05/01/96	21.27	8.84	30.11

APPRENTICE RATES

THE APPRENTICE'S HOURLY RATE IS BY PERCENTAGE OF THE JOURNEYMAN'S HOURLY RATE

CONTINUED ON NEXT PAGE.

APPRENTICE RATES

UNLESS OTHERWISE INDICATED. FULL FRINGE BENEFITS ALSO APPLY TO APPRENTICES. RATIO OF APPRENTICES TO JOURNEYMEN WILL BE ENFORCED.

THE TERM "APPRENTICE" MEANS A PERSON EMPLOYED AND WORKING UNDER A BONA FIDE APPRENTICESHIP PROGRAM, DIRECTLY RELATED TO THE PARTICULAR CRAFT INVOLVED IN THE CONSTRUCTION INDUSTRY AND REGISTERED WITH AND APPROVED BY THE PENNSYLVANIA APPRENTICESHIP AND TRAINING COUNCIL AND WHOSE TRAINING AND EMPLOYMENT ARE IN FULL COMPLIANCE WITH THE PROVISIONS OF THE APPRENTICESHIP AND TRAINING ACT APPROVED JULY 14, 1961 (No. 304). APPRENTICES SHALL BE LIMITED TO SUCH NUMBERS AS SHALL BE IN ACCORDANCE WITH A BONA FIDE APPRENTICESHIP PROGRAM REGISTERED WITH AND APPROVED BY THE PENNSYLVANIA APPRENTICESHIP AND TRAINING COUNCIL AND ONLY APPRENTICES WHOSE TRAINING AND EMPLOYMENT ARE IN FULL COMPLIANCE WITH THE PROVISIONS OF THE APPRENTICESHIP AND TRAINING ACT APPROVED JULY 14, 1961 (No. 304) AND THE RULES AND REGULATIONS ISSUED PURSUANT THERETO SHALL BE EMPLOYED ON THE PUBLIC WORK PROJECT. ANY WORKMAN PERFORMING THE DUTIES OF A CRAFT WHO DOES NOT QUALIFY AS AN APPRENTICE WITHIN THE PROVISIONS OF THIS SUBSECTION SHALL BE PAID THE RATE PREDETERMINED FOR JOURNEYMEN IN THAT PARTICULAR CRAFT AND/OR CLASSIFICATION.

EFFECTIVE DATE	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH	10TH
			SIX-MONTH INTERVALS							
IRONWORKERS										
Ironworkers(Riggers)										
07/01/89	60%	70%	80%	90%	0%	0%	0%	0%		
IRONWORKERS (STRU & ORN)										
Ironworkers (Orn., Struc.)										
/ /	55%	55%	65%	65%	75%	75%	85%	85%		
IRONWORKERS (RODSETTER)										
RODSETTERS										
/ /	55%	60%	65%	70%	75%	80%	0%	0%		
PLUMBERS										
PLUMBER										
THESE PERCENTAGES APPLY TO THE TOTAL PACKAGE OF THE PLUMBERS RATES (i.e. BASE RATE, H & W, etc.)										
/ /	37%	39%	49%	52%	56%	59%	64%	67%	72%	80%
STEAMFITTERS										
STEAMFITTERS										
/ /	34%	39%	44%	48%	53%	58%	63%	68%	73%	80%
HEAVY AND HIGHWAY CARPENTERS										
CARPENTERS, PARTY CHIEF										
/ /	50%	56%	62%	68%	74%	80%	86%	92%		

HEAVY/HIGHWAY CONST. ENGINEERS

WAGE GROUP I

HANDLING STEEL AND STONE IN CONNECTION WITH ERECTION, CRANES DOING HOOK WORK, ANY MACHINES HANDLING MACHINERY, HELICOPTERS, CABLE SPINNING MACHINES, ALL REMOTE CONTROL EQUIPMENT WITHIN THIS CLASSIFICATION, MACHINES SIMILAR TO THE ABOVE.
* ON ALL MACHINES WITH BOOMS. JIBS, MASTS, AND LEADS 100 FEET FROM THE GROUND UP, FIFTY CENTS ($.50) PER HOUR ADDITIONAL WILL BE PAID FOR EACH INCREMENT OF TWENTY-FIVE FEET OVER 100 FEET. SEVENTY FIVE CENTS ($.75) PER HOUR FOR EACH INCREMENT OF TWENTY-FIVE FEET OVER 200 FEET.

NOTE: ON HAZARDOUS WASTE REMOVAL WORK, ON A STATE DESIGNATED HAZARDOUS

CONTINUED ON NEXT PAGE.

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL

WASTE SITE, WHERE THE EQUIPMENT OPERATOR IS IN DIRECT CONTACT WITH HAZARDOUS MATERIAL AND WHEN PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED FOR RESPIRATORY, SKIN AND EYE PROTECTION, THE EQUIPMENT OPERATOR SHALL RECEIVE THE HOURLY RATE PLUS AN ADDITIONAL TWENTY PERCENT (20%) OF THAT WAGE.
*ON ALL MACHINES WITH BOOMS, JIBS, MASTS, AND LEADS 100FEET FROM GROUND UP, THIRTY-FIVE ($.35) PER HOURADDITIONAL WILL BE PAID FOR EACH INCREMENT OF 25 FEET OVER100 FEET.

EFFECTIVE DATE	HOURLY RATE	FRINGE BENEFITS	TOTAL
48 MONTH APPRENTICE			
05/01/95	13.05	7.83	20.88
05/01/96	13.75	8.03	21.78
42 MONTH APPRENTICE			
05/01/95	13.05	7.83	20.88
05/01/96	13.75	8.03	21.78
36 MONTH APPRENTICE			
05/01/95	12.35	6.63	18.98
05/01/96	13.05	6.83	19.88
30 MONTH APPRENTICE			
05/01/95	12.35	6.63	18.98
05/01/96	13.05	6.83	19.88
24 MONTH APPRENTICE			
05/01/95	10.88	6.20	17.08
05/01/96	11.58	6.41	17.99
18 MONTH APPRENTICE			
05/01/95	10.88	6.20	17.08
05/01/96	11.58	6.41	17.99
12 MONTH APPRENTICE			
05/01/95	9.41	5.77	15.18
05/01/96	10.11	5.97	16.08
06 MONTH APPRENTICE			
05/01/95	9.41	5.77	15.18
05/01/96	10.11	5.97	16.08

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF LABOR AND INDUSTRY
PREVAILING WAGE DIVISION
(717) 787-4763

TO: AWARDING AGENCIES

Effective June 1, 1996, the attached revised "Weekly Payroll Certification for Public Works", LIPW-128, Rev. 6-96, will be included in rate packages. Please note the following changes:

1. The form has been reduced to 8.5" x 11".
2. Address and Social Security numbers of employees are no longer required.
3. The "Gross Pay" column has been changed to "Gross Pay for Prevailing Rate Job(s)."
4. Columns for deductions such as No. of Exemptions, FICA, Withholding, and Amounts Unpaid have been eliminated.
5. A column has been added - "Check Number".
6. A Certified Statement of Compliance has been added to the reverse side regarding debarments and persons having an interest in such firms.
7. A section requiring a detailed explanation of fringe benefits has been added to the reverse side.

In addition to the revised LIPW-128, the rate package you receive will contain a blank rate request form, debarment list, and "Duties of Awarding Agencies" letter beginning June 1, 1996.

The Prevailing Wage Act and Regulations are available on the Internet at: www.state.pa.us or the Electronic Bulletin Board (717) 772-0014.

Robert E. Moore, Director
Prevailing Wage Division

Department Use Only:
Serial No.________________
Date of Issue______________

REQUEST FOR PREVAILING MINIMUM WAGE PREDETERMINATION

PLEASE COMPLETE THE FOLLOWING (Print or Type):

1. Have you applied for Federal Bacon-Davis rates? __Yes __No

2. Descriptive name of project________________________________

3. Project locality______________________County________________
   (Boro, Township, City)

4. List all counties where construction occurs (if different than above):________________

5. Name of Awarding Agency/Authority________________

6. Estimated Cost to complete project $________________

7. General directions to project site:________________

8. Contract(s) award date ________________
   Month Day Year

9. Proposed start date ________________
   Month Day Year

10. Estimated completion ________________
    Month Day Year

11. General description of completed project (e.g., five miles of 4-lane concrete highway;two story brick and concrete school with driveways and parking. etc.) ________________

12. Mail predetermination to: Name: ________________
    Address: ________________
    Telephone: ________________

13: Signature:____________________Date:________________
    Title:____________________

Return this request to:

Commonwealth of Pennnsylvania
Department of Labor and Industry
Prevailing Wage Division
1301 Labor & Industry Building
Harrisburg, PA 17120

Telephone: (717) 787-4763
(In PA) 1-800-932-0665
Fax: (717) 787-0517
Electronic Bulletin Board:
(717) 772-0014
Internet: www.state.pa.us

LIPW-66 REV 6-96

For ______________________

Effective

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

Weekly Payroll
and
Final Certification

☐ Contractor or ☐ Subcontractor (Please check one)

CONTRACTOR	SUBCONTRACTOR	COMMONWEALTH OF PENNSYLVANIA TOM RIDGE, GOVERNOR DEPARTMENT OF LABOR AND INDUSTRY PREVAILING WAGE DIVISION 7TH & FORSTER STREETS HARRISBURG, PA 17120 1-800-932-0665
ADDRESS	ADDRESS	

PAYROLL NUMBER	WEEK ENDING DATE	PROJECT AND LOCATION PROJECT SERIAL # PROJECT #

EMPLOYEE NAME	APPR. RATE (%)	WORK CLASSIFICATION AND PRIME OR SUB	DAY AND DATE / HOURS WORKED EACH DAY							S-TIME / O-TIME	BASE HOURLY RATE	TOTAL FRINGE BENEFITS (C=Cash) (P=Contributions)*	TOTAL DEDUCTIONS	GROSS PAY FOR PREVAILING RATE JOB(S)	CHECK #
												C: P:			
												C: P:			
												C: P:			
												C: P:			
												C: P:			

*SEE REVERSE SIDE

PAGE NUMBER ______ OF ______

*FRINGE BENEFITS EXPLANATION (P): Bona fide benefits contribution, except those required by Federal or State Law (unemployment tax, workers' compensation, income taxes, etc.)

Please specify the type of benefits provided and contributions per hour:

1) Medical or hospital care ______________________

2) Pension or retirement ______________________

3) Life Insurance ______________________

4) Disability ______________________

5) Vacation, holiday ______________________

6) Other (please specify) ______________________

CERTIFIED STATEMENT OF COMPLIANCE

1. The undersigned, having executed a contract with ______________________ (AWARDING AGENCY) ______________________ for the construction of the above-identified project, acknowledges that:

   (a) The prevailing wage requirements and the predetermined rates are included in the aforesaid contract.

   (b) Correction of any infractions of the aforesaid conditions is his responsibility.

   (c) It is the contractor's responsibility to include the Prevailing Wage requirements and the predetermined rates in any subcontract or lower tier subcontract for this project.

2. The undersigned certifies that:

   (a) Neither he nor his firm, nor any firm, corporation or partnership in which he or his firm has an interest is debarred by the Secretary of Labor and Industry pursuant to Section 11(e) of the Pennsylvania Prevailing Wage Act, Act of August 15, 1961, P.L. 987 as amended, 43 P.S. § 165-11(e).

   (b) No part of this contract has been or will be subcontracted to any subcontractor if such subcontractor or any firm, corporation or partnership in which such subcontractor has an interest is debarred pursuant to the aforementioned statute.

3. The undersigned agrees to obtain and forward to the Prevailing Wage Division within ten days after the execution of any subcontract, including those executed by his subcontractors and any lower tier subcontractors, a Subcontractor's Certification Concerning Prevailing Wage Requirements executed by the subcontractors.

4. The undersigned certifies that:

   (a) The legal name and the business address of the undersigned are:

   (b) The undersigned is: ☐ a single proprietorship ☐ a corporation organized in the state of ______________ ☐ a partnership ☐ other organization (describe) ______________

(c) The name, title and address of the owner, partners or officers of the undersigned are:

NAME	TITLE	ADDRESS

The willful falsification of any of the above statements may subject the contractor to civil or criminal prosecution, provided in the Pennsylvania Prevailing Wage Act of August 15, 1961 (P.L. 987), as amended, August 9, 1963, 43 P.S. § 165.1 through 165.17.

______________________ (DATE)

______________________ (SIGNATURE)

______________________ (TITLE)

______________________ SEAL

Taken, sworn and subscribed before me this __________ Day of ______________________ A.D., 19 ________

EXHIBIT JC1.3

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.	:	
Complainants,	:	
	:	Docket No. C-2021-3029259
v.	:	
	:	
Philadelphia Gas Works,	:	
Respondent.	:	

SURREBUTTAL TESTIMONY OF JAMES L. CRIST, P.E.

ON BEHALF OF

GRAYS FERRY COGENERATION PARTNERSHIP

AND VICINITY ENERGY PHILADELPHIA, INC.

Statement JC-1SR
July 22, 2022

Q. PLEASE STATE YOUR NAME AND ON WHOSE BEHALF, YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. I am presenting surrebuttal testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity").

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS TESTIMONY?

A. Specifically, in my surrebuttal testimony I will:

1. Address Mr. Zuk's claims regarding the ability of Philadelphia Gas Works ("PGW") to provide a special rate to Grays Ferry, and refute his claim that the Pennsylvania Public Utility Commission ("Commission") may not approve such special rates.
2. Address Ms. Heppenstall's incorrect cost of service assumptions and lay out the appropriate and reasonable contractual details for PGW to execute with Grays Ferry so the other customers of PGW can realize lower rates as Grays Ferry continues service through PGW.
3. Address Mr. Reeves incorrect claims that despite PGW having more than adequate supply resources to meet its needs, and never having to execute PGW's contractual right to interrupt service to Grays Ferry, that the ARS service which Grays Ferry pays for cannot continue under a new contract.
4. Address Mr. Teme's mistaken belief that Grays Ferry is not a credible bypass threat and PGW's lack of action to pursue a special rate that would be sufficient for Grays Ferry to continue as a customer over the next 25 years, by avoiding the construction of a bypass pipeline to TETCO.

5. Address Mr. Lacey's accounting recommendations that Grays Ferry and VEPI can simply absorb any rate increase and not pass them onto VEPI steam customers.

6. Address Mr. Mierzwa's incorrect conclusions regarding PGW's proposed rate to Grays Ferry, capacity release, and balancing charges.

7. Address Mr. Knecht's observations regarding the cost of service study ("COSS") and sales practices reminiscent of the "Gas Wars."

I will not be addressing Mr. Teme's or Mr. Carrier's testimony regarding the competitive sales and marketing efforts aimed at switching steam customers from service provided by VEPI to service from PGW that include installing natural gas fired boilers with cost subsidies from PGW and producing steam on site. While I am concerned about sales and marketing practices and will express those concerns when I address Mr. Knecht's observations, the issue is a distraction from my main assertions regarding the contract renewal and extension at just and reasonable rates.

Q. WHAT ARE YOUR MAJOR ASSERTIONS?

A. Simply put, this case involves the continuation of the current 25-year contract to provide service to Grays Ferry using the four-mile pipeline that was constructed to serve Grays Ferry, was paid for by Grays Ferry, and serves no other PGW customers. Without any change in facts, PGW has inexplicably reversed its prior cost of service study allocation position regarding the dedicated pipe serving Grays Ferry, sworn to in four previous rate cases, that correctly treated Grays Ferry as a customer served by the four-mile pipeline and not by PGW's distribution system, in order to attempt to justify a ten-fold transportation rate increase and other charges that have no basis in actual cost causation principles. My main points are:

1. The four-mile line was constructed for and paid for by Grays Ferry, the only customer served by the line.
2. 98.6% of the gas PGW delivers to Grays Ferry flows down TETCO's Philadelphia Lateral and then onto the dedicated four-mile line. Distribution service for this gas should be based on the directly allocated costs to provide the service which is completely consistent with PGW's sworn, Commission approved position in four prior rate cases.
3. The gas delivered by TETCO is through a combination of (1) Grays Ferry's own capacity purchased from TETCO, (2) PGW's released capacity during the summer (for which Grays Ferry pays a mutually calculated market rate), and (3) Alternate Receipt Service, (which Grays Ferry pays for at costs greater than PGWs cost of service).
4. A mere 1.4% of the gas used by Grays Ferry flows through the PGW distribution system for which Grays Ferry is charged \$0.61 per Dth plus the WACOG ("Weighted Average Cost of Gas"). I agree with PGW's desire to charge \$0.61 per Dth plus the GCR cost of gas instead of the WACOG.
5. PGW's COSS ignores fundamental cost causation principals and direct allocation methodology, and without any basis reverses PGW's previous position on cost causation in every base rate proceeding it has filed and had approved since 2007. It is fatally flawed and must be rejected.

6. The Commission should direct PGW to provide Grays Ferry continued contract service after the expiration of the existing contract in accordance with the terms and conditions I have outlined in my testimony; principally, this means allocating to Grays Ferry only the cost of service associated with the four-mile line and rejecting PGW's proposal to allocate to Grays Ferry the cost of the PGW distribution system that Grays Ferry does not use. Contract terms should be as I have specified in this testimony for the other individual components.

I. <u>RESPONSE TO MR. ZUK'S TESTIMONY</u>

Q. WHAT STATEMENTS DID MR. ZUK MAKE IN HIS DIRECT TESTIMONY (PGW ST. 1R) THAT YOU WILL ADDRESS?

A. It is important to establish that 25 years ago in the mid-1990s, Grays Ferry's intention was to construct its own four-mile line to interconnect with TETCO's Philadelphia lateral and had undertaken engineering work, right of way procurement, and completed the necessary filings with FERC. Mr. Zuk states, "GFCP/VEPI had threatened to construct a lateral" (St.1R, 6:17). This was not a threat. This was Grays Ferry's plan. For a large facility such as Grays Ferry that requires significant natural gas quantities on a continuous basis, constructing its own pipeline was a sound business decision 25 years ago, and remains a viable option today. Grays Ferry had already secured FERC approvals in 1995 when PGW initiated its campaign to capture Grays Ferry's business through the arrangement embodied in the present contract. Had that not happened we would not be here today, attempting to continue the agreement that has bound the two entities for the past 25 years. My understanding is that Mayor Rendell felt strongly that Grays Ferry should not bypass PGW and exerted pressure to facilitate Grays Ferry and PGW reaching an agreement.

Q. WHAT ARE REASONABLE EXPECTATIONS OF TWO PARTIES ENTERING A LONG-TERM NATURAL GAS SERVICE AGREEMENT?

A. Mr. Zuk explained that Grays Ferry reimbursed PGW for the four-mile line construction and made over $10 million in payments. He explains that the rates and charges under rate GTS-Firm were determined through negotiation, so both sides mutually agreed that Grays Ferry should pay approximately $10 million for the pipeline construction and to have a pipeline capable of providing the necessary quantity of gas at necessary pressures. Other important financial terms included the transportation rate of $0.08/Dth, the O&M charges of $100,000/yr. with escalation, and the ability to have service provided through the use of the Alternate Receipt Service ("ARS") that swaps delivery locations of both parties' gas in order to increase the reliability of gas flow through the Philadelphia Lateral to Grays Ferry during winter. During the 25-year contract, PGW has undertaken no major investments to improve or modify the four-mile line, and none is planned, so there is no reason to prospectively increase the rate to recover the cost of past or planned capital improvements. Likewise, PGW has incurred no significant change in O&M expenses, so prospective charges should not materially change. The ability to provide ARS has not changed. Nevertheless, in its contract renewal proposals PGW has consistently attempted to impose revenue requirement responsibility for its entire distribution system onto Grays Ferry. There is no valid cost of service reason for this.

Q. IS THERE ANY SUBSTANCE TO MR. ZUK'S ASSERTION THAT RATE GTS-FIRM HAS BEEN DISCONTINUED AND IS THEREFORE NO LONGER AVAILABLE?

A. No. As Mr. Zuk conceded, Grays Ferry and VEPI are the only customers served under the GTS-Firm rate, so PGW's move to discontinue rate GTS-Firm is and has been part of its plan to avoid extending the current contract and attempt to force Vicinity onto a rate schedule that is wildly out of line with the actual cost to serve Vicinity. But even in the absence of rate GTS-Firm, there is no reason PGW and Vicinity cannot develop and agree to a new contract under terms that reasonably reflect the actual cost to serve Vicinity on the four-mile line.

Q. CAN THE COMMISSION ORDER PGW TO ENTER INTO A NEW CONTRACT WITH GRAYS FERRY?

A. Mr. Zuk does not think so as he refers to "a serious legal question concerning whether the Commission has the authority to order PGW and PAID to enter into a new contract."[1] I am not an attorney so I cannot provide an answer to the "legal" aspect of Mr. Zuk's question, but I am advised by counsel that the Commission does have the authority. As I am a regulatory expert, I know the Commission has the authority to approve just and reasonable rates and to deny approval of unjust and unreasonable rates. I will be disagreeing any time any of the PGW witnesses claim that there is any rationale that Grays Ferry, having been served for 25 years through the dedicated four-mile pipeline, now must

[1] The addition of the allegation that the Philadelphia Area Industrial Development Authority ("PAID") was a party to the contract thus nullifying the Commission's ability to address a new contract with PGW, was never raised in this matter prior to Mr. Zuk's testimony.

assume revenue responsibility for a share of PGW's entire distribution system. Nothing has changed in how Grays Ferry is served to merit any allocation of the costs of PGW's distribution system to Vicinity.

Q. WHAT CIRCUMSTANCES DOES MR. ZUK BELIEVE WOULD ENTITLE GRAYS FERRY TO RECEIVE A SPECIAL RATE FROM PGW?

A. Mr. Zuk discussed several attributes of Grays Ferry that make it unique but concludes that Grays Ferry does not merit a special rate because it is simply the largest member of a class of similar industrial customers. And although he acknowledges that a special rate is justified to avoid the loss of a PGW customer, he is not convinced by my direct testimony that such a competitive threat exists. In this he is also wrong.

Q. WHY IS GRAYS FERRY A CREDIBLE BYPASS THREAT?

A. Grays Ferry is served by a dedicated four-mile line that interconnects directly with TETCO. Twenty-five years ago, Grays Ferry was poised to bypass PGW, having completed the engineering design to construct a bypass line, procured the necessary right-of-way and received FERC approval[2] of a direct interconnection with TETCO. Nothing has changed in 25 years to make Grays Ferry's bypass option any less realistic. But instead of offering a contract extension at a reasonable rate, Mr. Zuk, through the exorbitant rates proposed during contract negotiations, apparently prefers to push Grays Ferry down the bypass path. If Grays Ferry elects that bypass option, PGW will lose its largest customer and millions

[2] Docket No. CP95-2-000, Order Denying Protests and Authorizing Construction and Operation of Facilities, Issued April 5, 1995

of dollars of revenue that Grays Ferry remits annually. Grays Ferry's departure will not save PGW expenditures -- PGW has not identified any routine O&M expense associated with the four-mile line. The four-mile line will once again be what it was 25 years ago, an abandoned, unused pipeline.

Q. IS MR. ZUK'S DISMISSAL OF THE "UNIQUENESS" OF GRAYS FERRY VALID?

A. No. Mr. Zuk portrays Grays Ferry as just another large customer by saying, "Rates are generally set to group classes of customers; in such a grouping there will always be one customer that is the largest compared to others." (Id. 15:23-25). Grays Ferry is a ***utility scale*** customer, consuming over 13 billion cubic feet of gas annually, so it is not just "another large customer." Mr. Zuk was unable to cite any other PGW customer whose consumption approaches Grays Ferry's. Mr. Zuk explained there could be customers served from other PGW distribution pipes at 150 psig but fails to mention that Grays Ferry receives service from the four-mile line commonly at 450 psig, more than three times the pressure of any other PGW customer. He cites the 22% load factor of the VEPI boilers and claims other customers have comparable or higher load factors but fails to explain that the data upon which he bases his faulty analysis is from a meter that is used only on the rare occasions that gas is not available through the four-mile line. In 2021 that meter recorded a mere 196,206 Dth out of Grays Ferry's total consumption of 13,373,288 Dth – 1.4% of Grays Ferry's total consumption. Mr. Zuk based his argument on a meter that carried a mere 1.4% of Grays Ferry's load. Mr. Zuk's claims provide nothing convincing. Grays Ferry is uniquely large and unmatched by other PGW customers, and it sits in a location that is very accessible for pipeline bypass. Mr. Zuk is recklessly pushing Grays Ferry in the bypass direction.

Q. SHOULD ANY SPECIAL RATE BE BASED ON COST OF SERVICE?

A. Development of a special rate should be grounded in the cost of service. There may be other factors such as competitive opportunities that also would be justification for establishing a special rate that is less than the cost of service. Retaining Grays Ferry as a customer provides significant revenues to PGW. I strongly disagree that the cost of service study that Ms. Heppenstall conducted under the direction of PGW is accurate or valid because she ignored cost causation -- the polestar of cost of service. The frequent claims of Mr. Zuk, Ms. Heppenstall, and other PGW witnesses that Grays Ferry uses the PGW distribution system in its entirety is simply not true. Except for 1.4% of the gas sold to the Grays Ferry/VEPI boilers[3] through PGW's low pressure distribution system, the other 98.6% of Grays Ferry gas supply flows exclusively and only on the dedicated four-mile higher pressure line, never touching *any* part of PGW's low pressure distribution system.

Q. WHY IS THE 1.4% OF GAS WHICH FLOWS TO VEPI'S BOILERS NOT ENOUGH TO MANDATE THE GRAYS FERRY BE ASSESSED FOR THE USE OF ALL OF PGW'S DISTRIBUTION SYSTEM?

A. Vicinity's only (and exceedingly small) use of the "entire" PGW system is for the very small amount of gas (1.4% of Vicinity's entire load) that PGW provides at low pressure and that is used solely to fuel boilers to produce steam for the thermal energy system when

[3] The low pressure gas is inadequate to fire the combustion turbine.

the high pressure TETCO deliveries are interrupted. This sales gas is provided to Grays Ferry and VEPI through the PGW distribution system at Passyunk Station which adjoins the four-mile line.

I would agree that the 1.4% of Grays Ferry's gas, and only that gas, should be as PGW had proposed at $0.61 per Dth plus the GCR gas cost or otherwise billed through an existing PGW tariff appropriate for that load, and which appropriately reflects in the tariffed charge an allocation of the cost of PGW's entire system. That gas is needed only when high pressure gas cannot flow through the four-mile line, and during those periods, the Grays Ferry cogeneration plant cannot operate. As I continue in this testimony and I refer to "Grays Ferry," I am referring to the 13,177,037 Dth of gas delivered from the TETCO gate station through the four-mile line – 98.6% of PGW deliveries to Vicinity. Grays Ferry already pays a higher rate for the Sales Service gas, very similar to the rate PGW proposes; a rate that reflects the differences in the methods of transportation.

Q. HOW SHOULD GRAYS FERRY'S O&M FEE BE DETERMINED?

A. Mr. Zuk believes that Grays Ferry's O&M fee should be based on all of PGW's mains. Again, PGW refuses to recognize that Grays Ferry takes the overwhelming majority (98.6%) of its gas supply through the four-mile dedicated high pressure line and barely places any demand (1.4%) on the rest of PGW's low pressure distribution system (and already pays a different rate for that sales gas). PGW could not identify <u>any</u> O&M expense attributable to the four-mile line. This supports my contention that PGW has not needed to do any significant maintenance on that line during the past 25 years, as significant maintenance projects should have been documented. There were none.

II. RESPONSE TO MS. HEPPENSTALL'S TESTIMONY

Q. WHAT TOPIC DOES MS. HEPPENSTALL ADDRESS?

A. Ms. Heppenstall sponsors PGW's Cost of Service Study ("COSS"). Her study indicates that Grays Ferry's current rate of $0.08/Dth should increase to $0.601/Dth. I will show that Ms. Heppenstall did not conduct a proper COSS, she received direction from PGW employees, ignored previous PGW COSSs, and omitted critical steps in her methodology. Mr. Zuk opined that if PGW was directed to develop a special rate for Grays Ferry, it should be based on the COSS conducted by Ms. Heppenstall. I agree that rates should be cost based but the COSS that Ms. Heppenstall produced does not comply with ratemaking principles and its results are not valid. Additionally, because of the continual presence of a bypass threat, any special rate will need to be sufficiently attractive to deter Grays Ferry from constructing its own four-mile line to reach TETCO, as was the plan 25-years ago.

Q. HOW WAS GRAYS FERRY TREATED IN PREVIOUS COSS CONDUCTED BY PGW AND SUBMITTED IN ITS RATE FILINGS?

A. In four previous base rate cases in 2007, 2009, 2017, and 2020, PGW treated Grays Ferry in the same manner that I recommended Grays Ferry should be treated: that is, served solely through the high pressure four- mile line that does not use and therefore should not be allocated any portion of the cost of the PGW low pressure distribution system. In its 2017 base rate case (Docket R-2017-2586783) PGW specifically considered whether to allocate the costs of the PGW distribution system to the service PGW provides to Grays Ferry. PGW told the Commission that Grays Ferry did not use PGW's distribution system because it obtained its gas through the dedicated four-mile line, which Grays Ferry had paid for when constructed.

Mr. Kenneth Dybalski, PGW's Vice President of Energy Planning & Technical Compliance, stated:

> "the Company explained that the GTS class, at the time of the class cost of service study, was comprised of just three customers for whom the Company maintained separate accounts. Only one GTS customer (Customer A) was included in the Design Day Mains allocator in the COSS because, at the time the cost of service study was conducted, it was provided service via PGW's interconnected distribution system. Customer A has since ceased operations in April 2017. The company further explained that the two other GTS customers (Customers B and C) were not include in the Design Day Mains allocator in the COSS because they are served on a separate individual gas main that is not part of PGW's distribution system."

To be clear, Customers B and C refer to Gray Ferry and VEPI. Mr. Dybalski also provided this question and answer:

> Q. Who financed the separate individual gas mains[?] that serve GTS customers B and C?
>
> A. Customers B and C financed the individual gas main upon installation.

PGW St. No. 6-R, 2:5-17.

Q. HOW WAS MR. DYBLASKI'S INFORMATION USED IN THE COSS CONDUCTED BY PGW IN ITS 2017 BASE RATE CASE?

A. Mr. Phillip Hanser, Principal of the Brattle Group, conducted the COSS for PGW. He explained,

> "The GTS customers that remain are not embedded inside PGW's distribution system in the same way as other Rate IT distribution customers. As explained by Company witness Mr. Dybalski in his rebuttal testimony, these GTS customers are served on a separate individual gas main that was financed by those customers upon installation, and that is not part of PGW's distribution system. Because these GTS customers are served on a separate self-financed individual gas main, their distribution mains and supply costs are directly assignable and, thus, they should

> not be assigned responsibility for distribution system costs in the same way as other customers that receive service via PGW's interconnected distribution system."

PGW St. No. 5-R, 10:25-11:8

It is clearly stated by Mr. Dybalski, PGW's Vice President, and Mr. Hanser, Principal of the Brattle Group, that Grays Ferry is not receiving service through PGW's distribution system and should not be allocated costs of that system. The parties reached a settlement in this case and none of the revenue increase was allocated to Grays Ferry, which was the Company's position that was not challenged by any intervenors in their pre-served testimony and was supported in the joint settlement. The Recommended Decision of ALJs Christopher P. Pell and Marta Guhl accepted the Joint Petition for Settlement which did not modify the Company's original assignment of revenue to Gray's Ferry/VEPI, stating:

> "That Philadelphia Gas Works shall be permitted to increase annual operating revenues in the total amount of $42 million consistent with the rates, rules and regulations set forth in Exhibit 1 (proposed tariff modifications) and Exhibit 2 (proof of revenues) to the Joint Petition for Settlement."

R.D at 114.

Q. WHAT IS MS. HEPPENSTALL'S EXPERIENCE WITH COSSs FOR GAS UTILITIES?

A. In Appendix A of her testimony she lists the 42 cases she has testified in. Forty of the cases involve water utilities and two are natural gas utilities. She did her first gas utility case in 2020 and that was for PGW, and her only other gas utility case was in 2021 for UGI Utilities, Inc.- Gas Division. Unlike gas utilities, water utilities do not contend with the possibility of pipeline bypass, which is the situation that PGW faces with Grays Ferry. Ms. Heppenstall's testimony in the UGI case (DocketR-2021-3030218) is illuminating.

Q. IN THE 2021 UGI CASE, DID THE COSS CONDUCTED BY MS. HEPPENSTALL HAVE DIRECT ASSIGNMENT OF MAINS COSTS TO ANY CUSTOMERS?

A. Yes. Ms. Heppenstall did use direct assignment of costs for large customers as she explained, "The costs related to distribution mains were first directly assigned to Rate XD Firm and XD-I (a portion of IS-interruptible) customers based on an analysis of the mains and the proportion thereof serving each individual Rate XD customer." (Statement 10, 5:1-3).

Q. WHAT RESOURCE DID MS. HEPPENSTALL RELY ON TO HELP HER AS A REFERENCE AS SHE CONDUCTED HER COSS?

A. She says she relied on the text "Gas Rate Fundamentals," published by the American Gas Association's Rate Committee. However, she overlooked the important and critical information included in that text that explains the necessity of direct allocation where warranted:

> "if each dollar of expense and investment could be specifically assigned to a single customer group, there would be no need for the allocation process of a cost-of-service study." *Id*, 132. The text continues to explain, "Some plant items can be designated as specific and are readily assignable to a customer within a class of service." *Id*, 135. Finally, it provides an example that is exactly Grays Ferry's situation: "An analysis of accounts may indicate specific costs that should be assigned directly to a particular class of service. *These costs might include, for example, a lateral gas main built specifically to serve one of a group of industrial customers. Both the plant investment and associated expenses of this lateral should be assigned directly to the industrial class*." *Id* 140-141 (emphasis added).

Q. WHAT IS THE SUMMARY OF YOUR RESPONSE TO MS. HEPPENSTALL'S TESTIMONY?

A. In its four previous COSSs Company witnesses admitted that Grays Ferry did not use the PGW distribution system but instead was served directly through the four-mile line, which Grays Ferry paid for. Those four historical COSSs appropriately did <u>not</u> allocate distribution system costs to Grays Ferry. When Ms. Heppenstall conducted the COSS in 2020, she remained consistent with those historical COSSs and also did <u>not</u> allocate distribution system costs to Grays Ferry. Although no facts have changed from a facilities usage or operational perspective that could justify a departure from the allocation conclusions that PGW, including Ms. Heppenstall, have sworn to in successive past rate cases, Ms. Heppenstall has inexplicably changed positions from her prior sworn testimony. The only thing that has changed is that Grays Ferry's contract is coming to an end, and PGW seeks to justify a higher rate. That is the antithesis of the role of an expert's COSS. In a legitimate COSS, actual facilities usage and operational realities drive allocation of facility costs, which is the foundation for just and reasonable rates. Instead, PGW, through Ms. Heppenstall, has contrived to allow a preordained goal of much higher rates to drive the manner in which facility costs are allocated. This turns what should be a fact-driven inquiry upside down. Ms. Heppenstall's COSS should be dismissed because it is based on an inherently suspect and wholly unjustified about-face on fundamental facts concerning the underlying facility usage and operational realities. I will continue to address this topic of how Grays Ferry has always used PGW's system to receive its gas – and how that usage has not changed - as I review additional PGW witness testimony.

Q. WHAT CHANGES HAVE YOU MADE TO MS. HEPPENSTALL'S COSS TO REFLECT THE PROPER TREATMENT OF GRAYS FERRY TRANSPORTATION VOLUMES?

A. Ms. Heppenstall's COSS, presented as Exhibit CEH-1, treated gas delivered to Grays Ferry under the ARS as though it flowed through PGW's distribution system, and as a result allocated substantial costs to Grays Ferry. I made adjustments to Ms. Heppenstall's COSS model by including the gas delivered annually using the ARS (3,666,839 Dth) with the gas delivered through the Philadelphia Lateral using Grays Ferry's leased capacity and PGW's released capacity (9,510,243 Dth). The total annual volume of gas that is delivered to Grays Ferry through the Philadelphia Lateral and high pressure four-mile line (13,177,082 Dth) is 98.6% of Grays Ferry consumption. As Ms. Heppenstall did, I separated the volumes that are provided at lower pressure through PGW's distribution system when gas flow through the high pressure four-mile line is interrupted (notably <u>not</u> delivered through the Philadelphia Lateral and the high pressure four-mile line), which is 196,206 Dth per year (1.4% of Grays Ferry consumption). The revised COSS is presented as **Exhibit JC-12**.

Q. WHAT ARE THE RESULTS OF THE COST OF SERVICE STUDY WITH THE CHANGES YOU MADE?

A. Understand that the only change I made in the COSS was to reallocate the ARS gas volumes from the distribution system allocators to the dedicated pipeline – reflecting the reality of how the ARS functions. The results still are greater than what the Grays Ferry rate would be if determined by direct allocation for they include significant system labor and overhead costs, which are not appropriate here. Notwithstanding, examining the revised COSS, Schedule A shows that the cost to provide service under Ms. Heppenstall's own model, as revised, to Grays Ferry is $2,839,000; or $0.212 per Dth based on annual volumes of 13,373,288 Dth. I emphasize that $0.212 per Dth is a maximum amount, calculated by Ms. Heppenstall's own model once the model reflects the reality that ARS flows gas down the four-mile dedicated pipeline and not through PGW's distribution system. It is noted that this amount includes allocations of maintenance costs and labor cost that exceed the amounts that would be determined by direct assignment. Therefore, this represents a maximum rate that should be applied to all the gas delivered to Grays Ferry through the high pressure four-mile line, in absence of a proper direct assignment of Grays Ferry costs.

III. RESPONSE TO MR. REEVES TESTIMONY

Q. WHAT CAN BE OBSERVED FROM MR. REEVES' DISCRIPTION OF THE PIPING SYSTEM TO GRAYS FERRY?

A. Similar to the previous PGW witnesses, Mr. Reeves attempts to make a case that Grays Ferry is using the PGW distribution system. His primary basis is PGW's provision of Alternate Receipt Service ("ARS"). As a reminder, ARS comes into play during the winter when the capacity Grays Ferry holds on TETCO's Philadelphia lateral is insufficient to provide the amount of gas Grays Ferry requires. As a result, Grays Ferry must rely on PGW, which leases the majority of TETCO's capacity on the lateral. PGW allows Grays Ferry to use a portion of PGW's capacity on the lateral to supplement Grays Ferry's own capacity in order to flow sufficient gas volumes down the TETCO lateral and then through the four-mile dedicated high-pressure line to meet Grays Ferry's demands in winter. Mr. Reeves presents as confidential exhibit RER-1 a map showing the pipeline routing. The map clearly shows that the four-mile high pressure line, illustrated in red, is separate from the rest of PGW's low pressure distribution system, illustrated in yellow. Mr. Reeves speculates that PGW could take gas from the four-mile high pressure line as it passes through the Passyunk plant, but in actual practice, gas from the four-mile high pressure line does not flow into the PGW distribution system. PGW does not use the four-mile high pressure line for PGW system supply. Only Grays Ferry uses the four-mile high pressure line.

Q. COULD PGW SELL THE FOUR MILE LINE TO GRAYS FERRY?

A. Yes. PGW has no other use for the four-mile high pressure line except service to Grays Ferry, so selling it to Grays Ferry would cause absolutely no change in how PGW operates its low pressure distribution system. Because the four-mile line is 25 years old, and the first two miles that Mr. Reeves calls the "naphtha line" was an abandoned liquids pipeline that PGW repurposed as a component of the four-mile line, the current book value of the line is negligible. Grays Ferry paid for the line once in 1995, and any amount that Grays Ferry would pay for it a second time would benefit PGW's customers. Of course, the issue of ARS service would still need to be examined and addressed. I am advised by counsel that with Commission approval, PGW would be permitted to sell such an asset to Grays Ferry, the only customer that uses the asset.

Q. WHAT IS ALTERNATE RECEIPT SERVICE?

A. I described the ARS in my direct testimony and Mr. Reeves describes the ARS in his testimony. It is the method that Grays Ferry uses in the winter to move gas down the Philadelphia lateral, through the four-mile high pressure line, and into its facility. The physical route is the same route Grays Ferry uses to move gas to its facility during the summer. During the summer, Grays Ferry has enough capacity on TETCO's Philadelphia lateral to move the gas it needs into the four-mile high pressure line and into the Grays Ferry cogeneration plant. In the winter, Grays Ferry has the need for increased volumes, but has been unable to secure sufficient capacity on the TETCO Philadelphia lateral to accommodate that higher winter demand. ARS allows Grays Ferry to supplement its own TETCO capacity on the lateral with some of PGW's unused/unneeded TETCO capacity. The ARS service requires both parties to deliver to each other. Grays Ferry sends gas for PGW's system supply use on the Skippack station (station 70034 otherwise known as 0-34) which is never constrained, so that there is no diminution of system supply capacity for PGW as a result of providing ARS. PGW releases capacity for Grays Ferry's use to station 73060, which is very often constrained in winter and requires firm transportation. The gas used at Grays Ferry <u>never</u> flows through PGW's low pressure distribution system; every dekatherm flows from TETCO directly through the four-mile high pressure line. Grays Ferry compensates PGW for the use of PGW's extra capacity via ARS; the gas is then delivered off of the TETCO lateral into the four-mile high pressure line. In Exhibit RER-2, Mr. Reeves represents that Grays Ferry pays $4,500 per month when using ARS, but in fact Grays Ferry pays that monthly amount year-round, totaling $54,000 annually. Mr. Reeves substantially understated the revenue PGW receives from Grays Ferry for ARS.

Q. DOES GRAYS FERRY'S USE OF PGW CAPACITY ON THE PHILADELPHIA LATERAL IN THE WINTER CREATE ANY PROBLEMS FOR PGW'S CUSTOMERS?

A. No. In fact, PGW holds more than adequate interstate pipeline capacity to meet its system needs – winter or summer. The capacity PGW leases on the Philadelphia Lateral totals 134,800 Dth/day (PGW Response to Set I-14) which is significantly greater than Grays Ferry's requirement of 56,000 Dth/day. If delivery of gas to Grays Ferry using the ARS mechanism were to cause any supply or delivery issues that could disrupt PGW's service to other PGW customers, PGW has the right under the agreement to interrupt the deliveries to Grays Ferry. It has never done so in the 25-year period.

Q. DOES PGW INCUR INCREASED COSTS IN ORDER TO PROVIDE ARS SERVICE TO GRAYS FERRY?

A. No. Although Mr. Reeves asserts that delivering gas using ARS requires more effort, hence cost, by PGW to enable the deliveries because it must coordinate the gas deliveries to the ARS location of Skippack Gate Station 0-34. This extra "effort" is nothing more than having a gas management operator enter some daily gas volumes into the computer program that schedules and monitors gas deliveries into the PGW system. Such extra effort is *de minimis*. It does not require the addition of personnel. It does not require overtime labor. PGW does not have to pay the operator a premium rate to make the additional data entry. So, in reality Mr. Reeves claim that it costs more is not true. All the while, PGW receives $54,000 annually to make *de minimis* gas schedule data entries, making the revenue collection for providing ARS a benefit to PGW and its customers.

Q. DOES SUMMER CAPACITY RELEASE TO GRAYS FERRY DISADVANTAGE PGW?

A. No. Mr. Reeves complained that the FERC-sanctioned capacity release in the summer was a large opportunity cost for PGW, but the actual data show just the opposite. Under the terms of the 1996 contract PGW releases 36,000 Dth/day of capacity on the Philadelphia lateral to Grays Ferry in the summer months of May through September. While there could be times when the market value of such capacity exceeds the amount that Grays Ferry contractually pays, that has not been the situation in the recent five-year period. **Exhibit JC-13**, an excel table provided by Mr. Reeves to Grays Ferry, compares the market price with the price Grays Ferry paid PGW and shows that Grays Ferry paid PGW a substantial premium over market price. That premium over market price was greater than $1.2 million in 2020 and this summer the premium over market price is forecast to be greater than $2 million, contrary to Mr. Reeves' claim that capacity release creates a subsidy in favor of Grays Ferry. During contract negotiations Grays Ferry requested that the capacity release obligation be excluded from the revised contract as Grays Ferry considered it to be expensive and unnecessary since Grays Ferry added an additional 20,000 Dth/day of firm capacity in 2012. PGW replied that if it were excluded then PGW would look to add $1 million back into the revised contract somewhere else. Mr. Reeve's claim in his testimony is disingenuous and impeached by his own data.

Q. DURING THE WINTER COULD PGW RELEASE CAPACITY ON THE PHILADELPHIA LATERAL TO GRAYS FERRY?

A. Yes, it could, and it would not disadvantage other PGW customers as such a capacity release would be recallable, meaning that PGW would recall the capacity during days that its other vast portfolio of supply resources proved inadequate to meet its system needs. Mr. Reeves states his concern that it does not have sufficient capacity on the Philadelphia Lateral to meet customer demand, but that claim is misleading. PGW meets the peak demands of its customers through its portfolio of assets, which include the separate capacities on both the TETCO and Transco pipelines as well as its LNG facilities. I observed that PGW conducts capacity releases, and Mr. Reeves claims that those releases allow PGW to recall the capacity if needed. I understand that PGW releases capacity, and that the capacity is recallable, as Mr. Reeves explained. What he is not telling us is how frequently, if ever, he actually does recall the capacity. PGW has abundant delivery assets and allowing Grays Ferry to deliver its gas using the ARS has not disadvantaged other PGW customers.

IV. <u>RESPONSE TO MR. TEME'S TESTIMONY</u>

Q. WHAT IS MR. TEME'S OPINION REGARDING THE COMPETITIVE CHOICES GRAYS FERRY HAS?

A. He believes that bypass of the PGW system by obtaining service from TETCO's Philadelphia Lateral is not realistic and states, "So far as PGW can determine, Grays Ferry has no bona fide competitive natural gas alternative to PGW." (St.3R, 8:4-5) When discussing my description of Grays Ferry's "close proximity" to the TETCO Philadelphia Lateral he acknowledged it was 2.75 miles from TETCO's delivery point (Station 030).

Q. BASED ON YOUR EXPERIENCE WITH PIPELINE EXTENSIONS AND OTHER LOCAL DISTRIBUTION COMPANY BYPASS PROJECTS, WHAT IS YOUR OPINION?

A. Construction of a 12-inch, high pressure (450 psig), pipeline through an industrial area providing 13,000,000 Dth/yr is a very practical, feasible project. Considering that Grays Ferry has been told by PGW during negotiations and through witness testimony by Mr. Teme, Mr. Zuk, and Ms. Heppenstall, that an appropriate rate would be anywhere from $0.601/Dth to $0.77/Dth, compared to the existing $0.08/Dth rate, the economics of bypass would be attractive. Of course, only Grays Ferry can make that business decision. Mr. Teme commented that I provided no current analysis of such a bypass and had only stated that additional engineering work was planned. I am updating the information I previously provided, and including **HIGHLY CONFIDENTIAL Exhibit JC-14**, which is the engineering study, including pipeline mapping and construction drawings. This project is very feasible and is underway.

V. RESPONSE TO MR. LACEY'S TESTIMONY

Q. WHAT IS THE MAIN POINT MR. LACEY ATTEMPTS TO JUSTIFY IN HIS TESTIMONY?

A. Mr. Lacey attempts to "show that if the Complainants modified their own accounting practices, they could avoid any rate increase for steam customers and enhance the competitiveness of VEPI." St. 5R 5:5-7. As I will show, this is truly a bizarre suggestion that not only lacks financial integrity but also is not something that as a regulated utility, VEPI would be permitted to do.

Q. WHAT FINANCIAL CLAIM REGARDING VEPI'S STEAM RATES DOES MR. LACEY MAKE?

A. Mr. Lacey's first approach would be for Grays Ferry to "simply make a business decision not to pass through to VEPI all or some portion of any rate increase in the gas transportation costs. Alternatively or additionally, VEPI could choose not to further pass through the increases to its steam customers." St. 5R, 6:14-16. Keep in mind that PGW has threatened to increase the transportation rate from $0.08/Dth to at least $0.601/Dth or higher. This increase of 750% equates to about $9 Million that Mr. Lacey proposes Grays Ferry not pass on to VEPI, of if it does, that VEPI not pass on to its customers. To evaluate the feasibility of such a recommendation I would encourage Mr. Lacey to propose to his own client that it not pass on any theoretical $9 million cost increase to Grays Ferry. For sake of clarity, continuing the existing contract would not increase costs to PGW whatsoever. Obviously, Mr. Lacey's plan lacks business sense. His convoluted argument states that if Vicinity were to accept the pass through of fuel costs from Grays Ferry, then it could offset the $9 million with revenues from the electric generation plant, which Mr. Lacey claims "it currently ignores in its ratemaking." Id 6:24-7:1. There are so many things wrong with this, it is hard to determine where to begin.

Q. IS IT TRUE THAT STEAM CUSTOMERS PAY FOR THE FUEL TO POWER GRAYS FERRY?

A. No. That statement is blatantly false. Steam customers of VEPI pay only for the purchased steam costs from Grays Ferry. In turn Grays Ferry allocates to VEPI only the fuel (natural gas or oil) it burns to produce only the steam sold to VEPI. It does not allocate any electricity fuel costs to the steam it passes on to VEPI. VEPI is allowed to pass purchased steam costs that VEPI pays to Grays Ferry for the actual amount of steam that VEPI buys from Grays Ferry. To be clear, VEPI cannot and does not require steam customers to pay fuel costs for Grays Ferry's electric power generation.

Q. WHAT "FLAW" DOES MR. LACEY DESCRIBE?

A. The "flaw" he identified is that Grays Ferry, which is merchant generator in the PJM market, does not pass on revenues from electric sales to VEPI, a regulated steam distribution utility. This is nonsense. Grays Ferry is a generator that must retain its revenues to pay workers' salaries, maintain equipment and buildings, and provide a return to its investors, as any company does.

Q. DOES VEPI'S STEAM COST RATE ALLOW IT TO PASS STEAM COSTS AND FUEL COSTS ONTO ITS CUSTOMERS?

A. Yes, as Mr. Lacey acknowledges. Generally, all public utilities pass fuel procurement costs on to customers and such cost pass-throughs are reviewed annually by the PUC. VEPI's tariff allows a pass-through of costs for (1) fuel for the gas and oil purchased by VEPI for steam production in VEPI boilers and (2) steam purchased from Grays Ferry. Mr. Lacey confuses matters when he suggests that customers of VEPI are paying for fuel costs of Grays Ferry for its electric generation. This is not true.

Mr. Lacey appears to be proposing that Grays Ferry and VEPI absorb PGW's proposed $9.75 million price increase and not attempt to recover it from customers. Again, if Mr. Lacey believes that utilities should decide not to pass on fuel costs to their customers, he should test that concept with his own client. It is ridiculous to propose such a concept.

Q. WHAT IS THE PRICE TREND FOR VEPI'S FUEL COSTS?

A. Energy prices have increased dramatically this year. The $24.1 million of fuel costs that VEPI incurred in 2021 will be significantly higher in 2022 and beyond. Through the first six months of 2022, Grays Ferry has already spent 109% of the entire 2021 fuel cost expenditure. Through the first six months of 2022, VEPI has already spent 89% of the entire 2021 expenditure on its combined internal production fuel costs and purchased steam costs for steam bought from Grays Ferry and Vicinity Energy Efficiency Pennsylvania ("VEEPA"). There is no "fat" in either Grays Ferry's or VEPI's purchased fuel budget to absorb the gigantic increase PGW proposes.

Q. DOES GRAYS FERRY GENERATE ELECTRICITY AT TIMES WHEN IT IS NOT PRODUCING STEAM FOR SALE TO VEPI?

A. Mr. Lacey apparently believes that Grays Ferry does so (id, 8:16) This is false. If Grays Ferry is producing electricity, then it coincidentally is producing steam and that steam flows to VEPI.

Q. DOES MR. LACEY ACCURATELY PORTRAY THE BUSINESS MODEL OF GRAYS FERRY?

A. No, he misunderstands how Grays Ferry operates, nor how Grays Ferry sells steam to VEPI under terms approved by the Commission. Grays Ferry does not generate electricity revenues that are free of expense. In 2021 Grays Ferry paid $40 million for fuel. A portion of that fuel expense, the fuel allocated to steam sales to VEPI, was passed on to VEPI. None of the cost of the fuel to generate electricity was passed on to VEPI or its customers. He claims "Grays Ferry profits by $24 million in 2021" (id, 9:5). This is absurdly false. Mr. Lacey is confused as the amount he cites is approximately the gross margin in 2021. After charges for all other expenses, not including interest and taxes, its net margin was $15 million. Mr. Lacey continues in his testimony claiming that expenses were improperly matched to revenues. His future projections of revenues and earnings are even more fictitious. With the recently released PJM capacity auction results, Grays Ferry will earn less than $3.1 million in electric capacity payments for the future year commencing June 1, 2023. The capacity sales of $2.4 million that Mr. Lacey cites will drop to $1.4 million in the first quarter of 2023 and to $750,000 in the first quarter of 2024. Mr. Lacey is apparently unaware that PJM has significant excess electric capacity and generators' margins have been under increasing downward pressure.

I will not be caught up in Mr. Lacey's fictional world where money appears by magic and can be shifted between Grays Ferry and VEPI so that somehow the electric revenues of Grays Ferry increase, while the steam prices of VEPI decrease. Grays Ferry and VEPI are distinct corporations, each with their own set of books that adhere to accounting standards.

Mr. Lacey's suggestions have no basis in financial accounting, business world reality, or common sense, and should be disregarded.

VI. RESPONSE TO MR. MIERZWA'S TESTIMONY

Q. WHAT POINTS DID MR. MIERZWA INCLUDE IN HIS TESTIMONY REGARDING GAS DELIVERIES TO GRAYS FERRY?

A. Mr. Mierzwa, representing the Office of Consumer Advocate ("OCA") believed that Grays Ferry should be charged at the $0.75/Dth interruptible rate that applies to much smaller customers served exclusively through the PGW low pressure distribution system and not their own dedicated high pressure pipeline. He incorrectly states that "Approximately 9,200,000 Dth per year is delivered by PGW to Vicinity using this four-inch pipeline" (Statement 1R, 3:23-24). Regarding the pipe size, I believe Mr. Mierzwa intended to say "four-mile" not "four-inch" as there is no way that amount of gas could be delivered through a four-inch line, referring to the pipe diameter, not the actual length of the pipeline. More importantly, the 9,200,000 Dth per year refers to the gas that Grays Ferry has delivered through the four-mile high pressure line using capacity it leases on TETCO's Philadelphia Lateral. Mr. Mierzwa overlooks the 3,800,000 Dth per year that Grays Ferry has delivered through the four-mile high pressure line using capacity obtained from PGW's capacity release, or by displacement under the ARS. His claim that 3,800,000 Dth per year utilizes PGW's low pressure distribution system is incorrect. I have established that all of that high-pressure gas flows through the four-mile line. That gas is delivered to Grays Ferry at 450 psig. There is no way that it could flow through PGW's low pressure distribution system.

Q. IS THE COSS PRESENTED BY MR. MIERZWA VALID?

A No. Mr. Mierzwa's study contains the same critical flaw as Ms. Heppenstall's in that it ignores cost causation principles of direct allocation of the four-mile line and treats the gas provided under the ARS as though it were flowing through PGW's distribution system, which has been proven to not be the case. Because of his incorrect assumption he allocates significant costs for the entire low pressure distribution system to Grays Ferry, even though Grays Ferry only nominally uses the PGW low pressure distribution system for 1.4% of its usage. His distribution rate calculation should be disregarded.

Q. DOES MR. MIERZWA ADDRESS PGW'S RELEASE OF CAPACITY TO GRAYS FERRY?

A. He states that "PGW needs sufficient capacity to meet the design peak day requirements of its GCR customers and its firm choice transportation customers" (id 7:18-19) and so should not release capacity to Grays Ferry. I agree with Mr. Mierzwa that PGW needs sufficient capacity to meet the needs of GCR customers, but PGW has been doing so while at the same time releasing capacity to Grays Ferry. He overlooks that for the past 25 years, PGW has met the needs of its GCR and its firm choice transportation customers, and has also met the delivery needs of Grays Ferry, by using its own capacity, and the Grays Ferry capacity under the ARS, and continues to do so today. There is no aspect of the current agreement that would place any additional risk on the customers Mr. Mierzwa is attempting to protect.

Q. WHY DOES MR. MIERZWA BELIEVE GRAYS FERRY SHOULD PAY BALANCING CHARGES?

A. Mr. Mierzwa does not understand how PGW delivers gas to Grays Ferry. He keeps going back to the same incorrect concept, that the gas actually used by Grays Ferry is somehow delivered to the Skippack Lateral. That is not correct. Grays Ferry delivers released capacity gas to the Skippack Lateral for use by PGW's sales customers, not by Grays Ferry. Grays Ferry does its own balancing on the TETCO system and does not need any of PGWs assets to balance its gas deliveries. There is no operational basis to impose a balancing charge on Grays Ferry.

VII. RESPONSE TO MR. KNECHT'S TESTIMONY

Q. WHAT ARE MR. KNECHT'S OBSERVATIONS REGARDING COST ALLOCATIONS TO GRAYS FERRY?

A. Mr. Knecht observed that the allocation of distribution system costs for large industrial customers located proximate to an interstate pipeline is done through direct allocation, as Columbia Gas, National Fuel Gas, UGI gas, and PECO Gas do. I recommended that the cost of transportation of Grays Ferry's 13,000,000 Dth be based on direct allocation of costs of the four-mile high pressure line. Mr. Knecht included PGW's response to OSBA Set I-17(e) which explained that the meter costs were paid for by Grays Ferry as part of its \$10.4 million payment.[4]

[4] I wish to clear up a point of confusion regarding the CAIC paid by Grays Ferry the Mr. Knecht discusses at 3:12-14. Grays Ferry made three initial \$500,000 payments over 18 months and then monthly payments of \$78,183 over 120 months, totaling \$10.1 million. This cost was amortized over a 25-year period for recovery from VEPI customers.

Q. HOW DOES MR. KNECHT CONSIDER BYPASS CAPABILITIES IN DETERMINING A REASONABLE RATE?

A. He explains that customers with a credible ability to physically bypass the distribution utility generally have negotiated flex rates, which should reflect the cost the customer would incur to bypass. Because Grays Ferry is a credible bypass threat, I have included as **HIGHLY CONFIDENTIAL Exhibit JC-14** the engineering study done on June 8, 2022, as Grays Ferry moves ahead with its bypass plan in the event a reasonable rate is not obtained from PGW.

Q. WHAT ARE MR. KNECHT'S VIEWS REGARDING THE PIPELINE CAPACITY GRAYS FERRY USES TO MOVE GAS DOWN THE PHILADELPHIA LATERAL TO THE FOUR-MILE PIPE?

A. His observations are:

1. Because PGW has been providing Grays Ferry essentially firm capacity for the past 25 years, PGW's claim now that it needs that capacity to serve its GCR customers "requires careful review" (Id, 16:13).
2. Releasing Philadelphia Lateral recallable capacity to Grays Ferry is not materially different than ARS.
3. The total cost of PGW capacity Grays Ferry uses should be at the costs incurred by GCR customers, including opportunity costs. I explained earlier in this testimony that currently Grays Ferry pays more than $1,000,000 for the unneeded capacity in the summer which provides a subsidy the GCR customers.

Q. WHAT ARE MR. KNECHT'S OBSERVATIONS REGARDING PGW'S MARKETING EFFORTS TO VEPI STEAM CUSTOMERS?

A. He states:

> "it is not reasonable regulatory policy to allow utilities to "compete" amongst each other by offering targeted rate discounts to specific customers and recovering the lost revenues from those discounts from all other customers. This is not cost competition as it applies to unregulated firms, where it encourages competitors to innovate, to reduce cost, and to provide service more efficiently. This is cross-subsidy competition, and it is simply a matter of which utility can pass on more rate discounts onto its regular rate customers." Id 18:7-13

Q. WHAT COMMISSION POSITION DID MR. KNECHT PROVIDE?

A. He referenced the "gas-on-gas" competition in western Pennsylvania, which is casually referred to as "gas wars," and I am very familiar with that from my first-hand experience as Marketing Director at Peoples Gas, and Vice President of Marketing at Equitable Gas. I share Mr. Knecht's concerns and agree with his explanation of the Commission's view as he states:

> "The Commission has generally limited to such competition such that utilities are not allowed to set rates below the lowest regular tariff rate of the competitors (although it took an unreasonably long time).39 In addition, my experience has been that the Commission has been reasonably cautious about the use of energy efficiency and conservation ("EE&C") plan subsidies for inter-fuel competition between gas and electric utilities. As such, Mr. Crist's concerns regarding rate subsidies for gas-on-steam competition merit some consideration." Id, 18:16-22

I have subordinated my concerns about PGW's competitive sales activities in this surrebuttal testimony to my concerns about the immediate critical issue of the contract renewal and the pricing terms which I have discussed in detail. None the less, if left unchecked, I believe Philadelphia will see the rise of steam wars.

VIII. SUMMARY

Q. WHAT IS THE SUMMARY OF YOUR TESTIMONY?

A. I have these recommendations:

1. PGW should be directed to develop the rate for Grays Ferry's transportation service based on direct assignment of the costs of the four-mile pipeline. In absence of such a study, the COSS results I present in **Exhibit JC-12** should be used.
2. PGW should be directed to continue provision of capacity to Grays Ferry using recallable capacity release or ARS.
3. Mr. Lacey's unprecedented, unsupported and frankly, bizarre ideas on how Grays Ferry or VEPI cannot pass on fuel charges or purchased steam costs to its tariffed customers should be disregarded in entirety.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.

EXHIBIT JC1.4

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.	:	
Complainants,	:	
	:	Docket No. R-2023-3038069 and
v.	:	C-2023-3038722
	:	
Philadelphia Gas Works,	:	
Respondent.	:	

DIRECT TESTIMONY OF JAMES L. CRIST, P.E.
ON BEHALF OF
GRAYS FERRY COGENERATION PARTNERSHIP
AND VICINITY ENERGY PHILADELPHIA, INC.

Vicinity Statement No. 1
April 3, 2023

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS, AND ON WHOSE BEHALF YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. a consulting firm focused on regulatory and market issues. My business address is 4226 Yarmouth Drive, Suite 101, Allison Park, Pennsylvania 15101. I am presenting testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity").

Q. DO YOU HAVE ANY QUALIFICATIONS OR OTHER SPECIALIZED KNOWLEDGE THAT WOULD ASSIST THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("COMMISSION") IN ITS DELIBERATIONS IN THIS CASE?

A. Yes. I have a B.S. in Chemical Engineering from Carnegie Mellon University and an M.B.A. from the University of Pittsburgh. Additionally, I am a Registered Professional Engineer in the Commonwealth of Pennsylvania. I have attached a copy of my CV and Regulatory Experience as **Appendix A and Appendix B**, respectively.

Q. BRIEFLY DESCRIBE YOUR RELEVANT BUSINESS QUALIFICATIONS.

A. I have run a consulting practice for the past 25 years focused on regulated and deregulated energy company strategy, market strategy, and regulatory issues. During 2004 and 2005, I undertook a consulting assignment as the Vice President of Consumer Markets for ACN Energy. ACN is a gas and electric marketer that is active in eight states. Prior to my consulting practice, I worked at three major energy companies for a total of 19 years. Most

recently I was Vice President of Marketing for Equitable Resources. In that function, I was responsible for the development of the company's deregulated business strategy.

Prior to that I was Vice President of Marketing for Citizens Utilities, responsible for gas, electric, water and wastewater marketing activities in several service territories within the United States. The gas and electric utility operations were in Vermont, Louisiana, Arizona, Colorado, and Hawaii. Under my direction, Citizens initiated commercial and industrial transportation and supply services at its gas operation in Arizona. I also directed significant gas supply contracting activities with large industrial and commercial customers in Citizens' gas operation in Louisiana.

Before that, during 1988 through 1994, I was the Marketing Director at the Peoples Natural Gas Company where I was actively involved in many gas transportation programs as the company relaxed transportation requirements so that customers would have supply choices.

In summary, I have considerable experience in several states involving residential, commercial, and industrial customer energy procurement, regulatory issues and industry restructuring programs.

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

A. Yes, I have appeared before the Commission in numerous gas and electric regulatory proceedings. Additionally, I provided testimony on a variety of issues relating to energy procurement, industry restructuring, and demand response before regulatory Commissions in Arizona, Maryland, New Mexico, Illinois, Ohio, Wyoming and the U.S. Virgin Islands.

I. ISSUES

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS TESTIMONY?

A. Specifically, in my Direct Testimony I will:

1. Review the history of the Grays Ferry Cogeneration facility going back twenty-five years and the agreements with Philadelphia Gas Works ("PGW") that facilitate the transportation of the majority of gas used by Grays Ferry.
2. Review the capacity held by PGW to provide service to its sales and transportation customers, including Grays Ferry. Then I will review the capacity used by PGW to meet its peak day needs, identify excess capacity held by PGW, and discuss the cost of such excess capacity.
3. Propose a mechanism for PGW to sell a portion of its excess capacity to Grays Ferry on an ongoing basis. This will provide benefits to PGWs end-user customers and reduce their costs of purchased gas.

II. GRAYS FERRY COGENERATION PLANT

Q. WOULD YOU DESCRIBE THE HISTORY OF THE DEVELOPMENT OF GRAYS FERRY?

A. The Grays Ferry cogeneration plant was constructed in 1997 to produce 1) electricity which is sold to the PJM Grid and 2) steam which is sold to its affiliated steam system. The cogeneration plant consists of a combined cycle plant with a gas combustion turbine-generator ("CT") and a waste heat recovery boiler or heat recovery steam generator ("HRSG"), a 700klb/hr. auxiliary boiler and an extraction steam turbine ("ST"). The outputs of the ST and CT are 58 MW and 135 MW respectively. The CT and HRSG burn only natural gas. The auxiliary boiler burns either natural gas or low sulfur distillate oil ("LSDO"), and the ST can be fed with steam from the HRSG and/or the auxiliary boiler. Initially developed as a partnership of Trigen, Philadelphia Electric ("PECO") and O'Brien Energy, the facility is currently owned by Grays Ferry Cogeneration Partnership, which is in turn owned by Vicinity Energy, Inc. ("Vicinity"), parent company of the downtown district energy system owned and operated by Vicinity Energy Philadelphia Inc. ("VEPI"). The entirety of the net electrical power output of the plant is sold into the wholesale market through the PJM Interconnect LLC ("PJM") the regional transmission organization ("RTO") responsible for, among other areas, the Philadelphia market.

Q. WHAT IS THE NATURE OF THE CONTRACT BETWEEN GRAYS FERRY AND PGW?

A. In January 1996, Grays Ferry signed a Service Contract with the Philadelphia Authority for Industrial Development ("PAID") – a City of Philadelphia entity capable of signing this long-term contract on behalf of Philadelphia Gas Works ("PGW"), the City's municipally owned gas utility. The contract is an integral part of Grays Ferry's natural gas transportation assets. The contract expired on 12/31/2022, but service from PGW is currently extended under the original contract terms pending a final order by the Commission in the complaint proceeding at Docket No. C-2021-3029259.

Q. WHAT WAS THE ORIGINAL PLAN TO OBTAIN GAS SUPPLY FOR GRAYS FERRY?

A, Recognizing the need for a firm, secure supply of natural gas, in 1996 during the construction phase of the plant, Grays Ferry had a high-pressure natural gas pipeline designed and permitted that would connect its plant directly to the Philadelphia Lateral of Texas Eastern Transmission ("TETCO"). The Philadelphia Lateral is a segment of interstate pipeline owned and operated by TETCO that branches off of TETCO's main line near Eagle, Pennsylvania and allows TETCO to deliver natural gas to the southern part of Philadelphia.

Q. WHY DID GRAYS FERRY ELECT TO OBTAIN GAS SERVICE THROUGH PGW INSTEAD OF CONSTRUCTING ITS OWN DEDICATED LINE?

A. Philadelphia Gas Works and Grays Ferry negotiated a contract that, in lieu of Grays Ferry constructing its own high pressure pipeline, required PGW to construct the dedicated natural gas pipeline connecting Grays Ferry to TETCO's Philadelphia Lateral. PGW used (1) an abandoned liquids pipeline located near the Philadelphia Lateral, that it converted to natural gas service, in combination with (2) construction of a 16" high pressure steel pipe to extend the abandoned pipe and connect directly to the Grays Ferry facility. PGW's TETCO/Grays Ferry connection allowed PGW to remain at least a passive participant in the transportation of gas to a major Philadelphia business (in this case, Grays Ferry).

Q. WHAT IS THE DIFFERENCE BETWEEN A PIPELINE CONNECTION AND CAPACITY?

A. A pipeline connection of a distribution pipe, in this case the dedicated high pressure four-mile line from the Philadelphia Lateral to Grays Ferry, allows an amount of gas to flow from TETCO to Grays Ferry. The maximum amount of gas a pipeline can transport depends primarily on its diameter, and operating pressure. TETCO allocates that maximum capacity (in Dth/day) among the customers that hold the capacity rights. The Philadelphia Lateral is fully subscribed, meaning that all of its capacity is allocated to customers. PGW holds 134,800 Dth/day and Grays Ferry holds 35,000 Dth/day. In the winter Grays Ferry has peak needs of 56,000 Dth, which is why it relies on the PGW Alternate Receipt Service for 21,000 Dth/day. Grays Ferry deliver 21,000 Dth/day at the PGW alternate receipt point and Grays Ferrys gas is transported down the Philadelphia Lateral using 21,000 Dth/day of PGW's own capacity. To summarize, in the summer all of Grays Ferry's high pressure gas supply flows down the Philadelphia Lateral using Grays Ferry's TETCO capacity. In the winter, deliveries require Grays Ferry's capacity and PGW's capacity on TETCO[1]. The difference is that in the winter PGW does not release the capacity to Grays Ferry but instead provides the gas under a swap mechanism called Alternative Receipt Service.

Q. WHAT IS RELEASE CAPACITY?

A. Capacity is the right to transport a specific amount of gas on a particular interstate pipeline and is typically measured in dekatherms per day ("Dth/day"). PGW holds excess capacity, or more capacity than it can reasonably expect to need. It sells the excess capacity to other

[1] Winter transportation on the Philadelphia Lateral is provided through the ARS arrangement.

parties that could use the capacity and charges for those parties to use the capacity – otherwise known as release capacity. Twenty five percent of those release capacity revenues are retained by PGW, even though PGW's customers pay 100% of the cost of that capacity.

Q. HOW DOES PGW MEET ITS PEAK NEEDS?

A. PGW has a maximum daily firm capacity of 134,822 Dth on the TETCO pipeline and a maximum daily capacity of 167,179 Dth on the Transco pipeline. This means that every day, unless it releases it through release capacity, PGW has the ability to move 302,001 Dth onto its system. PGW supplements its firm pipeline capacity with its off-site storage assets and stored Liquified Natural Gas ("LNG") on system to meet its design day demands.

Q. WHAT CAPACITY ASSETS DOES PGW HOLD ON THE PHILADELPHIA LATERAL?

A. As conveyed in its response to Vicinity's Set I-1 (**Exhibit JC-1**), PGW holds four capacity contracts on the Philadelphia Lateral. These four capacity contracts are for 75,000 Dth/d, 23,822 Dth/d, 18,000 Dth/d, and 18,000 Dth/d, totaling 134,822 Dth/d. This is more than enough capacity required by PGW to satisfy its customers' peak needs. We know this because there has never been an instance in the past 10 years when PGW had to interrupt deliveries to Grays Ferry or any other customers due to lack of capacity on the Philadelphia Lateral. In the response to Vicinity's data request Set II-1 (**Exhibit JC-2**) Mr. Florian Teme stated, “PGW has had no general curtailments or otherwise had gas delivery interruptions over the past 10 years.”

Q. DOES PGW HOLD EXCESS CAPACITY ON THE PHILADELPHIA LATERAL?

A. Yes. In its reply to Vicinity’s Set II-9 (**Exhibit JC-3**), PGW witness Mr. Reeves provided data for the most recent five winter periods that showed the daily volumes of gas flowing through the Philadelphia Lateral and delivered to PGWs low pressure distribution system and to the high-pressure four-mile line that serves Grays Ferry. Even with the Gray Ferry deliveries, PGW still had more capacity available on the Philadelphia Lateral than it needs.

Q. WHAT IS THE STORAGE CAPACITY AND WITHDRAWAL CAPACITY OF PGW’S LNG FACILITIES?

A. PGW operates two LNG facilities. The storage capacity of those facilities is approximately 3,900,000 Mcf, and the daily withdrawal capability is 545,000 Mcf as noted in PGW’s response to OCA Set I, No. 31 (**Exhibit JC-4**).

Q. HOW DOES PGW PLAN TO MEET ITS SUPPLY REQUIREMENTS ON ITS FORECASTED PEAK DAY?

A. In response to OCA Set I-4 (**Exhibit JC-5**) PGW lists its supply plan for the forecast peak day and shows how PGWs pipeline, storage and LNG assets would meet the forecasted requirement of 678,445 Dth. It shows that on the peak day 119,298 Dth of supply would need to flow through TETCO. As stated earlier, PGW holds 134,882 Dth/day of firm capacity which reflects an excess of 15,540 Dth/day of capacity on TETCO. It is capacity on the TETCO Philadelphia Lateral that is needed to provide gas to Grays Ferry.

Q. DOES PGW HAVE EXCESS OVERALL CAPACITY?

A. Yes. PGW holds a combined total of 302,001 Dth/day of firm capacity on the Transco and TETCO pipelines and has storage and on-system LNG. (Response to Vicinity Set II-2, **Exhibit JC-6**). PGW presented its 3-day peak analysis in response to I&E Set I-25 (**Exhibit JC-7**) that stated on January 29, 2022, the peak day in the recent heating season, the sendout was 531,582 Mcf (about 550,000 Dth), only 81% of its forecast peak.

Q. WHAT DOES PGW DO WITH THIS EXCESS CAPACITY?

A. Because PGW's capacity assets exceed its needs it engages in the practice of off-system sales and capacity release. Off-system sales involve the sale of gas or capacity to entities outside the PGW service territory; PGW engages in off-system sales perennially and allows PGW to earn extra revenue from the assets that otherwise might not be used. Of the revenues it obtains from off-system sales 75% are credited to the Gas Cost Rate ("GCR") which benefits firm sales service customers, and 25% are retained by PGW. Providing the capacity that Grays Ferry needs to operate should take precedence over capacity release off the PGW system. As a Philadelphia-based business Grays Ferry employs 81 people and its regulated steam utility VEPI distributes steam to over 250 commercial and residential buildings (approximately 90 million square feet of building space), primarily in center city. Releasing the capacity to Grays Ferry will produce superior financial benefits to PGW customers than PGWs current actions of off-system release.

Q. WHAT AMOUNT HAS PGW FORECAST FOR OFF SYSTEM SALES, CAPACITY RELEASE CREDITS, AND ASSET MANAGEMENT CREDITS?

A. PGW's witness, Mr. Florian Teme, stated in his direct testimony, "PGW has projected the amount of off system sales, capacity release credits, and asset management credits within the GCR period of 2023-2024. This amount is based on a 3-year average. Of that amount, $16,909,282 was credited to the GCR." (Source: PGW St. 1 12:5-7). PGW controls substantial assets that exceed its needs.

Q. WHAT PORTION OF THE NET MARGINS FROM OFF SYSTEM SALES ARE CREDITED TO GCR CUSTOMERS?

A. Consistent with its tariff, PGW credits 75% of its historic review period off-system sales net margins, capacity release credits, and storage asset management fees to GCR customers and retains the remaining 25% pursuant to the sharing provisions of its tariff (Ninety Third Revised Page No. 67). Similar sharing provisions are currently in place for all other natural gas distribution companies ("NGDCs") in Pennsylvania that are subject to Section 1307(f) gas cost recovery. PGW forecasts $16.9 million, which is 75% of the total amount of off-system sales, capacity release, and asset management credits within 2023-2024 period, is to be credited to the GCR. This means the remaining 25% or $5.6 million is retained by PGW.

Q. HOW DOES PGW BENEFIT FINANCIALLY BY NOT RELEASING EXCESS CAPACITY ANNUALLY?

A. While it might seem attractive to GCR customers that PGW credits 75% of off system sales and capacity release revenues and storage asset management fees to the GCR, it must be noted that PGW retains 25% of those revenues. If PGW were not overcapacity, for example if it reduced the amount of capacity it holds by permanently releasing capacity, those capacity costs (e.g., the maximum tariff rate charged by TETCO for capacity) would be paid in full by the receiving party. This would reduce the cost to GCR customers by 100% of the capacity costs, not just give them 75% of the revenues received when and if that capacity is released.

Additionally, PGW benefits financially by selling LNG off system, because it retains 100% of those revenues even though the capacity that is used to flow the LNG is system capacity paid for by GCR customers, and the LNG facilities are PGW facilities that are owned and operated for benefit of its customers. PGW has an incentive to underutilize LNG for system use, i.e., to supply customers on its system, so that it can sell more gas to off system parties. PGW has the capability of such actions because it holds excess pipeline capacity.

Q. UNDER WHAT ARRANGEMENT DOES GRAYS FERRY OBTAIN THE CAPACITY IT NEEDS?

A. Because Grays Ferry was unable to obtain all of the necessary capacity it needed in 1996, the original contract with PGW provided for PGW to release capacity to Grays Ferry in the summer, from May through September. In exchange, Grays Ferry pays PGW the market rate[2] for the capacity, and last year that amount was $1.4 million. In 2012 Grays Ferry was able to obtain additional capacity on its own behalf, and therefore no longer is dependent on PGW's release capacity in the summer, however it does need the capacity in the winter months. A 12-month capacity release of the very same assets PGW uses now to serve Grays Ferry would provide financial benefits to PGW. Absent such a year-round release, Grays Ferry would intend to discontinue acceptance of the summer capacity, which would reduce the subsidy Grays Ferry provides to PGW gas costs by $1.4 million.

Q. ARE YOU ABLE TO CALCULATE THE SAVINGS THAT PGW CUSTOMERS WOULD REALIZE IF PGW WERE TO RELEASE THE CAPACITY TO VICINITY?

A. I calculate the value of that 21,000 Dth/day capacity to be over approximately $6 million, which would result in an approximate benefit to the GCR customers of $5 million. If PGW were to release the 21,000 Dth/day, the purchaser of that capacity (presumably Grays Ferry) would pay TETCO the full tariff cost of that capacity of $0.80/Dth which would be $6.132 million annually, and that will eliminate that cost from the GCR because the purchaser of that capacity, and not PGW would be paying TETCO. Currently, Grays Ferry pays PGW for 36,000 Dth/day release capacity in the five summer months and pays the market rate which was $0.23/Dth during the six-year period of 2017 through 2022, or $1.27 million annually, and Grays Ferry pays $54,000 for ARS. The PGW GCR customers would benefit by approximately $5 million per year.

[2] Contractually Grays Ferry's rate is capped at 65% of the full tariff rate, however it is rare that the market rate exceeds the cap.

III. SUMMARY

Q. WHAT ARE YOUR RECOMMENDATIONS?

A. PGW should be directed to release 21,000 Dth/day TETCO capacity. The payment for the capacity will benefit the residential and commercial GCR customers of PGW.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

APPENDIX A

JAMES L. CRIST

PRESIDENT, LUMEN GROUP, INC.

Suite 101, 4226 Yarmouth Drive • Allison Park, PA 15101

Phone: 412.487.9708 • Cell: 412.613.8886 • E-mail: JLCrist@aol.com

DEMONSTRATED AREAS OF EXPERTISE

GENERAL MANAGEMENT	Proven executive-level management expertise with excellent capabilities in developing, implementing, and supervising corporate-wide policies and procedures in areas including sales, marketing, customer service, public relations, rates, regulatory affairs, and administration. Possess a unique combination of abilities to set goals, develop winning business strategies, organize structures and work methods, and train the right people for the right positions to make it all work. Skilled in strategic short and long-term planning and budgeting with effective abilities in reducing the "fat" and increasing organizational efficiency. A creative, decisive leader who can successfully meet challenges and overcome obstacles to achieve profit objectives.
REGULATORY STRATEGY	A thorough strategist with an extensive background in utility business unit operation (electric, natural gas, water/wastewater) the full range of rate and regulatory functions, from tariff development and special contract negotiation. Proven personal testifying skills with an outstanding record of developing and presenting successful written and oral testimony, along with settlement negotiations.
PERSONNEL MANAGEMENT	Effective interpersonal communications skills support outstanding capabilities in recruiting, training, motivating, and directing staff at all levels. Proven ability to build productive, highly motivated teams of sales/marketing, operations, technical, and customer service personnel who contribute to top organizational performance.
PERSONAL ATTRIBUTES	A determined, hardworking, challenge-driven executive with the skills and experience to bring excellence to any business organization. A high-energy mover and shaper ... experienced in successful start-ups and turn-arounds. An excellent communicator - written and verbal. A frequent speaker at professional symposiums, able to interpret and communicate complex concepts for diverse audiences. An engineering/technical specialist and a management generalist. Active in civic and community affairs.

EMPLOYMENT HISTORY

LUMEN GROUP, INC., Pittsburgh, PA — 1996 - Present

President - A consulting practice specializing in strategic planning, business planning, regulatory strategy, marketing and venture development in the electric, natural gas and energy services industries. Please see Addendum for amplification of consulting assignments.

ACN ENERGY, Farmington Hills, MI — 2004-2005

Vice President, Consumer Markets

OPTIRON, Pittsburgh, PA — 2003-2004

Vice President, Marketing

E R I SERVICES, Pittsburgh, PA — 1996

Vice President, Marketing & Product Development

CITIZENS UTILITIES, Harvey, LA & Stamford, CT — 1994 - 1995

Vice President, Marketing

CONSOLIDATED NATURAL GAS, Pittsburgh, PA — 1977 - 1994

Director, Residential & Commercial Marketing (1988 - 1994)
Manager, Technical Sales/Market Development (1985 - 1988)
Market Development Specialist (1982 - 1985)
Project Engineer (1979 - 1982) ... promoted from ... **Process Engineer** (1977 - 1979)

OCCIDENTIAL CHEMICAL CORP., Niagara Falls, NY — 1975 - 1977

Research Engineer

PENNSYLVANIA STATE UNIVERSITY, State College, PA — 1988
CLEVELAND STATE UNIVERSITY, Cleveland, OH — 1984

Instructor (Evening Division) - Economics, Engineering Economics

SELECTED ACCOMPLISHMENTS

VICE PRESIDENT, CONSUMER MARKETS - ACN ENERGY

Retained for a turnaround assignment with an independent energy marketing company. Participated on the executive management team and directed a decentralized 3-person market management staff responsible for sales to 85,000 customers. Worked directly with the parent company executives and business unit management to create market-driven strategies for the corporation. Sharpened marketing and sales efforts of an energy marketing company operating in seven states and packaged company for eventual sale to Commerce Energy.

- Primary executive responsible for sales. Directed a team of market managers that was responsible for all aspects of 11 different markets (electric and natural gas) around the country. Provided direction and support to sales channel organization of commissioned representatives. Turned around five-year annual loss to significant gain in 2004. Tightened focus on market decisions.
- Directed regulatory involvement to insure compliance with market rules. Focused on maintaining positive relationships with state utility regulators to avoid penalties.
- Led weekly operations meetings during absence of COO. This involved direction of call center, provisioning, billing, credit & collection, and marketing.
- Worked in a team setting with other executives (VP Finance, VP Supply, COO) to provide consistent, professional focus to workforce experiencing changing environment.
- Directed development of annual business plan and budget with targets resulting in both goal achievements and income improvements.
- During transition period working with merger partner Commerce Energy's executive team to train and advise incoming executives.
- Directed customer service improvements in the customer acquisition process which resulting in replacing outdated paper/fax process with phone order process.
- Organized and directed trade show presence at national sales convention for alliance sales channel to create awareness of new product and market focus.

VICE PRESIDENT, MARKETING - OPTIRON

Retained as part of executive team in venture capital startup company developing new CIS/CRM software for the energy industry. Worked closely with CEO, COO, and Director of Sales to determine business strategy and develop marketing strategy to create market awareness and brand attributes in medium and small energy companies.

- Added in-house marketing communications function and personnel and revamped all marketing materials.
- Added new website functionality and content.
- Implemented first print advertising campaign in industry publications.
- Using industry contacts, positioned Option as expert presenter at several conferences and trade shows.
- Developed business plan to identify sales prospects and created competitive database of CIS/CRM vendors.
- Participated in development of exit strategy plan resulting in the successful sale to large software company.

VICE PRESIDENT, MARKETING & PRODUCT DEVELOPMENT - ERI Services

Assumed responsibility for creating a new corporate marketing vision and strategy to facilitate entry into new deregulated energy markets nationally.

- Recruited and selected an exceptional management team and integrated marketing and sales activities into one functional operating unit.
- Established the product innovation process to identify and create new and profitable market-driven service offerings.
- Directed strategic branding to launch the new corporate identity; managed a $2 million national advertising campaign; and developed over $1 million of new sales/marketing collateral materials.
- Instituted financial controls that reduced costs 60% in the Iowa market rollout while maintaining 80% market share and high customer satisfaction.

VICE PRESIDENT, MARKETING - Citizens Utilities

Directed a decentralized 20-person sales staff and a five person marketing staff. Worked directly with the Board of Directors, Corporate President, and Sector Vice President to create market-driven sales strategies for the corporation. Revamped and redirected sales efforts of a five-state energy utility with 440,000 customers.

- Increased industrial sales revenues by reorganizing unregulated gas marketing effort.
- Revamped merchandising utilizing inbound telemarketing in Louisiana Gas.
- Revised training programs for entire sales force, identifying and correcting missing technical and equipment training, adding a greater competency in the commercial and industrial sectors.
- Developed first business plan in sales and marketing organization with monthly budget monitoring and

targets resulting in both goal achievements and cost improvements.

- Launched an aggressive direct marketing program that increased sales 500% over previous year.
- Increased share of gas transportation business in Arizona by 15% in first year of operation through marketing efforts.
- Created a telephone long distance business in Louisiana that captured a 20% share (2nd to AT & T).

DIRECTOR, RESIDENTIAL & COMMERCIAL MARKETING - Consolidated Natural Gas

Managed a marketing staff of 12 and a "dotted-line" 24-person field sales force. Directed marketing and sales efforts in consumer, business, and manufacturing markets with $154 million revenue.

- Added $6 million in revenue by developing new products in gas transportation, supply, and agency.
- Directed sales activities in residential, commercial, institutional and governmental accounts for both product sales and technology sales.
- Produced $600,000 annual revenue and doubled competitive project wins by revamping market approaches to residential and commercial new construction.
- Secured 50% increase in customer decisions over 5 gas companies and 4 electric companies.
- Experienced in PUC and Legislature lobbying. Increased revenues $2.3 million through regulatory strategy/testifying and received major competitive program approval.

MANAGER, TECHNICAL SALES / MARKET DEVELOPMENT - Consolidated Natural Gas

Directed new market development and competitive market support.

- Focused on commercial and industrial accounts and increased the depth of relationship beyond the typical utility provider of service to a rich full service information provider and business partner.
- Captured $150,000 in new business annually by competitive pricing analysis, sales tool development, and market approach.
- Developed total advertising and promotional plan launching new market programs.
- Compiled extensive technical database and developed economic model for project analysis, eliminating a $100,000 operating budget expense.
- Led statewide coalition with customers and government agencies for fair treatment of new technology.

EDUCATION - PROFESSIONAL

UNIVERSITY OF PITTSBURGH, Pittsburgh, PA — 1982

M.B.A. Degree

CARNEGIE - MELLON UNIVERSITY, Pittsburgh, PA — 1975

B.S. Degree in Chemical Engineering

Registered Professional Engineer   AGA Hall of Fame, 4/1991

APPENDIX B

JAMES L. CRIST

Lumen Group, Inc.
Suite 101, 4226 Yarmouth Drive ● Allison Park, PA 15101
Phone: 412.487.9708 ●Cell: 412.613.8886 ●E-mail: JLCrist@AOL.com

AMPLIFICATION OF LUMEN GROUP CONSULTING ASSIGNMENTS

A consulting practice specializing in strategic planning, business planning, marketing and venture development in the telecommunications, energy, and services industries.

REGULATORY

Represented the National Energy Marketers Association and their members in Equitable-Dominion Peoples merger case. Developed strategy, presented written and oral testimony and negotiated on behalf of clients. Worked with other interveners and FTC on anti-competitive issues.

UTILITY RATE NEGOTIATION

Represented large client group seeking to obtain rate reduction from electric utility. Prepared strategy, wrote testimony, and exceeded expectations by achieving a 40% reduction in charges, producing a $2 million annual reduction.

STRATEGIC PLANNING FOR ON-SITE POWER GENERATION

Participated in proposal development for a 27-MW power plant on Kauai. Handled critical customer needs assessment in rapid turnaround fashion to meet proposal deadline. Maintained relationships with clients, vendors and proposal partners. Our proposal was selected as the preferred bidder out of five strong competitors.

NEW BUSINESS START-UP / TARIFF NEGOTIATIONS

Participated in the development of a new gas distribution utility in New York. Handled tariff development, pricing structure, transportation contracting, and operations, maintenance, and emergency manual preparation.

SALES STRATEGY/BUSINESS DEVELOPMENT

Developed sales strategy to focus on profitable accounts and markets. Developed sales training and account management plans and provided consulting to energy marketing organizations to improve overall sales.

BUSINESS STRATEGY/BUSINESS DEVELOPMENT

Developed business strategy to verticalize eCommerce/Customer Relationship Management product for the energy/utility industry. Produced sales training for global applications, product promotion presentations, developed alliance relationships with system integrators and software partners, developed business. Client is market leader in North America.

JOINT VENTURE/PRODUCT DEVELOPMENT

Assembled joint ventures resulting in sales to offer new hedge-based weather risk management retail product. Identified venture partners, and developed business arrangements and closed million-dollar deals

ENERGY PROCUREMENT

Served as energy expert on project team that obtained long-term natural gas supply for major government facilities. Prepared project specifications, negotiated with suppliers, prepared RFP, negotiated major reduction in delivery charges. This project resulted in annual cost reduction of $2.5 million.

NEW BUSINESS DEVELOPMENT - TELECOMMUNICATIONS

Analyzed use of electric utility assets for possible telecommunications business venture. Wrote the business plan that identifies regulatory and non-regulatory issues, marketing plans, financial analysis, and organizational requirements. Launched the new non-regulated business unit in 1996.

JOINT VENTURE DEVELOPMENT - TELECOMMUNICATIONS

Conducted analysis of potential joint venture partners for new unregulated telecommunications venture, bypassing the Bell operating company. Held screening discussions with potential partners and selected lead candidate for venture. Developed working agreement with partners along with business case to launch venture.

JOINT VENTURE DEVELOPMENT - TELECOMMUNICATIONS & ENERGY

Developed strategic plan for joint venture involving gas, electric, and telecommunications partners. Screened potential business partners and held discussions with lead candidates. Assembled justification for top management approval.

PRODUCT DEVELOPMENT - UNREGULATED ENERGY SERVICES

Developed energy products for start-up subsidiary of major energy utility. Identified potential products and selected most likely candidates for further development. Developed market plans and sales plans for products.

MARKET PLAN - DIRECT MARKETING

Developed the market plan for large, global direct marketing agency to enter the energy industry. Identified strategies, strengths, weaknesses, and target prospects. Initiated sales effort and developed new business.

CORPORATE IMAGE DEVELOPMENT

Developed complete business unit identity for a new operations and services company. Produced capabilities brochure for use with prospects.

MARKET RESEARCH

Conducted market research to identify new customer/new business opportunities for major energy utility. Comprehensive project with two additional similar projects were completed. Entailed determination of goals, development of research methodology, script preparation, vendor selection, data analysis, and development of action plan.

MARKET DEVELOPMENT

Organized intervener group in Illinois consisting of retail marketers and intervened in three rate proceedings (Nicor Gas base case, WPS-Peoples merger case, Peoples Gas base case) and secured significant improvements in rules and procedures enabling marketers to increase their business and profitability. Developed strategy and presented written and oral testimony.

PARTIAL LIST OF REGULATORY EXPERIENCE OF JAMES L. CRIST

1. Dominion Energy Ohio Motion, Case No. 18-1419-GA-EXM, Representing Retail Energy Supply Association
2. Aqua America/Peoples Natural Gas Merger, Docket R-2018-3006061, Representing Natural Gas Supplier Parties and Retail Energy Supply Association
3. Peoples Natural Gas General Base Rate Increase, Docket R-2018-3006818, Representing Peoples Industrial Intervenors
4. Duquesne Light Company General Base Rate Increase, Docket R-2018-3000124, Representing the Duquesne Industrial Intervenors
5. Columbia of PA General Base Rate Increase, Docket R-2018-2647577, Representing the Pennsylvania State University
6. West Penn Power Company, Default Service Program, Docket R-2017-2637866, Representing the Pennsylvania State University
7. Vectren Energy Delivery Ohio, Alternative Rate Plan, Case No. 18-0049-GA-ALT, Representing Retail Energy Supply Association
8. Columbia of PA Gas Cost Increase, Docket R-2017-2591326, Representing the Pennsylvania State University
9. West Penn Power Company, General Base Rate Increase, Docket R-2016-2537359, Representing the Pennsylvania State University
10. Columbia of PA General Base Rate Increase, Docket R-2016-2529660, Representing the Pennsylvania State University
11. UGI Utilities General Base Rate Increase, Docket R-2015-2518438, Representing Dominion Retail, Inc., Shipley, Choice, LLC, Interstate Gas Supply, Inc., Amerigreen Energy, and Rhoads Energy
12. Columbia of PA General Base Rate Increase, Docket R-2015-2468056, Representing the Pennsylvania State University
13. West Penn Power Company, General Base Rate Increase, Docket R-2014-2428742, Representing the Pennsylvania State University
14. Herman Oil & Gas Company, General Base Rate Increase, R-2014-2414379, Representing Herman Oil & Gas Company
15. Columbia of PA General Base Rate Increase, Docket R-2014-2406274, Representing the Pennsylvania State University
16. Ameren Gas- General Base Rate Increase, Docket No. 13-0192, Representing Dominion Retail and Interstate Gas Supply of Illinois
17. Columbia of PA General Base Rate Increase, Docket R-2012-2321748, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
18. Columbia of PA Petition for Approval of a Distribution System Improvement Charge Docket R-2012-2338282, Representing the Pennsylvania State University
19. PUC PA Generic Investigation Regarding Gas-On-Gas Competition, Docket No. P-2011-2277868, Representing the Pennsylvania State University
20. Ameren Gas- General Base Rate Increase, Docket 11-0282 (Cons.), Representing Dominion Retail and Interstate Gas Supply of Illinois
21. Water and Power Authority (USVI)- Electric Base Rate Case, Docket 575, June 2009, Representing Frenchman's Reef Marriott
22. Water and Power Authority (USVI)- Water Base Rate Case, Docket 576, June 2009, Representing Frenchman's Reef Marriott
23. Public Service of New Mexico 2010 Base Rate Case, Informal rate design workshops pursuant to the stipulation in NMPRC Case No. 08-00273-UT, Representing City of Albuquerque
24. Public Service of New Mexico, Electric base case at Case No. 08-00273-UT, Representing City of Albuquerque
25. Public Service of New Mexico 2009 Renewable Energy Procurement Plan for 2010, Case No. 09-00260-UT, Representing City of Albuquerque and Santa Fe County
26. Public Service of New Mexico, Gas sale case at Case No. 08-00078-UT, Representing City of Albuquerque
27. UGI Utilities, Central Penn Gas, Penn Natural Gas, Gas Cost Increase, Docket No. R-2011-2238953, Representing Shipley Energy, Rhodes Energy, and CenterPoint Energy
28. UGI Utilities- Gas Division, Gas Cost Increase, Docket No. R-2010-2172933, Representing Shipley Energy
29. Columbia of PA General Base Rate Increase, Docket R-2010-2215623, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
30. Columbia of PA General Base Rate Increase, Docket R-2009-2149262, Representing the Pennsylvania State University, Dominion Retail, Interstate Gas Supply, and Shipley Energy
31. Columbia of PA General Base Rate Increase, Docket R-2008-2011621, Representing Hess Energy, Dominion Retail, Interstate Gas Supply, and Shipley Energy
32. Columbia of PA Gas Cost Increase, Docket R-2008-2028039, Representing Dominion Retail, Interstate Gas Supply, and Shipley Energy
33. PPL Electric Utilities Voluntary Purchase of Accounts Receivables Program and Merchant Function Charge, Docket No. P-2009-2129502

34. Nicor Gas Company, Provision of facilities and services and the transfer of assets between Nicor Gas Company and Nicor Inc., Docket No. 09-0301, Representing Dominion Retail
35. North Shore Gas and Peoples Gas Light and Coke Company, General Base Rate Increase, Dockets 09-0166 and 09-0167, Representing Dominion Retail, Interstate Gas Supply and Nicor Advanced Energy
36. Nicor Gas Company, Base Rate Increase, Docket No. 08-0363, Representing Interstate Gas Supply and Dominion Retail
37. North Shore Gas and Peoples Gas Light and Coke Company, General Base Rate Increase, Dockets 07-0241 and 07-0242, Representing Dominion Retail, Interstate Gas Supply and U.S. Energy Savings
38. WPS Resources, Peoples Energy, Peoples Gas Light and Coke Company, North Shore Gas Company, Application pursuant to Section 7-204 of the Public Utilities Act for authority to engage in a Reorganization, Docket 06-0540, Representing Dominion Retail, Interstate Gas Supply, US Energy Savings, MxEnergy, and Direct Energy Services.
39. Allegheny Energy, Approval of Retail Electric Default Service Program and Competitive Procurement Plan, Docket No. P-2008-2021608, Representing the Pennsylvania State University
40. Allegheny Energy, Generation Rate Cap, Docket No. P-2007-2001828, Representing the Pennsylvania State University
41. Equitable Gas Company, Rate Increase, Docket R-2008-2029325, Representing Independent Oil & Gas Association and Hess Corp.
42. Equitable Gas Company and Peoples Gas, Merger Case, Docket A-122250F5000, Representing National Energy Marketers, Hess Corporation, and Constellation New Energy.

EXHIBIT JC-1

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: Vicinity Set I-1
Date of Response: 3/24/2023
Response Provided By: Ryan Reeves

Question:
Provide copies of all PGW's capacity and storage service contracts effective during the period 2017-2022

Attachments: 22
Vicinity_Set_I_1_K1005001 Amend 1-Superceded.pdf
Vicinity_Set_I_1_S-2 Amend 1.pdf
Vicinity_Set_I_1_400121.pdf
Vicinity_Set_I_1_S-2 Amend 2.pdf
Vicinity_Set_I_1_400209.pdf
Vicinity_Set_I_1_800232.pdf
Vicinity_Set_I_1_S-2 Orig.pdf
Vicinity_Set_I_1_K1038582 WSS-OA amend 2.pdf
Vicinity_Set_I_1_K1038582 WSS-OA orig.pdf
Vicinity_Set_I_1_331725.pdf
Vicinity_Set_I_1_800514.pdf
Vicinity_Set_I_1_K1005001 -PS-FT-orig-Superceded.pdf
Vicinity_Set_I_1_K1003691 FT amend 1.pdf
Vicinity_Set_I_1_800515.pdf
Vicinity_Set_I_1_331822.pdf
Vicinity_Set_I_1_K1000791 GSS amend 1.pdf
Vicinity_Set_I_1_800233.pdf
Vicinity_Set_I_1_K1003691-2018-07-11-FT.pdf
Vicinity_Set_I_1_K1003691 FT Orig.pdf
Vicinity_Set_I_1_K1000791 GSS orig.pdf
Vicinity_Set_I_1_K1038582 WSS-OA amend 1.pdf
Vicinity_Set_I_1_330791.pdf

Response:

Please see attached documents.

FORM OF SERVICE AGREEMENT
(For Use Under Seller's Rate Schedule FT)

THIS AGREEMENT entered into this 11 day of JULY, 2018, by and between TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company, hereinafter referred to as "Seller," first party, and PHILADELPHIA GAS WORKS, by Philadelphia Facilities Management Corporation in its capacity as operator and manager of the municipally owned Philadelphia Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended, hereinafter referred to as "Buyer," second party,

WITNESSETH

WHEREAS, Seller and Buyer are parties to that certain Service Agreement, dated August 1, 1991 (Seller's Contract #1005001, hereinafter referred to as "the Service Agreement"), under Seller's Rate Schedule FT pursuant to which Seller provides firm transportation service for Buyer up to a Transportation Contract Quantity of 1,967 dt per day; and

WHEREAS, Seller and Buyer desire to amend the Service Agreement to modify Exhibit A of the Service Agreement to remove all of the receipt points and volumes with the exception of the receipt points at Compressor Stations 30, 45, 50, 54, 62 and 65 and the associated volumes for each; and

WHEREAS, in accordance with the settlement approved by the FERC in Docket No. RP12-993-000, Seller and Buyer also desire to amend Exhibit A of the Service Agreement to remove the column for the billing determinant quantities; and

WHEREAS, Seller and Buyer also desire to amend the Service Agreement to reflect the conversion of the quantities of gas under the Service Agreement from Mcf to dt at a conversion factor of 1.035 dt per Mcf; and

WHEREAS, Seller and Buyer further desire to amend the Service Agreement to include a non-conforming provision specifying the responsible party for payments for transportation service provided by Seller under the Service Agreement in Article VI, Paragraph 6; and

WHEREAS, consistent with Federal Energy Regulatory Commission requirements, Seller and Buyer have agreed to supersede and cancel the Service Agreement and execute a new agreement reflecting these amendments and otherwise restating the terms and conditions of the Service Agreement, which will then be submitted to the Federal Energy Regulatory Commission for approval.

NOW THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
GAS TRANSPORTATION SERVICE

1. Subject to the terms and provisions of this agreement and of Seller's Rate Schedule FT, Buyer agrees to deliver or cause to be delivered to Seller gas for transportation and Seller agrees to receive, transport and redeliver natural gas to Buyer or for the account of Buyer, on a firm basis, up to a Transportation Contract Quantity ("TCQ") of 1,967 dt per day.

2. Transportation service rendered hereunder shall not be subject to curtailment or interruption except as provided in Section 11 and, if applicable, Section 42 of the General Terms and Conditions of Seller's FERC Gas Tariff.

ARTICLE II
POINT(S) OF RECEIPT

Buyer shall deliver or cause to be delivered gas at the point(s) of receipt hereunder at a pressure sufficient to allow the gas to enter Seller's pipeline system at the varying pressures that may exist in such system from time to time; provided, however, the pressure of the gas delivered or caused to be delivered by Buyer shall not exceed the maximum operating pressure(s) of Seller's pipeline system at such point(s) of receipt. In the event the maximum operating pressure(s) of Seller's pipeline system, at the point(s) of receipt hereunder, is from time to time increased or decreased, then the maximum allowable pressure(s) of the gas delivered or caused to be delivered by Buyer to Seller at the point(s) of receipt shall be correspondingly increased or decreased upon written notification of Seller to Buyer. The point(s) of receipt for natural gas received for transportation pursuant to this agreement shall be:

See Exhibit A, attached hereto, for points of receipt.

ARTICLE III
POINT(S) OF DELIVERY

Seller shall redeliver to Buyer or for the account of Buyer the gas transported hereunder at the following point(s) of delivery and at a pressure(s) of:

See Exhibit B, attached hereto, for points of delivery and pressures.

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective as of September 1, 2018 and shall remain in force and effect until 9:00 a.m. Central Clock Time September 1, 2021 and thereafter until terminated by Seller or Buyer upon at least three (3) years written notice; provided, however, this agreement shall terminate immediately and, subject to the receipt of necessary authorizations, if any, Seller may discontinue service hereunder if (a) Buyer, in Seller's reasonable judgment fails to demonstrate creditworthiness, and (b) Buyer fails to provide adequate security in accordance with Section 32 of the General Terms and Conditions of Seller's Volume No. 1 Tariff. As set forth in Section 8 of Article II of Seller's August 7, 1989 revised Stipulation and Agreement in Docket Nos. RP88-68 et.al., (a) pregranted abandonment under Section 284.221(d) of the Commission's regulations shall not apply to any long term conversions from firm sales service to transportation service under Seller's Rate Schedule FT and (b) Seller shall not exercise its right to terminate this service agreement as it applies to transportation service resulting from conversions from firm sales service so long as Buyer is willing to pay rates no less favorable than Seller is otherwise able to collect from third parties for such service.

ARTICLE V
RATE SCHEDULE AND PRICE

1. Buyer shall pay Seller for natural gas delivered to Buyer hereunder in accordance with Seller's Rate Schedule FT and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be legally amended or superseded from time to time. Such rate schedule and General Terms and Conditions are by this reference made a part hereof. In the event Buyer and Seller mutually agree to a negotiated rate pursuant to the provisions in Section 53 of the General Terms and Conditions and specified term for service hereunder, provisions governing such negotiated rate (including surcharges) and term shall be set forth on Exhibit C to the service agreement.

2. Seller and Buyer agree that the quantity of gas that Buyer delivers or causes to be delivered to Seller shall include the quantity of gas retained by Seller for applicable compressor fuel, line loss make-up (and injection fuel under Seller's Rate Schedule GSS, if applicable) in providing the transportation service hereunder, which quantity may be changed from time to time and which will be specified in the currently effective Statement of Rates and Fuel in Part II, Section 12.1 of this tariff which relates to service under this agreement and which is incorporated herein.

3. In addition to the applicable charges for firm transportation service pursuant to Section 3 of Seller's Rate Schedule FT, Buyer shall reimburse Seller for any and all filing fees incurred as a result of Buyer's request for service under Seller's Rate Schedule FT, to the extent such fees are imposed upon Seller by the Federal Energy Regulatory Commission or any successor governmental authority having jurisdiction.

ARTICLE VI
MISCELLANEOUS

1. This Agreement supersedes and cancels as of the effective date hereof the following contract(s): FT Service Agreement, dated August 1, 1991 (Seller's Contract #1005001).

2. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

3. The interpretation and performance of this agreement shall be in accordance with the laws of the State of Texas, without recourse to the law governing conflict of laws, and to all present and future valid laws with respect to the subject matter, including present and future orders, rules and regulations of duly constituted authorities.

4. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

5. Notices to either party shall be in writing and shall be considered as duly delivered when mailed to the other party at the following address:

(a) If to Seller:
Transcontinental Gas Pipe Line Company, LLC
P. O. Box 1396
Houston, Texas 77251
Attention: Manager – Customer Services

(b) If to Buyer:
Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122
Attention: Vice President – Rates and Federal Regulatory Affairs

Such addresses may be changed from time to time by mailing appropriate notice thereof to the other party by certified or registered mail.

6. It is understood and agreed that any payments required to be made by the Philadelphia Facilities Management Corporation and/or PGW as a result of or arising out of its entering into this Service Agreement shall be made solely from the revenues of the Philadelphia Gas Works.

92 1009 103

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective officers or representatives thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE
COMPANY, LLC
(Seller)

By Hector Alatorre

Print Name HECTOR ALATORRE

Title DIRECTOR, CUSTOMER SERVICE

PHILADELPHIA GAS WORKS
(Buyer)

By John C. Zuk

Print Name John C. Zuk

Title V.P Gas Supply

Exhibit A

Point(s) of Receipt	Maximum Daily Capacity Entitlement at each Receipt Point (DT/day)*
1. Suction Side of Seller's Compressor Station 30 at the Existing Point of Interconnection between Seller's Central Texas Lateral and Seller's Mainline at Wharton County, Texas. (Station 30 – TP#7133)	334
2. Discharge Side of Seller's Compressor Station 45 at the Existing Point of Interconnection between Seller's Southwest Louisiana Lateral and Seller's Mainline Beauregard Parish, Louisiana. (Station 45 TP#7101)	826
3. Suction Side of Seller's Compressor Station 50 at the Existing Point of Interconnection Between Seller's Central Louisiana Lateral and Seller's Mainline Evangeline Parish, Louisiana. (Station 50 TP#6948)	1,200
4. Discharge Side of Seller's Compressor Station 54 at Seller's Washington Storage Field, St. Landry Parish, Louisiana (Station 54 TP#6768)	1,967
5. Suction Side of Seller's Compressor Station 62 on Seller's Southeast Louisiana Lateral in Terrebonne Parish, Louisiana. (Station 62 TP#7141)	767
6. Suction Side of Seller's Compressor Station 65 at Existing Point of Interconnection between Seller's Southeast Louisiana Lateral and Seller's Mainline St. Helena Parish, Louisiana. (Station 65 TP#6685)	1,967

* These quantities do not include the additional quantities of gas retained by Seller for applicable compressor fuel and line loss make-up provided for in Article V, 2 of this service agreement, which are subject to change as provided for in Article V, 2 hereof.

Exhibit B

	Point(s) of Delivery	Maximum Daily Capacity Entitlement at each Delivery Point(Dt/Day)	Pressure
1.	Station 54	1,967	Not Applicable.
2.	Seller's Eminence Storage Field, Covington County, Mississippi	1,967	Prevailing pressure in Seller's pipeline system not to exceed maximum allowable operating pressure.
3.	Ashmead Road Meter Station, located on Seller's Oreland Line at mile post 13.44 in Cheltenham Township, Montgomery County, Pennsylvania, near the city limits line of the City of Philadelphia, Pennsylvania.	1,967	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
4.	Whitman Meter Station, located in the City of Philadelphia, Pennsylvania, on Delaware Avenue approximately 550 feet south of the intersection of Delaware Avenue and Packer Avenue where the facilities of Seller connect with those of Buyer.	1,967	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.

5. Richmond Meter Station, located adjacent to Seller's Trenton-Woodbury line at mile post 36.83 and near the intersection of Lewis and Delaware Avenue, Philadelphia County, Philadelphia, Pennsylvania.	1,967	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
6. Northeast Philadelphia Meter Station (Somerton), located near the westerly terminus of Brookside Drive and approximately 1200 feet northeasterly from County Line Road in Lower Southampton Township, Bucks County, Pennsylvania.	1,967	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
7. Oreland Meter Station, located on Seller's Oreland Line at mile post 6.09 in Springfield Township, Montgomery County, Pennsylvania.	1,967	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.

Exhibit C

Specification of Negotiated Rate and Term

None.

EXHIBIT A 00 3829 001

AMENDMENT TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE S-2

This Amendment is made and entered into as of this 16th day of April, 1996 by and between Transcontinental Gas Pipe Line Corporation, hereinafter referred to as "Seller" and Philadelphia Gas Works , hereinafter referred to as "Buyer".

WITNESSETH:

WHEREAS, Buyer and Seller entered into an Agreement under Seller's Rate Schedule S-2 effective November 1, 1954 ("Agreement"); and

WHEREAS, the primary term of the Agreement has expired and Buyer and Seller desire to amend the Agreement to extend the primary term thereof as stated in Article II of the Agreement.

NOW THEREFORE, in consideration of the premises and mutual covenants hereinafter contained, the parties amend the Agreement as follows:

1. Article II is hereby deleted in its entirety effective April 16, 1996 and the following substituted therefor:

ARTICLE II
TERM OF AGREEMENT

Subject to the provisions of Article I hereof, this Agreement shall be effective on April 16, 1996 and shall continue for a period of five (5) contract years and thereafter until terminated by either Seller or Buyer upon twelve (12) months prior written notice to the other specifying a termination date at the end of such period or any yearly period thereafter, provided, however, that either party may cancel this Agreement in the event the said agreement of December 8, 1953, between Seller and Texas Eastern is canceled.

2. Except as hereinabove amended, the Agreement shall remain in full force and effect as written.

IN WITNESS THEREOF, the parties have executed this Amendment as of the date first above written.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

By: ____________________
Frank J. Ferazzi
Vice President
Customer Service

SHIPPER

By: ____________________
Name: Gregory D. Martin
Title: Executive V.P. & COO

RECEIVED
97 FEB 2? PM 3:07
CORPORATE RECORDS

Contract #: 400121

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1

This agreement, made and entered into this 1 day of June, 1993, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer," whether one or more),

W I T N E S S E T H:

WHEREAS, the Federal Energy Regulatory Commission required Pipeline to restructure Pipeline's services to reflect compliance with Order Nos. 636, 636-A, and 636-B (collectively hereinafter referred to as "Order No. 636"); and

WHEREAS, by order issued January 13, 1993 (62 FERC P61,015) and order issued April 22, 1993 (63 FERC P61,100), the Federal Energy Regulatory Commission accepted Pipeline's revised tariff sheets filed in compliance with Order No. 636 to become effective June 1, 1993, subject to certain conditions set forth in the April 22, 1993 order; and

WHEREAS, Customer made its final Order No. 636 service elections on May 3, 1993 pursuant to the April 22, 1993 order and Pipeline filed revised tariff sheets to become effective June 1, 1993 in compliance with the April 22, 1993 order;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule SS-1, Pipeline agrees to provide firm service for Customer under Rate Schedule SS-1 and to receive and store for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Injection Quantity (MDIQ) 13,606 dth
Maximum Storage Quantity (MSQ) 2,647,080 dth

Pipeline agrees to withdraw from storage for Customer, at Customer's request, quantities of gas up to Customer's Maximum Daily Withdrawal Quantity (MDWQ) of 44,118 dekatherms, or such lesser quantity as determined pursuant to Rate Schedule SS-1, from Customer's Storage Inventory, plus Applicable Shrinkage, and to deliver for Customer's account such quantities. Pipeline's obligation to withdraw gas on any day is governed by the provisions of Rate Schedule SS-1, including but not limited to Section 6.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on June 1, 1993 and shall continue in force and effect until 04/30/2012 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon five (5) years prior written notice to the other specifying a termination date of any year occurring on or after the expiration of the primary term. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

In the event there is gas in storage for Customer's account on April 30 of the year of termination of this Service Agreement, this Service Agreement shall continue in force and effect for the sole purpose of withdrawal and delivery of said gas to Customer for an additional one-hundred and twenty (120) days.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule SS-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule SS-1 as filed with the Federal Energy Regulatory Commission and as the same may be hereafter revised or changed.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule SS-1, (b) Pipeline's Rate Schedule SS-1, pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule SS-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDIQ, MSQ and MDWQ specified in Article I, to change the term of the service agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The natural gas received by Pipeline for Customer's account for storage injection pursuant to this Service Agreement shall be those quantities scheduled for delivery pursuant to Service Agreements between Pipeline and Customer under Rate Schedules CDS, FT-1, SCT, PTI or IT-1 which specify as a Point of Delivery the "SS-1 Storage Point". For purposes of billing of Usage Charges under Rate Schedules CDS, FT-1, SCT, PTI or IT-1, deliveries under Rate Schedules CDS, FT-1, SCT, PTI or IT-1 for injection into storage scheduled directly to the "SS-1 Storage Point" shall be deemed to have been delivered 60% in Market Zone

2 and 40% in Market Zone 3. In addition, at Customer's request any positive or negative variance between scheduled deliveries and actual deliveries on any day at Customer's Points of Delivery under Rate Schedules CDS, FT-1, SCT, or IT-1 shall be deemed for billing purposes delivered at the Point of Delivery and shall be injected into or withdrawn from storage for Customer's account. In addition to accepting gas for storage injection at the SS-1 Storage Point, Pipeline will accept gas tendered at points of interconnection between Pipeline and third party facilities at Oakford and Leidy Storage Fields provided that such receipt does not result in Customer tendering aggregate quantities for storage in excess of the Customer MDIQ.

The Point(s) of Delivery at which Pipeline shall deliver gas shall be specified in Exhibit A of the executed service agreement.

Exhibit A and B are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform and be subject to the provisions of Section 5 of the General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: Texas Eastern Transmission Corporation
5400 Westheimer Court
Houston, Texas 77056-5310

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1
(Continued)

(b) Customer: PHILADELPHIA GAS WORKS
GAS AQUISITION & FED. REGULATORY AFFAIRS DEPT.
800 W. MONTGOMERY AVENUE
PHILADELPHIA, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1
(Continued)

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

Service Agreement(s) dated, 08/09/1991 between Pipeline and Customer under Pipeline's Rate Schedule SS-1, and SCQ (Pipeline's Contract No. 400021 and 312051).

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1
(Continued)

IN WITNESS WHEREOF, the Parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents, or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By Diane J. Tom
Vice President

ATTEST: Robert W. Reed

PHILADELPHIA GAS WORKS*

By A. P. Degen
Executive Vice President

ATTEST: Sydney M. Tarrant

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended

EXHIBIT A, POINT(S) OF DELIVERY, DATED __________,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE SS-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA GAS WORKS ("Customer"), DATED __________:

Point of Delivery		Description	Maximum Daily Delivery Obligation	Delivery Pressure Obligation	Measurement Responsibilities	Owner	Operator
1.	70030	P.G.W. Philadelphia Co., PA	33,738 dth	100 pounds per square inch gauge	TE	TE	Philadelphia Gas
2.	70034	P.G.W. Montgomery Co., PA	23,357 dth	100 pounds per square inch gauge	TE	TE	Philadelphia Gas

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations at each of the points of delivery described above, including Pipeline's maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Point of Delivery	Aggregate Maximum Daily Delivery Obligation
No. 1	137,073 dth
No. 2	137,310 dth

SIGNED FOR IDENTIFICATION:

PIPELINE: Diane T. [illegible]

CUSTOMER: [illegible]

00 3829 002

AMENDMENT TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE S-2

This Amendment is made and entered into as of this 1st day of May 1998 by and between Transcontinental Gas Pipe Line Corporation ("Seller") and the Philadelphia Gas Works by Philadelphia Facilities Management Corporation ("PFMC") solely in its capacity as operator and manager of the municipally owned Philadelphia Gas Works, under and pursuant to an agreement with the City of Philadelphia dated December 29,1972, as amended, (collectively "PGW" or "Buyer")

WITNESSTH

WHEREAS, Seller and the United Gas Improvement Company entered into an Agreement under Seller's Rate Schedule S-2, dated December 14, 1953, effective November 1, 1954 to deliver natural gas to meter stations: Oreland, 030 Point Breeze and 034 Levick Street serving the Gas Works owned by the City of Philadelphia ("Agreement");

WHEREAS, the Buyer, PGW is the successor in interest to the Agreement under and pursuant to an agreement with the City of Philadelphia dated December 29,1972, as amended for the operation and management of the municipally owned Philadelphia Gas Works;

WHEREAS, the primary term of the Agreement has expired and Buyer and Seller desire to amend the Agreement to extend the primary term thereof as stated in Article II of the Agreement.

NOW THEREFORE, in consideration of the premises and mutual covenants hereinafter contained, the parties amend the Agreement as follows:

1. Article II is hereby deleted in its entirety effective April 16, 1996 and the following substituted therefore:

ARTICLE II
TERM OF AGREEMENT

Subject to the provisions of Article I hereof, this Agreement shall be effective on April 16, 1996 and shall continue for a period of five (5) contract years and thereafter until terminated by either Seller or Buyer upon twelve (12) months prior written notice to the other specifying a termination date at the end of such period or any yearly period thereafter, provided, however, that either party may cancel this Agreement in the event the said agreement of December 8, 1953, between Seller and the Texas Eastern Transmission Corporation is canceled.

2. Except as hereinabove amended, the Agreement shall remain in full force and effect as written.

IN WITNESS THEREOF, the parties have executed this Amendment as of the date first above written.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION	**PHILADELPHIA GAS WORKS BY PHILADELPHIA FACILITIES MANAGEMENT CORPORATION**
By: _________ Date: _________	By: _________ Date: 6/30/98
Frank J. Frazzi, Vice Pres. Customer Service	Gregory D. Martin, Executive Vice Pres. Chief Operating Officer
Attest: _________ Date: 7-5-98	Attest: _________ Date: 7/21/98

Contract #: 400209

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1

This agreement, made and entered into this 1 day of June, 1993, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer," whether one or more),

W I T N E S S E T H:

WHEREAS, the Federal Energy Regulatory Commission required Pipeline to restructure Pipeline's services to reflect compliance with Order Nos. 636, 636-A, and 636-B (collectively hereinafter referred to as "Order No. 636"); and

WHEREAS, by order issued January 13, 1993 (62 FERC P61,015) and order issued April 22, 1993 (63 FERC P61,100), the Federal Energy Regulatory Commission accepted Pipeline's revised tariff sheets filed in compliance with Order No. 636 to become effective June 1, 1993, subject to certain conditions set forth in the April 22, 1993 order; and

WHEREAS, Customer made its final Order No. 636 service elections on May 3, 1993 pursuant to the April 22, 1993 order and Pipeline filed revised tariff sheets to become effective June 1, 1993 in compliance with the April 22, 1993 order;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule SS-1, Pipeline agrees to provide firm service for Customer under Rate Schedule SS-1 and to receive and store for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Injection Quantity (MDIQ) 12,656 dth *
Maximum Storage Quantity (MSQ) 2,462,120 dth *

* Quantities subject to Court determination and/or final FERC action. PGW reserves all rights.

Pipeline agrees to withdraw from storage for Customer, at Customer's request, quantities of gas up to Customer's Maximum Daily Withdrawal Quantity (MDWQ) of 20,847 dekatherms, or such lesser quantity as determined pursuant to Rate Schedule SS-1, from Customer's Storage Inventory, plus Applicable Shrinkage, and to deliver for Customer's account such quantities. Pipeline's obligation to withdraw gas on any day is governed by the provisions of Rate Schedule SS-1, including but not limited to Section 6.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on June 1, 1993 and shall continue in force and effect until 04/30/2012 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon five (5) years prior written notice to the other specifying a termination date of any year occurring on or after the expiration of the primary term. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

In the event there is gas in storage for Customer's account on April 30 of the year of termination of this Service Agreement, this Service Agreement shall continue in force and effect for the sole purpose of withdrawal and delivery of said gas to Customer for an additional one-hundred and twenty (120) days.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule SS-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule SS-1 as filed with the Federal Energy Regulatory Commission and as the same may be hereafter revised or changed.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule SS-1, (b) Pipeline's Rate Schedule SS-1, pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule SS-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDIQ, MSQ and MDWQ specified in Article I, to change the term of the service agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The natural gas received by Pipeline for Customer's account for storage injection pursuant to this Service Agreement shall be those quantities scheduled for delivery pursuant to Service Agreements between Pipeline and Customer under Rate Schedules CDS, FT-1, SCT, PTI or IT-1 which specify as a Point of Delivery the "SS-1 Storage Point". For purposes of billing of Usage Charges under Rate Schedules CDS, FT-1, SCT, PTI or IT-1,

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1
(Continued)

deliveries under Rate Schedules CDS, FT-1, SCT, PTI or IT-1 for injection into storage scheduled directly to the "SS-1 Storage Point" shall be deemed to have been delivered 60% in Market Zone 2 and 40% in Market Zone 3. In addition, at Customer's request any positive or negative variance between scheduled deliveries and actual deliveries on any day at Customer's Points of Delivery under Rate Schedules CDS, FT-1, SCT, or IT-1 shall be deemed for billing purposes delivered at the Point of Delivery and shall be injected into or withdrawn from storage for Customer's account. In addition to accepting gas for storage injection at the SS-1 Storage Point, Pipeline will accept gas tendered at points of interconnection between Pipeline and third party facilities at Oakford and Leidy Storage Fields provided that such receipt does not result in Customer tendering aggregate quantities for storage in excess of the Customer MDIQ.

The Point(s) of Delivery at which Pipeline shall deliver gas shall be specified in Exhibit A of the executed service agreement.

Exhibit A and B are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform and be subject to the provisions of Section 5 of the General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications.

SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1
(Continued)

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: Texas Eastern Transmission Corporation
5400 Westheimer Court
Houston, Texas 77056-5310

(b) Customer: PHILADELPHIA GAS WORKS
GAS ACQUISITION & FED. REGULATORY AFFAIRS DEPT.
800 W. MONTGOMERY AVENUE
PHILADELPHIA, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

> Service Agreement(s) dated, 03/22/1990 between Pipeline and Customer under Pipeline's Rate Schedule CD-2 (Pipeline's Contract No. 311975).

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SERVICE AGREEMENT
FOR RATE SCHEDULE SS-1
(Continued)

IN WITNESS WHEREOF, the Parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents, or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By Diane T. Tom
Vice President

ATTEST:

Robert W. Reed

PHILADELPHIA GAS WORKS*

By A.P. Degen LAF
Executive Vice President

ATTEST:

Sydney M Arent

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended

EXHIBIT A, POINT(S) OF DELIVERY, DATED ________,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE SS-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA GAS WORKS ("Customer"), DATED __________:

Point of Delivery	Description	Maximum Daily Delivery Obligation	Delivery Pressure Obligation	Measurement Responsibilities	Owner	Operator
1. 70030	P.G.W. Philadelphia Co., PA	20,847 dth	100 pounds per square inch gauge	TE	TE	Philadelphia Gas
2. 70034	P.G.W. Montgomery Co., PA	20,847 dth	100 pounds per square inch gauge	TE	TE	Philadelphia Gas
3. 71682	P.G.W. Philadelphia Co., PA	5,000 dth	100 pounds per square inch gauge	TE	TE	TE

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations at each of the points of delivery described above, including Pipeline's maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Point of Delivery	Aggregate Maximum Daily Delivery Obligation
No. 1	137,073 dth
No. 2	137,310 dth
No. 3	5,000 dth

SIGNED FOR IDENTIFICATION:

PIPELINE: Dujine J. Tom

CUSTOMER: Harry Brunnel

SUPERSEDES EXHIBIT A DATED __________

Contract #: 800232R1

SERVICE AGREEMENT
FOR RATE SCHEDULE CDS

This Service Agreement, made and entered into this 31st day of December, 1999, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Customer and Pipeline are parties to an executed service agreement dated December 15, 1998, under Pipeline's Rate Schedule CDS (Pipeline's Contract No. 800232R); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800232R;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule CDS, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Sections 2.3 and 2.4 of Pipeline's Rate Schedule CDS, Pipeline shall deliver to those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), for Customer's account, as requested for any day, natural gas quantities up to Customer's MDQ. Customer's MDQ is as follows:

Maximum Daily Quantity (MDQ) 75,000 dth

provided, however, Customer shall have the option to reduce the MDQ of this Service Agreement by 7,500 dth upon one (1) year prior written notice to Pipeline with such reduction to be effective November 1, 2002. Pipeline and Customer agree that any reduction in MDQ of this Service Agreement will (i)reduce all of Customer's market zone entitlements by the quantity of such reduction; and (ii)reduce Customer's firm rights under this Service Agreement in each of Pipeline's acess area zones by 10%.

Subject to variances as may be permitted by Sections 2.4 of Rate Schedule CDS or the General Terms and Conditions, Customer shall deliver to Pipeline and Pipeline shall receive, for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) daily quantities of gas equal to the daily quantities delivered to Customer pursuant to this Service Agreement up to Customer's MDQ, plus Applicable Shrinkage as specified in the General Terms and Conditions.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule CDS and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

80023285

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2003 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon one (1) year prior written notice to the other specifying a termination date of October 31, 2003 or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule CDS and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule CDS as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule CDS, (b) Pipeline's Rate Schedule CDS pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule CDS. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

SERVICE AGREEMENT
FOR RATE SCHEDULE CDS
(Continued)

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA GAS WORKS
GAS ACQUISITiON & FEDERAL REGULATORY AFFAIRS DEPT.
800 W. MONTGOMERY AVENUE
PHILADELPHIA, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other;

provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

> service agreement dated December 15, 1998, between Pipeline and Customer under Pipeline's Rate Schedule CDS (Pipeline's Contract No. 800232R).

SERVICE AGREEMENT
FOR RATE SCHEDULE CDS
(Continued)

WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________ VP

ATTEST:

____
Assistant Secretary

PHILADELPHIA GAS WORKS*

By ______________________

ATTEST:

____

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended

800232

Contract #800232R

R1 A1

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE CDS
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA GAS WORKS ("Customer"), DATED 12/31/1999:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	75000

SIGNED FOR IDENTIFICATION

PIPELINE: Thevers JMM

CUSTOMER: [signature] LAF

SUPERSEDES EXHIBIT A DATED: ________

800232R

Contract #:800232R1
R1B1

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE CDS
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA GAS WORKS ("Customer"),
DATED 12/31/1999:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi-bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE,PA PHILADELPHIA CO., PA	75,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	70034	PHILADELPHIA GAS WORKS - LEVICK ST., PA MONTGOMERY CO., PA	75,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
3.	71682	PHILADELPHIA GAS WORKS PENROSE (EASTWICK)-PHILADEL PHILADELPHIA CO., PA	5,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
4.	79513	SS-1 STORAGE POINT	26,262 04/01-10/31 26,262 11/01-03/31	N/A	N/A	N/A	N/A
5.	73060	HARKNESS PHILADELPHIA PHILADELPHIA CO., PA	49,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

800232R6

Contract #:800232R1

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA GAS WORKS

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	92,073 12/01-02/28 101,073 03/01-11/30
No.2	137,310
No.3	5,000
No.4	26,262
No.5	49,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 101,073 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ____________________ JMM

CUSTOMER: ____________________ GAT

SUPERSEDES EXHIBIT B DATED: December 15, 1998

800232R5

Contract #:800232R
RIC1

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/31/1999, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE CDS BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA GAS WORKS ("CUSTOMER"), DATED 12/31/1999:

ZONE BOUNDARY ENTRY QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX								2127						
ETX					9040		3218							
WLA							979	2127						
ELA						58727								
M1-24									9040					
M1-30										58727				
M1-TXG											4198			
M1-TGC												4254		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														75000
M3														

800232R4

Contract #:800232R

EXHIBIT C (Continued)
PHILADELPHIA GAS WORKS

ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24									9040					
M1-30										58727				
M1-TXG											4198			
M1-TGC												4254		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														75000
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: [signature] Jmm

CUSTOMER: [signature] LAC

SUPERCEDES EXHIBIT C DATED

LW

THIS AGREEMENT entered into this 14th day of December, 1953, by and between TRANSCONTINENTAL GAS PIPE LINE CORPORATION, a Delaware Corporation, hereinafter referred to as "Seller", first party, and THE UNITED GAS IMPROVEMENT COMPANY, hereinafter referred to as "Buyer", second party,

W I T N E S S E T H :

WHEREAS, Seller has entered into an agreement with Texas Eastern Transmission Corporation (Texas Eastern), dated December 8, 1953, providing for the delivery of natural gas to Seller from the Oakford Storage Field, Westmoreland County, Pennsylvania, during the period of November 16th through April 15th and for the return to storage of an equivalent quantity of natural gas during the period of April 16th through November 15th of each year, and Seller has or can provide capacity for the delivery to and the return by Buyer of certain quantities of natural gas during such respective periods; and

WHEREAS, Buyer desires to receive delivery of certain quantities of such natural gas during the period of November 16th through April 15th of each year, and to return equivalent quantities of natural gas to storage during the period of April 16th through November 15th of each year as hereinafter provided;

NOW, THEREFORE, Seller and Buyer agree as follows:

ARTICLE I

GOVERNMENTAL AUTHORIZATION
AND CONSTRUCTION OF FACILITIES

Seller and Buyer agree to use due diligence to obtain all necessary permits, licenses and approvals from regulatory bodies having jurisdiction, particularly including a Certificate of Public Convenience and Necessity satisfactory to Seller.

If Seller does not obtain such necessary permits, licenses and approvals from regulatory bodies having jurisdiction on or before April 30, 1954, then either party may terminate this Agreement by giving the other party notice of its intentions to terminate this Agreement within ten (10) days thereof.

ARTICLE II

TERM OF AGREEMENT

Subject to the provisions of Article I hereof, this Agreement shall be effective on November 1, 1954. Natural gas service rendered hereunder shall commence on November 16, 1954, and continue for a period of twenty (20) contract years and thereafter until terminated either by Seller or Buyer upon twelve (12) months prior written notice to the other specifying a termination date at the end of such period or any yearly period thereafter, provided, however, that either party may cancel this Agreement in the event the said agreement of December 8, 1953, between Seller and Texas Eastern is cancelled.

ARTICLE III

CONTRACT DEMAND
AND ANNUAL CONTRACT QUANTITY

Subject to the terms and provisions of this Agreement, Seller, during the period November 16th through April 15th, inclusive, of each contract year, agrees to sell and deliver to Buyer such volumes of natural gas as Buyer shall specify up to the following maximum daily quantities:

The period from November 16 through February 16,	5,111 Mcf per day;
Commencing February 17 the Maximum Daily Quantity shall decrease each successive day by 96 Mcf per day until March 1, on which date the Maximum Daily Quantity shall be	3,828 Mcf per day;
Commencing March 2 the Maximum Daily Quantity shall decrease each successive day by 77 Mcf per day until March 16, on which date the Maximum Daily Quantity shall be	2,680 Mcf per day;
Commencing March 17 the Maximum Daily Quantity shall decrease each successive day by 114 Mcf per day until April 1, and for the period from April 1 through April 15, the Maximum Daily Quantity shall be	957 Mcf per day;

provided, that Seller shall have no obligation to deliver to Buyer during each contract year a volume of natural gas in excess of the following total quantities during the periods hereinafter set forth:

From November 16 through February 15, not in excess of	348,204 Mcf
From November 16 through March 15, not in excess of	432,729 Mcf
From November 16 through April 15, not in excess of	459,372 Mcf

For the purpose of computing the demand charge in Seller's Rate Schedule S-2, the foregoing maximum daily quantity of 5,111 Mcf shall constitute the Contract Storage Demand of Buyer, and Buyer agrees to pay Seller therefor as provided in Article V hereof.

The term "contract year" as used in this Contract and in Seller's Rate Schedule S-2 shall mean a period commencing on the sixteenth day of November of each calendar year of the term hereof and continuing through the next ensuing fifteenth day of November.

In the event that Seller fails or is unable to commence deliveries hereunder by November 16, 1954, but commences deliveries hereunder during any of the periods thereafter as hereinafter set forth, Buyer agrees to take and pay for, or pay for whether taken or not, pursuant to Section 4 of Seller's Rate Schedule S-2, quantities of natural gas, as follows:

If deliveries commence after November 16, 1954, but before December 1, 1954, during the period December 1, 1954, through April 15, 1955	413,435 Mcf
If deliveries commence after December 1, 1954, but before December 16, 1954, during the period December 16, 1954, through April 15, 1955	385,873 Mcf
If deliveries commence after December 16, 1954, but before January 1, 1955, during the period January 1, 1955, through April 15, 1955	330,748 Mcf
If deliveries commence after January 1, 1955, but before January 16, 1955, during the period January 16, 1955, through April 15, 1955	275,624 Mcf
If deliveries commence after January 16, 1955, but before February 1, 1955, during the period February 1, 1955, through April 15, 1955	192,936 Mcf
If deliveries commence after February 1, 1955, but before February 16, 1955, during the period February 16, 1955, through April 15, 1955	110,249 Mcf
If deliveries commence after February 16, 1955, but before March 1, 1955, during the period March 1, 1955, through April 15, 1955	68,905 Mcf
If deliveries commence after March 1, 1955, but before March 16, 1955, during the period March 16, 1955, through April 15, 1955	27,562 Mcf

ARTICLE IV

POINTS OF DELIVERY
AND DELIVERY PRESSURE

Seller shall deliver natural gas hereunder to Buyer at the following Points of Delivery and at a pressure of not less than one hundred (100) pounds per square inch gauge:

Oreland Meter Station, Ashmead Road, Pennsylvania.

Meter Station 030 Point Breeze, Pennsylvania.

Meter Station 034 Levick Street, Pennsylvania.

ARTICLE V

PRICE

Commencing on the effective date hereof Buyer shall pay Seller for all natural gas service rendered hereunder in accordance with Seller's Rate Schedule S-2 as filed with the Federal Power Commission, and as same may be legally amended or superseded.

This Agreement in all respects shall be and remain subject to the applicable provisions of Seller's Rate Schedule S-2, which is made a part hereof by reference.

ARTICLE VI

MISCELLANEOUS

1. The subject headings of the Articles of this Agreement are inserted for the purpose of convenient reference and are not intended to be a part of this Agreement nor to be considered in any interpretation of the same.

This Agreement supersedes and cancels as of the effective date hereof the following contracts between the parties hereto for the sale of natural gas by Seller to the Buyer:

NONE

3. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this Agreement

shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

4. It is agreed by Buyer and Seller that this Agreement is entered into pursuant to the provisions of Paragraph 2 of Article IV and subject to the provisions of Article III of the Gas Sales Contract between Transcontinental Gas Pipe Line Corporation and The Philadelphia Gas Works Company (to which The United Gas Improvement Company, Buyer herein, is successor by merger) and, any provision hereof to the contrary notwithstanding, the term of this Agreement shall not under any circumstances extend beyond the date when the said Gas Sales Contract dated as January 1, 1951, as the same may be amended, superseded or extended by agreement of the parties, shall have been terminated.

5. This Agreement shall be interpreted, performed, and enforced in accordance with the laws of the State of Pennsylvania.

6. This Agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be signed by their respective Presidents or Vice Presidents thereunto duly authorized and have caused their respective corporate seals to be hereunto affixed and attested by their respective Secretaries or Assistant Secretaries the day and year above written.

ATTEST:

Tom H. Wheat
Secretary

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

By Tom P. Walker JGH.
President

SELLER

ATTEST:

Secretary

THE UNITED GAS IMPROVEMENT COMPANY

By E H Smoker
Vice - President

BUYER

21 0289 002

2011 JUL 17 AM 10: 15

AMENDMENT TO SERVICE AGREEMENT

THIS AMENDMENT ("Amendment") is entered into this 16 day of June, 2011 by and between TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company, hereinafter referred to as "Seller", first party, and PHILADELPHIA GAS WORKS, hereinafter referred to as "Buyer", second party.

WITNESSETH

WHEREAS, Seller and Buyer entered into that certain Service Agreement dated April 3, 2001 under Seller's Rate Schedule WSS-Open Access pursuant to which Seller provides firm storage service for Buyer of a Storage Capacity Quantity of 3,335,909 dekatherms (Seller's Contract #1038582, hereinafter referred to as "the Service Agreement"); and

WHEREAS, Seller submitted the filing to reduce the certificated maximum daily deliverability at the Washington Storage Field on December 6, 2010 in Docket No. CP11-45, and received Commission order authorizing the abandonment on March 30, 2011 to be effective May 1, 2011; and

WHEREAS, Seller and Buyer now agree to amend Buyer's Storage Demand Quantity to Buyer's proportionate reduced delivery capability at the Washington Storage Field.

NOW THEREFORE, Seller and Buyer hereby agree to amend the Service Agreement as follows:

1. Article I of the Service Agreement is hereby deleted in its entirety and replaced by the following:

"ARTICLE I
SERVICE TO BE RENDERED

Subject to the terms and provisions of this agreement and of Seller's Rate Schedule WSS-Open Access, Seller agrees to inject into storage for Buyer's account, store and withdraw from storage, quantities of natural gas as follows:

To withdraw from storage up to a maximum quantity on any day of 35,115 dt, which quantity shall be Buyer's Storage Demand Quantity, or such greater daily quantity, as applicable from time to time, pursuant to the terms and conditions of Seller's Rate Schedule WSS-Open Access.

21 0289 002

To receive and store up to a total quantity at any one time of 3,335,909 dt, which quantity shall be Buyer's Storage Capacity Quantity."

2. This Amendment shall be effective on May 1, 2011.

3. Except as herein amended, the Service Agreement shall remain in full force and effect pursuant to the terms thereof.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective officers or representative thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

By Paul F. Egner III

Paul F. Egner III
Director, Customer Services

BAW
1/4
JB

PHILADELPHIA GAS WORKS

By Douglas A. Moser

Printed Name DOUGLAS A. MOSER
Title SR. VICE PRESIDENT GAS MANAGEMENT

Contract No. 3.8582

21 0289 100

SERVICE AGREEMENT

between

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

and

PHILADELPHIA GAS WORKS

DATED

April 1, 2001

SERVICE AGREEMENT UNDER RATE SCHEDULE WSS-OPEN ACCESS

THIS AGREEMENT entered into this 3rd day of April, 2001, by and between TRANSCONTINENTAL GAS PIPE LINE CORPORATION, a Delaware corporation, hereinafter referred to as "Seller," first party, and PHILADELPHIA GAS WORKS*, hereinafter referred to as "Buyer," second party,

WITNESSETH:

WHEREAS, Seller has made available to Buyer storage capacity from its Washington Storage Field under Part 284 of the Commission's Regulations; and Buyer desires to purchase and Seller desires to sell natural gas storage service under Seller's Rate Schedule WSS-Open Access as set forth herein;

NOW, THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
SERVICE TO BE RENDERED

Subject to the terms and provisions of this agreement and of Seller's Rate Schedule WSS–Open Access, Seller agrees to inject into storage for Buyer's account, store and withdraw from storage, quantities of natural gas as follows:

> To withdraw from storage up to maximum quantity on any day of 39,246 dt, which quantity shall be Buyer's Storage Demand Quantity, as applicable from time to time, pursuant to the terms and conditions of Seller's Rate Schedule WSS-Open Access.
>
> To receive and store up to a total quantity at any one time of 3,335,909 dt, which quantity shall be Buyer's Storage Capacity Quantity.

ARTICLE II
POINT(S) OF RECEIPT AND DELIVERY

The Point of Receipt for injection of natural gas delivered to Seller by Buyer and the Point

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* Philadelphia Gas Works by the Philadelphia Facilities Management Corporation, a non-profit Pennsylvania corporation, solely in its capacity as operator and manager of the city-owned Philadelphia Gas Works, under and pursuant to an agreement with the City of Philadelphia, dated December 29, 1972, as amended.

of Delivery for withdrawal of natural gas delivered by Seller to Buyer under this agreement shall be Seller's Washington Storage Field located at Seller's Station 54 in St. Landry Parish, Louisiana. Gas delivered or received in Seller's pipeline system shall be at the prevailing pressure not to exceed the maximum allowable operating pressure.

ARTICLE III
TERM OF AGREEMENT

This agreement shall be effective April 1, 2001 and shall remain in force and effect until March 31, 2002, and year to year thereafter, subject to termination by either party upon six months written notice to the other party.

ARTICLE IV
RATE SCHEDULE AND PRICE

Buyer shall pay Seller for natural gas service rendered hereunder in accordance with Seller's Rate Schedule WSS–Open Access, and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be amended or superseded from time to time. Such Rate Schedule and General Terms and Conditions are by this reference made a part hereof. In the event Buyer and Seller mutually agree to a negotiated rate pursuant to the provisions of Section 53 of the General Terms and Conditions and specified term for service hereunder, provisions governing such negotiated rate (including surcharges) and term shall be set forth on Exhibit A to the service agreement.

ARTICLE V
MISCELLANEOUS

1. The subject headings of the Articles of this agreement are inserted for the purpose of convenient reference and are not intended to be a part of this agreement nor to be considered in any interpretation of the same.

2. This agreement supersedes and cancels as of the effective date hereof the following contracts between the parties hereto: Service Agreement under Rate Schedule WSS dated August 1,1991 (Seller's system contract number 0.0790).

3. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or

defaults, whether of a like or different character.

4. This agreement shall be interpreted, performed and enforced in accordance with the laws of the State of Texas.

5. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective officers or representatives thereunto duly authorized.

Attest:

Abby L. Pozefsky,
Assistant Secretary

TRANSCONTINENTAL GAS PIPE LINE
CORPORATION (Seller)

By ______________________
Frank J. Ferazzi - Vice President
Customer Service and Rates

PHILADELPHIA GAS WORKS
(Buyer)

By Kumar Kishinchand
Title: President & CEO

EXHIBIT A

Specification of Negotiated Rate and Term

None

Contract #: 331725

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-7

This Service Agreement, made and entered into this 7th day of August, 1996, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Customer and Pipeline are parties to an executed service agreement under Pipeline's Rate Schedule FTS-7, Pipeline's Contract No. 331006, which specifies an MDQ of 7,470 dekatherms per day ("Dth/d"); and

WHEREAS, pursuant to the terms and conditions of Section 10 of Rate Schedule FTS-7, as approved by the Commission, Customer desires to increase its MDQ thereunder by 318 Dth/d; and

WHEREAS,subject to the terms and conditions set forth in the Precedent Agreement dated October 21, 1994 entered into by and between Customer and Pipeline ("Precedent Agreement") and the terms and conditions of this Service Agreement, Customer and Pipeline desire to supersede Pipeline's Contract No. 331006 by entering into this Service Agreement to reflect the additional firm transportation service as described above;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FTS-7, Pipeline agrees to deliver on a firm basis for Customer's account quantities of gas up to the following quantity:

Maximum Daily Quantity (MDQ) 7,788 dth

Pipeline shall receive for Customer's account, at the Customer Point(s), for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at the CNG Point(s), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall receive for Customer's account, at the CNG Point(s), for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at the Customer Point(s), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage, as specified in the executed service agreement. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ, as specified in the executed service agreement.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the date specified by Pipeline in Pipeline's written notice to Customer pursuant to Paragraph 3 of the Precedent Agreement which date will be the later of: (i) November 1, 1996; or (ii) the date that all of the conditions precedent set forth in Paragraph 6 of the Precedent Agreement have been satisfied or waived by mutual written agreement of the parties and Pipeline is ready and able to place the necessary facilities into gas service. In the event the Precedent Agreement is terminated in accordance with Paragraph 10 of the Precedent Agreement, then the term of this Service Agreement shall not commence and this Service Agreement shall be null and void. After commencement of the term of this Service Agreement, the term of this Service Agreement shall continue in force and effect until March 31, 2006, and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon twenty-four (24) months prior written notice to the other specifying a termination date of March 31, 2006 or any March 31 thereafter.

Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill. Notwithstanding the foregoing, service shall not be terminated unless and until Pipeline has received abandonment authority pursuant to Section 7 of the Natural Gas Act. Customer shall have the right to oppose Pipeline's application to the Federal Energy Regulatory Commission, or any successor agency, for such abandonment authority. For the 120 days following termination of this Service Agreement, Pipeline shall utilize its best efforts to provide Customer with such additional interruptible transportation service, to be provided pursuant to Rate Schedule IT-1 or successor of Rate Schedule IT-1, as is necessary for Customer to withdraw and receive delivery of all gas remaining in storage pursuant to CNG's Rate Schedule GSS.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FTS-7 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline for, all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FTS-7 as filed with the Federal Energy Regulatory Commission and as the same may be hereafter revised or changed.

Pipeline shall have the right from time to time, by the filing of a revised rate schedule, to increase or decrease the rates, to change the form of the applicable rate schedule and to take such other and further action with respect thereto without further consent by Customer and such changes in rates and other changes shall become the Rate Schedule and Terms and Conditions under which the gas shall be transported hereunder. Customer shall have the right to oppose any of the foregoing and to request reduction in rates to the extent that Customer is legally permitted to do so under the Natural Gas Act.

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-7
(Continued)

ARTICLE IV

CUSTOMER POINT(S) AND CNG POINT(S)

Natural gas to be received by Pipeline for Customer's account for service hereunder shall be received on the outlet side of the measuring station at or near the following designated Customer Point(s) or CNG Point(s), and natural gas to be delivered by Pipeline for Customer's account hereunder shall be delivered at the outlet side of the measuring stations at or near the following designated CNG Point(s) or Customer Point(s), in accordance with the Maximum Daily Receipt Obligation (MDRO) plus Applicable Shrinkage, Maximum Daily Delivery Obligation (MDDO), receipt and delivery pressure obligations and measurement responsibilities indicated below for each:

	Customer Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
1.	In the City of Philadelphia, Pennsylvania, and designated by Pipeline as Measuring Station 70030	7,788 dth	100 psig	Pipeline
2.	On the Montgomery-Philadelphia County Line, in Philadelphia, Pennsylvania and designated by Pipeline as Measuring Station 70034	7,788 dth	100 psig	Pipeline

	CNG Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
1.	In Westmoreland County, Pennsylvania, and designated by Pipeline as Measuring Station 75082.	7,788 dth	At such pressure necessary to enter Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline
2.	In Clinton County, Pennsylvania, and designated by Pipeline as Measuring Station 75931.	0 dth	At such pressure necessary to enter Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	CNG Transmission

provided, however, receipt of gas by Pipeline for Customer's account at Customer Point(s) shall be accomplished solely by the displacement of gas quantities otherwise deliverable to Customer by Pipeline pursuant to other contractual arrangements between Pipeline and Customer, and which quantities shall be billed by Pipeline and paid by Customer as if such deliveries in fact occurred pursuant to the relevant contractual arrangements.

further provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations at each of the Customer Points described above, including Pipeline's maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Customer Point	Aggregate Maximum Daily Delivery Obligation
No. 1	86,398 dth
No. 2	137,310 dth

and provided further that Pipeline shall have no obligation to deliver natural gas designated as MDQ at any Customer Point other than those listed below:

Customer Point

Measuring Station 70030, City of Philadelphia, Pennsylvania, up to 4,053 dth/d
and
Measuring Station 70034, Montgomery County, Pennsylvania, up to 3,735 dth/d

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: Philadelphia Gas Works
1800 North Ninth Street
Philadelphia, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

AUTHORITY FOR PAYMENT

It is understood and agreed that in entering into and performing this Agreement, PFMC acts solely in its capacity as operator and manager of the municipally owned Philadelphia Gas Works pursuant to an agreement with the City of Philadelphia, dated December 29, 1972, as amended, and not otherwise; and further that any and all payments required to be made in connection with this agreement shall be made solely from the revenues of Philadelphia Gas Works.

ARTICLE X

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

Service Agreement dated June 1, 1993, between Pipeline and Customer under Pipeline's Rate Schedule FTS-7 (Pipeline's Contract No. 331006).

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-7
(Continued)

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________________
Vice President

ATTEST:

____

ROBERT W. REED
CORPORATE SECRETARY

PHILADELPHIA GAS WORKS*

By ______________________________
GREGORY D. MARTIN
EXECUTIVE VICE PRESIDENT &
CHIEF OPERATING OFFICER

ATTEST:

____

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended

ntract #: 800514R

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1

This Service Agreement, made and entered into this 15th day of December, 1998, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Pipeline and Customer are parties to an executed service agreement dated February 29, 1996, under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800514); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800514;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule FT-1, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FT-1, Pipeline agrees to deliver for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Quantity (MDQ) 18,000 dth

Pipeline shall receive for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule FT-1 and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2003 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon two (2) years prior written notice to the other specifying a termination date of October 31, 2003 or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FT-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FT-1 as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FT-1, (b) Pipeline's Rate Schedule FT-1 pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FT-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service

agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT
2600 Center Square West 15th St. & Market St.
Philadelphia, PA 19102-2126

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

service agreement dated February 29, 1996, between Pipeline and Customer under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800514).

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ____________________ PmT

ATTEST:

____

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

By ____________________

ATTEST:

____

Contract #800514R

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"), DATED 12/15/98:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	18,000

SIGNED FOR IDENTIFICATION

PIPELINE: ____________ Jmm

CUSTOMER: ____________

SUPERSEDES EXHIBIT A DATED: ____________

800514R1

Contract #:800514R

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"),
DATED 12/15/98:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi-bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE, PA PHILADELPHIA CO., PA	18,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	73060	HARKNESS PT. - PA PHILADELPHIA CO., PA	18,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Contract #:800514

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	36,000
	12/01-02/28
	21,000
	03/01-11/30
No.2	36,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 36,000 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ______________________ Jmm

CUSTOMER: ______________________ LAF

SUPERSEDES EXHIBIT B DATED: ____________

800514R1

Contract #:800514R

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/15/98, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1 BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("CUSTOMER"), DATED 12/15/98:

ZONE BOUNDARY ENTRY QUANTITY

Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA						9,360								
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														
M3														18,000

800514R1

Contract #:800514R

EXHIBIT C (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT
ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: ______________ Jmm

CUSTOMER: ______________

SUPERCEDES EXHIBIT C DATED______________

System Contract #.5001

92 1089 000

SERVICE AGREEMENT

between

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

and

PHILADELPHIA GAS WORKS

DATED

August 1, 1991

PGW File #91-TRA-1-PS-1

FORM OF SERVICE AGREEMENT
(For Use Under Seller's Rate Schedule FT)

THIS AGREEMENT entered into this 1st day of August, 1991, by and between TRANSCONTINENTAL GAS PIPE LINE CORPORATION, a Delaware corporation, hereinafter referred to as "Seller", first party, and PHILADELPHIA GAS WORKS, hereinafter referred to as "Buyer," second party,

W I T N E S S E T H

WHEREAS, Seller and Buyer have agreed to convert Buyers firm sales service under Seller's PS Rate Schedule to firm transportation; and

WHEREAS, Seller and Buyer have agreed to terminate and abandon Buyer's existing PS firm sales service to permit such conversion; and

WHEREAS, Seller is agreeable as part of such conversion to receiving, transporting and redelivering or causing the redelivery of such gas as requested under the terms and conditions hereinafter set forth,

NOW, THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
GAS TRANSPORTATION SERVICE

1. Subject to the terms and provisions of this agreement and of Seller's Rate Schedule FT, Buyer agrees to deliver or cause to be delivered to Seller gas for transportation and Seller agrees to receive, transport and redeliver natural gas to Buyer or for the account of Buyer, on a firm basis, up to the dekatherm equivalent of a Transportation Contract Quantity ("TCQ") of 1,900 Mcf per day.

2. Transportation service rendered hereunder shall not be subject to curtailment or interruption except as provided in Section 11 of the General Terms and Conditions of Seller's FERC Gas Tariff.

FORM OF SERVICE AGREEMENT
(For Use Under Seller's Rate Schedule FT)
(Continued)

ARTICLE II
POINT(S) OF RECEIPT

Buyer shall deliver or cause to be delivered gas at the Point(s) of receipt hereunder at a pressure sufficient to allow the gas to enter Seller's pipeline system at the varying pressures that may exist in such system from time to time; provided, however, that such pressure of the gas delivered or caused to be delivered by Buyer shall not exceed the maximum operating pressure(s) specified below. In the event the maximum operating pressure(s) of Seller's pipeline system, at the Point(s) of receipt hereunder, is from time to time increased or decreased, then the maximum allowable pressure(s) of the gas delivered or caused to be delivered by Buyer to Seller at the point(s) of receipt shall be correspondingly increased or decreased upon written notification of Seller to Buyer. The point(s) of receipt for natural gas received for transportation pursuant to this agreement shall be:

SEE Exhibit A, attached hereto, for points of receipt.

ARTICLE III
POINT(S) OF DELIVERY

Seller shall redeliver to Buyer or for the account of Buyer the gas transported hereunder at the following point(s) of delivery and at a pressure(s) of:

SEE Exhibit B, attached hereto, for points of delivery.

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective as of August 1, 1991 and shall remain in force and effect until 8:00 a.m. Eastern Standard Time July 31, 2011 and thereafter until terminated by Seller or Buyer upon at least three (3) years written notice; provided, however, this agreement shall terminate immediately and, subject to the receipt of necessary authorizations, if any, Seller may discontinue service hereunder if (a) Buyer, in Seller's reasonable judgment fails to demonstrate credit worthiness, and (b) Buyer fails to provide adequate security in accordance with Section 8.3 of Seller's Rate Schedule FT. As set forth in Section 8 of Article II of Seller's August 7, 1989 revised Stipulation and Agreement in Docket Nos. RP88-68 et. al., (a) pregranted abandonment under Section 284.221 (d) of the Commission's Regulations shall not apply to any long term conversions from firm sales service to transportation service under Seller's Rate Schedule FT and (b) Seller shall not exercise its right to terminate this service agreement as it applies to transportation service resulting from conversions from firm sales service so long as Buyer is willing to pay rates no less favorable than Seller is otherwise able to collect from third parties for such service.

ARTICLE V

RATE SCHEDULE AND PRICE

1. Buyer shall pay Seller for natural gas delivered to Buyer hereunder in accordance with Seller's Rate Schedule FT and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be legally amended or superseded from time to time. Such Rate Schedule and General Terms and Conditions are by this reference made a part hereof.

2. Seller and Buyer agree that the quantity of gas that Buyer delivers or causes to be delivered to Seller shall include the quantity of gas retained by Seller for applicable compressor fuel, line loss make-up (and injection fuel under Seller's Rate Schedule GSS, if applicable) in providing the transportation service hereunder, which quantity may be changed from time to time and which will be specified in the currently effective Sheet No. 44 of Volume No. 1 of this Tariff which relates to service under this agreement and which is incorporated herein.

3. In addition to the applicable charges for firm transportation service pursuant to Section 3 of Seller's Rate Schedule FT, Buyer shall reimburse Seller for any and all filing fees incurred as a result of Buyer's request for service under Seller's Rate Schedule FT, to the extent such fees are imposed upon Seller by the Federal Energy Regulatory Commission or any successor governmental authority having jurisdiction.

ARTICLE VI
MISCELLANEOUS

1. This Agreement supersedes and cancels as of the effective date hereof the following contract(s) between the parties hereto:

> PS Service Agreement between Buyer and Seller dated November 11, 1970.

FORM OF SERVICE AGREEMENT
(For Use Under Seller's Rate Schedule FT)
(Continued)

2. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

3. The interpretation and performance of this agreement shall be in accordance with the laws of the State of Texas, without recourse to the law governing conflict of laws, and to all present and future valid laws with respect to the subject matter, including present and future orders, rules and regulations of duly constituted authorities.

4. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

5. Notices to either party shall be in writing and shall be considered as duly delivered when mailed to the other party at the following address:

(a) If to Seller:

Transcontinental Gas Pipe Line Corporation
P. O. Box 1396
Houston, Texas 77251
Attention: Customer Services

(b) If to Buyer:

Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122
Attention: Vice President - Rates and Federal Regulatory Affairs

Such address may be changed from time to time by mailing appropriate notice thereof to the other party by certified or registered mail.

92 1089 000

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective officers or representatives thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
(Seller)

By: Thomas E. Skains DSL
Thomas E. Skains
Senior Vice President
Transportation and Customer Services

CJH

PHILADELPHIA GAS WORKS
(Buyer)

By: A. D. Dezen LAP

Title: Vice President, PFMC

92 1089 000

System Contract #.5001

EXHIBIT "A"

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
1.	Suction Side of Seller's Compressor Station 30 at the Existing Point of Interconnection between Seller's Central Texas Lateral and Seller's Mainline at Wharton County, Texas. (Station 30 TP#7133)	323	158
2.	Existing Point of Interconnection between Seller and Valero Transmission Company (Seller Meter No. 3396) at Wharton County, Texas. (Wharton Valero TP#6690)	323	
3.	Existing Point of Interconnection between Seller and Meter named Spanish Camp (Seller Meter No. 3365) Wharton County, Texas. (Spanish Camp-Delhi TP#6895)	323	
4.	Existing Point of Interconnection between Seller and Meter named Denton Cooley #1 (Seller Meter No. 3331), In Fort Bend County, Texas (Denton Cooley #1 -TP#1106)	323	
5.	Existing Point of Interconnection between Seller and Meter named Randon East (Fulshear) (Seller Meter No. 1427), in Fort Bend County, Texas. (Randon East (Fulshear) TP#299)	323	
6.	Existing Point of Interconnection between Seller and Houston Pipeline Company (Seller Meter No. 3364) At Fulshear, Fort Bend County, Texas. (Fulshear-HPL TP#6097)	323	
7.	Existing Point of Interconnection between Seller and Meter named White Oak Bayou-Exxon Gas System, Inc. (Seller Meter No. 3545), in Harris County, Texas. (White Oak Bayou-EGSI-TP#1036)	323	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
8.	Existing Point of Interconnection between Seller and Houston Pipeline Company (Seller Meter No. 4359) at Bammel, Harris County, Texas. (Bammel-HPL TP#6014)	323	
9.	Existing Point of Interconnection between Seller and Delhi Pipeline Company (Seller Meter No. 3346) at Hardin County, Texas. (Hardin-Delhi TP#6696)	323	
10.	Existing Point of Interconnection between Seller and Meter named Vidor Field Junction (Seller Meter No. 3554), in Jasper County, Texas. (Vidor Field Junction-TP#2337)	323	
11.	Existing Point of Interconnection between Seller and Meter named Starks McConathy (Seller Meter No. 3535), in Calcasieu Parish, Louisiana. (Starks McConathy-TP#7346)	323	
12.	Existing Point of Interconnection between Seller and Meter named DeQuincy Intercon (Seller Meter No. 2698), in Calcasieu Parish, Louisiana. (DeQuincy Intercon-TP#7035)	323	
13.	Existing Point of Interconnection between Seller and Meter named DeQuincy Great Scott (Seller Meter No. 3357), in Calcasieu Parish, Louisiana. (DeQuincy Great Scott-TP#6809)	323	
14.	Existing Point of Interconnection between Seller and Meter named Perkins-Phillips (Seller Meter No. 3532), in Calcasieu Parish, Louisiana. (Perkins-Phillips-TP#7508)	323	
15.	Existing Point of Interconnection between Seller and Meter named Perkins (Intercon) (Seller Meter No. 3395), in Calcasieu Parish, Louisiana. (Perkins (Intercon) -TP#7036)	323	
16.	Existing Point of Interconnection between Seller and Meter named Perkins East (Seller Meter No. 2369), in Beauregard Parish, Louisiana. (Perkins East-TP#139)	323	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
17.	Discharge Side of Seller's Compressor Station 45 at the Existing point of Interconnection between Seller's Southwest Louisiana Lateral and Seller's Mainline Beauregard Parish, Louisiana. (Station 45 TP#7101)	798	233
18.	Existing Point of Interconnection between Seller and Texas Eastern Transmission Corporation, (Seller Meter No. 4198) at Ragley, Beauregard Parish, Louisiana. (Ragley-TET TP#6217)	798	
19.	Existing Point of Interconnection between Seller and Trunkline Gas Company (Seller Meter No. 4215) at Ragley, Beauregard Parish, Louisiana. (Ragley-Trunkline TP#6218)	798	
20.	Existing Point of Interconnection between Seller and Tennessee Gas Transmission Company (Seller Meter No. 3371) at Kinder, Allen Parish, Louisiana. (Kinder TGT-TP#6149)**	798	
21.	Existing Point of Interconnection between Seller and Texas Gas Transmission Corporation (Seller Meter Nos. 3227, 4314, 4457) at Eunice, Evangeline Parish, Louisiana. (Eunice Mamou Tx. Gas TP#6923)	798	
22.	Suction Side of Seller's Compressor Station 50 at the Existing Point of Interconnection between Seller's Central Louisiana Lateral and Seller's Mainline Evangeline Parish, Louisiana. (Station 50 TP#6948)	1,159	177
23.	Existing Point of Interconnection between Seller and Columbia Gulf Transmission Corporation (Seller Meter No. 3142) at Eunice, Evangeline Parish, Louisiana. (Eunice Evangeline Col. Gulf TP#6414)	1,159	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
24.	Discharge Side of Seller's Compressor Station 54 at Seller's Washington Storage Field, St. Landry Parish, Louisiana (Station 54 TP#6768)*****	1,159	
25.	Existing Point of Interconnection between Seller and Acadian Pipeline (Seller Meter No. 3506) in Pointe Coupee Parish, Louisiana. (Morganza-Acadian Pipeline TP#7060)	1,159	
26.	Existing Point of Interconnection (Seller Meter No. 3272) at M.P. 566.92, Morganza Field, Pointe Coupee Parish, Louisiana. (Morganza Field - TP#576)	1,159	
27.	Existing Point of Interconnection between Seller and Meter named West Feliciana Parish-Creole (Seller Meter No. 4464), in West Feliciana Parish, Louisiana. (West Feliciana Parish-Creole TP#7165)	1,159	
28.	Existing Point of Interconnection between Seller and Mid-Louisiana Gas Company (Seller Meter Nos. 4137, 4184, 3229) at Ethel, East Feliciana Parish, Louisiana. (Ethel-Mid LA TP#6083)	1,159	
29.	Existing Point of Interconnection between Seller and Meter named Liverpool Northwest (Seller Meter No. 3390), in St. Helena Parish, Louisiana. (Liverpool Northwest-TP#6757)	1,159	
30.	Suction Side of Seller's Compressor Station 62 on Seller's Southeast Louisiana Lateral in Terrebonne Parish Louisiana.(Station 62 TP#7141)	741	363
31.	Existing Point of Interconnection between Seller and Meter named Texas Gas - TLIPCO-Thibodeaux (Seller Meter No. 3533), in Lafourche Parish, Louisiana. (TXGT-TLIPCO -Thibodeaux-TP#7206)	741	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
32.	Existing Point of Interconnection between Seller and Meter named Romeville-Monterey Pipeline (Seller Meter No. 4410), in St. James Parish, Louisiana. (Romeville-Monterey Pipeline-TP#580)	741	
33.	Existing Point of Interconnection between Seller and Meter named St. James CCIPC (Seller Meter No. 4462), in St. James Parish, Louisiana. (St. James CCIPC-TP#7164)**	741	
34.	Existing Point of Interconnection between Seller and Meter named St. James Faustina (St. Amelia)(Seller Meter No. 3328), in St. James Parish, Louisiana. (St. James Faustina (St. Amelia) TP#6268)**	741	
35.	Existing Point of Interconnection between Seller and Meter named St. James Acadian (Seller Meter No. 4366), in St. James Parish, Louisiana. (St. James Acadian-TP#6677)**	741	
36.	Existing Point of Interconnection between Seller and Meter Named Livingston-Flare (Seller Meter No. 3540), in Livingston Parish, Louisiana. (Livingston-Flare-TP#8739)	741	
37.	Existing Point of Interconnection between Seller and Florida Gas Transmission Company (Seller Meter No. 3217) at St. Helena, St. Helena Parish, Louisiana. (St. Helena FGT-TP#6267)	741	
38.	Existing Point of Interconnection between Seller and Meter named Beaver Dam Creek (Seller Meter No. 3536), in St. Helena Parish, Louisiana. (Beaver Dam Creek-TP#8218)	741	
39.	Suction Side of Seller's Compressor Station 65 at the Existing Point of Interconnection between Seller's Southeast Louisiana Lateral and Seller's Mainline St. Helena Parish, Louisiana. (Station 65 TP#6685)	1,900	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
40.	Existing Point of Interconnection between Seller and Meter named Amite County/Koch (Seller Meter No. 3332), in Amite County, Mississippi (Amite County/Koch-TP#6701)	1,900	
41.	Existing Point of Interconnection between Seller and Meter named McComb (Seller Meter No. 3461), in Pike County, Mississippi. (McComb-TP#6446)	1,900	
42.	Existing Point of Interconnection between Seller and United Gas Pipe Line Company at Holmesville (Seller Meter No. 3150), Pike County, Mississippi. (Holmesville-United TP#6128)	1,900	
43.	Discharge Side of Seller's Compressor Station 70 at M.P. 661.77 in Walthall County, Mississippi. (M.P. 661.77-Station 70 Discharge-TP#7142)	1,900	
44.	Existing Point of Interconnection between Seller and United Gas Pipe Line Company at Walthall (Seller Meter No. 3095), Walthall County, Mississippi. (Walthall-UGPL TP#6310)***	1,900	
45.	Existing Point of Interconnection between Seller and Meter named Darbun-Pruett 34-10 (Seller Meter No. 3446) at M.P. 668.46 on Seller's Main Transmission Line, Darbun Field, Walthall County, Mississippi. (Darbun Pruett TP#6750)	1,900	
46.	Existing Point of Interconnection between Seller and Meter named Ivy Newsome (Seller Meter No. 3413) in Marion County, Mississippi. (Ivy Newsome-TP#6179)	1,900	
47.	Existing Point of Interconnection between Seller and West Oakvale Field at M.P. 680.47-Marion County, Mississippi. (M.P. 680.47-West Oakvale Field-TP#7144)	1,900	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
48.	Existing Point of Interconnection between Seller and East Morgantown Field at M.P. 680.47 in Marion County, Mississippi. (M.P. 680.47-E. Morgantown Field-TP#7145)	1,900	
49.	Existing Point of Interconnection between Seller and Greens Creek Field, at M.P. 681.84 Marion County, Mississippi. (M. P. 681.84 Greens Creek Field TP#7146)	1,900	
50.	Existing Point of Interconnection between Seller and Meter named M.P.685.00-Oakville Unit 6-6 in Jefferson Davis County, Mississippi. (M.P. 685.00-Oakville Unit 6-6 TP#1376)	1,900	
51.	Existing Point of Interconnection between Seller and Meter named M.P. 687.23-Oakvale Field in Marion County, Mississippi. (M.P. 687.23-Oakvale Field-TP#7147)	1,900	
52.	Existing Point of Interconnection between Seller and Bassfield at named M.P. 696.40 in Marion County, Mississippi. (M.P. 696.40 Bassfield-TP#9439)	1,900	
53.	Existing Point of Interconnection between Seller and Meter named Lithium/Holiday Creek -Frm (Seller Meter No. 3418), in Jefferson Davis County, Mississippi. (Lithium/Holiday Creek-Frm-TP#7041)	1,900	
54.	Existing Point of Interconnection between Seller and S. W. Sumrall Field and Holiday Creek at M.P. 692.05-Holiday Creek in Jefferson Davis, Mississippi. (M.P. 692.05 -Holiday Creek-TP#7159)	1,900	
55.	Existing Point of Interconnection between Seller and ANR Pipe Line Company at Holiday Creek (Seller Meter No. 3241), Jefferson David County, Mississippi. (Holiday Creek-ANR TP#398)	1,900	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
56.	Existing Point of Interconnection between Seller and Mississippi Fuel Company at Jeff Davis (Seller Meter No. 3252), Jefferson Davis County, Mississippi. (Jefferson Davis County-Miss Fuels TP#6579)***	1,900	
57.	Existing Point of Interconnection between Seller and Meter named Jefferson Davis-Frm (Seller Meter No. 4420), in Jefferson Davis County, Mississippi. (Jefferson Davis-Frm-TP#7033)	1,900	
58.	Existing Point of Interconnection between Seller and Carson Dome Field M.P. 696.41, in Jefferson Davis County, Mississippi. (M.P. 696.41-Carson Dome Field-TP#7148)	1,900	
59.	Existing Point of Interconnection between Seller and Meter Station named Bassfield-ANR Company at M.P. 703.17 on Seller's Main Transmission Line (Seller Meter No. 3238), Covington County, Mississippi. (Bassfield-ANR TP#7029)	1,900	
60.	Existing Point of Interconnection between Seller and Meter named Patti Bihm #1 (Seller Meter No. 3468), in Covington County, Mississippi. (Patti Bihm #1-TP#7629)	1,900	
61.	Discharge Side of Seller's Compressor at Seller's Eminence Storage Field (Seller Meter No. 4166 and 3160) Covington County, Mississippi. (Eminence Storage TP#5561)	1,900	
62.	Existing Point of Interconnection between Seller and Dont Dome Field at M.P. 713.39 in Covington, County, Mississippi. (M.P. 713.39-Dont Dome-TP#1396)	1,900	
63.	Existing Point of Interconnection between Seller and Endevco in Covington County, Mississippi. (Hattiesburg-Interconnect storage TP#1686)	1,900	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
64.	Existing Point at M.P. 719.58 on Seller's Main Transmission Line (Seller Meter No. 3544), Centerville Dome Field, Jones County, Mississippi. (Centerville Dome Field-TP#1532)	1,900	
65.	Existing Point at M.P. 727.78 on Seller's Main Transmission Line, Jones County, Mississippi. (Jones County-Gitano TP#7166)	1,900	
66.	Existing Point of Interconnection between Seller and a Meter named Koch Reedy Creek (Seller Meter No. 3333), Jones County, Mississippi. (Reedy Creek-Koch TP#670)	1,900	
67.	Existing Point of Interconnection between Seller and Meter named Sharon Field (Seller Meter No. 3000), in Jones County, Mississippi. (Sharon Field-TP#419)	1,900	
68.	Existing Point of Interconnection between Seller and Tennessee Gas Transmission Company at Heidelberg (Seller Meter No. 3109), Jasper County, Mississippi. (Heidelberg-Tennessee TP#6120)***	1,900	
69.	Existing Point of Interconnection between Seller and Mississippi Fuel Company at Clarke (Seller Meter No. 3254), Clarke County, Mississippi. (Clarke County-Miss Fuels TP#6047)***	1,900	
70.	Existing Point of Interconnection between Seller and Meter named Clarke County-Koch at M.P. 757.29 in Clarke County, Mississippi. (Clarke County-Koch-TP#5566)	1,900	
71.	Existing Point of Interconnection between Seller's mainline and Mobile Bay Lateral at Butler, Choctaw County, Alabama (Butler - TP#6034)	1,900	

Point(s) of Receipt		Buyer's Cumulative Mainline Capacity Entitlement (Mcf/d)	Billing Determinent Quantity****
72.	Existing Point of Interconnection between Seller and Southern Natural Gas Company, (Seller Meter No. 4087) at Jonesboro, Clayton County, Georgia.(Jonesboro-SNG-TP#6141)	1,900	
73.	Existing Point of Interconnection between Seller and Columbia Gas Transmission (Seller Meter No. 7157) at Dranesville, Fairfax County, Virginia.(Dranesville-Colgas-TP#6068)**	1,900	
74.	Existing Point of Interconnection between Seller and Columbia Gas Transmission (Seller Meter No. 4080) at Rockville, Baltimore County, Maryland. (Rockville-Colgas-TP#6227)**	1,900	
75.	Existing Point of Interconnection between Seller and Columbia Gas Transmission (Seller Meter No. 3088) at Downingtown, Chester County, Pennsylvania.(Downington-Colgas-TP#6067)**	1,900	
76.	Existing Point of Interconnection between Seller and Texas Eastern Transmission Corporation (Seller Meter No. 4133) at Skippack, Montgomery County, Pennsylvania. (Skippack-TET-TP#6249)**	1,900	

Buyer shall not tender, without the prior consent of Seller, at any point(s) of receipt on any day, a quantity in excess of the applicable Buyer's cumulative mainline capacity entitlement for such point(s) of receipt.

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* These quantities do not include the additional quantities of gas retained by Seller for applicable compressor fuel and line loss make-up provided for in Article V, 2 of this Service Agreement, which are subject to change as provided for in Article V, 2 hereof.

** Receipt of gas by displacement only.

*** Receipt of gas limited to physical capacity of Seller's lateral line facilities.

**** In order to effectuate the cost allocation and rate design allocation approved in the Settlement in docket Nos. RP87-7 et. al., the parties recognize that the quantities reflected herein shall be considered Buyer's applicable TCQ Quantities for the purpose of billing the rates and charges hereunder, and such billing determinants are subject to change through rate filings of Seller pursuant to the terms and conditions of Article V hereof.

***** Buyer's cumulative mainline capacity entitlements at Compressor Station 54 shall not supersede or otherwise affect any rights, obligations or limitations which are stated in Seller's WSS Rate Schedule.

System Contract #.5001

Exhibit B

Point(s) of Delivery		Pressure(s)
1.	Station 54*	Not Applicable.
2.	Seller's Eminence Storage Field, Covington County, Mississippi.	Prevailing pressure in Seller's pipeline system not to exceed maximum allowable operating pressure.
3.	Ashmead Road Meter Station, located on Seller's Oreland Line at mile post 13.44 in Cheltemham Township, Montgomery County, Pennsylvania, near the city limits line of the City of Philadelphia, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
4.	Whitman Meter Station, located in the City of Philadelphia, Pennsylvania, on Delaware Avenue approximately 550 feet south of the intersection of Delaware Avenue and Packer Avenue where the facilities of Seller connect with those of Buyer.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
5.	Richmond Meter Station, located adjacent to Seller's Trenton-Woodbury line at mile post 36.83 and near the intersection of Lewis and Delaware Avenue, Philadelphia County, Philadelphia, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operations of Seller and Buyer.

* Delivery to Seller's Washington Storage Field for injection into storage is subject to the terms, conditions and limitations of Seller's WSS Rate Schedule.

Exhibit B

Point(s) of Delivery		Pressure(s)
6.	Northeast Philadelphia Meter Station (Somerton), located near the westerly terminus of Brookside Drive and approximately 1200 feet northeasterly from County Line Road in Lower Southampton Township, Bucks County, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and buyer.
7.	Oreland Meter Station, located on Seller's Oreland Line at mile post 6.09 in Springfield Township, Montgomery County, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operations of Seller and Buyer.

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FORM OF SERVICE AGREEMENT
(For Use Under Seller's Rate Schedule FT)

THIS AGREEMENT entered into this 11 day of JULY, 2018, by and between TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company, hereinafter referred to as "Seller," first party, and PHILADELPHIA GAS WORKS, by Philadelphia Facilities Management Corporation in its capacity as operator and manager of the municipally owned Philadelphia Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended, hereinafter referred to as "Buyer, " second party,

WITNESSETH

WHEREAS, Seller and Buyer are parties to that certain Service Agreement, dated February 1, 1992 (Seller's Contract #1003691, hereinafter referred to as "the Service Agreement"), under Seller's Rate Schedule FT pursuant to which Seller provides firm transportation service for Buyer up to a Transportation Contract Quantity of 165,212 dt per day; and

WHEREAS, Seller and Buyer desire to amend the Service Agreement to modify Exhibit A of the Service Agreement to remove all of the receipt points and volumes with the exception of the receipt points at Compressor Stations 30, 45, 50, 54, 62 and 65 and the associated volumes for each; and

WHEREAS, Seller and Buyer also desire to amend the Service Agreement to reflect the conversion of the quantities of gas under the Service Agreement from Mcf to dt at a conversion factor of 1.035 dt per Mcf; and

WHEREAS, Seller and Buyer further desire to amend the Service Agreement to include a non-conforming provision specifying the responsible party for payments for transportation service provided by Seller under the Service Agreement in Article VI, Paragraph 6; and

WHEREAS, consistent with Federal Energy Regulatory Commission requirements, Seller and Buyer have agreed to supersede and cancel the Service Agreement and execute a new agreement reflecting these amendments and otherwise restating the terms and conditions of the Service Agreement, which will then be submitted to the Federal Energy Regulatory Commission for approval.

NOW THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
GAS TRANSPORTATION SERVICE

1. Subject to the terms and provisions of this agreement and of Seller's Rate Schedule FT, Buyer agrees to deliver or cause to be delivered to Seller gas for transportation and Seller agrees to receive, transport and redeliver natural gas to Buyer or for the account of Buyer, on a firm basis, up to a Transportation Contract Quantity ("TCQ") of 165,212 dt per day.

2. Transportation service rendered hereunder shall not be subject to curtailment or interruption except as provided in Section 11 and, if applicable, Section 42 of the General Terms and Conditions of Seller's FERC Gas Tariff.

ARTICLE II
POINT(S) OF RECEIPT

Buyer shall deliver or cause to be delivered gas at the point(s) of receipt hereunder at a pressure sufficient to allow the gas to enter Seller's pipeline system at the varying pressures that may exist in such system from time to time; provided, however, the pressure of the gas delivered or caused to be delivered by Buyer shall not exceed the maximum operating pressure(s) of Seller's pipeline system at such point(s) of receipt. In the event the maximum operating pressure(s) of Seller's pipeline system, at the point(s) of receipt hereunder, is from time to time increased or decreased, then the maximum allowable pressure(s) of the gas delivered or caused to be delivered by Buyer to Seller at the point(s) of receipt shall be correspondingly increased or decreased upon written notification of Seller to Buyer. The point(s) of receipt for natural gas received for transportation pursuant to this agreement shall be:

See Exhibit A, attached hereto, for points of receipt.

ARTICLE III
POINT(S) OF DELIVERY

Seller shall redeliver to Buyer or for the account of Buyer the gas transported hereunder at the following point(s) of delivery and at a pressure(s) of:

See Exhibit B, attached hereto, for points of delivery and pressures.

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective as of September 1, 2018 and shall remain in force and effect until 9:00 a.m. Central Clock Time September 1, 2021 and thereafter until terminated by Seller or Buyer upon at least three (3) years written notice; provided, however, this agreement shall terminate immediately and, subject to the receipt of necessary authorizations, if any, Seller may discontinue service hereunder if (a) Buyer, in Seller's reasonable judgment fails to demonstrate creditworthiness, and (b) Buyer fails to provide adequate security in accordance with Section 32 of the General Terms and Conditions of Seller's Volume No. 1 Tariff. As set forth in Section 8 of Article II of Seller's August 7, 1989 revised Stipulation and Agreement in Docket Nos. RP88-68 et.al., (a) pregranted abandonment under Section 284.221(d) of the Commission's regulations shall not apply to any long term conversions from firm sales service to transportation service under Seller's Rate Schedule FT and (b) Seller shall not exercise its right to terminate this service agreement as it applies to transportation service resulting from conversions from firm sales service so long as Buyer is willing to pay rates no less favorable than Seller is otherwise able to collect from third parties for such service.

ARTICLE V
RATE SCHEDULE AND PRICE

1. Buyer shall pay Seller for natural gas delivered to Buyer hereunder in accordance with Seller's Rate Schedule FT and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be legally amended or superseded from time to time. Such rate schedule and General Terms and Conditions are by this reference made a part hereof. In the event Buyer and Seller mutually agree to a negotiated rate pursuant to the provisions in Section 53 of the General Terms and Conditions and specified term for service hereunder, provisions governing such negotiated rate (including surcharges) and term shall be set forth on Exhibit C to the service agreement.

2. Seller and Buyer agree that the quantity of gas that Buyer delivers or causes to be delivered to Seller shall include the quantity of gas retained by Seller for applicable compressor fuel, line loss make-up (and injection fuel under Seller's Rate Schedule GSS, if applicable) in providing the transportation service hereunder, which quantity may be changed from time to time and which will be specified in the currently effective Statement of Rates and Fuel in Part II, Section 12.1 of this tariff which relates to service under this agreement and which is incorporated herein.

3. In addition to the applicable charges for firm transportation service pursuant to Section 3 of Seller's Rate Schedule FT, Buyer shall reimburse Seller for any and all filing fees incurred as a result of Buyer's request for service under Seller's Rate Schedule FT, to the extent such fees are imposed upon Seller by the Federal Energy Regulatory Commission or any successor governmental authority having jurisdiction.

ARTICLE VI
MISCELLANEOUS

1. This Agreement supersedes and cancels as of the effective date hereof the following contract(s): FT Service Agreement, dated February 1, 1992 (Seller's Contract #1003691).

2. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

3. The interpretation and performance of this agreement shall be in accordance with the laws of the State of Texas, without recourse to the law governing conflict of laws, and to all present and future valid laws with respect to the subject matter, including present and future orders, rules and regulations of duly constituted authorities.

4. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

27 [illegible]

5. Notices to either party shall be in writing and shall be considered as duly delivered when mailed to the other party at the following address:

(a) If to Seller:
Transcontinental Gas Pipe Line Company, LLC
P. O. Box 1396
Houston, Texas 77251
Attention: Manager – Customer Services

(b) If to Buyer:
Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122
Attention: Vice President – Rates and Federal Regulatory Affairs

Such addresses may be changed from time to time by mailing appropriate notice thereof to the other party by certified or registered mail.

6. It is understood and agreed that any payments required to be made by the Philadelphia Facilities Management Corporation and/or PGW as a result of or arising out of its entering into this Service Agreement shall be made solely from the revenues of the Philadelphia Gas Works.

27 [illegible]

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective officers or representatives thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE
COMPANY, LLC
(Seller)

By Hector Alatorre

Print Name HECTOR ALATORRE

Title DIRECTOR, CUSTOMER SERVICE

APZ
KTH
CKM

PHILADELPHIA GAS WORKS
(Buyer)

by

By John C. Zuk

Print Name John C. Zuk

Title VP Gas Supply

27 0041 003

Exhibit A

Point(s) of Receipt	Maximum Daily Capacity Entitlement at each Receipt Point (DT/day)*]
1. Suction Side of Seller's Compressor Station 30 at the Existing Point of Interconnection between Seller's Central Texas Lateral and Seller's Mainline at Wharton County, Texas. (Station 30 TP#7133)	28,086
2. Discharge Side of Seller's Compressor Station 45 at the Existing Point of Interconnection between Seller's Southwest Louisiana Lateral and Seller's Mainline Beauregard Parish, Louisiana. (Station 45 TP#7101)	69,388
3. Suction Side of Seller's Compressor Station 50 at the Existing Point of Interconnection between Seller's Central Louisiana Lateral and Seller's Mainline Evangeline Parish, Louisiana. (Station 50 TP#6948)	100,779
4. Discharge Side of Seller's Compressor Station 54 at Seller's Washington Storage Field, St. Landry Parish, Louisiana (Station 54 TP#6768)	101,546 Mar.–Nov. 100,779 Dec.–Feb.
5. Suction Side of Seller's Compressor Station 62 on Seller's Southeast Louisiana Lateral in Terrebonne Parish, Louisiana. (Station 62 TP#7141)	64,433
6. Suction Side of Seller's Compressor Station 65 at Existing Point of Interconnection between Seller's Southeast Louisiana Lateral and Seller's Mainline St. Helena Parish, Louisiana. (Station 65 TP#6685)	165,212

* These quantities do not include the additional quantities of gas retained by Seller for applicable compressor fuel and line loss make-up provided for in Article V, 2 of this service agreement, which are subject to change as provided for in Article V, 2 hereof.

Exhibit B

Point(s) of Delivery		Maximum Daily Capacity Entitlement at each Delivery Point(Dt/Day)	Pressure
1.	Station 54	101,546 Mar.–Nov. 100,779 Dec.–Feb.	Not Applicable.
2.	Seller's Eminence Storage Field, Covington County, Mississippi	165,212	Prevailing pressure in Seller's pipeline system not to exceed maximum allowable operating pressure.
3.	Ashmead Road Meter Station, located on Seller's Oreland Line at mile post 13.44 in Cheltenham Township, Montgomery County, Pennsylvania, near the city limits line of the City of Philadelphia, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
4.	Whitman Meter Station, located in the City of Philadelphia, Pennsylvania, on Delaware Avenue approximately 550 feet south of the intersection of Delaware Avenue and Packer Avenue where the facilities of Seller connect with those of Buyer.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.

5.	Richmond Meter Station, located adjacent to Seller's Trenton-Woodbury line at mile post 36.83 and near the intersection of Lewis and Delaware Avenue, Philadelphia County, Philadelphia, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
6.	Northeast Philadelphia Meter Station (Somerton), located near the westerly terminus of Brookside Drive and approximately 1200 feet northeasterly from County Line Road in Lower Southampton Township, Bucks County, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
7.	Oreland Meter Station, located on Seller's Oreland Line at mile post 6.09 in Springfield Township, Montgomery County, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.

Exhibit C

Specification of Negotiated Rate and Term

None.

Contract #: 800515R

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1

This Service Agreement, made and entered into this 15th day of December, 1998, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Pipeline and Customer are parties to an executed service agreement dated February 29, 1996, under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800515); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800515;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule FT-1, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FT-1, Pipeline agrees to deliver for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Quantity (MDQ) 18,000 dth

Pipeline shall receive for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule FT-1 and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2006 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon two (2) years prior written notice to the other specifying a termination date of October 31, 2006 or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FT-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FT-1 as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FT-1, (b) Pipeline's Rate Schedule FT-1 pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FT-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service

agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT
2600 Center Square West 15th St. & Market St.
Philadelphia, PA 19102-2126

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

> service agreement dated February 29, 1996, between Pipeline and Customer under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800515).

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________ PMT

ATTEST:

____

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

By ______________________ LAF JS

ATTEST:

____

Contract #800515R

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"), DATED 12/15/98:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	18,000

SIGNED FOR IDENTIFICATION

PIPELINE: [signature] JMM

CUSTOMER: [signature] VAF

SUPERSEDES EXHIBIT A DATED: ________

800515R1

Contract #:800515R

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"),
DATED 12/15/98:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsibilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE, PA PHILADELPHIA CO., PA	18,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	73060	HARKNESS PT. - PA PHILADELPHIA CO., PA	18,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Contract #:800515

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	36,000 12/01-02/28 21,000 03/01-11/30
No.2	36,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 36,000 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ______________________ JMM

CUSTOMER: ______________________ RF LAA

SUPERSEDES EXHIBIT B DATED: ______________

800151R1

Contract #:800515R

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/15/98, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1 BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("CUSTOMER"), DATED 12/15/98:

ZONE BOUNDARY ENTRY QUANTITY

Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA						9,360								
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

800515R1

EXHIBIT C (Continued)
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24														
M1-30										18,000				
M1-TXG														
M1-TGC														
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														18,000
M3														

SIGNED FOR IDENTIFICATION:

PIPELINE: ______________________ Jmm

CUSTOMER: ______________________

SUPERCEDES EXHIBIT C DATED ______________

Contract #: 331822

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-8

This Service Agreement, made and entered into this 7th day of August, 1996, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Customer and Pipeline are parties to an executed service agreement under Pipeline's Rate Schedule FTS-8, Pipeline's Contract No. 331016, which specifies an MDQ of 25,702 dekatherms per day ("Dth/d"); and

WHEREAS, pursuant to the terms and conditions of Section 10 of Rate Schedule FTS-8, as approved by the Commission, Customer desires to increase its MDQ thereunder by 7 Dth/d; and

WHEREAS, subject to the terms and conditions set forth in the Precedent Agreement dated October 21, 1994 entered into by and between Customer and Pipeline ("Precedent Agreement") and the terms and conditions of this Service Agreement, Customer and Pipeline desire to supersede Pipeline's Contract No. 331016 by entering into this Service Agreement to reflect the additional firm transportation service as described above;

NOW, THEREFORE, in consideration of the premises and of the mutual convenants and agreements herein contained, the parties do convenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FTS-8, Pipeline agrees to deliver on a firm basis for Customer's account quantities of gas up to the following quantity:

Maximum Daily Quantity (MDQ) 25,709 dth

Pipeline shall receive for Customer's account, at the Customer Point(s), for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at the CNG Point(s), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall receive for Customer's account, at the CNG Point(s), for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at the Customer Point(s), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage, as specified in the executed service agreement. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ, as specified in the executed service agreement.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the date specified by Pipeline in Pipeline's written notice to Customer pursuant to Paragraph 3 of the Precedent Agreement, which date will be the later of: (i) November 1, 1996; or (ii) the date that all of the conditions precedent set forth in Paragraph 6 of the Precedent Agreement have been satisfied or waived by mutual written agreement of the parties and Pipeline is ready and able to place the necessary facilities into gas service.- In the event the Precedent Agreement is terminated in accordance with Paragraph 10 of the Precedent Agreement, then the term of this Service Agreement shall not commence and this Service Agreement shall be null and void. After commencement of the term of this Service Agreement, the term of this Service Agreement shall continue in force and effect until March 31, 2006, and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon twenty-four (24) months prior written notice to the other specifying a termination date of March 31, 2006 or any March 31 thereafter.

Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such right, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill. Notwithstanding the foregoing, service shall not be terminated unless and until Pipeline has received abandonment authority pursuant to Section 7 of the Natural Gas Act. Customer shall have the right to oppose Pipeline's application to the Federal Energy Regulatory

Commission, or any successor agency, for such abandonment authority. For the 120 days following termination of this Service Agreement, Pipeline shall utilize its best efforts to provide Customer with such additional interruptible transportation service, to be provided pursuant to Rate Schedule IT-1 or successor of Rate Schedule IT-1, as is necessary for Customer to withdraw and receive delivery of all gas remaining in storage pursuant to CNG's Rate Schedule GSS.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FTS-8 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline for, all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FTS-8 as filed with the Federal Energy Regulatory Commission and as the same may be hereafter revised or changed.

Pipeline shall have the right from time to time, by the filing of a revised rate schedule, to increase or decrease the rates, to change the form of the applicable rate schedule and to take such other and further action with respect thereto without further consent by Customer and such changes in rates and other changes shall become the Rate Schedule and Terms and Conditions under which the gas shall be transported hereunder. Customer shall have the right to oppose any of the foregoing and to request reduction in rates to the extent that Customer is legally permitted to do so under the Natural Gas Act.

ARTICLE IV

CUSTOMER POINT(S) AND CNG POINT(S)

Natural gas to be received by Pipeline for Customer's account for service hereunder shall be received on the outlet side of the measuring station at or near the following designated Customer Point(s) or CNG Point(s), and natural gas to be delivered by Pipeline for Customer's account hereunder shall be delivered at the outlet side of the measuring stations at or near the following designated CNG Point(s) or Customer Point(s), in accordance with the Maximum Daily Receipt Obligation

(MDRO)plus Applicable Shrinkage, Maximum Daily Delivery Obligation (MDDO), receipt and delivery pressure obligations and measurement responsibilities indicated below for each:

	Customer Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
1.	In the City of Philadelphia, Pennsylvania, and designated by Pipeline as Measuring Station 70030	25,709 dth	100 pounds per square inch gauge.	Pipeline
2.	On the Montgomery Philadelphia, County Line, in Philadelphia, and designated by Pipeline as Measuring Station 70034	25,709 dth	100 pounds per square inch gauge.	Pipeline
3.	In the City of Philadelphia, Pennsylvania, and designated by Pipeline as Measuring Station 71682	5,000 dth	100 pounds per square inch gauge.	Pipeline

	CNG Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
1.	In Noble County, Ohio, and designated by Pipeline as Measuring Station 70450.	0 dth 1/ 13,451 dth 2/	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline
2.	In Monroe County, Ohio, and designated by Pipeline as Measuring Station 70471.	0 dth 1/ 13,451 dth 2/	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline

3.	In Monroe County, Ohio, and designated by Pipeline as Measuring Station 70983.	0 dth [1/] 13,451 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	CNG Transmission
4.	In Monroe County, Ohio, and designated by Pipeline as Measuring Station 70004.	0 dth [1/] 13,451 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline
5.	In Marshall County, West Virginia, and designated by Pipeline as Measuring Station 70372.	0 dth [1/] 13,451 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline
6.	In Greene County, Pennsylvania, and designated by Pipeline as Measuring Station 75037.	13,451 dth [1/] 13,451 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline
7.	In Somerset County, Pennsylvania, and designated by Pipeline as Measuring Station 70051.	13,451 dth [1/] 13,451 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	Pipeline
8.	In Westmoreland County, Pennsylvania, and designated by Pipeline as Measuring Station 75082.	13,458 dth [1/] 13,458 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	CNG Transmission
9.	In Clinton County, Pennsylvania, and designated by Pipeline as Measuring Station 75931.	12,251 dth [1/] 12,251 dth [2/]	At such pressure existing in Pipeline's facilities not to exceed the Maximum Allowable Operating Pressure.	CNG Transmission

1/ for receipt by Pipeline for Customer's account

2/ for delivery by Pipeline for Customer's account

provided, however, that Pipeline's maximum daily receipt obligation shall not exceed 13,451 dth in the aggregate at CNG Points (6) and (7) and 13,458 dth in the aggregate at CNG Points (6), (7) and (8) above;

further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 13,458 dth in the aggregate at CNG Points (1) through (8) above;

further provided, however, receipt of gas by Pipeline for Customer's account at Customer Point(s) shall be accomplished solely by the displacement of gas quantities otherwise deliverable to Customer by Pipeline pursuant to other contractual arrangements between Pipeline and Customer, and which quantities shall be billed by Pipeline and paid by Customer as if such deliveries in fact occurred pursuant to the relevant contractual arrangements;

further provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations at each of the Customer Points described above, including Pipeline's maximum daily delivery obligations under this and all other Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Customer Point	Aggregate Maximum Daily Delivery Obligation
No. 1	86,398 dth
No. 2	137,310 dth
No. 3	5,000 dth

and provided further that Pipeline shall have no obligation to deliver natural gas designated as MDQ at any Customer Point other than those listed below:

<u>Customer Points</u>

Measuring Station 70030, Philadelphia, Pennsylvania, up to 12,858 dth/d and
Measuring Station 70034, Montgomery County, Pennsylvania, up to 12,851 dth/d

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: Texas Eastern Transmission Corporation
5400 Westheimer Court
Houston, Texas 77056-5310

(b) Customer: Philadelphia Gas Works
800 W. Montgomery Avenue
Philadelphia, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service

Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without resources to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

AUTHORITY FOR PAYMENT

It is understood and agreed that in entering into and performing this Agreement, PFMC acts solely in its capacity as operator and manager of the City-owned Philadelphia Gas Works pursuant to an agreement with the City of Philadelphia, dated December 29, 1972, as amended, and not otherwise; and further that any and all payments required to be made in connection with this agreement shall be made solely from the revenues of Client.

ARTICLE X

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

Service Agreement dated June 1, 1993, between Pipeline and Customer under Pipeline's Rate Schedule FTS-8 (Pipeline's Contract No. 331016)

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-8
(Continued)

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By Robert B. Evans
Vice President

ATTEST:
Robert W. Reed

ROBERT W. REED
CORPORATE SECRETARY

PHILADELPHIA GAS WORKS*

By Gregory D. Martin
GREGORY D. MARTIN
EXECUTIVE VICE PRESIDENT &
CHIEF OPERATING OFFICER

ATTEST:

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended

331822

AMENDMENT TO SERVICE AGREEMENT UNDER RATE SCHEDULE GSS

THIS AMENDMENT ("Amendment") is entered into this 9 day of JULY, 2012 by and between TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company, hereinafter referred to as "Seller", first party, and PHILADELPHIA GAS WORKS, by Philadelphia Facilities Management Corporation in its capacity as operator and manager of the municipally owned Philadelphia Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended, hereinafter referred to as "Buyer", second party.

WITNESSETH

WHEREAS, Seller and Buyer are parties to that certain Service Agreement dated July 1, 1996, under Seller's Rate Schedule GSS, pursuant to which Seller provides natural gas storage service for Buyer ("Service Agreement") (which Service Agreement superseded the Service Agreement between Buyer and Seller dated October 1, 1993); and

WHEREAS, pursuant to the terms of the Application to Amend Seller's Certificate, in Docket No. CP61-194, as approved by the Federal Energy Regulatory Commission's order dated June 13, 1996 in Docket No. CP96-226-000, the Service Agreement allows for a partial decrease in Buyer's Storage Demand and Buyer's Storage Capacity Quantity beginning July 1, 2001; and

WHEREAS, Buyer has requested and Seller has agreed not to decrease Buyer's Storage Demand and Buyer's Storage Capacity Quantity, and to maintain those quantities at the higher level for the remaining term of the Storage Service Agreement; and

WHEREAS, Seller's firm storage service under Rate Schedule GSS is supported, in part, by a contract storage service purchased from Dominion Transmission, Inc. ("DTI") pursuant to an agreement dated August 23, 1993 under DTI's Rate Schedule GSS ("DTI Storage Service Agreement"); and

WHEREAS, DTI and Seller have negotiated for an extension of the DTI Storage Service Agreement through March 31, 2023; and

WHEREAS, Seller and Buyer desire to continue transacting business pursuant to the Service Agreement and extend the primary term of the Service Agreement to March 31, 2023.

NOW THEREFORE, Seller and Buyer hereby agree as follows:

1. Effective as of the date hereof, Article I of the Service Agreement is hereby deleted in its entirety and replaced by the following:

ARTICLE I
SERVICE TO BE RENDERED

Subject to the terms and provisions of this agreement and of Seller's Rate Schedule GSS, Seller agrees to receive from Buyer for storage, inject into storage for Buyer's account, store, withdraw from storage (or cause to be injected into storage for Buyer's account, stored, and withdrawn from storage) and deliver to Buyer, quantities of natural gas as follows:

97 0614 002

To withdraw from storage or cause to be withdrawn from storage, the gas stored for Buyer's account up to a maximum quantity in any day of 61,567 dt, which quantity shall be Buyer's Storage Demand.

To receive and store or cause to be stored up to a total quantity at any one time of 4,123,733 dt, which quantity shall be Buyer's Storage Capacity Quantity.

2. Effective as of April 1, 2013, Article IV of the Service Agreement is hereby deleted in its entirety and replaced by the following:

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective July 1, 1996 and shall remain in force and effect for a period ending March 31, 2023.

3. Except as herein renewed and amended, the Service Agreement shall remain in full force and effect pursuant to the terms thereof.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective officers or representatives thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
(Seller)

By Paul F. Egner

Print Name Paul F. Egner III

Title Director, Customer Services

PHILADELPHIA GAS WORKS by Philadelphia Facilities Management Corporation
(Buyer)

By Douglas A. Moser

Print Name DOUGLAS A. MOSER

Title EVP & COO

Contract #: 800233R1

SERVICE AGREEMENT
FOR RATE SCHEDULE FT-1

This Service Agreement, made and entered into this 31st day of December, 1999, by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, Customer and Pipeline are parties to an executed service agreement dated December 15, 1998, under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800233R); and

WHEREAS, Pipeline and Customer desire to enter into this Service Agreement to supersede Pipeline's currently effective Contract No. 800233R;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof, of Pipeline's Rate Schedule FT-1, and of the General Terms and Conditions, transportation service hereunder will be firm. Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FT-1, Pipeline agrees to deliver for Customer's account quantities of natural gas up to the following quantity:

Maximum Daily Quantity (MDQ) 23,822 dth

provided, however, Customer shall have the option to reduce the MDQ of this Service Agreement by 2,382 dth upon one (1) year prior written notice to Pipeline with such reduction to be effective November 1, 2002. Pipeline and Customer agree that any reduction in MDQ of this Service Agreement will (i)reduce all of Customer's market zone entitlements by the quantity of such reduction; and (ii)reduce Customer's firm rights under this Service Agreement in each of Pipeline's acess area zones by 10%.

Pipeline shall receive for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Receipt) for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at those points on Pipeline's system as specified in Article IV herein or available to Customer pursuant to Section 14 of the General Terms and Conditions (hereinafter referred to as Point(s) of Delivery), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery Obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ.

In addition to the MDQ and subject to the terms, conditions and limitations hereof, Rate Schedule FT-1 and the General Terms and Conditions, Pipeline shall deliver within the Access Area under this and all other service agreements under Rate Schedules CDS, FT-1, and/or SCT, quantities up to Customer's Operational Segment Capacity Entitlements, excluding those Operational Segment Capacity Entitlements scheduled to meet Customer's MDQ, for Customer's account, as requested on any day.

ARTICLE II

TERM OF AGREEMENT

The term of this Service Agreement shall commence on the first day of the first month after Customer fully executes this Service Agreement and shall continue in force and effect until October 31, 2003 and year to year thereafter unless this Service Agreement is terminated as hereinafter provided. This Service Agreement may be terminated by either Pipeline or Customer upon one (1) year prior written notice to the other specifying a termination date of October 31, 2003, or any October 31 thereafter. Subject to Section 22 of Pipeline's General Terms and Conditions and without prejudice to such rights, this Service Agreement may be terminated at any time by Pipeline in the event Customer fails to pay part or all of the amount of any bill for service hereunder and such failure continues for thirty (30) days after payment is due; provided, Pipeline gives thirty (30) days prior written notice to Customer of such termination and provided further such termination shall not be effective if, prior to the date of termination, Customer either pays such outstanding bill or furnishes a good and sufficient surety bond guaranteeing payment to Pipeline of such outstanding bill.

THE TERMINATION OF THIS SERVICE AGREEMENT WITH A FIXED CONTRACT TERM OR THE PROVISION OF A TERMINATION NOTICE BY CUSTOMER TRIGGERS PREGRANTED ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT AS OF THE EFFECTIVE DATE OF THE TERMINATION. PROVISION OF A TERMINATION NOTICE BY PIPELINE ALSO TRIGGERS CUSTOMER'S RIGHT OF FIRST REFUSAL UNDER SECTION 3.13 OF THE GENERAL TERMS AND CONDITIONS ON THE EFFECTIVE DATE OF THE TERMINATION.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FT-1 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FT-1 as filed with the Federal Energy Regulatory Commission, and as same may hereafter be legally amended or superseded.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FT-1, (b) Pipeline's Rate Schedule FT-1 pursuant to which service hereunder is rendered or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FT-1. Notwithstanding the foregoing, Customer does not agree that Pipeline shall have the unilateral right without the consent of Customer subsequent to the execution of this Service Agreement and Pipeline shall not have the right during the effectiveness of this Service Agreement to make any filings pursuant to Section 4 of the Natural Gas Act to change the MDQ specified in Article I, to change the term of the agreement as specified in Article II, to change Point(s) of Receipt specified in Article IV, to change the Point(s) of Delivery specified in Article IV, or to change the firm character of the service hereunder. Pipeline agrees that Customer may protest or contest the aforementioned filings, and Customer does not waive any rights it may have with respect to such filings.

ARTICLE IV

POINT(S) OF RECEIPT AND POINT(S) OF DELIVERY

The Point(s) of Receipt and Point(s) of Delivery at which Pipeline shall receive and deliver gas, respectively, shall be specified in Exhibit(s) A and B of the executed service

agreement. Customer's Zone Boundary Entry Quantity and Zone Boundary Exit Quantity for each of Pipeline's zones shall be specified in Exhibit C of the executed service agreement.

Exhibit(s) A, B and C are hereby incorporated as part of this Service Agreement for all intents and purposes as if fully copied and set forth herein at length.

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, Customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications. Customer shall execute or cause its supplier to execute, if such supplier has retained processing rights to the gas delivered to Customer, the appropriate agreements prior to the commencement of service for the transportation and processing of any liquefiable hydrocarbons and any PVR quantities associated with the processing of gas received by Pipeline at the Point(s) of Receipt under such Customer's service agreement. In addition, subject to the execution of appropriate agreements, Pipeline is willing to transport liquids associated with the gas produced and tendered for transportation hereunder.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered,

800233R6

certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: PHILADELPHIA GAS WORKS
GAS ACQUISITION & FED. REGULATORY AFFAIRS DEPT.
800 W. MONTGOMERY AVENUE
PHILADELPHIA, PA 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any Company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other. In addition, Customer may assign its rights to capacity pursuant to Section 3.14 of the General Terms and Conditions. To the extent Customer so desires, when it releases capacity pursuant to Section 3.14 of the General Terms and Conditions, Customer may require privity between Customer and the Replacement Customer, as further provided in the applicable Capacity Release Umbrella Agreement.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law governing conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

service agreement dated December 15, 1998, between Pipeline and Customer under Pipeline's Rate Schedule FT-1 (Pipeline's Contract No. 800233R).

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By ______________________ PMT

ATTEST:

____
Assistant Secretary

PHILADELPHIA GAS WORKS*

By ______________________ HAF

ATTEST:

____

*PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended.

800233

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA GAS WORKS ("Customer"), DATED 12/31/1999:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	23,822

SIGNED FOR IDENTIFICATION

PIPELINE: ____ JMM

CUSTOMER: ____ XAK

SUPERSEDES EXHIBIT A DATED: ____

800233R

Contract #:800233R1
R1B1

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/31/1999,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA GAS WORKS ("Customer"),
DATED 12/31/1999 :

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsi-bilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE,PA PHILADELPHIA CO., PA	23,822	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	70034	PHILADELPHIA GAS WORKS - LEVICK ST., PA MONTGOMERY CO., PA	23,822	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
3.	71682	PHILADELPHIA GAS WORKS PENROSE (EASTWICK)-PHILADEL PHILADELPHIA CO., PA	5,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
4.	79513	SS-1 STORAGE POINT	23,822 04/01-10/31 23,822 11/01-03/31	N/A	N/A	N/A	N/A
5.	73060	HARKNESS PT. - PHILADELPHIA, PA PHILADELPHIA CO., PA	23,822	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Contract #:800233R1

EXHIBIT B, POINT(S) OF DELIVERY (Continued)
PHILADELPHIA GAS WORKS

Point of Delivery	Aggregate Maximum Daily Delivery Obligation (dth)
No.1	92,073
	12/01-02/28
	101,073
	03/01-11/30
No.2	137,310
No.3	5,000
No.4	26,262
No.5	49,000

and further provided, however, that Pipeline's maximum daily delivery obligation shall not exceed 101,073 dth in the aggregate at Points of Delivery 70030 and 73060.

SIGNED FOR IDENTIFICATION

PIPELINE: ____________ JMM

CUSTOMER: ____________ LAK

SUPERSEDES EXHIBIT B DATED: December 15, 1998

800233R1

Contract #:800233R

RIC1

EXHIBIT C, ZONE BOUNDARY ENTRY QUANTITY AND ZONE BOUNDARY EXIT QUANTITY, DATED 12/31/1999, TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1 BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("PIPELINE") AND PHILADELPHIA GAS WORKS ("CUSTOMER"), DATED 12/31/1999:

ZONE BOUNDARY ENTRY QUANTITY

Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX								1696						
ETX					7210		2567							
WLA							781	1696						
ELA						28123								
M1-24									7210					
M1-30										10843				
M1-TXG											3348			
M1-TGC												3393		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														23822
M3														

800233R

Contract #:800233R

EXHIBIT C (Continued)
PHILADELPHIA GAS WORKS

ZONE BOUNDARY EXIT QUANTITY
Dth/D

To

FROM	STX	ETX	WLA	ELA	M1-24	M1-30	M1-TXG	M1-TGC	M2-24	M2-30	M2-TXG	M2-TGC	M2	M3
STX														
ETX														
WLA														
ELA														
M1-24									7210					
M1-30										10840				
M1-TXG											3348			
M1-TGC												3393		
M2-24														
M2-30														
M2-TXG														
M2-TGC														
M2														23822
M 3														

SIGNED FOR IDENTIFICATION:

PIPELINE: [signature] JMM

CUSTOMER: Gary White HAE

SUPERSEDES EXHIBIT C DATED: ______

FORM OF SERVICE AGREEMENT
(For Use Under Seller's Rate Schedule FT)

THIS AGREEMENT entered into this 11 day of JULY, 2018, by and between TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company, hereinafter referred to as "Seller," first party, and PHILADELPHIA GAS WORKS, by Philadelphia Facilities Management Corporation in its capacity as operator and manager of the municipally owned Philadelphia Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended, hereinafter referred to as "Buyer, " second party,

WITNESSETH

WHEREAS, Seller and Buyer are parties to that certain Service Agreement, dated February 1, 1992 (Seller's Contract #1003691, hereinafter referred to as "the Service Agreement"), under Seller's Rate Schedule FT pursuant to which Seller provides firm transportation service for Buyer up to a Transportation Contract Quantity of 165,212 dt per day; and

WHEREAS, Seller and Buyer desire to amend the Service Agreement to modify Exhibit A of the Service Agreement to remove all of the receipt points and volumes with the exception of the receipt points at Compressor Stations 30, 45, 50, 54, 62 and 65 and the associated volumes for each; and

WHEREAS, Seller and Buyer also desire to amend the Service Agreement to reflect the conversion of the quantities of gas under the Service Agreement from Mcf to dt at a conversion factor of 1.035 dt per Mcf; and

WHEREAS, Seller and Buyer further desire to amend the Service Agreement to include a non-conforming provision specifying the responsible party for payments for transportation service provided by Seller under the Service Agreement in Article VI, Paragraph 6; and

WHEREAS, consistent with Federal Energy Regulatory Commission requirements, Seller and Buyer have agreed to supersede and cancel the Service Agreement and execute a new agreement reflecting these amendments and otherwise restating the terms and conditions of the Service Agreement, which will then be submitted to the Federal Energy Regulatory Commission for approval.

NOW THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
GAS TRANSPORTATION SERVICE

1. Subject to the terms and provisions of this agreement and of Seller's Rate Schedule FT, Buyer agrees to deliver or cause to be delivered to Seller gas for transportation and Seller agrees to receive, transport and redeliver natural gas to Buyer or for the account of Buyer, on a firm basis, up to a Transportation Contract Quantity ("TCQ") of 165,212 dt per day.

2. Transportation service rendered hereunder shall not be subject to curtailment or interruption except as provided in Section 11 and, if applicable, Section 42 of the General Terms and Conditions of Seller's FERC Gas Tariff.

ARTICLE II
POINT(S) OF RECEIPT

Buyer shall deliver or cause to be delivered gas at the point(s) of receipt hereunder at a pressure sufficient to allow the gas to enter Seller's pipeline system at the varying pressures that may exist in such system from time to time; provided, however, the pressure of the gas delivered or caused to be delivered by Buyer shall not exceed the maximum operating pressure(s) of Seller's pipeline system at such point(s) of receipt. In the event the maximum operating pressure(s) of Seller's pipeline system, at the point(s) of receipt hereunder, is from time to time increased or decreased, then the maximum allowable pressure(s) of the gas delivered or caused to be delivered by Buyer to Seller at the point(s) of receipt shall be correspondingly increased or decreased upon written notification of Seller to Buyer. The point(s) of receipt for natural gas received for transportation pursuant to this agreement shall be:

See Exhibit A, attached hereto, for points of receipt.

ARTICLE III
POINT(S) OF DELIVERY

Seller shall redeliver to Buyer or for the account of Buyer the gas transported hereunder at the following point(s) of delivery and at a pressure(s) of:

See Exhibit B, attached hereto, for points of delivery and pressures.

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective as of September 1, 2018 and shall remain in force and effect until 9:00 a.m. Central Clock Time September 1, 2021 and thereafter until terminated by Seller or Buyer upon at least three (3) years written notice; provided, however, this agreement shall terminate immediately and, subject to the receipt of necessary authorizations, if any, Seller may discontinue service hereunder if (a) Buyer, in Seller's reasonable judgment fails to demonstrate creditworthiness, and (b) Buyer fails to provide adequate security in accordance with Section 32 of the General Terms and Conditions of Seller's Volume No. 1 Tariff. As set forth in Section 8 of Article II of Seller's August 7, 1989 revised Stipulation and Agreement in Docket Nos. RP88-68 et.al., (a) pregranted abandonment under Section 284.221(d) of the Commission's regulations shall not apply to any long term conversions from firm sales service to transportation service under Seller's Rate Schedule FT and (b) Seller shall not exercise its right to terminate this service agreement as it applies to transportation service resulting from conversions from firm sales service so long as Buyer is willing to pay rates no less favorable than Seller is otherwise able to collect from third parties for such service.

ARTICLE V
RATE SCHEDULE AND PRICE

1. Buyer shall pay Seller for natural gas delivered to Buyer hereunder in accordance with Seller's Rate Schedule FT and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be legally amended or superseded from time to time. Such rate schedule and General Terms and Conditions are by this reference made a part hereof. In the event Buyer and Seller mutually agree to a negotiated rate pursuant to the provisions in Section 53 of the General Terms and Conditions and specified term for service hereunder, provisions governing such negotiated rate (including surcharges) and term shall be set forth on Exhibit C to the service agreement.

2. Seller and Buyer agree that the quantity of gas that Buyer delivers or causes to be delivered to Seller shall include the quantity of gas retained by Seller for applicable compressor fuel, line loss make-up (and injection fuel under Seller's Rate Schedule GSS, if applicable) in providing the transportation service hereunder, which quantity may be changed from time to time and which will be specified in the currently effective Statement of Rates and Fuel in Part II, Section 12.1 of this tariff which relates to service under this agreement and which is incorporated herein.

3. In addition to the applicable charges for firm transportation service pursuant to Section 3 of Seller's Rate Schedule FT, Buyer shall reimburse Seller for any and all filing fees incurred as a result of Buyer's request for service under Seller's Rate Schedule FT, to the extent such fees are imposed upon Seller by the Federal Energy Regulatory Commission or any successor governmental authority having jurisdiction.

ARTICLE VI
MISCELLANEOUS

1. This Agreement supersedes and cancels as of the effective date hereof the following contract(s): FT Service Agreement, dated February 1, 1992 (Seller's Contract #1003691).

2. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

3. The interpretation and performance of this agreement shall be in accordance with the laws of the State of Texas, without recourse to the law governing conflict of laws, and to all present and future valid laws with respect to the subject matter, including present and future orders, rules and regulations of duly constituted authorities.

4. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

5. Notices to either party shall be in writing and shall be considered as duly delivered when mailed to the other party at the following address:

(a) If to Seller:
Transcontinental Gas Pipe Line Company, LLC
P. O. Box 1396
Houston, Texas 77251
Attention: Manager – Customer Services

(b) If to Buyer:
Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122
Attention: Vice President – Rates and Federal Regulatory Affairs

Such addresses may be changed from time to time by mailing appropriate notice thereof to the other party by certified or registered mail.

6. It is understood and agreed that any payments required to be made by the Philadelphia Facilities Management Corporation and/or PGW as a result of or arising out of its entering into this Service Agreement shall be made solely from the revenues of the Philadelphia Gas Works.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective officers or representatives thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE
COMPANY, LLC
(Seller)

By Hector Alatorre

Print Name HECTOR ALATORRE

Title DIRECTOR, CUSTOMER SERVICE

PHILADELPHIA GAS WORKS
(Buyer)

By John C. Zuk

Print Name John C. Zuk

Title VP Gas Supply

Exhibit A

Point(s) of Receipt	Maximum Daily Capacity Entitlement at each Receipt Point (DT/day)*]
1. Suction Side of Seller's Compressor Station 30 at the Existing Point of Interconnection between Seller's Central Texas Lateral and Seller's Mainline at Wharton County, Texas. (Station 30 TP#7133)	28,086
2. Discharge Side of Seller's Compressor Station 45 at the Existing Point of Interconnection between Seller's Southwest Louisiana Lateral and Seller's Mainline Beauregard Parish, Louisiana. (Station 45 TP#7101)	69,388
3. Suction Side of Seller's Compressor Station 50 at the Existing Point of Interconnection between Seller's Central Louisiana Lateral and Seller's Mainline Evangeline Parish, Louisiana. (Station 50 TP#6948)	100,779
4. Discharge Side of Seller's Compressor Station 54 at Seller's Washington Storage Field, St. Landry Parish, Louisiana (Station 54 TP#6768)	101,546 Mar.–Nov. 100,779 Dec.–Feb.
5. Suction Side of Seller's Compressor Station 62 on Seller's Southeast Louisiana Lateral in Terrebonne Parish, Louisiana. (Station 62 TP#7141)	64,433
6. Suction Side of Seller's Compressor Station 65 at Existing Point of Interconnection between Seller's Southeast Louisiana Lateral and Seller's Mainline St. Helena Parish, Louisiana. (Station 65 TP#6685)	165,212

* These quantities do not include the additional quantities of gas retained by Seller for applicable compressor fuel and line loss make-up provided for in Article V, 2 of this service agreement, which are subject to change as provided for in Article V, 2 hereof.

Exhibit B

Point(s) of Delivery	Maximum Daily Capacity Entitlement at each Delivery Point(Dt/Day)	Pressure
1. Station 54	101,546 Mar.–Nov. 100,779 Dec.–Feb.	Not Applicable.
2. Seller's Eminence Storage Field, Covington County, Mississippi	165,212	Prevailing pressure in Seller's pipeline system not to exceed maximum allowable operating pressure.
3. Ashmead Road Meter Station, located on Seller's Oreland Line at mile post 13.44 in Cheltenham Township, Montgomery County, Pennsylvania, near the city limits line of the City of Philadelphia, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
4. Whitman Meter Station, located in the City of Philadelphia, Pennsylvania, on Delaware Avenue approximately 550 feet south of the intersection of Delaware Avenue and Packer Avenue where the facilities of Seller connect with those of Buyer.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.

5.	Richmond Meter Station, located adjacent to Seller's Trenton-Woodbury line at mile post 36.83 and near the intersection of Lewis and Delaware Avenue, Philadelphia County, Philadelphia, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
6.	Northeast Philadelphia Meter Station (Somerton), located near the westerly terminus of Brookside Drive and approximately 1200 feet northeasterly from County Line Road in Lower Southampton Township, Bucks County, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
7.	Oreland Meter Station, located on Seller's Oreland Line at mile post 6.09 in Springfield Township, Montgomery County, Pennsylvania.	165,212	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.

Exhibit C

Specification of Negotiated Rate and Term

None.

27 0041 000

System Contract #0.3691

NEED NEW BASE #

ATION

DATED

February 1, 1992

PGW File #87-TRA-1-FT-10

27 0041 000

SERVICE AGREEMENT

THIS AGREEMENT entered into this 1st day of February, 1992, by and between TRANSCONTINENTAL GAS PIPE LINE CORPORATION, a Delaware corporation, hereinafter referred to as "Seller", first party, and PHILADELPHIA GAS WORKS 1/, hereinafter referred to as "Buyer," second party,

W I T N E S S E T H

WHEREAS, Buyer and Seller desire to consolidate the existing limited term and long term firm transportation service agreements between Buyer and Seller into a single long term service agreement under Seller's Rate Schedule FT.

NOW, THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
GAS TRANSPORTATION SERVICE

1. Subject to the terms and provisions of this agreement and of Seller's Rate Schedule FT, Buyer agrees to deliver or cause to be delivered to Seller gas for transportation and Seller agrees to receive, transport and redeliver natural gas to Buyer or for the account of Buyer, on a firm basis, up to the dekatherm equivalent of a Transportation Contract Quantity ("TCQ") of 159,625 Mcf per day.

2. Transportation service rendered hereunder shall not be subject to curtailment or interruption except as provided in Section 11 of the General Terms and Conditions of Seller's FERC Gas Tariff.

SERVICE AGREEMENT
(Continued)

ARTICLE II
POINT(S) OF RECEIPT

Buyer shall deliver or cause to be delivered gas at the Point(s) of receipt hereunder at a pressure sufficient to allow the gas to enter Seller's pipeline system at the varying pressures that may exist in such system from time to time; provided, however, that such pressure of the gas delivered or caused to be delivered by Buyer shall not exceed the maximum operating pressure(s) specified below. In the event the maximum operating pressure(s) of Seller's pipeline system, at the Point(s) of receipt hereunder, is from time to time increased or decreased, then the maximum allowable pressure(s) of the gas delivered or caused to be delivered by Buyer to Seller at the point(s) of receipt shall be correspondingly increased or decreased upon written notification of Seller to Buyer. The point(s) of receipt for natural gas received for transportation pursuant to this agreement shall be:

SEE Exhibit A, attached hereto, for points of receipt.

ARTICLE III
POINT(S) OF DELIVERY

Seller shall redeliver to Buyer or for the account of Buyer the gas transported hereunder at the following point(s) of delivery and at a pressure(s) of:

SEE Exhibit B, attached hereto, for points of delivery and pressures.

SERVICE AGREEMENT
(CONTINUED)

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective as of February 1, 1992 and shall remain in force and effect until 8:00 a.m. Eastern Standard Time March 31, 2005 and thereafter until terminated by Seller or Buyer upon at least three (3) years written notice; provided, however, this agreement shall terminate immediately and, subject to the receipt of necessary authorizations, if any, Seller may discontinue service hereunder if (a) Buyer, in Seller's reasonable judgment fails to demonstrate credit worthiness, and (b) Buyer fails to provide adequate security in accordance with Section 8.3 of Seller's Rate Schedule FT. As set forth in Section 8 of Article II of Seller's August 7, 1989 revised Stipulation and Agreement in Docket Nos. RP88-68 et al., (a) pregranted abandonment under Section 284.221 (d) of the Commission's Regulations shall not apply to any long term conversions from firm sales service to transportation service under Seller's Rate Schedule FT and (b) Seller shall not exercise its right to terminate this service agreement as it applies to transportation service resulting from conversions from firm sales service so long as Buyer is willing to pay rates no less favorable than Seller is otherwise able to collect from third parties for such service.

ARTICLE V

RATE SCHEDULE AND PRICE

1. Buyer shall pay Seller for natural gas delivered to Buyer hereunder in accordance with Seller's Rate Schedule FT and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be legally amended or superseded from time to time. Such Rate Schedule and General Terms and Conditions are by this reference made a part hereof.

2. Seller and Buyer agree that the quantity of gas that Buyer delivers or causes to be delivered to Seller shall include the quantity of gas retained by Seller for applicable compressor fuel, line loss make-up (and injection fuel under Seller's Rate Schedule GSS, if applicable) in providing the transportation service hereunder, which quantity may be changed from time to time and which will be specified in the currently effective Sheet No. 44 of Volume No. 1 of this Tariff which relates to service under this agreement and which is incorporated herein.

SERVICE AGREEMENT
(Continued)

3. In addition to the applicable charges for firm transportation service pursuant to Section 3 of Seller's Rate Schedule FT, Buyer shall reimburse Seller for any and all filing fees incurred as a result of Buyer's request for service under Seller's Rate Schedule FT, to the extent such fees are imposed upon Seller by the Federal Energy Regulatory Commission or any successor governmental authority having jurisdiction.

ARTICLE VI
MISCELLANEOUS

1. This Agreement supersedes and cancels as of the effective date hereof the following contract(s) between the parties hereto:

FT Service Agreement dated April 1, 1991, as amended August 1, 1991 (system contract 0.3691); FT (limited term) Service Agreement dated April 10, 1990, as amended April 1, 1991 and August 1, 1991 (system contract 0.3409/0.3449) the term of which Buyer and Seller hereby agree to extend until the effective date of service hereunder.

2. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

3. The interpretation and performance of this agreement shall be in accordance with the laws of the State of Texas, without recourse to the law governing conflict of laws, and to all present and future valid laws with respect to the subject matter, including present and future orders, rules and regulations of duly constituted authorities.

4. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

SERVICE AGREEMENT
(Continued)

5. Notices to either party shall be in writing and shall be considered as duly delivered when mailed to the other party at the following address:

(a) If to Seller:

Transcontinental Gas Pipe Line Corporation
P. O. Box 1396
Houston, Texas 77251
Attention: Director - Transportation Services

(b) If to Buyer:

Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122
Attention: Vice President - Rates and Federal Regulatory Affairs

Such address may be changed from time to time by mailing appropriate notice thereof to the other party by certified or registered mail.

27 0041 000

SERVICE AGREEMENT
(Continued)

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective officers or representatives thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
(Seller)

By: Thomas E. Skains
Thomas E. Skains
Senior Vice President
Transportation and Customer Services

PHILADELPHIA GAS WORKS
(Buyer)

By: a.p. Degen

Title:

1/ PHILADELPHIA GAS WORKS by PHILADELPHIA FACILITIES MANAGEMENT CORPORATION, a non-profit Pennsylvania corporation, in its capacity as operator and manager of the City-owned facility, pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended.

EXHIBIT "A"
(FT)

System Contract #.3691

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
1. Suction Side of Seller's Compressor Station 30 at the Existing Point of Interconnection between Seller's Central Texas Lateral and Seller's Mainline at Wharton County, Texas. (Station 30 TP#7133)	27,136
2. Existing Point of Interconnection between Seller and Valero Transmission Company (Seller Meter No. 3396) at Wharton County, Texas. (Wharton Valero TP#6690)	27,136
3. Existing Point of Interconnection between Seller and Meter named Spanish Camp (Seller Meter No. 3365) Wharton County, Texas. (Spanish Camp-Delhi TP#6895)	27,136
4. Existing Point of Interconnection between Seller and Meter named Denton Cooley #1 (Seller Meter No. 3331), In Fort Bend County, Texas (Denton Cooley #1 -TP#1106)	27,136
5. Existing Point of Interconnection between Seller and Meter named Randon East (Fulshear) (Seller Meter No. 1427), in Fort Bend County, Texas. (Randon East (Fulshear) TP#299)	27,136
6. Existing Point of Interconnection between Seller and Houston Pipeline Company (Seller Meter No. 3364) At Fulshear, Fort Bend County, Texas. (Fulshear-HPL TP#6097)	27,136
7. Existing Point of Interconnection between Seller and Meter named White Oak Bayou-Exxon Gas System, Inc. (Seller Meter No. 3545), in Harris County, Texas. (White Oak Bayou-EGSI-TP#1036)	27,136

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
8. Existing Point of Interconnection between Seller and Houston Pipeline Company (Seller Meter No. 4359) at Bammel, Harris County, Texas. (Bammel-HPL TP#6014)	27,136
9. Existing Point of Interconnection between Seller and Delhi Pipeline Company (Seller Meter No. 3346) at Hardin County, Texas. (Hardin-Delhi TP#6696)	27,136
10. Existing Point of Interconnection between Seller and Meter named Vidor Field Junction (Seller Meter No. 3554), in Jasper County, Texas. (Vidor Field Junction-TP#2337)	27,136
11. Existing Point of Interconnection between Seller and Meter named Starks McConathy (Seller Meter No. 3535), in Calcasieu Parish, Louisiana. (Starks McConathy-TP#7346)	27,136
12. Existing Point of Interconnection between Seller and Meter named DeQuincy Intercon (Seller Meter No. 2698), in Calcasieu Parish, Louisiana. (DeQuincy Intercon-TP#7035)	27,136
13. Existing Point of Interconnection between Seller and Meter named DeQuincy Great Scott (Seller Meter No. 3357), in Calcasieu Parish, Louisiana. (DeQuincy Great Scott-TP#6809)	27,136
14. Existing Point of Interconnection between Seller and Meter named Perkins-Phillips (Seller Meter No. 3532), in Calcasieu Parish, Louisiana. (Perkins-Phillips-TP#7508)	27,136
15. Existing Point of Interconnection between Seller and Meter named Perkins (Intercon) (Seller Meter No. 3395), in Calcasieu Parish, Louisiana. (Perkins (Intercon) -TP#7036)	27,136
16. Existing Point of Interconnection between Seller and Meter named Perkins East (Seller Meter No. 2369), in Beauregard Parish, Louisiana. (Perkins East-TP#139)	27,136

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
17. Discharge Side of Seller's Compressor Station 45 at the Existing point of Interconnection between Seller's Southwest Louisiana Lateral and Seller's Mainline Beauregard Parish, Louisiana. (Station 45 TP#7101)	67,043
18. Existing Point of Interconnection between Seller and Texas Eastern Transmission Corporation, (Seller Meter No. 4198) at Ragley, Beauregard Parish, Louisiana. (Ragley-TET TP#6217)	67,043
19. Existing Point of Interconnection between Seller and Trunkline Gas Company (Seller Meter No. 4215) at Ragley, Beauregard Parish, Louisiana. (Ragley-Trunkline TP#6218)	67,043
20. Existing Point of Interconnection between Seller and Tennessee Gas Transmission Company (Seller Meter No. 3371) at Kinder, Allen Parish, Louisiana. (Kinder TGT-TP#6149)**	67,043
21. Existing Point of Interconnection between Seller and Texas Gas Transmission Corporation (Seller Meter Nos. 3227, 4314, 4457) at Eunice, Evangeline Parish, Louisiana. (Eunice Mamou Tx. Gas TP#6923)	67,043
22. Suction Side of Seller's Compressor Station 50 at the Existing Point of Interconnection between Seller's Central Louisiana Lateral and Seller's Mainline Evangeline Parish, Louisiana. (Station 50 TP#6948)	97,371
23. Existing Point of Interconnection between Seller and Columbia Gulf Transmission Corporation (Seller Meter No. 3142) at Eunice, Evangeline Parish, Louisiana. (Eunice Evangeline Col. Gulf TP#6414)	97,371

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
24. Discharge Side of Seller's Compressor Station 54 at Seller's Washington Storage Field, St. Landry Parish, Louisiana (Station 54 TP#6768)	98,112 March-November 97,371 December-February
25. Existing Point of Interconnection between Seller and Acadian Pipeline (Seller Meter No. 3506) in Pointe Coupee Parish, Louisiana. (Morganza-Acadian Pipeline TP#7060)	97,371
26. Existing Point of Interconnection (Seller Meter No. 3272) at M.P. 566.92, Morganza Field, Pointe Coupee Parish, Louisiana. (Morganza Field - TP#576)	97,371
27. Existing Point of Interconnection between Seller and Meter named West Feliciana Parish-Creole (Seller Meter No. 4464), in West Feliciana Parish, Louisiana. (West Feliciana Parish-Creole TP#7165)	97,371
28. Existing Point of Interconnection between Seller and Mid-Louisiana Gas Company (Seller Meter Nos. 4137, 4184, 3229) at Ethel, East Feliciana Parish, Louisiana. (Ethel-Mid LA TP#6083)	97,371
29. Existing Point of Interconnection between Seller and Meter named Liverpool Northwest (Seller Meter No. 3390), in St. Helena Parish, Louisiana. (Liverpool Northwest-TP#6757)	97,371
30. Suction Side of Seller's Compressor Station 62 on Seller's Southeast Louisiana Lateral in Terrebonne Parish Louisiana.(Station 62 TP#7141)	62,254
31. Existing Point of Interconnection between Seller and Meter named Texas Gas - TLIPCO-Thibodeaux (Seller Meter No. 3533), in Lafourche Parish, Louisiana. (TXGT-TLIPCO -Thibodeaux-TP#7206)	62,254

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
32. Existing Point of Interconnection between Seller and Meter named Romeville-Monterey Pipeline (Seller Meter No. 4410), in St. James Parish, Louisiana. (Romeville-Monterey Pipeline-TP#580)	62,254
33. Existing Point of Interconnection between Seller and Meter named St. James CCIPC (Seller Meter No. 4462), in St. James Parish, Louisiana. (St. James CCIPC-TP#7164)**	62,254
34. Existing Point of Interconnection between Seller and Meter named St. James Faustina (St. Amelia)(Seller Meter No. 3328), in St. James Parish, Louisiana. (St. James Faustina (St. Amelia) TP#6268)**	62,254
35. Existing Point of Interconnection between Seller and Meter named St. James Acadian (Seller Meter No. 4366), in St. James Parish, Louisiana. (St. James Acadian-TP#6677)**	62,254
36. Existing Point of Interconnection between Seller and Meter Named Livingston-Flare (Seller Meter No. 3540), in Livingston Parish, Louisiana. (Livingston-Flare-TP#8739)	62,254
37. Existing Point of Interconnection between Seller and Florida Gas Transmission Company (Seller Meter No. 3217) at St. Helena, St. Helena Parish, Louisiana. (St. Helena FGT-TP#6267)	62,254
38. Existing Point of Interconnection between Seller and Meter named Beaver Dam Creek (Seller Meter No. 3536), in St. Helena Parish, Louisiana. (Beaver Dam Creek-TP#8218)	62,254
39. Suction Side of Seller's Compressor Station 65 at the Existing Point of Interconnection between Seller's Southeast Louisiana Lateral and Seller's Mainline St. Helena Parish, Louisiana. (Station 65 TP#6685)	159,625

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
40. Existing Point of Interconnection between Seller and Meter named Amite County/Koch (Seller Meter No. 3332), in Amite County, Mississippi (Amite County/Koch-TP#6701)	159,625
41. Existing Point of Interconnection between Seller and Meter named McComb (Seller Meter No. 3461), in Pike County, Mississippi. (McComb-TP#6446)	159,625
42. Existing Point of Interconnection between Seller and United Gas Pipe Line Company at Holmesville (Seller Meter No. 3150), Pike County, Mississippi. (Holmesville-United TP#6128)	159,625
43. Discharge Side of Seller's Compressor Station 70 at M.P. 661.77 in Walthall County, Mississippi. (M.P. 661.77-Station 70 Discharge-TP#7142)	159,625
44. Existing Point of Interconnection between Seller and United Gas Pipe Line Company at Walthall (Seller Meter No. 3095), Walthall County, Mississippi. (Walthall-UGPL TP#6310)	159,625
45. Existing Point of Interconnection between Seller and Meter named Darbun-Pruett 34-10 (Seller Meter No. 3446) at M.P. 668.46 on Seller's Main Transmission Line, Darbun Field, Walthall County, Mississippi. (Darbun Pruett TP#6750)	159,625
46. Existing Point of Interconnection between Seller and Meter named Ivy Newsome (Seller Meter No. 3413) in Marion County, Mississippi. (Ivy Newsome-TP#6179)	159,625
47. Existing Point of Interconnection between Seller and West Oakvale Field at M.P. 680.47-Marion County, Mississippi. (M.P. 680.47-West Oakvale Field-TP#7144)	159,625

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
48. Existing Point of Interconnection between Seller and East Morgantown Field at M.P. 680.47 in Marion County, Mississippi. (M.P. 680.47-E. Morgantown Field-TP#7145)	159,625
49. Existing Point of Interconnection between Seller and Greens Creek Field, at M.P. 681.84 Marion County, Mississippi. (M. P. 681.84 Greens Creek Field TP#7146)	159,625
50. Existing Point of Interconnection between Seller and Meter named M.P.685.00-Oakvale Unit 6-6 in Jefferson Davis County, Mississippi. (M.P. 685.00-Oakvale Unit 6-6 -TP#1376)	159,625
51. Existing Point of Interconnection between Seller and Meter named M.P. 687.23-Oakvale Field in Marion County, Mississippi. (M.P. 687.23-Oakvale Field-TP#7147)	159,625
52. Existing Point of Interconnection between Seller and Bassfield at named M.P. 696.40 in Marion County, Mississippi. (M.P. 696.40 Bassfield-TP#9439)	159,625
53. Existing Point of Interconnection between Seller and Meter named Lithium/Holiday Creek -Frm (Seller Meter No. 3418), in Jefferson Davis County, Mississippi. (Lithium/Holiday Creek-Frm-TP#7041)	159,625
54. Existing Point of Interconnection between Seller and S. W. Sumrall Field and Holiday Creek at M.P. 692.05-Holiday Creek in Jefferson Davis, Mississippi. (M.P. 692.05 -Holiday Creek-TP#7159)	159,625
55. Existing Point of Interconnection between Seller and ANR Pipe Line Company at Holiday Creek (Seller Meter No. 3241), Jefferson David County, Mississippi. (Holiday Creek-ANR TP#398)	159,625

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitilement (Mcf/day)*
56. Existing Point of Interconnection between Seller and Mississippi Fuel Company at Jeff Davis (Seller Meter No. 3252), Jefferson Davis County, Mississippi. (Jefferson Davis County-Miss Fuels TP#6579)	159,625
57. Existing Point of Interconnection between Seller and Meter named Jefferson Davis-Frm (Seller Meter No. 4420), in Jefferson Davis County, Mississippi. (Jefferson Davis-Frm-TP#7033)	159,625
58. Existing Point of Interconnection between Seller and Carson Dome Field M.P. 696.41, in Jefferson Davis County, Mississippi. (M.P. 696.41-Carson Dome Field-TP#7148)	159,625
59. Existing Point of Interconnection between Seller and Meter Station named Bassfield-ANR Company at M.P. 703.17 on Seller's Main Transmission Line (Seller Meter No. 3238), Covington County, Mississippi. (Bassfield-ANR TP#7029)	159,625
60. Existing Point of Interconnection between Seller and Meter named Patti Bihm #1 (Seller Meter No. 3468), in Covington County, Mississippi. (Patti Bihm #1-TP#7629)	159,625
61. Discharge Side of Seller's Compressor at Seller's Eminence Storage Field (Seller Meter No. 4166 and 3160) Covington County, Mississippi. (Eminence Storage TP#5561)	159,625
62. Existing Point of Interconnection between Seller and Dont Dome Field at M.P. 713.39 in Covington, County, Mississippi. (M.P. 713.39-Dont Dome-TP#1396)	159,625
63. Existing Point of Interconnection between Seller and Endevco in Covington County, Mississippi. (Hattiesburg-Interconnect storage TP#1686)	159,625

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
64. Existing Point at M.P. 719.58 on Seller's Main Transmission Line (Seller Meter No. 3544), Centerville Dome Field, Jones County, Mississippi. (Centerville Dome Field-TP#1532)	159,625
65. Existing Point of Interconnection between Seller and Meter named Calhoun (Seller Meter No. 3404), in Jones County, Mississippi. (Calhoun-TP#378)	159,625
66. Existing Point at M.P. 727.78 on Seller's Main Transmission Line, Jones County, Mississippi. (Jones County-Gitano TP#7166)	159,625
67. Existing Point of Interconnection between Seller and a Meter named Koch Reedy Creek (Seller Meter No. 3333), Jones County, Mississippi. (Reedy Creek-Koch TP#670)	159,625
68. Existing Point of Interconnection between Seller and Meter named Sharon Field (Seller Meter No. 3000), in Jones County, Mississippi. (Sharon Field-TP#419)	159,625
69. Existing Point of Interconnection between Seller and Tennessee Gas Transmission Company at Heidelberg (Seller Meter No. 3109), Jasper County, Mississippi. (Heidelberg-Tennessee TP#6120)	159,625
70. Existing Point of Interconnection between Seller and Mississippi Fuel Company at Clarke (Seller Meter No. 3254), Clarke County, Mississippi. (Clarke County-Miss Fuels TP#6047)	159,625
71. Existing Point of Interconnection between Seller and Meter named Clarke County-Koch at M.P. 757.29 in Clarke County, Mississippi. (Clarke County-Koch-TP#5566)	159,625

Point(s) of Receipt	Buyer's Cumulative Mainline Capacity Entitlement (Mcf/day)*
72. Existing Point of Interconnection between Seller's mainline and Mobile Bay Lateral at M.P. 784.66 in Choctaw County, Alabama. (Station 85 - Mobile Bay Pool TP#8244)	159,625
73. Existing Point of Interconnection between Seller's mainline and Mobile Bay Lateral at M.P. 784.66 in Choctaw County, Alabama. (Station 85 - Mainline Pool TP#6971)	159,625
74. Existing Point of Interconnection between Seller and Magnolia Pipeline in Chilton County, Alabama. (Magnolia Pipeline Interconnect-TP#1808)	159,625
75. Existing Point of Interconnection between Seller and Southern Natural Gas Company, (Seller Meter No. 4087) at Jonesboro, Clayton County, Georgia.(Jonesboro-SNG-TP#6141)	159,625
76. Existing Point of Interconnection between Seller and Columbia Gas Transmission (Seller Meter No. 7157) at Dranesville, Fairfax County, Virginia.(Dranesville-Colgas-TP#6068)**	159,625
77. Existing Point of Interconnection between Seller and Columbia Gas Transmission (Seller Meter No. 4080) at Rockville, Baltimore County, Maryland. (Rockville-Colgas-TP#6227)**	159,625
78. Existing Point of Interconnection between Seller and Columbia Gas Transmission (Seller Meter No. 3088) at Downingtown, Chester County, Pennsylvania.(Downington-Colgas-TP#6067)**	159,625
79. Existing Point of Interconnection between Seller and Texas Eastern Transmission Corporation (Seller Meter No. 4133) at Skippack, Montgomery County, Pennsylvania. (Skippack-TET-TP#6249)**	159,625

Buyer shall not tender, without the prior consent of Seller, at any point(s) of receipt on any day a quantity in excess of the applicable Buyer's Cumulative Mainline Capacity Entitlement for such point(s) of receipt.

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* These quantities do not include the additional quantities of gas retained by Seller for applicable compressor fuel and line loss make-up provided for in Article V, 2 of this Service Agreement, which are subject to change as provided for in Article V, 2 hereof.

** Receipt of gas by displacement only.

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Exhibit B

Point(s) of Delivery	Pressure(s)
1. Station 54*	Not Applicable.
2. Seller's Eminence Storage Field, Covington County, Mississippi.	Prevailing pressure in Seller's pipeline system not to exceed maximum allowable operating pressure.
3. Ashmead Road Meter Station, located on Seller's Oreland Line at mile post 13.44 in Cheltemham Township, Montgomery County, Pennsylvania, near the city limits line of the City of Philadelphia, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
4. Whitman Meter Station, located in the City of Philadelphia, Pennsylvania, on Delaware Avenue approximately 550 feet south of the intersection of Delaware Avenue and Packer Avenue where the facilities of Seller connect with those of Buyer.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and Buyer.
5. Richmond Meter Station, located adjacent to Seller's Trenton-Woodbury line at mile post 36.83 and near the intersection of Lewis and Delaware Avenue, Philadelphia County, Philadelphia, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operations of Seller and Buyer.

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* Delivery to Seller's Washington Storage Field for injection into storage is subject to the terms, conditions and limitations of Seller's WSS Rate Schedule.

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Exhibit B

Point(s) of Delivery		Pressure(s)
6.	Northeast Philadelphia Meter Station (Somerton), located near the westerly terminus of Brookside Drive and approximately 1200 feet northeasterly from County Line Road in Lower Southampton Township, Bucks County, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operation of Seller and buyer.
7.	Oreland Meter Station, located on Seller's Oreland Line at mile post 6.09 in Springfield Township, Montgomery County, Pennsylvania.	Not less than one hundred (100) pounds per square inch gauge or at such other pressures as may be agreed upon in the day to day operations of Seller and Buyer.

97 0614 000

SERVICE AGREEMENT

between

TRANSCONTINENTAL GAS PIPE LINE CORPORATION

and

PHILADELPHIA GAS WORKS

July 1, 1996

97 0614 000

SERVICE AGREEMENT UNDER RATE SCHEDULE GSS

THIS AGREEMENT entered into this 1st day of July 1996, by and between, PHILADELPHIA GAS WORKS by PHILADELPHIA FACILITIES MANAGEMENT CORPORATION ("PFMC') soley in its capacity as operator and manager of the City owned PHILADELPHIA GAS WORKS ("Buyer" or "PGW"), under and pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended and TRANSCONTINENTAL GAS PIPE LINE CORPORATION, a Delaware corporation, hereinafter referred to as "Seller"

WITNESSETH:

WHEREAS, Buyer desires to purchase and Seller desires to sell natural gas storage service under Seller's Rate Schedule GSS as set forth herein; and

WHEREAS, pursuant to the terms of the Joint Stipulation and Settlement Agreement approved by the Federal Energy Regulatory Commission's ("Commission") Order dated July 16, 1993 in Docket Nos. RS92-86-003, RP92-108-000, and RP92-137-000 which amended Seller's Certificate in Docket No. CP61-194, Seller and Buyer agreed to a twenty year contract term through March 31, 2013, as set forth in that Order, for the Storage Demand Quantity and Storage Capacity Quantity which are supported by service provided by CNG Transmission Corporation; and

WHEREAS, pursuant to the terms of the Application to Amend Seller's Certificate, in Docket No. CP61-194, as approved by the Commission's Order dated June 13, 1996 in Docket No. CP96-226-000, Seller and Buyer agreed to the Storage Demand Quantity and Storage Capacity Quantity set forth in Article I hereof;

NOW, THEREFORE, Seller and Buyer agree as follows:

ARTICLE I
SERVICE TO BE RENDERED

Subject to the terms and provisions of this agreement and of Seller's Rate Schedule GSS, Seller agrees to receive from Buyer for storage, inject into storage for Buyer's account, store, withdraw from storage (or cause to be injected into storage for Buyer's account, stored, and withdrawn from storage) and deliver to Buyer, quantities of natural gas as follows:

To withdraw from storage or cause to be withdrawn from storage, transport and deliver to Buyer at the delivery points set forth below, the gas stored for Buyer's account up to a maximum quantity in any day of

59,485 Mcf, during the period beginning July 1, 1996 and ending on June 30, 2001, and

32,338 Mcf, during the period beginning July 1, 2001 and ending on March 31, 2013,

which quantity shall be Buyer's Storage Demand.

To receive and store or cause to be stored up to a total quantity at any one time of

3,984,283 Mcf, during the period beginning July 1, 1996 and ending on June 30, 2001, and

2,269,277 Mcf, during the period beginning July 1, 2001 and ending on March 31, 2013,

which quantity shall be Buyer's Storage Capacity Quantity.

ARTICLE II
POINT(S) OF DELIVERY

The Point or Points of Delivery for all natural gas delivered by Seller to Buyer under this agreement shall be at or near:

SERVICE AGREEMENT UNDER RATE SCHEDULE GSS
(Continued)

(1) Ashmead Road Meter Station, located on Seller's Oreland Line at milepost 13.44 in Cheltenham Township, Montgomery County, Pennsylvania, near the city limits line of the City of Philadelphia, Pennsylvania.

(2) Whitman Meter Station, located in the City of Philadelphia, Pennsylvania, on Delaware Avenue approximately 550 feet south of the intersection of Delaware Avenue and Packer Avenue, where the facilities of Seller connect with those of Buyer.

(3) Richmond Meter Station, located adjacent to Seller's Trenton-Woodbury line at milepost 36.83 and near the intersection of Lewis and Delaware Ave., Philadelphia County, Philadelphia, Pennsylvania.

(4) Northeast Philadelphia Meter Station (Somerton), located near the westerly terminus of Brookside Drive and approximately 1,200 feet northeasterly from County Line Road in Lower Southampton Township, Bucks County, Pennsylvania.

(5) Oreland Meter Station, located on Seller's Oreland line at milepost 6.09 in Springfield Township, Montgomery County, Pennsylvania.

Pennsylvania

ARTICLE III
DELIVERY PRESSURE

Seller shall deliver natural gas to Buyer at the Point(s) of Delivery at a pressure(s) of: not less than one hundred (100) pounds per square inch gauge, or at such other pressures as may be agreed upon in the day-to-day operations of Buyer and Seller.

ARTICLE IV
TERM OF AGREEMENT

This agreement shall be effective July 1, 1996 and shall remain in force and effect through March 31, 2013.

ARTICLE V
RATE SCHEDULE AND PRICE

Buyer shall pay Seller for natural gas service rendered hereunder in accordance with Seller's Rate Schedule GSS and the applicable provisions of the General Terms and Conditions of Seller's FERC Gas Tariff as filed with the Federal Energy Regulatory Commission, and as the same may be amended or superseded from time to time at the initiative of either party. Such rate schedule and General Terms and Conditions are by this reference made a part hereof.

ARTICLE VI
MISCELLANEOUS

1. The subject headings of the Articles of this agreement are inserted for the purpose of convenient reference and are not intended to be a part of this agreement nor to be considered in any interpretation of the same.

SERVICE AGREEMENT UNDER RATE SCHEDULE GSS
(Continued)

97 0616 00C

2. This agreement supersedes and cancels as of the effective date hereof the following contract(s): Any and all Service Agreements previously entered into between Buyer and Seller under Seller's Rate Schedule GSS.

3. No waiver by either party of any one or more defaults by the other in the performance of any provisions of this agreement shall operate or be construed as a waiver of any future default or defaults, whether of a like or different character.

4. This agreement shall be interpreted, performed and enforced in accordance with the laws of the State of Pennsylvania.

5. This agreement shall be binding upon, and inure to the benefit of the parties hereto and their respective successors and assigns.

6. It is understood and agreed that in entering into and performing this Agreement, PFMC acts solely in its capacity as operator and manager of the municipally owned Philadelphia Gas Works pursuant to an agreement with the City of Philadelphia, dated December 29, 1972, as amended, and not otherwise; and further that any and all payments required to be made in connection with this agreement shall be made solely from the revenues of PGW.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be signed by their respective Presidents or Vice Presidents thereunto duly authorized and have caused their respective corporate seals to be hereunto affixed and attested by their respective Secretaries or Assistant Secretaries the day and year above written.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
(Seller)

ATTEST:
[SEAL]

Secretary
Randall R. Conklin
Assistant Secretary

By

Frank J. Ferazzi
Vice President
Customer Service

RWS
VCC

PHILADELPHIA GAS WORKS
(Buyer)

ATTEST:
[SEAL]

Sydney M. Avent
Asst Secretary

By

Title V.P. - GAS MGMT.

21 0289 002

2011 JUN 17 AM 10: 15

AMENDMENT TO SERVICE AGREEMENT

THIS AMENDMENT ("Amendment") is entered into this 16 day of June, 2011 by and between TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC, a Delaware limited liability company, hereinafter referred to as "Seller", first party, and PHILADELPHIA GAS WORKS, hereinafter referred to as "Buyer", second party.

WITNESSETH

WHEREAS, Seller and Buyer entered into that certain Service Agreement dated April 3, 2001 under Seller's Rate Schedule WSS-Open Access pursuant to which Seller provides firm storage service for Buyer of a Storage Capacity Quantity of 3,335,909 dekatherms (Seller's Contract #1038582, hereinafter referred to as "the Service Agreement"); and

WHEREAS, Seller submitted the filing to reduce the certificated maximum daily deliverability at the Washington Storage Field on December 6, 2010 in Docket No. CP11-45, and received Commission order authorizing the abandonment on March 30, 2011 to be effective May 1, 2011; and

WHEREAS, Seller and Buyer now agree to amend Buyer's Storage Demand Quantity to Buyer's proportionate reduced delivery capability at the Washington Storage Field.

NOW THEREFORE, Seller and Buyer hereby agree to amend the Service Agreement as follows:

1. Article I of the Service Agreement is hereby deleted in its entirety and replaced by the following:

"ARTICLE I
SERVICE TO BE RENDERED

Subject to the terms and provisions of this agreement and of Seller's Rate Schedule WSS-Open Access, Seller agrees to inject into storage for Buyer's account, store and withdraw from storage, quantities of natural gas as follows:

To withdraw from storage up to a maximum quantity on any day of 35,115 dt, which quantity shall be Buyer's Storage Demand Quantity, or such greater daily quantity, as applicable from time to time, pursuant to the terms and conditions of Seller's Rate Schedule WSS-Open Access.

Contract #: 330791

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-2

This Service Agreement, made and entered into this 1 day of June, 1993 by and between TEXAS EASTERN TRANSMISSION CORPORATION, a Delaware Corporation (herein called "Pipeline") and PHILADELPHIA GAS WORKS, by the Philadelphia Facilities Management Corporation in its capacity as manager and operator of the city-owned Gas Works pursuant to an Agreement with the City of Philadelphia dated December 29, 1972, as amended (herein called "Customer", whether one or more),

W I T N E S S E T H:

WHEREAS, the Federal Energy Regulatory Commission required Pipeline to restructure Pipeline's services to reflect compliance with Order Nos. 636, 636-A, and 636-B (collectively hereinafter referred to as "Order No. 636"); and

WHEREAS, by order issued January 13, 1993 (62 FERC P61;015) and order issued April 22, 1993 (63 FERC P61,100), the Federal Energy Regulatory Commission accepted Pipeline's revised tariff sheets filed in compliance with Order No. 636 to become effective June 1, 1993,, subject to certain conditions set forth in the April 22, 1993 order; and

WHEREAS, Customer made its final Order No. 636 service elections on May 3, 1993 pursuant to the April 22, 1993 order and Pipeline filed revised tariff sheets to become effective June 1, 1993 in compliance with the April 22, 1993 order;

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, the parties do covenant and agree as follows:

ARTICLE I

SCOPE OF AGREEMENT

Subject to the terms, conditions and limitations hereof and of Pipeline's Rate Schedule FTS-2, Pipeline agrees to deliver on a firm basis for Customer's account quantities of gas up to the following quantity:

Maximum Daily Quantity (MDQ) 5,394 dth

Pipeline shall receive for Customer's account, at the Customer Point(s), for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at the Equitrans Point(s), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall receive for Customer's account, at the Equitrans Point(s), for transportation hereunder daily quantities of gas up to Customer's MDQ, plus Applicable Shrinkage. Pipeline shall transport and deliver for Customer's account, at the Customer Point(s), such daily quantities tendered up to such Customer's MDQ.

Pipeline shall not be obligated to, but may at its discretion, receive at any Point of Receipt on any day a quantity of gas in excess of the applicable Maximum Daily Receipt Obligation (MDRO), plus Applicable Shrinkage, but shall not receive in the aggregate at all Points of Receipt on any day a quantity of gas in excess of the applicable MDQ, plus Applicable Shrinkage, as specified in the executed service agreement. Pipeline shall not be obligated to, but may at its discretion, deliver at any Point of Delivery on any day a quantity of gas in excess of the applicable Maximum Daily Delivery obligation (MDDO), but shall not deliver in the aggregate at all Points of Delivery on any day a quantity of gas in excess of the applicable MDQ, as specified in the executed service agreement.

ARTICLE II

TERM OF AGREEMENT

This Service Agreement shall become effective on June 1, 1993, and shall continue in force and effect until and including March 31, 2002 ("Primary Term") and shall continue thereafter unless terminated by either party at the end of the Primary Term or the end of any subsequent month by twelve (12) months prior written notice.

Customer hereby expressly acknowledges and agrees that, to the extent not utilized by Customer for transportation of gas for Customer's account, Pipeline has the sole right to utilize any pipeline capacity attributable to facilities constructed by Pipeline to provide service pursuant to this Service Agreement as part of Pipeline's overall general system capacity. To that end, Customer agrees not to instigate or cause to be instigated any action designed to alter or increase Customer's right to utilize the pipeline capacity attributable to facilities constructed by Pipeline to provide service pursuant to this Service Agreement. Upon termination of this Service Agreement, all rights of Customer to the transportation service provided by the facilities constructed and utilized to provide service hereunder shall terminate and the capacity provided by such facilities shall be available without limitation for Pipeline's use as Pipeline in its sole discretion deems desirable. If Customer elects to terminate this Service Agreement, then notwithstanding such termination Customer shall continue to pay the monthly charge provided under Section 3.2(A) of Rate Schedule FTS-2 until the earlier of (i) the date Pipeline recovers through said monthly charge the full original cost of the facilities attributable to the service which has been terminated, or (ii) the date Pipeline makes effective its next general rate filing and begins receiving recovery on an alternate basis, which may include system wide recovery, of the costs of facilities attributable to the service which has been terminated. At such time Customer shall cease paying the monthly charge attributable to the terminated service. In addition, if and to the extent that Customer terminates this Service Agreement and the Federal Energy Regulatory Commission or any other Agency having jurisdiction over the premises ever determines that the facilities attributable to such service are not used or useful in providing natural gas service on Pipeline's system or otherwise precludes Pipeline from recovering the full original cost of such facilities then Customer shall reimburse Pipeline the remaining initial cost of said facilities not previously recovered by Pipeline through depreciation charges. Such reimbursement shall not be applicable if and to the extent that Pipeline elects to terminate this Service Agreement.

Any portions of this Service Agreement necessary to correct or cash-out imbalances under this Service Agreement as required by the General Terms and Conditions of Pipeline's FERC Gas Tariff, Volume No. 1, shall survive the other parts of this Service Agreement until such time as such balancing has been accomplished.

ARTICLE III

RATE SCHEDULE

This Service Agreement in all respects shall be and remain subject to the applicable provisions of Rate Schedule FTS-2 and of the General Terms and Conditions of Pipeline's FERC Gas Tariff on file with the Federal Energy Regulatory Commission, all of which are by this reference made a part hereof.

Customer shall pay Pipeline, for all services rendered hereunder and for the availability of such service in the period stated, the applicable prices established under Pipeline's Rate Schedule FTS-2 as filed with the Federal Energy Regulatory Commission and as the same may be hereafter revised or changed.

Customer agrees that Pipeline shall have the unilateral right to file with the appropriate regulatory authority and make changes effective in (a) the rates and charges applicable to service pursuant to Pipeline's Rate Schedule FTS-2, (b) Pipeline's Rate Schedule FTS-2, pursuant to which service hereunder is rendered provided, however, that the firm character of service shall not be subject to change hereunder, or (c) any provision of the General Terms and Conditions applicable to Rate Schedule FTS-2. Pipeline agrees that Customer may protest or contest the aforementioned filings, or may seek authorization from duly constituted regulatory authorities for such adjustment of Pipeline's existing FERC Gas Tariff as may be found necessary to assure that the provisions in (a), (b), or (c) above are just and reasonable.

ARTICLE IV

CUSTOMER POINT(S) AND EQUITRANS POINT(S)

Natural gas to be received by Pipeline or for Customer's account for service hereunder shall be received on the outlet side of the measuring station at or near the following designated Customer Point(s) or Equitrans Point(s), and natural gas to be delivered by Pipeline for Customer's account hereunder shall be delivered at the outlet side of the measuring stations at or near the following designated Equitrans Point(s) or Customer Point(s), in accordance with the Maximum Daily Receipt obligation (MDRO) plus Applicable Shrinkage, Maximum Daily Delivery Obligation (MDDO), and receipt and delivery pressure obligations and measurement responsibilities indicated below for each:

Customer Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
1. In the City of Philadelphia, PA, and designated by Pipeline as Measuring Station 70030.	5,394 dth	100 pounds per square inch gauge.	Pipeline
2. On the Montgomery-Philadelphia County Line, in Philadelphia, PA, and designated by Pipeline as Measuring Station 70034.	5,394 dth	100 pounds per square inch gauge.	Pipeline

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-2
(Continued)

Customer Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
3. In the City of Philadelphia, PA, and designated by Pipeline as Measuring Station 71682.	5,000 dth	100 pounds per square inch gauge.	Pipeline

Equitrans Point	Maximum Daily Obligation	Pressure Obligation	Measurement Responsibilities
1. In Greene County, Pennsylvania, and designated by Pipeline as Measuring Station 75009.	5,394 dth, plus Applicable Shrinkage	At pressures existing on Pipeline's facilities not to exceed Maximum Allowable Operating Pressure.	Pipeline

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations at the Customer Points described above, including Pipeline's maximum daily delivery obligations under this and all other Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

Customer Point	Aggregate Maximum Daily Delivery Obligation
No. 1	137,073 dth
No. 2	137,310 dth
No. 3	5,000 dth

and provided further that Pipeline shall have no obligation to deliver natural gas designated as MDQ at any Customer Point other than that listed below:

Customer Point

Measuring Station 70034, Montgomery County, Pennsylvania

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-2
(Continued)

ARTICLE V

QUALITY

All natural gas tendered to Pipeline for Customer's account shall conform to the quality specifications set forth in Section 5 of Pipeline's General Terms and Conditions. Customer agrees that in the event Customer tenders for service hereunder and Pipeline agrees to accept natural gas which does not comply with Pipeline's quality specifications, as expressly provided for in Section 5 of Pipeline's General Terms and Conditions, customer shall pay all costs associated with processing of such gas as necessary to comply with such quality specifications.

ARTICLE VI

ADDRESSES

Except as herein otherwise provided or as provided in the General Terms and Conditions of Pipeline's FERC Gas Tariff, any notice, request, demand, statement, bill or payment provided for in this Service Agreement, or any notice which any party may desire to give to the other, shall be in writing and shall be considered as duly delivered when mailed by registered, certified, or regular mail to the post office address of the parties hereto, as the case may be, as follows:

(a) Pipeline: TEXAS EASTERN TRANSMISSION CORPORATION
5400 Westheimer Court
Houston, TX 77056-5310

(b) Customer: Philadelphia Gas Works
Gas Acquisition & Fed. Regulatory Affairs
800 W. Montgomery Ave.
Philadelphia, Pennsylvania 19122

or such other address as either party shall designate by formal written notice.

ARTICLE VII

ASSIGNMENTS

Any company which shall succeed by purchase, merger, or consolidation to the properties, substantially as an entirety, of Customer, or of Pipeline, as the case may be, shall be entitled to the rights and shall be subject to the obligations of its predecessor in title under this Service Agreement; and either Customer or Pipeline may assign or pledge this Service Agreement under the provisions of any mortgage, deed of trust, indenture, bank credit agreement, assignment, receivable sale, or similar instrument which it has executed or may execute hereafter; otherwise, neither Customer nor Pipeline shall assign this Service Agreement or any of its rights hereunder unless it first shall have obtained the consent thereto in writing of the other; provided further, however, that neither Customer nor Pipeline shall be released from its obligations hereunder without the consent of the other.

ARTICLE VIII

INTERPRETATION

The interpretation and performance of this Service Agreement shall be in accordance with the laws of the State of Texas without recourse to the law regarding conflict of laws.

This Service Agreement and the obligations of the parties are subject to all present and future valid laws with respect to the subject matter, State and Federal, and to all valid present and future orders, rules, and regulations of duly constituted authorities having jurisdiction.

ARTICLE IX

CANCELLATION OF PRIOR CONTRACT(S)

This Service Agreement supersedes and cancels, as of the effective date of this Service Agreement, the contract(s) between the parties hereto as described below:

Service Agreement dated October 16, 1986, between Pipeline and Customer under Pipeline's Rate Schedule FTS-2 (Pipeline's Contract No. 8791)

SERVICE AGREEMENT
FOR RATE SCHEDULE FTS-2
(Continued)

IN WITNESS WHEREOF, the parties hereto have caused this Service Agreement to be signed by their respective Presidents, Vice Presidents or other duly authorized agents and their respective corporate seals to be hereto affixed and attested by their respective Secretaries or Assistant Secretaries, the day and year first above written.

TEXAS EASTERN TRANSMISSION CORPORATION

By Diane T. Tom
Vice President

ATTEST:

Robert W. Reed

PHILADELPHIA GAS WORKS*

By O.P. Degen LAF
Executive Vice President

ATTEST:

Sydney M Arent

*Philadelphia Gas Works by the Philadelphia Facilities Management Corporation, a non-profit Pennsylvania corporation in its capacity as operator and manager of the city-owned Gas Works, pursuant to an Agreement with the City of Philadelphia, dated December 29, 1972, as amended.

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To receive and store up to a total quantity at any one time of 3,335,909 dt, which quantity shall be Buyer's Storage Capacity Quantity."

2. This Amendment shall be effective on May 1, 2011.

3. Except as herein amended, the Service Agreement shall remain in full force and effect pursuant to the terms thereof.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective officers or representative thereunto duly authorized.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

By Paul F. Egner

Paul F. Egner III
Director, Customer Services

BAW
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JH

PHILADELPHIA GAS WORKS

By Douglas A. Moser

Printed Name DOUGLAS A. MOSER
Title SR. VICE PRESIDENT GAS MANAGEMENT

EXHIBIT JC-2

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: Vicinity Set II-1
Date of Response: 3/30/2023
Response Provided By: Florian Teme

Question:
List any and all incidents that occurred during the last 10 years where customers were curtailed or otherwise had gas delivery interruptions. Explain cause and duration of event.

Attachments: 0

Response:

PGW has had no general curtailments or otherwise had gas delivery interruptions over the past 10 years. There have been individual instances where customers may have been affected due to unplanned work such as an emergency but these are not tracked on an individual customer basis.

EXHIBIT JC-3

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: Vicinity Set II-9
Date of Response: 3/30/2023
Response Provided By: Ryan Reeves

Question:

For each of the most recent five winter periods (Nov - Mar), please detail PGW's daily volume of firm TETCO capacity rights on the Philadelphia Lateral by Meter Number, as well as the actual daily deliveries off of the Philadelphia Lateral for PGW's system use, also by Meter Number. (Please do not include any transportation customers' usage).

Attachments: 1

Vicinity_Set_II_9_Vicinity Set II-9.pdf

Response:

As stated in PGW's response to Vicinity II-8, on Texas Eastern, PGW typically delivers its gas to O-30 Gate Station while choice suppliers deliver their gas to O-34. For ARS (Alternate Receipt Service), PGW will deliver gas to O-60 gate station while the counter party will deliver to O-34.

For firm TETCO capacity rights, please refer to PGW's response to Vicinity I-1. PGW provided all of PGW's pipeline contracts.

The attachment contains the flows for each of PGW's gate stations on the Philadelphia Lateral daily flow volume (in Mcf).

Date	O-30	Penrose	O-60
11/1/17 10:00	11,920	2,131	43,571
11/2/17 10:00	20,769	1,780	41,602
11/3/17 10:00	29,256	1,950	42,090
11/4/17 10:00	16,565	2,450	45,573
11/5/17 10:00	29,604	2,081	43,221
11/6/17 10:00	36,938	2,300	43,917
11/7/17 10:00	50,529	2,320	49,069
11/8/17 10:00	37,941	2,247	49,176
11/9/17 10:00	62,638	2,095	44,408
11/10/17 10:00	48,943	3,110	47,303
11/11/17 10:00	34,788	3,680	41,046
11/12/17 10:00	69,561	3,430	40,869
11/13/17 10:00	47,917	2,690	32,803
11/14/17 10:00	26,739	2,470	33,154
11/15/17 10:00	26,767	2,530	45,059
11/16/17 10:00	45,906	2,640	44,022
11/17/17 10:00	37,603	3,240	46,547
11/18/17 10:00	46,324	2,339	43,004
11/19/17 10:00	51,505	2,720	44,666
11/20/17 10:00	30,631	2,940	49,319
11/21/17 10:00	56,058	1,970	46,362
11/22/17 10:00	61,845	2,969	47,946
11/23/17 10:00	56,000	3,480	56,443
11/24/17 10:00	38,348	3,300	53,182
11/25/17 10:00	44,637	2,411	52,283
11/26/17 10:00	39,239	2,809	56,257
11/27/17 10:00	33,147	2,841	56,858
11/28/17 10:00	17,649	2,069	56,064
11/29/17 10:00	36,211	2,480	57,176
11/30/17 10:00	41,792	2,930	56,846
12/1/17 10:00	40,236	3,110	57,125
12/2/17 10:00	41,389	3,080	55,051
12/3/17 10:00	34,833	3,220	57,585
12/4/17 10:00	30,870	2,850	58,587
12/5/17 10:00	55,077	2,640	58,583
12/6/17 10:00	51,372	3,490	58,460
12/7/17 10:00	64,654	3,171	61,038
12/8/17 10:00	78,144	3,010	62,537
12/9/17 10:00	62,941	3,480	60,044
12/10/17 10:00	44,141	3,590	61,240
12/11/17 10:00	72,854	3,231	62,406
12/12/17 10:00	77,352	3,030	57,379
12/13/17 10:00	75,840	3,290	59,783
12/14/17 10:00	76,655	3,320	60,553
12/15/17 10:00	66,472	3,580	64,968
12/16/17 10:00	56,817	3,780	63,493

12/17/17 10:00	45,535	3,331	62,612
12/18/17 10:00	28,354	2,840	59,707
12/19/17 10:00	55,194	2,500	60,612
12/20/17 10:00	70,026	2,910	61,372
12/21/17 10:00	46,947	3,290	59,878
12/22/17 10:00	40,482	2,501	59,620
12/23/17 10:00	55,964	2,720	56,122
12/24/17 10:00	84,992	3,010	57,878
12/25/17 10:00	82,870	3,740	59,679
12/26/17 10:00	92,573	3,680	64,213
12/27/17 10:00	102,255	3,980	60,225
12/28/17 10:00	98,497	4,160	58,416
12/29/17 10:00	98,237	4,230	57,328
12/30/17 10:00	105,720	4,630	55,585
12/31/17 10:00	99,682	5,060	59,702
1/1/18 10:00	102,222	4,720	57,089
1/2/18 10:00	90,123	4,340	54,074
1/3/18 10:00	107,305	3,720	55,702
1/4/18 10:00	112,682	4,780	44,936
1/5/18 10:00	117,125	4,740	40,981
1/6/18 10:00	114,178	4,650	56,132
1/7/18 10:00	88,303	5,000	57,107
1/8/18 10:00	62,895	4,440	51,289
1/9/18 10:00	59,773	4,090	55,861
1/10/18 10:00	27,887	3,280	53,081
1/11/18 10:00	11,841	2,400	48,787
1/12/18 10:00	90,065	2,180	50,622
1/13/18 10:00	94,715	4,140	54,433
1/14/18 10:00	84,541	4,330	54,843
1/15/18 10:00	66,454	3,970	54,951
1/16/18 10:00	87,734	3,000	53,172
1/17/18 10:00	84,262	3,120	58,539
1/18/18 10:00	76,860	3,370	53,675
1/19/18 10:00	56,358	3,670	52,849
1/20/18 10:00	48,490	2,860	49,764
1/21/18 10:00	27,793	2,970	49,171
1/22/18 10:00	29,752	2,690	48,326
1/23/18 10:00	69,002	2,478	51,716
1/24/18 10:00	84,008	4,030	55,016
1/25/18 10:00	72,345	3,970	65,707
1/26/18 10:00	43,593	3,980	60,734
1/27/18 10:00	43,026	3,261	58,578
1/28/18 10:00	56,813	3,749	59,949
1/29/18 10:00	89,940	3,781	60,425
1/30/18 10:00	90,356	3,879	58,502
1/31/18 10:00	76,275	4,311	59,342
2/1/18 10:00	107,339	3,480	59,403

2/2/18 10:00	99,252	4,229	62,763
2/3/18 10:00	80,570	4,320	62,904
2/4/18 10:00	84,398	3,211	61,736
2/5/18 10:00	85,502	2,660	62,960
2/6/18 10:00	89,551	3,450	65,695
2/7/18 10:00	88,780	3,500	64,545
2/8/18 10:00	76,516	4,120	64,462
2/9/18 10:00	45,206	3,380	64,430
2/10/18 10:00	22,968	3,510	61,302
2/11/18 10:00	75,889	2,701	59,714
2/12/18 10:00	75,268	3,149	60,789
2/13/18 10:00	35,526	3,210	62,563
2/14/18 10:00	22,502	2,930	59,464
2/15/18 10:00	51,306	2,391	57,840
2/16/18 10:00	69,042	2,569	47,772
2/17/18 10:00	70,723	3,730	48,055
2/18/18 10:00	39,117	3,041	48,057
2/19/18 10:00	12,656	2,990	56,794
2/20/18 10:00	27,610	2,191	57,592
2/21/18 10:00	53,395	1,840	53,448
2/22/18 10:00	49,560	3,029	55,888
2/23/18 10:00	50,087	3,360	56,271
2/24/18 10:00	52,620	3,190	54,035
2/25/18 10:00	50,567	3,270	50,866
2/26/18 10:00	54,233	3,030	45,397
2/27/18 10:00	48,516	3,200	41,118
2/28/18 10:00	46,775	2,360	46,440
3/1/18 10:00	67,915	2,320	49,216
3/2/18 10:00	66,964	4,090	54,214
3/3/18 10:00	60,190	3,980	52,461
3/4/18 10:00	70,704	3,950	55,052
3/5/18 10:00	60,067	3,291	55,602
3/6/18 10:00	75,408	3,519	53,854
3/7/18 10:00	67,169	3,221	55,729
3/8/18 10:00	60,411	3,389	55,851
3/9/18 10:00	61,708	3,920	56,578
3/10/18 10:00	66,307	3,580	51,891
3/11/18 10:00	67,164	3,610	51,291
3/12/18 10:00	70,059	3,630	55,140
3/13/18 10:00	74,666	3,030	55,161
3/14/18 10:00	59,139	3,900	55,967
3/15/18 10:00	61,884	3,621	55,647
3/16/18 10:00	58,838	3,620	56,851
3/17/18 10:00	61,719	3,140	55,497
3/18/18 10:00	55,915	3,500	55,124
3/19/18 10:00	85,018	3,480	55,912
3/20/18 10:00	81,281	3,603	60,346

3/21/18 10:00	72,802	3,640	60,706
3/22/18 10:00	64,103	3,601	57,825
3/23/18 10:00	61,198	2,660	57,748
3/24/18 10:00	77,856	3,580	56,939
3/25/18 10:00	65,749	3,670	56,583
3/26/18 10:00	57,444	3,320	57,952
3/27/18 10:00	39,805	3,421	56,717
3/28/18 10:00	14,274	3,070	46,137
3/29/18 10:00	17,901	2,281	41,406
3/30/18 10:00	29,751	2,359	44,691
3/31/18 10:00	42,269	2,950	45,385
11/1/18 10:00	-	1,560	35,525
11/2/18 10:00	36,253	1,559	36,171
11/3/18 10:00	34,935	2,880	38,521
11/4/18 10:00	42,795	2,901	37,058
11/5/18 10:00	40,779	2,180	37,284
11/6/18 10:00	39,817	1,800	37,023
11/7/18 10:00	52,070	1,070	37,656
11/8/18 10:00	49,312	1,840	39,745
11/9/18 10:00	47,568	2,320	39,635
11/10/18 10:00	50,860	3,149	44,538
11/11/18 10:00	57,733	3,230	43,126
11/12/18 10:00	59,072	2,640	42,741
11/13/18 10:00	74,308	2,989	43,112
11/14/18 10:00	87,198	3,110	47,301
11/15/18 10:00	56,694	3,270	48,277
11/16/18 10:00	51,984	2,979	45,487
11/17/18 10:00	57,040	3,251	43,352
11/18/18 10:00	57,904	2,800	41,822
11/19/18 10:00	65,267	2,990	40,063
11/20/18 10:00	69,057	2,650	43,325
11/21/18 10:00	91,793	3,359	46,464
11/22/18 10:00	82,792	3,501	52,082
11/23/18 10:00	58,589	3,180	51,417
11/24/18 10:00	33,701	3,040	45,059
11/25/18 10:00	47,875	2,451	41,783
11/26/18 10:00	69,673	2,110	44,088
11/27/18 10:00	80,544	2,710	47,883
11/28/18 10:00	58,781	2,340	49,180
11/29/18 10:00	58,217	2,430	48,266
11/30/18 10:00	39,128	2,740	39,923
12/1/18 10:00	28,164	2,511	27,892
12/2/18 10:00	42,645	1,780	23,676
12/3/18 10:00	68,089	2,180	27,144
12/4/18 10:00	86,812	2,999	29,551
12/5/18 10:00	91,835	3,660	31,745
12/6/18 10:00	91,536	3,850	30,508

12/7/18 10:00	84,900	3,910	32,692
12/8/18 10:00	86,095	3,321	39,430
12/9/18 10:00	78,542	3,250	51,753
12/10/18 10:00	68,811	3,180	51,155
12/11/18 10:00	86,218	3,140	50,183
12/12/18 10:00	56,974	3,321	47,648
12/13/18 10:00	39,970	2,840	44,964
12/14/18 10:00	42,828	2,360	40,830
12/15/18 10:00	50,579	3,329	41,520
12/16/18 10:00	59,955	3,481	44,549
12/17/18 10:00	65,807	3,210	44,932
12/18/18 10:00	68,496	3,201	47,908
12/19/18 10:00	43,243	3,239	46,234
12/20/18 10:00	1,331	2,971	41,892
12/21/18 10:00	27,910	2,040	40,018
12/22/18 10:00	35,866	2,271	44,133
12/23/18 10:00	58,372	2,080	44,110
12/24/18 10:00	65,254	2,859	46,339
12/25/18 10:00	61,109	3,360	46,950
12/26/18 10:00	39,944	3,630	44,926
12/27/18 10:00	23,003	3,240	42,049
12/28/18 10:00	39,857	2,730	37,316
12/29/18 10:00	53,309	3,440	41,391
12/30/18 10:00	32,569	3,330	43,228
12/31/18 10:00	23,749	3,211	36,906
1/1/19 10:00	36,005	2,690	26,803
1/2/19 10:00	39,162	2,819	26,282
1/3/19 10:00	55,777	3,370	28,182
1/4/19 10:00	35,661	3,081	24,346
1/5/19 10:00	57,784	2,870	23,738
1/6/19 10:00	75,207	3,100	26,951
1/7/19 10:00	56,550	3,310	28,787
1/8/19 10:00	73,236	2,651	31,902
1/9/19 10:00	87,511	2,829	46,058
1/10/19 10:00	87,607	3,160	51,304
1/11/19 10:00	85,899	3,650	52,508
1/12/19 10:00	88,596	3,640	51,316
1/13/19 10:00	89,981	3,810	53,336
1/14/19 10:00	86,067	3,860	52,783
1/15/19 10:00	80,184	3,670	52,021
1/16/19 10:00	80,144	3,390	51,387
1/17/19 10:00	89,787	3,080	51,365
1/18/19 10:00	74,365	3,060	49,540
1/19/19 10:00	94,185	3,460	47,667
1/20/19 10:00	93,135	4,169	51,247
1/21/19 10:00	90,970	4,370	55,197
1/22/19 10:00	53,022	4,310	53,326

1/23/19 10:00	52,165	3,091	45,103
1/24/19 10:00	85,060	3,229	46,214
1/25/19 10:00	84,979	3,540	52,354
1/26/19 10:00	87,676	3,721	51,884
1/27/19 10:00	76,143	3,749	48,656
1/28/19 10:00	82,128	4,079	53,242
1/29/19 10:00	108,316	3,850	50,228
1/30/19 10:00	109,561	4,379	53,715
1/31/19 10:00	112,735	3,981	50,988
2/1/19 10:00	97,639	4,330	53,555
2/2/19 10:00	82,086	4,340	54,628
2/3/19 10:00	47,898	3,411	47,911
2/4/19 10:00	48,885	3,102	44,415
2/5/19 10:00	51,060	2,679	42,904
2/6/19 10:00	51,643	2,751	44,784
2/7/19 10:00	76,264	3,089	42,219
2/8/19 10:00	91,003	3,470	45,249
2/9/19 10:00	90,235	4,050	53,100
2/10/19 10:00	83,737	3,600	53,515
2/11/19 10:00	85,813	3,541	53,454
2/12/19 10:00	73,868	3,120	51,498
2/13/19 10:00	57,979	3,560	50,225
2/14/19 10:00	45,562	3,361	45,917
2/15/19 10:00	72,757	3,030	40,930
2/16/19 10:00	74,595	3,290	46,868
2/17/19 10:00	74,459	2,940	48,408
2/18/19 10:00	79,419	3,029	49,543
2/19/19 10:00	72,959	3,560	52,461
2/20/19 10:00	50,935	4,060	51,261
2/21/19 10:00	54,789	2,911	43,838
2/22/19 10:00	56,688	3,550	46,208
2/23/19 10:00	61,316	3,480	45,300
2/24/19 10:00	64,094	3,660	43,688
2/25/19 10:00	86,383	3,860	48,704
2/26/19 10:00	89,877	3,871	47,990
2/27/19 10:00	91,491	2,840	44,996
2/28/19 10:00	78,130	3,269	46,881
3/1/19 10:00	80,977	3,910	49,056
3/2/19 10:00	78,770	3,660	45,352
3/3/19 10:00	84,981	3,680	47,253
3/4/19 10:00	79,651	3,430	52,109
3/5/19 10:00	91,901	4,050	51,781
3/6/19 10:00	82,801	4,010	48,861
3/7/19 10:00	79,420	3,370	50,706
3/8/19 10:00	58,939	3,590	47,429
3/9/19 10:00	58,825	3,380	43,292
3/10/19 10:00	56,376	3,320	43,964

3/11/19 10:00	66,687	2,930	45,271
3/12/19 10:00	49,931	2,521	43,648
3/13/19 10:00	32,736	2,250	41,554
3/14/19 10:00	22,377	1,312	38,120
3/15/19 10:00	51,980	1,788	37,850
3/16/19 10:00	64,561	2,769	43,418
3/17/19 10:00	63,565	3,120	45,099
3/18/19 10:00	51,216	2,900	39,459
3/19/19 10:00	40,274	2,721	42,350
3/20/19 10:00	52,793	2,660	42,017
3/21/19 10:00	65,545	2,940	41,945
3/22/19 10:00	53,991	2,820	42,794
3/23/19 10:00	46,261	3,080	43,597
3/24/19 10:00	55,947	2,471	40,467
3/25/19 10:00	58,874	2,449	42,046
3/26/19 10:00	57,906	2,130	44,718
3/27/19 10:00	49,550	1,743	44,773
3/28/19 10:00	38,741	2,449	39,368
3/29/19 10:00	29,724	2,180	35,998
3/30/19 10:00	63,290	1,661	35,451
3/31/19 10:00	57,442	2,809	40,658
11/1/19 10:00	45,466	2,500	37,386
11/2/19 10:00	39,317	1,691	38,375
11/3/19 10:00	36,684	2,260	37,026
11/4/19 10:00	35,236	2,180	35,778
11/5/19 10:00	27,551	2,210	34,985
11/6/19 10:00	42,005	2,310	36,964
11/7/19 10:00	54,947	2,390	38,576
11/8/19 10:00	41,715	2,709	44,950
11/9/19 10:00	37,088	3,071	43,287
11/10/19 10:00	29,498	2,270	38,000
11/11/19 10:00	73,346	1,980	35,223
11/12/19 10:00	67,409	3,230	45,403
11/13/19 10:00	66,123	3,190	47,716
11/14/19 10:00	58,521	2,860	45,229
11/15/19 10:00	66,355	2,690	43,132
11/16/19 10:00	57,095	3,160	45,818
11/17/19 10:00	44,958	3,140	43,245
11/18/19 10:00	46,501	3,050	42,507
11/19/19 10:00	47,468	3,190	41,620
11/20/19 10:00	39,199	3,241	35,027
11/21/19 10:00	52,226	2,070	39,607
11/22/19 10:00	43,679	3,329	42,206
11/23/19 10:00	47,690	3,350	41,748
11/24/19 10:00	60,347	2,630	43,079
11/25/19 10:00	51,895	3,190	41,716
11/26/19 10:00	48,226	2,670	39,876

11/27/19 10:00	45,144	2,720	39,912
11/28/19 10:00	60,271	3,369	43,012
11/29/19 10:00	64,984	3,360	45,202
11/30/19 10:00	66,462	3,550	44,496
12/1/19 10:00	62,474	3,610	45,132
12/2/19 10:00	65,498	3,750	46,826
12/3/19 10:00	64,650	3,581	46,129
12/4/19 10:00	58,314	3,290	42,933
12/5/19 10:00	60,171	3,370	45,087
12/6/19 10:00	70,889	3,080	43,666
12/7/19 10:00	65,993	3,619	47,719
12/8/19 10:00	47,578	3,491	45,398
12/9/19 10:00	56,704	2,951	41,739
12/10/19 10:00	58,263	2,629	43,143
12/11/19 10:00	61,884	3,560	50,568
12/12/19 10:00	55,257	3,720	49,937
12/13/19 10:00	56,668	3,211	43,522
12/14/19 10:00	56,932	3,290	43,442
12/15/19 10:00	69,186	3,330	46,645
12/16/19 10:00	71,752	3,650	48,124
12/17/19 10:00	80,294	3,720	48,797
12/18/19 10:00	96,774	3,669	52,779
12/19/19 10:00	79,808	4,380	52,747
12/20/19 10:00	70,926	3,980	52,027
12/21/19 10:00	56,708	3,791	51,598
12/22/19 10:00	54,289	3,079	39,228
12/23/19 10:00	62,176	3,390	24,205
12/24/19 10:00	53,406	3,470	42,057
12/25/19 10:00	51,637	3,330	44,429
12/26/19 10:00	47,060	3,080	44,093
12/27/19 10:00	54,973	3,070	42,917
12/28/19 10:00	52,771	2,960	42,733
12/29/19 10:00	46,656	3,090	43,370
12/30/19 10:00	47,693	3,270	45,330
12/31/19 10:00	69,070	3,050	45,336
1/1/20 10:00	57,986	3,060	46,630
1/2/20 10:00	49,146	2,951	44,205
1/3/20 10:00	72,499	2,840	43,373
1/4/20 10:00	71,998	2,660	43,564
1/5/20 10:00	63,212	2,720	47,119
1/6/20 10:00	63,683	3,059	46,156
1/7/20 10:00	90,742	3,050	47,019
1/8/20 10:00	83,093	3,479	50,453
1/9/20 10:00	45,711	3,641	51,099
1/10/20 10:00	26,759	2,690	42,954
1/11/20 10:00	39,759	2,380	40,719
1/12/20 10:00	49,730	2,710	43,247

1/13/20 10:00	45,299	3,050	45,336
1/14/20 10:00	36,405	2,851	44,679
1/15/20 10:00	60,442	2,310	43,463
1/16/20 10:00	81,339	3,319	46,733
1/17/20 10:00	80,054	4,010	51,438
1/18/20 10:00	78,718	3,651	46,989
1/19/20 10:00	96,138	3,860	48,155
1/20/20 10:00	94,309	4,000	52,747
1/21/20 10:00	84,612	3,690	51,559
1/22/20 10:00	63,328	2,791	48,807
1/23/20 10:00	33,504	3,169	46,925
1/24/20 10:00	37,556	3,021	44,598
1/25/20 10:00	48,169	3,250	44,751
1/26/20 10:00	47,225	2,920	46,317
1/27/20 10:00	53,412	2,740	45,998
1/28/20 10:00	59,889	2,730	47,138
1/29/20 10:00	72,017	3,199	46,879
1/30/20 10:00	46,464	3,581	47,844
1/31/20 10:00	48,000	3,270	45,516
2/1/20 10:00	51,710	3,099	44,974
2/2/20 10:00	29,902	3,550	44,775
2/3/20 10:00	27,699	2,832	40,313
2/4/20 10:00	36,722	2,179	40,384
2/5/20 10:00	35,123	2,800	45,314
2/6/20 10:00	57,552	2,631	44,652
2/7/20 10:00	73,164	3,558	46,745
2/8/20 10:00	49,245	3,580	47,202
2/9/20 10:00	35,935	3,271	45,824
2/10/20 10:00	38,003	2,980	44,814
2/11/20 10:00	46,598	2,500	43,903
2/12/20 10:00	51,393	2,911	45,569
2/13/20 10:00	83,307	3,198	41,290
2/14/20 10:00	80,303	3,931	52,620
2/15/20 10:00	32,482	3,490	46,000
2/16/20 10:00	42,424	3,171	46,253
2/17/20 10:00	27,069	2,939	45,681
2/18/20 10:00	7,522	2,620	43,750
2/19/20 10:00	67,152	451	6,746
2/20/20 10:00	89,487	3,060	45,392
2/21/20 10:00	53,070	3,391	51,093
2/22/20 10:00	39,855	2,759	46,476
2/23/20 10:00	38,022	2,721	44,171
2/24/20 10:00	34,470	1,602	40,623
2/25/20 10:00	47,234	2,279	40,759
2/26/20 10:00	72,130	2,729	41,789
2/27/20 10:00	60,628	3,502	47,908
2/28/20 10:00	64,548	3,630	49,000

2/29/20 10:00	39,352	3,790	50,111
3/1/20 10:00	13,379	2,850	46,691
3/2/20 10:00	15,191	2,082	42,162
3/3/20 10:00	30,795	2,059	42,600
3/4/20 10:00	30,898	2,450	42,925
3/5/20 10:00	31,032	2,400	26,541
3/6/20 10:00	50,499	3,159	45,227
3/7/20 10:00	24,711	2,819	43,942
3/8/20 10:00	10,152	2,761	43,464
3/9/20 10:00	3,336	2,081	38,499
3/10/20 10:00	13,236	1,590	38,505
3/11/20 10:00	12,192	2,270	40,291
3/12/20 10:00	18,479	1,830	38,983
3/13/20 10:00	36,183	1,710	37,962
3/14/20 10:00	28,545	1,871	39,744
3/15/20 10:00	34,470	2,130	42,650
3/16/20 10:00	19,017	2,330	44,849
3/17/20 10:00	19,506	2,050	43,191
3/18/20 10:00	14,659	2,060	40,511
3/19/20 10:00	3,577	1,721	39,631
3/20/20 10:00	27,733	1,349	37,519
3/21/20 10:00	41,347	2,101	40,821
3/22/20 10:00	44,262	2,390	42,619
3/23/20 10:00	21,354	2,400	43,625
3/24/20 10:00	31,527	1,830	40,713
3/25/20 10:00	11,148	2,500	41,667
3/26/20 10:00	3,735	1,971	39,192
3/27/20 10:00	14,332	1,520	36,730
3/28/20 10:00	21,554	1,860	40,303
3/29/20 10:00	26,373	2,259	39,609
3/30/20 10:00	33,598	2,341	40,294
3/31/20 10:00	38,909	2,670	41,761
11/1/20 10:00	48,774	2,531	41,692
11/2/20 10:00	36,172	1,990	44,729
11/3/20 10:00	29,479	2,240	42,844
11/4/20 10:00	32,159	1,630	40,073
11/5/20 10:00	25,494	2,080	38,654
11/6/20 10:00	6,112	1,531	37,690
11/7/20 10:00	-	1,769	37,545
11/8/20 10:00	-	1,301	37,633
11/9/20 10:00	-	990	37,379
11/10/20 10:00	-	1,120	35,832
11/11/20 10:00	37,767	1,120	27,129
11/12/20 10:00	53,697	1,889	25,122
11/13/20 10:00	56,152	2,289	34,013
11/14/20 10:00	51,494	2,440	38,661
11/15/20 10:00	58,117	2,091	37,868

11/16/20 10:00	57,616	1,980	39,854
11/17/20 10:00	42,718	2,509	44,588
11/18/20 10:00	49,536	2,949	48,404
11/19/20 10:00	55,159	3,001	44,458
11/20/20 10:00	48,125	2,382	38,289
11/21/20 10:00	48,406	2,157	38,006
11/22/20 10:00	66,459	2,161	38,555
11/23/20 10:00	53,426	2,789	41,467
11/24/20 10:00	50,455	2,522	42,723
11/25/20 10:00	33,811	1,859	38,286
11/26/20 10:00	45,433	1,830	36,659
11/27/20 10:00	61,779	2,070	37,160
11/28/20 10:00	57,371	2,219	39,154
11/29/20 10:00	42,173	1,761	39,064
11/30/20 10:00	53,426	1,749	38,940
12/1/20 10:00	49,391	2,410	44,657
12/2/20 10:00	40,681	2,509	46,271
12/3/20 10:00	41,853	2,640	42,944
12/4/20 10:00	44,757	2,770	42,548
12/5/20 10:00	72,504	3,100	43,682
12/6/20 10:00	71,312	2,651	46,542
12/7/20 10:00	58,787	2,939	48,581
12/8/20 10:00	52,115	3,123	47,694
12/9/20 10:00	44,260	2,709	46,435
12/10/20 10:00	43,249	3,140	45,530
12/11/20 10:00	43,601	2,590	42,240
12/12/20 10:00	54,880	2,240	40,956
12/13/20 10:00	86,008	2,709	41,879
12/14/20 10:00	79,057	2,920	47,391
12/15/20 10:00	79,477	2,780	50,725
12/16/20 10:00	75,138	3,130	53,203
12/17/20 10:00	78,786	3,210	53,251
12/18/20 10:00	84,431	3,409	54,378
12/19/20 10:00	74,088	3,011	51,662
12/20/20 10:00	57,273	3,010	46,382
12/21/20 10:00	52,092	2,972	44,609
12/22/20 10:00	33,649	2,309	46,167
12/23/20 10:00	11,448	2,351	46,095
12/24/20 10:00	54,748	1,611	40,865
12/25/20 10:00	95,507	2,807	49,900
12/26/20 10:00	77,219	2,931	53,329
12/27/20 10:00	67,132	2,840	52,639
12/28/20 10:00	73,177	2,441	47,273
12/29/20 10:00	44,900	3,013	50,814
12/30/20 10:00	49,212	3,222	47,054
12/31/20 10:00	42,498	3,339	46,652
1/1/21 10:00	39,101	2,992	47,268

1/2/21 10:00	40,940	2,379	44,311
1/3/21 10:00	33,923	3,111	47,640
1/4/21 10:00	57,078	2,760	46,609
1/5/21 10:00	64,001	3,229	46,464
1/6/21 10:00	56,221	3,450	47,863
1/7/21 10:00	71,511	3,211	48,939
1/8/21 10:00	75,372	2,909	50,197
1/9/21 10:00	72,599	3,490	47,164
1/10/21 10:00	80,536	3,490	47,753
1/11/21 10:00	59,239	3,580	48,315
1/12/21 10:00	50,128	2,830	47,053
1/13/21 10:00	44,714	3,320	47,158
1/14/21 10:00	23,604	2,761	45,603
1/15/21 10:00	38,320	2,270	42,704
1/16/21 10:00	49,044	2,730	45,729
1/17/21 10:00	49,825	2,480	45,383
1/18/21 10:00	52,758	2,560	47,936
1/19/21 10:00	76,858	3,069	46,887
1/20/21 10:00	60,268	3,051	48,780
1/21/21 10:00	66,783	2,469	49,404
1/22/21 10:00	81,404	3,180	47,977
1/23/21 10:00	77,754	3,450	53,303
1/24/21 10:00	75,296	2,911	51,795
1/25/21 10:00	62,289	2,980	50,106
1/26/21 10:00	74,403	2,660	46,889
1/27/21 10:00	84,562	2,849	48,254
1/28/21 10:00	94,029	3,589	52,580
1/29/21 10:00	83,143	3,840	56,034
1/30/21 10:00	86,204	3,041	53,726
1/31/21 10:00	91,893	3,340	54,504
2/1/21 10:00	81,321	3,730	52,945
2/2/21 10:00	78,605	3,300	52,869
2/3/21 10:00	68,020	3,230	52,841
2/4/21 10:00	46,422	2,981	49,490
2/5/21 10:00	46,169	2,799	48,605
2/6/21 10:00	76,784	3,161	46,630
2/7/21 10:00	77,407	3,179	50,801
2/8/21 10:00	84,576	3,440	52,434
2/9/21 10:00	80,018	3,290	50,388
2/10/21 10:00	77,967	2,850	50,082
2/11/21 10:00	79,877	3,081	50,916
2/12/21 10:00	80,449	3,439	46,941
2/13/21 10:00	68,367	3,270	46,734
2/14/21 10:00	46,073	2,821	51,053
2/15/21 10:00	48,752	2,851	46,276
2/16/21 10:00	76,896	3,059	48,507
2/17/21 10:00	91,571	3,569	53,609

2/18/21 10:00	83,007	3,191	50,008
2/19/21 10:00	78,379	3,240	54,368
2/20/21 10:00	75,141	3,769	56,146
2/21/21 10:00	71,552	2,861	52,475
2/22/21 10:00	69,076	2,720	53,232
2/23/21 10:00	39,104	2,780	48,706
2/24/21 10:00	40,042	2,071	44,295
2/25/21 10:00	63,312	2,568	45,566
2/26/21 10:00	72,896	3,221	44,883
2/27/21 10:00	70,325	2,860	43,342
2/28/21 10:00	88,286	2,681	44,266
3/1/21 10:00	85,137	2,659	47,417
3/2/21 10:00	59,796	2,721	48,053
3/3/21 10:00	64,174	2,050	44,788
3/4/21 10:00	68,963	2,789	48,926
3/5/21 10:00	63,090	3,310	49,544
3/6/21 10:00	63,823	3,211	49,262
3/7/21 10:00	73,638	3,100	50,254
3/8/21 10:00	60,567	2,970	47,418
3/9/21 10:00	49,053	1,991	39,257
3/10/21 10:00	34,266	2,210	36,652
3/11/21 10:00	47,482	2,021	32,764
3/12/21 10:00	63,984	1,519	38,410
3/13/21 10:00	80,474	2,089	39,518
3/14/21 10:00	81,771	2,169	43,701
3/15/21 10:00	60,042	2,761	47,965
3/16/21 10:00	50,712	3,190	46,674
3/17/21 10:00	72,398	2,511	43,332
3/18/21 10:00	68,021	2,450	43,757
3/19/21 10:00	60,273	3,119	46,162
3/20/21 10:00	51,523	2,740	41,645
3/21/21 10:00	50,648	1,951	40,216
3/22/21 10:00	41,335	2,271	39,595
3/23/21 10:00	43,891	1,740	38,808
3/24/21 10:00	30,912	1,880	37,444
3/25/21 10:00	22,897	1,901	37,284
3/26/21 10:00	21,405	1,880	31,829
3/27/21 10:00	36,943	1,391	24,822
3/28/21 10:00	47,570	2,078	30,531
3/29/21 10:00	38,313	2,140	42,782
3/30/21 10:00	37,338	1,821	41,065
3/31/21 10:00	72,110	1,479	41,346
11/1/21 10:00	37,470	2,179	37,362
11/2/21 10:00	30,817	2,162	40,902
11/3/21 10:00	40,318	2,457	40,919
11/4/21 10:00	41,874	2,472	41,366
11/5/21 10:00	42,241	2,211	41,092

11/6/21 10:00	21,405	1,951	42,235
11/7/21 10:00	6,837	1,871	37,845
11/8/21 10:00	5,083	1,560	35,383
11/9/21 10:00	18,086	1,291	35,481
11/10/21 10:00	12,037	1,490	37,261
11/11/21 10:00	23,622	1,340	36,269
11/12/21 10:00	30,549	1,609	37,114
11/13/21 10:00	53,837	2,149	40,133
11/14/21 10:00	49,729	2,140	40,651
11/15/21 10:00	47,191	2,289	42,903
11/16/21 10:00	30,274	2,669	42,393
11/17/21 10:00	39,796	2,213	33,126
11/18/21 10:00	52,533	1,738	36,952
11/19/21 10:00	45,784	2,719	45,683
11/20/21 10:00	35,489	2,613	44,633
11/21/21 10:00	60,962	2,279	43,214
11/22/21 10:00	54,973	2,528	46,399
11/23/21 10:00	53,330	2,990	49,260
11/24/21 10:00	38,035	2,762	46,896
11/25/21 10:00	60,895	2,091	43,850
11/26/21 10:00	71,248	2,311	47,592
11/27/21 10:00	45,034	2,879	47,291
11/28/21 10:00	52,045	2,958	46,408
11/29/21 10:00	47,559	2,782	49,593
11/30/21 10:00	49,382	2,909	47,855
12/1/21 10:00	42,306	2,581	45,217
12/2/21 10:00	36,793	2,341	43,228
12/3/21 10:00	34,257	2,349	45,170
12/4/21 10:00	34,650	2,830	44,924
12/5/21 10:00	35,389	2,263	44,153
12/6/21 10:00	48,731	2,387	44,836
12/7/21 10:00	50,465	2,890	48,759
12/8/21 10:00	51,437	3,099	50,280
12/9/21 10:00	24,971	3,092	49,203
12/10/21 10:00	20,247	2,481	44,702
12/11/21 10:00	33,688	2,260	39,689
12/12/21 10:00	25,154	2,818	45,290
12/13/21 10:00	27,388	2,643	43,725
12/14/21 10:00	14,558	2,139	43,578
12/15/21 10:00	14,862	1,621	39,814
12/16/21 10:00	14,639	1,671	39,632
12/17/21 10:00	22,291	1,969	41,166
12/18/21 10:00	59,544	2,200	39,289
12/19/21 10:00	60,470	2,639	49,206
12/20/21 10:00	56,039	2,630	52,709
12/21/21 10:00	62,119	2,928	50,217
12/22/21 10:00	52,237	3,310	50,767

12/23/21 10:00	22,174	3,251	52,060
12/24/21 10:00	15,507	2,711	47,805
12/25/21 10:00	39,240	2,599	41,930
12/26/21 10:00	32,937	2,461	45,107
12/27/21 10:00	31,629	2,920	49,588
12/28/21 10:00	35,847	2,719	46,593
12/29/21 10:00	39,226	2,640	44,343
12/30/21 10:00	31,802	2,621	44,034
12/31/21 10:00	3,710	1,972	42,725
1/1/22 10:00	43,886	1,869	40,678
1/2/22 10:00	96,060	2,376	43,836
1/3/22 10:00	77,529	3,389	58,486
1/4/22 10:00	65,644	3,053	52,250
1/5/22 10:00	67,286	2,469	47,902
1/6/22 10:00	88,673	2,790	49,693
1/7/22 10:00	78,473	3,327	43,497
1/8/22 10:00	60,890	3,311	52,983
1/9/22 10:00	87,085	3,091	49,524
1/10/22 10:00	99,251	3,517	50,570
1/11/22 10:00	70,943	3,931	48,446
1/12/22 10:00	60,458	3,023	49,294
1/13/22 10:00	77,354	2,610	46,452
1/14/22 10:00	100,822	3,247	50,776
1/15/22 10:00	85,801	3,771	50,309
1/16/22 10:00	83,246	3,400	50,954
1/17/22 10:00	77,347	3,780	50,261
1/18/22 10:00	48,966	3,301	46,293
1/19/22 10:00	92,914	2,922	44,701
1/20/22 10:00	114,480	3,645	43,547
1/21/22 10:00	88,350	4,090	42,717
1/22/22 10:00	72,467	3,831	49,546
1/23/22 10:00	58,528	3,241	49,321
1/24/22 10:00	75,330	3,312	41,434
1/25/22 10:00	94,494	2,770	35,743
1/26/22 10:00	89,300	2,999	52,610
1/27/22 10:00	81,270	3,209	50,770
1/28/22 10:00	106,738	3,608	51,618
1/29/22 10:00	104,342	4,260	47,753
1/30/22 10:00	92,254	3,921	46,581
1/31/22 10:00	84,474	3,800	46,621
2/1/22 10:00	59,710	3,601	50,118
2/2/22 10:00	27,882	3,193	42,479
2/3/22 10:00	60,976	2,310	37,956
2/4/22 10:00	90,020	3,557	46,187
2/5/22 10:00	77,490	3,779	50,385
2/6/22 10:00	64,953	3,461	45,265
2/7/22 10:00	67,233	3,020	43,750

2/8/22 10:00	48,659	3,274	45,727
2/9/22 10:00	43,698	2,758	40,039
2/10/22 10:00	27,064	2,879	38,692
2/11/22 10:00	37,186	2,363	35,979
2/12/22 10:00	85,903	2,467	38,226
2/13/22 10:00	96,840	3,548	47,543
2/14/22 10:00	86,456	3,860	54,285
2/15/22 10:00	47,530	3,433	50,396
2/16/22 10:00	9,595	2,303	44,771
2/17/22 10:00	191	2,017	40,458
2/18/22 10:00	38,617	3,080	48,991
2/19/22 10:00	45,840	3,747	52,105
2/20/22 10:00	-	3,043	51,448
2/21/22 10:00	-	2,699	45,617
2/22/22 10:00	13,587	2,313	40,923
2/23/22 10:00	55,919	2,736	44,935
2/24/22 10:00	61,673	3,369	51,245
2/25/22 10:00	64,919	3,440	49,912
2/26/22 10:00	49,968	3,491	50,882
2/27/22 10:00	65,408	3,270	48,270
2/28/22 10:00	62,400	3,112	51,111
3/1/22 10:00	54,842	2,550	44,726
3/2/22 10:00	59,305	2,829	43,824
3/3/22 10:00	79,230	3,318	49,508
3/4/22 10:00	50,939	3,461	50,223
3/5/22 10:00	35,094	2,971	42,105
3/6/22 10:00	14,551	2,083	37,689
3/7/22 10:00	56,545	1,928	39,856
3/8/22 10:00	65,403	2,548	43,096
3/9/22 10:00	41,137	3,231	46,100
3/10/22 10:00	52,158	3,000	43,981
3/11/22 10:00	83,737	2,569	41,133
3/12/22 10:00	79,554	3,747	52,314
3/13/22 10:00	45,504	3,563	52,362
3/14/22 10:00	43,801	2,733	43,207
3/15/22 10:00	36,449	1,890	39,113
3/16/22 10:00	41,855	1,409	38,258
3/17/22 10:00	12,415	1,801	38,779
3/18/22 10:00	17,291	2,131	37,492
3/19/22 10:00	45,776	1,990	36,520
3/20/22 10:00	44,873	2,258	39,730
3/21/22 10:00	42,738	2,181	39,675
3/22/22 10:00	41,727	2,419	40,879
3/23/22 10:00	39,796	2,443	41,234
3/24/22 10:00	54,213	2,687	40,684
3/25/22 10:00	44,098	2,241	39,040
3/26/22 10:00	63,169	2,788	41,356

3/27/22 10:00	86,676	3,468	48,090
3/28/22 10:00	71,915	3,849	51,705
3/29/22 10:00	45,402	3,411	48,969
3/30/22 10:00	31,120	2,843	42,839
3/31/22 10:00	72,630	2,389	37,561
11/1/22 10:00	-	1,447	34,624
11/2/22 10:00	-	1,879	34,784
11/3/22 10:00	-	1,961	35,142
11/4/22 10:00	3,327	1,162	34,795
11/5/22 10:00	-	1,689	38,132
11/6/22 10:00	4,007	1,660	36,625
11/7/22 10:00	9,440	1,541	38,026
11/8/22 10:00	5,773	1,589	40,236
11/9/22 10:00	255	1,850	38,876
11/10/22 10:00	21,899	1,241	36,428
11/11/22 10:00	28,818	991	36,095
11/12/22 10:00	36,789	1,156	35,671
11/13/22 10:00	50,040	2,199	38,460
11/14/22 10:00	41,994	2,819	43,284
11/15/22 10:00	43,753	2,580	43,083
11/16/22 10:00	56,895	2,601	43,952
11/17/22 10:00	66,726	2,379	46,877
11/18/22 10:00	57,506	2,649	45,588
11/19/22 10:00	68,754	2,899	45,557
11/20/22 10:00	65,682	3,183	49,218
11/21/22 10:00	46,976	2,649	46,827
11/22/22 10:00	44,684	2,441	43,828
11/23/22 10:00	51,653	2,477	41,465
11/24/22 10:00	45,721	2,712	40,973
11/25/22 10:00	36,352	2,778	41,578
11/26/22 10:00	42,651	2,861	40,906
11/27/22 10:00	49,947	2,463	39,872
11/28/22 10:00	39,635	2,308	42,058
11/29/22 10:00	54,169	2,441	42,918
11/30/22 10:00	68,516	2,409	43,823
12/1/22 10:00	45,558	2,650	46,958
12/2/22 10:00	36,810	2,442	42,866
12/3/22 10:00	47,116	2,647	41,985
12/4/22 10:00	48,313	3,211	45,851
12/5/22 10:00	36,792	2,492	44,979
12/6/22 10:00	47,296	2,081	38,684
12/7/22 10:00	53,822	2,299	37,545
12/8/22 10:00	56,097	2,678	41,112
12/9/22 10:00	52,784	2,799	44,182
12/10/22 10:00	48,008	2,593	44,713
12/11/22 10:00	66,772	2,580	44,745
12/12/22 10:00	72,579	2,709	48,004

12/13/22 10:00	67,315	3,269	48,990
12/14/22 10:00	42,376	3,349	48,343
12/15/22 10:00	41,953	2,963	45,348
12/16/22 10:00	52,759	2,241	44,054
12/17/22 10:00	70,173	2,547	44,458
12/18/22 10:00	71,720	2,930	47,272
12/19/22 10:00	70,835	2,901	50,050
12/20/22 10:00	64,459	2,840	48,563
12/21/22 10:00	49,701	2,770	46,940
12/22/22 10:00	95,774	2,171	42,515
12/23/22 10:00	90,352	3,614	44,644
12/24/22 10:00	84,880	3,812	43,049
12/25/22 10:00	83,987	3,123	50,024
12/26/22 10:00	77,661	3,210	47,459
12/27/22 10:00	53,331	3,049	47,579
12/28/22 10:00	53,173	3,409	45,771
12/29/22 10:00	36,863	3,401	43,935
12/30/22 10:00	47,812	2,821	40,400
12/31/22 10:00	47,647	2,519	39,907
1/1/23 10:00	32,176	2,930	40,573
1/2/23 10:00	46,375	2,422	40,930
1/3/23 10:00	36,721	2,501	39,968
1/4/23 10:00	49,025	2,220	36,545
1/5/23 10:00	64,938	2,470	39,419
1/6/23 10:00	72,514	3,250	43,920
1/7/23 10:00	73,332	2,980	44,293
1/8/23 10:00	73,869	3,340	44,756
1/9/23 10:00	70,546	3,440	45,769
1/10/23 10:00	65,932	3,100	45,671
1/11/23 10:00	54,718	3,390	45,251
1/12/23 10:00	70,985	3,170	40,887
1/13/23 10:00	86,405	3,330	44,462
1/14/23 10:00	79,421	3,870	48,570
1/15/23 10:00	63,809	3,650	48,327
1/16/23 10:00	54,981	2,920	45,738
1/17/23 10:00	34,903	3,090	43,522
1/18/23 10:00	48,634	2,500	42,741
1/19/23 10:00	57,169	3,097	44,072
1/20/23 10:00	66,793	3,280	44,390
1/21/23 10:00	46,255	3,150	45,258
1/22/23 10:00	61,777	3,230	45,261
1/23/23 10:00	66,966	3,240	46,374
1/24/23 10:00	61,844	3,380	45,663
1/25/23 10:00	62,570	3,270	43,899
1/26/23 10:00	63,554	3,420	45,450
1/27/23 10:00	54,188	2,900	46,367
1/28/23 10:00	50,353	2,670	43,127

1/29/23 10:00	50,274	2,740	43,364
1/30/23 10:00	59,104	2,950	42,712
1/31/23 10:00	74,536	2,770	47,001
2/1/23 10:00	72,291	2,600	49,961
2/2/23 10:00	94,340	3,280	48,109
2/3/23 10:00	84,494	3,620	53,658
2/4/23 10:00	37,301	3,350	53,557
2/5/23 10:00	46,707	2,490	45,426
2/6/23 10:00	52,742	3,220	46,246
2/7/23 10:00	53,225	3,480	45,104
2/8/23 10:00	44,774	3,270	39,659
2/9/23 10:00	53,877	2,980	39,788
2/10/23 10:00	53,147	3,180	40,632
2/11/23 10:00	57,916	3,071	44,348
2/12/23 10:00	52,789	3,060	44,356
2/13/23 10:00	46,799	2,950	42,187
2/14/23 10:00	34,255	3,110	41,696
2/15/23 10:00	15,925	2,610	38,595
2/16/23 10:00	48,256	2,670	39,544
2/17/23 10:00	51,359	2,610	44,326
2/18/23 10:00	27,232	2,640	46,836
2/19/23 10:00	44,850	2,320	41,337
2/20/23 10:00	42,368	2,260	40,242
2/21/23 10:00	41,259	2,620	41,810
2/22/23 10:00	39,190	3,010	44,041
2/23/23 10:00	55,592	2,850	39,085
2/24/23 10:00	71,202	3,110	47,374
2/25/23 10:00	38,179	3,410	49,431
2/26/23 10:00	50,204	3,218	44,761
2/27/23 10:00	55,580	3,260	44,873
2/28/23 10:00	27,465	3,370	43,559
3/1/23 10:00	29,570	3,200	43,963
3/2/23 10:00	37,210	2,870	43,069
3/3/23 10:00	59,748	2,301	43,694
3/4/23 10:00	54,056	2,679	43,682
3/5/23 10:00	51,109	2,851	43,501
3/6/23 10:00	72,630	2,350	41,438
3/7/23 10:00	52,536	2,640	42,500
3/8/23 10:00	56,434	2,570	46,324
3/9/23 10:00	55,633	2,291	45,453
3/10/23 10:00	57,690	2,440	45,502
3/11/23 10:00	45,702	2,480	45,390
3/12/23 10:00	47,229	2,460	46,627
3/13/23 10:00	61,366	2,510	45,702
3/14/23 10:00	60,860	3,000	47,965
3/15/23 10:00	62,529	2,730	46,885
3/16/23 10:00	34,051	2,360	43,811

3/17/23 10:00	32,507	2,240	41,896
3/18/23 10:00	60,194	2,260	45,332
3/19/23 10:00	34,771	2,880	48,518

EXHIBIT JC-4

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: OCA Set I-4
Date of Response: 3/13/2023
Response Provided By: Florian Teme

Question:

Please provide a detailed supply and requirements schedule for PGW’s 2022-2023 projected design day of 685,131 Mcf (Tab 12). The schedule should include deliveries to the Company by pipeline contract, and sales and transportation customer requirements by class/service classification.

Attachments: 1

OCA_Set_I_4_OCA Set I-4.pdf

Response:

PGW’s design day is 0°F. PGW models a 2°F peak day and attached is the forecast DTH requirements and sources for a 2°F day.

EXHIBIT JC-5

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: OCA Set I-4
Date of Response: 3/13/2023
Response Provided By: Florian Teme

Question:
Please provide a detailed supply and requirements schedule for PGW's 2022-2023 projected design day of 685,131 Mcf (Tab 12). The schedule should include deliveries to the Company by pipeline contract, and sales and transportation customer requirements by class/service classification.

Attachments: 1
OCA_Set_I_4_OCA Set I-4.pdf

Response:

PGW's design day is 0°F. PGW models a 2°F peak day and attached is the forecast DTH requirements and sources for a 2°F day.

OCA-Set I-4

FY 2024 Forecasted Peak Day: 2 Degrees F. (63 DD)
All Volumes in (Dth)

Requirements	
Firm	580,246
Cogen	1,146
Firm Transportation	96,996
LNG Sales	58
Total Requirements	678,445
Supply	
Pipeline Gas	
Williams Pipeline Company	125,780
Texas Eastern	119,282
Firm Transportation	33,514
Total Pipeline Gas	278,576
Storage Withdrawals	
WSS	28,619
S 2	5,191
GSS-TR	61,567
SS1 A	44,505
SS1 B	21,030
GSS-TE	34,047
Total Storage Withdrawals	194,959
LNG Withdrawals	
Richmond	214,536
Passyunk	183
Total LNG Withdrawals	214,719
Total Gas Supply	688,254
Fuels	
Pipeline	5,194
Storage	1,164
LNG	3,451
Total Fuel Deductions	9,808
Delivered Supply	678,445

EXHIBIT JC-6

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: Vicinity Set II-2
Date of Response: 3/30/2023
Response Provided By: Ryan Reeves

Question:
List the ten coldest days each heating season for 2018-19, 2019-20, 2020-21, 2021-22. On each day provide the total customer consumption and the total delivery capacity.

Attachments: 1
Vicinity_Set_II_2_Vicinity Set II-2.pdf

Response:

Please see attached spreadsheet. The clarification on the information provided, the column labeled, "Total Customer Consumption (in Mcf)", is the volume of gas that flowed through PGW's distribution system to its customers. The column labeled, "Total Delivery Capacity (in Dth)", is the firm rights of pipeline capacity PGW contracts from Transco and Texas Eastern. PGW pays for these rights year-round and is recovered in the GCR.

This number (Total Delivery Capacity) does not include capacity on the pipelines owned by customers or deliveries made to PGW's city gates by IT choice suppliers.

Date	Total Customer Consumption	Total Delivery Capacity
1/13/2019	499,890	302,001
1/20/2019	543,386	302,001
1/21/2019	665,010	302,001
1/22/2019	535,664	302,001
1/30/2019	642,798	302,001
1/31/2019	667,011	302,001
2/1/2019	641,028	302,001
2/2/2019	523,603	302,001
3/5/2019	501,408	302,001
3/6/2019	545,587	302,001
12/18/2019	489,693	302,001
12/19/2019	516,312	302,001
12/20/2019	471,460	302,001
1/8/2020	463,075	302,001
1/17/2020	484,623	302,001
1/19/2020	439,887	302,001
1/20/2020	506,845	302,001
1/21/2020	478,904	302,001
2/14/2020	502,500	302,001
2/15/2020	464,236	302,001
1/28/2021	509,523	302,001
1/29/2021	552,959	302,001
1/30/2021	480,643	302,001
1/31/2021	506,601	302,001
2/8/2021	480,954	302,001
2/11/2021	480,427	302,001
2/12/2021	487,222	302,001
2/13/2021	487,169	302,001
2/18/2021	490,090	302,001
2/20/2021	488,948	302,001
1/10/2022	505,212	302,001
1/11/2022	542,190	302,001
1/15/2022	581,637	302,001
1/21/2022	559,451	302,001
1/22/2022	508,776	302,001
1/26/2022	525,952	302,001
1/29/2022	587,386	302,001
1/30/2022	538,066	302,001
2/5/2022	514,012	302,001
2/14/2022	529,071	302,001

EXHIBIT JC-7

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: IE Set I-25
Date of Response: 3/13/2023
Response Provided By: Florian Teme

Question:

Reference the peak day send-out for the winter of 2021-2022 shown on Item 53.64(c)12, Schedule 1. Provide a breakdown of the source of supply and volumes from each supply used to provide the following volumes on their respective peak days as shown:

A. 531,582 Mcf on January 29, 2022;

B. 490,112 Mcf on January 30, 2022;

C. 454,674 Mcf on January 31, 2022.

Attachments: 1

IE_Set_I_25_IE Set 1-25.pdf

Response:

Please see the attached Excel spreadsheet.

3 DAY PEAK ANALYSIS

Winter Peak Season	Date	Average Temp.	Hi Temp.	Low Temp.	Total Sendout (mcfs)	Firm Sendout	Cogen Sendout	LBS Sendout	BPS Sendout	GTS Sendout	IT Sendout	GRAYSFERRY Sendout (mcfs)
2017- 2018	Jan 5	15	19	10	625,642	547,239	44	0	0	0	78,359	20,030
2017 - 2018	Jan 6	13	16	8	639,043	565,130	44	0	0	0	73,869	36,380
2017- 2018	Jan 7	20	27	9	582,222	516,455	44	0	0	0	65,723	38,850
2018 - 2019	Jan 30	16	37	7	584,172	500,209	43	0	0	0	83,920	53,916
2018 - 2019	Jan 31	17	20	11	609,241	522,948	43	0	0	0	86,250	47,420
2018 - 2019	Feb 1	18	25	15	586,904	503,748	43	0	0	0	83,113	52,759
2019- 2020	Dec 18	31	42	23	435,785	374,997	45	0	0	0	60,743	52,320
2019- 2020	Dec 19	30	33	25	461,382	398,876	45	0	0	0	62,461	51,357
2019- 2020	Dec 20	33	37	29	417,993	362,084	45	0	0	0	55,864	51,897
2020- 2021	Jan 28	29	36	25	455,995	397,133	45	0	0	0	58,817	51,780
2020- 2021	Jan 29	26	31	22	495,584	435,311	45	0	0	0	60,228	55,038
2020- 2021	Jan 30	32	36	27	426,177	372,796	45	0	0	0	53,336	52,584
2021- 2022	Jan 29	16	24	11	531,582	474,039	42	0	0	0	57,501	47,589
2021- 2022	Jan 30	23	27	17	490,112	434,209	42	0	0	0	55,861	46,917
2021- 2022	Jan 31	27	34	23	454,674	397,965	42	0	0	0	56,667	46,939

EXHIBIT JC1.5

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.	:	
Complainants,	:	
	:	Docket No. R-2023-3038069 and
v.	:	C-2023-3038722
	:	
Philadelphia Gas Works,	:	
Respondent.	:	

SURREBUTTAL TESTIMONY OF JAMES L. CRIST, P.E.
ON BEHALF OF
GRAYS FERRY COGENERATION PARTNERSHIP
AND VICINITY ENERGY PHILADELPHIA, INC.

Vicinity Statement No. 1-SR
April 20, 2023

Q. PLEASE STATE YOUR NAME AND ON WHOSE BEHALF YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. a consulting firm focused on regulatory and market issues. I presented direct testimony and am now presenting surrebuttal testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity").

I. ISSUES

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS TESTIMONY?

A. Specifically, in my surrebuttal testimony I will:

1. Address claims made by Company witness Mr. Reeves.
2. Address comments and observations by OSBA witness Mr. Knecht.
3. Propose a mechanism for PGW to provide Philadelphia Lateral capacity during the winter to Grays Ferry on an ongoing basis. This will provide benefits to PGWs end-user customers and reduce their costs of purchased gas.

Q. MR. REEVES CLAIMS PGW LACKS CAPACITY TO MEET ITS DESIGN DAY NEEDS AND THEREFORE CANNOT RELEASE CAPACITY TO GRAYS FERRY. DOES PGW LACK SUFFICIENT CAPACITY?

A. Mr. Reeves makes several arguments in his rebuttal testimony, but does not dispute the principal and only critical fact that for the past 25 years all of the gas that was supplied to Grays Ferry flowed down the Philadelphia Lateral and through the dedicated four-mile high pressure line to Grays Ferry. Mr. Reeves took issue with my testimony because I made the point that PGW has had significant resources to provide winter capacity on the Philadelphia Lateral to flow high-pressure gas to Grays Ferry. Mr. Reeves opines that I should have used PGW's design day and not the actual peak day that has actually occurred, but that does not refute that fact that PGW has delivered gas through the lateral to Grays Ferry for 25 years without interruption and can do so going forward. Despite Mr. Reeves stating that 11 of 18 scenarios of his failure analysis, which I will address in detail, would have resulted in interruption of firm service, not once in 25 years was PGW's capacity need been great enough to cause PGW to recall or otherwise refuse to provide the 21,000 Dth of Alternative Receipt Service that allows gas to flow on the Philadelphia Lateral using PGW's capacity.

Q. MR. REEVES CLAIMS THE CAPACITY ON THE PHILADELPHIA LATERAL THAT IS FULLY HELD BY PGW IS FULLY UTILIZED AND PGW WOULD NOT BE ABLE TO RELEASE ANY CAPACITY TO GRAYS FERRY. HOW DO YOU ADDRESS HIS ASSERTION?

A. In the winter, Grays Ferry's gas is transported down the Philadelphia Lateral using 35,000 Dth/day of capacity held by Grays Ferry and 21,000 Dth/day of capacity held by PGW. I am simply pointing out that the exact same 21,000 Dth/day could be released to Grays Ferry directly, rather than held by PGW and released to Grays Ferry indirectly. If Grays Ferry would cease operations entirely, then PGW would be left holding 21,000 Dth/day of capacity that would then be excess, which exposes PGW's GCR customers to financial risk.

Q. IS THE CAPACITY ON THE PHILADELPHIA LATERAL THE ONLY SUPPLY RESOURCE PGW HAS TO MEET CUSTOMERS' NEEDS?

A. No. The Philadelphia Lateral capacity in question is just one of many interstate pipeline gate stations at which PGW has firm capacity at their disposal. In this GCR filing, Mr. Reeves has explained that PGW has off system gas storage, and two LNG facilities that are on PGW's distribution system. He points out that a significant portion of PGW's peak day needs are supplied by the storage and LNG gas. He then made the non-logical leap that because PGW cannot supply its peak day needs using only Transco and TETCO pipeline capacity, that is proof the PGW cannot afford to release any capacity to Grays Ferry. His claim is without merit. Most local distribution utilities operating in the cold regions of the country such as Pennsylvania, rely on a combination of gas supplied through interstate pipeline capacity and storage and LNG that is available in the market area. It is not uncommon that gas customers' needs cannot be met solely by pipeline capacity. PGW has demonstrated that it has sufficient supply resources to supply its customers and Grays Ferry and if the capacity it uses were released to Grays Ferry, PGW would still have enough capacity to meet its other customers' needs.

Q. WHAT ATTRIBUTE OF RELEASE CAPACITY DOES MR. REEVES INCORPORATE INTO THE OTHER CAPACITY RELEASES UNDERTAKEN BY PGW?

A. Mr. Reeves explained that such releases are recallable, meaning that if there were factors that impaired PGW's ability to meet its customers' needs using its remaining pipeline capacity, gas storage, and on-system LNG that it could recall the release capacity and use that to meet customer needs. Grays Ferry would be agreeable to such a condition under similar terms as were in effect for the past 25 years.

Q. WHAT DOES PGW RECEIVE AS COMPENSATION WHEN IT RELEASES CAPACITY?

A. I requested such data from PGW and Mr. Reeves provided it as the response to data request Set II-7. I took his data and summarized it to a more readable format. I then calculated the actual average rate that PGW has received for release capacity, and that rate is $0.35/Dth. I provided the summary and calculation as the reply to the OSBA data request Set I-4. (Attached as **Exhibit JC-8**). I also have attached Mr. Reeves' data response as **Exhibit JC-9**. It is clear that releasing capacity to Grays Ferry on a year-round basis provides superior benefits to PGW's GCR customers. The current maximum tariff rate is $0.80/Dth/day, which means there is a fairly wide gap between what PGW earns today and what it might earn on a regular basis if it were to release the capacity on a year-round basis.

Q. HOW DO YOU ADDRESS THE ONE EXAMPLE OF CAPACITY RELEASE REVENUES THAT MR. REEVES PRESENTED?

A. In his rebuttal testimony, Mr. Reeves cites one example of a capacity release during the past winter. Despite the fact that I had issued a data request (**Exhibit JC-9**) for all capacity release data on the Philadelphia Lateral, Mr. Reeves did not provide an update to his response that provided the data he discussed. None the less, he is cherry picking from his past six years of data for the one example that was an attractive release of capacity. If I estimate using the numbers he presented in his testimony, for as of this point writing this testimony I still have not received the updated data, I calculate that the release period was about 151 days. Mr. Reeves got lucky in securing a 151 day winter release as examination of the data he provided from 2018 through 2022 shows that most of his winter releases are only for one month. His example is not representative. To provide a more evenly balanced analysis of the value of release capacity on the Philadelphia Lateral, I divided the total revenue received over the five-year period that Mr. Reeves had provided in discovery, and it is $2.5 million/year. I would expect this amount to be less than what could be realized through the 365-day release I am proposing, which could, depending on demand, produce substantially in excess of that amount.

Q. SHOULD PGW BE IN THE ARBITRAGE BUSINESS?

A. By holding on to the 21,000 Dth/day of Philadelphia Lateral capacity and hoping that he will be able to maximize revenue by attempting to release such capacity on a short-term basis creates risk for PGW's GCR customers. As the actual evidence has shown, Mr. Reeves has realized only $0.35/Dth for the capacity he has released on the Philadelphia Lateral. While forecasting the future success of Mr. Reeves' venture is difficult, it likely will not vary significantly from his past performance. Hoping that he can exploit short-term trends in the Philadelphia Lateral capacity market is a riskier action than agreeing to a dependable long-term release to a substantial customer. Such a release to Grays Ferry eliminates risk.

Q. MR. REEVES OPINES THAT RELEASING CAPACITY TO GRAYS FERRY COULD RESULT IN SYSTEM FAILURES. IS HIS CONCERN ACCURATE?

A. No, his concerns are inflated and unsupported by the data. Mr. Reeves provides a summary of a design day failure analysis that shows the possible consequences to the PGW system under a variety of scenarios. Such scenarios include extremely cold weather, unavailability of a gate station or a gas main, or of one of the two LNG facilities. He presents a summary table that shows in 11 of the 18 scenarios, the only solution would be a curtailment of firm customers. Mr. Reeves' portrayal of this outcome is greatly exaggerated. First, his analysis ignores the fact that in 7 of his 18 scenarios there was no risk at all to system GCR customers. Continuing to examine the 11 scenarios that did result in a curtailment, I note that Mr. Reeves has presented this data previously, in the complaint case (C-2021-3029259). At the time I observed that he failed to provide a critical piece of information, namely the probability that each of the scenarios would occur. Since he is presenting the same study again, and presenting it without the lacking probability data, I can conclude one of two things. Either he does not have the data, which would make his Summary of Failure Study incomplete and therefore should be ignored, or he has the data, and does not like that it may show an extremely low probability of those 11 scenarios occurring, making his point trivial. The fact that the gas supplied under the ARS agreement that flows on the Philadelphia Lateral using capacity held by PGW has never been recalled in 25 years surely shows the exaggeration.

Q. HAVE YOU BEEN PERMITTED TO VIEW MR. REEVES' STUDY?

A. No. The Company has refused to send it to me, claiming that it is Confidential System Information. It is impractical to travel to the Company's Philadelphia office to view the document in the short timetable of this proceeding. Therefore, I cannot verify the claims made by Mr. Reeves are not misleading.

Q. HOW DOES MAKING RELEASE CAPACITY RECALLABLE ADDRESS MR. REEVES CONCERNS BASED ON HIS SUMMARY OF FAILURE STUDY?

A. It makes those concerns disappear, as stated by Mr. Reeves, "Assuming PGW's current operations and pipeline capacity rights, PGW passes all the failure scenarios. (Exhibit RER-1R, page 1).

Q. HOW DO YOU RESPOND TO OSBA WITNESS MR. KNECHT'S CONCERNS?

A. Mr. Knecht believes as I do and stated, "Mr. Crist's argument that PGW has not needed that capacity for 25 years is certainly credible evidence that PGW has had excess capacity in the past" (OSBA Statement 1-R, 5:21-22). Mr. Knecht expresses concerns about the future as I offered no analysis to that effect, however, that fact that Grays Ferry is willing to agree to a recallable capacity release addresses such concerns, for it places any risk onto Grays Ferry and not on the backs of PGW's GCR customers. Mr. Knecht stated, "Mr. Crist does not indicate whether he is proposing that the capacity be released on a recallable or non-recallable basis. However, as Mr. Crist proposes that Grays Ferry pay the full tariff rate for the capacity, I have assumed that he proposes a non-recallable release." (id, p. 5, footnote 6). My proposal to have capacity released on a recallable basis satisfies Mr. Knecht's concern.

II. SUMMARY

Q. WHAT IS THE SUMMARY OF YOUR SURREBUTTAL TESTIMONY?

A. 1. For the past 25 years, high pressure gas has flowed down the Philadelphia Lateral and through the dedicated four-mile line to Grays Ferry using a combination of capacity owned by Grays Ferry and PGW, and at no time during that period were any PGW customers, including Grays Ferry interrupted. PGW has sufficient capacity to continue release the needed winter capacity to Grays Ferry.

2. Grays Ferry is agreeable to Mr. Reeves' condition that released capacity be recallable as it has been for the last 25 years. This takes any concern that PGC customers will be at risk if capacity is released to Grays Ferry.

3. Data provided showing the Philadelphia Lateral capacity release revenues have averaged $0.35/Dth show that releasing capacity to Grays Ferry at any amount greater than that would provide an immediate ratepayer benefit.

Q. WHAT IS YOUR RECOMMENDATION?

A. PGW should release 21,000 Dth/day of capacity to Grays Ferry on a year-round basis at a fair market rate. Such capacity can be recallable under similar terms that have been in effect for 25 years. Alternatively, the same agreement could be accomplished via an Asset Management Agreement (AMA) if that were deemed more appropriate. This will benefit the residential and commercial GCR customers of PGW.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.

EXHIBIT JC2

SERVICE CONTRACT

BETWEEN

GRAYS FERRY COGENERATION PARTNERSHIP

AND

THE PHILADELPHIA AUTHORITY

FOR

INDUSTRIAL DEVELOPMENT

Dated: January 28, 1996

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SERVICE CONTRACT

THIS SERVICE CONTRACT (the "Contract") is entered into as of this ___ day of January, 1996, by and between THE PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT (the "Authority") and the GRAYS FERRY COGENERATION PARTNERSHIP, a Pennsylvania general partnership (the "Partnership").

WHEREAS, the City of Philadelphia (the "City") is a municipal corporation and a body corporate and politic organized and existing under the laws of the Commonwealth of Pennsylvania (the "Commonwealth"), having adopted the Philadelphia Home Rule Charter under the provisions of the First Class City Home Rule Act of April 21, 1949, P.L. 665;

WHEREAS, the Authority is a public instrumentality of the Commonwealth and is a body corporate and politic organized and established by the City and existing under the Pennsylvania Economic Development Financing Law, P.L. 251, August 23, 1967, Pa. Stat. Ann. Title 73 § 371 et seq. (Purdon), as amended (the "Act");

WHEREAS, the Authority is authorized and empowered to acquire, hold, construct, improve, maintain, own, finance and lease projects, including facilities and activities, which promote the public purposes set forth in the Act;

WHEREAS, the Act declares it to be in the public interest and the policy of the Commonwealth to promote industrial, commercial and other economic development and to encourage economic development and efficiency within the Commonwealth by providing basic services and facilities and by providing financing for infrastructure facilities, transportation systems and facilities of every kind, facilities for the furnishing of gas and other basic services and facilities conducive to economic activity in the Commonwealth;

WHEREAS, the Act declares it to be in the public interest and the policy of the Commonwealth to promote the acquisition, construction and improvement of public facilities; to promote public and private infrastructure; and otherwise to promote the health, welfare and safety of the residents of the Commonwealth by promoting economic activity and efficiency;

WHEREAS, the Authority has and may exercise all powers necessary and convenient for the carrying out of the aforesaid purposes, including but not limited to (i) constructing, improving and maintaining projects; (ii) making contracts of every name and nature necessary or convenient for carrying out projects; and (iii) doing all acts and things necessary or convenient for carrying out and exercising the purposes of and the powers granted under the Act;

WHEREAS, the City owns certain real and personal property used in the acquisition, manufacture, storage and distribution of natural, liquified, synthetic or manufactured gas or in the maintenance, management and administration thereof (the "Philadelphia Gas Works"), and the Philadelphia Gas Works is operated and managed for the City by the Philadelphia Facilities Management Corporation, a Pennsylvania nonprofit corporation and any successor thereto ("PFMC"), pursuant to an agreement with the City dated December 29, 1972, as amended (the Philadelphia Gas Works and PFMC, as well as any successor to the Philadelphia Gas Works or PFMC, collectively referred to hereinafter as "PGW");

WHEREAS, the City, through PGW, is the sole distributor of gas within the 129 square mile area constituting the City;

WHEREAS, the Partnership has contracted to construct, own and operate a 150 MW gas and oil fired electric and thermal generation Facility (as defined herein) which will produce and sell electricity to PECO Energy Company and steam to Trigen-Philadelphia Energy Corporation and any successor thereto ("Trigen");

WHEREAS, the Authority, in cooperation with the City, has agreed to undertake as a project the following activities and facilities which promote the public purposes set forth in the Act, on the terms and conditions set forth in this Contract: (a) to supply Local Gas Transportation Service (as defined herein) to the Facility; (b) to offer a long-term firm transportation capacity release to the Facility utilizing PGW's existing interstate transportation capacity on the pipeline system of Texas Eastern Transmission Corporation and any successor thereto ("TETCO"); (c) to assist the Partnership and Trigen in their efforts to cause TETCO to modify and re-price the TETCO Precedent Agreement (as defined herein); (d) to cause the City to reactivate and convert an existing liquid fuel pipeline, defined herein as the PGW Liquids Pipeline, to gas capability in order to provide Local Gas Transportation Service from the new TETCO Gate Station 060 to PGW's Passyunk Avenue Station; (e) to cause the City to construct and install a new gas pipeline, defined herein as the PGW Pipeline Extension, in order to extend Local Gas Transportation Service from PGW's Passyunk Avenue Station to the Facility Delivery Point (as defined herein) (elements (d) and (e) herein, and all elements ancillary thereto, collectively comprise the "Construction Project"); (f) to provide Alternative Receipt Service to the Partnership for an amount up to 21,000 Dekatherms per Day of Gas which PGW receives at its facilities at the outlet of Gate Station 060 with an equivalent quantity of Gas delivered by the Partnership to PGW's facilities at the outlet of Gate Station 034 in order to facilitate Local Gas Transportation Service to the Facility; (g) to supply both Start Up Service and

Sales Service (as defined herein) to the Facility; and (h) to endeavor to cause TETCO to construct Gate Station 060; and

WHEREAS, the City and the Authority have entered into a Service Agreement of even date herewith (the "Service Agreement") pursuant to which the City will supply Local Gas Transportation Service and certain other gas services and benefits to the Authority;

NOW THEREFORE, in consideration of the mutual covenants set out herein, the sufficiency of which is acknowledged by both parties, and intending to be legally bound hereby, the parties do hereby agree as follows:

ARTICLE I
DEFINITIONS

Unless another meaning is expressly stated, the following words and terms wherein used in this Contract shall have the following meaning:

1.1 "Act" shall have the meaning set forth in the WHEREAS clause.

1.2 "Affiliate" shall mean, with respect to any party, (a) any director, officer, or general partner of such party, and (b) any entity that is a direct or indirect parent or subsidiary of such party or that directly or indirectly (i) owns or controls such party, (ii) is owned or controlled by such party, or (iii) is under common ownership or control with such party. For purposes of this definition, "control" shall mean the power to direct the management or policies of such entity, whether through the ownership of voting securities, by contract or otherwise.

1.3 "<u>Aggregate Facilities Demand Charge</u>" shall mean the total charges to be paid by the Partnership pursuant to Section 4.1(d).

1.4 "<u>Agreement Year</u>" shall mean a calendar year beginning January 1 and ending on the last day of December of such year; <u>provided</u>, <u>however</u>, that the first Agreement Year shall extend from the Date of Initial Service to the end of the calendar year in which the Date of Initial Service occurs.

1.5 "<u>Alternate Trigen Project</u>" shall mean the construction of the Trigen pipeline described in Section 3.9(f)(ii) of the Trigen Service Contract.

1.6 "<u>Alternative Receipt Service</u>" shall have the meaning set forth in Section 3.5.

1.7 "<u>Annual Transportation Quantity</u>" shall mean, with respect to an Agreement Year, the sum of (i) the total quantity of Gas in Dth delivered to the Facility pursuant to the Local Gas Transportation Service during such Agreement Year, and (ii) the total quantity of Gas in Dth delivered to Trigen during such Agreement Year pursuant to the Trigen Service Agreement and Trigen Service Contract.

1.8 "<u>ARS Quantity</u>" shall have the meaning set forth in Section 3.5.

1.9 "<u>Authority Recall Rights</u>" shall mean the right of the City, through PGW, upon a minimum of forty-eight (48) hours notice to the Partnership and the Authority prior to the commencement of a Day, to (a) require the Authority to recall, pursuant to the provisions of Article 5 of this Contract and the Service Agreement, all or a portion of the Released Capacity on such Day and (b) release such capacity to the City.

1.10 "British Thermal Unit" or "Btu" shall mean the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit (1°F) at sixty degrees Fahrenheit (60°F) ambient temperature.

1.11 "Capacity Release" shall mean the pre-arranged release to the Partnership of the Released Capacity pursuant to the terms of this Contract and the Service Agreement.

1.12 "Capacity Release Quantity" shall mean, with respect to a given time period, the quantity in Dth of Released Capacity actually released by the Authority to the Partnership under this Contract and the Service Agreement with respect to such time period.

1.13 "City Cooperation" shall have the meaning set forth in Section 3.2(e).

1.14 "City Gate" means one or more gate stations on the boundary between the PGW service area and the TETCO pipeline system.

1.15 "City RACT Payment" shall have the meaning set forth in Section 3.2 (e).

1.16 "Construction Contract(s)" shall mean the contracts between the City and third parties for the construction of the Construction Project.

1.17 "Construction Contractor(s)" shall have the meaning set forth in Section 3.2(e).

1.18 "Contractor Damages" shall have the meaning set forth in Section 3.2(e).

1.19 "Construction Project" shall have the meaning set forth in the tenth WHEREAS clause.

1.20 "Contract" shall mean this Service Contract, including all exhibits attached hereto and amendments hereto that may be made from time to time.

1.21 "CPI" shall mean the retail index of consumer prices for finished goods in the Philadelphia, Pennsylvania region, as published monthly by the United States Department of Labor, Bureau of Labor Statistics.

1.22 "Date of Commercial Operation" shall mean, with respect to the Facility, the date of Provisional Acceptance (as such term is defined in the Engineering, Procurement and Construction Contract dated August 31, 1995 between the Partnership and Westinghouse Electric Corporation), which shall be the date, following initial synchronization, commissioning, and testing, on which care, custody and control of the Facility has been passed to the Partnership by the contracting parties under such agreement or any replacement contract with Westinghouse Electric Corporation or another party, as specified in a written notice from the Partnership to the Authority and the City.

1.23 "Date of Financial Closing" shall have the meaning set forth in Section 2.1 (a)(i).

1.24 "Date of Initial Service" shall mean the date, currently estimated to be March 1, 1997, on which the Partnership requests Start Up Service and/or Local Gas Transportation Service through written notice from the Partnership to the Authority and the City; provided, however, that such date shall not be before the In Service Date.

1.25 "Day" shall have the meaning given to such term under TETCO's FERC Gas Tariff, as modified from time to time.

1.26 "Deficiency Payment" shall mean, with respect to an Agreement Year, an amount equal to the Transport Charge multiplied by the amount in Dth by which the Minimum Annual Quantity exceeds the sum of (i) the Annual Transportation Quantity, (ii) the sum for all Days during such Agreement Year on which the Partnership was partially or wholly unable, as a result of an event of Force Majeure, to consume Gas at the Facility or to cause Gas to be delivered to the City at the Delivery Point, of the difference between the Average Previous Nomination (as defined below) of the Partnership and the quantity of Gas in Dth, if any, delivered by the Authority and the City, through PGW, at the Facility Delivery Point pursuant to the Local Gas Transportation Service on each such Day, (iii) the sum for all Days during such Agreement Year on which the Authority and the City, through PGW, partially or wholly failed for any reason (other than because the Partnership failed to accept delivery of Gas nominated by the Partnership and proffered by the Authority and the City, acting through PGW), including but not limited to an event of Force Majeure, to perform pursuant to this Contract and the Service Agreement, of the difference between the Average Previous Nomination of the Partnership and the quantity of Gas in Dth, if any, delivered by the Authority and the City, through PGW, at the Facility Delivery Point pursuant to the Local Gas Transportation Service on each such Day, and (iv) the sum for all Days during such Agreement Year on which the Authority and the City, through PGW, partially or wholly failed for any reason (other than because Trigen failed to accept delivery of Gas nominated by Trigen and proffered by the Authority and the City, acting through PGW), including but not limited to an event of Force Majeure, to perform pursuant to the Trigen Service Agreement and the Trigen Service Contract, of the difference between the Average Previous Nomination of Trigen and the quantity of Gas in Dth, if any, delivered by the Authority and the City, through

PGW, to Trigen pursuant to the Trigen Service Agreement and the Trigen Service Contract on each such day.

For purposes of the foregoing definition of Deficiency Payment, the term "Average Previous Nomination" shall mean (i) with respect to the Partnership, the average daily quantity of Gas in Dth nominated by the Partnership for Local Gas Transportation Service pursuant to this Contract during the thirty (30) Days immediately preceding the applicable Force Majeure event or the failure of the Authority and the City, through PGW, to perform, as the case may be, or (ii) with respect to Trigen, the average daily quantity of Gas in Dth nominated by Trigen pursuant to the Trigen Service Contract during the thirty (30) Days immediately preceding the applicable Force Majeure event or failure of the Authority and the City, through PGW, to perform, as the case may be; provided, however, that under each of clauses (i) and (ii) above, if the relevant Force Majeure event or failure by the Authority and the City, through PGW, to perform continues for more than thirty (30) Days, the Average Previous Nomination shall mean the sum of (1) the average daily quantity in Dth nominated and taken by such party and (2) any nomination for service by such party improperly denied by the City or the Authority during the three hundred sixty-five (365) Days preceding the Force Majeure event or failure of the Authority and the City, through PGW, to perform.

1.27 "Dekatherm" or "Dth" shall mean the quantity of heat energy which is equal to 1,000,000 Btu.

1.28 "Delivery Point" shall mean Gate Station 060, with a secondary Delivery Point of Gate Station 034 for purposes of the ARS Quantity or, subject to the City's approval in its sole discretion, other PGW area gate stations on the TETCO system if such other PGW gate stations are requested by the Partnership.

1.29 "Eagle Gate Station" shall mean the interchange point on the main TETCO transmission line located near Eagle, Pennsylvania, where the main TETCO transmission line joins the TETCO Philadelphia Lateral.

1.30 "Effective Date" means the date in which all of the conditions precedent set forth in Article 2 hereof shall have been satisfied or waived.

1.31 "Excess Capacity" shall mean gas transportation capacity requested by the Partnership in excess of 50,000 Dekatherms per Day.

1.32 "Facilities Demand Charge" shall mean a monthly charge equal to Seventy-one Thousand Five Hundred Eighty-three Dollars ($71,583).

1.33 "Facility" shall mean the Partnership's cogeneration plant and all appurtenant structures and equipment, including the electrical and steam interconnection facilities and real property interests leased by the Partnership located at 2600 Christian Street, Philadelphia, Pennsylvania, excluding Trigen's boiler number 26, as such plant and appurtenant structures and equipment may be modified or enlarged from time to time.

1.34 "Facility Delivery Point" shall mean the metering station at the Facility, as described more fully on Exhibit D.

1.35 "Facility Operator" shall mean Philadelphia United Power Corporation or any successor operator of the Facility.

1.36 "FERC" shall mean the Federal Energy Regulatory Commission or successor agency.

1.37 "FT-1 Agreements" shall mean the Tier 1 FT-1 Agreement and the Tier 2 FT-1 Agreement.

1.38 "Gas" shall mean natural gas of a quality acceptable for delivery into the system of TETCO.

1.39 "Gate Station 030" shall mean the gate station, referred to by TETCO as Point of Delivery No. 70030, located at the interconnection of PGW's distribution system and the terminus of the TETCO Philadelphia Lateral in Philadelphia County, Pennsylvania.

1.40 "Gate Station 060" shall mean the new gate station, referred to by TETCO as Point of Delivery No. 73060, to be installed pursuant to the TETCO Precedent Agreement near the interconnection of the PGW Liquids Pipeline and the TETCO Philadelphia Lateral.

1.41 "Gate Station 034" shall mean the gate station, referred to by TETCO as Point of Delivery No. 70034, located at an interconnection of PGW's distribution system and TETCO's pipeline system in Montgomery County, Pennsylvania.

1.42 "Governmental Authority" shall mean any federal, state, or local governmental or quasi-governmental entity exercising jurisdiction over rates, services, operations and/or facilities that are the subject of this Contract, including without limitation the City Council of the City, the Philadelphia Gas Commission, and the Board of Directors of the Authority.

1.43 "Guaranteed Recall Period" shall mean the months of January, February and December in any Agreement Year.

1.44 "Heating Season" shall mean the period from September 1 of a given Agreement Year to May 31 of the immediately succeeding Agreement Year.

1.45 "Incremental Cost" shall have the meaning set forth in Section 3.2(e)(iii).

1.46 "In Service Date" shall mean the date that the Authority certifies to the Partnership in writing pursuant to this Contract, based on the certification of the City under the Service Agreement and the Construction Contractor(s) under the Construction Contracts, that the PGW Liquids Pipeline and the PGW Pipeline Extension are capable of delivering 50,000 Dekatherms per Day on a continuous firm basis from Gate Station 060 to the Facility Delivery Point.

1.47 "Local Gas Transportation Service" shall mean the local Gas transportation service provided by the Authority, in cooperation with the City, through PGW, pursuant to Tariff Rate GTS, as modified by this Contract and the Service Agreement, from Gate Station 060 to the Facility Delivery Point.

1.48 "Mcf" shall mean one thousand cubic feet of Gas.

1.49 "Mlbs" shall mean 1,000 pounds of steam.

1.50 "Maximum FERC Allowable TETCO Firm Reservation Charge" shall mean the maximum demand charge authorized by FERC plus associated pipeline surcharges for firm transportation on the TETCO gas transmission line for deliveries to Gate Station 060 pursuant to the FT-1 Agreements, as such charge may be modified from time to time.

1.51 "Maximum ARS Quantity" shall mean 21,000 Dth of Gas; provided, however, that with respect to each

Day during an Off-Peak Period, it shall mean a quantity in Dth equal to the amount by which 21,000 Dth exceeds the Capacity Release Quantity in effect on such Day.

1.52 "MW" or "Megawatt" shall mean 1,000 kilowatts of electricity.

1.53 "Minimum Annual Quantity" shall mean, with respect to an Agreement Year, the following applicable quantity:

Agreement Year	Minimum Annual Quantity (in million Dth)
1997	6.0
1998-2000	11.0
2001	8.8
2002-2016	8.6
2017-2022	6.7

provided, however, that if the Date of Commercial Operation occurs after June 1, 1997, (i) the Minimum Annual Quantity for the 1997 Agreement Year shall be reduced by an amount (the "Adjustment Amount") equal to 28,036 Dth per Day multiplied by the number of days by which the Date of Commercial Operation follows June 1, 1997 and (ii) the Minimum Annual Quantity for the 2001 Agreement Year shall be increased by the Adjustment Amount.

1.54 "Net Margin" shall mean, with respect to the margin collected by the City, through PGW, during a given time period from a new customer served by use of the PGW Pipeline Extension, (i) with respect to sales service to such new customer, an amount equal to the total quantity of Gas in Dth sold to such new customer during such period multiplied by the amount by which the gross amount collected from such customer per Dth during such period exceeds the PGW WACOG during such period less ten percent (10%) of the remainder, or (ii) with respect to transportation service to such new customer, the gross amount collected from such customer during such period less ten percent (10%).

1.55 "Off-Peak Period" or "Off-Peak" shall mean the five-month period from May 1 through September 30 in any Agreement Year.

1.56 "On-Peak Period" or "On-Peak" shall mean the four-month period from March 1 through April 30 and from October 1 through November 30 in any Agreement Year.

1.57 "Operating Service Charge" shall mean a payment by the Partnership to the Authority, pursuant to Section 4.1(b) of this Contract, and assigned by the Authority to the City, to cover operation and maintenance costs of the PGW Liquids Pipeline and the PGW Pipeline Extension, which payment shall be in an amount equal to $100,000 per Agreement Year; provided, however, on January 1 of the second Agreement Year and each Agreement Year thereafter, the amount of the charge shall be adjusted by the percentage change occurring in the CPI during the most recent twelve-month period for which such data has been published.

1.58 "Partnership" shall have the meaning set forth in the Whereas clauses to this Contract.

1.59 "PECO" shall mean PECO Energy Company and any successor thereto.

1.60 "PFMC" shall have the meaning set forth in the Whereas clauses to this Contract.

1.61 "PGW FT-1 Agreement" shall mean the Service Contract for Rate Schedule FT-1 (Contract No. 800233) between PGW and TETCO dated June 1, 1993, as amended, modified, or superceded.

1.62 "PGW Liquids Pipeline" shall mean that certain 24-inch diameter liquid fuels pipeline owned by the City and extending from Gate Station 060 intersection with the TETCO Philadelphia Lateral to PGW's Passyunk Avenue Station.

1.63 "PGW Pipeline Extension" shall mean the new 16-inch pipeline facilities proposed (i) to be constructed, owned, and operated by the City, through PGW, as described in Section 3.2 of this Contract, and (ii) to extend from an interconnection with the PGW Liquids Pipeline at PGW's Passyunk Avenue Station to the Facility Delivery Point, as set forth on Exhibit D.

1.64 "PGW WACOG" shall mean, with respect to each month, the weighted average cost of Gas delivered at the City Gate for PGW's system supply during such month. Exhibit E sets forth an example calculation of the PGW WACOG.

1.65 "Philadelphia Gas Commission" means the Gas Commission established by the City with jurisdiction over PGW.

1.66 "Released Capacity" shall mean that portion, up to a maximum of 36,000 Dth per Day, of the capacity rights released by the City and held by the Authority on the TETCO system pursuant to the FT-1 Agreements which will be released to the Partnership pursuant to the provisions of Article 5 of this Contract and the Service Agreement. The receipt points associated with the Released Capacity are described in Exhibit B.

1.67 "Revenues of PGW" shall mean all rents, rates and charges imposed or charged by the City, acting through PGW, upon the owners or occupants of properties connected to, and upon all users of, gas distributed or transported by PGW ("Project Revenues") and all other revenues derived therefrom and all accounts, contract rights, and general intangibles representing Project Revenues.

1.68 "Sales Service" shall mean the interruptible burner-tip Gas delivered at the Facility Delivery Point by the Authority pursuant to Section 3.3 of this Contract and by the City, acting though PGW, pursuant to the Service Agreement.

1.69 "Senior Debt" shall mean the Construction and Term Loan obtained by the Partnership from the Senior Lender.

1.70 "Senior Lender" shall mean the agent bank, as the Partnership may choose, providing the Senior Debt, and any successor thereto.

1.71 "Service Agreement" shall have the meaning set forth in the last WHEREAS clause.

1.72 "Shrinkage" shall mean any Gas retained by the City for fuel or line loss, as provided for in PGW's tariffs.

1.73 "Start Up Service" shall mean the Sales Service provided to the Facility by the City, through PGW, pursuant to Section 3.4 of the Service Agreement and by the Authority pursuant to this Contract solely for initial testing of the Facility from the Date of Initial Service to the Date of Commercial Operation.

1.74 "Tariff Rate GTS" shall mean Rate GTS of PGW Gas Service Tariff Number 10 issued on June 15, 1995 for firm gas transportation service, a copy of which is attached as Exhibit A. To the extent that Tariff Rate GTS is modified following the date of this Contract, the provisions of such tariff in effect as of the date of this Contract, as reflected in Exhibit A, and as modified by this Contract and the Service Agreement shall continue to govern this Contract.

1.75 "TETCO" shall have the meaning set forth in the WHEREAS clauses to this Contract.

1.76 "TETCO Joint Stipulation and Agreement" shall mean that certain settlement agreement among PGW, the Partnership, TETCO, Trigen and Sun Company, Inc. pursuant to which such parties agree to accomplish, inter alia, the matter described in Section 3.2(d) and other matters necessary for the performance of this Contract and the Service Agreement.

1.77 "TETCO Philadelphia Lateral" shall mean that portion of the TETCO pipeline system extending from an intersection with TETCO's main transmission line at the Eagle Gate Station to Gate Station 030.

1.78 "TETCO Precedent Agreement" shall mean the Precedent Agreement for Firm Transportation of Natural Gas (Additional Capacity) dated October 10, 1994 by and between TETCO and Trigen, as amended, supplemented, or modified, including the modification pursuant to the TETCO Joint Stipulation and Agreement.

1.79 "TETCO Receipt Points" shall have the meaning set forth on Exhibit B.

1.80 "Tier 1 FT-1 Agreement" shall mean the Service Agreement for Rate Schedule FT-1 between the Authority and TETCO resulting from PGW's release of 18,000 Dth/day of PGW's rights to firm transportation service pursuant to the Service Agreement for Rate Schedule FT-1 (Contract No. 800233) dated June 1, 1993, and all continuations, extensions, modifications, or amendments thereof. The primary term of the Tier 1 FT-1 Agreement shall end on October 31, 2003.

1.81 "Tier 2 FT-1 Agreement" shall mean the Service Agreement for Rate Schedule FT-1 between the Authority and TETCO resulting from PGW's release of 18,000 Dth/day of PGW's rights to firm transportation service pursuant to the Service Agreement for Rate Schedule FT-1 (Contract No. 800233) dated June 1, 1993, and all continuations, extensions, modifications or amendments thereof. The primary term of the Tier 2 FT-1 Agreement shall end on October 31, 2007.

1.82 "Transport Charge" shall mean an amount equal to eight cents ($0.08) per Dekatherm which amount, subject to Section 4.1(e), shall be inclusive of all surcharges and shall not be subject to escalation during the term of this Contract.

1.83 "Trigen" shall have the meaning set forth in the WHEREAS clauses to this Contract.

1.84 "Trigen Service Agreement" shall mean that certain service agreement, dated as of even date herewith, between the City and the Authority, by which the City, through PGW, will provide to the Authority for purposes of the Authority providing to Trigen pursuant to the Trigen Service Contract: (a) Sales Service and Local Gas Transportation Service (Local Gas Transportation Service to Partnership and to Trigen not to exceed 50,000 Dth per Day in the aggregate, unless otherwise agreed by the City through PGW, in its sole discretion) on terms no less favorable than those set forth in Section 4.2 of this Contract, except that for Sales Service, the delivery charge shall be sixty-eight cents ($0.68) per Dekatherm rather than sixty-one cents ($0.61), and (b) the ability to utilize Alternative Receipt Service rights identical to those granted the Partnership in Section 3.5 of this Contract and the Service Agreement on any Day after the Date of Commercial Operation to the extent the Partnership is not utilizing such Alternative Receipt Service rights.

1.85 "Trigen Service Contract" shall mean that certain gas service contract, dated as of even date herewith, between the Authority and Trigen, by which the Authority will, in cooperation with the City pursuant to the Trigen Service Agreement, provide Trigen with (a) Sales Service and Local Gas Transportation Service (Local Gas Transportation Service to Partnership and to Trigen not to exceed 50,000 Dth per Day in the aggregate, unless otherwise agreed by the City, through PGW, in its sole discretion) on terms no less favorable than those set forth in Section 4.2 of this Contract, except that for Sales Service, the delivery charge shall be sixty-eight cents ($0.68) per Dekatherm rather than sixty-one cents ($0.61), and (b) the ability to utilize Alternative Receipt Service rights identical to those granted the Partnership in Section 3.5 of this Contract and the Service Agreement on any Day after the Date of Commercial Operation to the extent the Partnership is not utilizing such Alternative Receipt Service rights.

1.86 "Winter Degree Days" shall mean, with respect to any Heating Season, the number of heating degree days reported by the National Weather Service for the Philadelphia metropolitan area during such Heating Season, as recorded at the Philadelphia International Airport.

ARTICLE II
CONDITIONS

2.1 Conditions Precedent.

(a) Except with respect to the obligations set forth in Section 5.1(a), (b), (e), and (i) the obligations and liabilities of the Authority and the Partnership under this Contract shall be conditioned upon satisfaction or waiver by the parties of each of the following conditions precedent prior to the Effective Date:

(i) the closing on the Senior Debt by the Partnership, which shall include funding and disbursement of the first draw in the amount of at least Ten Million Dollars ($10,000,000)(the "Date of Financial Closing");

(ii) the execution and delivery of this Contract by each of the Authority and the Partnership;

(iii) the execution and delivery of the Service Agreement by each of the City and the Authority;

(iv) the receipt of all required Governmental Authority approvals for the actions required of the City, Authority, and Trigen under the Trigen Service Agreement and the Trigen Service Contract;

(v) the execution and delivery of the Trigen Service Agreement by each of the City and the Authority;

(vi) the execution and delivery of the Trigen Service Contract by each of the Authority and Trigen;

(vii) the execution by all of the parties and submission to the FERC by TETCO of the TETCO Joint Stipulation and Agreement among PGW, Partnership, Trigen, TETCO and Sun Company, Inc.;

(viii) the satisfaction or waiver of the conditions precedent set forth in Article 2 of the Service Agreement, provided that the Authority shall have waived no condition precedent without the prior approval of the City;

(ix) the receipt of all required Governmental Authority approvals for the actions required of the City, Authority, and Partnership under this Contract and the Service Agreement;

(x) the representations and warranties of the Authority and the Partnership set forth in Article 15 shall be true and correct in all material respects as of the Effective Date as if made on and as of such date; and

(xi) no change in, addition to, or deletion of, any provision of any applicable law shall have occurred and no bill, resolution or ordinance shall have been enacted in the federal, state or local legislatures, excluding the City Council, the Gas Commission, and the Board of Directors of the Authority, after the date of execution of this Contract and the Service Agreement and on or before the Effective Date, that would make the execution, delivery or performance by the Authority or the Partnership of this Contract, the Service Agreement or any of the contracts contemplated hereby to which either is a party, a violation of any law, statute or regulation, or materially increase the cost to either party of performing its obligations under this Contract.

(b) If the Effective Date shall not have occurred by March 1, 1996, then on any date thereafter, so long as any of the foregoing conditions precedent has not been waived or satisfied, either party may give twenty (20) days prior notice of termination. If the unsatisfied conditions precedent are not waived or satisfied by the end of such twenty (20) day notice period, this Contract and the Service Agreement shall automatically terminate, and neither party shall thereafter have any further liability or obligations to the other.

2.2 Mutual Cooperation. The parties agree to act with due diligence and to cooperate with each other to cause the satisfaction of the conditions precedent referenced above in this Article 2 that are within each party's respective control. The parties also acknowledge and agree that the implementation of this Contract is dependent upon the continued effectiveness of the related Service Agreement and that a termination of that contract shall also cause a termination of this Contract.

ARTICLE III
SERVICES AND FACILITIES

3.1 (a) Local Gas Transportation Service. Subject to the terms and conditions of this Contract and the Service Agreement, on and after the Date of Commercial Operation, the Authority, in cooperation with the City, acting through PGW, shall provide firm, non-interruptible Local Gas Transportation Service to the Facility for up to 50,000 Dekatherms per Day.

(b) Interim Local Gas Transportation Service. If the Authority is unable to provide Start Up Service or elects not to provide such service on any day after the Date of Initial Service, the Authority will offer firm, non-interruptible transportation services to the

Partnership on the same terms and conditions as Local Gas Transportation Service, except that the only charges the Partnership shall pay for such service are the Transport Charge and the Customer Charge.

3.2 Pipeline Improvements and Construction.

(a) The Authority shall cause the City to perform and be responsible for the timely completion of the Construction Project; provided, however, the City's liability for failure to timely complete the Construction Project shall be limited as expressly provided in this Contract.

(b) Because of the special skills and expertise required to implement a project for engineering and installation of a major high pressure Gas line, the Authority shall retain the City, acting through PGW, to be the general contractor for the Construction Project, to provide engineering, design and general supervision and inspection services, to acquire by appropriate public bidding in the name of the Authority the necessary pipe, valves and other materials and supplies, and to contract by appropriate public bidding with one or more responsible contractors to install the PGW Pipeline Extension, all as described below.

The Authority, through the City, acting through PGW and such other contractors, as may be necessary, shall reactivate and convert to Gas capacity the PGW Liquids Pipeline and connect the PGW Liquids Pipeline to the TETCO Philadelphia Lateral in order to provide Local Gas Transportation Service from the new TETCO Gate Station 060 to PGW's Passyunk Avenue Station. In reactivating and converting the PGW Liquids Pipeline, the Authority acting through the City through PGW agrees to comply with all applicable laws, including all applicable bidding laws.

(c) The Authority will cause the City, through PGW, to bear all costs related to TETCO's construction of Gate Station 060 and all costs of the connection of the PGW Liquids Pipeline to the TETCO Philadelphia Lateral to enable the installation of Gate Station 060. It is expected that TETCO, pursuant to the modified TETCO Precedent Agreement, will construct Gate Station 060 at the intersection of the PGW Liquids Pipeline and the TETCO Philadelphia Lateral.

(d) The Authority will cause the City, through PGW, pursuant to the TETCO Joint Stipulation and Agreement to modify the PGW FT-1 Agreement to the extent necessary to perform the City's obligations under the Service Agreement and to perform the Authority's obligations under the Service Contract, including adding new Gate Station 060 as a delivery point under the FT-1 Agreement.

(e) (i) The Authority acting through the City, acting through PGW, shall construct the PGW Liquids Pipeline. The Authority, through the City, acting through PGW and other contractors, shall construct and install the PGW Pipeline Extension, in order to enable the City, through PGW, to extend Local Gas Transportation Service from PGW's Passyunk Avenue Station to the Facility Delivery Point. In constructing the PGW Pipeline Extension, the Authority acting through the City through PGW agrees to comply with all applicable laws, including all applicable bidding laws. The Authority acting through the City through PGW will select, pursuant to and subject to applicable laws, responsible third-party contractors to construct the Construction Project (the "Construction Contractor(s)"). From each third party contractor other than PGW, the Authority covenants to require liquidated damages for delayed completion beyond October 1, 1996 (subject to Force Majeure), of $5,000 per day ("Contractor Damages"), and to require a performance bond with dual obligee rider guaranteeing completion of the Construction Contract work payable to the City and the Authority in an amount not less than the Construction Contract price.

(ii) The Authority shall cause the Service Agreement to state that if the Construction Project is not completed and the facilities placed in service by October 1, 1996, then the City, through PGW, agrees to use its best efforts to assist Trigen in obtaining approval for delay in achieving its October 1, 1996, compliance deadline (as set forth in its Reasonably Available Control Technology plan approved by the Philadelphia Air Management Services) ("City Cooperation"). If Trigen nevertheless incurs a fine as a result of its failure to meet its October 1, 1996 compliance deadline as a result of a failure to supply gas to Trigen by October 1, 1996, then any Contractor Damages (up to the amount of the fine) shall be applied to payment of such fine, the remainder of which fine shall be paid equally by the Partnership and the City, acting through PGW (the City's obligation, the "City RACT Payment"); provided, however, that the Partnership's obligation to pay such fine shall not exceed the lesser of (i) Three Hundred Thousand Dollars ($300,000), or (ii) an amount equal to the sum of the City RACT Payment for the first ninety (90) days in which fines are incurred and after the Partnership has met its obligation, the City shall be solely responsible for payment of 50% of the fine. The Partnership agrees that after (x) the applicable Contractor Damages under the Construction Contract(s) are applied to payment of such fine and (y) the City has met the City Cooperation and City RACT Payment obligations, if applicable, then neither the Authority nor the City shall have any further liability to the Partnership or any other person or entity for delayed completion of the PGW Pipeline Extension. The Authority shall permit the Partnership, at the Partnership's own cost and expense, to monitor construction of the Construction Project. The

Partnership shall indemnify and hold harmless the Authority and the City from and against any cost, expense, liability or damage arising in whole or in part from any such monitoring activities.

(iii) If the Date of Financial Closing has not occurred by May 1, 1996, the Authority may notify the Partnership in writing of the amount by which the projected cost of completing both the Construction Project and the Alternate Trigen Project exceeds the projected cost of completing the Construction Project (the "Incremental Cost"). If the Partnership does not provide, within thirty (30) days of the Authority's notice, written assurance reasonably acceptable to the Authority of the Partnership's agreement to and its ability to pay the Incremental Cost, then the Authority may terminate this Contract.

(f) The design of the PGW Liquids Pipeline and the PGW Pipeline Extension shall be determined by the City. The Authority will cause the City, through PGW, to prepare all detailed plans and drawings required by sound engineering practices to construct the PGW Liquids Pipeline and the PGW Pipeline Extension. The Authority shall have the right to review and approve the plans and drawings at each phase of design and construction. The Authority covenants to the Partnership that the Authority will cause the detailed plans and drawings to be in accordance with the following specifications for the PGW Liquids Pipeline and the PGW Pipeline Extension from Gate Station 060 to the Facility Delivery Point: a maximum hourly throughput of 3,450 Dth with a maximum design pressure drop equal to 50 p.s.i., whenever the inlet pressure at Gate Station 060 equals or exceeds 250 p.s.i., and a maximum delivery pressure at the Facility Delivery Point of 656 p.s.i. When the Date of Financial Closing has occurred and the Letter of Credit described in Section 4.1(h) has been delivered to the City, the Authority shall forward a copy of the then existing plans and drawings for the PGW Pipeline Extension to the Partnership; _provided_, _however_, if such plans and drawings do not then exist, the Authority shall forward a copy of such plans and drawings to the Partnership when the Authority receives such plans and drawings from the City. The Authority shall also forward to the Partnership any material revisions to the plans and drawings on a timely basis.

(g) The Authority will cause the City to acquire and maintain all necessary rights of way, easements and permits required for the reactivation, construction and continued operation of the PGW Liquids Pipeline and the PGW Pipeline Extension, and the Authority will cause the City to employ its best efforts to ensure that the In Service Date occurs by no later than October 1, 1996.

(h) The Authority will cause the City, through PGW, to pay and, subject to the Partnership's payment of the Facilities Demand Charge pursuant to Section 4.1(d) and additional payments pursuant to Section 4.1(f), bear all costs of constructing the PGW Pipeline Extension and of converting the PGW Liquids Pipeline to Gas and connecting it to the TETCO Philadelphia Lateral.

(i) The Authority, through the City, acting through PGW, as general contractor, shall be responsible for oversight of all aspects of the construction, equipping, testing and start-up of the PGW Liquids Pipeline and the PGW Pipeline Extension.

(j) Before commencement of construction of the PGW Liquids Pipeline and PGW Pipeline Extension or before execution of a contract or commencement of work by each particular contractor, subcontractor or any design professional, the Authority shall file or cause to be filed in the Office of the Prothonotary waivers of mechanics' liens, between the Authority and any and all contractors, in form satisfactory to the City, and shall, in addition, include effective waivers of mechanics' liens in all contracts with its contractors and materialmen, and shall require that such waivers are included in all contracts between any contractors and their subcontractors and require in any such contracts the execution by each subcontractor and materialman of a release of mechanics' liens, in recordable form, upon final payment.

The Authority, shall (i) discharge of record any valid liens of any sort that attach to or arise out of the activities of the Authority under the Service Agreement, and (ii) indemnify the City for any injury or expense, including reasonable fees and expenses of attorneys, incurred by the City due to the filing of any such lien or the failure to have such lien discharged.

(k) The Authority will cause the City, through PGW, to provide for all security at the pipeline construction sites from the Construction Project commencement date and for the remainder of the term of this Contract.

(l) The Authority shall at all times permit access to the PGW Liquids Pipeline and the PGW Pipeline Extension by the City and its authorized agents, licensees or invitees.

(m) The Authority will cause the Service Agreement to state that the City will deliver to the Authority monthly progress reports as well as prompt reports of any material problem experienced in the Construction Project. Each progress report shall contain the status of the following items: engineering and design completion, procurement of materials, linear feet of pipe installed, linear feet of backfill, testing start up, the existence of workmanship problems, and delays. Each progress report shall include all contractors' reports received during the previous month. The City shall deliver the first progress report within one month of the Date of Financial Closing and shall continue to deliver the reports until the date the Construction Project is placed in service. In addition to the reports, the City shall meet with the Authority and its authorized agents, licensees or invitees following the issuance of each progress report to discuss the progress of the construction and within five (5) business Days of any problem report. The Authority shall deliver copies of such progress and problem reports to the Partnership and notice of any meetings. The Partnership may send its representatives to such meetings.

(n) The City, through PGW, shall own and the Authority will cause the City, through PGW, to maintain the PGW Liquids Pipeline and PGW Pipeline Extension, and to repair and protect against deterioration to meet all obligations under this Contract. The Authority will cause the City, through PGW, to inspect the PGW Liquids Pipeline and PGW Pipeline Extension and otherwise oversee the operations of the PGW Liquids Pipeline and PGW Pipeline Extension.

3.3 Sales Service. The Authority covenants that, in addition to providing the Local Gas Transportation Service described in Section 3.1, the Authority will cause the City, through PGW, to make available to the Facility, on a "best efforts" basis solely, for use in the Facility, Sales Service beginning on the Date of Commercial Operation. The Partnership acknowledges and agrees that from time to time on any given day the Partnership's request for Sales Service may be denied or limited by the City in its sole judgment for economic or operational reasons. For purposes of calculating Sales Service and transportation quantities, the parties agree that the first Gas recorded through the meters at the Facility Delivery Point on each Day for which Sales Service Gas has been nominated shall be considered Sales Service Gas.

3.4 Start Up Service. The Authority covenants, that, at the request of the Partnership, the Authority will cause the City, through PGW, to provide, on a "best-efforts" basis, Start Up Service to the Facility beginning on the Date of Initial Service and continuing until the Date of Commercial Operation in an amount not to exceed 36,000 Dekatherms per Day. The Partnership acknowledges and agrees that from time to time on any given day the Partnership's request for Start Up Service may be denied or limited by the City in its sole judgment for economic or operational reasons. For purposes of calculating Start Up Service and transportation quantities, the parties agree that the first Gas recorded through the meters at the Facility Delivery Point for which Start Up Service has been nominated on each Day shall be considered Start Up Service Gas.

3.5 Alternative Receipt Service. The Authority covenants that, as described in Section 5.8(d), the Authority will cause the City, through PGW, on each Day on or after the Date of Commercial Operation during the term of this Contract (i) to accept at PGW's facilities at the outlet of Gate Station 034 delivery of a quantity in Dth of Gas nominated by the Partnership and actually delivered by TETCO (the "ARS Quantity") for such Day up to the Maximum ARS Quantity for such Day, and (ii) in exchange for such Gas, to deliver at PGW's facilities at the outlet of Gate Station 060 on such Day a quantity of Gas in Dth equal to the ARS Quantity for such Day; provided however, that at its election as described in Section 5.8(d), the Authority shall be excused from its Alternative Receipt Service obligations under this Section 3.5 on any Day, up to a maximum of fifteen (15) Days per Agreement Year, on which the forecasted mean temperature for the greater Philadelphia metropolitan area, is forecasted by the National Weather Service to be twenty-five degrees Fahrenheit (25°F)or less (the "Alternative Receipt Service"). Except to the extent the Partnership is allowed under Section 13.1 of this Contract to assign this entire Contract, the Alternative Receipt Service rights granted to the Authority pursuant to Section 3.5 of the Service Agreement and by the Authority to the Partnership pursuant to this Contract shall not be assignable by the Authority or the Partnership, and any Gas delivered by the City, through PGW, to the Facility pursuant to this Section 3.5 shall be used only in the Facility except as permitted in the Trigen Service Contract. The Authority shall cause the Trigen Service Contract to state that Trigen's rights to Alternative Receipt Service shall be subordinate to the Partnership's and that Trigen must nominate its Alternative Receipt Service through the Partnership.

3.6 Transportation; Maximum Quantity. The Authority covenants that, subject to Force Majeure, it will cause Local Gas Transportation Service to be provided by the City, through PGW, on a firm, non-interruptible basis up to a maximum quantity of 50,000 Dekatherms per Day, for Gas volumes received at PGW's City Gate. The Partnership acknowledges that such volume is the aggregate transportation volume under both the Service Contract and the Trigen Service Contract; provided, however, that the Authority shall cause the Trigen Service Contract to state that Trigen's rights to Local Gas Transportation Service are subordinate to the Partnership's and that Trigen must nominate Local Gas Transportation Service through the Partnership

3.7 Transportation; Interruptions. Except in the event of a nomination for Excess Capacity confirmed by the City, through PGW, pursuant to Section 5.8, Local Gas Transportation Services for Excess Capacity provided by the City, through PGW, at its sole discretion at the Partnership's request, shall be subject to interruption on such terms as the City, through PGW, determines necessary.

3.8 Minimum Take.

(a) The Authority covenants that if, with respect to any Agreement Year, the Annual Transportation Quantity for such Contract Year is less than the Minimum Annual Quantity for such Agreement Year, then the Authority will cause the City, through PGW, to, following the end of such Agreement Year, deliver to the Authority and to the Partnership a statement indicating the Annual Transportation Quantity for such Agreement Year and the Deficiency Payment, if any, due the City with respect to such Agreement Year.

(b) The Partnership shall pay the Authority the Deficiency Payment within thirty (30) days following the Partnership's receipt of the City's statement; provided, however, that for each increment of 100,000 Mlbs, up to a maximum of fifteen (15) increments, the Trigen Steam Sales in any Agreement Year fall below 4.2 million Mlbs, then the Partnership shall be entitled to a credit to be applied toward any Deficiency Payment otherwise due with respect to such Agreement Year, with such credit with respect to each such increment being equal to the Transport Charge multiplied by 125,000 Dth. If the Partnership disputes the City's calculation of the Deficiency Payment, it shall pay the undisputed amount and refer the matter to dispute resolution pursuant to Article 16 of this Contract. Trigen Steam Sales shall mean the total steam produced at the Facility or produced from boiler 26 or any other boiler converted to natural gas at Trigen's facility located at 2600 Christian Street, Philadelphia, Pennsylvania.

3.9 Operation and Maintenance Standards for PGW Gas Pipelines. The Authority covenants that the Authority will cause the City, through PGW, to operate and maintain the PGW Liquids Pipeline and the PGW Pipeline Extension consistent with all applicable regulations and requirements of any Governmental Authority, including but not limited to 49 C.F.R. Parts 192 through 199.

3.10 Restriction on Use of Gas. The Partnership covenants that all Gas delivered by the City, through PGW, to the Facility Delivery Point will be utilized only in the facilities and boilers of the Partnership or Trigen at 2600 Christian Street.

3.11 Restriction on Use of Capacity Release Volumes. Capacity release volumes rereleased or assigned to other parties by the Partnership may not be used to deliver Gas for use in any facility within the City of Philadelphia except the facilities and boilers of the Partnership or Trigen at 2600 Christian Street.

ARTICLE IV
RATES AND CHARGES

4.1 Charges for Local Gas Transportation Services. The Partnership shall pay the Authority the following charges for the Local Gas Transportation Services provided pursuant to Article 3.

(a) Commencing the month in which the Date of Initial Service occurs and continuing each month during the term of this Contract, the Partnership shall pay the Authority, pursuant to Article 7, a customer charge equal to $250 per month per meter.

(b) The Partnership shall pay the Authority, on or before January 15 of each Agreement Year, pursuant to Article 7, the Operating Service Charge payable with respect to such Agreement Year; provided, however, that the Operating Service Charge for the first Agreement Year shall be (i) pro rated by multiplying

$100,000 by a fraction, the numerator of which shall be equal to the number of days between the Date of Commercial Operation and the end of such Agreement Year and the denominator of which shall be equal to 365, and (ii) due and payable sixty (60) days following the Date of Commercial Operation.

(c) Commencing the month in which the Date of Initial Service occurs and continuing each month during the term of this Contract, the Partnership shall pay the Authority, pursuant to Article 7, the Transport Charge for all Gas delivered by the City, through PGW, to the Facility Delivery Point during the previous month, exclusive of quantities sold to the Partnership under the Sales Service and/or Start Up Service.

(d) Commencing the month following the month in which the Date of Commercial Operation occurs or such earlier date as may be elected by the Partnership pursuant to Section 4.1(h) of this Contract and continuing for a period of one hundred twenty (120) months, the Partnership shall pay the Authority, pursuant to Article 7, the Facilities Demand Charge. In the event the Date of Commercial Operation is delayed beyond June 1, 1997, for reasons beyond the reasonable control of the City, PGW or the Authority, the Partnership shall pay interest to the Authority within sixty (60) days following the earlier of the Date of Commercial Operation or the date the Facilities Demand Charge commences to be paid pursuant to Section 4.1(h) in the amount of Thirteen Hundred Dollars ($1,300.00) per Day from June 1, 1997 until the Date of Commercial Operation or such earlier date as may be elected by the Partnership pursuant to Section 4.1(h) of this Contract.

(e) The foregoing charges shall be in lieu of any and all other charges and surcharges imposed by Tariff Rate GTS for Local Gas Transportation Service, including any Shrinkage, fuel, system losses or unaccounted for Gas on PGW's system; provided, however, that the Authority may charge and collect, and the Partnership shall pay, any applicable imbalance penalties, emergency gas purchase costs, or charges for unauthorized use of Gas, and Fifty percent (50%) of any charges necessary to amortize costs of compliance with new regulatory requirements imposed on the PGW Liquids Pipeline or the PGW Pipeline Extension by state or federal regulatory bodies subsequent to the date of execution of this Contract (the "DOT Charge"); provided, however, the Partnership's liability for DOT Charges (i) shall not exceed Fifty (50%) percent of the aggregate amount of capital payment recovery payments received by it pursuant to Section 4.5; and (ii) shall cease upon the receipt by the Partnership of its last payment pursuant to Section 4.5.

(f) The Partnership will also make three payments of Five Hundred Thousand Dollars ($500,000) each to the Authority on the respective dates which are six (6) months, twelve (12) months and eighteen (18) months after the Date of Commercial Operation.

(g) In reference to imbalance charges, to the extent that volumes are out of balance prior to delivery to the Delivery Point, then TETCO's imbalance regulations will apply to the applicable parties. To the extent imbalances occur within PGW's distribution system, PGW's GTS imbalance resolution rules will apply, specifically modified to recognize a daily balancing requirement within a range of ± 10 percent, a monthly balancing obligation within a range of ± 5 percent, wherein for usage outside of such allowable ranges cash out payments by PGW will be at the rate designated by TETCO for its own cash out purchase at Market Zone 1 (M-1) and payments by Customer for usage in excess of the allowable overrun margin (±10% daily/±5% monthly) will be at the rates (under Tariff Rate GTS) for the applicable

Emergency Gas Service (Dth equivalent of $10/Mcf) or Unauthorized Usage (Dth equivalent of $20/Mcf) charges.

The parties acknowledge that PGW's GTS imbalance rules, which are incorporated into this Contract through Exhibit A, provide that: "Notice will be provided by Company's Gas Control Dispatcher, at the time of each individual Customer's daily nominations, as to the availability of retail gas backup in accordance with operating conditions and their contractual service obligations. On any day when retail backup is declared unavailable, all volumes used (including adjustment for line loss and unaccounted for gas) in excess of that delivered on such Customer's behalf that day, will be excluded from their daily and monthly balancing provisions. Such Gas will be billed for at the rate of $10 per Mcf if Emergency Gas was initially requested and approved or at the rate of $20 per Mcf if Unauthorized, as specified in the Conditions of Use provisions 6 and 7, respectively."

(h) To provide security for payment of the Facilities Demand Charge and the amounts payable under Section 4.1(f), on the Date of Financial Closing, the Partnership shall deliver to the City, a direct-draw letter or letters of credit in form and substance acceptable to the City in its sole discretion, on Chase Manhattan Bank, N.A., Chemical Bank, N.A. or another bank acceptable to the City in its sole discretion, in the aggregate amount of Three Million Dollars ($3,000,000) (the "Letter of Credit").

If (i) the Date of Commercial Operation has not occurred by December 31, 1997 (whether or not because of Force Majeure) or (ii) the Credit and Reimbursement Agreement between the Partnership and the Senior Lender has not been executed or is terminated before December 31, 1997, then the City may draw the full amount of the Letter of Credit as a payment on account of the Aggregate

Facilities Demand Charge and the amount of such payment shall be credited against the Facilities Demand Charges otherwise payable, in inverse order of payment dates; provided, however, the City's right to draw on the Letter of Credit may be deferred at the Partnership's option from month to month for an aggregate of six (6) months (until June 30, 1998) if the Letter of Credit is maintained in full force and effect and on the first of each month the Partnership pays the monthly Facilities Demand Charge.

If the Date of Commercial Operation occurs without the City drawing on the Letter of Credit, the face amount of the Letter of Credit may be reduced to One Million Dollars ($1,000,000) in a manner satisfactory to the City. Upon default in the timely payment of any monthly installment of the Facilities Demand Charge, or the amounts payable under Section 4.1(f), (after the City gives written notice to the Partnership of the ten (10) Day cure period and the cure period has expired) the City may draw on the Letter of Credit for the amount due. The Letter of Credit shall be restored to its full face amount within fifteen (15) business Days of any draw upon it. In addition to any other rights and remedies available in the event of a termination of the Service Contract for any reason other than a breach of the Authority, the City may draw on the Letter of Credit for the entire unpaid balance of the Aggregate Facilities Demand Charge and any amounts described in Section 4.1(f) not already paid to the City. Notwithstanding the foregoing, the City may nonetheless draw on the Letter of Credit for the entire unpaid balance of the Aggregate Facilities Demand Charge and any amounts described in Section 4.1(f) not already paid to the City if the Partnership shall have, prior to the Authority's breach, committed any act or omission, which, but for the passage of time or the giving of notice by the Authority, or both, would constitute a default hereunder that would permit the Authority to terminate the Contract. In the event of a termination of this Contract for any reason other than a breach of the Authority, the entire balance of the sum of the unpaid Aggregate Facilities Demand Charge and any unpaid amounts described in section 4.1(f) less the amount of the Letter of Credit, shall become immediately due and payable and without restriction on, or waiver of, any and all rights and remedies the Authority may have under this Agreement. In the event of a termination of this Contract due to a breach by the Authority, the Authority may, upon the resolution of any claims the Partnership may have against the Authority for damages, draw upon the Letter of Credit for an amount, if any, equal to the difference between the sum of the unpaid Aggregate Facilities Demand Charge and any unpaid amounts described in Section 4.1(f) less the amount of damages awarded to the Partnership for the Authority's breach.

The Letter of Credit also may be drawn upon at any time during the thirty (30) days preceding its maturity date unless it is extended or replaced.

One hundred thirty (130) days after receipt of payment in full of the Aggregate Facilities Demand Charge and all sums due under Section 4.1(f), without the Partnership being subject to bankruptcy or insolvency, the City shall deliver the Letter of Credit to or upon the instructions of the Partnership.

4.2 <u>Charges for Start Up Service and Sales Service</u>. Commencing on the Date of Initial Service and continuing for the term of this Contract, the Partnership shall pay the Authority for Start Up Service and Sales Service an amount per Dekatherm equal to the lesser of (i) the PGW WACOG, plus a delivery charge of sixty-one cents ($0.61) per Dekatherm, (ii) the lower of the LBS-XL or Cogeneration Gas Tariff Rate, or (iii) the lowest applicable rate paid by a comparable customer. A comparable customer is a PGW customer who purchases in excess of 750,000 Dth of Gas in the applicable calendar year on an interruptible basis.

The Partnership shall be billed and shall pay monthly the lower of the rates described in Section 4.2.(i) and (ii). At the end of each calendar year, the Authority shall determine the customers who were comparable and the lowest rate paid by a comparable customer in each month of that calendar year. If the Partnership is entitled to a lower rate than the rate it actually paid in any month, then the Authority shall cause the City to credit the Partnership for the excess charges within sixty days after the end of the calendar year. No interest shall accrue on the credit. The credit shall be applied against all amounts owed by the Partnership under this Contract.

The Authority covenants that, upon request by the Partnership, the Authority shall cause the City, through PGW, to notify the Partnership prior to the beginning of each month of the City's best estimate, based on all information available to PGW at such time, of the PGW WACOG for such month. The parties acknowledge that, as of the date of this Contract, the City determines the PGW WACOG only in connection with its Cogeneration Gas Tariff and that, in the event such Cogeneration Gas Tariff Rate or calculation of the PGW WACOG is ever discontinued, the Authority shall cause the City, in order to determine the price of Sales Service under this Contract and the Service Agreement, to thereafter calculate the PGW WACOG in the same manner as it is calculated by the City as of the date of this Contract.

4.3 Charges for Alternative Receipt Services. Commencing the month in which the Date of Initial Service occurs, in consideration for the Alternative Receipt Services set out in Section 3.5, the Partnership shall pay the Authority the sum of Four Thousand Five Hundred

Dollars ($4,500) per month for each month during the term of this Contract. This charge shall not be subject to escalation.

4.4 Service Agreement Rates and Charges. The Partnership, accepts and agrees to pay all the rates and charges the Authority is required to pay to the City pursuant to Article 4 of the Service Agreement for the gas transportation and all other services provided to the Partnership and/or the Facility by the City, through PGW. The Authority shall execute a separate instrument by which the Authority assigns to the City, on PGW's behalf, all of the Authority's right, title and interest in the payments to be received by the Authority from Partnership under this Contract. Upon execution of such assignment, the Partnership shall, under the terms and conditions of this Contract, make all payments due from the Partnership to the Authority directly to the City to a PGW bank account, which initially shall be at CoreStates Bank, account 00330958 ABA#031-000-011, and which bank account designation may be changed from time to time by notice to the Partnership and the Authority given by the City on PGW's behalf. 031-000

4.5 Capital Payment Recovery Mechanism. The Authority covenants that the Authority will cause the City, through PGW, to provide to the Authority amounts sufficient for the Authority to pay the Partnership under this Contract, as a separate payment, and not as a set off against charges otherwise payable by the Partnership, fifty percent (50%) of the applicable Net Margin collected by the City, through PGW, from new non-firm sales or transportation customers that are served by use of the PGW Pipeline Extension and that are added to the PGW system within seven (7) years of the Date of Commercial Operation (the "Seventh Anniversary"); provided, however, that the total amount paid by the Authority pursuant to this Section shall not exceed Six Million Three Hundred Thousand Dollars ($6,300,000), and shall be subject to offset to pay DOT charges as described in Section 4.1(e). The Authority's payments to the Partnership shall be calculated with respect to the applicable Net Margin derived from each new customer during (i) the three-year period following the initial date such new customer is served by use of the PGW Pipeline Extension (but not extending beyond the Seventh Anniversary) or (ii) in the event that the City makes capital expenditures to serve such customer, the three-year period following the date upon which the City recovers such investment (but not extending beyond the Seventh Anniversary plus the number of months during which the City was recovering its capital investment).

4.6 Closing Delay Payments. If the Effective Date does not occur by March 15, 1996, then the Partnership shall pay the Authority twenty-five thousand dollars ($25,000). If the Effective Date has not occurred by April 15, 1996, then the Partnership shall pay the Authority twenty-five thousand dollars ($25,000).

ARTICLE V
RELEASE OF FIRM TRANSPORTATION CAPACITY; NOMINATION AND SCHEDULING PROCEDURES

5.1 Release of Firm Transportation Capacity; First Refusal Capacity.

(a) The Authority shall cause the Service Agreement to state that the City shall permanently release to the Authority 36,000 Dth/day of its transportation rights under the PGW FT-1 Agreement pursuant to the applicable FERC rules no later than February 12, 1996. The Authority shall enter into the FT-1 Agreements with TETCO.

(b) The Authority shall cause the Service Agreement to state that Authority shall temporarily release the Released Capacity to the City, acting through PGW; such release shall be (i) effective until October 1, 1997, (ii) include recall rights so that the Authority's releases to the Partnership may be activated if the Partnership elects a date before October 1, 1997 pursuant to Section 5.1(d), and (iii) at maximum rates.

(c) The Authority shall cause the Service Agreement to state that the Authority shall release for the term of this Contract the Capacity Release Quantity to the City, acting through PGW, for the Guaranteed Recall Period. These releases shall be (i) at maximum rates, and (ii) with recall rights when required for the Authority to implement a permanent release of capacity pursuant to Section 5.1(f) or (g).

(d) If the Partnership gives the Authority forty-five (45) days prior written notice requesting such a release, the Authority shall release the Capacity Release Quantity to the Partnership effective on the date requested by the Partnership (but no earlier than May 1, 1997), with a term ending October 1, 1997 at the price set forth in Exhibit C and the terms set forth in 5.1(e)(ii) and with the Authority Recall Rights set forth in Section 5.2.

(e) The Authority shall release the Capacity Release Quantity (in two releases of 18,000 Dth/day each) to the Partnership under the terms set forth in this section. No later than February 19, 1996 (unless the Partnership and the Authority agree to another date), the Authority shall post a pre-arranged capacity release to the Partnership of the Capacity Release Quantity pursuant to FERC's rules and TETCO's tariff. The terms of that release shall include the following:

(i) Each release shall be effective as of October 1, 1997;

(ii) Each release to the Partnership shall be for the On-Peak and Off-Peak Periods;

(iii) The release of capacity associated with each of the Tier 1 FT-1 Agreement and the Tier 2 FT-1 Agreement shall be effective throughout the term of each such agreement, including any continuations, extensions, or renewals thereof.

The Partnership agrees to match any bid that an alternative bidder may make pursuant to FERC's rules and TETCO's tariff so that the Partnership is the replacement shipper for the Capacity Release Quantity. If the Partnership must pay an amount greater than the caps set forth in Exhibit C to become the replacement shipper, then the Partnership may elect, upon at least sixty (60) days written notice to the City, PGW, and the Authority, to permanently release the Released Capacity to the Authority effective on the second anniversary of the Date of Commercial Operation and the Authority agrees to accept such a release. If the Partnership releases the Released Capacity to the Authority, the Capacity Release Quantity shall be reduced to zero as of the second anniversary of the Date of Commercial Operation.

(f) In the event the Authority determines at any time to terminate either of the FT-1 Agreements effective upon expiration of the primary term or any extension period of the relevant FT-1 Agreement, then the Authority shall notify the Partnership of its determination not later than twelve (12) months prior to the date the Authority must notify TETCO of its election. The Partnership shall have the right to notify the Authority, within eleven (11) months of receipt of the Authority's notice, that the Partnership elects to receive a permanent pre-arranged capacity release of the relevant FT-1 Agreement. Such notice from the Partnership shall constitute a binding obligation on the part of the Partnership to accept the permanent release. If the Partnership elects to receive a permanent release, the Authority shall recall the capacity associated with the relevant FT-1 Agreement released to the City pursuant to Section 5.1(c) of this Contract effective as of the date upon which the relevant FT-1 Agreement would otherwise have terminated and the Authority shall permanently release the capacity associated with such FT-1 Agreement to the Partnership. Whether or not the Partnership elects to receive the permanent release of the capacity associated with the relevant FT-1 Agreement, the Capacity Release Quantity shall be reduced by the amount of the capacity associated with the relevant FT-1 Agreement, but to no less than zero, with such reduction being effective as of the date upon which the termination or permanent capacity release to the Partnership becomes effective. Any capacity released to the Partnership pursuant to this Section 5.1(f) shall be supplied to the Partnership at the Maximum FERC Allowable TETCO Firm Reservation Charge, plus applicable surcharges, in lieu of the prices set forth in Exhibit C.

(g) During the term of this Contract, the Authority will forward to the Partnership any notice from TETCO of TETCO's election to terminate either of the FT-1 Agreements on five (5) years notice pursuant to Article II of such contracts, within ten (10) days of receipt of such notice. Within two (2) business days of receipt, the Authority shall forward to the City and the Partnership a copy of the best bid(s) notice from TETCO pursuant to Section 3.13 of the General Terms and Conditions of TETCO's tariff. The Authority shall cause the Service Agreement to state that within ten (10) days of receipt of such notice the City shall notify the Authority whether the Authority shall exercise its right of first refusal on the City's behalf. Within fifteen (15) days of the Authority's receipt of the best bid(s) notice from TETCO, the Authority shall notify the Partnership whether it will exercise its right of first refusal on behalf of the City. If the Authority exercises its right of first refusal to match the "best bid" (as defined in Section 3.13 of the General Terms and Conditions of TETCO's tariff) on behalf of the City, then the terms and conditions of neither the Service Agreement nor this Contract shall be affected. If the Authority notifies the Partnership that the Authority will not exercise its right of first refusal on the City's behalf, then the Partnership shall have five (5) days from the receipt of the Authority's election to direct the Authority to exercise its right of first refusal for all or a portion of such capacity on behalf of the Partnership. If the Partnership elects to match TETCO's best bid for all or a portion of such capacity, the Authority shall, (1) make such election to TETCO, (2) recall that quantity of capacity released to the City pursuant to Section 5.1(c), and (3) thereafter permanently release such capacity to the Partnership. Any quantities of Gas for which the Partnership has matched TETCO's best bid under this Section 5.1(g) shall be permanently released by the Authority to the Partnership on the terms and conditions of such bid, in lieu of the ceiling prices set out herein for Released Capacity under the relevant FT-1 Agreement. The Capacity Release Quantity shall be reduced by the quantity for which the Partnership has the opportunity to match the best bid, but to no less than zero, with such reduction being effective as of the date upon which the termination or reduction of the relevant FT-1 Agreement becomes effective.

(h) If TETCO provides notice to the Authority of a breach or default by the Authority of either of the FT-1 Agreements, the Authority shall, within one (1) Day of receipt thereof, provide a copy of such notice to the Partnership. With the consent of TETCO, the Partnership shall have the opportunity, but not the obligation, to cure such breach or default within the permitted time period. In addition to any other remedies available to the Partnership, any payments or other costs incurred by the Partnership in curing or attempting to cure such breach or default may be offset by the Partnership against any sums due, or thereafter falling due, under this Contract.

(i) The Authority shall cause the Service Agreement to state that, if (i) the Authority recalls the Released Capacity pursuant to Section 5.2(e), (ii) this Contract terminates without a release of capacity pursuant to Section 5.1(e), (iii) the Authority receives a release of the Released Capacity pursuant to Section 5.1(e), or (iv) this Contract terminates for any reason other than a breach by the Authority, then the Authority shall permanently release the Released Capacity to the City.

5.2 Release Volumes and Authority Recall Rights. The release of the Released Capacity to the Partnership shall be subject to the Authority Recall Rights, for the periods set out below:

(a) During the On-Peak Period of each Agreement Year, the City shall have the right to cause the Authority to recall all or a portion of the Released Capacity on any Day; provided, however, that the quantity of Released Capacity recalled by the Authority, at the direction of the City on any Day must be either 18,000 Dth or 36,000 Dth to the extent that such quantities are equal to or less than the Capacity Release Quantity in effect on such Day. The maximum total quantity of Released Capacity that the Authority at the direction of the City shall have the right to recall during the On-Peak Period of an Agreement Year shall be equal to (i) forty-eight (48) multiplied by the Capacity Release Quantity then in effect, or (ii) in the event that the number of Winter Degree Days during the relevant Heating

Season ending in such Agreement Year exceeds forty-nine hundred (4900), fifty-eight (58), multiplied by the Capacity Release Quantity then in effect; provided, however, if the Capacity Release Quantity changes during any Agreement Year, the Capacity Release Quantity for such Agreement Year, for purposes of the foregoing clauses (i) and (ii), shall be equal to the weighted average of the Capacity Release Quantities in effect during such Agreement Year, with such weighting being based on the number of Days during such Agreement Year that each Capacity Release Quantity was in effect.

During the On-Peak Period of each Agreement Year, with respect to any Released Capacity on any Day, which the Partnership determines it cannot use for the Facility:

(A) if the Partnership gives at least forty-eight (48) hours prior notice of the availability of such Released Capacity to the Authority, the Authority shall recall such Released Capacity;

(B) if the Partnership gives less than forty-eight (48) hours prior notice of the availability of such Released Capacity to the Authority, the Authority, at the direction of the City, at its sole discretion, will notify the Partnership within ninety (90) minutes of receipt of such notice from the Partnership whether it will recall such Released Capacity; if the Authority does not recall the Released Capacity, the Partnership may re-release such Released Capacity to any other party.

(b) Except as provided in Section 5.1(e), the Authority shall have no right to recall any portion of the Released Capacity during an Off-Peak Period.

(c) The Authority shall cause the Service Agreement to provide that, to the extent the Authority exercises its Authority Recall Rights, it shall release the recalled capacity to the City.

(d) The Authority shall cause the City to covenant that during any On-Peak Period, the City shall not direct the Authority to exercise its Authority Recall Rights with respect to any capacity which the City intends to resell as capacity alone or combined with other services such as commodity services. The Authority agrees that the release by the City in the aggregate of at least 10,001 Dth of TETCO capacity held by the City acting through PGW on any day on which capacity is recalled from the Partnership shall constitute prima facie evidence of a violation of the foregoing covenant.

(e) The Authority may recall the Released Capacity from the Partnership if the Date of Commercial Operation does not occur by June 30, 1998 or if this Contract terminates for any reason other than a breach by the Authority.

5.3 Required Notice to the Partnership to Exercise Authority Recall Rights. The Authority covenants as follows: (i) not less than fifteen (15) Days prior to the commencement of each month during an On-Peak Period, the Authority will provide the Partnership with a monthly schedule for advisory purposes only, showing the projected dates on which the City, through PGW, expects to direct the Authority to exercise its Authority Recall Rights during the following month; (ii) if the City, through PGW, desires to exercise its Authority Recall Rights with respect to any Day within an On-Peak Period, the Authority shall notify the Partnership by telephone not less than forty-eight (48) hours prior to the beginning of such Day (with confirmation within one (1) hour thereafter by facsimile copy); and (iii) in the event that the City only directs the Authority to exercise its Authority Recall Rights for a portion of the MDQ, as allowed pursuant to Section 5.2(a), the Authority shall specify in the notice the quantity of Released Capacity that the City is directing the Authority to recall on such Day.

5.4 Partnership Right to Release Capacity. Except as otherwise set forth herein, the Partnership shall have the right on any given Day to release to any third party any portion of the Released Capacity not utilized by the Partnership on such Day.

5.5 TETCO Receipt Points for Gas. The Authority will not delete or modify any of the receipt points under the FT-1 Agreements or any of the respective quantities applicable thereto without the prior written consent of the Partnership, which consent shall not be unreasonably withheld or delayed.

5.6 Delivery Point for Gas Delivered on the TETCO System. The primary delivery point for Gas delivered on the TETCO System pursuant to the Capacity Releases described herein shall be Gate Station 060, with a secondary delivery point or points of another TETCO gate station or stations as described in Section 1.28. The Authority will not change the foregoing Delivery Points under the FT-1 Agreements without the prior written consent of the Partnership, which consent shall not be unreasonably withheld or delayed.

5.7 Pricing for Released Capacity. The price to be paid by the Partnership for the Released Capacity shall be determined pursuant to Exhibit C.

5.8 Scheduling and Nomination of Gas Sales and Transportation Services.

(a) To coordinate delivery arrangements, the Partnership shall notify the City's Gas

Control Dispatcher by telephone, with confirmation by facsimile of the Partnership's nomination of GTS transportation and of the Partnership's daily nominations to TETCO for deliveries to the Delivery Point. Such notification shall occur no later than ninety (90) minutes prior to TETCO's nomination deadline on the Day preceding the Day of actual delivery. Friday's notification by the Partnership shall specify the nominated volumes for Saturday, Sunday and Monday. Two Days advance nominations will be required for holidays. Additionally, monthly and mid-monthly nominations may be required in accordance with TETCO operating practices.

(b) The Authority covenants that at the time that the Partnership makes its nomination pursuant to Section 5.8(a), and subsequently when required, the Authority shall cause PGW's Gas Control Dispatcher to inform the Partnership of capacity or operating constraints on the PGW system, or of other service conditions such as interruption of service. The Partnership shall be responsible for all necessary communications with the Partnership's suppliers and TETCO to ensure coordination of all delivery arrangements, including, but not limited to, timely curtailment of deliveries, if required.

(c) With respect to Start Up Service and Sales Service, the Partnership shall be required to nominate quantities by 6:00 a.m. Philadelphia time on the Day preceding delivery, and the Authority covenants that it will cause the City, through PGW, to confirm its ability to meet the requested Day's nomination or a lesser quantity by 9:00 a.m. Philadelphia time on the Day preceding delivery. The Partnership may reduce the PGW-confirmed quantity for such services by up to fifty percent (50%) as long as it notifies the City by 9:00 a.m. Philadelphia time on the Day of delivery. The Partnership may also request an increase in the confirmed quantity by 9:00 a.m. Philadelphia time on the Day of delivery, but any such increase shall be at the sole discretion of the City.

(d) With respect to Alternative Receipt Service under Section 3.5, the Partnership may initiate any Alternative Receipt Service request to the Authority upon forty-two (42) hours notice prior to the delivery Day by telephone, with confirmation within one hour by facsimile. Any such Alternative Receipt Service notification shall set out the duration of the Alternative Receipt Service as well as the quantity involved. The Authority covenants that such Alternative Receipt Service request shall be presumed accepted unless the Partnership is notified by 8:00 a.m. of the Day prior to the delivery Day of the City's election not to meet the Alternative Receipt Service request. In the event the National Weather Service then forecasted mean temperature in the greater Philadelphia area is twenty-five degrees Fahrenheit (25°F) or less for a delivery Day as to which the Partnership has notified the City, acting through PGW, of its intention to initiate Alternative Receipt Service, the City acting through PGW, may cancel such Alternative Receipt Service no later than 8:00 a.m. of the Day prior to the delivery Day by telephone notice to the Partnership with confirmation by facsimile within one hour. The Authority covenants that to facilitate such Alternative Receipt Service deliveries to the Partnership, the Authority will cause the City, acting through PGW, to nominate to TETCO sufficient quantities of Gas to be delivered under the PGW FT-1 Agreement to Gate Station 060 to allow the City, through PGW, to perform its obligations under the Service Agreement. Any recall by the Authority of Released Capacity pursuant to its Release Rights shall be deemed to be a simultaneous request by the Partnership and an accompanying agreement by the Authority, through PGW, to Alternative Receipt Service for the volumes recalled in excess of 15,000 Dth on such Day in accordance with the provisions of Section 3.5. Such deemed Alternative

Receipt Service shall be effective unless canceled by the Partnership at least forty (40) hours prior to the beginning of the applicable Day by telephone notice to the City with confirmation by facsimile within one hour.

ARTICLE VI
TERM

6.1 Term. The term of this Contract shall begin on the Effective Date of this Contract and, unless sooner terminated, shall continue in effect for a period of twenty-five (25) years.

6.2 Renewal. This Contract may be extended for an additional term subject to mutual agreement as to all terms and subject to the simultaneous extension of the term of the Service Agreement for the same extension period.

ARTICLE VII
ACCOUNTING AND PAYMENT

7.1 Invoicing and Payment. The Authority covenants that by the tenth (10th) day of the month following the month services are provided, the Authority will cause the City through PGW to calculate all sums payable for services provided by the Authority under this Contract during the previous month, and deliver an invoice to the Authority and the Partnership for such services, which invoice shall set forth sufficient billing details with respect to each service provided by the City to allow the Authority and the Partnership to verify the accuracy of such invoice. Payment of the invoices, which shall be made directly to the City as set forth in Section 7.3, shall be due within thirty (30) days of receipt.

7.2 Indices. The Authority covenants that: (i) with the exception of the price to be paid for the Released Capacity pursuant to Exhibit C, if an index, rate, publication or other source of information required for the adjustment of any price, charge or credit under this Contract or the Service Agreement is unavailable on the effective date for such adjustment, the Authority will cause the City's invoice to be calculated using the best available estimate of such adjustment; (ii) if the information necessary for calculation of the actual adjustment subsequently becomes available, such invoice will be recalculated and any net charge or credit resulting from the recalculation will be reflected on the next month's invoice; and (iii) if the current pricing structure upon which the pricing determinations provided in this Contract and the Service Agreement (including Exhibits) are changed in structure or reporting availability, the parties shall modify the method of calculating the pricing components in order as nearly as possible to place the parties in the same position as existed prior to the change.

7.3 Manner of Payment. Each payment due the City pursuant to the Service Agreement and this Contract shall be made by interbank wire transfer to the bank address and account designated in writing by the City to the Authority and the Partnership as set forth in Section 4.4.

7.4 Auditing. The Authority and the Partnership covenant that each party to this Contract and to the Service Agreement and its designees shall, upon reasonable prior notice, have the right during normal business hours to examine the books, records and charts of the other party solely to the extent reasonably necessary to verify the accuracy of any income, payment, charge, measurement, calculation, or determination made pursuant to the provisions of this Contract so long as such examination is not disruptive to the party's normal business operations; provided, however, that if any such examination requires access to confidential information, the release of which would be harmful to the party's competitive position, such party shall select an examiner who is not in a position to benefit from such confidential information and such examiner will execute an agreement to maintain the confidentiality of the information to be examined. If any such examination reveals, or if a party discovers, any error or inaccuracy in its own or the other party's invoice, calculation, measurement or determination, then proper adjustment and correction thereof will be made as promptly as practicable thereafter, except that no adjustment or correction will be made if more than two (2) years have elapsed since the error or inaccuracy occurred.

7.5 Failure to Pay. The Authority and the Partnership covenant that if a party fails to pay any amount payable to another party under this Contract or the Service Agreement when due, interest thereon will accrue and be payable from the date on which payment was due until the date payment is made; provided, however, if the paying party in good faith disputes the amount of any such bill or any part thereof, and pays such amount as it concedes to be correct, then the paying party may withhold the disputed portion of such bill pending the outcome of dispute resolution. The rate of interest accruing on late payments will be the Prime Rate published weekdays in the Wall Street Journal, plus two percent (2%); provided, however, that the interest rate provided herein may never exceed the highest rate of interest permitted by applicable law.

7.6 Overpayment. The Authority and the Partnership covenant that if a party pays any amount set forth in an invoice of another party, and such amount is subsequently determined by agreement or judgment of court not to have been due and owing when paid, the overpaid party will refund such amount to the other party together with interest from the date of payment to date of refund at the Prime Rate plus one percent (1%) published weekdays in the _Wall Street Journal_; _provided_, _however_, that the interest rate provided herein may never exceed the highest rate of interest permitted by applicable law.

7.7 _Financial Responsibility_.

(a) The Authority and the Partnership covenant that in the event (i) either party shall file a petition or otherwise commence, authorize, or acquiesce in the commencement of a proceeding or case under any bankruptcy or similar law for the protection of creditors or have such petition filed or proceeding commenced against it or (ii) the Partnership shall fail to make a payment under this Contract before the expiration of the cure period after the due date for such payment, or (iii) the City reasonably determines after a review of the Partnership's financial statements, which shall be submitted to the Authority annually for review, that the creditworthiness of the Partnership is unsatisfactory, then the other party in the case of (i), or the City in the case of (ii) or (iii), as the case may be, shall have the right to suspend the performance of its obligations under this Contract and of the City under the Service Agreement until adequate security is delivered, and to demand adequate security (which in the case of the Partnership shall be Additional Security, as defined in Section 7.7(b) herein) for, or assurance of, the other party's ability to perform its further obligations under this Contract and under the Service Agreement within ten (10) business days of a reasonable written request therefor. Notwithstanding the above, in the event of a determination by the City of the Partnership's uncreditworthiness as described in (iii) above, the City and Authority shall not suspend their performance unless the Partnership fails to provide the Additional Security as provided in subsection (b). Should either party in the case of (i) or the Partnership in the case of (ii) or

(iii) fail to provide such security or assurance of its ability to perform its further obligations under this Contract or under the Service Agreement, the other party shall have the right upon thirty (30) days' prior written notice to terminate this Contract and the Service Agreement in addition to any and all other remedies available hereunder or pursuant to applicable law; provided, however, that if such security or assurance is delivered within such thirty-day period, such termination notice will no longer have any effect.

(b) As security for all amounts payable by the Partnership under this Contract, the Partnership shall deliver to the City, within twenty (20) days after demand by the City based upon (i) or (ii) below, a direct draw letter or letters of credit in form and substance acceptable to the City in its sole discretion, on Chase Manhattan Bank, N.A., Chemical Bank, N.A., or another bank acceptable to the City in its sole discretion ("Additional Security") if: (i) the Partnership fails to make a payment under the Service Contract before the expiration of the cure period after the due date for such payment, or (ii) the City reasonably determines after a review of the Partnership's financial statements, which shall be submitted to the Authority annually for review, that the creditworthiness of the Partnership is unsatisfactory. The amount of Additional Security shall be One Million Dollars ($1,000,000) during the first five Agreement Years, Five Hundred Thousand Dollars ($500,000) during the sixth through tenth Agreement Years, and Two Hundred Fifty Thousand Dollars ($250,000) during the remaining Agreement Years. Upon default in the timely payment of any payment under this Contract (and after the City gives written notice to the Partnership of the ten (10) Day cure period and the cure period has expired), the City may draw on the Additional Security for the amount due. The Additional Security shall be restored to its full face amount within fifteen (15) business Days of any draw upon it. In addition to any other rights and remedies available in the event of a termination of the Service Contract, the City may draw on the Additional Security for the entire unpaid balance of the Aggregate Facilities Demand Charge, any amounts described in Section 4.1(f) not already paid to the City, and any other amounts owed to the Authority under the terms of this Contract. The Additional Security also may be drawn upon at any time during the thirty (30) days preceding its maturity date unless it is extended or replaced.

The City shall deliver the Additional Security to or upon the instructions of the Partnership after the Partnership has made all payments under the Service Contract when due for twelve (12) consecutive months. If an event described in this Section 7.7(b)(i) or (ii) occurs after the City has delivered the Additional Security to the Partnership, the City may require the Partnership to again deliver the Additional Security.

ARTICLE VIII
MEASUREMENT AND DELIVERY CONDITIONS

8.1 <u>Metering</u>.

(a) The parties recognize that the Delivery Point(s) applicable to Gas delivered by TETCO on behalf of the Partnership is operated under the control of TETCO and that Gas delivered by TETCO at the Delivery Point(s) shall be measured by TETCO.

(b) The Authority covenants that: (i) The Authority will cause the City to install and maintain at no additional charge to the Partnership, such measuring equipment, including a meter of suitable accuracy of a type customarily used in the industry, to record the quantities of Gas sold and/or delivered to the Partnership hereunder at the Facility Delivery Point; (ii) the Authority will cause the City to be responsible for maintaining the accuracy of such measuring equipment and will test such equipment at reasonable intervals, or as requested by the Partnership, but no more frequently than once in any sixty (60) Day period; (iii) the Partnership may have its representatives present at the testing of such equipment; (iv) the Authority will cause the City to follow the standards of the Philadelphia Gas Commission with regard to the testing and accuracy of measuring equipment, but in any event shall calibrate such equipment no less frequently than annually; (v) the Partnership may maintain at its own expense check measuring equipment; provided, however, that City's measuring equipment shall be used for all determinations of quantities pursuant to this Contract; (vi) in the event that the Partnership's check metering equipment indicates a discrepancy with City metered readings, the Partnership may request an immediate recalibration of City's meters; (vii) if such recalibration shows a meter error of one percent (1%) or greater, City's invoices will be corrected utilizing the data from the Partnership's check meter back to the date for which such discrepancy was first noted but in no event greater than one year; (viii) in the event of a failure of a City meter, the Authority will cause the City to utilize the data from the Partnership's check meters back to the date of such failure.

8.2 Pressure. The Authority shall cause the City to deliver all Gas whenever the inlet pressure at Gate Station 060 equals or exceeds 250 p.s.i. to the Facility on a given Day at the Facility Delivery Point at a pressure not lower than fifty (50) p.s.i. below the actual delivered pressure from the TETCO system at Gate Station 060 on such Day, unless the City and the Authority otherwise agree and such agreement is concurred in by the Partnership pursuant to this Contract. The Authority shall cause the City acting through PGW, not to connect any new customer directly to, or to a lateral directly connected to, the PGW Liquids Pipeline or the

PGW Pipeline Extension without the Partnership's prior written approval if, whenever the inlet pressure at Gate Station 060 equals or exceeds 250 p.s.i., the addition of such customer would result in a reduction of the pressure differential of greater than 50 p.s.i. at the Facility Delivery Point.

8.3 Heating Content. The Dekatherm content of the Gas delivered to the Facility Delivery Point shall be as reported by TETCO on a daily basis for deliveries at Gate Station 060.

8.4 Quality. The Authority covenants that all Gas delivered by the City at the Facility Delivery Point shall meet the minimum quality specifications of TETCO, as set forth in TETCO's FERC Gas Tariff.

8.5 Rate of Takes. The Authority covenants that during the course of each Day, the Partnership shall not be required to take the quantity of Gas nominated by it to the City with respect to such Day on a uniform hourly rate, but in no event shall the maximum hourly take exceed 2,800 Dth (when combined with that of Trigen under the Trigen Service Contract) or the minimum hourly take be less than 100 Dth when Gas is flowing through the meter at the Facility Delivery Point.

ARTICLE IX
FORCE MAJEURE

9.1 Definition. The Authority and the Partnership agree that the term "Force Majeure" means an event or condition (i) that is beyond the reasonable control of the party claiming its occurrence; (ii) that could not have been prevented or avoided by such party through the exercise of due diligence and reasonable care; and (iii) that materially adversely impairs the ability of such party to perform an obligation under this

Contract. Economic hardship or inability to pay increased prices, costs or charges imposed by third parties shall not constitute Force Majeure. Events that may give rise to a claim of Force Majeure include, but are not limited to:

(a) Acts of God, earthquakes, epidemics, fires or other casualty, floods, hurricanes, landslides, lightning, storms, washouts, freezing of lines of pipe or similar occurrence;

(b) Acts of the public enemy, terroristic acts, wars, blockade, insurrections, riots, civil disturbances and arrests, or sabotage;

(c) Strikes, lockouts or other industrial disturbances;

(d) Explosions, breakage or accidents to the Facility, the PGW Liquids Pipeline or the PGW Pipeline Extension, including damage to machinery, lines or pipe;

(e) Inability to obtain or unavoidable delay in obtaining necessary materials, equipment, easements, franchises or permits;

(f) Failure of any entity for reasons of Force Majeure to deliver Gas under firm contracts, or to transport Gas delivered or to be delivered under firm contracts;

(g) The order of any court while the same is in force and effect;

(h) The inability or failure of TETCO on any Day to deliver to the Delivery Point the quantity of Gas nominated by the Partnership for firm transportation by TETCO on such Day;

(i) A break or a fault in PECO's grid, or a loss, diminution or impairment of PECO's electrical supply which prevents or restricts PECO's ability to receive electrical energy from the Facility;

(j) The imposition by a Governmental Authority (excluding, however, the City Council of the City, the Philadelphia Gas Commission and the Board of Directors of the Authority), of laws, conditions, limitations, rules, orders or regulations not existing as of the date of this Contract that materially impair the operating ability of the Partnership, the Authority or the City, through PGW, to perform their respective obligations under this Contract, and/or the Service Agreement including, but not limited to, actions or inactions restricting the ability of the Partnership, the Authority or the City, through PGW, to acquire Gas or obtain transportation of Gas; and

(k) Failure or delay of FERC approving the TETCO Joint Stipulation and Agreement as filed.

The Authority may not claim Force Majeure to excuse its performance under this Contract as a result of a failure of the City to perform its obligations under the Service Agreement unless the City's failure to perform is excused under Article 9 of the Service Agreement.

9.2 Notice and Suspension. The Authority and the Partnership agree that if an occurrence of Force Majeure renders a party wholly or partially unable to carry out its obligations under this Contract or the Service Agreement, such party will promptly give the other party and the City notice and full particulars of the occurrence by telephone, with confirmation in writing by facsimile or overnight delivery service. The obligations of either or both parties under this Contract and under the Service Agreement will be suspended to the extent that they are affected by the same occurrence. Such suspensions will be effective only during the continuance of the inability to perform caused by the Force Majeure occurrence, and, except with respect to Deficiency Payments, will not apply to the obligation to pay when due any charges under this Contract and the Service Agreement.

9.3 Remedial Actions. The Authority and the Partnership agree that a party claiming Force Majeure as grounds for suspension of its performance under this Contract or the Service Agreement shall proceed with due diligence and with all reasonable dispatch to endeavor to and remedy the cause of its inability to perform and to put itself in position to resume its obligations.

9.4 Settlements of Disputes. The Authority and the Partnership agree that the requirements of this Article that an inability to perform caused by an event of Force Majeure be remedied with all reasonable dispatch does not obligate a party to settle a strike, lockout or other industrial dispute or disturbance by acceding to the demands of an opposing party. Any such settlement will be entirely within the discretion of the party having the difficulty.

9.5 Termination Rights. The Authority and the Partnership covenant that if an occurrence of Force Majeure renders a party unable to carry out its obligations hereunder, and such inability continues for a period of twelve (12) months following such occurrence, the other party shall have the right to terminate this Contract and the Service Agreement upon thirty (30) days' prior written notice to the other party; provided, however, all liabilities, accruing prior to the date of such termination shall survive any such termination.

ARTICLE X
LIMITATIONS OF LIABILITY AND RECOURSE

10.1 Limitation of Liability. Neither the Authority nor the Partnership shall be liable to the other party for claims for punitive, incidental, special, indirect or consequential damages ("Damages") whether such claim is based on a cause of action based in warranty, negligence, strict liability, contract, operation of law or otherwise; provided, however, that the Partnership and Trigen may jointly claim as damages lost profits of up to an aggregate maximum of Fifty Thousand Dollars ($50,000) per Day, although the Authority shall cause the Trigen Service Contract to state that Trigen's right to claim lost profit damages is subordinate to the right of the Partnership to claim lost profit damages in the full amount of Fifty Thousand Dollars ($50,000) per Day. The parties recognize that the foregoing is not intended to be a liquidated damages clause but rather a limitation on liability and that the applicable burden of proof applies to any legal proceeding involving a claim for damages.

10.2 Limitation on Recourse.

(a) The Authority and the Partnership agree, and the Authority shall cause the City to covenant in the Service Agreement, that subject to the provisions of Sections 4.1(h) and 7.7, any claim against the Partnership that may arise under this Contract shall be made only against, and shall be limited to the assets of, the Partnership, and no judgment, order or execution entered in any suit, action or proceeding thereon shall be obtained or enforced against any partner within the Partnership or to assets of any such partner or any incorporator, shareholder, officer or director thereof (or, in the case of such partners that are partnerships, of any partner thereof) or against any direct or indirect parent corporation or any incorporator, shareholder, officer, director, employee or agent thereof for the purpose of obtaining satisfaction and payment of any amount owing under this Contract. Nothing contained in this Section 10.2(a) shall be construed (i) so as to prevent the Authority, or the City as assignee of funds payable by Partnership to Authority under this Contract, from commencing any action, suit or proceeding with respect to, or causing legal papers to be served upon, any partner within the Partnership for the purpose of obtaining jurisdiction over the Partnership or (ii) otherwise to limit the exercise of enforcement, in accordance with the terms of this Contract, of the Authority, or the City, as assignee of funds payable by the Partnership to the Authority under this Contract, against the Partnership or against the assets thereof.

(b) The Authority and the Partnership agree and the Authority shall cause the City to agree in the Service Agreement that any claim, obligation or liability that may arise against the Authority under this Contract or the Service Agreement or against the City under the Service Agreement shall be made only against, and shall be limited to the Revenues of PGW, and no judgment, order or execution entered in any suit, action or proceeding thereon shall otherwise be obtained or enforced against the City, the Gas Commission, PFMC, the Authority or any incorporator, shareholder, member, officer, director, employee or agent thereof for the purpose of obtaining satisfaction and payment of any amount owing under this Contract or the Service Agreement. Nothing contained in this Section 10.2(b) shall be construed (i) so as to prevent the Partnership under this Contract from commencing any action, suit or proceeding with respect to, or causing legal papers to be served upon, the Authority, the City, PFMC, or any member, officer, director, employee or agent thereof for the purpose of obtaining jurisdiction over PGW, and the Revenues of PGW, or (ii) otherwise to limit the exercise of enforcement, in accordance with the terms of this

Contract, of the Partnership's rights and remedies against the Authority, PGW or against the Revenues of PGW.

ARTICLE XI
INSURANCE

11.1 Required Insurance. The Partnership shall obtain and maintain the following insurance coverage, within five (5) business Days of the Date of Financial Closing, shall deliver to the City and to the City's Risk Manager at 1101 Market Street, Philadelphia, PA 19101, certificates of insurance, issued by reputable insurers admitted to do business on a direct basis in the Commonwealth who are previously approved by the City with a financial rating of A-10 or better as determined by A.M. Best, Inc., with all coverages being on an "occurrence" basis and not a "claim made basis", listing the City, PFMC, the Authority, the Gas Commission and their officers, employees and agents as additional insureds and as loss payee, evidencing the following coverage:

Commercial/comprehensive general liability insurance covering: Facility premises and operations; explosions, collapse, and underground hazards; products liability and completed operations; independent contractors; contractual liability on a blanket basis or contractual liability specifically covering this Contract, personal injury liability (with employee exclusion deleted), automobile coverage for all owned, non-owned, or hired motor vehicles used in connection with the Authority obligations under this Contract; fire legal liability with a limit of not less than Fifty Thousand Dollars ($50,000); and broad form property damage against bodily injury and property damage claims. The commercial/comprehensive general liability coverage shall be subject to limit of liability not less than a combined single limit of (i) Ten Million Dollars

($10,000,000) per occurrence and in the aggregate, with respect to activity not taking place in, on or affecting the operations area, and (ii) Twenty Million Dollars ($20,000,000) per occurrence and in the aggregate, with respect to activity in, on or affecting the operations area. Such coverage shall be adjusted pursuant to the provisions of this Section. The City, the Authority, and their elected and appointed officials, agents and employees, shall be named as additional insureds.

The requirement for advance documentation of insurance coverage may be waived in such situations where such waiver will benefit the City or Authority, but under no circumstances shall the Partnership or any subtenant or subcontractor actually begin work (or continue work, in the case of renewal) without providing the required evidence of insurance. The City reserves the right to require the Partnership to furnish certified copies of the original policies of all insurance required under this Contract at any time upon ten (10) days written notice to the Partnership.

Each of the aforementioned certificates shall provide that no act or omission or negligence or fault of the City or Authority shall invalidate the coverage, that such policies shall be primary to any other policies of insurance available to the City and Authority and their officers, employees and agents, and each certificate shall provide that such policies cannot be terminated, canceled or materially changed in any manner that may materially adversely affect the City or the Authority, until after the issuing company has proved thirty (30) days' prior written notice to the Authority, the City and the City's Risk Manager. Any and all deductibles in the insurance policies described above shall be assumed by and be for the account of, and the sole risk of the Partnership. The Partnership shall deliver to the City, ten (10) days before the date of the renewal of any policy of insurance required hereunder, a renewal certificate that shall conform to the requirement set forth in this Section for the original certificate. The City shall have the right to modify or waive the insurance obligations of the Partnership as required by this Contract.

ARTICLE XII
DEFAULTS; RIGHT TO CURE

12.1 Defaults by the Authority.

(a) If the Authority shall fail to perform any obligations imposed upon it under this Contract (except where such failure shall be excused under other provisions hereof), then in such event the Partnership may, at its option (without waiving any other remedy for breach thereof), seek an injunction in the Court of Common Pleas of Philadelphia County requiring specific performance of the Authority's responsibilities hereunder, after notifying the Authority in writing of the alleged default stating specifically the nature of the default and providing the Authority not less than ten (10) days to cure such default.

(b) The Authority and the Partnership agree that if the Partnership seeks an injunction under this Contract, it shall not be precluded from concurrently or subsequently seeking damages against the Authority solely as provided in Section 10.1 under this Contract.

12.2 Defaults by the Partnership. If the Partnership shall fail to perform any of its obligations under this Contract, (except where such failure shall be excused under other provisions hereof), the Authority shall provide the Partnership with written notice of such alleged default. If the default is not cured within fifteen (15) days after notice to the Partnership for monetary default and thirty (30) days after notice to the Partnership for non-monetary default, the Authority may suspend (and may instruct the City, through PGW, to suspend) the performance of its obligations under this Contract and the Service Agreement and pursue all remedies at law and in equity consistent with the terms of the Service Agreement and this Contract. If such default is not cured within one hundred eighty (180) days, the Authority may terminate this Contract.

12.3 Survival of Certain Rights and Obligations. No termination of this Contract shall limit or otherwise affect the rights and obligations of any party which have accrued before the date of such termination.

ARTICLE XIII
ASSIGNMENT OF INTERESTS

13.1 Assignment of Interests.

(a) Either party may, without relieving itself of its obligations under this Contract, assign this Contract in its entirety to any Affiliate, but otherwise no assignment of this Contract or any of the rights or obligations hereunder shall be made unless there first shall have been obtained the consent thereto in writing of the other party. Any successor-in-interest of the Authority or the Partnership shall be entitled to the rights of its predecessor-in-interest under this Contract.

(b) Notwithstanding Section 13.1 (a), the Partnership may pledge or assign its rights in the Service Contract as security for its Senior Debt.

(c) Upon the written request of the Partnership, the Authority shall execute and deliver to the Partnership, or cause the City to execute and deliver to the Partnership, the documents attached as Exhibit F. The Authority shall execute and deliver to the Partnership (i) an opinion of counsel to the Authority and (ii) a Closing Certificate of the Authority comparable in form and substance to the opinion of the City Solicitor and the Closing Certificate of the City attached as part of Exhibit F.

ARTICLE XIV
NOTICES AND ADDRESSES

14.1 Notices. Any notice, request, demand, statement or payment provided for in this Contract shall be sent to the parties hereto at the following addresses:

PARTNERSHIP:

for routine notices related to daily or monthly nominations and recalls of capacity:

The Partnership's fuel manager.
The Partnership shall notify the parties of the name and address of its fuel manager.

for all other notices:

Grays Ferry Cogeneration Partnership
c/o Adwin (Schuylkill) Cogeneration Inc.,
Managing Partner
Airport Business Center
600 Stevens Drive
Lester, Pennsylvania 19113
Attention: Project Manager

With a copy to:

The Partnership's fuel manager
The Partnership shall notify the parties of the name and address of its fuel manager

AUTHORITY: Philadelphia Authority for Industrial Development
2600 Centre Square West
Philadelphia, PA
Attention: Director

with a copy to:

General Counsel

CITY: City of Philadelphia
Department of Public Property
Municipal Services Bldg., 10th Floor
Philadelphia, PA 19102

with a copy to:

City Solicitor
1600 Arch Street, 8th Floor
Philadelphia, PA 19103

PGW: Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122
Attention: Vice President of Gas Planning and Supply

with a copy to:

General Counsel

Provided, *however*, all notices with respect to Gas delivery and transportation, including capacity releases, shall be directed to or delivered by the City, through PGW, and not the Authority; and all payments and notices with respect to payments shall be pursuant to the Assignment of even date herewith between the Authority as assignor and the City as assignee.

Any notice, request or demand shall be deemed to have been made or delivered hereunder at such time as same has been (i) deposited and stamped in registered United States mail, postage prepaid, (ii) transmitted by facsimile, receipt of which is confirmed, or (iii) delivered by overnight delivery service, receipt of which is confirmed; *provided*, *however*, that notices required under Section 5.8 shall be given first by telephone and then confirmed within one (1) hour by facsimile. Either party may change addresses under this Article 14 by giving prior written notice to the other party.

ARTICLE XV
REPRESENTATIONS, WARRANTIES AND COVENANTS

15.1 Representations of Authority. The Authority represents, warrants and covenants to the Partnership as follows:

(a) Organization. The Authority is a body corporate and politic duly organized and validly existing under the laws of the Commonwealth of Pennsylvania, is in good standing under the laws of every jurisdiction as required to perform under this Contract, and has the full power and authority to carry on its business as now conducted and to enter into and perform its obligations under this Contract.

(b) Authorization; No Conflict. The Authority has duly authorized, executed and delivered this Contract and neither the Authority's execution and delivery hereof nor its compliance with the terms hereof (i) does or will contravene its articles of incorporation or bylaws or any other governmental rule or law or the terms or conditions or any judgment or decree, agreement or instrument applicable to or binding on it or any of its assets, or (ii) does or will require the consent or approval of any person, entity or instrumentality which has not already been obtained.

(c) Enforceability. This Contract is a legal, valid and binding obligation of the Authority, enforceable against the Authority in accordance with its terms, except to the extent that enforceability may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or other similar laws affecting creditors' rights generally and by general principles of equity (regardless of whether enforcement is sought in a proceeding in equity or at law).

(d) Litigation. There is no action, suit or proceeding, at law or in equity before or by any court or governmental authority, pending or, to the best of the Authority's knowledge, threatened, against the Authority wherein an unfavorable decision, ruling or finding would materially adversely affect the performance of its obligations hereunder or in connection with the other transactions contemplated hereby or which, in any way, would materially adversely affect the validity or enforceability of this Contract or any agreement or instrument entered into by the Authority in connection with the transactions contemplated hereby.

(e) Enforcement of Agreements. The Authority shall perform and comply in all material respects with all of the terms and provisions of the Service Agreement and the FT-1 Agreements to be performed or complied with by it, shall maintain the Service Agreement and the FT-1 Agreements in full force and effect and shall enforce the Service Agreement and the FT-1 Agreements in accordance with their terms.

(f) Dissolution of the Authority. The Authority hereby covenants that it will not dissolve or terminate itself or its business operations or consent to the dissolution or termination of itself other than through a transfer of all or substantially all of its assets, including the Service Agreement and this Contract, to a successor entity to which the Authority is authorized to transfer its interests under the Service Agreement and this Contract without the prior written consent of the Partnership.

15.2 Representations of the Partnership. The Partnership represents, warrants and covenants to Authority as follows:

(a) Organization. The Partnership is a general partnership organized and existing under the laws of the Commonwealth of Pennsylvania, and has the full power and authority to carry on its business as now conducted or to be conducted and to enter into and perform its obligations under this Contract.

(b) Authorization; No Conflict. The Partnership has duly authorized, executed and delivered this Contract and neither the Partnership's execution and delivery hereof nor its compliance with the terms hereof (i) does or will contravene its organizational documents, including its partnership agreement, or any other governmental rule or law or the terms or conditions of any judgment or decree, agreement or instrument applicable to or binding on it or any of its assets, or (ii) does or will require the consent or approval of any person, entity or instrumentality which has not already been obtained.

(c) Enforceability. This Contract is a legal, valid and binding obligation of the Partnership, enforceable against the Partnership in accordance with its terms, except to the extent that enforceability may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or other similar laws affecting creditors' rights generally and by general principles of equity (regardless of whether enforcement is sought in a proceeding in equity or at law).

(d) Litigation. There is no action, suit or proceeding, at law or in equity before or by any court or governmental authority, pending or, to the best of the Partnership's knowledge, threatened, against the Partnership wherein an unfavorable decision, ruling or finding would materially adversely affect the performance of its obligations hereunder or in connection with the other transactions contemplated hereby or which, in any way, would materially adversely affect the validity or enforceability of this Contract or any agreement or instrument entered into by the Partnership in connection with the transactions contemplated hereby.

15.3 Additional Covenants of the Partnership. The Partnership covenants and agrees to grant, or cause PECO to grant, to the Authority (or to City if so directed by the Authority) one or more easement(s) necessary to perform the Service Agreement and this Contract, provided that the location and extent of each such easement shall be subject to the reasonable advance written approval of the Partnership and PECO based on the existing and proposed use and configuration of the Facility. The Authority acknowledges that the consent of Trigen may also be required for any easement at Schuylkill Station, the consent of third parties may be required for easements located outside Schuylkill Station, and the Partnership makes no representations about the availability of such consents. The Authority shall be responsible, at the Authority's expense, to obtain any easements from parties other than the Partnership and PECO.

15.4 Partnership represents and warrants that, upon information and belief as of the Date of Financial Closing:

(a) it will not be insolvent.

(b) for purposes of this Section ___, the term "insolvent" shall mean: the inability to meet payment obligations when they become due and payable.

ARTICLE XVI
DISPUTE RESOLUTION

16.1 Dispute Resolution. The parties shall use their best efforts to avoid the occurrence of any claim or dispute hereunder. In the event any claim or dispute or other matter in question arises relating to this Contract, the parties shall promptly refer the same to the chief executive officer of each party, each of whom shall use reasonable efforts to achieve resolution thereof.

16.2 Referral to an Expert. The parties may, upon mutual agreement, refer matters, differences or disputes in issue between them to an appropriate expert. In such event, the parties shall appoint by agreement, which agreement shall not be unreasonably withheld by either party, an engineer that has experience in the natural gas industry and the independent power industry and that is not affiliated with any of Authority, City, or the Partnership to act as the expert in relation to technical matters in dispute. The expert will resolve or settle such matter or dispute in such manner as he shall in his absolute discretion see fit. Any decision of the expert shall be final and binding on the parties. The cost of the expert in settling or resolving such matter or dispute shall be born equally by the parties.

16.3 Jurisdiction. Unless otherwise specifically provided for herein, the court of first jurisdiction for the determination of any question of law or fact to be determined in any judicial proceeding relating to this Contract or the Service Agreement shall be exclusively the Philadelphia County Court of Common Pleas. To the extent permitted by applicable law, the Authority and the Partnership hereby waive their right to a trial by jury in any action brought to enforce, construe or recover damages for any breach of this Contract or the Service Agreement. It is the express intention of the parties that all legal actions and proceedings related to this Contract or to the Service Agreement or to any rights or any relationship between the parties arising therefrom shall be solely and exclusively initiated and maintained in such forum.

16.4 Performance to Continue During Dispute. Subject to Section 12.2, performance of this Contract shall continue during any dispute resolution mechanism pursuant to this Article 16. No payment due or payable by either party shall be withheld on account of a pending reference to arbitration or other dispute resolution mechanism except to the extent that such payment is the subject of such dispute and withholding of such payment is expressly authorized by this Contract.

16.5 Consolidation. The parties hereto agree that in the event of any dispute under this Contract and/or under the Service Agreement each of the City, the Authority and the Partnership shall become or be joined as a party to such dispute.

ARTICLE XVII
SPECIFIC LAWS

17.1 Compliance with Law. The parties agree that they will comply with all applicable local, state and federal laws during their performance of their obligations hereunder.

ARTICLE XVIII
MISCELLANEOUS

18.1 Governing Law. This Contract shall be governed by, and interpreted and construed according to, the internal laws of the Commonwealth of Pennsylvania.

18.2 Entire Agreement. This Contract, including the Exhibits attached hereto and all amendments hereto, together with the related Service Agreement, constitutes the entire agreement between the parties hereto with respect to the matters set forth herein and supersedes all other agreements, whether written or oral, with respect to the matters set forth herein, including that certain letter of intent dated August 22, 1995.

18.3 Counterparts. This Contract may be executed in any number of counterparts, each of which shall be deemed to be an original of this Contract and all of which shall be deemed one and the same Contract.

18.4 Waiver. Failure by either party to exercise any of its rights under this Contract shall not constitute a waiver of such rights. Neither party shall be deemed to have waived any right resulting from any failure to perform by the other unless it has made such waiver specifically in writing.

18.5 Captions. The captions and headings appearing herein are for convenience and reference only, and shall not be considered a part of this Contract for any purpose or as in any way interpreting, construing, varying, altering or modifying this Contract or any of the provisions hereof.

18.6 Amendments. No modification or amendment to this Contract shall be effective, unless such modification or amendment is executed in writing by both parties.

18.7 Business Days. If the date of any payment obligation hereunder should occur on a Saturday, Sunday or holiday, then such obligation shall be deferred until the next business day thereafter.

18.8 Further Assurances. The Authority and the Partnership covenant to cooperate with one another in all reasonable respects necessary to consummate the transactions contemplated by this Contract and each will take all reasonable actions within its authority to secure cooperation of its officers, agents and other third parties, and execute and deliver any instruments and perform such acts as are reasonably necessary to implement this Contract.

18.9 In the event that the Partnership seeks voluntary relief under the United States Bankruptcy Code, 11 U.S.C. Section 101 et seq. (the "Code"), such relief will be sought before, and jurisdiction will lie with the United States Bankruptcy Court for the Eastern District of Pennsylvania (the "Bankruptcy Court").

18.10 In the event that an involuntary proceeding under the Code is commenced against the Partnership, the Partnership and its principals, agents and assigns shall use their best efforts to take any affirmative steps necessary to establish jurisdiction of such proceeding before the Bankruptcy Court, including, but not limited to, transfer of such proceeding's venue to the Bankruptcy Court.

18.11 In the event that the Partnership seeks voluntary relief under the Code, or in the event that an involuntary proceeding under the Code is commenced against the Partnership, the Partnership, in its capacity as debtor, shall within ninety (90) days of commencement of any such proceeding, move to either assume or reject this Contract in accordance with Section 365 of the Code, as it may be amended from time to time, unless the Authority waives such requirement.

(a) Assumption. Upon assumption of this Contract as provided herein, the Partnership shall immediately cure any and all arrearages and other defaults under this Contract, unless the parties otherwise agree.

(b) Rejection. Notwithstanding any provision herein or in the Code to the contrary, upon rejection of this Contract as provided herein, any claims by the Authority for damages under this Contract shall be allowed as priority, administrative expenses of the Partnership bankruptcy proceeding, payable upon demand by Authority, or, at the latest, upon the effective date of any plan of reorganization or liquidation proposed by the Partnership as debtor in the event that the Partnership proceeds under Chapter 11 of the Code.

18.12 In the event that (i) the Partnership seeks voluntary relief under the Code; (ii) an involuntary proceeding under the Code is commenced against the Partnership; or (iii) the Partnership seeks protection under any Federal or State law providing for protection from creditors,

(a) The Partnership hereby unconditionally and irrevocably consents to immediate relief from the automatic stay imposed by Section 362 of the Code or any stay imposed by any other law, in favor of the Authority, in order to allow the Authority to pursue any rights it may have, before any court of competent jurisdiction, in connection with this Contract, unless such relief is waived by the Authority. The Partnership agrees that a copy of this Contract may be filed in any proceeding, as necessary, to evidence such consent.

(b) Any claim by Authority for any damages arising under this Contract shall be treated as priority, administrative expenses of the Partnership bankruptcy proceeding.

18.13 The Partnership shall execute or cause to be executed Exhibit G and the Authority shall cause Exhibit H to be executed.

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be duly executed in duplicate by their respective duly authorized corporate officers effective as of the day first above-written.

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

Attest: (Seal) ______________________________

By: ASST. SECRETARY By: CHAIRMAN

GRAYS FERRY COGENERATION PARTNERSHIP, a Pennsylvania general partnership

By: Adwin (Schuylkill) Cogeneration, Inc. a Pennsylvania corporation, its managing general partner

By: ______________________________

Name: ______________________________

Title: ______________________________

By: O'Brien (Schuylkill) Cogeneration, Inc. a Delaware corporation, a general partner

By: ______________________________

Name: ______________________________

Title: ______________________________

IN WITNESS WHEREOF, the parties hereto have caused this Contract to be duly executed in duplicate by their respective duly authorized corporate officers effective as of the day first above-written.

PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT

Attest: (Seal) ______________________________

By: ______________________ By: ______________________

GRAYS FERRY COGENERATION PARTNERSHIP, a Pennsylvania general partnership

By: Adwin (Schuylkill) Cogeneration, Inc. a Pennsylvania corporation, its managing general partner

By: William J. Brady III

Name: WILLIAM J. BRADY III

Title: VICE-PRESIDENT

By: O'Brien (Schuylkill)
Cogeneration, Inc. a
Delaware corporation, a
general partner

By: Douglass H Swart

Name: DOUGLASS H. SWART

Title: VICE PRESIDENT

EXHIBIT C
PRICE OF RELEASED CAPACITY

The price per Dekatherm of all Released Capacity to be paid by the Partnership in each month shall be based on the average (the "Index") of the monthly rates paid by third parties for firm transportation capacity on TETCO as reported in The Gas Daily publication of The Gas Transportation Report, or equivalent successor publications for such month. The Index for each month shall be determined by taking an average of the "Daily Rate" of all postings meeting the qualifications below for such month in all applicable publications of the Gas Transportation Report. Only postings meeting the following criteria shall be used:

SUCCESSOR PUBLICATION IS "TRANSPORTATION + STORAGE HUB." A.W.E.

* postings must be for a period of ten (10) days or greater;

* only single month postings shall be used;

* only recallable postings shall be used between October and April, but if no recallable postings are available, non-recallable postings shall be used;

* both recallable and non-recallable postings shall be used between May and September;

* only postings for volumes in excess of 5,000 MMBtu/day shall be used, but if no such postings are available, all postings in excess of 1,000 MMBtu/day shall be used;

* the receipt point must be one of the receipt area zones (WLA, ELA, ~~ETX, STX~~) or a combination thereof; and

* the delivery point must be Market Area 3 (M3).

If there is not at least one posting for the given month meeting the foregoing criteria, the Index for such month shall be the average of the Indices from the first previous month in which there was at least one posting meeting the foregoing criteria and the next subsequent month in which there is at least one posting meeting the foregoing criteria until such time as such average can be determined, the price of Released Capacity shall be the price last determined. This price per Dekatherm will be multiplied by the amount by which (i) the Capacity Release Quantity in effect during such month multiplied by the number of Days in such month exceeds (ii) the quantity in Dth of Released Capacity recalled by PGW during such month. The foregoing charges shall be subject to the ceilings set out below in each Agreement Year:

(calendar year)

	Off - Peak Cap:
1997 - 2002	35% of Maximum FERC Allowable TETCO Firm Reservation Charge, plus all applicable demand surcharges not already included.
2003 - 2008	50% of Maximum FERC Allowable TETCO Firm Reservation Charge, plus all applicable demand surcharges not already included.
2009 - 2021	65% of Maximum FERC Allowable TETCO Firm Reservation Charge, plus all applicable demand surcharges not already included.

The rate structure for the capacity release is based on the assumption that TETCO's reservation charges are levelized (i.e., that the reservation charge is the same each month of the year). To the extent that the reservation charges paid by the Authority to TETCO ceases to be levelized, the parties agree to negotiate a modified Cap structure for the capacity release so that the rate the Partnership pays each month during an Agreement Year will not change as a result of TETCO's adoption, or the Authority's payment, of non-levelized reservation charges. For example, the Cap could be calculated as a percentage of the sum of the Maximum FERC Allowable TETCO Firm Reservation Charges for each month of a calendar year divided by twelve.

On-Peak Cap:

Entire term of Contract 100% of Maximum FERC Allowable TETCO Firm Reservation Charge, plus all applicable demand surcharges not already included.

If publication of the Gas Daily Gas Transportation Report ceases, then the Parties shall consult in good faith to arrive at a pricing mechanism which accurately reflects the market price for such capacity.

The Partnership shall pay TETCO the Cap rate each month. In the following month, the Partnership and Authority shall jointly calculate the Index. If the Index is less than the Cap, the parties shall notify TETCO within fifteen (15) days of the end of the month so that TETCO may credit or debit the accounts of the Partnership and Authority on the next invoice.

Philadelphia Gas Works

Gregory D. Martin
Executive Vice President & Chief Operating Officer

PGW

800 W. Montgomery Avenue, Philadelphia, PA 19122
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Fax: (215) 684-6101
E-mail: gregory.martin@pgworks.com

September 21, 1999

Mr. Alan Ellison
Grays Ferry Cogeneration Partnership
c/o Barnett Satinsky, Esq.
Fox Rothchild et al.
2000 Market Street
Philadelphia, PA 19103

Dear Alan:

In accordance with our recent conversation, PGW hereby agrees to contact Texas Eastern within 10 days of receipt of payment from Grays Ferry Cogeneration Partnership ("GFCP") to PGW of all outstanding amounts due, and to meet with Texas Eastern personnel, along with representatives of GFCP, in Texas Eastern's offices in Houston Texas as soon thereafter as feasible. The nature of the meeting will be to discuss the feasibility of an operation balancing agreement directly between Texas Eastern and GFCP governing Grays Ferry natural gas operations, and/or any other viable plan to mitigate GFCP's balancing risks.

My office will schedule the meeting and get back to you with several alternative dates. Each of us agrees to pay its own costs (travel, legal, personnel) with regard to this intended meeting, and other follow up meetings as might be warranted.

Thank you.

Gregory D. Martin

Gregory D. Martin
Executive Vice President
& Chief Operating Officer

cc: Ben Hayllar
Abby L. Pozefsky, Esq.
Bud Karachiwala

Philadelphia Gas Works
Gregory D. Martin
Executive Vice President & Chief Operating Officer

PGW

800 W. Montgomery Avenue, Philadelphia, PA 19122
Telephone: (215) 684-6020
Fax: (215) 684-6101
E-mail: gregory.martin@pgworks.com

September 21, 1999

Grays Ferry Cogeneration Partnership
Attn: Trigen-Schuylkill Cogeneration, Inc.
Managing Partner
2600 Christian Street
Philadelphia, PA 19146

The City of Philadelphia
Attn: Frank Mayer, Chair - Corporate Group
City of Philadelphia Law Department
1515 Arch Street
17th Floor
Philadelphia, PA 19102

The Philadelphia Authority for
Industrial Development
Attn: Director
2600 Centre Square West
Philadelphia, PA 19103

Re: Grays Ferry Cogeneration Project

Gentlemen:

In accordance with recent discussions with respect to the Grays Ferry Cogeneration Project, below is a summary of the understandings reached by and among the City of Philadelphia (the "City"), the Philadelphia Gas Works ("PGW"), the Philadelphia Authority for Industrial Development ("PAID"), and the Grays Ferry Cogeneration Partnership ("GFCP") concerning interpretation of some of the provisions of those certain agreements dated January 26, 1996, entitled "Service Contract between Grays Ferry Cogeneration Partnership and the Philadelphia Authority for Industrial Development" (the "GFCP Contract"), and "Service Agreement between the City of Philadelphia and the Philadelphia Authority for Industrial Development" (the "GFCP Agreement") (collectively, the "Agreements"). Defined terms used herein retain the definitions contained in the Agreements.

1. The "Date of Commercial Operation" for purposes of the Agreements will be deemed to be January 9, 1998, notwithstanding the fact that Provisional Acceptance has been declared to be April 26, 1999 under the "Engineering, Procurement and Construction Contract" dated August 31, 1995, between GFCP and Westinghouse Electric Corporation.

2. Based on the January 9, 1998 Date of Commercial Operation, on or before September 22, 1999, GFCP shall pay to PGW the amounts set forth on the attached Schedule 1. Upon receipt of good and readily available funds by PGW of said amounts, GFCP shall no longer be required, and shall not in the future be required, to prepay amounts due under the GFCP Contract, and the payment provisions set forth in Article VII of the GFCP Contract shall control. Upon receipt of such good funds by PGW of said amounts, GFCP shall have satisfied all of its current obligations pursuant to paragraphs 4.1(b) and 4.1(f) of the GFCP Contract, and shall be deemed in good standing and not in default with respect to all charges due and payable under the GFCP Contract as of September 22, 1999.

3. As of September 22, 1999, and upon receipt of payment of all sums due and owing as set forth on Schedule 1, the Letter of Credit required pursuant to section 4.1(h) of the GFCP Contract and section 4.1(h) of the GFCP Agreement, shall, as permitted by Agreements, be reduced from three million dollars ($3,000,000) to one million dollars ($1,000,000) and the Letter of Credit, Drawing Certificate and Sight Draft shall have been modified as set forth on Exhibit "A." Such Letter of Credit shall be deemed to fully satisfy GFCP's responsibilities to provide security under both section 4.1 and section 7.7 of the GFCP Contract.

4. PGW and GFCP agree that with regard to the Alternate Receipt Service ("ARS") provisions of the GFCP Contract, GFCP shall, in accordance with the GFCP Contract, have the right to nominate receipt of deliveries at the alternate receipt points (as defined in the GFCP Contract) by the deadline contained in the GFCP Contract. In accordance with the GFCP Contract, PGW shall accept such nominations. With respect to such ARS nominations by GFCP at the outlet of Gate Station 034, GFCP will have its gas supplier schedule delivery of the corresponding quantity of gas to the outlet of Gate Station 034 on such Day for use by PGW, and PGW will schedule the corresponding quantity of gas to the outlet of Gate Station 060 for use by GFCP on such Day. As a consequence, with respect to such quantity of Gas for such Day, GFCP will have the use of the Gas delivered to Gate Station 060, rather than the gas delivered to Gate Station 034. The parties may implement an alternative procedure upon mutual agreement. Nothing contained herein will expand or restrict the use of the Gas as set forth in Section 3.10 of the GFCP Contract.

   PAID, through PGW, is currently engaged in discussions with Texas Eastern Transmission Company ("TETCO") to identify and designate a procedure which will enable the parties to continue to implement Section 3.5 of the GFCP Contract without creating unnecessary operating imbalances for PGW and/or GFCP, while not limiting or adversely affecting GFCP's rights under the GFCP Contract. GFCP will cooperate with PGW in achieving such a result provided that GFCP's rights under the GFCP Contract are unaffected by such result.

5. In the event that GFCP, pursuant to section 5.2(a)(A) of the GFCP Contract, but regardless of GFCP's reason for notifying PAID to recall the Released Capacity, directs PGW on behalf of PAID to recall the Released Capacity, such recall shall continue for the period designated by GFCP, which in no event shall be less than ten (10) days, and the Released Capacity shall be returned to GFCP when the designated recall period expires; *provided, however,* that effective October 1999, during the two time periods October – November and March – April of each Agreement Year, GFCP may direct PGW on behalf of PAID to recall the Released Capacity for a maximum of two times each in each of the two time periods (non-cumulative) for a minimum of 5 days in each instance, and the Released Capacity shall be returned to GFCP when the designated recall period expires.

6. All other terms of the Agreements will remain in force and effect. Nothing herein shall in any way be deemed to modify the exclusive use provisions agreed to by the parties in the Agreements. All other related agreements between the parties are hereby deemed clarified, as appropriate, in order to conform to this letter.

If you concur with these understandings, please sign below where indicated. Signatures may be in counterpart.

Sincerely yours,
Gregory D. Martin
Gregory Martin
Chief Operating Officer,
Philadelphia Gas Works

Attachments

cc: Ricardo Valeriano, Chase Manhattan Bank
Philip M. Brandt, Esq.
Barnett Satinsky, Esq.
Gregory Kleiber, Esq.
Joe Martino, Trigen-Schuylkill Cogeneration, Inc.
Ben Hayllar, Interim President and CEO, PGW
Bud Karachiwala, V.P., PGW
Abby Pozefsky, S.V.P. and General Counsel, PGW

Concur:

Grays Ferry Cogeneration Partnership

By: Joseph Martino
Name: Joseph Martino
Title: Vice President
For Trigen-Schuylkill Cogeneration, Inc.
Managing General Partner

Concur:

The City of Philadelphia

By:____________________________
Name: Andres Perez, Jr.
Title: Commissioner of Public Property

By:____________________________
Name: Stephen P. Mullin
Title: Director of Commerce

APPROVED AS TO FORM
STEPHANIE L. FRANKLIN-SUBER, CITY SOLICITOR

Per____________________________
Chief Deputy City Solicitor

Concur:

The Philadelphia Authority for Industrial Development

By: ______________________
Name: James McManus
Title: Chairman

SCHEDULE "1"

PHILADELPHIA GAS WORKS 800 W. Montgomery Avenue, Philadelphia, PA 19122

MR. JOSEPH A. MARTINO
V.P. & CONTROLLER
TRIGEN-PHILADELPHIA ENERGY CORP.
2600 CHRISTIAN ST.
PHILA., PA. 19146

Date 13-Jul-99

Invoice Number 561

When remitting for this bill or corresponding regarding same, please mention this number.

Payment Due Upon Receipt of Invoice

Remit to: Philadelphia Gas Works, Treasury Department, 800 W. Montgomery Avenue, Philadelphia, PA 19122

INVOICES	DESCRIPTION	AMOUNT
#1	2nd ANNUAL OPERATING SERVICE CHARGE	$101,278.15
#2	3rd ANNUAL OPERATING SERVICE CHARGE	103,651.86
#3	1st HALF-MILLION DOLLAR PAYMENT PER 4.1(F)	500,000.00
#4	2nd HALF-MILLION DOLLAR PAYMENT PER 4.1 (F)	500,000.00
#5	3rd HALF-MILLION DOLLAR PAYMENT PE 4.1 (F)	500,000.00
#6	NEGOTIATED INTEREST CHARGE FOR THREE (3) HALF MILLION DOLLAR PAYMENTS	25,000.00
#7	INTEREST CHARGE ON 3rd OPERATING SERVICE CHARGE	5,927.59
~~#7~~ 8	INTEREST CHARGE ON 2nd OPERATING SERVICE CHARGE	~~22,174.29~~ 16,246.70
	TOTAL	$1,752,104.30

TRE/wl

cc: Bud Karachiwala
cc: Joseph F. Golden, Jr. ACTING CFO
cc: Tom Smyth VP - RECTR.

Frm 47349 Rev 9-88

AUG 23 '99 09:57 2158756919 PAGE.03

EXHIBIT "A"

CHASE

DRAFT

Irrevocable Letter of Credit Number P-369044

Date: ______________

Beneficiary:
The City of Philadelphia
c/o Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, PA 19122
Attention Vice President
of Gas Planning and Supply

Applicant:
Grays Ferry Cogeneration Partnership
c/o Trigen-Schuylkill Cogeneration, inc.
2600 Christian Street
Philadelphia, PA 19146

Dear Beneficiary:

At the request and for the account of Grays Ferry Cogeneration Partnership, a Pennsylvania General Partnership ("Grays Ferry"). We hereby establish in your favor our Irrevocable Letter of Credit No. P-368044 (this "Letter of Credit") whereby, subject to the terms and conditions contained herein, you hereby are authorized irrevocably to draw on us, by your draft or drafts at sight, an aggregate amount (such amount the "Stated Amount") not to exceed, as of the date of any such draft drawn under this Letter of Credit (such draft a "Sight Draft") $1,000,000.00 (One Million Dollars).

This Letter of Credit shall be effective immediately and shall expire on the expiration date (as hereinafter defined), this Letter of Credit is established pursuant to Section 4.1(b) and 7.7(b) of that certain Service Contract dated as of January 28, 1996 (collectively the "Agreement") between Philadelphia Authority for Industrial Development ("Paid") and Grays Ferry.

Partial drawings on this Letter of Credit are permitted.

Funds under this Letter of Credit shall be available to you upon presentation to us of:

(i) a Sight Draft drawn on us in the form of Exhibit A hereby in the amount of such demand (which amount, together with the amounts of any previous Sight Drafts presented hereunder, shall not exceed the Stated Amount), and

(ii) a Drawing Certificate in the form of Exhibit B hereby duly executed and delivered by your authorized representative.

You will provide us telephonic notice at (212-638-2016) prior to or contemporaneously with the presentation by mail), hand delivery or overnight delivery service of such Sight Draft and Drawing Certificate. Presentation of any Sight Draft and Drawing Certificate shall be made at our office located at 55 Water Street, New York, NY 10041, Room 1708, attn: standby Letter of Credit dept.) and shall be effective upon receipt.

We hereby agree that any Sight Draft drawn under and in compliance with the terms of this Letter of Credit shall be duly honored by us upon delivery of the above-specified Drawing Certificate, if presented on or before the expiration date at our office specified above, if a drawing is made by you hereunder at or prior to 10:00 a.m. New York time on a business day and provided that such drawing and the documents presented in connection therewith conform to the terms and conditions hereof, payment shall be made to you of the amount specified, in immediately available funds, at or before 3:00 p.m. New York time on such business day.

If a drawing in respect of payment is made by you hereunder after 10:00 a.m. New York time on a Business day and provided that such drawing and the documents presented in connection therewith conform to the terms and conditions hereof, payment shall be made to you of the amount specified, in immediately available funds, at or before 3:00 p.m. New York time on the business day thereafter.

As used herein business day shall mean any day other than a Saturday, Sunday or day on which Banking institutions in the State of New York are authorized or required by law to close. If any drawings or the documentation presented in connection therewith do not conform to the terms and conditions hereof we will promptly advise you of same by telephone and give the reasons for such non-conformance.

This Letter of Credit shall expire and be delivered to us for cancellation on the expiration date which shall be the earliest to occur of:

(a) at the close of business, New York time, one year from the date hereof;
(b) the date you or your account have been paid in full the Stated Amount pursuant to a Sight Draft or Sight Drafts drawn hereunder;
(c) the date fifteen days after delivery by us to you of a written notice of revocation; by mail, hand delivery or overnight delivery service;
(d) the date you notify us in writing that you have accepted a Letter of Credit or an alternate form of security as a substitute for this Letter of Credit;
(e) the date you notify us in writing that the agreement has expired or has been terminated and all amounts due to Beneficiary thereunder have been paid in full; or
(f) the date on which you surrender this Letter of Credit for cancellation, whether pursuant to the terms of the agreement, or otherwise.

This Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits (1993 Revision), International Chamber of Commerce Publication No. 500 (the "UCP") and to the extent not inconsistent therewith shall be governed by and construed in accordance with the laws of the State of New York in the event of a conflict between the UCP and the laws of the State of New York, the UCP shall prevail.

Other than as provided herein, communications with respect to this Letter of Credit shall be in writing and shall be addressed to The Chase Manhattan Bank at our address set forth above, specifically referring therein to Letter of Credit No. P-368044.

This Letter of Credit may be transferred in its entirety, but not in part, with our consent, which shall not be unreasonably withheld. Transfer of all rights of the Beneficiary of this Letter of Credit to such transferee shall be effected by the presentation to us of this Letter of Credit accompanied by a request, in the form of Exhibit C hereto, that we reissue this Letter of Credit in favor of such transferee. Upon such presentation, we shall forthwith issue an irrevocable letter of credit to such transferee, reflecting the transferee as Beneficiary and otherwise in the form of this Letter of Credit, our transfer fee being for account of the Applicant.

Upon the payment to you or your account for the full aggregate Stated Amount specified herein, we shall be fully discharged of our obligations under this Letter of Credit.

This Letter of Credit sets forth in full the terms of our undertaking.
Reference in this Letter of Credit to other documents or instruments is for identification purposes only and such reference shall not modify or affect the terms hereof or cause such documents or instruments to be deemed incorporated herein.

Yours Truly,

The Chase Manhattan Bank

Authorized Signature

DRAWING CERTIFICATE

DRAFT

TO: THE CHASE MANHATTAN BANK
55 Water Street, Room 1708
New York, NY 10041
Attention: Standby Letter of Credit Dept.

This is a Drawing Certificate under Letter of Credit No. P-368044

I, Stephanie Franklin-Suber, City Solicitor, an authorized representative of THE CITY OF PHILADELPHIA (the "City") do hereby certify that:

This drawing is made pursuant to Letter of Credit No. P-368044 issued by THE CHASE MANHATTAN BANK (the "Letter of Credit").

In accordance with the terms and conditions of the Service Contract dated as of January 28, 1996 (the "Agreement") between the Philadelphia Authority for Industrial Development ("PAID") and Grays Ferry Cogeneration Partnership, a Pennsylvania General Partnership ("Grays Ferry") the City is entitled to and hereby demands payment in the amount of $______________________, such amount to be paid to the City by wire transfer in immediately available funds to:

[WIRE TRANSFER
ACCOUNT INFORMATION]

[GFCP has failed to pay any amount payable by GFCP under the Agreement, which failure (a)(i) constitutes a default under the Agreement, or (ii) but for the passage of time or the giving of notice by PAID, or both, would constitute a default under the Agreement; and (b) would permit PAID to terminate the Agreement, and at least ten days have passed since we provided written notice to Grays Ferry that such amounts are due and unpaid.]

OR

[The Agreement has terminated because of a breach by PAID, and after resolution of damages due Grays Ferry by PAID a balance is due and payable to the City of $_______________ with respect to the Aggregate Facilities Demand Charge and of $_________________ under Section 4.1 of the Agreement, and at least ten days have passed since we provided written notice to Grays Ferry that such amounts are due and unpaid.]

OR

[The Agreement has terminated for a reason other than a breach by PAID, and there has been (i) no default by Grays Ferry, or (ii) no prior act or omission of Grays Ferry which with the passage of time or the giving of notice would constitute a default which would permit PAID to terminate the Agreement, and amounts constituting the Facilities Demand Charge in the amount of $________________________, or amounts payable under Section 4.1 of the Agreement in the amount of $________________________, are due and payable to the City, and at least ten days have passed since we provided written notice to Grays Ferry that such amounts are due and unpaid.]

OR

[The Letter of Credit will terminate in 30 days or less, and has not been extended or replaced.]

OR

[We have received a notice of revocation of the Letter of Credit from The Chase Manhattan Bank.]

As of the date hereof, the aggregate amount drawn under such Letter of Credit plus the amount requested in this Drawing Certificate does not exceed the Stated Amount (as defined in the Letter of Credit). This Drawing Certificate is accompanied by a duly executed Sight Draft.

IN WITNESS WHEREOF, ____________________________, has executed and delivered this Drawing Certificate this ________________ day of _____________ 19___.

THE CITY OF PHILADELPHIA

By: The City Solicitor

By: _________________________

Name: ______________________

DRAFT

SIGHT DRAFT

Date:

TO: THE CHASE MANHATTAN BANK
55 Water Street
17th Floor, Room 1708
New York, NY 10041
Attention: Standby Letter of Credit Department

Re: Letter of Credit No. P-368044

On Sight

Pay to THE CITY OF PHILADELPHIA in immediately available funds ______________________ U.S. Dollars (U.S. $__________________________) at or before 3:00 p.m. New York time, on the date hereof, if this Sight Draft is presented prior to 10:00 a.m. New York time, pursuant to Letter of credit No. P-368044 of the Chase Manhattan Bank and otherwise by 3:00 p.m. New York time, on the next business day following the date hereof.

This Sight Draft is accompanied by a duly executed Drawing Certificate.

THE CITY OF PHILADELPHIA

By:__________________________

Name:________________________

CHASE

EXHIBIT C

TRANSFER CERTIFICATE

TO: The Chase Manhattan Bank
55 Water Street
17th Floor, Room 1708
New York NY 10041
Attention: Standby Letter of Credit Department

Re: Letter of Credit No. P-368044

The undersigned as Beneficiary under Letter of Credit No. P-368044 issued by The Chase Manhattan Bank at the request and for the account of Grays Ferry Cogeneration Partnership hereby irrevocably transfers to:

(Name of Transferee)
(Address of Transferee)

all rights of the undersigned Beneficiary to draw under such Letter of Credit. Such Transferee has succeeded to the undersigned as the Beneficiary under such Letter of Credit.

By this transfer, all rights of the undersigned Beneficiary in such Letter of Credit are transferred to the transferee and the transferee shall have the sole rights of the undersigned Beneficiary as beneficiary thereof.

Your original Letter of Credit No. P-368044 is returned herewith, and we ask you, simultaneously with your receipt and cancellation of this Letter of Credit, to issue a new letter of Credit in the form of such letter of credit reflecting such transferee as the beneficiary in place of the undersigned Beneficiary, and forward same to the transferee.

Very Truly Yours,

THE CITY OF PHILADELPHIA

By: The City Solicitor

By: ___________________________

Name: ______________________

The Chase Manhattan Bank
4 Chase Metrotech Center
8th Floor
Brooklyn, NY 11245

Irrevocable Letter of Credit Number P-293065

Date: September 21, 1999

Beneficiary:
The City of Philadelphia
c/o Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, PA 19122
Attention Vice President
of Gas Planning and Supply

Applicant:
Grays Ferry Cogeneration Partnership
c/o Trigen-Schuylkill Cogeneration, Inc.
2600 Christian Street
Philadelphia, PA 19146

Dear Beneficiary:

At the request and for the account of Grays Ferry Cogeneration Partnership, a Pennsylvania General Partnership ("Grays Ferry"), we hereby establish in your favor our Irrevocable Letter of Credit No. P-293065 (this "Letter of Credit") whereby, subject to the terms and conditions contained herein, you hereby are authorized irrevocably to draw on us, by your draft or drafts at sight, an aggregate amount (such amount the "Stated Amount") not to exceed, as of the date of any such draft drawn under this Letter of Credit (such draft a "Sight Draft") $1,000,000.00 (One Million Dollars).

This Letter of Credit shall be effective immediately and shall expire on the expiration date (as hereinafter defined), this Letter of Credit is established pursuant to Section 4.1(b) and 7.7(b) of that certain Service Contract dated as of January 28, 1996 (collectively the "Agreement") between Philadelphia Authority for Industrial Development ("Paid") and Grays Ferry.

Partial drawings on this Letter of Credit are permitted.

Funds under this Letter of Credit shall be available to you upon presentation to us of:

(i) a Sight Draft drawn on us in the form of Exhibit A hereto in the amount of such demand (which amount, together with the amounts of any previous Sight Drafts presented hereunder, shall not exceed the Stated Amount), and

(ii) a Drawing Certificate in the form of Exhibit B hereby duly executed and delivered by your authorized representative.

You will provide us telephonic notice at (718-242-4884) prior to or contemporaneously with the presentation by mail, hand delivery or overnight delivery service of such Sight Draft and Drawing Certificate, presentation of any Sight Draft and Drawing Certificate shall be made at our office located at 4 Chase Metrotech Center, 8th Floor, Brooklyn, NY 11245 attn: Standby Letter of Credit Dept., and shall be effective upon receipt.

We hereby agree that any Sight Draft drawn under and in compliance with the terms of this Letter of Credit shall be duly honored by us upon delivery of the above-specified Drawing Certificate, if presented on or before the expiration date at our office specified above, if a drawing is made by you hereunder at or prior to 10:00 a.m. New York time on a business day and provided that such drawing and the documents presented in connection therewith conform to the terms and conditions hereof, payment shall be made to you of the amount specified, in immediately available funds, at or before 3:00 p.m. New York time on such business day.

If a drawing in respect of payment is made by you hereunder after 10:00 a.m. New York time on a Business day and provided that such drawing and the documents presented in connection therewith conform to the terms and conditions hereof, payment shall be made to you of the amount specified, in immediately available funds, at or before 3:00 p.m. New York time on the business day thereafter.

As used herein business day shall mean any day other than a Saturday, Sunday or day on which Banking institutions in the State of New York are authorized or required by law to close. If any drawings or the documentation presented in connection therewith do not conform to the terms and conditions hereof we will promptly advise you of same by telephone and give the reasons for such non-conformance.

This Letter of Credit shall expire and be delivered to us for cancellation on the expiration date which shall be the earliest to occur of:

(a) at the close of business, New York time, one year from the date hereof;
(b) the date you or your account have been paid in full the Stated Amount pursuant to a Sight Draft or Sight Drafts drawn hereunder;
(c) the date fifteen days after delivery by us to you of a written notice of revocation; by mail, hand delivery or overnight delivery service;
(d) the date you notify us in writing that you have accepted a Letter of Credit or an alternate form of security as a substitute for this Letter of Credit;
(e) the date you notify us in writing that the agreement has expired or has been terminated and all amounts due to Beneficiary thereunder have been paid in full; or
(f) the date on which you surrender this Letter of Credit for cancellation, whether pursuant to the terms of the agreement, or otherwise.

This Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits (1993 Revision), International Chamber of Commerce Publication No. 500 (the "UCP") and to the extent not inconsistent therewith shall be governed by and construed in accordance with the laws of the State of New York. In the event of a conflict between the UCP and the laws of the State of New York, the UCP shall prevail.

Other than as provided herein, communications with respect to this Letter of Credit shall be in writing and shall be addressed to The Chase Manhattan Bank at our address set forth above, specifically referring therein to Letter of Credit No. P-293065.

This Letter of Credit may be transferred in its entirety, but not in part, with our consent, which shall not be unreasonably withheld. Transfer of all rights of the Beneficiary of this Letter of Credit to such transferee shall be effected by the presentation to us of this Letter of Credit accompanied by a request, in the form of Exhibit C hereto, that we reissue this Letter of Credit in favor of such transferee. Upon such presentation, we shall forthwith issue an irrevocable letter of credit to such transferee, reflecting the transferee as Beneficiary and otherwise in the form of this Letter of Credit, our transfer fee being for account of the Applicant.

Upon the payments to you or your account for the full aggregate Stated Amount specified herein, we shall be fully discharged of our obligations under this Letter of Credit.

This Letter of Credit sets forth in full the terms of our undertaking.

Reference in this Letter of Credit to other documents or instruments is for identification purposes only and such reference shall not modify or affect the terms hereof or cause such documents or instruments to be deemed incorporated herein.

Yours Truly,

The Chase Manhattan Bank

Satya Kharga

Authorized Signature
SATYA KHARGA

P-293065.doc [W97]

3 8856 (7/96)9-98

SIGHT DRAFT

Exhibit A

Date:

TO: THE CHASE MANHATTAN BANK
4 Chase Metrotech Center
8th Floor
Brooklyn, NY 11245
Attention: Standby Letter of Credit Department

Re: Letter of Credit No. P-293065

On Sight

Pay to THE CITY OF PHILADELPHIA in immediately available funds ____________________ U.S. Dollars (U.S. $____________________) at or before 3:00 p.m. New York time, on the date hereof, if this Sight Draft is presented prior to 10:00 a.m. New York time, pursuant to Letter of credit No. P-293065 of the Chase Manhattan Bank and otherwise by 3:00 p.m. New York time, on the next business day following the date hereof.

This Sight Draft is accompanied by a duly executed Drawing Certificate.

THE CITY OF PHILADELPHIA

By:____________________

Name:____________________

Exhibit B

DRAWING CERTIFICATE

TO: THE CHASE MANHATTAN BANK
4 Chase Metrotech Center
8th Floor
Brooklyn, NY 11245
Attention Standby Letter of Credit Dept.

This is a Drawing Certificate under Letter of Credit No. P-293065

I, Stephanie Franklin-Suber, City Solicitor, an authorized representative of THE CITY OF PHILADELPHIA (the "City") do hereby certify that:

This drawing is made pursuant to Letter of Credit No. P-293065 issued by THE CHASE MANHATTAN BANK (the "Letter of Credit").

In accordance with the terms and conditions of the Service Contract dated as of January 28, 1996 (the "Agreement") between the Philadelphia Authority for Industrial Development ("PAID") and Grays Ferry Cogeneration Partnership, a Pennsylvania General Partnership ("Grays Ferry") the City is entitled to and hereby demands payment in the amount of $________________________, such amount to be paid to the City by wire transfer in immediately available funds to:

[WIRE TRANSFER
ACCOUNT INFORMATION]

[GFCP has failed to pay any amount payable by GFCP under the Agreement, which failure (a)(i) constitutes a default under the Agreement, or (ii) but for the passage of time or the giving of notice by PAID, or both, would constitute a default under the Agreement; and (b) would permit PAID to terminate the Agreement, and at least ten days have passed since we provided written notice to Grays Ferry that such amounts are due and unpaid.]

OR

[The Agreement has terminated because of a breach by PAID, and after resolution of damages due Grays Ferry by PAID a balance is due and payable to the City of $________________ with respect to the Aggregate Facilities Demand Charge and of $__________________ under Section 4.1 of the Agreement, and at least ten days have passed since we provided written notice to Grays Ferry that such amounts are due and unpaid.]

OR

[The Agreement has terminated for a reason other than a breach by PAID, and there has been (i) no default by Grays Ferry, or (ii) no prior act or omission of Grays Ferry which with the passage of time or the giving of notice would constitute a default which would permit PAID to terminate the Agreement, and amounts constituting the Facilities Demand Charge in the amount of $_________________________, or amounts payable under Section 4.1 of the Agreement in the amount of $________________________, are due and payable to the City, and at least ten days have passed since we provided written notice to Grays Ferry that such amounts are due and unpaid.]

OR

[The Letter of Credit will terminate in 30 days or less, and has not been extended or replaced.]

OR

[We have received a notice of revocation of the Letter of Credit from The Chase Manhattan Bank.]

As of the date hereof, the aggregate amount drawn under such Letter of Credit plus the amount requested in this Drawing Certificate does not exceed the Stated Amount (as defined in the Letter of Credit). This Drawing Certificate is accompanied by a duly executed Sight Draft.

IN WITNESS WHEREOF, __________________________, has executed and delivered this Drawing Certificate this ________________ day of ____________ 19___.

THE CITY OF PHILADELPHIA

By: The City Solicitor

By: ________________________

Name: ______________________

Exhibit C

Transfer Certificate

To: The Chase Manhattan Bank
4 Chase Metrotech Center
8th Floor
Brooklyn, NY 11245
Attention: Standby Letter of Credit Department

Re: Letter of Credit No. P-293065

The undersigned as Beneficiary under Letter of Credit No. P-293065 issued by the Chase Manhattan Bank at the request and for the account of Grays Ferry Cogeneration Partnership hereby irrevocably transfers to:

(Name of Transferee)
(Address of Transferee)

all rights of the undersigned Beneficiary to draw under such Letter of Credit such Transferee has succeeded to the undersigned as the Beneficiary under such Letter of Credit.

By this transfer, all rights of the undersigned Beneficiary in such Letter of Credit, are transferred to the transferee and the transferee shall have the sole rights of the undersigned Beneficiary as beneficiary thereof.

Your original Letter of Credit no. P-293065 is returned herewith, and we ask you, simultaneously with your receipt and cancellation of this Letter of Credit, to issue a new Letter of Credit in the form of such Letter of Credit reflecting such transferee as the beneficiary in place of the undersigned Beneficiary, and forward same to the transferee.

Very Truly Yours,
The City of Philadelphia

By: The City Solicitor

By: ____________

Name: ___________

EXHIBIT JC3

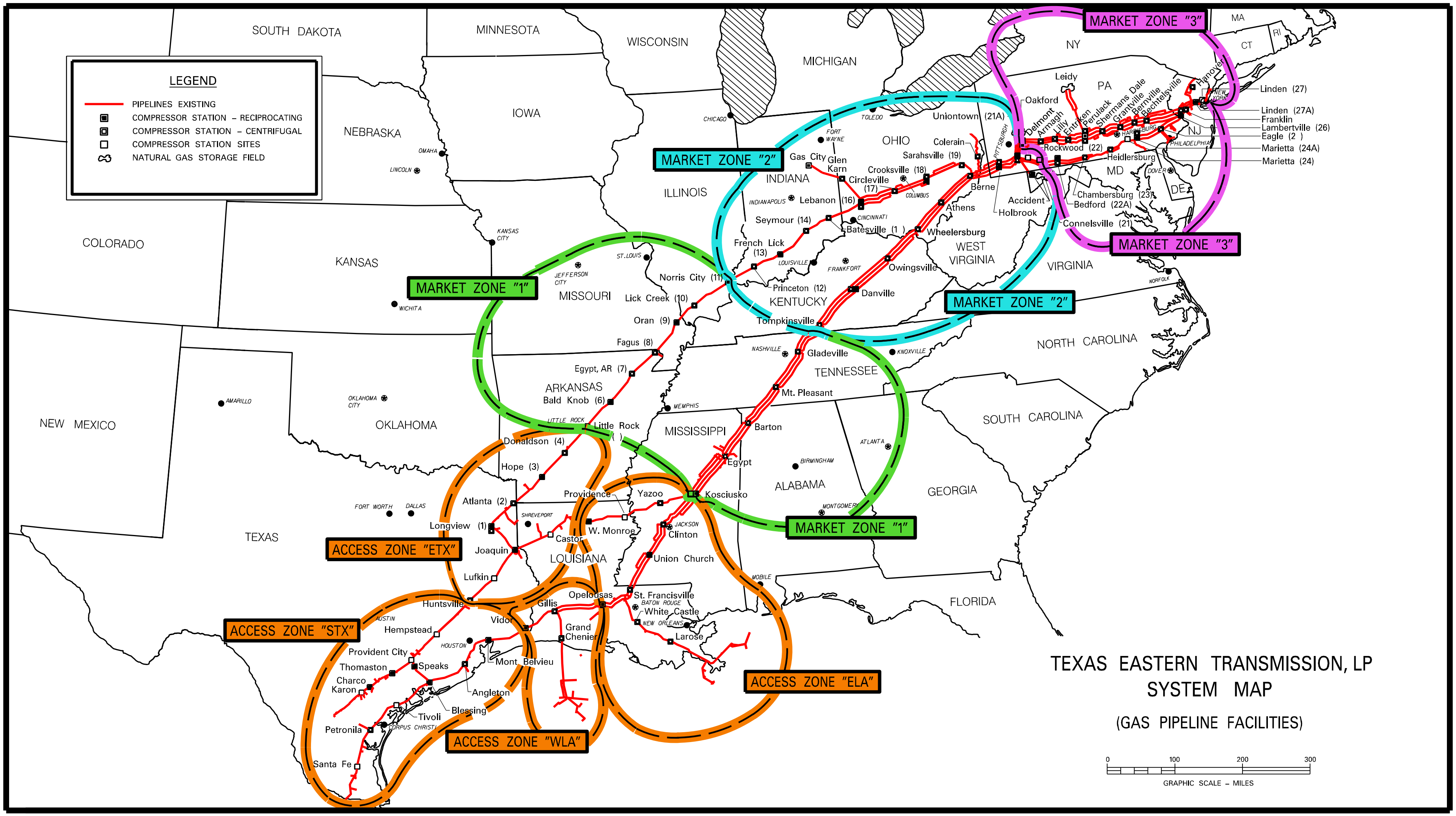
TEXAS EASTERN TRANSMISSION, LP
SYSTEM MAP
(GAS PIPELINE FACILITIES)
LEGEND
PIPELINES EXISTING
COMPRESSOR STATION – RECIPROCATING
COMPRESSOR STATION – CENTRIFUGAL
COMPRESSOR STATION SITES
NATURAL GAS STORAGE FIELD
MARKET ZONE "3"
MARKET ZONE "2"
MARKET ZONE "1"
ACCESS ZONE "ETX"
ACCESS ZONE "STX"
ACCESS ZONE "WLA"
ACCESS ZONE "ELA"
SOUTH DAKOTA
MINNESOTA
WISCONSIN
MICHIGAN
NY
MA
CT
RI
NEBRASKA
IOWA
ILLINOIS
INDIANA
OHIO
PA
NJ
MD
DE
COLORADO
KANSAS
MISSOURI
KENTUCKY
WEST VIRGINIA
VIRGINIA
NORTH CAROLINA
TENNESSEE
SOUTH CAROLINA
NEW MEXICO
OKLAHOMA
ARKANSAS
MISSISSIPPI
ALABAMA
GEORGIA
TEXAS
LOUISIANA
FLORIDA
Leidy
Oakford
Delmont
Armagh
Lilly
Entriken
Perulack
Shermans Dale
Grantville
Bernville
Bechtelsville
Hanover
Linden (27)
Linden (27A)
Franklin
Lambertville (26)
Eagle (2)
Marietta (24A)
Marietta (24)
Uniontown (21A)
Colerain
Rockwood (22)
Heidlersburg
Chambersburg (23)
Bedford (22A)
Connelsville (21)
Accident
Holbrook
Berne
Athens
Wheelersburg
Owingsville
Danville
Sarahsville (19)
Crooksville (18)
Circleville (17)
Lebanon (16)
Batesville (1)
Seymour (14)
French Lick (13)
Princeton (12)
Gas City
Glen Karn
Norris City (11)
Lick Creek (10)
Oran (9)
Fagus (8)
Egypt, AR (7)
Bald Knob (6)
Little Rock
Donaldson (4)
Hope (3)
Atlanta (2)
Longview (1)
Joaquin
Lufkin
Huntsville
Hempstead
Provident City
Thomaston
Speaks
Charco
Karon
Petronila
Santa Fe
Tivoli
Blessing
Angleton
Mont Belvieu
Vidor
Gillis
Grand Chenier
Opelousas
Providence
Castor
W. Monroe
Yazoo
Kosciusko
Clinton
Union Church
St. Francisville
White Castle
Larose
Egypt
Barton
Mt. Pleasant
Gladeville
Tompkinsville
CHICAGO
TOLEDO
FORT WAYNE
INDIANAPOLIS
COLUMBUS
CINCINNATI
LOUISVILLE
FRANKFORT
PITTSBURGH
HARRISBURG
PHILADELPHIA
NEW YORK
DOVER
NORFOLK
NASHVILLE
KNOXVILLE
ATLANTA
BIRMINGHAM
MONTGOMERY
MOBILE
MEMPHIS
JACKSON
BATON ROUGE
NEW ORLEANS
ST. LOUIS
JEFFERSON CITY
KANSAS CITY
OMAHA
LINCOLN
WICHITA
OKLAHOMA CITY
AMARILLO
FORT WORTH
DALLAS
SHREVEPORT
LITTLE ROCK
AUSTIN
HOUSTON
CORPUS CHRISTI
0
100
200
300
GRAPHIC SCALE – MILES

EXHIBIT JC4

Philadelphia Gas Works
Case Name: GRAYS FERRY COGENERATION PARTNERSHIP
Docket No(s): C-2021-3029259

Response to Discovery Request: 1-2 Date of Response: 1/28/2022 Response Provided By: Joseph Hawkinson

Question:
Provide annual maintenance documents since the placement into service of the four-mile line. Indicate actual maintenance task, date, and cost.

Attachments: 0

Response:

The Company does not maintain annual maintenance records by main. However, the cost of service allocates $995,000 of mains and maintenance of mains expenses in Accounts 874 and 887.

EXHIBIT JC5

REDACTED

EXHIBIT JC6

Philadelphia Gas Works
Case Name: GCR 23
Docket No(s): R-2023-3038069

Response to Discovery Request: Vicinity Set II-7
Date of Response: 4/6/2023
Response Provided By: Ryan Reeves

Question:

For the period from 2018 through 2022, identify capacity release revenues resulting from capacity on the Philadelphia Lateral. Provide data on all transactions including but not limited to date, party, amount of capacity, expense PGW had paid for capacity, and revenue received for capacity.

Attachments: 2

Vicinity_Set_II_7_Philly Lateral Releases 2018-2022.pdf
Vicinity_Set_II_7_VIC II-7 - TETCO Rates.pdf

Response:

Please see attached spread sheet and .pdf. PGW provided all the releases, contract numbers, volume, dates, offer number, award #, winning party, and revenues from the release. PGW has included the tariff pages from Texas Eastern during this time frame as well.

Tetco

1) Company: Texla Energy
Contact: Mark Conely
Contract #800233 (STX 24" - M3)
Volume – 3,000 DTH/Day
Rate: $0.081
Term: April 1, 2018 - October 31, 2018
Offer #: 081806
Award #: 085717
Revenue: $52,002.00

2) Company: Tenaska Gas Storage
Contact: Scott Prophit
Contract #800233
Volume – 15,708 DTH/Day
Rate: $0.115
Term: April 1, 2018 - October 31, 2018
Offer #: 081800
Award #: 085723
Revenue: $386,573.88

3) Company: Colonial Energy
Contact: James Toczyl
Contract #800514
Volume – 18,000 DTH/Day telescoped
Rate: $0.097
Term: April 1, 2018 - April 30, 2018
Offer #: 082051
Award #: 085919
Revenue: $ 52,380.00

4) Company: Colonial Energy
Contact: James Toczyl
Contract #800515
Volume – 18,000 DTH/Day telescoped
Rate: $0.051
Term: April 1, 2018 - April 30, 2018
Offer #: 082050
Award #: 085920
Revenue: $ 27,540.00

6) Company: Castleton Commodities Merchant Trading
Contact: Walker Weston
Contract #800233
Volume – 15,708 DTH/Day (STX 30" - M3)
Rate: $1.60
Term: November 1, 2018 - March 31, 2019
Offer #: 084871
Award #: 088625
Revenue: $ 3,795,052.80

6) Company: J Aron & Co
Contact:
Contract #800514
Volume – 18,000 DTH/Day telescoped
Rate: $0.15
Term: October 1, 2018 - October 31, 2018
Offer #: 085187
Award #: 088906
Revenue: $ 83,700.00

7) Company: J Aron & Co
Contact:
Contract #800515
Volume – 18,000 DTH/Day telescoped
Rate: $0.15
Term: October 1, 2018 - October 31, 2018
Offer #: 085188
Award #: 088905
Revenue: $ 83,700.00

Tetco

1) Company: Colonial Energy
Contact: James Toczyl
Contract #800233
STX 30" - M3 (Philadelphia Lateral Included)
Volume – 15,708 DTH/Day
Rate: $0.054
Term: April 1, 2019 - October 31, 2019
Offer #: 088818
Award #: 092211
Revenue: $181,521.65

3) Company: Colonial Energy
Contact: James Toczyl
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.041
Term: April 1, 2019 - April 30, 2019
Offer #: 088775
Award #: 092221
Revenue: $22,140

4) Company: Sequent
Contact: John Turnbo
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.032
Term: April 1, 2019 - April 30, 2019
Offer #: 088778
Award #: 092220
Revenue: $17,280.00

5) Company: Sequent
Contact: John Turnbo
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.0475
Term: October 1, 2019 - October 31, 2019
Offer #: 091710
Award #: 094930
Revenue: $26,505.00

6) Company: Sequent
Contact: John Turnbo
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.05
Term: October 1, 2019 - October 31, 2019
Offer #: 091712
Award #: 094929
Revenue: $27,900.00

8) Company: PBF Energy
Contact: Alan King
Contract #800233
M3 30" - M3 30"
Volume – 15,708 DTH/Day
Rate: $0.25
Term: November 1, 2019 - March 31, 2020
Offer #: 091831
Award #: 095037
Revenue: $592,977.00

Tetco

1) Company: Sequent
Contact: John Turnbo
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.032
Term: April 1, 2020 - April 30, 2020
Offer #: 095431
Award #: 098359
Revenue: $17,280.00

2) Company: Colonial Energy
Contact: Cary Bender
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.03
Term: April 1, 2020 - April 30, 2020
Offer #: 095432
Award #: 098358
Revenue: $16,200.00

5) Company: Vitol
Contact: Matt Monday
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.095
Term: October 1, 2020 - October 301 2020
Offer #: 098785
Award #: 101481
Revenue: $53,010.00

6) Company: Spotlight Energy
Contact: Matt Steinberg
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.101
Term: October 1, 2020 - October 301 2020
Offer #: 098786
Award #: 101480
Revenue: $56,358

7) Company: Spotlgiht Energy
Contact: Matt Steinberg
Contract #800233
STX 30" - M3 30" (Philadelphia Lateral Included)
Volume – 15,708 DTH/Day
Rate: $1.01
Term: November 1, 2020- March 31, 2021
Offer #: 098783
Award #: 101483
Revenue: $2,395,627.08

Tetco

1) Company: Vitol
Contact: Matt Monday
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.08
Term: April 1, 2021 - April 30, 2021
Offer #: 102415
Award #: 104900
Revenue: $43,200

2) Company: Vitol
Contact: Matt Monday
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.08
Term: April 1, 2021 - April 30, 2021
Offer #: 102416
Award #: 104899
Revenue: $43,200

3) Company: Vitol
Contact: Matt Monday
Contract #800233
STX 30" - M3 30" (Philadelphia Lateral Included)
Volume – 15,708 DTH/Day
Rate: $0.05
Term: April 1, 2021 - October 31, 2021
Offer #: 102420
Award #: 104897
Revenue: $192,423

5) Company: Twin Eagle
Contact: Angie LeBlanc
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.031
Term: October 1, 2021 - October 31, 2021
Offer #: 105314
Award #: 107762
Revenue: $17,298

6) Company: Castleton
Contact: Jack Pellegrin
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.061
Term: October 1, 2021 - October 31, 2021
Offer #: 105288
Award #: 107556
Revenue: $34,038

7) Company: Castleton
Contact: Jack Pellegrin
Contract #800233
STX 30" - M3 30" (Philadelphia Lateral Included)
Volume – 15,708 DTH/Day
Rate: $1.691
Term: November 1, 2021 - March 31, 2022
Offer #: 105289
Award #: 107555
Revenue: $4,010,896.43

Tetco

1) Company: Twin Eagle
Contact: Marc Tronzo
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.061
Term: April 1, 2022 - April 30, 2022
Offer #: 108957
Award #: 110981
Revenue: $32,940

2) Company: Vitol
Contact: Matt Monday
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.06
Term: April 1, 2022 - April 30, 2022
Offer #: 108961
Award #: 110978
Revenue: $32,400

3) Company: Tenaska Gas Storage
Contact: Greig Whitney
Contract #800233
STX 30" - M3 30" (Philadelphia Lateral Included)
Volume – 15,708 DTH/Day
Rate: $0.105
Term: April 1, 2022 - October 31, 2022
Offer #: 108959
Award #: 110980
Revenue: $352,958.76

6) Company: Paulsboro Refining
Contact: Alan King
Contract #800233
M3 30" - M3 30"
Volume – 15,708 DTH/Day
Rate: $0.10
Term: November 1, 2022 - March 31, 2023
Offer #: 112510
Award #: 114365
Revenue: $237,190.80

8) Company: Twin Eagle
Contact: Angie LeBlanc
Contract #800514
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.046
Term: October 1, 2022 - October 31, 2022
Offer #: 112650
Award #: 114445
Revenue: $25,668

9) Company: Twin Eagle
Contact: Angie LeBlanc
Contract #800515
Volume – 18,000 DTH/Day telescoped
3,000 DTH WLA; 6,000 DTH ELA; 9,000 DTH M1-M3 (on 30")
Rate: $0.046
Term: October 1, 2022 - October 31, 2022
Offer #: 112653
Award #: 114444
Revenue: $25,668

EXHIBIT JC-7

REVISED

GENERAL SERVICE EXTRA LARGE TRANSPORTATION - RATE GS-XLT

AVAILABILITY

This Rate GS-XLT is only available to Customer(s) who share a common point of interconnection that collectively consumes gas and whose natural gas throughput to its Facilities on the PGW system is greater than 9 Bcf annually or, if a new customer, that can demonstrate to the Company's satisfaction such future use and throughput.

The term "Facilities" means the gas burning equipment of the Customers. Facilities that operate in a coordinated fashion among affiliated (commonly owned) entities on a contiguous parcel of land and receive service though a common point of interconnection shall be treated as a single customer for purposes of this rate schedule.

CHARACTER OF SERVICE

Transportation Service under this rate schedule is ~~firm~~ interruptible and may~~shall~~ be interrupted only in cases of operating emergencies experienced by the Company or instances of Force Majeure. The Company assumes no liability for interruptions caused by failure of supply sources or upstream transportation by third parties and shall not be obligated to deliver Gas under this rate schedule on any day that Gas is not received at its gate station for the Customer's account.

MONTHLY RATE

The Monthly Charge shall be the sum of the following:

1. **CUSTOMER CHARGE**: $~~1,100~~250.00 per month (Parallel meters are considered one meter):

2. **LOCAL GAS TRANSPORTATION SERVICE**:

"Local Gas Transportation Service" shall mean the local Gas transportation service provided by the Company, pursuant to this Rate GS-XLT, from Gate Station 060 to the Facility metering station.

PGW will provide ~~firm non-~~interruptible Local Gas Transportation Service to the Customer's Facility for up to 60~~50~~,000 Dekatherms per Day. Customer, ~~at PGW discretion~~, may balance its daily purchases, nominations, and deliveries in the interstate pipeline(s) and PGW shall have no responsibility for banking or balancing Customer's transportation deliveries.

The Local Gas Transportation Charge shall be an amount equal to $0.0397~~11067~~ per Dth, as measured by PGW at the Customer's metering station(s).

The Customer shall reimburse Company for any expense actually incurred for Customer's benefit from third party sources in the provision of this Service, such as directly assignable taxes, pipeline balancing penalties, governmentally imposed charges, and contingent liability for external transportation charges and fuel requirements. Additionally, for existing Customers, any unavoidable Gas supply costs (e.g., pipeline demand charges) incurred on the Customer's behalf. Such charges shall be in addition to charges specified elsewhere in this Rate GS-XLT. Minimum annual quantity is 9 Bcf.

3. ALTERNATIVE RECEIPT SERVICE

Rate GS-XLT Customers shall pay PGW a rate per Dth equal to the ~~greater of (1) the~~ average revenue per Dth received by the Company from all releases of capacity with the receipt point in TETCO zone M-3 and delivery point at any meter on the Philadelphia Lateral, excluding choice capacity releases and asset management agreement associated release, of recallable capacity on Texas Eastern Transmission ("TETCO"") during PGW's prior fiscal year, which shall be annually updated by PGW with the Commission by September 15 of each year following. ~~; or (2) the max TETCO tariff rate.~~ The Minimum ARS Quantity provided by the Company shall be ~~5,000~~0 Dth per day. ~~The minimum monthly charge shall be the above rate times 5,000 Dth times the number of days in the month regardless of whether the Customer uses less.~~ The Maximum ARS Quantity provided by the Company shall be 21,000 Dth/day.

Definitions Relevant to ARS

"Day" shall mean a period of time consisting of twenty-four hours and including the solar day and the night.

"Gate Station 060" shall mean the ~~new~~ gate station, referred to by TETCO as Point of Delivery No. 73060, ~~to be installed pursuant to the TETCO Precedent Agreement near~~located at the interconnection of the PGW ~~Liquids~~High Pressure Pipeline and the TETCO Philadelphia Lateral.

"Gate Station 034" shall mean the gate station, referred to by TETCO as Point of Delivery No. 70034, located at an interconnection of PGW's distribution system and TETCO's pipeline system in Montgomery County, Pennsylvania.

"Maximum ARS Quantity" shall mean 21,000 Dth of gas daily; provided.

Description of ARS

ARS is a natural gas swap arrangement. On each day PGW will, (i) accept at PGW's facilities at the outlet of Gate Station 034 delivery of a quantity in Dth of Gas nominated by the Rate GS-XLT Customer and actually delivered by TETCO (the "ARS Quantity") for such Day up to the Maximum ARS Quantity for such Day, and (ii) in exchange for such Gas, deliver to PGW's facilities at the outlet of Gate Station 060 on such Day a quantity of Gas in Dth equal to the ARS Quantity for such Day; provided however, that at its election, PGW shall be excused from its ARS obligations on any Day, up to a maximum of fifteen (15) Days per calendar year, on which the forecasted mean temperature for the greater Philadelphia metropolitan area, is forecasted by the National Weather Service to be twenty-five degrees Fahrenheit (25°) or less.

~~ARS, as described above, is a displacement service~~~~natural gas swap arrangement.~~ ~~Rate GS-XLT Customers are obligated to notify PGW thirty (30) days in advance of the first of every month they will accept ARS service of the volume of ARS they are accepting for the entire month up to the Maximum ARS Quantity without adjustment throughout the month. PGW, at its discretion, may use such unclaimed ARS volume's up to the Maximum ARS Quantity, at its discretion, for another purpose.~~

The Alternative Receipt Service rights granted to Rate GS-XLT Customers pursuant to the Service shall not be assignable by Rate GS-XLT Customers, and any Gas delivered by PGW to the Facility pursuant to ARS shall be used only in the Facility.

4. **SALES SERVICE:**

PGW will make Sales Service available to the Customer on a "best efforts" basis solely for use at the Customer's Facility, Rate GS-XLT Customers acknowledge that, from time to time on any given day, a request for Sales Service may be denied or limited by PGW in its sole judgment for economic or operational reasons and support documentation will be provided to the Customer.

The rate for such service shall be composed of a transportation component and a commodity component, as follows:

Transportation component:	The lowest applicable Interruptible Service Rate
Commodity component:	The current GCR Rate per Dth

For purposes of calculating Sales Service and transportation quantities, the first Gas recorded through the meters at the Facility Delivery Point on each Day for which Sales Service Gas has been nominated shall be considered Sales Service Gas.

5. **SURCHARGES**

The Universal Service and Energy Conservation Surcharge; the Efficiency Cost Recovery Surcharge; Other Post Employment Benefit Surcharge; and Distribution System Improvement Charge shall not apply to the Local Gas Transportation Service, Alternative Receipt Service, or Sales Service applied under this Rate GS-XLT.

6. **MINIMUM MONTHLY CHARGE:**

The minimum monthly charge shall be the Customer Charge per meter~~, and the minimum monthly ARS charge~~.

TERMS OF PAYMENT

Bills will be rendered and payment terms applied in accordance with this Tariff.

CONDITIONS OF USE

1. The Company shall not be obligated to incur the cost of additional facilities to provide Transportation Service hereunder for existing load. Nonetheless, in the event the Company elects to provide additional facilities, which in the Company's sole judgment are required to provide Transportation Service, the cost of such facilities shall be the responsibility of the Customer. Customers may appeal the Company's judgment to the Commission. The Company shall provide, install, own and maintain such facilities. Where applicable, extensions and enlargements of Gas supply facilities for qualifying new load shall be in accordance with Section 10.

2. The Customer warrants and will provide satisfactory documentation, upon request, that it has good and merchantable title for all Gas delivered to the Company for transportation hereunder. Title shall be free and clear of all liens, encumbrances and claims whatsoever. Customer will indemnify Company and hold the Company harmless from all suits, actions, debts, accounts, damages, costs, losses and expenses arising out of the adverse claims of any or all persons to said Gas and/or to royalties, taxes, license fees or charges thereon, including pipeline transportation and service charges, which are applicable to such Gas and/or the delivery of such Gas to the Company.

3. Transported gas received at a city gate station that can be delivered directly to the Customers shall not be subject to any retention ~~The Company may retain~~ for line loss and unaccounted-for Gas. ~~a percentage of the total volume of Gas delivered into its system for Customer's account. The percentage of Gas to be retained by the Company shall be equivalent to the percentage for total system line loss and unaccounted- for, as utilized in the Company's annual operating budget. This condition may, at the Company's discretion, be revised as appropriate, where the transported Gas can be delivered directly to the Customer without commingling with other distribution system supplies. If circumstances change, the Company will notify the Customer in writing thirty (30) days prior to any change.~~

4. In the event that the Company declares an emergency situation it may, at its discretion, divert Customer's Gas for such purposes as Company deems appropriate and Customer will be compensated for such Gas at the cost at which the Customer acquired the Gas, at the Customer's cost of the alternate fuel utilized or at the Company's avoided cost of Gas during the billing month, whichever is highest. The Customer shall demonstrate its cost of Natural Gas or replacement fuel by making a copy of its purchase contract available to Company upon request. All Gas purchased by the Company will be credited to the Customer's account.

5. Transported Gas received at a city gate station that can be delivered directly to the Customer shall not be ~~Rate GS-XLT is~~ subject to the provisions of the Daily Balancing Service – Rate DB in this Tariff (pgs. 101-109). ~~For purposes of Rate DB, Rate GS-XLT customers with a common point of interconnection will be deemed by the Company to meet the qualifications for Rate DB regardless of how they structure their natural gas purchases. This condition may, at the Company's discretion, be waived or revised as appropriate, where the transported Gas can be delivered directly to the Customer without commingling with other distribution system supplies. If circumstances change, the Company will notify the Customer in writing thirty (30) days prior to any change.~~ Customer is responsible for balancing on TETCO and will be responsible for any penalties assessed by TETCO.

UNAUTHORIZED USE

If a Customer uses Rate GS-XLT service after being notified that service under this schedule is not available, uses gas at other than the specified Facilities allowed under this tariff or uses this service in excess of authorized limitations when established and duly notified, all such unauthorized usage shall be billed a penalty charge of ~~seventy~~ five dollars ($~~7~~5.00) per Dth on the positive difference between the amount consumed by Customer and the amount delivered to the Company. Failure to comply with an Operational Flow Order (OFO) issued by PGW will result in a penalty charge of ~~seventy-~~five dollars ($~~7~~5.00) per Dth plus all incremental costs incurred by the Company as a result of the failure to comply with the OFO.

LIABILITY

The Company shall not be liable for curtailment of service under this rate schedule or loss of Gas of the Customer as a result of any steps taken to comply with any law, regulation or order of any governmental agency with jurisdiction to regulate, allocate or control Gas supplies or the rendering of service hereunder, and regardless of any defect in such law, regulation or order.

The Company reserves the right to commingle transport Gas with its other supplies but Gas is and remains the property of the Customer while being transported and delivered by the Company. In such circumstances the Customer will not be subject to charges for lost and unaccounted for gas or balancing penalties. The Customer shall be responsible for maintaining all insurance it deems necessary to protect its property interest in such Gas before, during and after receipt by the Company.

The Company shall not be liable for any loss to the Customer or any other entity or person(s) arising from or out of service under this rate schedule, including loss of Gas in the possession of the Company or any other cause.

COMPANY RULES

The provisions of this Tariff GS-XLT shall govern the service under this classification except where noted herein.

EXHIBIT JC8

Philadelphia Gas Works
FY 24
Base Rate Revenue at Current Rates

	FY 2023-2024			Current PUC Approved Tariff Rates									
	No. of Customers	No. of Annual Bills	Annual Deliveries (mcf)	Monthly Cust. Charge	Delivery Charge	Merchant Function Charge (MCF)	Gas Procurement Charge (GPC)	Gas Cost Rate (GCR)	Universal Service Surcharge	Other Post Employment Benefits (OPEB) Surcharge	Efficiency Cost Recovery Surcharge	Distribution System Improvement Charge (DSIC)
1 **Non-Heating:**												
2 Residential	12,860	154,325	327,215	$14.90	$7.2955	$0.2732	$0.0400	$7.5459	$1.7786	$0.3367	$0.0193	$ 0.0750
3 Residential-Senior	248	2,976	6,004	$14.90	$7.2955	$0.2732	$0.0400	$7.5459	$1.7786	$0.3367	$0.0193	$ 0.0750
4 Commercial	3,209	38,503	909,717	$25.35	$5.1908	$0.0687	$0.0400	$7.5459	$1.7786	$0.3367	$0.0194	$ 0.0750
5 Industrial	90	1,085	92,252	$75.90	$5.1668	$0.0317	$0.0400	$7.5459	$1.7786	$0.3367	$0.0025	$ 0.0750
6 Municipal/MS	240	2,880	211,257	$25.35	$4.7765	$ -	$0.0400	$7.5459	$1.7786	$0.3367		$ 0.0750
7 NGV	2	24	1,785	$35.00	$1.2833	$ -	$0.0400	$7.5459	$1.7786	$0.3367		$ 0.0750
8 *Total Non-Heat Firm*	16,649	199,793	1,548,231									
9												
10 **Heating:**												
11 Residential	442832	5,313,988	31,688,029	$14.90	$7.2955	$0.2732	$0.0400	$7.5459	$1.7786	$0.3367	$0.0193	$ 0.0750
12 Residential-Senior	5642	67,698	465,766	$14.90	$7.2955	$0.2732	$0.0400	$7.5459	$1.7786	$0.3367	$0.0193	$ 0.0750
13 Commercial	18366	220,389	5,842,292	$25.35	$5.1908	$0.0687	$0.0400	$7.5459	$1.7786	$0.3367	$0.0194	$ 0.0750
14 Industrial	359	4,307	349,376	$75.90	$5.1668	$0.0317	$0.0400	$7.5459	$1.7786	$0.3367	$0.0025	$ 0.0750
15 Municipal/MS	606	7,272	705,218	$25.35	$4.7765	$ -	$0.0400	$7.5459	$1.7786	$0.3367		$ 0.0750
16 PHA Rate 8	1035	12,420	418,601	$25.35	$5.4534		$0.0400	$7.5459	$1.7786	$0.3367	$0.0194	$ 0.0750
17 PHA/GS	1947	23,364	166,172	$14.90	$6.5393	$0.2732	$0.0400	$7.5459	$1.7786	$0.3367	$0.0193	$ 0.0750
18 PHA/GS- Senior	13	156	1,188	$14.90	$6.5393	$0.2732	$0.0400	$7.5459	$1.7786	$0.3367	$0.0193	$ 0.0750
19 *Total Heat Firm*	470,800	5,649,594	39,636,642									
20 **Total Heat & Non-Heat Firm**	**487,449**	**5,849,387**	**41,184,873**									
21												
22 **Firm Transport**												
23 **Non-Heating:**												
24 Residential	1,090	13,075	34,440	$14.90	$7.2955	$ -	$ -		$1.7786	$0.3367	$0.0193	$ 0.0750
25 Commercial	553	6,631	442,942	$25.35	$5.1908	$ -	$ -		$1.7786	$0.3367	$0.0194	$ 0.0750
26 Industrial	37	440	158,092	$75.90	$5.1668	$ -	$ -		$1.7786	$0.3367	$0.0025	$ 0.0750
27 Municipal/MS	2	24	772	$25.35	$4.7765	$ -	$ -		$1.7786	$0.3367		$ 0.0750
28 NGV	1	12	18,337	$35.00	$1.2833	$ -	$ -		$1.7786	$0.3367		$ 0.0750
29 ***Total Non Heat FT***	1,682	20,182	654,583									
30												
31 **Heating:**												
32 Residential	25,534	306,408	2,302,690	$14.90	$7.2955	$ -	$ -		$1.7786	$0.3367	$0.0193	$ 0.0750
33 Commercial	2,552	30,628	3,122,912	$25.35	$5.1908	$ -	$ -		$1.7786	$0.3367	$0.0194	$ 0.0750
34 Industrial	86	1,028	245,570	$75.90	$5.1668	$ -	$ -		$1.7786	$0.3367	$0.0025	$ 0.0750
35 Municipal/MS	15	180	40,276	$25.35	$4.7765	$ -	$ -		$1.7786	$0.3367		$ 0.0750
36 PHA/GS	185	2,220	18,045	$14.90	$6.5393	$ -	$ -		$1.7786	$0.3367	$0.0193	$ 0.0750
37 ***Total Heat FT***	28,372	340,464	5,729,492									
38 ***Total FT***	30,054	360,646	6,384,075									
39												
40 **Total Interrutpible Sales**	2	24	395,979									
41 **Total PGW (Sales & FT)**	**517,505**	**6,210,057**	**47,964,926**									
42 GTS/IT Revenue												
43 BUS	36	432	2,370									
44 TED	3	36	21,966									
45 NGS	1	12	21,973									
46 WNA Revenue												
47 LNG Sales Margin			20,000									
48 **Total Full Tariff Revenue**												

	Amounts in $000s												
	Cust. Charge Revenue	Delivery Charge Revenue	Merchant Function Charge (MCF) Revenue	Gas Procurement Charge (GPC) Revenue	Total Full Base Rate Revenue		Gas Cost Rate Revenue	Univ. Service Surcharge Revenue	Other Post Employment Benefits (OPEB) Revenue	Efficiency Cost Recovery Surcharge Revenue	Distribution System Improvement Charge-DSIC Revenue	Total Full Tariff Revenue
1 **Non-Heating:**												
2 Residential	2,299	2,387	89	13	4,789		2,469	582	110	6	404	8,361
3 Residential-Senior	44	44	2	0	90		45	11	2	0	8	156
4 Commercial	976	4,722	62	36	5,797		6,865	1,618	306	18	573	15,177
5 Industrial	82	477	3	4	566		696	164	31	0	57	1,514
6 Municipal/MS	73	1,009	0	8	1,091		1,594	376	71	0	115	3,246
7 NGV	1	2	0	0	3		13	3	1	0	1	21
8 *Total Non-Heat Firm*	3,476	8,641	156	62	12,336	#	11,683	2,754	521	24	1,156	28,474
9												
10 **Heating:**												
11 Residential	79,178	231,180	8,657	1,268	320,283		239,115	56,360	10,669	612	28,350	655,389
12 Residential-Senior	1,009	3,398	127	19	4,553		3,515	828	157	9	405	9,466
13 Commercial	5,587	30,326	401	234	36,548		44,085	10,391	1,967	113	3,629	96,734
14 Industrial	327	1,805	11	14	2,157		2,636	621	118	1	215	5,749
15 Municipal/MS	184	3,368	0	28	3,581		5,322	1,254	237	0	378	10,773
16 PHA Rate 8	315	2,283	0	17	2,614		3,159	745	141	8	262	6,929
17 PHA/GS	348	1,087	45	7	1,487		1,254	296	56	3	134	3,230
18 PHA/GS- Senior	2	8	0	0	10		9	2	0	0	1	23
19 *Total Heat Firm*	86,951	273,455	9,243	1,585	371,234	#	299,094	70,498	13,346	746	33,375	788,292
20 **Total Heat & Non-Heat Firm**	**90,427**	**282,096**	**9,399**	**1,647**	**383,569**	#	**310,777**	**73,251**	**13,867**	**770**	**34,531**	**816,766**
21												
22 **Firm Transport**												
23 **Non-Heating:**												
24 Residential	195	251	0	0	446		0	61	12	1	39	559
25 Commercial	168	2,299	0	0	2,467		0	788	149	9	256	3,669
26 Industrial	33	817	0	0	850		0	281	53	0	89	1,274
27 Municipal/MS	1	4	0	0	4		0	1	0	0	0	6
28 NGV	0	24	0		24		0	33	6	0	5	67
29 ***Total Non Heat FT***	397,338	3,394,531	0	0	3,792			1,164	220	10	389	5,575
30												
31 **Heating:**												
32 Residential	4,565	16,799	0	0	21,365		0	4,096	775	44	1,971	28,251
33 Commercial	776	16,210	0	0	16,987		0	5,554	1,051	61	1,774	25,427
34 Industrial	78	1,269	0	0	1,347		0	437	83	1	140	2,007
35 Municipal/MS	5	192	0	0	197		0	72	14	0	21	303
36 PHA/GS	33	118	0	0	151		0	32	6	0	14	204
37 ***Total Heat FT***	5,458	34,589	0	0	40,046			10,190	1,929	106	3,920	56,192
38 ***Total FT***	5,855	37,983	0	0	43,838			11,355	2,150	116	4,309	61,768
39												
40 **Total Interrutpible Sales**	9				306							306
41 **Total PGW (Sales & FT)**	**96,290**	**320,080**	**9,399**	**1,647**	**427,713**		**310,777**	**84,606**	**16,016**	**886**	**38,840**	**878,839**
42 GTS/IT Revenue					13,902							13,902
43 BUS	161	12	0	0	173							173
44 TED	9	51	2	1	63							63
45 NGS	5	60	2	1	68							68
46 WNA Revenue												
47 LNG Sales Margin					76							**76**
48 **Total Full Tariff Revenue**	**96,465**	**320,204**	**9,402**	**1,649**	**441,995**							**893,121**

Philadelphia Gas Works
FY 24
<u>Base Rate Revenue at Proposed Rates</u>

	FY 2023-2024				Proposed Rates							
	No. of Customers	No. of Annual Bills	Annual Deliveries (mcf)	Monthly Cust. Charge	Delivery Charge	Merchant Function Charge (MCF)	Gas Procurement Charge (GPC)	Gas Cost Rate (GCR)	Universal Service Surcharge	Other Post Employment Benefits (OPEB) Surcharge	Efficiency Cost Recovery Surcharge	Distribution System Improvement Charge (DSIC)
1 **Non-Heating:**												
2 Residential	12,860	154,325	327,215	$19.50	$8.2611	$0.3982	$0.0400	$7.5459	$1.5665	$0.2676	$0.0193	$ 0.0750
3 Residential-Senior	248	2,976	6,004	$19.50	$8.2611	$0.3982	$0.0400	$7.5459	$1.5665	$0.2676	$0.0193	$ 0.0750
4 Commercial	3,209	38,503	909,717	$34.00	$5.9169	$0.1062	$0.0400	$7.5459	$1.5665	$0.2676	$0.0091	$ 0.0750
5 Industrial	90	1,085	92,252	$100.00	$6.0521	$0.0275	$0.0400	$7.5459	$1.5665	$0.2676	$0.0025	$ 0.0750
6 Municipal/MS	240	2,880	211,257	$34.00	$6.0976		$0.0400	$7.5459	$1.5665	$0.2676		$ 0.0750
7 NGV	2	24	1,785	$46.50	$1.6510	$ -	$0.0400	$7.5459	$1.5665	$0.2676		$ 0.0750
8 *Total Non-Heat Firm*	16,649	199,793	1,548,231									
9												
10 **Heating:**												
11 Residential	442832	5,313,988	31,688,029	$19.50	$8.2611	$0.3982	$0.0400	$7.5459	$1.5665	$0.2676	$0.0193	$ 0.0750
12 Residential-Senior	5642	67,698	465,766	$19.50	$8.2611	$0.3982	$0.0400	$7.5459	$1.5665	$0.2676	$0.0193	$ 0.0750
13 Commercial	18366	220,389	5,842,292	$34.00	$5.9169	$0.1062	$0.0400	$7.5459	$1.5665	$0.2676	$0.0091	$ 0.0750
14 Industrial	359	4,307	349,376	$100.00	$6.0521	$0.0275	$0.0400	$7.5459	$1.5665	$0.2676	$0.0025	$ 0.0750
15 Municipal/MS	606	7,272	705,218	$34.00	$6.0976	$ -	$0.0400	$7.5459	$1.5665	$0.2676		$ 0.0750
16 PHA Rate 8	1035	12,420	418,601	$34.00	$6.0047		$0.0400	$7.5459	$1.5665	$0.2676	$0.0091	$ 0.0750
17 PHA/GS	1947	23,364	166,172	$19.50	$7.7984	$0.3982	$0.0400	$7.5459	$1.5665	$0.2676	$0.0193	$ 0.0750
18 PHA/GS- Senior	13	156	1,188	$19.50	$7.7984	$0.3982	$0.0400	$7.5459	$1.5665	$0.2676	$0.0193	$ 0.0750
19 *Total Heat Firm*	470,800	5,649,594	39,636,642									
20 **Total Heat & Non-Heat Firm**	**487,449**	**5,849,387**	**41,184,873**									
21												
22 **Firm Transport**												
23 **Non-Heating:**												
24 Residential	1,090	13,075	34,440	$19.50	$8.2611	$ -	$ -		$1.5665	$0.2676	$0.0193	$ 0.0750
25 Commercial	553	6,631	442,942	$34.00	$5.9169	$ -	$ -		$1.5665	$0.2676	$0.0091	$ 0.0750
26 Industrial	37	440	158,092	$100.00	$6.0521	$ -	$ -		$1.5665	$0.2676	$0.0025	$ 0.0750
27 Municipal/MS	2	24	772	$34.00	$6.0976	$ -	$ -		$1.5665	$0.2676		$ 0.0750
28 NGV	1	12	18,337	$46.50	$1.6510	$ -	$ -		$1.5665	$0.2676		$ 0.0750
29 ***Total Non Heat FT***	1,682	20,182	654,583									
30												
31 **Heating:**												
32 Residential	25,534	306,408	2,302,690	$19.50	$8.2611	$ -	$ -		$1.5665	$0.2676	$0.0193	$ 0.0750
33 Commercial	2,552	30,628	3,122,912	$34.00	$5.9169	$ -	$ -		$1.5665	$0.2676	$0.0091	$ 0.0750
34 Industrial	86	1,028	245,570	$100.00	$6.0521	$ -	$ -		$1.5665	$0.2676	$0.0025	$ 0.0750
35 Municipal/MS	15	180	40,276	$34.00	$6.0976	$ -	$ -		$1.5665	$0.2676		$ 0.0750
36 PHA/GS	185	2,220	18,045	$19.50	$7.7984	$ -	$ -		$1.5665	$0.2676	$0.0193	$ 0.0750
37 ***Total Heat FT***	28,372	340,464	5,729,492									
38 ***Total FT***	30,054	360,646	6,384,075									
39												
40 **Total Interrutpible Sales**	2	24	395,979									
41 **Total PGW (Sales & FT)**	**517,505**	**6,210,057**	**47,964,926**									
42 IT Revenue												
43 GS-XLT ARS	1	12	3,768,722		$ 1.05							
44 GS-XLT Transportation	1	12	12,286,916	$ 2,200	$ 0.11				$ 1.5665	$ 0.2676	$ 0.0091	$ 0.0750
45 BUS	36	432	2,370									
46 TED	3	36	21,966									
47 NGS	1	12	21,973									
48 WNA Revenue												
49 LNG Sales Margin			20,000									
50 **Total Full Tariff Revenue**												

	Amounts in $000s										
	Cust. Charge Revenue	Delivery Charge Revenue	Merchant Function Charge (MCF) Revenue	Gas Procurement Charge (GPC) Revenue	Total Full Base Rate Revenue	Gas Cost Rate Revenue	Univ. Service Surcharge Revenue	Other Post Employment Benefits (OPEB) Revenue	Efficiency Cost Recovery Surcharge Revenue	Distribution System Improvement Charge-DSIC Revenue	Total Full Tariff Revenue
1 **Non-Heating:**											
2 Residential	3,009	2,703	130	13	5,856	2,469	513	88	6	474	9,405
3 Residential-Senior	58	50	2	0	110	45	9	2	0	9	176
4 Commercial	1,309	5,383	97	36	6,825	6,865	1,425	243	8	628	15,994
5 Industrial	109	558	3	4	673	696	145	25	0	63	1,601
6 Municipal/MS	98	1,288	0	8	1,395	1,594	331	57	0	133	3,509
7 NGV	1	3	0	0	4	13	3	0	0	1	21
8 *Total Non-Heat Firm*	4,584	9,985	232	62	14,863 #	11,683	2,425	414	15	1,307	30,707
9											
10 **Heating:**											
11 Residential	103,623	261,778	12,618	1,268	379,286	239,115	49,639	8,480	612	31,810	708,940
12 Residential-Senior	1,320	3,848	185	19	5,372	3,515	730	125	9	452	10,202
13 Commercial	7,493	34,568	621	234	42,916	44,085	9,152	1,563	53	3,962	101,732
14 Industrial	431	2,114	10	14	2,569	2,636	547	93	1	239	6,086
15 Municipal/MS	247	4,300	0	28	4,576	5,322	1,105	189	0	438	11,629
16 PHA Rate 8	422	2,514	0	17	2,953	3,159	656	112	4	278	7,161
17 PHA/GS	456	1,296	66	7	1,824	1,254	260	44	3	154	3,541
18 PHA/GS- Senior	3	9	0	0	13	9	2	0	0	1	25
19 *Total Heat Firm*	113,995	310,427	13,500	1,585	439,508 #	299,094	62,090	10,607	682	37,335	849,315
20 **Total Heat & Non-Heat Firm**	**118,579**	**320,412**	**13,732**	**1,647**	**454,371** #	**310,777**	**64,515**	**11,021**	**697**	**38,642**	**880,022**
21											
22 **Firm Transport**											
23 **Non-Heating:**											
24 Residential	255	285	0	0	539	0	54	9	1	45	649
25 Commercial	225	2,621	0	0	2,846	0	694	119	4	275	3,937
26 Industrial	44	957	0	0	1,001	0	248	42	0	97	1,388
27 Municipal/MS	1	5	0	0	6	0	1	0	0	1	7
28 NGV	1	30	0		31	0	29	5	0	5	69
29 ***Total Non Heat FT***	525,791	3,897,128	0	0	4,423		1,025	175	5	422	6,051
30											
31 **Heating:**											
32 Residential	5,975	19,023	0	0	24,998	0	3,607	616	44	2,195	31,460
33 Commercial	1,041	18,478	0	0	19,519	0	4,892	836	28	1,896	27,171
34 Industrial	103	1,486	0	0	1,589	0	385	66	1	153	2,193
35 Municipal/MS	6	246	0	0	252	0	63	11	0	24	350
36 PHA/GS	43	141	0	0	184	0	28	5	0	16	234
37 ***Total Heat FT***	7,169	39,373	0	0	46,542		8,975	1,533	74	4,284	61,408
38 ***Total FT***	7,694	43,270	0	0	50,965		10,001	1,708	79	4,706	67,459
39											
40 **Total Interrutpible Sales**	9				306						306
41 **Total PGW (Sales & FT)**	**126,282**	**363,683**	**13,732**	**1,647**	**505,641**	**310,777**	**74,516**	**12,729**	**775**	**43,348**	**947,786**
42 IT Revenue					16,516						16,516
43 GS-XLT ARS		3,957			3,957		0	0	0	0	3,957
44 GS-XLT Transportation	26	1,295			1,321		19,247	3,288	112	1,798	25,766
45 BUS	161	12	0	0	173						173
46 TED	9	51	2	1	63						63
47 NGS	5	60	2	1	68						68
48 WNA Revenue											
49 LNG Sales Margin					76						76
50 **Total Full Tariff Revenue**	**126,484**	**369,059**	**13,735**	**1,649**	**527,816**	**310,777**	**93,763**	**16,017**	**887**	**45,146**	**994,406**

Proposed Increase **85,820**

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc. v. Philadelphia Gas Works	: : : : : : :	Docket Nos. R-2023-3037933 C-2023-3038727

REBUTTAL TESTIMONY OF JAMES L. CRIST, P.E.
ON BEHALF OF
GRAYS FERRY COGENERATION PARTNERSHIP
AND VICINITY ENERGY PHILADELPHIA, INC.

Vicinity Statement No. 1-R
June 26, 2023

Q. PLEASE STATE YOUR NAME AND ON WHOSE BEHALF YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. a consulting firm focused on regulatory and market issues. I am presenting rebuttal testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity"). I also presented direct testimony in this proceeding.

I. ISSUES

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS REBUTTAL TESTIMONY?

A. I am going to reiterate and reinforce a major point that I have made in my direct testimony in this case and in the 1307(f) case, that the determination of the proper transportation rate for the deliveries of gas through the high pressure four mile line is a base rate case issue, and the gas swap during the winter months known as Alternative Receipt Service ("ARS") is a gas supply issue. I will address comments that OSBA witness Mr. Knecht, and OCA witness Mr. Watkins, made concerning ARS, and specifically address how pricing of ARS should be based on market pricing, which can be volatile.

The quality of service will be addressed to make it clear that Vicinity has a considerable amount of on-site oil storage which enable it to accept interruptions in its service and are agreeable to the same terms and conditions it has operated under for the past twenty-five years. I will address the comments of Mr. Knecht, Mr. Watkins, and PICGUG witness Ms. LaConte, with respect to this matter.

Given that the outcome of the Complaint case did not resolve the contract issues of Vicinity and PGW, Vicinity has been forced to proceed with its plans to construct a direct connection to TETCO bypassing PGW. I will discuss that very real possibility to make sure that parties are aware of the proper treatment of the surcharges that PGW has proposed Vicinity be assessed. Imposition of those surcharges will influence the economic attractiveness of the bypass. Mr. Knecht has proposed alternative surcharge amounts which are also unmerited and should not be assessed. Here, the new surcharges that have never before been assessed to Vicinity should not be applied as the Company proposed. Mr. Knecht also suggests an alternative, but it should also be ignored for the same reasons that the Company's request should be denied.

I will explain why the scaleback proposal of Mr. Cline is not in line with accepted cost of service principals, nor is his proposal to recover PGW's requested ARS charges in this and in future rate proceedings.

Q. WHAT MUST BE DETERMINED IN THIS BASE RATE CASE REGARDING THE TRANSPORTATION RATE CHARGED TO VICINITY?

A. Mr. Knecht submitted his CCOSS and Mr. Knecht and I agree that the delivery of gas through the dedicated four-mile line is a distribution rate issue, and that the ARS gas swap is a gas supply issue. It is important to clearly explain that Vicinity's appropriate distribution rate should be based on direct allocation of costs that Vicinity causes. Motivated by the Final Order in the Complaint case, PGW has appropriately altered its approach and acknowledged that all of the gas Vicinity uses flows through the dedicated four-mile line. It has been proven that Vicinity's payments of $10.5 million in 1996, along with the volumetric charges Vicinity has paid for each Mcf of gas transported since 1996 (over $25.5 million since 1996), and the annual maintenance payments of $180,000 more than cover the cost of the line and ongoing maintenance. Ms. Heppenstall's CCOSS calculated a transportation rate that still included inappropriate allocations of other PGW low pressure distribution system costs. In the case of a dedicated line such as the four-mile high pressure line that only serves Vicinity, the proper CCOSS treatment is direct allocation of expenses. Expenses including pipeline maintenance should be only those expenses incurred for preventive maintenance and repair on the four-mile line, and not an allocation of expenses incurred in the separate low pressure distribution system maintenance, because that low pressure system is not used to serve Vicinity. When I removed the improperly allocated low pressure distribution expenses from Ms. Heppenstall's allocation, using her CCOSS model the calculated transportation rate was $0.0415/Mcf. At the annual throughput of 12,233,787 Mcf the revenue produced is $507,702, a sizable amount that should cover not only routine maintenance, with the surplus available for capital improvements when eventually necessary.

Q. WHAT IS THE SIGNIFICANT DETERMINATION THAT MUST BE MADE CONCERNING ARS?

A. Both Mr. Knecht and Mr. Watkins discussed ARS in their direct testimony. In both the complaint case and the 1307(f) case I thoroughly described ARS and the mechanics of the gas swap used to effectuate ARS. Simply put, PGW, who holds contracts for an abundance of TETCO Philadelphia Lateral capacity, uses that capacity in the winter months to transport gas for Vicinity to the meter 73060, located at the interconnection of the four-mile line and the Philadelphia Lateral. In the summer months PGW releases some Philadelphia Lateral capacity to Vicinity. In this case PGW again has claimed that ARS uses the low pressure distribution system[1] but such claims continue to lack credibility. PGW's Mr. Teme in his description of ARS admits it is a gas swap or displacement service.[2] It is not disputed that all the gas used by Vicinity flows through the high pressure four-mile line, and in fact could not flow through the low pressure distribution system. This is recognized by several witnesses.

OSBA witness Mr. Knecht recognized such in the Complaint case, and again in his direct testimony in this proceeding he asserts:

> "The Company's proposed allocation of costs related to Alternative Receipt Service ("ARS") to GFCP (and affiliates) improperly confuses base rates with gas supply costs. PGW incurs no base rates costs associated with ARS, as the ARS swap mechanism does not affect the physical flows on its distribution system, nor does it affect PGW's distribution system planning. (OSBA Statement No. 1, 5:17-21)

OCA witness, Mr. Watkins, made the observation that Vicinity's need to meet its winter month needs through ARS is not caused by distribution system issues but instead is a capacity limitation on the interstate pipeline (TETCO). When discussing ARS, Mr. Watkins states:

[1] In her supplemental testimony Ms. Heppenstall states, "ARS volumes, which are GFCP/VEPI's volumes that use and benefit from PGW's distribution system" PGW St. No. 5-SD, 3:12-13.
[2] In his supplemental testimony Mr. Teme states, "Alternative Receipt Service ("ARS") is a continuation of the displacement service that PGW has provided to GFCP/VEPI for the last twenty-five years PGW St. No. 6-SD, 4:3-4.

> Q. IS THERE A POTENTIAL SOLUTION TO THIS CONTROVERSY?
>
> A. In my view, there is. In reality, GFCP's inability to meet its peak load requirements are not the result of any PGW inadequate physical capacity on the two dedicated distribution lines that serve GFCP from Gate Station 060, but rather, are the result of GFCP not being able to secure enough gas supply from an interstate pipeline. Therefore, GFCP must rely upon PGW's interstate pipeline entitlements to satisfy its peak load requirements. In other words, this problem is not directly associated with any distribution capacity constraints on the PGW system, but rather, interstate pipeline supply. In this regard, interstate pipeline demand (firm capacity rights) costs are recovered in the GCR mechanism such that it would seem that a possible solution would be for PGW to release 21,000 Dth per day of TETCO capacity at Gate Station 060, on a recallable basis, to GFCP at market rates. In this way, PGW may not need its full capacity rights at Gate Station 060 except for on extremely cold days (in which the capacity release to GFCP could be recalled)." (OCA Statement No. 3, 4:4-16)

Mr. Watkins recognizes that Vicinity's winter capacity limitation that is remedied using ARS could be solved by a PGW recallable release of 21,000 Dth/day of TETCO capacity to Vicinity at market rates. He observes that I proposed exactly that in the 1307(f) case. In this case, because this is a base rate case, my recommendation addressed ARS as a tariffed service that should be priced at market rate, with the correct market rate being M-3 to M-3 Philadelphia Lateral capacity. Alternatively, recallable capacity release still is a solution should the Commission wish to select that.

Even PGW's Director of Gas Supply, Transportation and Control, Mr. Reeves admitted under cross-examination in the 1307(f) case that none of the gas Vicinity delivers to PGW at Skippack, referred to as location "O34", is actually consumed by Vicinity at its facility, referred to as location "O6"[3]. The exchange between Mr. Stewart and Mr. Reeves:

> Q. So you described the ARS service as Grays Ferry delivering gas to Skippack and PGW delivering a light(sic) quantity to the Philadelphia lateral for Grays Ferry.
>
> Has any of the gas that Grays Ferry ever delivered to Skippack been physically consumed by Grays Ferry?
>
> A. The ARS agreement process was structured in a way that Grays Ferry would provide gas to PGW on the Skippack lateral, so that PGW's distribution and PGW distribution system could take that volume, so PGW could handle - could push the volume to Grays Ferry at O6. ***So the physical molecule from O34 does not come through O6,*** if that answers your question. (Tr. at 67) emphasis added.

In his testimony in this case, Mr. Knecht summarizes his position concerning ARS:

> I disagree with the Company's proposed costing treatment of ARS as if it involved delivering gas from its receipt from the Tetco Skippack Lateral to the cogeneration plant. Except in rare circumstances, gas is delivered to GFCP/VEPI via dedicated mains from the Philadelphia Lateral. PGW does not size its distribution system to provide gas flows to GFCP/VEPI across its system. The ARS is a gas supply arrangement, and it should be priced as such. The price for the ARS service should reflect the relative value of GFCP/VEPI obtaining service through the Philadelphia Lateral compared to its cost of delivering to the Skippack Lateral. (OSBA Statement No. 1, 37:12-19)

Without a doubt, ARS is a gas swap service that does not flow gas through the PGW low pressure delivery system. It is a gas swap arrangement, and its value should be determined by the market price of capacity on the Philadelphia Lateral.

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[3] The TETCO delivery point known as Skippack is meter 70034. The TETCO delivery point on the Philadelphia Lateral to the four-mile line that delivers to Vicinity is meter 73060.

Q. WHAT PORTION OF TETCO CAPACITY DOES VICINTY REQUIRE?

A. In the past, PGW released the entire long-haul capacity path (Western Louisiana to M-3 including the Philadelphia Lateral) to Vicinity. Because Vicinity has obtained capacity it needs up to the Philadelphia Lateral, the only segment of capacity it requires from PGW would be the release of Philadelphia Lateral capacity. Such capacity should be priced at market rates, but to be clear, the market rate that must be used is the market rate for just the Philadelphia Lateral segment, and not the market rate for long-haul capacity back to TETCO zone M-2 or beyond.

Q. HOW ARE PGW's COSTS OF THE PHILADELPHIA LATERAL CAPACITY RECOVERED?

A. They are recovered in PGW's annual 1307(f) filing, and I agree with OCA's Mr. Watkins observation that the revenues that PGW would receive from Vicinity should be credited to the GCR. This is not what PGW proposed. Instead PGW proposed that only 75% of the revenues be credited to the GCR. Mr. Watkins also states his concern, "As a result, this would result in a windfall to PGW at the expense of its GCR (sales) customers." *Id.* 5:22-23.

Both of the two solutions to the ARS issue (recallable capacity release at market rates, or ARS provided at market rates) incorporate the use of Philadelphia Lateral capacity that is paid for by GCR customers and as such all the revenues received from the use of that capacity should be credited to the GCR.

Q. SHOULD VICINITY'S PAYMENTS FOR ARS BE CREDITED TO PGW'S BASE RATES?

A. No. ARS is a gas supply service. It does not matter which method (recallable capacity release, or the ARS gas swap) the Commission wishes to direct PGW to provide Vicinity the capacity it needs. It is proven and accepted by both OCA's Mr. Watkins and OSBA's Mr. Knecht that the capacity used to supply Vicinity (in excess of Vicinity's own capacity) is PGW's capacity on the Philadelphia Lateral. That capacity is paid for by PGW's GCR customers and any payment that Vicinity would make to PGW should be credited to the GCR, and not to base rates.

Q. WHAT IS THE CORRECT AMOUNT THAT VICINITY SHOULD PAY PGW FOR ARS?

A. The examples that I have provided in the Complaint case and the 1307(f) case may have caused confusion as the amounts vary depending upon the actual capacity path, and the market at the time. I have consistently stated that the maximum rate Vicinity should pay PGW is the TETCO tariff rate. Mr. Reeves testified in the 1307(f) case that the tariff maximum determined in the TETCO rate case decided in December 2022 was $0.61/Dth-day. That rate is for TETCO capacity from Western Louisiana to M-3 and includes the Philadelphia Lateral capacity as the Philadelphia lateral is located in M-3. To simplify the request of Vicinity, I have explained that all Vicinity requires from PGW is the final piece of capacity from the location where the Philadelphia Lateral branches off of the TETCO mainline (known as Eagle) and down to meter 73060. Mr. Reeves provided evidence that the recent market value of that piece of capacity is $0.105/Dth-day. PGW may segment its capacity release to provide Vicinity with the piece it needs, and then release the upstream segment to others.

I provided this explanation so that it is clear that I am not claiming that Vicinity will pay $6.132 million for transportation service. Mr. Watkins discussed this in his direct testimony and compared that to the $5.2 million that PGW proposed be collected from Vicinity for all three services (transportation, ARS, sales) collectively, and then concluded that an apparent solution was at hand. By doing so, Mr. Watkins was mixing distribution rates with gas cost rates. Vicinity should pay $0.0415/Mcf for transportation service and the market rate for ARS service, with the most recent documented market rate for Philadelphia Lateral capacity being $0.105/Dth.

Q. WHAT DATA DOES PGW USE TO DESIGN AND CONSTRUCT ITS DISTRIBUTION SYSTEM?

A. PGW uses the customer's connect load, not the annual throughput, as the data it collects from new customers to conduct the necessary engineering work to determine line sizing. PGW confirms that its distribution system is sized to meet customers' design day demands. (PICGUG-I-3). Understanding that PGW does not use annual throughput in any way in the design of its distribution system is critical because the fundamental concept of a CCOSS is that costs will be assigned based on cost causation. Adhering to established cost of service principles, the distribution cost allocations must be based on customer peak demands, not annual throughput or average demands.

Q. WHAT ISSUES DO YOU HAVE WITH THE CCOSS PERFORMED BY MR. KNECHT?

A. Mr. Knecht reviews the Company's CCOSS which used the Average & Excess ("A&E") method to allocate costs. A close examination of that method, which has been used in the past, shows that it does not adhere to cost causation principles, for it bases the major component of its allocation on average demand, or annual throughput. It is well established and proven by PGW data responses in this proceeding that average demand is not used in the design of its distribution system. Mr. Knecht recommends using the Customer/Demand CCOSS method. That method uses two main data elements: the number of customers, and the peak demands of those customers. I agree with Mr. Knecht on the selection of the Customer/Demand CCOSS method.

Q. HOW DO YOU ADDRESS THE SURCHARGES MR. KNECHT PROPOSED TO ASSIGN TO VICINITY?

A. I explained in my direct testimony why none of the surcharges (USEC, ECRS, OPEB, DSIC) should be added to Vicinity, as Vicinity is not currently subject to them, the addition of surcharges violates the cost causation principle, and bypass customers are exempt from surcharges. Mr. Knecht in his discussion of proposed Rate GS-XLT, explains "it is not appropriate to apply the OPEB Surcharge to this class." *Id.* 35:25-26.

Mr. Knecht also explains that the ECRS should not be applied to Vicinity, stating, "As Rate GS-XLT is a separate (and very different) rate class, and because I know of no energy conservation programs being provided to the GS-XLT customer, I recommend that the ECR be set at zero for this class." *.Id.* 36:12-15.

Mr. Knecht did propose to assign USEC charges to Vicinity, and for reasons discussed in my direct testimony and summarized above, his proposal should be rejected. He also proposes assignment of DSIC (Distribution System Improvement Charge) charges, and those charges would be wholly inappropriate as I have established, and Mr. Knecht has agreed, that Vicinity does not use the low pressure distribution system of PGW, which the DSIC recovers. Surcharges to improve a distribution system that Vicinity does not use should be rejected.

Q. HOW DID THE COMPANY PROPOSE TO ADDRESS INTERUPTIBLE CUSTOMERS IN ITS CCOSS?

A. PGW treats the interruptible customers that are served under Rate IT, essentially as firm customers. This is not consistent with cost causation principles. Rate IT customers have agreed to very distinct and stringent requirements stated in the Company's tariff.

Q. WHAT ASPECTS OF THE TREATMENT OF INTERRUPTIBLE CUSTOMERS RATES DO NOT ADHERE TO COST OF SERVICE PRINCIPALS?

A. A customer may elect to be Interruptible provided it has capability to actually withstand a gas supply interruption to its facility. PGW's tariff specifically describes the requirement for a customer to be interruptible:

> In order to qualify for interruptible daily Transportation Service under this Rate Schedule, a Customer must: (1) have installed and operable alternate fuel equipment, including appropriate fuel storage capacity, capable of displacing the daily quantity of Gas subject to curtailment or interruption; or (2) or in the alternative demonstrate to the Company's sole satisfaction the ability to manage its business without the use of Gas during periods of curtailment or interruption. (PGW Gas Tariff – Pa P.U.C. No. 2, Original Pg. No. 112)

Q. WHAT INVESTMENTS HAS VICINITY UNDERTAKEN TO ENSURE IT IS CAPABLE OF OPERATING IF INTERRUPTED?

A. Vicinity has installed oil storage that greatly exceeds PGW's requirement and can operate for 20 days in the winter using oil stored on site. If not operating under cold weather conditions, Vicinity can operate 30 days using oil stored on site. Additional fuel oil deliveries during any period of interruption would extend that capacity and such deliveries are routine.

Q. WHAT ASPECTS OF THE TREATMENT OF INTERRUPTIBLE CUSTOMERS RATES DO NOT ADHERE TO COST OF SERVICE PRINCIPALS?

A. Interruptible customers should not be allocated mains costs just like mains costs allocations of firm service customers for Rate IT customers do not impose identical costs on distribution customers. The rationale offered was that the Rate IT customers are essentially firm service customers for the purposes of mains cost allocation, as they have not been interrupted for many years. This is a ridiculous rationale. Rate IT customers have made substantial investment in their physical plant to enable them to withstand an interruption. PGW's tariff demands such. PGW's tariff does not allow a random customer that notices the lower Rate IT to simply switch to that customer class without demonstrating it first has the capability of withstanding interruption. The lower rates charged to a Rate IT customer take into consideration the capability offered by the Rate IT customer that PGW would surely call on in events of extreme weather or unplanned system failure, if needed to continue reliable service to the majority of PGW's other customers that are firm service customers.

Having Rate IT customers can be thought of as having an insurance policy that protects firm customers from interruptions. Although it is not needed often, when it is needed it would prove to be extremely valuable as it would be the one thing that keeps PGW from having to curtail service to customers involuntarily. PGW incorrectly claims that those customers are essentially firm service customers for the purposes of mains cost allocation, as they have not been interrupted for many years, but this treatment completely overlooks the critical role that an interruptible customer fulfills. Such an insurance policy does have a "cost" provided as a rate that is discounted to be lower than the firm service rate. To ignore the potential benefit that could be provided by Rate IT customers simply because PGW has not been in a situation where it had to call on Rate IT customers to interrupt is similar to me deciding to not pay my automotive insurance premium because I have gone years without having an accident. Insurance is bought to protect against financial losses due to catastrophic occurrences. You must pay the cost of insurance even during those periods when accidents, catastrophic or not, did not occur. I pay my auto insurance premium every year, and when I make it through the year without having an accident, I cannot call the insurance company and demand my money back. Instead, I am grateful that I did not have to use my insurance.

A reversal of roles makes it clear that PGW's cavalier treatment of its Rate IT customers is inappropriate. Instead of the current situation where PGW treats Rate IT customers similar to firm customers, consider the reverse. Envision an extremely cold weather month and there is an equipment failure that places PGW's distribution system at risk of not maintaining pressure and delivering enough gas to its firm customers to enable them to operate their furnaces, and PGW notifies its Rate IT customers that they must interrupt. If the IT customers would respond with "meh….you think of me similar to a firm customer, so I will behave like a firm customer and not cut my usage." PGW, and its truly firm customers, would be furious. Indeed, the Commission would be furious.

Q. CAN PGW SIMPLY INTERRUPT AN INTERRUPTIBLE CUSTOMER AT RANDOM, FOR NO REASON?

A. Although a review of the tariff might scare a customer into thinking so because the language states, "at the Company's sole discretion", a complete reading of the tariff provides the rationale that the Company would use to require a customer to interrupt:

> "The Company may curtail (reduce) or interrupt deliveries to the Customer whenever, at the Company's sole discretion, it determines that the available capacity in all or a portion of its system is projected to be insufficient to meet the requirements of all Customers or in the event a NGS fails to meet delivery obligations. Although the Company will endeavor to provide as much notice as is reasonable and practical, the Customer shall maintain the ability to curtail or interrupt usage upon eight hours' notice. In the event of a system emergency, upon notice by the Company, the Customer shall use its best efforts to curtail or interrupt usage upon less than eight hours' notice. (Gas Tariff- Pa P.U.C. No. 2, Original Pg. No. 112).

There must be a verifiable concern that the capacity or a portion of capacity is projected to be insufficient to meet customer requirements, or a Natural Gas Supplier fails to deliver, or there is a system emergency. These are reasonable conditions, and providing eight hours' notice is a reasonable timeframe.

If needed under such critical conditions, Vicinity can switch from natural gas to oil with at most, a four-hour notice.

Q. WHAT ISSUES DO YOU HAVE WITH THE REVENUE ALLOCATION PROPOSED BY MR. WATKINS?

A. Mr. Watkins confuses base rate distribution revenues with gas cost revenues, and it is not difficult to see why he is mixing the two concepts. He opines that Vicinity would willingly pay $6.132 million for capacity release (an example Mr. Watkins lifts from my direct testimony in the 1307(f) case) and uses this to leap to the conclusion that Vicinity would find it agreeable to pay the increase of $3.957 million proposed by Mr. Teme[4]. There have been changes to the capacity release value, which I will summarize here. The $6.132 million that Mr. Watkins refers to was my example of the value of 21,000 Dth/day of release capacity that Vicinity needs, valued on a 365-day release, priced at the TETCO tariff maximum price in TETCO's 2022 rate filing of $0.80/Dth-day[5]. As Mr. Reeves testified in the 1307(f) case, TETCO's filing was finalized at $0.61/Dth-day, making the value of the capacity $4.675 million[6]. Because this is for release capacity it is not a distribution rate, but instead is a gas cost component. To be clear, Vicinity does not find

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[4] Mr. Teme's PGW St. No. 6-SD, 6:14. The calculation of $3.957 is based on Mr. Reeves PGW St. No. 8, 7:17. 3,768,722 Mcf x $1.05/Dth = $3,957,158, however this must be corrected for the conversion of Mcf to DTh. Using the factor of 1.043 Dth/Mcf gives $4,127,315.
[5] 21,000 Dth/day x 365 days x $0.80/Dth = $6.132 million.
[6] Tr at 49-50. 21,000 Dth/day x 365 days x $0.61/Dth = $4.675 million.

an increase of $3.957 million in distribution rates agreeable. With the new information provided by Ms. Heppenstall in this case, that the proposed distribution rate for Vicinity of $0.1054/mcf contained a number of distribution system allocations totaling $511,000, when removed determines a rate of $0.0415/Mcf.

Q. WHY HAVE THE AMOUNTS FOR THE VALUE OF ARS CHANGED FROM THOSE IN THE COMPLAINT AND 1307(f) CASES?

A. It is because there are two components of the value of capacity used to provide ARS that require additional clarity. The first component is the capacity path. Simply put, a longer capacity path provides access to cheaper gas, therefore has greater value. In the Complaint and 1307(f) cases PGW's data responses on capacity releases on the Philadelphia Lateral cited release capacity not just from M-3 to meter 73060 but included capacity back to M-2 or Western Louisiana. Under cross-examination in the 1307(f) case Mr. Reeves admitted that the high value of release capacity was for long haul capacity that would not deliver to the Philadelphia Lateral.[7] Additionally, PGW provided data on the recent winter release capacity on the Philadelphia Lateral that was $0.105/Dth-day. This did not include more valuable long-haul capacity. That $0.105/Dth-day is the best representation of the value of the capacity that Vicinity needs.

[7] Tr. at 71: Q. Let's talk about that release. It's on page 14. You say you released 18,708 dekatherms per day on TETCO, I believe, for $3.25.
A. Correct, with the -.
Q. That capacity doesn't deliver to the Philadelphia lateral, does it?
A. I believe in these releases we segmented them, yes.
Q. So you agree it does not end up on the Philadelphia lateral?
A. No, not this release.

The second component of the value of ARS is based on market rates, and the market changes. The current value of $0.105/Dth-day may be different in the winter of 2023-24, and that would be the appropriate amount for Vicinity to pay in 2023-24.

Q. WHAT IS WRONG WITH MR. CLINE'S RECOMMENDATION REGARDING REVENUE ALLOCATION TO VICINITY?

A. Without any explanation or basis for his recommendation, Mr. Cline opines that he believes that Grays Ferry should be allocated the $5.2 million that PGW proposed, and that the remaining $4.9 million be eliminated in future rate cases (presumably by increasing Vicinity's rates more). I have already explained that base rate charges are distinct and separate from capacity charges for ARS, and that such charges must be recovered in a GCR case, not a base rate case. Mr. Cline's proposal that an additional $4.9 million of revenue, which would be for ARS, is totally inappropriate for several reasons. First, ARS is a gas swap that involves the use of PGW's Philadelphia Lateral capacity, and such a swap should be transacted at market rates, most recently $0.105/Dth-day. Mr. Cline offered no evidence to support the future value ($4.9 million) of release capacity for he has no way to predict such. His opinion should be disregarded.

Q. WHAT DID MR. CLINE RECOMMEND REGARDING CUSTOMER CHARGE INCREASES?

A. Mr. Cline supports PGW's proposed increases of 31-34% to customer charges, however he does not mention the proposed increase to Vicinity's customer charge from $250 to

$1100/meter, a 440% increase. Had Mr. Cline applied his own rationale of limiting customer charge increases to a maximum of 34%, he would have limited Vicinity's charge to $335/meter. I noted in my direct testimony that PGW submitted no evidence supporting increases to Vicinity's customer charge and therefore it should remain at the current amount of $250/month.

Q. WHAT IS WRONG WITH MR. CLINE'S PROPOSAL ON REVENUE SCALEBACK?

A. Mr. Cline proposed that the first $7 million of any revenue scaleback be applied first to the residential class. Given that PGW requested an $85.824 million increase, and based on previous and recent Commission decisions on base rate case revenue increases it is unlikely that if this case were fully litigated that PGW would receive the entire $85.824 million requested. It is highly likely that PGW would receive a lesser amount than requested, at least by $7 million, and Mr. Cline's scaleback recommendation is extremely unfair and biased, without any rationale provided. I have participated in many base rate case settlement discussions in Pennsylvania, and based on my experience I would also predict that if a settlement were reached it would be a notably lesser amount and having the first $7 million of decrease allocated to the residential class is extremely unlikely. This violates basic principles of cost-of-service ratemaking as it would result in an extreme benefit to the residential class that is not based at all on a CCOSS but Mr. Cline's personal desire to benefit residential customers. His recommendation should be denied, and any scaleback should be applied uniformly across the allocations to each customer class.

Q. WHAT DID MS. LACONTE'S TESTIMONY RECOMMEND CONCERNING THE OVERALL INCREASE PGW SHOULD APPLY TO INTERRUPTIBLE CUSTOMERS?

A. Philadelphia Industrial and Commercial Gas Users Group ("PICGUG") witness Ms. LaConte expressed concerns that PGW is proposing a 22.7% increase to Rate IT and observed that is over 1.35 times the proposed system average increase of 16.28%, which she feels is unreasonable for the Rate IT customers. However, she took no position regarding PGW's proposed rate for Vicinity.[8] She then stated that "If, contrary to my findings above, the Commission approves PGW's CCOSS, then the increase to Rate IT should not exceed the approved system average increase."[9] Considering that I have explained why I have recommended that Vicinity can continue to be an interruptible customer due to its considerable investment in on-site oil storage, Ms. LaConte's recommendation should apply to Vicinity. I have provided significant and substantial evidence that PGW's proposed increase to Vicinity's distribution rate should be rejected, and in fact lowered. In no case should Vicinity's rate change exceed the approved system average increase of PGW.

[8] PICGUG Statement No. 1, 25:11
[9] PICGUG Statement No. 1, 30:5-6

III. SUMMARY AND RECOMMENDATIONS

Q. WHAT IS THE SUMMARY OF YOUR REBUTTAL TESTIMONY?

A. 1. I have clearly explained that distribution services that deliver gas through the dedicated high pressure four-mile line, and ARS services using capacity on the Philadelphia Lateral are two entirely different services.

2. Rates for distribution services should be based on direct allocation of costs of the four-mile line. By removing allocated costs of PGW's low pressure distribution system the appropriate delivery rate is $0.0415/Mcf.

3. Rates for ARS service must be based on the market value of capacity. I have provided various examples of the market value of release capacity with the most recent date available from Mr. Reeves for Philadelphia Lateral capacity of $0.0105/Dth-day.

4. Work continues on the bypass line. Because I am familiar with other LDC bypass examples, I was convinced during the Complaint case that bypass is technically and financially feasible. Now that actual competitive bids have been received and the project has progressed further, those considerations, along with the other reasons I proved that explain that surcharges proposed are not appropriate and should not be assessed.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc. v. Philadelphia Gas Works	: : : : : : :	Docket Nos. R-2023-3037933 C-2023-3038727

SURREBUTTAL TESTIMONY OF JAMES L. CRIST, P.E.
ON BEHALF OF
GRAYS FERRY COGENERATION PARTNERSHIP
AND VICINITY ENERGY PHILADELPHIA, INC.

Vicinity Statement No. 1-SR
July 7, 2023

Q. PLEASE STATE YOUR NAME AND ON WHOSE BEHALF YOU ARE TESTIFYING.

A. I am James L. Crist, President of Lumen Group, Inc. a consulting firm focused on regulatory and market issues. I am presenting surrebuttal testimony on behalf of Grays Ferry Cogeneration Partnership ("Grays Ferry") and Vicinity Energy Philadelphia, Inc. ("VEPI") (collectively "Vicinity"). I also presented direct and rebuttal testimony in this proceeding.

I. ISSUES

Q. WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS SURREBUTTAL TESTIMONY?

A. I will address comments and opinions presented in the rebuttal testimony of OCA witness Mr. Watkins, OSBA witness Mr. Knecht, and PGW witnesses Ms. Heppenstall, Mr. Reeves, and Mr. Teme. The topics that I will address are the proper cost of Alternative Receipt Service ("ARS") and overall revenue allocation of PGW's desired revenue requirement.

I will provide additional clarification and explanation about my two main points, that have been consistent throughout the three regulatory proceedings (the Complaint case,[1] the 1307(f) case[2], and this base rate case) that (1) distribution costs for the 12.2 bcf/yr. of high

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[1] *Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia v. Philadelphia Gas Works*; Docket No. C-2021-3029259.

[2] *Pennsylvania Public Utility Commission, et al v. Philadelphia Gas Works*, Docket Nos. R-2023-3038069, C-2023-3038722.

pressure gas should be based on direct allocation, and (2) provision of capacity to Vicinity is a gas cost issue that should be priced at the market price for the desired capacity. The testimony of some other witnesses mistakenly used the examples of the value I provided for capacity and stated those as base rate costs, and that is entirely wrong. Capacity costs are a gas cost, not a base rate cost, and must be determined based on the market.

Q. WHAT IS THE APPROPRIATE DELIVERY RATE FOR VICINITY, AND HOW HAS IT CHANGED AS ADDITIONAL INFORMATION HAS BECOME AVAILABLE?

A. The appropriate rate for the gas delivered through the dedicated high pressure line is \$0.0397/Dth as discussed in my direct testimony in this case. Because the gas is delivered to Vicinity at 400 psig through the dedicated high pressure, four-mile pipeline that Vicinity paid for beginning in 1996, the distribution rate cost should be based on direct allocation. Simply put, the costs of installing and maintaining the four-mile line are the costs Vicinity did and should continue to pay. In the Complaint case, Ms. Heppenstall presented a CCOSS that improperly allocated significant costs of PGW's low pressure distribution system, which Vicinity does not use. Using Ms. Heppenstall's CCOSS model from the Complaint Case and removing the ARS volumes resulted in a greatly reduced rate for the delivery of high pressure gas, but that rate still included improperly allocated operation and maintenance costs of the low pressure distribution system. I was clear in my recommendation and stated that the maximum rate determined when the ARS volumes were removed from Ms. Heppenstall's model from the Complaint Case was \$0.212/Dth. In my testimony I stated:

> "I emphasize that $0.212 per Dth is a ***maximum*** amount, calculated by Ms. Heppenstall's own model once the model reflects the reality that ARS flows gas down the four-mile dedicated pipeline and not through PGW's distribution system. It is noted that this amount includes allocations of maintenance costs and labor cost that exceed the amounts that would be determined by direct assignment. Therefore, this represents a ***maximum*** rate that should be applied to all the gas delivered to Grays Ferry through the high pressure four-mile line, in absence of a proper direct assignment of Grays Ferry costs." Emphasis added (Statement JC-1SR, 16:4-11)

Several witnesses in this case have cited the $0.212/Dth and claimed that is an amount I stated should be charged. That is not true. It was purely a calculation based on the correction of a manifest error in Ms. Heppenstall's Complaint Case CCOSS and represented a maximum under PGW's own analysis before the removal of low pressure distribution system O&M costs.

In this case, Ms. Heppenstall improved her CCOSS and removed the ARS volumes from the allocation of the distribution rate calculation, which resulted in her revised rate calculation of $0.105/Dth. In my direct testimony I identified low pressure distribution O&M costs that Ms. Heppenstall allocated to Vicinity. I itemized those costs and removed them from Ms. Heppenstall's CCOSS model and the result was a distribution rate of $0.0397/Dth. PGW is disappointed that when CCOSS data is improved to more accurately reflect cost causation, the calculated cost for Vicinity drops, but that result is not surprising. Vicinity paid for the line beginning in 1996, paid the distribution rate of $1.1 million annually, and has annually contributed an amount for O&M, most recently $180,000 in

2022. Those O&M payments represent a revenue stream over 25 years, yet when asked to identify any O&M work done on the four-mile line, PGW could not.[3]

My position has been consistent throughout the three proceedings, that the cost Vicinity should pay for distribution service of gas transportation on the four mile line should be those costs that are a direct allocation of the four-mile line. They should not include allocated costs of the low pressure distribution system.

Q. HOW DO YOU ADDRESS COMMENTS IN MS. HEPPENSTALL'S REBUTTAL TESTIMONY CONCERNING THE DISTRIBUTION RATE?

A. On page 9 of her rebuttal testimony, Ms. Heppenstall said that because Vicinity has a special contract that "the cost of service analysis was not used or relied on" but previous PGW witnesses, including Ms. Heppenstall, have provided sworn testimony that the proper treatment of Vicinity in a CCOSS does not allocate low pressure distribution system costs to Vicinity. Ms. Heppenstall's current reversal of position should be ignored.

On page 10, Ms. Heppenstall testifies that, "as the cost of this pipeline was contributed by GFCP/VEPI, there is no asset to directly assign." *Id.*10:7-8. Ms. Heppenstall is incorrect, as there is a cost to directly assign, and that cost is zero, because Vicinity paid for the pipeline originally.

[3] Exhibit JC 3.1 in the Complaint case was the Response to Discovery Request I-2, Provide annual maintenance documents since the placement into service of the four-mile line. Indicate actual maintenance task, date, and cost. PGW's response was "The Company does not maintain annual maintenance records by main…."

Continuing on page 10, Ms. Heppenstall contradicts herself and appears to agree with me, saying, "The purpose of the cost of service study is to equitably assign costs across all customer classes. The ideal scenario would be to directly assign costs to each customer based on the costs to serve that individual customer." *Id.* 10:13-15. Despite this statement, Ms. Heppenstall proceeded to allocate costs of the low pressure distribution system to Vicinity and said, "These distribution expenses, of which the Company has only allocated $784,000 or 0.79% to GFCP/VEPI, are expenses needed to operate and maintain the ***entire*** distribution system, not just the low pressure system, as Mr. Crist is implying. These expenses, as they are joint and common costs needed to operate the system," emphasis added *id.*11:2-5.

I made my adjustments of her revised CCOSS by removing those low pressure distribution system O&M costs. That is also the explanation that addresses Ms. Heppenstall's observation that in the Complaint case when her CCOSS was adjusted by removing just the ARS volumes that changed the maximum rate to $0.212/Dth, and now that Ms. Heppenstall has further improved her CCOSS to separate out the ARS volumes for the determination of the distribution rate, she lowered her recommendation to $0.105/Dth, and when I then removed the low pressure distribution system O&M cost allocation it decreased the Vicinity distribution rate further. This should not be a surprise to Ms. Heppenstall.

Ms. Heppenstall maintains on page 12, that just because Vicinity can be interruptible they should not receive any true cost benefit because PGW has not interrupted any interruptible customers in a very long time. In my Rebuttal testimony, I addressed the merits and value of having interruptible customers and explained that having such a risk management capability of being interruptible comes with a cost, even when not used. Ms. Heppenstall's statements that categorize interruptible customers the same as firm customers, deny the premise that interruptible customers provide value, similar to an insurance policy, and just like an insurance policy, you must pay the premium even when you do not have coverable claims – ever. Risk management tools such as having interruptible customers as a component of system capacity planning provide a real benefit and such tools have a real value.

On page 12, Ms. Heppenstall raises the PGW position that if it were not for its low pressure distribution system, Vicinity would not have access to ARS volumes. I will address this mistaken claim later in this testimony when I address the capacity issue.

Q. HOW DO YOU ADDRESS COMMENTS IN MR. TEME'S REBUTTAL TESTIMONY CONCERNING GRADUALISM?

A. Reviewing Mr. Teme's endorsement and encouragement of gradualism as he stated, "It is important to evaluate the total bill impact when considering the concepts of rate shock and gradualism. The percentage increase in customer charge, alone, will not result in rate shock if the total bill increase is still reasonable and affordable for customers." PGW St. No. 6-R, 12:7-8. In his supplemental direct testimony Mr. Teme proposed an increase of Vicinity's rates from $1.129 million/yr. to $5.279 million/yr. PGW St. No. 6-SD, 2:23. His proposal to increase Vicinity's rates by 460% is not a demonstration of gradualism. I observed previously that PGW's proposed increase of Vicinity's monthly customer charge from $250/meter to $1,100/meter was unsubstantiated without any proof of costs, and that also is not an example of gradualism. Based on gradualism alone, which Mr. Teme professes to believe in, the PGW increase to Vicinity should be rejected.

Q. HAVE YOU CHANGED YOUR POSITION ON ISSUES AS MR. TEME ALLEGED?

A. No, but as I obtained additional information through discovery requests of PGW, I have clarified my recommendations based on the evidence. For each of the topics presented by Mr. Teme I will explain the additional information and how that has honed my position.

Q. WHAT CLARIFICATION CAN YOU PROVIDE REGARDING VICINITY BEING AN INTERRUPTIBLE CUSTOMER?

Regarding the interruptibility capability of Vicinity, I have desired to preserve the quality of service that Vicinity has had since 1996. In that contract it was described by PGW as "firm, non-interruptible Local Gas Transportation Service to the Facility for up to 50,000 Dekatherms per Day" (Contract at 22). Since Vicinity's peaking needs are 56,000 Dth/day its service was never firm for its entire need, as the final 6,000 Dth/day are not firm. Logically those peaking needs occur during the winter when temperatures are extremely cold, as Vicinity operates the thermal distribution system that serves downtown Philadelphia. In addition to not being firm to satisfy peaking needs, there are conditions that give PGW the right to interrupt "on any Day, up to a maximum of fifteen (15) Days per Agreement Year, on which the forecasted mean temperature for the greater Philadelphia metropolitan area, is forecasted by the National Weather Service to be twenty-five degrees Fahrenheit (25°) or less" (Contract at 30-31). Fifteen days per year is a huge amount of interruptibility, so the service conditions were never truly firm. Examining the PGW tariff conditions for Interruptible service show it described as, "service will be offered to interruptible Customers, who can in the sole judgment of the Company, manage its business without the use of Gas during periods of curtailment or interruption." (Gas Tariff- Pa P.U.C. No. 2 Original Pg. No. 111) so the tariff is less detailed than Vicinity's Contract in describing the conditions that subject a customer to interruption.

The tariff actually specifies the physical requirements necessary to be considered as an interruptible customer:

> INTERRUPTIBLE CAPABILITY
>
> In order to qualify for interruptible daily Transportation Service under this Rate Schedule, a Customer must: (1) have installed and operable alternate fuel equipment, including appropriate fuel storage capacity, capable of displacing the daily quantity of Gas subject to curtailment or interruption; or (2) or in the alternative demonstrate to the Company's sole satisfaction the ability to manage its business without the use of Gas during periods of curtailment or interruption.

During cross examination in the 1307(f) Case, Attorney Stewart attempted to obtain clarification from Mr. Reeves regarding the protocol that PGW uses when deciding upon recalling capacity it has released because of cold weather conditions. That exchange was:

> ATTORNEY STEWART: I asked -the question I asked is do they have a protocol for when they recall capacity or do they just do it as a, let's call it a game day decision. I mean, is there - do they have an actual set of rules or requirements that they follow when they do this? I'm just asking how it happens, the decision making process.
>
> ATTORNEY KENNARD: Thank you for that clarification.
>
> THE WITNESS: We evaluate the upcoming weather. PGW is a 90 percent residential heating customer basis. So a lot of our load is dependent on weather. We will evaluate the upcoming weather and the upcoming needs of our customers. Comparing that with where our gas portfolio stands, where our storages stand, our

> LT storages stand. And we'll take a look and determine whether it makes sense to recall the capacity or if we can balance off of our other assets. (Tr.at 75-76).

If PGW did recall capacity from customers, that would mean interrupting them. PGW has stated, and other parties have observed, that in recent years customers have not been interrupted, however the absence of PGW interrupting a customer, does not make that customer "firm." It simply means that during periods of cold weather PGW was able to satisfy the needs of its customers using the entirety of its gas portfolio assets. Vicinity's contractual obligation to accept up to 15 days per year of interruption, and its contractual agreement to not have firm service for 6,000 Dth/day (the difference between its peak of 56,000 Dth/day and 50,000 Dth/day provided in the Contract) by the definition used by PGW means the appropriate description of the service to Vicinity is "interruptible." I am simply recognizing that. I have consistently said that Vicinity would accept contract terms similar to those it has had for the past 25 years, meaning that it is agreeable to the interruptible language found in PGW's tariff.

Q. HOW DO YOU RESPOND TO MR. TEME'S COMMENTS REGADING BIOFUEL?

A. Because bio fuel is usually more expensive than natural gas, fuel switching is usually only done for gas interruptions, testing, and any time gas prices rise above the oil price. The low volumes in these recent months only illustrates that gas was not expensive in comparison, nor interrupted.

Q. ARE MR. TEME'S COMMENTS ABOUT VICINITY'S PERFORMANCE AS A POWER GENERATOR RELEVANT?

A. Although Mr. Teme attempts to provide some type of business analysis regarding Vicinity's role as a power generator (*id.* at 22) his comments are not relevant. Vicinity's power generation business is not the subject of this regulatory proceeding. It is an unregulated power supplier, and makes business decisions, including risk management decisions on a daily basis. The business decision it made in 1996 was to agree to the interruptibility provisions of the Contract and is confident in its decision now to be subject to similar terms.

Q. ARE MR. TEME'S COMMENTS ABOUT VICINITY'S PERFORMANCE AS A UTILITY STEAM PROVIDER RELEVANT?

A. Mr. Teme attempts to create fear about Vicinity's ability to provide reliable steam service are not relevant. Vicinity has operated its regulated thermal distribution system for 36 years and had no fuel related interruptions. Vicinity has millions of gallons of oil and biofuel on site and millions of gallons of additional oil storage capacity and have recently provided discovery responses to PGW regarding Vicinity's oil back up capabilities. Mr. Teme's comment that there are no documents (id 22:12-13) is misleading. I will be crystal clear- Vicinity has significant oil storage capability and is confident in its business decision and would agree to terms that are substantially similar to those in the 1996 Contract. PGW's description of interruptibility in its tariff actually pose less business risk to Vicinity than the terms in the 1996 Contract.

Q. ARE MR. TEME'S CLAIMS THAT VICINITY DOES NOT QUALIFY TO BE CONSIDERED INTERRUPTIBLE VALID?

A. I have provided significant evidence that Vicinity has oil storage and is capable of operating its facility for 70 days in the summer, 30 days in the winter, and 20 days at peak, and that is without replenishment of its oil stores. With oil deliveries that can occur daily, facility operations might continue indefinitely. Mr. Teme's rebuttal testimony that Vicinity must "demonstrate to the Company's sole satisfaction the ability to manage its business without the use of gas during periods of curtailment or interruption" should be satisfied by the fact that Vicinity has significant oil storage, and that Vicinity is stating it can comply with the terms of PGW's interruptible tariff. Mr. Teme or his colleagues are invited to inspect Vicinity's tank farm, and discuss interruption scenarios with Vicinity operation personnel. It is unclear why Mr. Teme is so focused on this, considering that PGW has not needed to interrupt customers in many years, and that Mr. Reeves has testified that PGW has significant assets to provide reliable gas delivery, and I do not disagree with that. In the 1307(f) case I provided evidence that PGW is surplus with delivery assets and recommended that it release some of its abundant capacity to Vicinity, yet now Mr. Teme is worried that Vicinity might not be able to interrupt its operations if called upon by PGW. Mr. Teme's concerns have been addressed and need not be considered further.

Q. HOW DO YOU ADDRESS MR. TEME'S POSITION CONCERNING THE USEC SURCHARGE?

A. I provided rationale in my direct testimony explaining that Vicinity has never been subject to surcharges, and applying such surcharges now is not appropriate. Mr. Knecht disagreed with me regarding the Universal Service and Energy Conservation ("USEC") surcharge, not because of cost causation, for he agrees with me that in all other regulated gas and electric utilities in Pennsylvania, such charges are borne by the customers in the class that is actually eligible to participate in and receive benefits. However, because the small business customers that Mr. Knecht represents are subject to USEC, he believes that Vicinity should also be subject to it. I have explained in this testimony that Vicinity has operated under terms and conditions since 1996 that allow it to be interrupted, even more so than customers served under PGW's interruptible transportation rate. Going forward, Vicinity is capable of continuing in that manner, and should be exempt from USEC. Mr. Knecht's logic of applying USEC to Vicinity is that "misery loves company." Just because customer classes other than residential (the only class that can participate in programs funded by the USEC) have been subject to USEC historically, does not make it right, as it violates cost causation principles. In his direct testimony Mr. Knecht pointed out the absurdity of PGW's proposed $19.2 million USEC surcharge to Vicinity, which was based on total throughput, and proposes an alternative amount of $290,000, and Mr. Teme stated that he would support that amount. While this is obviously more advantageous to Vicinity than the original $19.2 million that was in the Company's revenue allocation, it still violates cost causation principles, and gradualism. The starting point for Vicinity is the amount it is currently being charged for distribution services, which is $1.1. million/yr. Just adding a USEC amount of $290,000 would be an increase of 26%, which clearly is an increase that is excessive and I would believe that if such an increase were assigned to the small business class that Mr. Knecht favors, that he would object for the same reason I am.

Q. WHAT IS YOUR RESPONSE TO MR. PEACH'S OPINION REGARDING APPLYING THE USEC SURCHARE TO VICINITY?

A. Mr. Peach's testimony regarding Vicinity begins by recalling treatment of USEC's applicability to classes other than the residential class that can participate in USEC programs. I have already explained that such treatment violates cost causation and the assessment of the original $19.2 million requested or the $290,000 amount Mr. Teme presented in his rebuttal testimony would impose an extraordinary burden on Vicinity. He continues by stating that the USEC should apply to Vicinity even if its service is interruptible, "in my opinion it is reasonable public policy to require a large customer to contribute to helping to cover the costs of PGW's low-income programs regardless of the specific status of their service." (PGW St. No. 9-R, 36:7-9). He then contradicts himself stating, "the Interruptible Transportation class has been exempted from contributing to universal service costs since before PGW came under PUC jurisdiction. I do not believe it would be reasonable to modify that status in this proceeding." (*id.*36:13-16). The Interruptible Transportation customers that Mr. Peach desires to be exempt from USEC, are also large customers.

Mr. Peach adds that if Vicinity is not subject to the USEC surcharge that it "would also place an even heavier burden for these costs on residential customers" (*id.*37:12-13), however this analysis is incorrect as Vicinity has never been subject to the USEC surcharge and such costs have always been borne by residential customers. The impact that should concern Mr. Peach is the impact on residential customers if Vicinity were to cease to be a customer of PGW, and the millions of dollars of Vicinity's annual payments ended. That would cause a substantial burden on not only residential customers, but all of PGW's customers.

Q. HOW DO YOU ADDRESS MR. TEME'S POSITION CONCERNING THE EFFECIENCY COST RECOVERY SURCHARGE?

A. Mr. Teme still proposes to collect the Efficiency Cost Recovery ("ECR") surcharge amount of $112,000/yr. from Vicinity. I have explained that interruptible customers are not assessed the ECR and therefore Vicinity should be exempt. Additionally, adding to the gradualism argument I presented in the discussion of the USEC surcharge, I will now include this amount to illustrate that Vicinity's annual cost would increase from $1.1 million to $1.5 million, so now the increase is 36%, which further violates the gradualism principal. If the Commission determines that any cost surcharge should be assessed then it should restrict the use of those funds to the customer class that is providing the surcharge, namely the Rate GC-XLT class, of which Vicinity is the only member. Such treatment is done for Act 129 conservation and energy efficiency programs and can be applied here.

Q. HOW DO YOU ADDRESS MR. TEME'S POSITION CONCERNING THE OTHER POST EMPLOYMENT BENEFIT SURCHARGE?

A. Mr. Teme still proposes to collect the OPEB surcharge amount of $3,288,000/yr. from Vicinity, which dwarfs Vicinity's current aggregate distribution costs of $1.1 million/yr. Clearly this violates gradualism. Mr. Knecht disagrees with PGW's desire and states, "it is not appropriate to apply the OPEB Surcharge to this class" (*id*. 35:25-26). Repeating the same gradualism illustration I provided previously, adding an additional $3.2 million to Vicinity clearly violates gradualism, and should be rejected.

Q. HOW DO YOU ADDRESS MR. TEME'S POSITION CONCERNING THE OTHER DISTRIBUTION SYSTEM IMPROVEMENT CHARGE?

A. Mr. Teme still proposes to collect the DSIC surcharge amount of $1,780,000/yr. from Vicinity, which also dwarfs Vicinity's current distribution rate of $1.1 million/yr. Clearly this violates gradualism. Mr. Knecht proposes $150,000. If he would acknowledge that Vicinity is interruptible, he would have proposed nothing, recognizing the competitive nature of Vicinity. Assessing a DSIC surcharge to Vicinity is wholly inappropriate because Vicinity does not use the low pressure distribution system. PGW's DSIC charges are based on the replacement of aged distribution mains, therefore this again violates cost causation principles as Vicinity should not be assessed costs of the low pressure distribution system. There is no plan or need for replacement of the four mile line. DSIC simply does not apply here.

Q. WHAT IS THE SUMMARY OF YOUR POSITION REGARDING ASSESSMENTOF SURCHARGES?

A. PGW is striving to increase costs to Vicinity as much as possible. It must be recognized that as a potential bypass customer, by definition Vicinity is competitively situated. Whether the rate to Vicinity increased due to an increase in the transportation rate, or surcharges, regardless of the use of those surcharges, it all impacts the total amount that

Vicinity will be facing, and as that amount increases it becomes increasingly attractive to continue with the bypass line construction. Surcharges should not be assessed.

Q. WHAT PREVIOUS COMMISSION ORDERS ADDRESSED WAIVER OF SURCHARGES IN COMPETITIVE BYPASS SITUATIONS?

A. In 2005, during the Gas Wars era in western Pennsylvania, Commission Orders issued clarified the circumstances where rate discounting was a reasonable and desirable action, that would preserve customer load on the local gas utility. The Commission recognized that doing so benefits all customers of the local distribution company ("LDC").

The Order in the 2005 Peoples Gas 1307(f) case[4] stated:

> we believe that there are circumstances in which it may be reasonable to require captive PGC customers to bear the costs of discounted or waived gas delivery related charges incurred to retain throughput. The circumstances may include instances in which a customer may obtain service by direct bypass, receive service through facilities which could not produce the system average retainage (company use/ unaccounted for gas) percentage, a competitive offer from a non-jurisdictional entity, economic development and job retention and instances where there is a *bona fide* competitive offer from an alternative energy source. In such circumstances, the utility should maintain the burden of proof and it should also be demonstrated that the existing customer charges recover, at a minimum, the marginal costs of providing transportation service, so as to ensure a contribution to fixed costs. This list is not exhaustive. Because the aforementioned examples are not exhaustive, we believe that the Commission may entertain other instances in which the utility prudently exercised its discretion.

The Order in the 2005 Equitable Gas 1307(f) case[5] stated:

> There are circumstances in which it may be reasonable to require captive PGC customers to bear the costs of discounted or waived gas delivery-related charges incurred to retain throughput. Those circumstances may include instances in which a customer may obtain service by direct bypass,

[4] R-00050267

[5] R-00050272

> receive service through facilities which could not produce the system average retainage (company use, unaccounted for gas) percentage, a competitive offer from a non-jurisdictional entity, economic development and job retention, and instances where there is bona fide competitive offer from an alternative energy source. In such circumstances, it should also be demonstrated that the existing customer charges recover, at a minimum, the marginal costs of providing transportation service, so as to ensure a contribution to fixed costs. Because this list is not exhaustive, it is prudent that the Commission should entertain other instances in which the utility properly exercised its discretion.

The Commission is clear and consistent in its understanding that loss of an LDC customer to bypass disadvantages the remaining customers of the LDC. In this proceeding, PGW is facing the loss its largest customer, and the millions of dollars of annual revenue contributed by that customer. I have recommended a reasonable rate based on the cost of service to Vicinity through the dedicated four-mile pipeline, which Vicinity paid for in 1996. Attempts to add additional charges and surcharges, which Vicinity has never been subject to, should be rejected, and doing so would be consistent with the prior Commission rulings in such competitive situations.

Q. MR. TEME CONTINUES TO PROPOSE THAT THE METERING CHARGE FOR VICINITY SHOULD BE INCREASED 440%. WHAT RATIONALE DOES HE CITE?

A. He explains that a meter replacement was done in 2018. Utilities replace meters regularly as part of routine maintenance, and I have established that Vicinity has paid an annual maintenance charge since 1996, that increases yearly and more recently was $180,000 in 2022. Mr. Teme claims that the ongoing annual cost of maintaining the meters is $64,003.07. The two meters install are ultrasonic meters, which are an appropriate equipment choice for a customer of Vicinity's size. Such meters typically undergo an annual maintenance inspection, which consists of removing the meter, examining it for an internal wear, and verifying that the external controls and telemetry are in proper working order.

While a typical cost for such a routine inspection and maintenance might be a few thousand dollars, there is no way that it should be $64,003, so I requested the maintenance records to determine what the problem was. The Company's response to Set IV-2 is included as **Exhibit JC-9** and stated, "The meters are field inspected and maintained approximately 30 times per year." This set off a red flag with me as a meter inspection frequency of 30 times per year is excessive, so I followed up with a request for the maintenance logs, which the Company provided under a CONFIDENTIAL classification, therefore, I am including them as **CONFIDENTIAL Exhibit JC-10**, which consists of the maintenance records of both the 8" and 12" meters. Examination of the records show in general terms that the excessive number of maintenance calls were to remedy problems with the telemetering system. Table JC-1 shows the frequency by year for the maintenance call.

Table JC-1 Meter Maintenance Calls

	8"	12"
2023	3	2
2022	9	5
2021	26	24
2020	8	7
2019	19	11
2018	18	18
	83	67

Data in Table JC-1 show that the 8" meter has had more maintenance problems than the 12" meter. A review of the Confidential maintenance logs shows that the calls on the 12" meter were on the same date and time as the 8" meter, which makes sense. Total calls over the past 5 ½ years is 150, but only 83 visits since both meters were serviced during one visit. Data in the table show that in the 2021 and 2022 the maintenance call frequency has declined, so Mr. Teme's $64,003 average maintenance cost is significantly overstated. Examination of the Confidential maintenance logs show that the most recent maintenance call was June 9, 2023, and was to investigate the inoperative telemetering equipment, so after six years PGW still has not figured out how to get the meters working properly on their largest customer. For these reasons, I find that Mr. Teme's claim that the annual maintenance cost of $64,003 is not just and reasonable. His desire to increase the current $250/meter/month, which is already the highest monthly meter charge in the PGW tariff, to $1,100/meter/month, an increase of 440%, is based on the Company's inability to properly operate the telemetering equipment and must be rejected.

Q. WHAT IS MR. TEME'S POSITION ON VICINITY'S BYPASS LINE PROJECT?

A. Mr. Teme is not convinced that a bypass line is a credible project. Considering that the project bid documents that contain the specific route, engineering details, permitting plans and financial data are highly confidential and therefore Mr. Teme himself, or any other PGW employee, has not seen the documents, I understand his position. The multiple responses to the engineering bid solicitation were submitted as the response to OCA Set IV-1, therefore, may be examined by the non-PGW parties that have executed the appropriate non-disclosure agreement and of those parties, none have expressed doubts in rebuttal testimony regarding the possibility of the bypass line construction. Obviously, the ALJs and Commission can review those documents. One such document is attached to my direct testimony as Highly Confidential Exhibit JC-5. I have attached a summary showing the expected costs as **HIGHLY CONFIDENTIAL Exhibit JC-11**. I will provide as much non-confidential descriptive information as possible now. The bypass line total cost estimate, which includes contingency, permitting, tie in to TETCO, engineering, site supervision, and bond expense bring the project total to $26.7 million. Mr. Teme is certainly able to conduct his own financial analysis and in doing so will see that the rates and surcharge amounts PGW has proposed make this project financially attractive. Neither Mr. Teme nor I were involved in the negotiations that led to the 1996 Contract, but history can be an excellent predictor of the future. Vicinity had the engineering, permitting, right of way acquisition and FERC approvals completed, and would have constructed the bypass line had it not reached the agreement with PGW expressed in the 1996 Contract. This is not the time for Mr. Teme to engage in a game of chicken with Vicinity. It is clear that Vicinity has gone about as far in the process as it can go before actually ordering the construction to begin, the determination of which hinges on the outcome of this proceeding.

Q. WHAT IS YOUR RESPONSE TO MR. REEVES' POSITION ON HIS DEPARTMENT'S COSTS ASSOCIATED WITH PROVIDING ARS?

A. In my direct testimony I review the duties listed in the detailed job descriptions of the three employees that Mr. Reeves stated were involved with and responsible for the routine provisioning of ARS. Mr. Reeves explained that even though the job descriptions for the staff employees in his department do not specifically cite ARS as a component of their job functions, none the less, those employees conduct several tasks related to the provision of ARS:

> "PGW personnel have to procure the gas, schedule the nominations for the gas, monitor the gas flow on interstate pipeline (and makes adjustments if needed), and then account for the gas at the end of the month. PGW is also a recipient of gas which requires PGW personnel to monitor the incoming gas supply, and account for all the gas to make sure the volumes appropriately match." (PGW St. 8-R).

While I do not disagree that such job functions are reasonable in provision of ARS, they are the same job functions that the three employees do on a daily basis for every transportation customer. I would expect the PGW's gas nomination process and associated monitoring is computerized and the inclusion of Vicinity volumes, whether it is 21,000 Dth in a day 100 Dth in a day, does not create a noticeable or measurable amount of work. As such, any labor costs connected with the provision of ARS should be allocated on a per-customer basis, not on a volumetric basis. Such costs are de minimis.

Q. MR. REEVES OPINES THAT YOUR EDITS OF THE BALANCING AND LOST AND UNACCOUNTED FOR SECTION OF THE PROPOSED TARIFF GS-XLT ARE NOT NECESSARY. HOW DO YOU ADDRESS THAT?

A. Mr. Reeves believes my modifications are not necessary because the proposed tariff includes language that states the condition may "at the Company's discretion be waived or revised as appropriate." He raises possible future scenarios of adding another customer served off of meter 73060. His concern, no matter how unlikely, is valid. He has sworn not to subject Vicinity to balancing provisions and LUF charges under the current operation and because he stated as such, I would agree that if things change there may be reason to modify it to deal appropriately with the operational concerns that may arise. However, this would be a unique situation and given the contentious history of the PGW-Vicinity relationship I am not comfortable "trusting" PGW into the future on this point. I recommend that if operational conditions change as Mr. Reeves has described, that the Company and Vicinity be required to meet and develop a satisfactory modification that reflects the actual balancing or LUF services provided by the Company.

Q. MR. REEVES DISAGREES WITH YOUR DESCRIPTION OF ARS AS A GAS "SWAP". WHAT IS YOUR RESPONSE?

A. ARS can be confusing to understand and Mr. Reeves chooses to refer to ARS as a "dis-placement transaction." I am happy to use his wording but that does not change the sub-stance of what occurs when the gas that is delivered to Vicinity through the four mile line. To make that happen, Vicinity delivers a like quantity of gas to Skippack and PGW delivers gas down the Philadelphia Lateral to meter 73060 and through the four mile line.

Mr. Reeves' testimony continues with explanations that I debate. While I explained that Vicinity delivers gas to Skippack and PGW delivers gas to meter 73060 he complains that "Mr. Crist focus is on the physical flow of gas" (PGW St. 8-R 6:18). I focus on the physical flow of gas because cost causation principles demand such. He complains that ARS is strictly an accommodation requested by Vicinity and PGW allows Vicinity to use PGW's capacity rights to deliver gas on the Philadelphia Lateral, and that there is no benefit to PGW from the ARS arrangement. The benefit to PGW began in 1996, when through the result of negotiation PGW and Vicinity reached agreement for PGW to allow the use of its capacity on the Philadelphia Lateral in exchange for Vicinity abandoning its plans to construct a bypass pipeline. In addition to the $1.1 million annually that Vicinity paid to PGW for transportation service, for 25 years PGW received large payments for the release capacity of 36,000 Dth/day in the summer, when it did not require such an amount. In

2022 those payments totaled $2.3 million. Those are the financial benefits. In terms of public awareness, PGW retained its largest customer and avoided the embarrassment of that customer constructing a bypass line. Current actions by PGW have put that at risk, as PGW has done nothing in the three regulatory proceedings to encourage Vicinity to remain a customer of PGW.

Q. WHAT CAPACITY CONTRACTS DOES PGW USE TO PROVIDE SERVICE TO VICINITY?

A. The contracts that PGW uses to supply Philadelphia Lateral capacity to Vicinity are TETCO #800514 and #800515, and I have attached the relevant pages that show the contract path and delivery points as **Exhibit JC-12**. Examination of both contracts show that they provide M1 to M3 capacity and can deliver up to 18,000 Dth/day to meters 70030 and 73060 (the meter at the city gate of the four mile pipe). Both of these contracts began in February, 1996, at the beginning of service to Vicinity.

Q. WHAT IS YOUR POSITION REGARDING THE VALUE OF CAPACITY VICINITY NEEDS TO DELIVER GAS TO METER 73060 ON THE PHILADELPHIA LATERAL?

A. My position has been and remains that the price of capacity that Vicinity needs should be the market price, regardless if that capacity is provided through PGW's ARS or if PGW simply releases the capacity on a recallable basis. As additional data requested was supplied it became clear that the market value of capacity can vary considerably, and a significant determinant of value is the contract path of the capacity.

Q. WHAT IS THE EXPLANATION OF THE DIFFERENT VALUES OF RELEASE CAPACITY AND ARS THAT YOU HAVE CITED IN PREVIOUS TESTIMONY?

A. I introduced the example of PGW releasing capacity to Vicinity at the filed TETCO tariff maximum of $0.80/Dth-day for all 21,000 Dth that PGW supplies, and the simple arithmetic calculates the annual cost ($0.80 x 365 x 21,000) at $6.1 million. The release of that capacity that has a delivery path of M1 to M3, and to meter 73060 would provide Vicinity access to low cost Marcellus shale gas in M-2, and that would provide value to Vicinity. PGW provided evidence in the 1307(f) case of the total capacity releases for the period 2018 through 2022 and that average value was $0.35/Dth-day. That data proves the market rate for the M1 to M3 release capacity is $0.35/Dth-day. When I requested an update of the data to include release capacity contract through this past winter, the response included the winter (11/1/22-3/1/23) release of capacity to the Paulsboro Refinery and the capacity path was M3 to delivery on the Philadelphia Lateral using contact #800233 and the market value was $0.10/Dth-day. That may seem like a low amount to Mr. Reeves, but it must be recognized that the capacity path is only M-3 so it does not allow access to the low cost Marcellus gas available in M-2. That value is the most recent true market value of segment of capacity that Vicinity needs.

Q. WHAT IS YOUR EXPLANATION OF THE REASON THE VALUE OF PHILADELPIA LATERAL CAPACITY IS $0.10/DTH-DAY?

A. It is the straightforward reason that any price is low, that there is not much demand for that capacity on the Philadelphia Lateral. There are two major industrial size customers, Vicinity and the Paulsboro Refinery. I continue to emphasize that $0.10/Dth-day is a market rate, and as such it can increase or decrease. Mr. Reeves was critical of my illustration that the Philadelphia Lateral capacity was only worth $0.10/Dth-day and stated, "more likely, GFCP/VEPI have again changed their theory of the case yet again to try to obtain an advantageous, subsidized rate. Now that PGW has agreed to use a capacity pricing model for ARS, the value has dropped considerably." *Id* 10:11-14.

He shows his frustration with the low price he received from the Paulsboro Refinery by claiming, "The underlying argument that $0.10 paid by Paulboro [sic] Refinery is a market based rate is incorrect. There is currently no competitive market for the Philadelphia Lateral. There are not enough customers seeking capacity on the Philadelphia Lateral in the secondary market to constitute a competitive market or to create a competitive price. I believe that there are only two potential customers in the market for Philadelphia Lateral specific releases of capacity – GFCP/VEPI and Paulsboro Refining." *Id.* 13:6-11. Mr. Reeves may lament that $0.10 is not a market based rate but the fact that he (the seller) and Paulsboro Refinery (the buyer) agreed to that price illustrates by its very existence that it is a market based rate. It is a thinly traded market and the price that Mr. Reeves wished for was obviously higher than $0.10, but that's how the market works. Mr. Reeves rejected my concept I presented in the 1307(f) case, that PGW release the capacity to Vicinity at the tariff maximum price, and now complains when I observe that Philadelphia Lateral capacity should be provided to Vicinity at the $0.10 market price. Mr. Reeves solution would to be have Vicinity continue to subsidize his GCR customers, as they have done for 25 years, by charging Vicinity greater than the market price. Vicinity paid those prices for release capacity as it was a term in the 1996 contract and over the years provided subsidies to the GCR, most recently $2.3 million in 2023.

Q. MR. REEVES COMPLAINS THAT VICINITY DID NOT BID ON THE PHILADELPHIA LATERAL CAPACITY THIS PAST WINTER. WHY NOT?

A. He complains:

> "bidding is not something GFCP/VEPI ha[ve] historically attempted to address their capacity shortfall." PGW Exh. RER-2R (GCR Case). Since GFCP/VEPI do not bid on capacity, it is impossible to determine a market-based rate. One customer's bid does not set the market. By refusing to bid, GFCP/VEPI have prevented a competitive market price from emerging. For this reason, PGW has suggested that the maximum price for ARS be set at the market price for all TECO (sic) releases, not just the Philadelphia Lateral." PGW St. 8-R, 13: 12-18

I found this piece of misleading testimony particularly amusing. Vicinity has its winter capacity needs met through ARS. There is no need or reason that Vicinity would bid for capacity, since PGW already provides delivery of gas to Vicinity under the Contract provisions of ARS and Release Capacity.

However, do not be distracted by Mr. Reeves complaint, and miss the real windfall he is trying to create when he states in the next line, "For this reason, PGW has suggested that the maximum price for ARS be set at the market price for all TECO [sic] releases, not just the Philadelphia Lateral." As a reminder, the market price of just the Philadelphia Lateral capacity release is $0.10/Dth-day, and the market price calculated based on all capacity releases that include the Philadelphia Lateral during the period of 2018-2022 is $0.345/Dth-day, and the market price for all TETCO releases is higher, but I do not know how much higher as Mr. Reeves did not supply comprehensive data, just his one big fish of $3.25/Dth-day. Mr. Reeves' attempt to extract a subsidy from Vicinity must be ignored. It is vitally important to understand that all of Mr. Reeve's referenced transactions, with the sole exception of the $0.10 Paulsboro Refinery release, include the full contract path including access to the inexpensive Marcellus shale gas in zone M-2.

Q. HOW DOES MR. REEVES CONTRADICT HIMSELF REGARDING THE VALUE OF TETCO MAINLINE CAPACITY?

A. When explaining that if PGW would segment the capacity, meaning break up the capacity path and sell it in pieces (the Philadelphia Lateral piece to Vicinity, and offer the long-haul piece in the capacity release market) Mr. Reeves complains:

> Having secured rights through the constrained and bottlenecked Philadelphia Lateral, Mr. Crist, with no support, assures the Commission and the parties that PGW can find a use for the now stranded portion of its capacity (i.e., WLA to Eagle). *Id.* 12:18-20.

This is the same Mr. Reeves that bragged about releasing long-haul capacity in his 1307(f) testimony:

> "this past winter, PGW released 18,708 per day on TETCO at a price of $3.25 per Dth, far in excess of the tariffed TECO [sic] rate. Therefore, PGW was able to generate approximately $9.2 million dollars in revenues for the benefit of its customers. If PGW were forced to accept GFCP/VEPI's offer of a long-term release at a rate equal to TETCO's tariff, the value of which Mr. Crist calculates to be approximately $6.1 million, *PGW's ratepayers would be losing well over $3 million annually*." 1307(f) case St. No. 2R, 14:10-15.

Mr. Reeves had to confess under cross examination by Mr. Stewart that the high $3.25 price he was bragging about did not include capacity on the Philadelphia Lateral, therefore was not applicable to Vicinity:

> Q. Let's talk about that release. It's on page 14. You say you released 18,708 dekatherms per day on TETCO, I believe, for $3.25.
> A. Correct, with the -.
> Q. That capacity doesn't deliver to the Philadelphia lateral, does it?
> A. I believe in these releases we segmented them, yes.
> Q. So you agree it does not end up on the Philadelphia lateral?
> A. No, not this release.

(Tr. at 71).

On one hand Mr. Reeves laments that if the TETCO capacity is segmented and the Philadelphia Lateral piece is released to Vicinity, then he will be stuck with the long-haul piece and not able to find a market, and on the other hand he brags that just this winter he released a piece of long-haul segmented capacity for $3.25, far in excess of the tariffed rate. Mr. Reeves testimony when discussing ARS and capacity pricing is deliberately misleading, and his comments should be considered with a healthy dose of skepticism. Mr. Reeves repeats the same contradiction later in his testimony and attempts a second time to mischaracterize the value of capacity:

> "GFCP/VEPI's position that it would prefer to only contract for the use of TETCO capacity from Eagle to the 060 city gate is self-serving and imposes risks on our other customers. All of PGW's pipelines contracts are long haul contracts that begin at the supply areas to market areas on Texas Eastern, principally Louisiana and Texas and end at metered connections with PGW. PGW cannot use capacity that ends at Eagle, since the particular TETCO facility does not connect with PGW's system. In other words, GFCP/VEPI are asking that PGW breakup one or more of its long haul contracts to serve GFCP/VEPI, using the most valuable segment. PGW's customers pay for the underlying capacity costs of these contracts through the GCR. By offering $0.10 per DTH to use the most valuable portion of our TETCO capacity contract, GFCP/VEPI's proposal leaves our customers on the hook for making up the difference. This would force PGW's GCR customers to bear the cost of the capacity without a way to receive gas. While Mr. Crist points out that PGW could release the rest of the capacity to the market to generate revenue for the GCR customers, the capacity market is 100% a market price with no guarantees. This proposal would shift all of the market risk from GFCP/VEPI and force PGW's GCR customers to bear that risk. PGW's other customers would bear the risk of under recovering the cost associated with the stranded portion in the secondary market, since PGW cannot use it for system sales."
> *Id* 13:22-14:15

Several corrections are needed here.

1. Contracting the segment of capacity from Eagle to meter 73060, the Philadelphia Lateral, will reduce risks to PGW's GCR customers as this segment has little value ($0.10/Dth-day)

2. Long-haul capacity that will bring gas from Louisiana and Texas, and zone M-2 where low cost Marcellus gas is located up to zone M-3 is desirable capacity. Mr. Reeves released such capacity last winter for $3.25/Dth-day.

3. GCR customers do pay for PGW's excess capacity, which I had proposed be released at tariff rates to Vicinity during the 1307(f) case, a proposal that Mr. Reeves rejected, yet now claims that releasing long-haul capacity would shift market risk to GCR customers. Those customers already bear the cost, and PGW recovers that cost from them through the GCR. By releasing it, there is an opportunity to create additional value (Mr. Reeves $3.25 deal for example).

4. If you want to eliminate the risk that GCR customers bear then release the entire delivery path at TETCO tariff rates to Vicinity.

Q. WHO IS SUBSIDIZING WHOM?

A. For one last time, Mr. Reeves' statement that "the continued provisioning of ARS and the discontinuance of the fact that the current payment of $54,000 for ARS imposes a huge subsidy burden on PGW's other ratepayers." (*Id.*17:10-12) is false and the reverse of what has occurred over the past 25 years. The $54,000 ARS payment was one of two components of payments for ARS. The other component was the required 21,000 Dth/day of summertime capacity which Vicinity did not entirely need, and which Vicinity paid $2.3

million in 2022. Vicinity has been subsidizing the GCR customers, not the other way around.

Q. IS PGW'S REQUESTED INCREASE TO VICINITY'S RATE REASONABLE?

A. It is not at all reasonable. Table JC-2 shows the total of the increase requested including the ARS and four surcharges as filed which total $29.7 million, and as revised by Mr. Teme in his rebuttal testimony, which he adjusted his requested amount for USEC, resulting in a revised increase of $10.7 million. Clearly PGW's requested amount is far beyond what could be considered reasonable and should be denied, consistent with the detailed recommendations I have provided in my testimony.

Table JC-2 Requested Rate Increase		
	Filed	Revised
GS-XLT	1,295,176	1,295,176
ARS	3,957,000	3,957,000
USEC	19,247,000	290,000
ECR	3,288,000	3,288,000
OPEB	112,000	112,000
DSIC	1,798,000	1,798,000
Total	29,697,176	10,740,176

II. <u>SUMMARY AND RECOMMENDATIONS</u>

Q. WHAT IS THE SUMMARY OF YOUR SURREBUTTAL TESTIMONY?

A. At the beginning of my direct testimony in this case I cited the four items in the Commission's decision in the Complaint case that were to be addressed in this proceeding. I will review them again, with a summary of how they have been addressed.

> a) the proper rate class for Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc., including, if necessary, whether a special rate class is appropriate.

I have demonstrated that PGW's largest customer operates within four miles of the TETCO Philadelphia Lateral, and has initiated plans including engineering design and contractor bid solicitation to construct a bypass line and cease being a PGW customer. This undoubtably qualifies Vicinity for a special rate, and PGW has proposed a special rate class tariff, and I have edited that tariff with appropriate changes based on cost causation.

> b) the appropriate methodology and evidence necessary to apply the methodology, to determine Philadelphia Gas Works' actual cost of service for Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.

I have provided evidence from past PGW rate cases that demonstrates the appropriate CCOSS method, which is direct cost allocation, and does not include an allocation of PGW's low pressure distribution system expenses to Vicinity.

> c) consideration and resolution of the question of whether and, if so, to what extent Philadelphia Gas Works' transportation service to Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc., utilizes PGW's low pressure distribution system, and if so, what impact does such use have upon the Philadelphia Gas Work's actual cost of service and the resulting "just and reasonable" rate for Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc.

Vicinity does not use PGW's low pressure distribution system and distribution service provided to Vicinity has no impact on PGW's other customers. Using PGW's CCOSS model as a starting point I removed low pressure distribution system O&M costs from the allocations to the proposed Vicinity rate.

> d) consideration and resolution of the question whether Philadelphia Gas Works should be held to its prior position in base rate proceedings that Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc., do not utilize Philadelphia Gas Works' distribution system.

At the commencement of this case, PGW had finally conceded that Vicinity does not use its low pressure distribution system and removed some, but not all, low pressure distribution cost allocations from its determination of Vicinity's transportation rate. I identified and removed several low pressure cost allocation items, consistent with the opinions stated by PGW's CCOSS witnesses in its four previous base rate cases.

Q. DID ADDRESSING THOSE FOUR ITEMS RESOLVE ALL THE ISSUES CONNECTED WITH PROVIDING JUST AND REASONABLE RATES TO VICINITY?

A. No. While it was necessary to thoroughly address the four items cited in the Commission's Order, there were additional items that are required to provide the correct rate and tariff language for Vicinity. I made adjustments to PGW's CCOSS calculation of the distribution transportation rate, and I made edits to the proposed GS-XLT tariff that will result in a fair, just and reasonable cost-based rate for Vicinity.

I explained that Vicinity continues to pursue the construction of a bypass line and provided highly confidential data responses detailing contractor bids. There should be no doubt that Vicinity's bypass line is a financially viable project. Bypass customers are competitive and as such exempt from each of the surcharges that PGW wishes to assess. Addition of any surcharges increases the financial incentive for Vicinity to bypass the PGW system.

I provided significant data regarding the value of PGW's capacity that Vicinity uses to meet its gas supply needs in winter and summer. Such needs can be met by the modification of ARS or capacity release as discussed in this case as well as the 1307(f) case.

Q. WHAT ARE THE KEY RATE COMPONENTS OF A JUST AND REASONABLE RATE FOR VICINITY?

A. The transportation rate should be $0.0397/Dth. Capacity can be provided to Vicinity through ARS at a market price, and the most recent market price data is $0.10/Dth-day for M-3 and Philadelphia Lateral capacity and is $0.345/Dth-day for long-haul capacity that delivers to meter 73060 on the Philadelphia Lateral.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend that the Commission accept the pricing and evidence that I have provided, and that PGW be directed to modify proposed rate GS-XLT for Vicinity reflecting those terms. A serious attempt should be made to retain the patronage of Vicinity as a customer of PGW. Failure on PGW's part to do so will disadvantage all of its customers though the loss of distribution system revenues and will disadvantage GCR customers through loss of revenues from ARS or capacity release. In no case should the cost increase to Vicinity exceed the overall percentage revenue increase awarded to PGW.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes.

EXHIBIT JC-9

Philadelphia Gas Works
Case Name: R-2023-3037933
Docket No(s): 2023 BRC Rate Case

Response to Discovery Request: VIC-04-VIC-04-FT-2
Date of Response: 5/25/2023
Response Provided By: Joseph Hawkinson

Question:

Identify the make and model of the two installed meters at GFCP/VEPI. Provide details about the installation date(s), original cost of meters, and any maintenance that has been performed on the meters.

Attachments: 0

Response:

The two meters installed in 2018 are:

- 12” Meter:
  Twin Sonic Plus 12” - TSP1264PSF10, TWINSONIC PLUS FLOW METER, 12", ANSI 600, SCH. 40, 6+2 PATH, RETRACTABLE 200KHZ TRANSDUCERS, CLASS I, DIV I, GROUP C & D WITH METERMOUNTED PRESSURE &TEMPERATURE SENSORS.INCLUDES COMPLETE REDUNDANCY, Q. SONIC PLUS

  12” meter cost = $51,930

- 8” Meter:
  Q.Sonic Plus 8” - QSP0864PSF10, Q.SONIC-Plus Flow Meter, 8", ANSI 600, Sch.40, 6-Path, retractable 200kHz transducers, Class I, Div I, Group C & D with meter mounted temperature and pressure sensors. Meter mounted 18-30 VDC electronics complete with (2) Serial Ports (RS 232/485 configurable), (1) Ethernet port, (2) Frequency Outputs, (2) digital outputs, and (2) analog outputs.

  8” meter cost = $28,750

The meters are field inspected and maintained approximately 30 times per year.

CONFIDENTIAL

EXHIBIT JC-10

REDACTED

HIGHLY CONFIDENTIAL

EXHIBIT JC-11

REDACTED

EXHIBIT JC-12

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"), DATED 12/15/98:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	18,000

SIGNED FOR IDENTIFICATION

PIPELINE: [signature] Jmm

CUSTOMER: [signature]

SUPERSEDES EXHIBIT A DATED: ______

800514R.1

Contract #:800514R

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"),
DATED 12/15/98:

	Point of Delivery	Description	Maximum Daily Delivery Obligation (dth)	Delivery Pressure Obligation	Measurement Responsibilities	Owner	Operator
1.	70030	PHILADELPHIA GAS WORKS - POINT BREEZE, PA PHILADELPHIA CO., PA	18,000	100 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS
2.	73060	HARKNESS PT. - PA PHILADELPHIA CO., PA	18,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

EXHIBIT A, TRANSPORTATION PATHS
FOR BILLING PURPOSES, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline")
AND PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"), DATED 12/15/98:

(1) Customer's firm Point(s) of Receipt:

Point of Receipt	Description	Maximum Daily Receipt Obligation (plus Applicable Shrinkage)	Measurement Responsibilities	Owner	Operator
None					

(2) Customer shall have Pipeline's Master Receipt Point List ("MRPL"). Customer hereby agrees that Pipeline's MRPL as revised and published by Pipeline from time to time is incorporated herein by reference.

Customer hereby agrees to comply with the Receipt Pressure Obligation as set forth in Section 6 of Pipeline's General Terms and Conditions at such Point(s) of Receipt.

Transportation Path	Transportation Path Quantity (Dth/D)
M1 to M3	18,000

SIGNED FOR IDENTIFICATION

PIPELINE: [signature] JMM

CUSTOMER: [signature] VAF

SUPERSEDES EXHIBIT A DATED: ________

800515R1

Contract #:800515R

EXHIBIT B, POINT(S) OF DELIVERY, DATED 12/15/98,
TO THE SERVICE AGREEMENT UNDER RATE SCHEDULE FT-1
BETWEEN TEXAS EASTERN TRANSMISSION CORPORATION ("Pipeline"), AND
PHILADELPHIA AUTHORITY FOR INDUSTRIAL DEVELOPMENT ("Customer"),
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2.	73060	HARKNESS PT. - PA PHILADELPHIA CO., PA	18,000	125 POUNDS PER SQUARE INCH GAUGE	TX EAST TRAN	TX EAST TRAN	PHIL GAS WKS

provided, however, that until changed by a subsequent Agreement between Pipeline and Customer, Pipeline's aggregate maximum daily delivery obligations under this and all other firm Service Agreements existing between Pipeline and Customer, shall in no event exceed the following:

800515R1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia, Inc. v. Philadelphia Gas Works	: : : : : : :	Docket Nos. R-2023-3037933 C-2023-3038727

VERIFICATION OF
JAMES L. CRIST

I, James L. Crist, hereby verify the following facts:

1) I am the Principle of the Lumen Group, Inc. My business address is 4226 Yarmouth Drive, Suite 101, Allison Park, Pennsylvania 15101;

2) I have been retained by Grays Ferry Cogeneration Partnership and Vicinity Energy Philadelphia to provide testimony in the above captioned matter;

3) I prepared Vicinity Statement No. 1, Appendix 1 along with Exhibits JC-1 through JC-8, which is my Direct Testimony and Exhibits;

4) I prepared Vicinity Statement No. 1-R, which is my Rebuttal Testimony; and,

5) I prepared Vicinity Statement No. 1-SR and Exhibits JC-9 through JC-12, which is my Surrebuttal Testimony and Exhibits.

6) Vicinity Statements No. 1, No. 1-R and 1-SR, and the accompanying Exhibits, were prepared by me or under my supervision, are true and correct to the best of my knowledge, information, and belief, and if a hearing were held today and I were asked the same questions, my answers would

be the same as contained in each of my Statements. I understand that my statements are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

James L. Crist
President, The Lumen Group, Inc.
4227 Yarmouth Drive, Suite 101
Allison Park, Pennsylvania, 15101

DATED: 9 July 2023

LABEL	DESCRIPTION
Vicinity Statement No. 1	Direct Testimiony of James L. Crist
Appendix 1	James Crist Resume & Regulatory Experience
Exhibit JC-1.1	Direct Testimiony & Exhibits of James L. Crist @ Docket C-2021-3029259
Exhibit JC-1.2	Project Book from Docket C-2021-3029259
Exhibit JC-1.3	Surrebuttal Testimony and Exhibits of James L. Crist from Docket C-2021-3029259
Exhibit JC-1.4	Direct Testimony and Exhibits of James L. Crist from Docket R-2023-3038069 C-2023-3038722
Exhibit JC-1.5	Surrebuttal Testimony and Exhibits of James L. Crist from Dockets R-2023-3038069 C-2023-3038722
Exhibit JC-2	Service Contract between Grays Ferry and PAID
Exhibit JC-3	Texas Eastern System Map
Exhibit JC-4	PGW Response to Vicinity Set 1 No. 2
Exhibit JC-5 (Highly Confidential)	Construction Costs
Exhibit JC-6	PGW Response to Vicinity Set II No. 7
Exhibit JC-7 (Revised & Corrected)	JC markup of PGW proposed General Service Extra Large Transportation Tariff
Exhibit JC-8	JC Revisions to PGW CCOSS
Vicinity Statement No. 1-R	Rebuttal Testimony of James L. Crist
Vicinity Statement No. 1-SR	Surrebuttal Testimony of James L. Crist
Exhibit JC-9	PGW Response to Vicinity Set 4 No. 2
Exhibit JC-10 (Confidential)	PGW Response to Vicinity Set 7 No. 1 (meter service logs)
Exhibit JC-11 (Highly Confidential)	Bypass Pipeline Cost Estimate
Exhibit JC-12	Excerpts from PGW capacity contracts