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May 3, 2017

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
2nd Floor, 1 North
400 North Street
Harrisburg, PA 17120

Re: Petition of Philadelphia Gas Works for Approval of its Second Long-Term Infrastructure Improvement Plan for the Period Beginning September 1, 2017 and Ending August 31, 2022, Docket No. P-2017-

Dear Secretary Chiavetta:

Enclose for filing is the Petition of Philadelphia Gas Works for Approval of its Second Long-Term Infrastructure Improvement Plan in the above-referenced proceeding. Copies will be served as indicated on the attached Certificate of Service.

Respectfully,

Brandon J. Pierce, Esquire

Enclosure

cc: Cert. of Service w/enc.

CERTIFICATE OF SERVICE

I hereby certify that this day I served a copy of the Petition of Philadelphia Gas Works for Approval of its Second Long-Term Infrastructure Improvement Plan upon the persons listed below in the manner indicated in accordance with the requirements of 52 Pa. Code Section 1.54.

Via Email and/or First Class Mail

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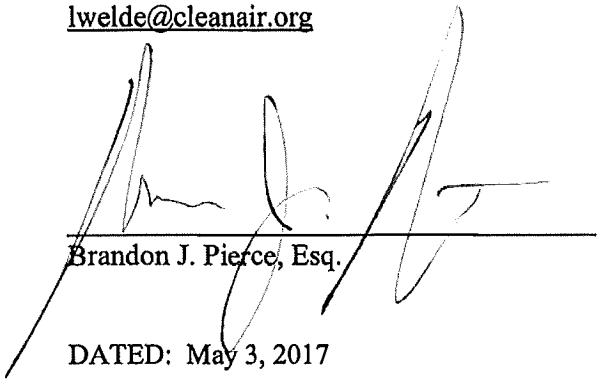

Brandon J. Pierce, Esq.

DATED: May 3, 2017

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of Philadelphia Gas Works for Approval of its Second Long-Term Infrastructure Improvement Plan	: : :	Docket No. P-2017-XXXXXXX

PETITION OF PHILADELPHIA GAS WORKS FOR APPROVAL OF ITS SECOND LONG-TERM INFRASTRUCTURE IMPROVEMENT PLAN

Pursuant to Section 1352(a) of the Public Utility Code, 66 Pa.C.S. § 1352(a), and 52 Pa. Code § 121.5(a), Philadelphia Gas Works ("PGW" or "Company") respectfully submits this Petition requesting that the Public Utility Commission ("PUC" or the "Commission") approve PGW's Second Long-Term Infrastructure Improvement Plan for the period beginning September 1, 2017, and ending August 31, 2022 ("Second LTIIP"). This Second LTIIP replaces the Modified LTIIP that was entered by Commission Order on July 6, 2016 at Docket No. P-2015-2501500 ("Modified LTIIP").[1] PGW's Second LTIIP is attached as "Attachment A."

In support of approval of the relief requested, PGW states as follows:

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1 *Petition of Philadelphia Gas Works for Waiver of Provisions of Act 11 to Increase the Distribution System Improvement Charge CAP and to Permit Levelization of DSIC Charges*, PUC Docket No. P-2015-2501500, Opinion and Order entered July 6, 2016. PGW's original LTIIP was approved by the Commission on April 4, 2013, *Petition of Philadelphia Gas Works for Approval of its Long-Term Infrastructure Improvement Plan*, PUC Docket No. P-2012-2337737, Opinion and Order entered April 4, 2013 ("First LTIIP").

I. BACKGROUND

1. PGW is a city natural gas distribution operation as defined in the Public Utility Code, 66 Pa.C.S. § 102. PGW manages a distribution system of approximately 6,000 miles of gas mains and service lines[2] supplying approximately 500,000 customers in the City and County of Philadelphia.

2. The names, addresses and telephone number of PGW's counsel are:

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3. On February 14, 2012, Act 11 was signed into law by the Pennsylvania General Assembly. That Act authorizes the establishment of a Distribution System Improvement Charge ("DSIC") to provide for the timely recovery of reasonable and prudent costs incurred to repair, improve or replace eligible property in order to ensure and maintain adequate, efficient, safe, reliable and reasonable service.[3] The provisions of Act 11 were

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2 There are no customer-owned service lines in the PGW territory. Service lines are also referred to as services.

3 66 Pa.C.S. § 1353(a).

codified in Chapter 13 of the Public Utility Code,[4] and related Commission regulations were promulgated as Chapter 121 to Title 52 of the Pennsylvania Code ("LTIIP Regulations").[5]

4. PGW's First LTIIP was approved on April 9, 2013,[6] and was thereafter replaced by the Modified LTIIP that was approved on July 6, 2016, which continues by its terms until August 31, 2017.[7] That LTIIP contained all of the elements required by the Commission's Implementation Order[8] and 66 Pa.C.S. § 1352(a):[9] (a) the types and age of eligible property; (b) a schedule of planned repairs and replacements; (c) location of eligible property; (d) a reasonable estimate of the quantity of property to be improved; (e) projected annual expenditures and measures to ensure the plan is cost-effective; (f) the manner in which replacement of aging infrastructure will be accelerated and how repair, improvement or replacement will maintain safe and reliable service; and (g) a workforce

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4 66 Pa.C.S. §§ 1350 - 1360.

5 The Commission adopted final regulations related to Long-Term Infrastructure Improvement Plans in December 2014. 52 Pa. Code §§ 121.1 to 121.8; Review of Long-Term Infrastructure Improvement Plan, 44 Pa.B. 7809, 7856 (December 20, 2014).

6 *See* footnote 1, *supra.*

7 August 31, 2017 is the end of Fiscal Year 2017 for PGW.

8 On August 2, 2012, the Commission issued its Final Implementation Order establishing procedures and guidelines to carry out the ratemaking provisions of Act 11. *Implementation of Act 11 of 2012*, Docket No. M-2012-2293611, Final Implementation Order entered August 2, 2012 ("Final Implementation Order"). The Final Implementation Order is a policy statement setting forth how the Commission intends to interpret Act 11 in future adjudications and rulemakings. See *Petition of PPL Electric Utilities Corporation For Approval of a Distribution System Improvement Charge*, PUC Docket No. P-2012-2325034, Recommended Decision dated July 25, 2014 at 18-19, modified (on other grounds) in part by Opinion and Order entered April 9, 2015.

9 The Commission's LTIIP Regulations were adopted after PGW's current LTIIP was approved. *See* footnotes **Error! Bookmark not defined.** and 5, *supra.* 52 Pa. Code § 121.3(a) tracks these seven requirements and adds an eighth (h) requirement: "A description of a utility's outreach and coordination activities with other utilities, Department of Transportation and local governments regarding the planned maintenance/construction projects and roadways that may be impacted by the LTIIP."

and management training plan designed to ensure that PGW will have access to a qualified workforce to perform work in a cost-effective, safe and reliable manner.

5. PGW's DSIC was approved on May 9, 2013.[10] PGW's DSIC compliance tariff, Supplement No. 62 to Gas Service Tariff – Pa P.U.C. No. 2, went into effect June 1, 2013.[11]

6. On September 1, 2015, PGW filed its Petition for Waiver of Provisions of Act 11 to Increase the Distribution System Improvement Charge Cap and Permit Levelization of DSIC Charges ("DISC Cap Increase Petition")[12] seeking, *inter alia*, approval to increase the DSIC cap and to permit PGW to use an annualized, levelized charge as the basis for establishing a DSIC.

7. On January 28, 2016,[13] the Commission issued an order which, *inter alia*, authorized PGW to increase its DSIC cap to 7.5% of distribution revenues (including any reconciliation recovery); and directed PGW to file a petition to amend (referenced in the regulation as a petition to modify) its LTIIP detailing the Company's proposed

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10 *Petition of Philadelphia Gas Works for Approval of a Distribution System Improvement Charge*, PUC Docket No. P-2012-2337737, Opinion and Order entered on May 9, 2013 ("Final DSIC Order").

11 *Id.; Petition of Philadelphia Gas Works for Approval of a Distribution System Improvement Charge,* PUC Docket No. P-2012-2337737, Secretarial Letter dated June 4, 2013; *Petition of Philadelphia Gas Works for Approval of a Distribution System Improvement Charge,* PUC Docket No. P-2012-2337737, Secretarial Letter dated June 10, 2013.

12 *See* footnote 13, *infra.*

13 *Petition of Philadelphia Gas Works for Waiver of Provisions of Act 11 to Increase the Distribution System Improvement Charge CAP and to Permit Levelization of DSIC Charges*, PUC Docket Nos. P-2015-2501500, C-2015-2504092, Opinion and Order entered January 28, 2016 ("DISC Increase Order").

accelerated main replacement program and how it plans to expend the additional DSIC revenues.[14]

8. The Modified LTIIP was deemed in compliance with that requirement and was subsequently approved by the Commission on July 6, 2016.[15]

II. Description and Justification for Second LTIIP

9. As fully described in the accompanying Second LTIIP (Attachment "A"), the accelerated main replacement program set forth therein will, over time, reduce risk and costs, compared to that which PGW would experience if it did not accelerate its program, and result in more adequate, efficient, safe, reliable and reasonable natural gas distribution service.

10. PGW's Second LTIIP (Attachment "A") will, upon approval, replace the Company's Modified LTIIP and is set to begin on September 1, 2017 and end on August 31, 2022. It includes all of the required elements identified in Section 1352(a) and the LTIIP Regulations.

(a) the types and age of eligible property;

(b) a schedule of planned repairs and replacements;

(c) location of eligible property;

(d) a reasonable estimate of the quantity of property to be improved;

(e) projected annual expenditures and measures to ensure the plan is cost-effective;

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14 *Id.*, at Ordering Paragraph 8(a). As part of a stipulation with the Bureau of Investigation and Enforcement ("I&E") PGW also agreed in its amended LTIIP to show how PGW intends to train staff and contractors to meet the Operator Qualification requirements of 49 CFR Subpart N and to otherwise demonstrate that it will have qualified personnel available to accomplish the accelerated main replacement authorized by the PGW Petition. I&E Stipulation, ¶ 1.B.(1)(c).

15 *See* footnote 1, *supra.*

(f) the manner in which replacement of aging infrastructure will be accelerated and how repair, improvement or replacement will maintain safe and reliable service;

(g) a workforce and management training plan;

(h) a description of a utility's outreach and coordination activities;

(i) a description of critical valves for which DSIC recovery is being sought.

11. The Second LTIIP is intended to: (1) continue the acceleration of the replacement rate of at-risk gas mains; (2) reduce overall risk to PGW's gas distribution system and enhance safety and reliability; and (3) comply with the DSIC Cap Waiver Order, Section 1352(a) and the LTIIP Regulations.

12. PGW's "at risk" [16] distribution mains currently make up 62% of its 3,031 miles of main. PGW has historically removed 18 miles of high risk cast iron main each year, financed from funds provided from its base rates.

13. PGW's Second LTIIP proposes to continue the acceleration of its cast iron main replacement program at the existing annual expenditure level (18 mile per year baseline program and accelerated, DSIC financed program). The specific targets for replacement reflect PGW's determination of a reasonable level of annual expenditure for replacement of at risk main and the prioritization of main replacement reflected in PGW's DIMP, using the MRP (DNV / GL) program and reflects the current DSIC cap of 7.5%, currently $33 million annually.

14. The continued acceleration of PGW's main replacement program, proposed herein, is estimated to retire all of its cast iron mains in 45 years.

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[16] PGW uses the term "at risk" to mean cast iron and unprotected steel mains.

15. Such an expedited pace should produce the following reliability, safety and cost benefits:

- The reduction of leaks and the concomitant risk of serious incidents from those leaks, compared to what PGW is likely to experience without further acceleration;
- Reduction of breakage repairs and future breakage repair costs, again, compared to the costs it would incur absent acceleration;
- Reductions in leak maintenance and repair on the facilities being removed from service; and
- Improvement in pressure, and lower levels of unaccounted-for gas, which should produce greater rate stability for PGW's customers and result in more adequate, efficient, safe, reliable and reasonable natural gas distribution service.

16. In sum, continued acceleration of the main replacement program will reduce risk and costs, compared to that which PGW would experience if it did not continue the acceleration of its program.

17. As detailed in the Second LTIIP, PGW will prioritize replacement of the following sizes and types of "at risk" main:

Long Term Infrastructure Improvement Program
Annual Schedule of Quantities
Period FY 2018 - FY 2022

QUANTITIES	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Cumulative Totals
CURRENT BASELINE PROGRAM						
8" & Smaller LP/IP	18.00	18.00	18.00	18.00	18.00	90.00
ACCELERATED PROGRAM						
8" & Smaller LP/IP	7.00	7.00	7.00	7.00	7.00	35.00
12" and Larger LP	1.30	1.35	1.40	1.34	1.20	6.59
12" and Larger HP	5.50	5.50	5.30	5.25	5.15	26.70
Abandonment for Non-Use	-	-	-	-	-	-
ACCELERATED TOTALS	13.80	13.85	13.70	13.59	13.35	68.29
Yearly Totals	**31.80**	**31.85**	**31.70**	**31.59**	**31.35**	**158.29**

III Service and Procedural Issues

18. PGW has served copies of this Petition on the statutory advocates, the active parties in PGW's last gas base rate case proceeding and the active parties in the Modified LTIIP/DSIC Cap Increase Petition, as shown on the accompanying Certificate of Service. If the Commission concludes that additional notice is necessary, PGW will provide such additional notice as the Commission may direct.

19. PGW does not believe that the Second LTIIP raises any "material factual issues"[17] and, therefore, is not filing a proposed litigation schedule or written testimony. However, if this Petition is referred to the Office of Administrative Law Judge for hearings and a decision, PGW would intend to submit written testimony in support of its Second LTIIP.

V. Conclusion

20. PGW respectfully requests that the Commission approve PGW's Second LTIIP (Attachment A). PGW's Second LTIIP conforms to the requirements of Act 11 and the Commission's LTIIP Regulations and is "adequate and sufficient to ensure and maintain adequate, efficient, safe, reliable and reasonable service"[18]

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17 52 Pa. Code § 121.4(c) states, in part, that an "LTIIP will be referred to the Office of Administrative Law Judge for hearings and a decision if comments raise material factual issues."

18 66 Pa.C.S. § 1352(a)(7).

WHEREFORE, PGW respectfully requests that the Commission:

a) Approve PGW's Second LTIIP (Attachment A); and

b) Take any other action deemed to be in the public interest.

Respectfully submitted,

Brandon J. Pierce, Esq.
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215-684-6219
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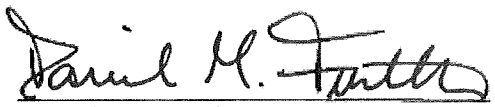
Dated: May 3, 2017

Counsel for Philadelphia Gas Works

VERIFICATION

I, Daniel M. Furtek, hereby state that: (1) I am the Director – Resource Management for Philadelphia Gas Works; (2) the facts above set forth in the foregoing document are true and correct (or are true and correct to the best of my knowledge, information and belief); and (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).



Daniel M. Furtek
Director, Resource Management
Philadelphia Gas Works

ATTACHMENT A

Philadelphia Gas Works

Long Term Infrastructure Improvement Plan

For the Period Beginning September 1, 2017 and

Ending August 31, 2022

Table of Contents

I. INTRODUCTION

Pursuant to 66 Pa. C.S. § 1352(a) and Pa. Code § 121.5(a), Philadelphia Gas Works ("PGW" or the "Company") hereby submits its Long Term Infrastructure Improvement Plan, submitted in accordance with the Order of the Pennsylvania Public Utility Commission ("PUC" or "Commission") at Docket No. P-2015-2501500.

PGW is owned by the City of Philadelphia and is the largest municipally owned gas utility in the country. PGW is regulated as a "City Natural Gas Distribution Operation" (CNGDO) pursuant to the Public Utility Code, 66 Pa. C.S. §102, §2212. PGW manages a distribution system of approximately 6,000 miles of gas mains and service lines[1] supplying approximately 500,000 customers.

By Order entered April 4, 2013, the PUC approved 1) PGW's proposed Long Term Infrastructure Improvement Plan ("LTIIP"), and 2) PGW's proposed Distribution System Improvement Charge ("DSIC"). PGW's LTIIP set out to accelerate the pace of its "at risk"[2] distribution mains, currently 62% of its 3,031 miles of main. PGW has historically removed 18 miles of high risk cast iron main each year, financed from funds provided from its base rates. PGW's approved LTIIP set forth a plan to replace another seven miles of cast iron main, financed through its DSIC, previously capped at 5% of PGW's distribution revenues.

On September 1, 2015, PGW applied for a waiver from the PUC to permit it to increase its DSIC cap (and its subsequent annual main replacement) to an amount representing 7.5% of its annual distribution revenues. PGW's proposal to increase its DSIC percentage cap to 7.5% was

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1 PGW owns and operates all the service lines from the mains to the inlet side of the meters. There are no customer-owned service lines in the PGW service territory. Service lines are also referred to as services.

2 PGW uses the term "at risk" to mean cast iron and unprotected steel mains. *See*, P-2015-2501500, St. 1 at 1, fn 1.

approved by the PUC on January 28, 2016, subject to the filing of an amended LTIIP within fifteen (15) days of the PUC Order ("DSIC Cap Waiver Order"). The Modified LTIIP was deemed in compliance with that requirement and was subsequently approved by the Commission on June 9, 2016.

PGW herein proposes to continue the acceleration of its cast iron main replacement program to reflect the current DSIC cap of 7.5%, currently $33 million annually. The continued acceleration of PGW's main replacement program, proposed herein, is estimated to retire all of its cast iron mains in 45 years.

Such an expedited pace should produce the following reliability, safety and cost benefits:

- The reduction of leaks and the concomitant risk of serious incidents from those leaks, compared to what PGW is likely to experience without further acceleration;
- Reduction of breakage repairs and future breakage repair costs, again, compared to the costs it would incur absent acceleration;
- Reductions in leak maintenance and repair on the facilities being removed from service; and
- Improvement in pressure, and lower levels of unaccounted-for gas, which should produce greater rate stability for PGW's customers and result in more adequate, efficient, safe, reliable and reasonable natural gas distribution service.

In sum, continued acceleration of the main replacement program will reduce risk and costs, compared to that which PGW would experience if it did not continue the acceleration of its program.

II. LTIIP REQUIREMENTS

On May 23, 2014, the Commission finalized the LTIIP Regulations at Docket No. L-2012-2317274. This Docket established the procedures and criteria for the filing, modifying and periodically reviewing a utility's LTIIP. The procedures and criteria reflect both Subchapter B requirements and certain provisions in the Commission's Implementation Order[3], as well as Act 11. As a result, the rulemaking added additional elements, thereby increasing the original seven elements in the LTIIP to nine as shown below:

(1) Identification of types and age of eligible property owned and operated by the utility for which it is seeking DSIC recovery;

(2) An initial schedule for planned repair and replacement of eligible property;

(3) A general description of location of eligible property;

(4) A reasonable estimate of the quantity of eligible property to be improved or repaired;

(5) Projected annual expenditures and means to finance the expenditures;

(6) A description of the manner in which infrastructure replacement will be accelerated and how repair, improvement or replacement will ensure and maintain adequate, efficient, safe, reliable and reasonable service;

(7) A workforce management and training program designed to ensure that the utility will have access to a qualified workforce to perform work in a cost-effective, safe and reliable manner;

(8) A description of a utility's outreach and coordination activities with other utilities, Department of Transportation and local governments regarding their

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3 On August 2, 2012, the Commission issued the Final Implementation Order, at Docket No. M-2012-2293611, establishing procedures and guidelines necessary to implement Act 11.

planned maintenance/construction projects and roadways that may be impacted by the LTIIP; and

(9) If a NGDC identifies a critical valve that it will repair, improve upon or replace and for which it will seek DSIC recovery, then it must include such information in its LTIIP.

This proposed LTIIP includes all of the required elements identified in Section 1352(a) and the LTIIP Regulations. The plan identifies how PGW proposes to expend the DSIC revenues in the next five (5) Fiscal Years (FY 2018 – FY 2022).

III. THE LONG TERM INFRASTRUCTURE IMPROVEMENT PLAN

PGW's original LTIIP was approved by the Commission on April 4, 2013 and covers the five year period September 1, 2012 through August 31, 2017 (PGW's Fiscal Years 2013 through 2017). This original LTIIP was modified for the last two (2) years (FY 2016 and FY 2017) to update the projected expenditures that take into account the additional funding levels resulting from the DSIC Cap Waiver Order that raised the allowable DSIC, inclusive of reconciliation, to 7.5% from 5%. The modified LTIIP was approved by the Commission on June 9, 2016. After four (4) years, as observed below, PGW continues to exceed the main replacement goals set forth in its current LTIIP.[4]

[4] As explained in the FY 2013 and FY 2014 Asset Optimization Plan submission, dated April 4, 2014, PGW experienced a shortfall in the first year of the LTIIP, "PGW included replacement estimates in the LTIIP but when it came time to define and begin the actual projects (which was before the LTIIP and DSIC petition were approved), the FY 2013 actual replacement were approximately one half mile less in each category."

CURRENT BASELINE PROGRAM	FY 2013		FY 2014		FY 2015		FY 2016	
	LTIIP	Actual	LTIIP	Actual	LTIIP	Actual	LTIIP	Actual
8" & Smaller LP/IP	18.00	18.10	18.00	18.04	18.00	18.06	18.00	18.06
ACCELERATED PROGRAM								
12" and Larger (LP)	-	-	-	-	-	-	-	-
12" and Larger (HP)	-	-	-	-	-	-	5.55	-
12" HP	1.84	1.34	2.16	2.31	2.04	3.59		4.60
30" HP	1.45	0.83	1.70	1.97	1.86	2.68		1.84
8" & Smaller LP/IP	2.97	0.00	3.04	4.64	2.97	4.93	5.75	6.02
Abandonment for Non-Use	2.08	2.04	0.00	1.10	0.00	0.00	1.07	1.10
ACCELERATED TOTALS	8.33	4.22	6.90	10.02	6.87	11.20	12.37	13.55
Yearly Totals	**26.33**	**22.32**	**24.90**	**28.05**	**24.87**	**29.25**	**30.37**	**31.61**

Figure 1- Cast Iron Main Reduction Schedule FY 2013 – FY 2016

This increased pace of replacement can be attributed principally to PGW's ability to more efficiently utilize the dollars made available from the DSIC due to experience with contractors and the main replacement process itself. Although PGW has made substantial strides in the accelerated removal of "at-risk" main over the past four (4) years, continued acceleration of the program is warranted due to the following statistics:

- At the end of calendar year 2016, PGW had approximately 3,031 miles of gas main, comprised of 1,409 miles of cast iron and 484 miles of unprotected coated steel. Therefore, 62 percent of PGW's distribution system is comprised of "at-risk" main.

- PGW's gas mains are some of the oldest in the state, with more than 1,091 miles installed pre-1940.

• PGW repaired more than 6,400 leaks in 2013 and more than 7,100 leaks in 2014. The next two (2) calendar years show a decrease in the number of leaks repaired.

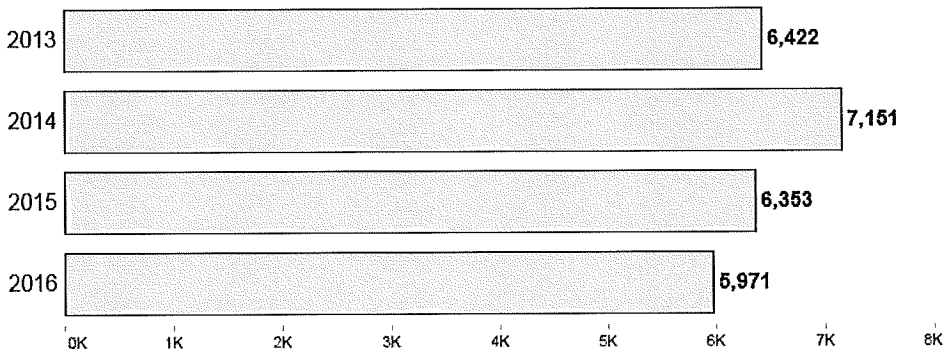

Figure 2- Total Leaks Permanently Repaired CY 2013 – CY 2016

• PGW repaired a total of 3,127 hazardous leaks on its mains and services in 2013, which is more than double any other NGDC. PGW's total hazardous leaks repaired increased to 3,448 in 2014. The next two (2) calendar years show a decrease in the number of hazardous leaks repaired.

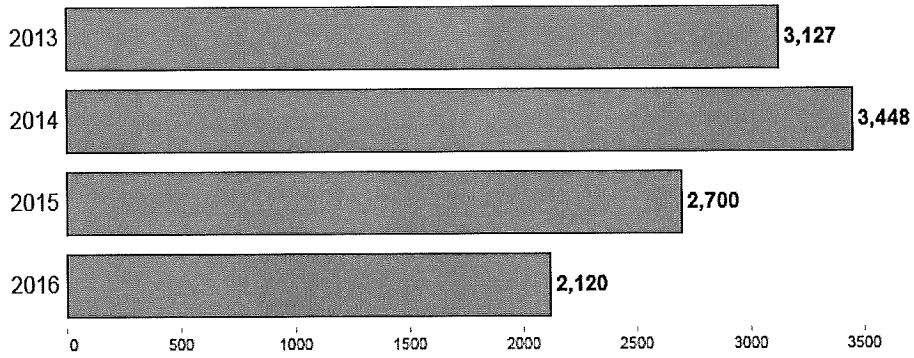

Figure 3 – Total Hazardous Leaks Permanently Repaired CY 2013 – CY 2016

• Of the total 3,448 hazardous leaks repaired in 2014, 1,542 were hazardous main leaks. PGW had 16-percent more hazardous main leaks than the closest Pennsylvania NGDC in 2014. The next two (2) calendar years show a decrease in the number of hazardous main leaks repaired.

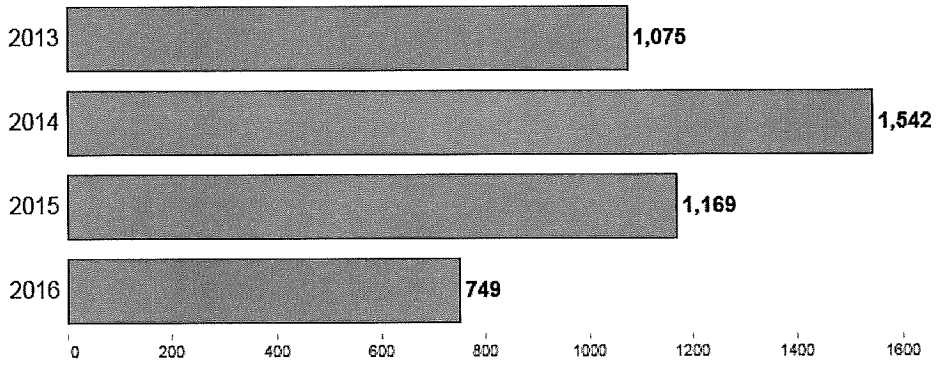

Figure 4 – Hazardous Main Leaks Permanently Repaired CY 2013 – CY 2016

• From 2013 to 2014, PGW experienced a 78-percent increase in cast iron main breaks from 298 cast iron main breaks in 2013 to 533 in 2014. Over the next two (2) calendar years, PGW experienced decreases in the amount of cast iron main breaks of 4% and 55%, respectively. PGW experienced a four (4) year low in the amount of broken mains in CY 2016.

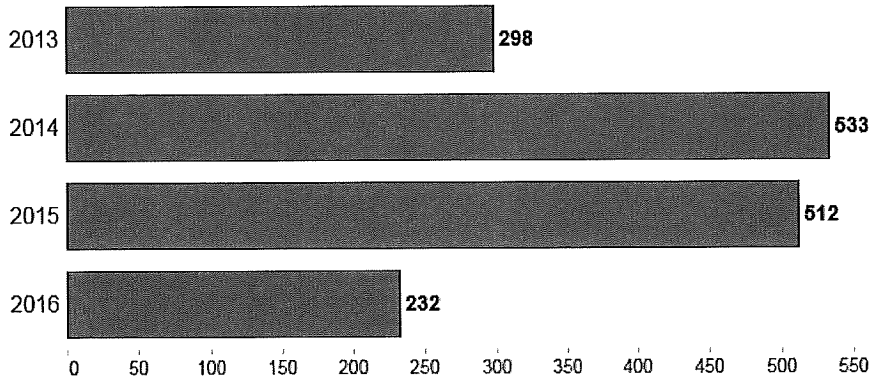

Figure 5 – Cast Iron Main Breaks CY 2013 – CY 2016

The accelerated main replacement program, coupled with the prioritized removal of "at-risk" main segments and warmer than average winter seasons, has contributed to these downward trend in most recent years. Based on these statistics and in accordance with the Commission's approval of the DSIC cap waiver, the sections below identify how PGW proposes to expend the DSIC revenues pursuant to the elements identified in Section 1352(a) and the LTIIP Regulations.

1. Identification of the types and age of eligible property owned and operated by the utility for which it is seeking DSIC recovery

PGW utilized several tools to formulate this proposed LTIIP, namely:

- PGW's Distribution Integrity Management Program; and
- DNV / GL Benchmarking Summary Final Report dated January 28, 2016.[5]

PGW's DIMP demonstrates that PGW understands its distribution system, identifies relevant threats posed on its distribution system, evaluates and ranks the risks posed by the

5 This Report was submitted as Appendix A to PGW's Modified LTIIP at Docket No. P-2015-2501500 (Feb. 12, 2016).

identified threats accordingly, develops strategies to mitigate these risks and measure performance and evaluate effectiveness of the strategies selected to mitigate the risks.

PGW utilizes the relative risk ranking model patterned after Gas Piping Technology Committee ("GPTC") threat identification and enhanced performance variance monitoring. This model allows PGW to better identify the high risk assets needing to be addressed to reduce overall risk. Once an asset has been identified and ranked accordingly, PGW utilizes the Mains Replacement Prioritization (MRP) software to find the section(s) of pipe deemed to be most "at-risk" and in need of replacement or removal from the distribution system. The relative risk ranking and performance variance monitoring components are the primary elements utilized to develop this proposed LTIIP.

PGW's relative risk ranking model, as incorporated into PGW's DIMP, has identified the following groups of high risk facilities that will be prioritized for removal:

Asset Group	Material	Size Group	Pressure
Service	Steel	1-1/4 and Smaller	Low
Main	Cast Iron	10" and Smaller	Low
Main	Cast Iron	12" and Larger	High
Main	Cast Iron	12" and Larger	Low

Figure 6 – DIMP Relative Risk Rankings

In addition to Evaluating and Prioritizing risk,[6] PGW is also required to monitor performance measures and evaluate the effectiveness of the additional and accelerated actions.[7] This analysis is critical in identifying the appropriate amount of each category to be addressed.

PGW also has updated the benchmarking studies referenced in the original LTIIP. DNV / GL (formerly d/b/a GL Noble Denton, formerly d/b/a Advantica) performed a comprehensive benchmarking / prioritization analysis on all metallic mains within PGW's distribution system to determine an appropriate annual replacement strategy to reduce risk. DNV / GL utilized PGW's leak history and readings discovered at front foundation walls (FFW) to develop a formula to measure system risk. This data was inputted into the Mains Replacement Prioritization software and several different annual replacement scenarios were run to determine suitable replacement scenarios for PGW to consider. Based on the scenarios that were analyzed, DNV / GL recommended that PGW adopt a strategy of replacing between 30 to 50 miles of the MRP suggested mains per year over a ten year timeframe in order to adequately reduce system risk.

As discussed above, the DIMP relative risk ranking model and associated performance monitoring were the basis of the formulation of this proposed LTIIP. The prioritization study performed by DNV / GL confirmed the asset groups to target and the appropriate overall annual mileage of main to be addressed to reduce risk. The Mains Replacement Prioritization software will be utilized to target the specific main segments within the DIMP identified asset groups for replacement.

In addition to the Distribution Integrity Management Program, Benchmarking Study and the Mains Replacement Prioritization model, PGW also plans to partner with Environmental

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6 49 CFR § 192.1007(c).

7 49 CFR § 192.1007(f).

Defense Fund ("EDF") to further sub-prioritize PGW's replacement projects based on leak size data.

Using all of these inputs, PGW proposes a continuation of its existing annual expenditure for "at risk" main replacement. The specific targets for replacement reflect PGW's determination of a reasonable level of annual expenditure for replacement of at risk main and the prioritization of main replacement reflected in PGW's DIMP, using the MRP (DNV / GL) program. Below are the age profiles of the asset groups targeted for further acceleration under this proposed LTIIP:

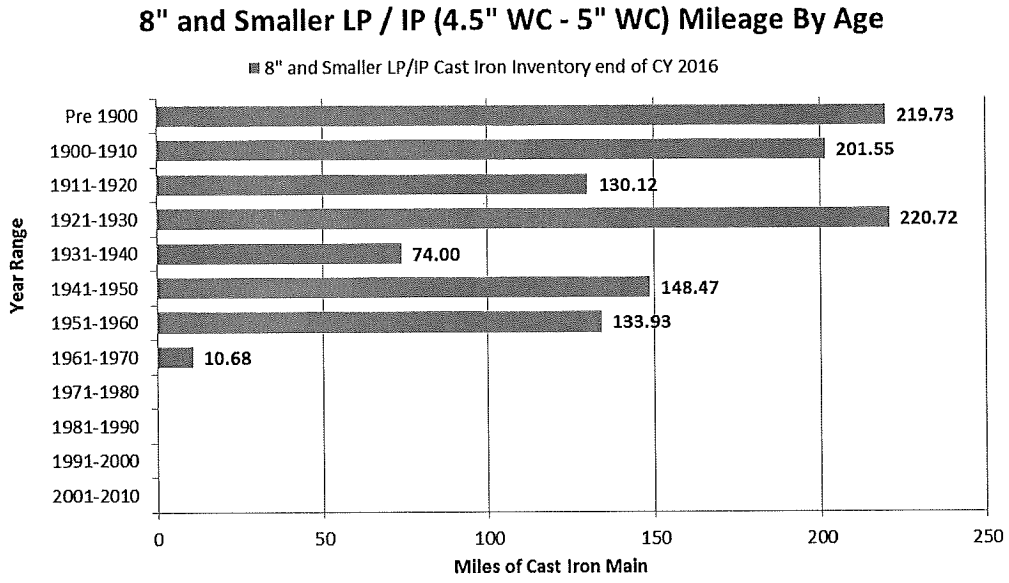

Figure 7 – Cast Iron, Small Diameter, Low/Int Pressure Main Mileage by Decade

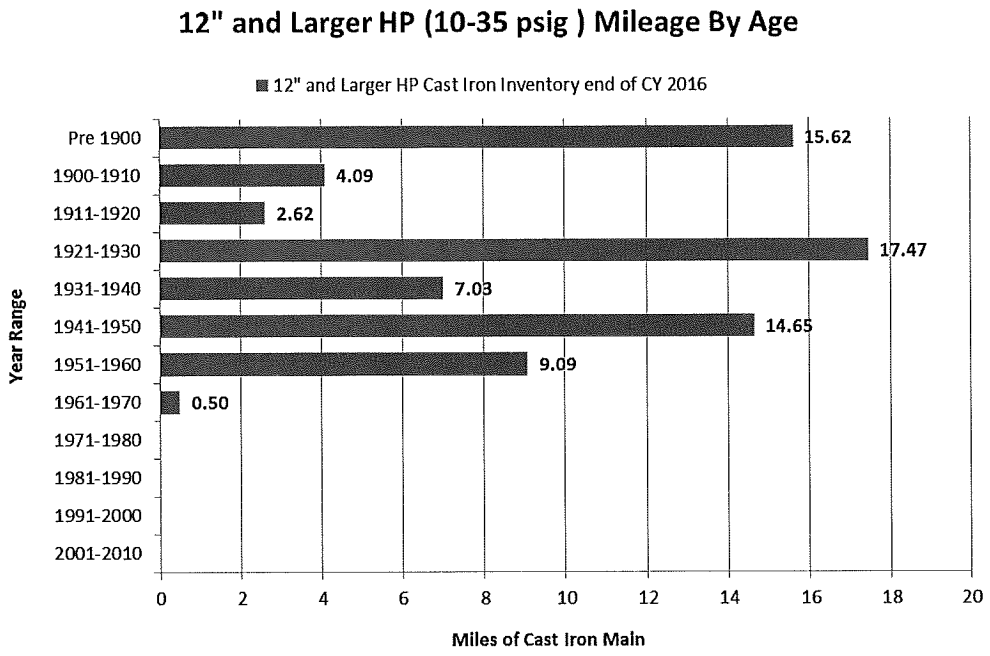

Figure 8 – Cast Iron, Large Diameter, High Pressure Main Mileage by Decade

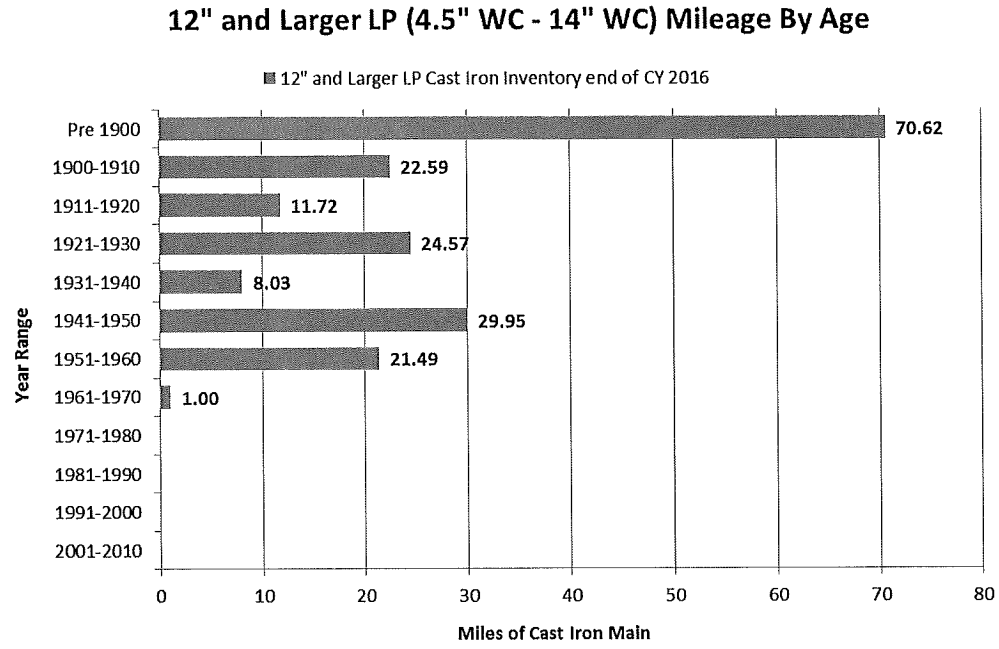

Figure 9 – Cast Iron, Large Diameter, Low Pressure Main Mileage by Decade

2. *An initial schedule for the planned repair and replacement of eligible property*

The period of PGW's proposed LTIIP, as described in the following table, will eliminate approximately 68 miles of cast iron main. Concurrent with this continued acceleration of the program, PGW will remove 18 miles of cast iron main per year as part of its baseline main replacement program. The combined amount of cast iron main removed from inventory during the proposed LTIIP period will be approximately 158 miles.

Long Term Infrastructure Improvement Program
Annual Schedule of Quantities
Period FY 2018 - FY 2022

QUANTITIES	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Cumulative Totals
CURRENT BASELINE PROGRAM						
8" & Smaller LP/IP	18.00	18.00	18.00	18.00	18.00	90.00
ACCELERATED PROGRAM						
8" & Smaller LP/IP	7.00	7.00	7.00	7.00	7.00	35.00
12" and Larger LP	1.30	1.35	1.40	1.34	1.20	6.59
12" and Larger HP	5.50	5.50	5.30	5.25	5.15	26.70
Abandonment for Non-Use	-	-	-	-	-	-
ACCELERATED TOTALS	13.80	13.85	13.70	13.59	13.35	68.29
Yearly Totals	**31.80**	**31.85**	**31.70**	**31.59**	**31.35**	**158.29**

Figure 10 – LTIIP Quantity Schedule

All of the above property to be replaced is characterized as piping, couplings and valves and are "DSIC eligible", under Act 11. PGW also plans to replace the unprotected bare and unprotected coated steel services and meter sets associated with these cast iron mains.

3. *A general description of location of eligible property*

PGW's authorized service territory is bound by the limits of the City of Philadelphia and all eligible property is located within these limits.

- There are currently approximately 1,139 miles of 10" and smaller, low / intermediate pressure (4.5 inch WC to 5 psig), cast iron main, of which 125 miles are proposed to be removed from inventory in during the proposed LTIIP period.
- There are currently approximately 190 miles of 12" and larger, low pressure (4.5 inch WC to 14 inches WC), cast iron main, of which 6.59 miles are proposed to be removed from inventory during the proposed LTIIP period.
- There are currently approximately 71 miles of 12" and larger, high pressure (10 – 35 psig), cast iron main, of which 26.7 miles are proposed to be removed from inventory during the proposed LTIIP period.

4. *A reasonable estimate of quantity of eligible property to be improved or repaired*

The information responsive to item 4 is included in items 2 and 5.

5. *Projected annual expenditures and means to finance the expenditures*

PGW's current base line main replacement program remove 18 miles of cast iron main annually and the Company will seek recovery, via the DSIC, for expenditures above the cost of the base line program on a pay as you go basis ("paygo") through its DSIC mechanism. More specifically, PGW does not plan to issue any long term debt to fund its accelerated main replacement program. Rather, it will utilize the approved 7.5% DSIC surcharge for the recovery of $33 million, annually.

Long Term Infrastructure Improvement Program
Annual Schedule of Expenditures
Period FY 2018 - FY 2022

EXPENDITURES	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Cumulative Totals
CURRENT BASELINE PROGRAM						
8" & Smaller LP/IP	$21,003,840	$21,384,000	$21,859,200	$22,239,360	$22,714,560	$109,200,960
ACCELERATED PROGRAM						
8" & Smaller LP/IP	$8,168,160	$8,316,000	$8,500,800	$8,648,640	$8,833,440	$42,467,040
12" and Larger LP	$4,456,320	$4,760,870	$5,188,681	$5,026,051	$4,657,922	$24,089,844
12" and Larger HP	$20,446,800	$20,249,856	$19,575,227	$19,653,148	$20,289,108	$100,214,139
Abandonment for Non-Use	$0	$0	$0	$0	$0	$0
ACCELERATED TOTALS	$33,071,280	$33,326,726	$33,264,708	$33,327,839	$33,780,470	$166,771,023
Yearly Totals	**$54,075,120**	**$54,710,726**	**$55,123,908**	**$55,567,199**	**$56,495,030**	**$275,971,983**

Figure 11 – LTIIP Expenditure Schedule

6. *A description of the manner in which infrastructure replacement will be accelerated and how repair, improvement or replacement will ensure and maintain adequate, efficient, safe, reliable and reasonable service to customers*

As discussed in the section above, PGW's "paygo" method is the least costly to customers over time, compared to the issuance of long term bonds. That being said, PGW's approved LTIIP contains a number of measures to ensure that it is implemented in a cost-effective manner, including: utilizing a competitive bidding process for all relevant aspects of the program and prioritizing high risk main which tend to be the most likely to leak and/or break, thus reducing maintenance costs compared to that which the Company would experience if it did not further accelerate its replacement program.

In addition, the incremental cost to customers is small when compared to the noticeable benefits. The value of accelerated distribution infrastructure improvement is substantial,

benefiting customers today and well into the future with adequate, efficient, safe, reliable and reasonable natural gas distribution service.

7. *A workforce management and training program designed to ensure that the utility will have access to a qualified workforce to perform work in a cost-effective, safe and reliable manner*

As discussed in earlier sections of this document, PGW's base line main replacement program removes 18 miles of 8" and smaller cast iron main and associated steel services annually. To ensure the LTIIP is successful, PGW currently has departmental structures and staffing in place for the contracting, execution and cost control of main replacement projects. In addition, as part of a stipulation entered between PGW and BIE, PGW agreed that it would "show how PGW intends to train staff and contractors to meet the Operator Qualification requirements of 49 CFR Subpart N and to otherwise demonstrate that it will have qualified personnel available to accomplish the accelerated main replacement authorized by the PGW Petition."[8]

PGW's Procurement Section administers a standard process contract bid procedure (adopted from the City of Philadelphia's procurement rules) for soliciting contractors to perform main installation and paving restoration as part of the main replacement program. This process includes the following:

- Identification of Vendors
- Issuance of the Request for Quotation (RFQ)
- Bid Evaluation and Vendor Selection
- Internal Accounting Approvals / Board Approvals

8 Stipulation between PGW and I&E at 2, Docket No. P-2015-2501500 (Nov. 4. 2015).

- Awarding of Bid / Collection of Performance Bonds and Insurance Certificates

Contractors for this specific type of work are qualified by PGW prior to being invited to bid. The qualification includes review of background information such as financial statements, safety performance, minority participation performance and training records.

After the contract is awarded, the Construction Section of PGW's Distribution Department is responsible for the execution of the contract. This group schedules, monitors and evaluates overall program / project progress and associated costs.

A clause allowing contractors to perform live gas work was included in the most recent collective bargaining agreement between the Philadelphia Gas Works and Gas Works Employees' Union of Philadelphia, Local 686. Third party contractors and PGW skilled workers are presently utilized for all main replacement projects including live gas. Third party contractors excavate, install, pressure test with air and backfill new mains under the direct supervision of a qualified PGW Construction Inspector. The construction inspector is required to monitor whether PGW's installation standards, safety performance standards and all contractual obligations are met.

Once the new main has been installed and tested, PGW's workforce or third party contractors energize the new main, replace existing steel services or reconnect existing plastic services and de-energize the existing main under the supervision of a PGW Construction Supervisor. Under certain circumstances such as short unanticipated cutouts or small replacement projects, PGW crews are also utilized to install main.

PGW has separated the City of Philadelphia into four construction territories. There is one supervisor assigned to each area to monitor the quality and timeliness of work, safety performance and customer satisfaction of the work performed by PGW's workforce.

In addition to PGW's current workforce structure for main replacement, proactive measures have been taken to increase the probability of a successful accelerated main replacement program. These measures include, but are not limited to the following:

- PGW has contracted with consultants for main replacement design work to prepare construction drawings and associated documents. The use of these design consultants will help PGW with the increased drawing/document preparation workload related to the accelerated main replacement program. Additional consultants may be added depending upon work load.
- PGW has successfully solicited the services of additional outside contractors to perform main installation. To date, five (5) contractors have been trained to work on live gas. PGW is in the process of qualifying additional contractors on smaller, "pilot" projects in order to begin to assess the performance of these contractors. The introduction of new contractors will keep contracts cost competitive.

PGW's Distribution Department currently employs skilled workers to perform operation, maintenance and construction activities on PGW's distribution system. These employees are trained and qualified to the standards set forth in US Department of Transportation, Office of Pipeline Safety Regulation Title 49 CFR 192 Subpart N via Northeast Gas Association's Gas Pipeline System Operator Qualification Plan (January 1, 2017).

The purpose of the above mentioned Natural Gas Pipeline System Operator Qualification Plan is to ensure safe and efficient natural gas service by establishing objective criteria for the required qualifications for all persons performing safety-sensitive operations and maintenance tasks on PGW's gas piping system. This plan also ensures, through evaluation, that each person performing safety sensitive tasks on PGW's pipeline system is: 1) able to perform these tasks; 2) able to recognize & respond appropriately to abnormal operating conditions; and 3) able to maintain necessary records to administer this plan.

PGW has a dedicated Training Section which provides classroom training as well as simulated and/or actual field training for each PGW promotional job title. Every employee is tested on their ability to perform every assigned task within an associated job title. Employees are evaluated on their knowledge, skill and ability related to each task as well as their ability to react to abnormal operating conditions.

In addition to the classroom training for promotional job titles, PGW has instituted annual training classes for all field and management personnel which cover such tasks as: proper trench shoring techniques, leak investigation & migration practices, damage prevention methodologies, proper use of gas detection instrument, plastic pipe fusion qualifications, steel pipe welding qualifications and proper respirator use.

In addition to the financial and technical screening performed by the Procurement Section, PGW's outside contractor workforce is tested and qualified in plastic pipe fusion by the Northeast Gas Association ("NGA"). PGW's weld foremen oversee qualification of contract welders in steel welding practices at PGW's weld shop. Moreover, now that the most recent Collective Bargaining Agreement permits outside contractors to work on live gas, the Training Section has established procedures to qualify contractors for live gas work.

PGW recently contracted with the NGA to provide a first responder E-learning portal that would be available to all first responders. This training offers a self-directed interactive online training package that provides emergency response personnel with information they need to safely identify and respond to incidents that may involve natural gas pipelines and other natural gas facilities. The goal of the E-learning portal is to enhance the cooperation and effectiveness of first responders in the event of a natural gas-related emergency.

PGW believes that the above described workforce management and training plans will ensure that it will have access to a qualified workforce to perform its proposed LTIIP and that it will be able to do so in a cost-effective, safe and reliable manner.

8. *A description of a utility's outreach and coordination activities with other utilities, Department of Transportation and local governments regarding the planned maintenance / construction projects and roadways that may be impacted by the LTIIP*

PGW's Enforced Replacement Program is used to manage the replacement of mains and services affected by others. Coordination with outside agencies is the main part of this program. There are several types of enforced replacements, the most common of which are due to the Philadelphia Water Department's ("PWD") water and sewer main replacement, PENNDOT's highway reconstruction projects and the City of Philadelphia's paving projects. In each scenario, there are several checks and balances to identify any potential conflicts. Design One Calls, the City's GPIS permitting system and Committee of Highway Supervisors' meeting are examples.

Once conflicts are identified, coordination meetings for individual projects are set up between the various agencies. The proposed infrastructure improvements are overlaid onto PGW's Detail Main Maps ("DMMs") to determine the extents of the conflict. PGW will look for slope interference, undermining and direct interference to determine whether its facilities will need to be replaced. Additional factors such as the age, material, maintenance history, services

and the paving requirements for the other utility will be factored into the decision of whether additional mains will be replaced.

In addition to conflict resolution for proposed infrastructure projects, PGW utilizes the City's GPIS permitting system as a preventative measure to identify conflicts with the various City/State paving programs. PGW enters in multiple years' worth of proposed replacement projects at a very preliminary stage to present a conflict when the City is scheduling their paving. When the conflict is identified, PGW will work with the City to coordinate our replacement project around their paving schedule.

9. *If a NGDC identifies a critical valve that it will repair, improve upon or replace and for which it will seek DSIC recovery, then it must include such information in its LTIIP.*

PGW has not currently identified any critical valves for repair, improvement or replacement in the proposed LTIIP period for recovery through the DSIC mechanism. Should critical valves be identified for repair, improvement or replacement for recovery through the DSIC mechanism, PGW will modify the LTIIP accordingly.

IV. CONCLUSION

In summary, PGW's proposed LTIIP satisfies the requirements set forth in Section 1352(a) and the LTIIP requirements by:

- identifying the age and type of eligible property owned or operated by the utility for which the utility will seek recovery;
- providing a schedule depicting the amount of projected expenditures and proposed quantity of eligible property targeted for replacement or removal from the distribution system;

- providing a general description of the location of the eligible property;
- providing a reasonable estimate of the quantity of property to be improved;
- projecting annual expenditures and measures to ensure that the plan is cost effective;
- providing the manner in which replacement of aging infrastructure will be accelerated and how repair, improvement or replacement will maintain safe and reliable service;
- providing a workforce management and training program;
- providing a description of the utility's outreach and coordination activities with other utilities, the Department of Transportation and local governments; and
- identifying critical valves that it will repair, improve upon or replace and for which it will seek DSIC recovery

As a result of the foregoing, PGW's proposed LTIIP is adequate and sufficient to ensure and maintain adequate, efficient, safe, reliable and reasonable service. Accordingly, PGW respectfully requests that the Commission approve this Plan.