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February 12, 2016

**Via Electronic Filing**

Rosemary Chiavetta, Secretary  
PA Public Utility Commission  
P.O. Box 3265  
Harrisburg, PA 17105-3265

Re: Petition of Philadelphia Gas Works for Approval of its Long-Term Infrastructure Improvement Plan – Docket Nos. P-2012-2337737 and P-2015-2501500

Dear Secretary Chiavetta:

Enclosed for electronic filing please find Philadelphia Gas Works' ("PGW") Petition for Approval of its Long-Term Infrastructure Improvement Plan ("LTIIP") and its Modified Long Term Infrastructure Plan. Copies to be served in accordance with the attached Certificate of Service.

Sincerely,

A handwritten signature in black ink that reads "Daniel Clearfield".

Daniel Clearfield

DC/lww  
Enclosure

cc: Cert. of Service w/enc.

## CERTIFICATE OF SERVICE

I hereby certify that this day I served a copy of PGW's LTIIP Petition upon the persons listed below in the manner indicated in accordance with the requirements of 52 Pa. Code Section 1.54.

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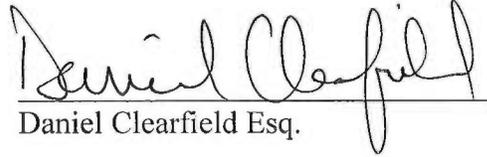
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Daniel Clearfield Esq.

Dated: February 12, 2016

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Petition of Philadelphia Gas Works for :  
Approval of its Long-Term Infrastructure : Docket No. P-2012-2337737 and  
Improvement Plan : P-2015-2501500

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**PHILADELPHIA GAS WORKS  
PETITION FOR MODIFICATION OF  
LONG-TERM INFRASTRUCTURE IMPROVEMENT PLAN**

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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 a Modified Long-Term Infrastructure Improvement Plan for the period through August 31, 2017 (“Modified LTIIIP”). This Modified LTIIIP (a) is being filed consistent with the directions in the Commission’s recently entered Order at P-2015-2501500 (“DSIC Cap Waiver Order”);<sup>1</sup> and (b) will, upon approval, replace the Company’s existing LTIIIP, which was approved by the Commission on April 4, 2013,<sup>2</sup> for the remainder of its term. PGW’s Modified LTIIIP is attached as “Attachment A.”

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

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<sup>1</sup> *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 January 28, 2016 (“DSIC Cap Waiver Order”).

<sup>2</sup> *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.

## 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<sup>3</sup> 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 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

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<sup>3</sup> There are no customer-owned service lines in the PGW territory. Service lines are also referred to as services.

service.<sup>4</sup> The provisions of Act 11 were codified in Chapter 13 of the Public Utility Code,<sup>5</sup> and related Commission regulations were promulgated as Chapter 121 to Title 52 of the Pennsylvania Code (“LTIIIP Regulations”).<sup>6</sup>

4. PGW’s existing LTIIIP was approved on April 9, 2013,<sup>7</sup> and continues by its terms until August 31, 2017.<sup>8</sup> That LTIIIP contained all of the elements required by the Commission’s Implementation Order<sup>9</sup> and 66 Pa.C.S. § 1352(a):<sup>10</sup> (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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<sup>4</sup> 66 Pa.C.S. § 1353(a).

<sup>5</sup> 66 Pa.C.S. §§ 1350 - 1360.

<sup>6</sup> 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).

<sup>7</sup> See footnote 2, *supra*.

<sup>8</sup> August 31, 2007 is the end of Fiscal Year 2017 for PGW.

<sup>9</sup> 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.

<sup>10</sup> The Commission’s LTIIIP Regulations were adopted after PGW’s current LTIIIP was approved. See footnotes 2 and 6, *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 LTIIIP.”

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.<sup>11</sup> PGW's DSIC compliance tariff, Supplement No. 62 to Gas Service Tariff – Pa P.U.C. No. 2, went into effect June 1, 2013.<sup>12</sup>
6. On September 1, 2015, PGW filed a "DISC Cap Increase Petition"<sup>13</sup> seeking, *inter alia*, approval to increase the DSIC cap and to permit PGW to use an annualized, leveled charge as the basis for establishing a DSIC.
7. On January 28, 2016,<sup>14</sup> 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 LTIP detailing the Company's proposed accelerated main replacement program and how it plans to expend the additional DSIC revenues.<sup>15</sup>

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<sup>11</sup> *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").

<sup>12</sup> *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.

<sup>13</sup> See footnote 14, *infra*.

<sup>14</sup> *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").

<sup>15</sup> *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 LTIP 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

## II. Description and Justification for Modified LTIIIP

8. As fully described in the accompanying Modified LTIIIP (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.
9. PGW consulted with the PUC’s Gas Safety Division about the contents of its Modified LTIIIP *prior to its formal filing* with the Commission.
10. PGW’s Modified LTIIIP (Attachment “A”) will, upon approval, replace the Company’s existing LTIIIP for the remainder of its term (until August 31, 2017). It includes all of the required elements identified in Section 1352(a) and the LTIIIP Regulations.<sup>16</sup>
  - (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;
  - (g) a workforce and management training plan;
  - (h) a description of a utility’s outreach and coordination activities;

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will have qualified personnel available to accomplish the accelerated main replacement authorized by the PGW Petition. I&E Stipulation, ¶ 1.B.(1)(c).

<sup>16</sup> Within 120 days of the end of the term of this Modified LTIIIP, PGW will file a new LTIIIP for the 5 year period beginning with FY 2018.

- (i) a description of critical valves for which DSIC recovery is being sought.
11. PGW's proposed amendments to its existing LTIIIP are intended to: (1) accelerate 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 LTIIIP Regulations.
12. PGW's Modified LTIIIP makes the following primary changes:
- (a) An update to take into account the additional funding levels resulting from DISC Cap Waiver Order (7.5% cap, inclusive of reconciliation);
  - (b) An update to the priorities for accelerated replacement as guided by recently completed independent benchmarking and prioritization studies, and by the risk assessment set forth in its Distribution Integrity Management Plan (DIMP) risk scores;
  - (c) A section showing 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;
  - (d) A section on Outreach and Coordination Activities (52 Pa. Code § 121.3(a)(8)), a requirement adopted after the Company's existing LTIIIP was approved; and
  - (e) A section discussing identification of Critical Valves (Final Rulemaking Order, p. 18), which was suggested after the Company's existing LTIIIP was approved.
13. As detailed in the Modified LTIIIP, PGW will prioritize replacement of the following sizes and types of "at risk"<sup>17</sup> main:

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<sup>17</sup> PGW uses the term "at risk" to mean cast iron and unprotected steel mains.

**Long Term Infrastructure Improvement Program  
Annual Schedule of Quantities**

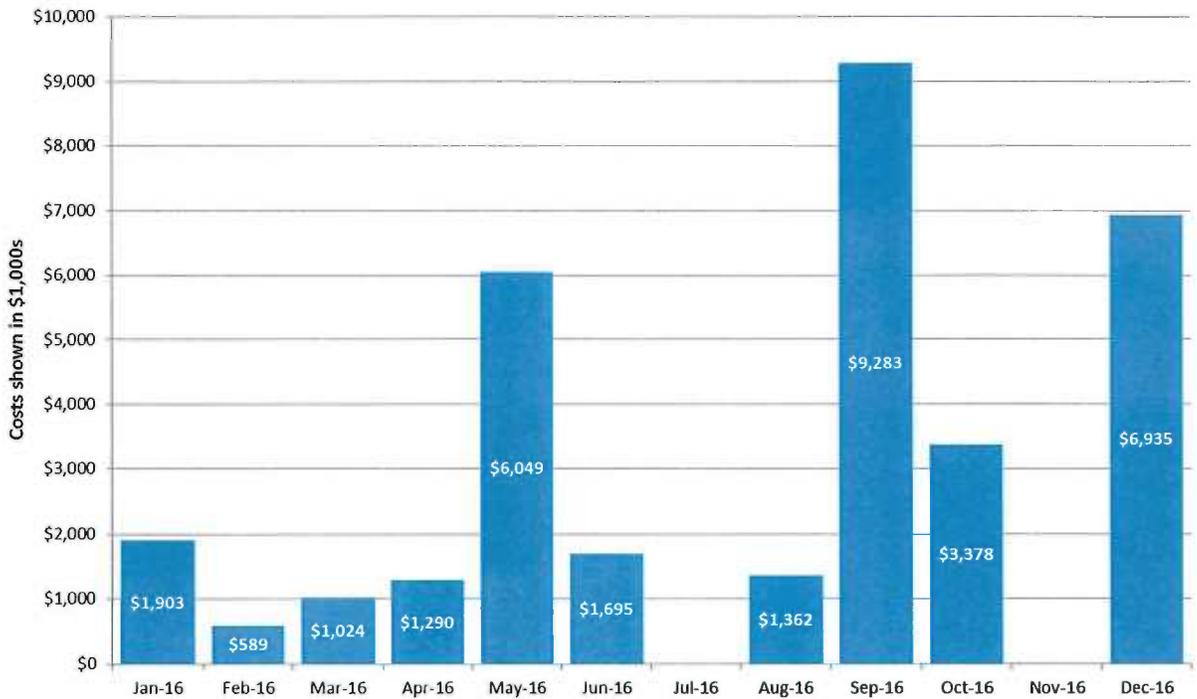
**Modified Period - FY 2017**

<i>QUANTITIES</i>	<u>FY 2016</u>		<u>FY 2017</u>	
	<b>Existing LTIP</b>	<b>Modified LTIP</b>	<b>Existing LTIP</b>	<b>Modified LTIP</b>
<b><u>CURRENT BASELINE PROGRAM</u></b>				
<b>8" &amp; Smaller LP/IP</b>	18.00	18.00	18.00	18.00
<b><u>ACCELERATED PROGRAM</u></b>				
<b>12" and Larger LP</b>	-	-	-	1.81
<b>12" and Larger HP</b>	3.82	5.55	3.88	5.81
<b>8" &amp; Smaller LP/IP</b>	2.98	5.75	3.01	6.58
<b><u>ACCELERATION SUB-TOTAL</u></b>			6.89	14.20
<b>Abandonment for Non-Use</b>	0.00	1.07	0.00	2.61
<b>ACCELERATED TOTALS</b>	6.79	12.37	6.89	16.81
<b>Yearly Totals</b>	<b>24.7</b>	<b>30.37</b>	<b>24.89</b>	<b>34.81</b>

14. For Calendar Year 2016, PGW proposes to expend DSIC revenues in the following amounts and periods:

### CY 2016 Accelerated Main Replacement Program Spending

■ Accelerated Program Spending



- The data above show that the total amount of accelerated program spending through June, 2016 is projected to be \$12,550 Million, with \$33,508 Million projected to be spent by year end CY 2016. It is assumed that the PUC will approve PGW's Modified LTIP by July, 2016. In any event, PGW shall not spend above the amount authorized in its existing LTIP (\$22 Million) unless and until the PUC approves this Modified LTIP.

### **III Procedural Schedule**

16. The LTIP Regulations provide a 30-day comment period<sup>18</sup> for major modifications,<sup>19</sup> such as the subject Modified LTIP.
17. 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 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.
18. PGW does not believe that the Modified LTIP raises any "material factual issues"<sup>20</sup> 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 Modified LTIP.

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<sup>18</sup> 52 Pa. Code § 121.5(a).

<sup>19</sup> The term "major modification" includes (but is not limited to) "a change to a utility's previously approved LTIP which ... Otherwise reflects a substantial change to the current Commission-approved LTIP." 52 Pa. Code § 121.2.

<sup>20</sup> 52 Pa. Code § 121.4(c) states, in part, that an "LTIP will be referred to the Office of Administrative Law Judge for hearings and a decision if comments raise material factual issues."

**IV. Request for Expedited Approval**

19. Consistent with the Stipulation in the DSIC Cap Increase Petition,<sup>21</sup> PGW is requesting that the Commission rule on PGW's Petition as soon as possible but no later than May 1, 2016.

**V. Conclusion**

20. The Commission should approve PGW's Modified LTIP (Attachment A). PGW's Modified LTIP conforms to the requirements of Act 11 and the Commission's LTIP Regulations and is "adequate and sufficient to ensure and maintain adequate, efficient, safe, reliable and reasonable service"<sup>22</sup>

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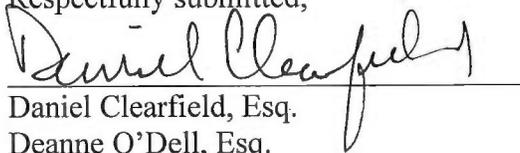
<sup>21</sup> DISC Increase Order at 11-12; *Petition of Philadelphia Gas Works for Waiver of Provisions of Act 11 to Increase the Distribution System Improvement Charge CAP and to Permit Levelization of DSIC Charges*, PUC Docket Nos. P-2015-2501500, C-2015-2504092, PGW/I&E Exh. 1 at ¶ 1.B(3).

<sup>22</sup> 66 Pa.C.S. § 1352(a)(7).

WHEREFORE, PGW respectfully requests that the Commission:

- a) Approve PGW's Modified LTIP (Attachment A) no later than May 1, 2016;
- and
- b) Take any other action deemed to be in the public interest.

Respectfully submitted,



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Philadelphia Gas Works

800 W. Montgomery Ave.

Philadelphia, PA 19122

Dated: February 12, 2016

Counsel for Philadelphia Gas Works

# Attachment A

# Philadelphia Gas Works

Modified

Long-Term Infrastructure Improvement Plan

For the Period Ending August 31, 2017

February 12, 2016

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## 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 modified Long Term Infrastructure Improvement Plan (“Modified LTIIIP” or “Modified 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” 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<sup>1</sup> supplying approximately 500,000 customers.

By Order entered April 4, 2013, the PUC approved 1) PGW’s proposed Long Term Infrastructure Improvement Plan (“LTIIIP”), and 2) PGW’s proposed Distribution System Improvement Charge (“DSIC”). PGW’s LTIIIP set out to accelerate the pace of its “at risk”<sup>2</sup> distribution mains, currently 65% of its 3,023 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 LTIIIP set forth a plan to replace another seven miles of cast iron main annually, financed through its DSIC at 5% of PGW’s distribution revenues.

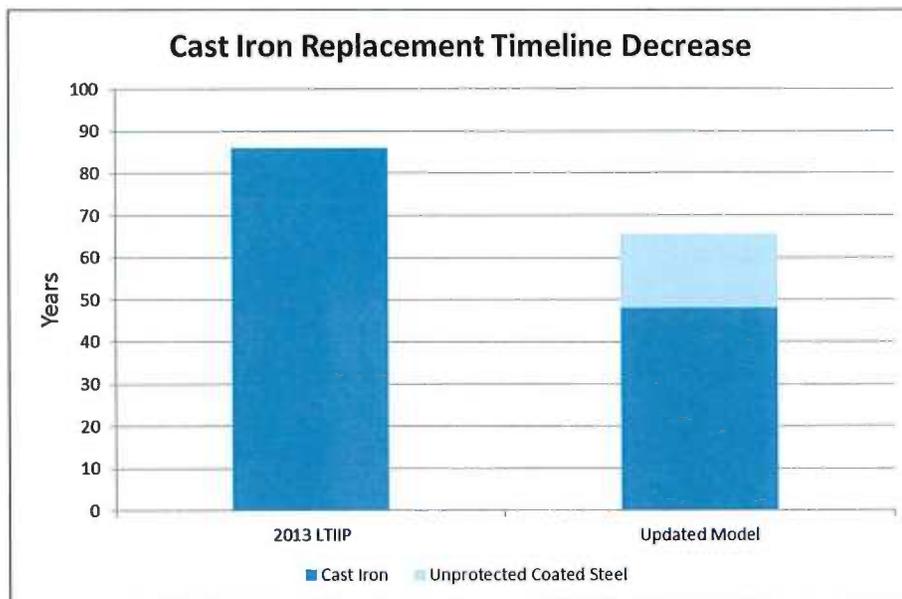
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<sup>1</sup> PGW owns and operates all the service lines from the mains to the inlet side of the meters. There are no customer-owned service lines in the PGW service territory. Service lines are also referred to as services.

<sup>2</sup> PGW uses the term “at risk” to mean cast iron and unprotected steel mains. *See*, P-2015-2501500, St. 1 at 1, fn 1.

On September 1, 2015, PGW applied for a waiver from the PUC to permit it to increase its DSIC cap (and its 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 approved by the PUC on January 28, 2016, subject to the filing of an amended LTIP within fifteen (15) days of the PUC Order. This Modified LTIP is in compliance with that requirement.

PGW herein proposes a further acceleration of its cast iron main replacement program to reflect the increase in the DSIC cap to 7.5%, which currently produces \$33 million of billed revenue annually. The further acceleration of PGW's main replacement program, proposed herein, is estimated to reduce the period of time needed to retire all of its cast iron mains from the current 86 years, based on the projection in its current LTIP, to 48 years.<sup>3</sup>



This represents a 44% reduction in the timeline for cast iron main replacement. Such an expedited pace should produce the following reliability, safety and cost benefits:

<sup>3</sup> The timeline to replace all cast iron and unprotected coated steel would be 65 years, as this graphic depiction shows.

- 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, further acceleration of the main replacement program will reduce risk and costs, compared to that which PGW would experience if it did not move forward with the further acceleration of its program.

## **II. LTIP REQUIREMENTS**

On May 23, 2014, the Commission finalized the LTIP Regulations at Docket No. L-2012-2317274. This Docket established the procedures and criteria for filing, modifying and periodically reviewing a utility's LTIP. The procedures and criteria reflect both Subchapter B requirements and certain provisions in the Commission's Implementation Order<sup>4</sup>, as well as Act 11. As a result, the rulemaking added additional elements, thereby increasing the original seven elements in the LTIP to nine, as shown below:

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<sup>4</sup> On August 2, 2012, the Commission issued the Final Implementation Order, at Docket Number M-2012-2293611, establishing procedures and guidelines necessary to implement Act 11.

- (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 planned maintenance/construction projects and roadways that may be impacted by the LTIP; 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 LTIP.

This Modified LTIP includes all of the required elements identified in Section 1352(a) and the LTIP Regulations (and PUC Orders). The modified plan identifies how PGW proposes to expend the increased DSIC revenues in the final year of the existing LTIP only (FY 2017,

September 1, 2016 – August 31, 2017). A new LTIP will be filed with the Commission at least 120 days prior to the expiration of the currently-effective LTIP (August 31, 2017).

### III. THE MODIFIED LONG TERM INFRASTRUCTURE IMPROVEMENT PLAN

PGW’s current LTIP 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). After three (3) years, as observed below, PGW continues to exceed the main replacement goals set forth in its current LTIP.<sup>5</sup>

<i><b>QUANTITIES</b></i>	<u><b>FY 2013</b></u>		<u><b>FY 2014</b></u>		<u><b>FY 2015</b></u>	
	<b>LTIP</b>	<b>Actual</b>	<b>LTIP</b>	<b>Actual</b>	<b>LTIP</b>	<b>Actual</b>
<u><b>CURRENT BASELINE PROGRAM</b></u>						
<b>8" &amp; Smaller LP/IP</b>	18.00	18.10	18.00	18.04	18.00	18.06
<u><b>ACCELERATED PROGRAM</b></u>						
<b>12" and Larger LP</b>	-	-	-	-	-	-
<b>12" HP</b>	1.84	1.34	2.16	2.31	2.04	3.59
<b>30" HP</b>	1.45	0.83	1.70	1.97	1.86	2.68
<b>8" &amp; Smaller LP/IP</b>	2.97	0.00	3.04	4.64	2.97	4.93
<b>Abandonment for Non-Use</b>	2.08	2.04	0.00	1.10	0.00	0.00
<b>ACCELERATED TOTALS</b>	8.33	4.22	6.90	10.02	6.87	11.20
<b>Yearly Totals</b>	<b>26.33</b>	<b>22.32</b>	<b>24.90</b>	<b>28.05</b>	<b>24.87</b>	<b>29.25</b>

<sup>5</sup> 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 LTIP, PGW included replacement estimates in the LTIP but when it came time to define and begin the actual projects (which was before the LTIP and DSIC petition were approved), the FY 2013 actual replacement were approximately one half mile less in each category.

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 three (3) years, further acceleration of the program is warranted due to the following statistics:

- In 2014, PGW had approximately 3,023 miles of gas main, comprised of 1,473 miles of cast iron pipeline and 491 miles of unprotected steel. Therefore, 65 percent of PGW's distribution system is comprised of "at-risk" main.
- PGW has more than double the miles of cast iron than any other NGDC and its system accounts for approximately half of the total cast iron mains in Pennsylvania.
- PGW's gas mains are some of the oldest in the state, with more than 1,148 miles installed pre-1940.
- PGW discovered more than 6,200 leaks in 2013 and more than 7,600 leaks in 2014.
- PGW had a total of 3,122 hazardous leaks on its mains and services in 2013, which is more than double any other NGDC. PGW's total hazardous leaks increased to 3,448 in 2014.

- Of the total 3,448 hazardous leaks in 2014, 1,542 were hazardous main leaks. PGW had 16-percent more hazardous main leaks than the closest Pennsylvania NGDC in 2014.
- From 2013 to 2014, PGW experienced a 78-percent increase in cast iron main breaks from approximately 297 cast iron main breaks in 2013 to 529 in 2014.

Based on these statistics and in accordance with the Commission’s approval of the DSIC Cap Waiver Petition, the sections below identify how PGW proposes to expend the increased 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 modified LTIIP:

- PGW’s Distribution Integrity Management Program (“DIMP”) Revision 4
- DNV/GL Benchmarking Summary Final Report dated January 28, 2016<sup>6</sup>

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

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<sup>6</sup> See Appendix A for the Executive Summary from the January 28, 2016 DNV/GL Benchmarking Summary Report.

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

PGW recently revised its DIMP in accordance with a non-compliance letter received from the PUC Bureau of Investigation and Enforcement (“BIE”) on March 4, 2015. The notable changes made between Revision 3<sup>7</sup> and Revision 4 of the DIMP were the development of a new relative risk ranking model patterned after Gas Piping Technology Committee (“GPTC”) threat identification and enhanced performance variance monitoring. This newly developed 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 tool 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 PUC’s Gas Safety Division has reviewed the changes to the program and has deemed PGW’s DIMP as compliant with the requirements of 49 CFR Part 192, Subpart P, Distribution Integrity Management Programs (DIMP). The relative risk ranking and performance variance monitoring components are the primary elements utilized to develop this modified LTIP.

PGW’s new relative risk ranking model, as incorporated into PGW’s DIMP (Revision 4), has identified the following groups of high risk facilities that will be prioritized for removal:

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7 Distribution Integrity Management Program – Revision 3 was used during the 2015 inspection leading to the non-compliance letter (NC-05-15).

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

*Benchmarking/Prioritization*

In addition to Evaluating and Prioritizing risk<sup>8</sup>, PGW is also required to monitor performance measures and evaluate the effectiveness of the additional and accelerated actions.<sup>9</sup> 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 LTIP. 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 to develop a formula to measure system risk. This data was inputted into the MRP software and several different annual replacement scenarios were run to determine suitable replacement

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<sup>8</sup> 49 CFR § 192.1007(c).

<sup>9</sup> 49 CFR § 192.1007(f).

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. Below is a breakdown of targeted asset group percentages identified by the study and DIMP.

<b>Asset Group</b>	<b>DNV/GL</b>	<b>DIMP</b>
Cast Iron Main - 8" and Smaller	76.4%	78.1%
Cast Iron Main - 12" and Larger	23.6%	21.9%

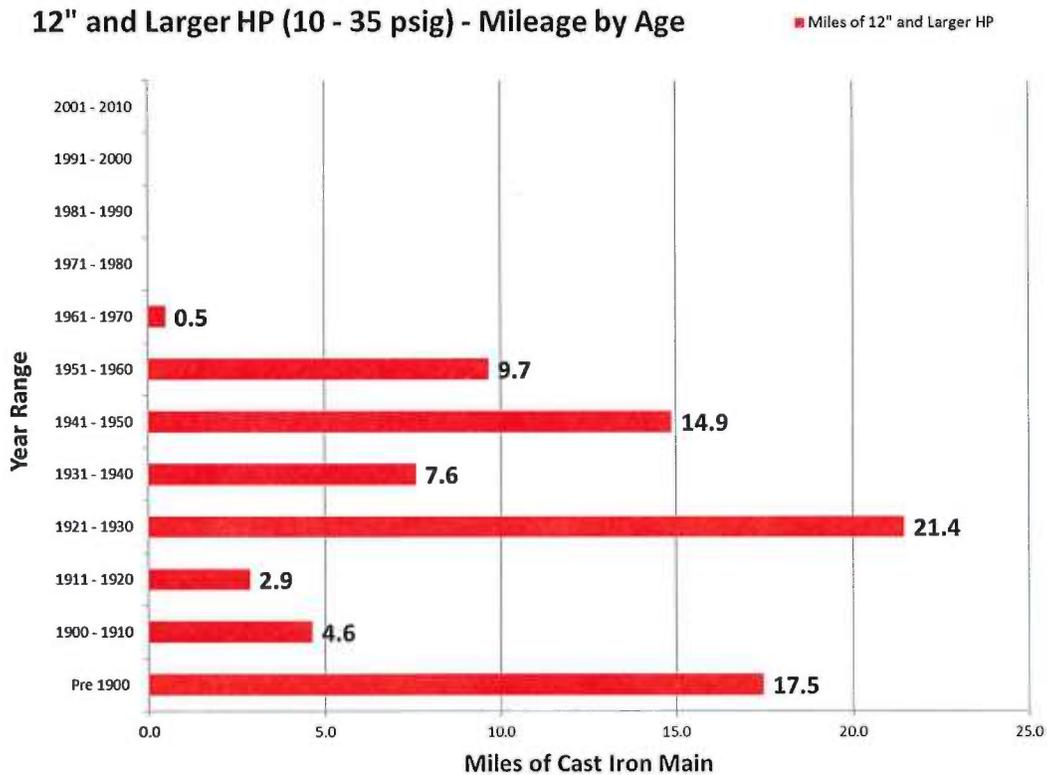
The results of the prioritization study performed by DNV / GL and the results of the new relative risk ranking model in PGW's revised DIMP are similar in the projected amounts of cast iron main to be removed and also with respect to diameter range (as shown in the above table). The only material difference was the pressure range, as shown in the table below:

<b>Asset Group</b>	<b>DNV/GL</b>	<b>DIMP</b>
Cast Iron Main – Low (4.5" – 14" WC)	91.2%	83.3%
Cast Iron Main – High (10 – 35 psig)	8.8%	16.7%

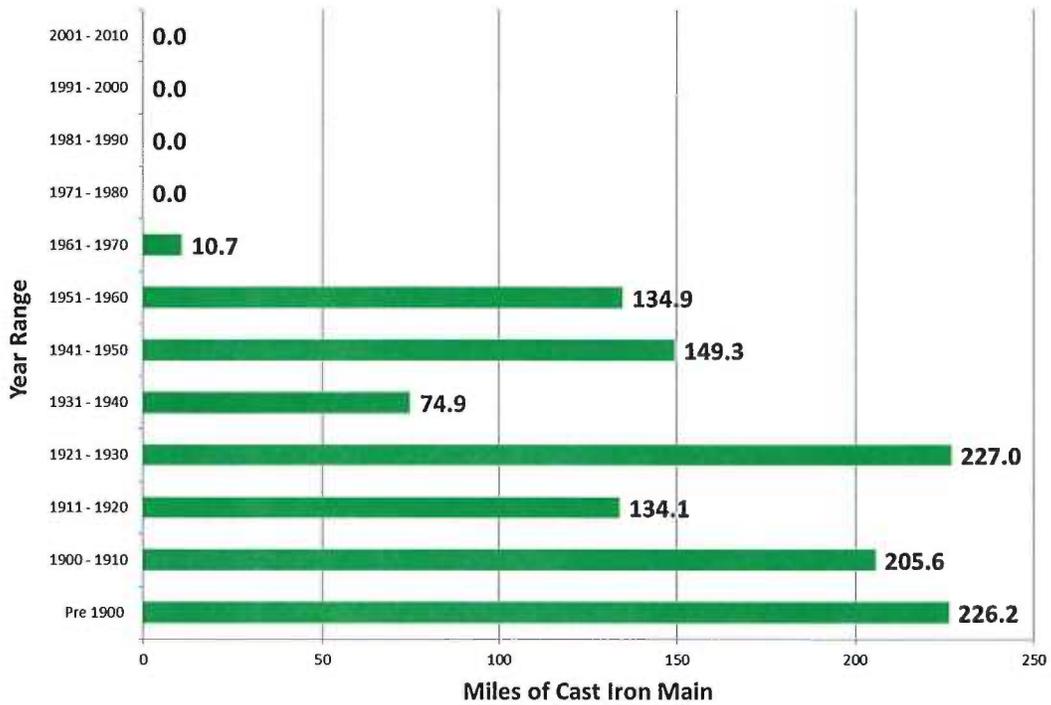
The prioritization study only suggested 8.8% of the high pressure (10 – 35 psig), large diameter, cast iron main be removed from inventory, whereas DIMP identified a greater amount – 16.7%. This is attributable to the fact that the performance of this high pressure (10 – 35 psig), large diameter, cast iron main is much poorer than the low pressure (4.5" WC – 14" WC), large diameter, cast iron main.

As discussed above, the DIMP newly developed relative risk ranking model and associated performance monitoring were the basis of the formulation of this modified 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. In addition, the MRP software will be utilized to target the specific main segments within the DIMP-identified asset groups for replacement.

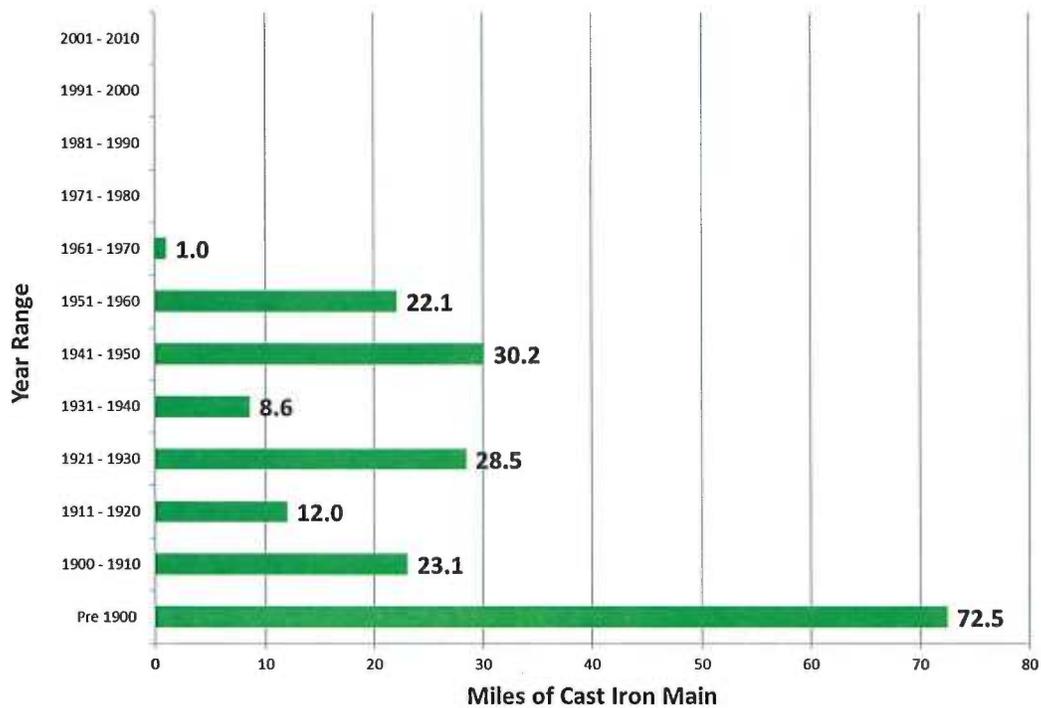
Below are the age profiles of the asset groups targeted for further acceleration under the Modified LTIIP:



**8" and Smaller LP / IP (4.5" WC - 5 psig) - Mileage by Age** ■ Miles of 8" and Smaller LP/IP



**12" and Larger LP (4.5" WC - 14" WC) - Mileage by Age** ■ Miles of 12" and Larger



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

The modified period of PGW's LTIP, as described in the following table, which includes the final year of the Company's current LTIP (FY 2017), will eliminate approximately 17 miles of cast iron main. Concurrent with this further acceleration of the program, PGW will continue to remove 18 miles of cast iron main as part of its baseline main replacement program and the combined replacement total for FY 2017 will be 35 miles of cast iron main.

<b>Long Term Infrastructure Improvement Program Annual Schedule of Quantities</b>				
<b>Modified Period - FY 2017</b>				
<i>QUANTITIES</i>	<u>FY 2016</u>		<u>FY 2017</u>	
	Existing LTIP	Modified LTIP	Existing LTIP	Modified LTIP
<b><u>CURRENT BASELINE PROGRAM</u></b>				
8" & Smaller LP/IP	18.00	18.00	18.00	18.00
<b><u>ACCELERATED PROGRAM</u></b>				
12" and Larger LP	-	-	-	1.81
12" and Larger HP	3.82	5.55	3.88	5.81
8" & Smaller LP/IP	2.98	5.75	3.01	6.58
<b><u>ACCELERATION SUB-TOTAL</u></b>			6.89	14.20
Abandonment for Non-Use	0.00	1.07	0.00	2.61
<b>ACCELERATED TOTALS</b>	6.79	12.37	6.89	16.81
<b>Yearly Totals</b>	<b>24.79</b>	<b>30.37</b>	<b>24.89</b>	<b>34.81</b>

All of the above property to be replaced is characterized as either piping, couplings or 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 in which all eligible property is located within these limits.

- There are currently approximately 1,163 miles of 10” and smaller, low or intermediate pressure (4.5 inch/WC to 5 psig), cast iron main, of which 6.58 miles are proposed to be removed from inventory in FY 2017 under the modified LTIIIP.
- There are currently approximately 198 miles of 12” and larger, low pressure (4.5 inch/WC to 14 inches WC), cast iron main, of which 1.81 miles are proposed to be removed from inventory in FY 2017 under the modified LTIIIP.
- There are currently approximately 79 miles of 12” and larger, high pressure (10 – 35 psig), cast iron main, of which 5.81 miles are proposed to be removed from inventory in FY 2017 under the modified LTIIIP.

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

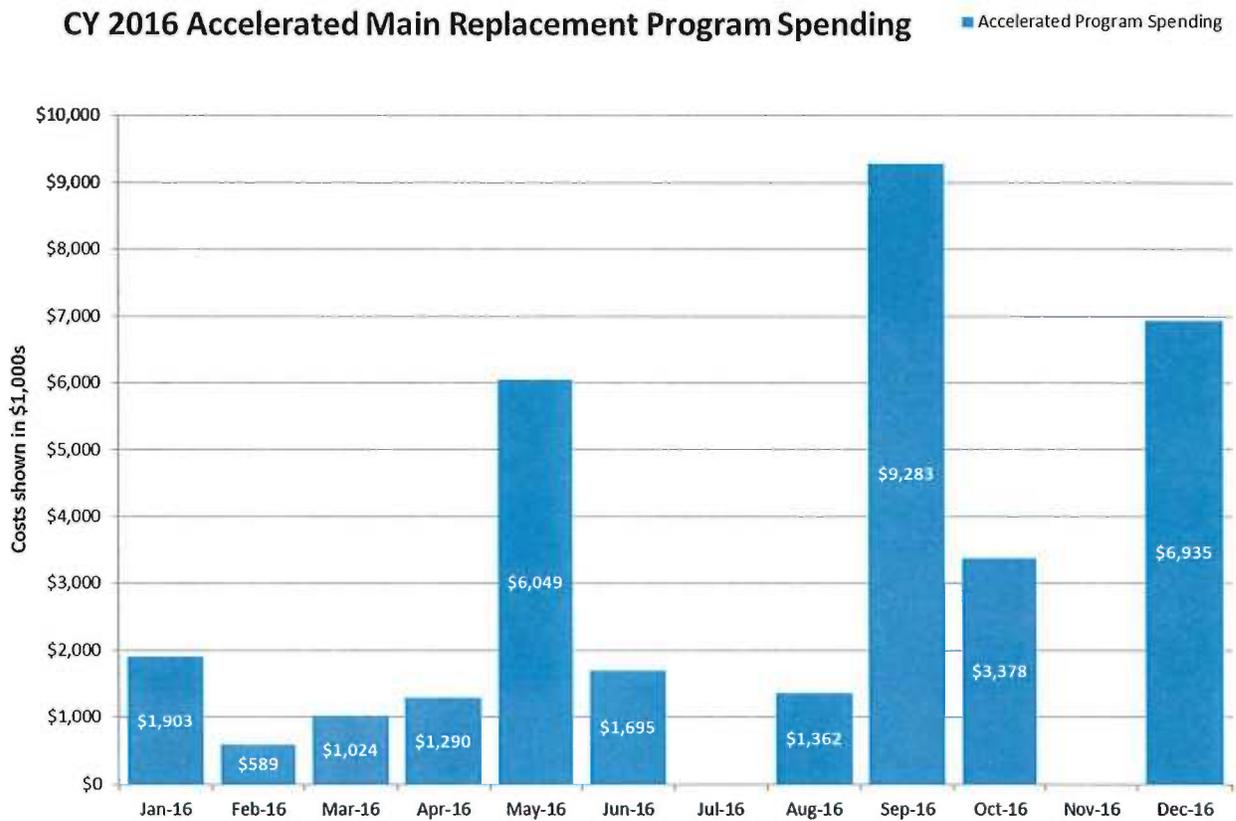
PGW's current base rates include its baseline main replacement program which removes 18 miles of cast iron main annually. The Company will recover, via the DSIC, expenditures above the cost of the base line program on a pay as you go basis ("paygo") through its DSIC mechanism. More specifically, PGW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

<b>Long Term Infrastructure Improvement Program Annual Schedule of Quantities and Expenditures</b>			
<b>Modified Period - FY 2017</b>			
<b><i>QUANTITIES AND EXPENDITURES</i></b>	<b><u>FY 2017</u></b>		
	<b>Existing LTIP</b>	<b>Modified LTIP</b>	<b>Proposed Expenditures</b>
<b><u>CURRENT BASELINE PROGRAM</u></b>			
<b>8" &amp; Smaller LP/IP</b>	18.00	18.00	\$20,500,000
<b><u>ACCELERATED PROGRAM</u></b>			
<b>12" and Larger LP</b>	-	1.81	\$7,120,000
<b>12" and Larger HP</b>	3.88	5.81	\$17,900,000
<b>8" &amp; Smaller LP/IP</b>	3.01	6.58	\$8,450,000
<b><u>ACCELERATION SUB- TOTAL</u></b>	6.89	14.20	\$33,470,000
<b>Abandonment for Non-Use</b>	0.00	2.61	N/A <sup>10</sup>
<b>ACCELERATED TOTALS</b>	6.89	16.81	\$33,470,000
<b>Yearly Totals</b>	<b>24.89</b>	<b>34.81</b>	<b>\$53,970,000</b>

<sup>10</sup> PGW has identified the abandonment of cast iron main in conjunction with a new main and service installation. The mileage of cast iron main removed from inventory will be counted towards the annual goal but the cost associated is not eligible under the DSIC mechanism.

PGW agrees that it shall not undertake any main replacement made possible by the incremental DSIC funding (\$11 million) authorized by the PGW Petition unless and until the PUC has approved PGW's Amended LTIP.<sup>11</sup>

Below is PGW's spending breakdown for the accelerated main replacement program in CY 2016:



The total amount of accelerated program spending through June, 2016 is projected to be \$12,550 Million, with \$33,508 Million projected to be spent by year end CY 2016. It is assumed that the PUC will approve its Modified LTIP by July, 2016. In any event, PGW shall not spend

<sup>11</sup> Stipulation between PGW and BIE; PUC Final Order, P-2015-2501500 Ordering ¶ 8(c).

above the amount authorized in its existing LTIP (\$22 Million) unless and until the PUC approves this Modified LTIP.

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, compared to the issuance of long term bonds. That being said, PGW's approved LTIP 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. This Modified LTIP is a continuation of our current LTIP, supplemented with additional replacement of 8" and smaller and 12" and larger cast iron main funded by the increase in the DSIC percentage from 5% to 7.5%. To ensure the Modified LTIP is successful, PGW currently has departmental structures and staffing in place for the contracting, execution

and cost control of main replacement projects. In addition, and as set forth below, PGW's existing training and recruitment structure will permit it to train staff and contractors to meet the Operator Qualification requirements of 49 CFR Subpart N and to otherwise have qualified personnel available to accomplish the accelerated main replacement authorized by the PGW Petition.<sup>12</sup>

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
- 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.

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<sup>12</sup> 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." *Stipulation between PGW and BIE*, ¶ 1.B(1)(c).

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.

Third party contractors and PGW skilled workers are utilized for all main replacement projects. 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 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:

- A clause allowing contractors to perform live gas work was included in the most recent collective bargaining agreement between Philadelphia Gas Works and Gas Works Employees' Union of Philadelphia, Local 686.

- PGW contracted with a consultant for main replacement design work to prepare construction drawings and associated documents. The use of this design consultant 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, twelve (12) 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 and ensure adequate resources.
- PGW has been approved to add additional vehicles and mobile equipment for its increased replacement plan in its FY 2016 capital budget.

#### *Operator Qualification Training*

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 PGW’s Natural Gas Pipeline System Operator Qualification Plan (effective April 26, 2001).

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 and 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 covers such tasks as proper trench shoring techniques, leak investigation & migration practices, damage prevention methodologies, proper use of gas detection instruments, 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, the Training Section tests and qualifies PGW's outside contractor workforce in plastic pipe fusion and steel welding practices. 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 believes that the above described workforce management and training plans will ensure that it will have access to a qualified workforce to perform its Modified 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 Departments' 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 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 in order to flag conflicts when the City is scheduling their paving. When the conflict is identified, PGW works with the City to coordinate its 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 does not intend to repair, improve upon or replace any critical valves through the DSIC recovery mechanism in the modified plan (FY 2017). PGW will identify critical valves in

the new LTIP, which shall be filed with the Commission at least 120 days prior to the expiration of the currently-effective LTIP.

#### **IV. CONCLUSION**

In summary, PGW's Modified LTIP satisfies the requirements set forth in Section 1352(a) and the LTIP 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 modified LTIP is adequate and sufficient to ensure and maintain adequate, efficient, safe, reliable and reasonable service. Accordingly, PGW respectfully requests that the Commission approve this modified Plan.

# Appendix A

Final Report

# Benchmarking Summary Report

**Philadelphia Gas Works  
Philadelphia, Pennsylvania**

**Report No.:** , OAPUS317ANLU (PP139287), Rev. 0

**Date:** January 28, 2016



## 1 EXECUTIVE SUMMARY

Philadelphia Gas Works (PGW) retained Det Norske Veritas (U.S.A.), Inc. (DNV GL) to perform a benchmark analysis of its main and service piping. DNV GL used a combination of focused benchmark comparisons using publicly available information and survey collection of some non-public information to measure the relative condition of PGW's distribution system, particularly in the replacement of cast-iron segments. These benchmarks, along with the results of a survey received from the benchmark companies, formed the basis for DNV GL's benchmark assessment of PGW's relative performance.

Several notable observations from the benchmark comparisons contained in the following report are as follows:

- PGW has 1,473 miles of cast iron mains in its system. This is comparable to the average cast iron main mileage of 1,326 for the eleven benchmark companies. However, PGW contains the largest amount of cast iron piping as a percent of its total mains at 48.73%. This is due to PGW's proportionally smaller amount of main mileage in its system when compared to the ten other benchmark companies.
- The pressure distribution for PGW is weighted toward the lower operating pressures when compared to the other benchmark companies in 2014, with 78% of PGW's main mileage operated to less than one psig.
- PGW is ranked sixth of the eleven benchmark companies in leaks per mile of main with a rate of 0.82 leaks per mile of main per year.
  - PGW's primary cause of main leaks is natural forces, with a smaller portion of leaks attributed to corrosion, and very few leaks attributed to all other causes.
- PGW is ranked fifth of the eleven benchmark companies in leaks per service with a rate of 8.57 leaks per 1,000 services per year.
  - PGW is consistent with the other benchmark companies where corrosion is a major contributor to service leaks.
- PGW has removed the second lowest percentage of its cast iron mains - when compared to the eleven benchmark companies considered with a total of a 10.4% reduction since 2005.
- PGW has experienced three reportable incidents since January 1, 2010, and has the second lowest number of reportable incidents of all eleven benchmark companies over this time period. When measured by the number of incidents per thousand miles of main, PGW ranks sixth of the eleven benchmark companies with a rate of 0.99 incidents per thousand miles of main since January 1, 2010.
- As mentioned above, PGW is ranked sixth of the eleven benchmark companies in leaks per mile of main, fifth of the eleven benchmark companies in leaks per service, and has the second lowest number of reportable incidents of all eleven benchmark companies. PGW also has a significantly higher percentage of mains operated to less than one psig than the other benchmark companies at 78%.

DNV GL used PGW's mains and historical leak repairs database to conduct an analysis on metallic mains to determine an appropriate annual replacement budget to reduce risk. Five different replacement options were considered using DNV GL's Mains Replacement Prioritization (MRP) software, concluding that replacing



Philadelphia Gas Works  
Philadelphia Gas Works (PGW) Benchmarking Summary Report

between 30 and 50 miles of mains per year over a ten year time frame results in a good, cost effective strategy to reduce risk.

The assessment of the summary results shows that replacing 30 to 50 miles per year of primarily low pressure Cast Iron mains recommended by MRP is a good value to reduce risk. Looking at risk reduction per dollar invested over each year of the ten year period shows little economic justification to distinguish any one from the other two within the recommended range. DNV GL recommends utilizing a \$48.5 million (30 mi/yr.) to \$82.4 (50 mi/yr.) annual replacement budget over the first five years, and then re-evaluating the replacement budget and strategy again before the year 2020.

VERIFICATION

I, Daniel 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).

A handwritten signature in black ink, appearing to read "Daniel Furtek". The signature is written in a cursive style with a large initial "D" and a long horizontal stroke extending to the right.

Daniel Furtek  
Director, Resource Management  
Philadelphia Gas Works