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File #: 153583

June 15, 2018

VIA ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

Re: Petition of UGI Utilities, Inc. - Gas Division for Approval of an Extension to its Long Term Infrastructure Improvement Plan - Docket No. P-2018-

Dear Secretary Chiavetta:

Enclosed for filing is the Petition of UGI Utilities, Inc. – Gas Division for Approval of an Extension to its Long term Infrastructure Improvement Plan. The Company requests approval from the Public Utility Commission no later than the **August 2, 2018** public meeting date. Copies will be provided as indicated on the Certificate of Service.

Respectfully submitted,

Jessica R. Rogers

JRR/jl
Enclosures

cc: Certificate of Service
Matt Stewart (*Technical Utility Staff*)

CERTIFICATE OF SERVICE

UGI Utilities, Inc. – Gas Division

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

VIA FIRST CLASS MAIL

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555 Walnut Street
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Richard A. Kanaskie
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Office of Small Business Advocate
Commerce Building
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Harrisburg, PA 17101

Date: June 15, 2018

Jessica R. Rogers

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of UGI Utilities, Inc. – Gas Division for Approval of an Extension to its Long Term Infrastructure Improvement Plan	: : :	Docket No. P-2018-_____

Petition of UGI Utilities, Inc. – Gas Division for Approval of an Extension to its Long Term Infrastructure Improvement Plan

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Pursuant to 66 Pa. C.S. § 1352 and 52 Pa. Code § 121.5(a), UGI Utilities, Inc. – Gas Division ("UGI-GD" or the "Company") hereby files this Petition seeking approval for an extension of its Long Term Infrastructure Improvement Plan ("Extended LTIIP" or "Extended Plan"). UGI-GD's Extended LTIIP, which is attached to this petition as **Appendix "A"**, contains all of the elements required by 66 Pa C.S. § 1352(a)(1)-(6) and 52 Pa. Code § 121.1 *et. seq.* Commission approval of this extension will also extend the current Commission-approved Distribution System Improvement Charge ("DSIC") cap of 5.0%, allowing for the continuation of recovery for qualifying eligible plant investments associated with this Extended LTIIP.

UGI-GD is seeking to extend its LTIIP to maximize administrative efficiency. UGI-GD is currently involved in a proceeding before the Pennsylvania Public Utility Commission ("Commission") at Docket Nos. A-2018-3000381 *et. seq.* ("Merger Proceeding"). In the Merger Proceeding, UGI Utilities, Inc. is seeking to create a single operating entity that would combine UGI-GD with the other natural gas distribution companies ("NGDCs") owned by UGI Utilities Inc. – UGI Central Penn Gas, Inc. ("UGI-CPG") and UGI Penn Natural Gas, Inc. ("UGI-PNG"). All three NGDCs currently have individual LTIIPs which will expire on December 31, 2018. The Commission's decision in the Merger Proceeding will determine whether a combined LTIIP

will be filed in lieu of three separate LTIIPs. Assuming that the Merger Proceeding is resolved by August 23, 2018 as requested by the Companies, it will provide insufficient time for the Companies to prepare a joint LTIIP if that is determined by the Commission and to afford the Commission with sufficient time to review the joint LTIIP before the December 31, 2018 expiration of the current plans. As a result, each of the three individual NGDCs proposes to extend their current LTIIP plans by one year, to provide sufficient time for the Commission to issue an Order in the Merger Proceeding, and, if the Companies' requests are approved, for the merged entity to file a joint LTIIP. Therefore, the Company respectfully requests Commission approval of this petition for a one-year extension of the Company's current LTIIP, consistent with all the terms applicable to its current LTIIP. As denial of this petition will require the Company and its affiliates to each prepare a new multi-year LTIIP, the Company requests Commission approval no later than the August 2, 2018 public meeting date.

I. INTRODUCTION

1. UGI-GD is a corporation organized and existing under the laws of the Commonwealth of Pennsylvania. UGI-GD is engaged in the business of selling and distributing natural gas to retail customers within the Commonwealth, and is therefore a "public utility" within the meaning of Section 102 of the Public Utility Code, 66 Pa. C.S. § 102, subject to the regulatory jurisdiction of the Commission. UGI-GD provides natural gas service to approximately 393,000 customers in and around Eastern and Central Pennsylvania, pursuant to certificates of public convenience granted by the Commission. Its system contains

approximately 5,707 miles of natural gas distribution mains and 113 miles of natural gas transmission mains as of December 31, 2017.[1]

2. On December 12, 2013, UGI-GD filed a *Petition for Approval of its Long Term Infrastructure Improvement Plan* ("LTIIP Petition") at Docket No. P-2013-2398833. In its LTIIP Petition, which contained all of the elements of 66 Pa C.S. § 1352(a)(1)-(6), UGI-GD described the Company's plans to replace all of its cast iron pipelines over a 13-year period ending in February 2027. The Company also committed to replace all of its bare steel and wrought iron pipelines over a 28-year period ending September 2041. In addition to its mains, UGI-GD identified other infrastructure repair and replacement that the Company would address in the five year period covered by the LTIIP. The Commission approved UGI-GD's LTIIP in an Order entered on July 31, 2014.

3. On February 29, 2016, UGI-GD filed a *Petition for Approval of its Modified Long Term Infrastructure Improvement Plan* ("Modified LTIIP Petition") at Docket No. P-2013-2398833. In its Modified LTIIP Petition, the Company reflected a significant increase in the anticipated annual spending associated with the infrastructure replacement included in the LTIIP which exceeded the 20% threshold established in the Commission's regulations. None of the original programs included in the Company's LTIIP, or its main replacement mileage goals, were modified. The Commission approved UGI-GD's Modified LTIIP in an order entered on June 30, 2016.

4. The Merger Proceeding was initiated on March 8, 2018, when the Joint Applicants filed an application requesting all necessary authority, approvals and certificates of public convenience from the Commission pursuant to Sections 1102(a)(1)-(3), 2102(a) and 2210

[1] The customer count and miles of main have been updated from the numbers included in the LTIIP in order to reflect the most recently available numbers.

of the Public Utility Code at Docket No. A-2018-3000381 *et. seq.* (hereinafter "the Merger Application"). The Merger Application sought the authorization for: (1) an Agreement and Plan of Merger; (2) the merger of UGI-PNG and UGI-CPG with and into UGI Utilities; (3) the initiation by UGI Utilities, Inc. of natural gas service in all territory in this Commonwealth where UGI-PNG and UGI-CPG do or may provide natural gas service; (4) the abandonment by UGI-PNG of all natural gas service in this Commonwealth; (5) the abandonment by UGI-CPG of all natural gas service in this Commonwealth; (6) adoption by UGI Utilities of UGI-PNG's and UGI-CPG's existing tariffs and their application within new service and rate districts of UGI Utilities corresponding to their existing service territories as UGI North and UGI Central, respectively; (7) the adoption by UGI Utilities of its Existing Tariff to be applied to a new UGI South Service and Rate District; and (8) to the extent necessary, associated affiliated interest agreements. The Joint Applicants requested further that the Commission grant these authorizations by no later than August 23, 2018, so that the merger may become effective October 1, 2018.

5. UGI-GD's currently effective LTIIP will expire on December 31, 2018. Pursuant to Section 121.5(c) of the Commission's regulations, a Company seeking to continue its DSIC must file a new LTIIP with the Commission at least 120 days prior to the expiration of a currently-effective LTIIP. *See* 52 Pa. § 121.5(c). Considering the requested August 23, 2018 date for a Commission Decision, the planned October 1, 2018 effective date for the merger, and the Commission's statutory 120-day LTIIP review period, there is insufficient time for Commission review of the joint LTIIP prior to the expiration of the Company's currently effective LTIIP. In order to avoid risking the expiration of the Company's LTIIP, leaving the Company incapable of utilizing the DSIC, the Company is proposing to extend its currently effective LTIIP for an additional year, as described below. Doing so would provide the

Company with sufficient time to prepare and file a joint LTIIP, and would provide the Commission with sufficient time to review the joint LTIIP and issue an Order.

II. THE EXTENDED LTIIP

A. THE PLAN

6. UGI-GD's plan remains unchanged from the Modified LTIIP which was approved by the Commission in Docket No. P-2013-2398833. The Extended LTIIP merely adds figures for capital expenditures and miles of main replacement for year 2019.

7. UGI-GD's proposed LTIIP investment for 2019 is $113.0M. The accelerated investment over the five year period of the LTIIP, plus the additional sixth year proposed in this Petition, are shown in Table 1, below. The Extended LTIIP reflects this additional accelerated spending on pages 25 and 29. UGI-GD has accelerated its investment significantly over the baseline spend. The 2019 proposal reflects nearly a 330% increase above the baseline spend.

TABLE 1

Year	Investment (in millions)
Baseline Period (2009-2011)	$26.1 average spend
2014	$52.1 actual spend
2015	$61.6 actual spend
2016	$72.0 actual spend
2017	$95.7 actual spend
2018	$105.2 projected spend
2019	$113.0 projected spend

8. UGI-GD's proposed miles of main replacement for 2019 is 33 miles. This continues the accelerated replacement pace that the Company had already accomplished in its previously approved LTIIP. UGI-GD has accelerated its main replacement significantly over the baseline period. The 2019 proposal brings the Company's total miles of main replaced since the beginning of its LTIIP to more than 204 miles of cast iron and bare steel mains. The accelerated main replacement over the five year period of the LTIIP, plus the extension period, is as follows:

TABLE 2

Year	Cast Iron, Bare Steel & Wrought Iron Pipe Replacement Plan (Miles)
2014	40.4 miles
2015	30.4 miles
2016	34.7 miles
2017	33.1 miles
2018	33 miles (projected)
2019	33 miles (projected)

9. The Company is currently authorized to use a DSIC with a cap of 5.0%, as approved by the Commission in *Petition of UGI Utilities, Inc. – Gas Division for Approval of a Distribution System Improvement Charge*, Docket No. P-2013-2398833 (November 9, 2016). The Company does not propose any modification to the current DSIC cap as part of this Petition.

10. **Appendix "B"** to this Petition is a redlined LTIIP, reflecting the changes proposed from the currently effective LTIIP. **Appendix "C"** to this Petition is a list of planned projects for 2019 which will be undertaken as part of this LTIIP.

11. With the exception of the specific changes identified in this section and reflected in Appendix B, the Extended LTIIP is otherwise identical to the one previously approved by the Commission. As to the elements of the LTIIP which are required by statute and regulation, and which have not been changed from UGI-GD's Commission-approved LTIIP, UGI-GD's Extended LTIIP meets all established requirements.

B. THE EXTENSION IS IN THE PUBLIC INTEREST BECAUSE IT MAINTAINS THE ACCELERATED PACE OF INFRASTRUCTURE REPLACEMENT WHICH SUPPORTS SAFE AND RELIABLE SERVICE

1. Continuing the LTIIP is in the Public Interest.

12. The Company proposes this Extended LTIIP because it serves the public interest by maintaining the steady program of accelerated infrastructure repair and replacement already underway at UGI-GD. Maintaining this steady pace will ensure that customers continue to receive safe and reliable service in the future, as required by 66 Pa. C.S. § 1501. The projects in the Extended LTIIP focus on the same critical categories that the Company's original and Modified LTIIPs have focused on: main replacements, system reliability improvements, service replacements, and mandated relocations of utility facilities. It is critical for the Company to maintain the ongoing LTIIP work, without any disruption associated with the end of its current LTIIP and the commencement of its next LTIIP period. This Extended LTIIP will allow the Company to more effectively and smoothly bridge the period between the end of its current LTIIP and the planning and operational transition to a joint LTIIP.

2. The Proposed Extension Facilitates Administrative Efficiency

13. The Extended LTIIP seeks to maximize administrative efficiency and to reduce the need for redundant reviews by the Commission and the Statutory Advocates. Consistent with prior Commission proceedings, UGI-GD anticipates that it will be instructed by the Commission

to file a joint LTIIP if the Merger Proceeding is approved. *See, e.g., Joint Application of Peoples Natural Gas Company, LLC, Peoples TWP LLC, and Equitable Gas Company, LLC for All of the Authority and Necessary Certificates of Public Convenience (1) to Transfer All of the Issued and Outstanding Limited Liability Company Membership Interest of Equitable Gas Company, LLC to PNG Companies LLC, (2) to Merger Equitable Gas Company, LLC with Peoples Natural Gas Company LLC, (3) to Transfer Certain Storage and Transmission Assets of Peoples Natural Gas Company LLC to Affiliates of EQT Corporation, (4) to Transfer Certain Assets between Equitable Gas Company, LLC and Affiliates of EQT Corporation, (5) for Approval of Certain Ownership Changes Associated with the Transaction, (6) for Approval of Certain Associated Gas Capacity and Supply Agreements, and (7) for Approval of Certain Changes in the Tariff of Peoples Natural Gas Company LLC*, Docket Nos. A-2013-2353647 *et. al*., p. 38 (Initial Decision entered November 1, 2013) (subsequently adopted by the Commission in its Order entered November 14, 2013).

14. Due to the different regulatory timing requirements associated with the end of the current LTIIP and the Merger Proceeding, if the Commission does not grant this Petition, the Company will be required to file three new LTIIPs on or before August 31, 2018, in order to provide the Commission with the necessary 120 day review period, so that the UGI distribution companies will have new LTIIPs in place prior to December 31, 2018. The Company would then also need to file a joint LTIIP in the weeks following approval of the Merger Proceeding. Thus, it may be possible for the Company to have four different LTIIP reviews occurring before the Commission at the same time, during the holiday season. Even if the Company does not file its joint LTIIP until after approval occurs for the three individual LTIIPs, it still would require the Commission to go through the full review of the three individual LTIIPs, then restart that

process entirely in reviewing the joint LTIIP. The Company believes that this would be administratively wasteful for the Commission, and burdensome for the Statutory Advocates.

15. At the conclusion of the Merger Proceeding, the Company will be required to file a new LTIIP to reflect the new operating reality of the merged entity. The joint LTIIP will reflect all three NGDCs in a single unified plan. This new joint LTIIP will require as much, if not more, scrutiny from the Commission and the Statutory Advocates, to ensure not only that the joint LTIIP meets the statutory requirements of Act 11, but that it also meets any additional criteria that are identified as part of the Merger Proceeding. The prior individual reviews will shed little to no light on the review required of the joint LTIIP, and will therefore simply be a fruitless expenditure of administrative resources for individual LTIIPs that would potentially only be applicable for a few months.

16. In order to avoid placing a redundant and unnecessary administrative burden on the Commission and the Statutory Advocates, the Company is proposing to extend its previously approved and currently effective LTIIP for one additional year, so that the Company's initial LTIIP will expire on December 31, 2019. Such an extension reduces the burden on the Commission and other parties to investigate the component pieces of the LTIIP, because those pieces have already been approved by the Commission as sufficient to meet the statutory and regulatory requirements. The extension will then allow time for the filing of the joint LTIIP, which will supplant UGI-GD's individual LTIIP on or before the end of the extension period.

3. To The Extent this Petition Constitutes a Request for a Major Modification, the Company Requests that the Commission Grant the Major Modification.

17. The Commission's regulations at 52 Pa. Code § 121.2 define a major modification as follows:

> A change to a utility's previously approved LTIIP which meets at least one of the following criteria:
>
> (i) Eliminates a category of eligible property from the LTIIP.
>
> (ii) Extends the schedule for repair, improvement or replacement of a category of eligible property by more than 2 years.
>
> (iii) Increases the total estimated cost of the LTIIP by more than 20%.
>
> (iv) Otherwise reflects a substantial change to the current Commission-approved LTIIP.

18. The Company does not believe that this request for an extension of its LTIIP should be considered a modification pursuant to 52 Pa. Code § 121.2. However, should the Commission consider it to be a modification, the Company asks that the Commission grant the Company's request to modify its LTIIP.

11. Approving the modifications to UGI-GD's LTIIP is in the public interest and will ensure that customers continue to receive safe and reliable service in the future as required by 66 Pa. C.S. § 1501. The projects incorporated in the extension year continue to focus on accelerating investment in critical infrastructure replacements, including cast iron and bare steel main replacement activity. All of the categories of the original LTIIP are being continued. Further, this extension will conserve administrative resources without compromising UGI-GD's programs, or its accountability to the Commission and to ratepayers.

III. CONCLUSION

WHEREFORE, UGI Utilities, Inc. – Gas Division respectfully requests that the Pennsylvania Public Utility Commission find that the extension of the Long Term Infrastructure Improvement Plan contains all necessary items identified in 66 Pa. C.S. § 1352, and that the Extended LTIIP be approved no later than the August 2, 2018 public meeting date.

Respectfully submitted,

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Of Counsel:

Post & Schell, P.C.

Attorneys for UGI Utilities, Inc. – Gas Division

Date: June 15, 2018

VERIFICATION

I, Hans G. Bell, Chief Operating Officer of UGI Utilities, Inc., hereby state that the information above set forth are true and correct to the best of my knowledge, information and belief, and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: June 15, 2018

Hans G. Bell
Chief Operating Officer
UGI Utilities, Inc.
2525 N. 12th Street
Reading, PA 19612-2677

APPENDIX A

UGI Utilities Inc. - Gas Division

Long Term Infrastructure Improvement Plan

2014-2019

December 12, 2013
Modified on February 29, 2016
Extended on June 15, 2018

Introduction

UGI Utilities, Inc. – Gas Division ("UGI-GD" or the "Company") respectfully submits this Long-Term Infrastructure Improvement Plan ("LTIIP" or "Plan") for the approval of the Pennsylvania Public Utility Commission ("Commission") in accordance with the requirements of 66 Pa. C.S. § 1352(a) and the Commission's Final Implementation Order, entered August 2, 2012, at Docket M-2012-2293611 ("Final Implementation Order"). As approved by the Commission, the UGI-GD LTIIP shall serve to guide the Company's accelerated infrastructure repair, improvement and replacement activities for the period 2014 through 2019 for its natural gas transmission and distribution facilities used in providing natural gas service to its customers located within the UGI-GD service territory.

The UGI-GD LTIIP is being filed simultaneously with the LTIIPs of UGI Penn Natural Gas ("UGI-PNG") and UGI Central Penn Gas, Inc. ("UGI-CPG"). Hereinafter, UGI-GD, UGI-PNG and UGI-CPG shall be referred to collectively as the "UGI Distribution Companies." Each company's LTIIP incorporates the joint facility replacement and betterment program of the UGI Distribution Companies.

The UGI-GD LTIIP is structured to address the six specific factors set forth in the Commission's Final Implementation Order. Accordingly, this LTIIP includes the following sections:

(1) Identification of the types and age of eligible property owned or operated by the utility for which the utility would seek recovery;

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

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

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

(5) Projected annual expenditures to implement the plan and measures taken to ensure that the plan is cost effective; and

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

UGI-GD will address each section in more detail below. Additionally, the Company will provide certain information about maintaining a qualified work force, as identified by the Commission in the Final Implementation Order.

Corporate Background

UGI Utilities, Inc. ("UGI Utilities") is the wholly owned, utility subsidiary of UGI Corporation. It operates two regulated divisions encompassing a natural gas distribution operation, UGI-GD, and an electric distribution operation, UGI Utilities. – Electric Division ("UGI-ED"). It also wholly owns two natural gas distribution companies, UGI-PNG and UGI-CPG, which were separately acquired by UGI Utilities within the last

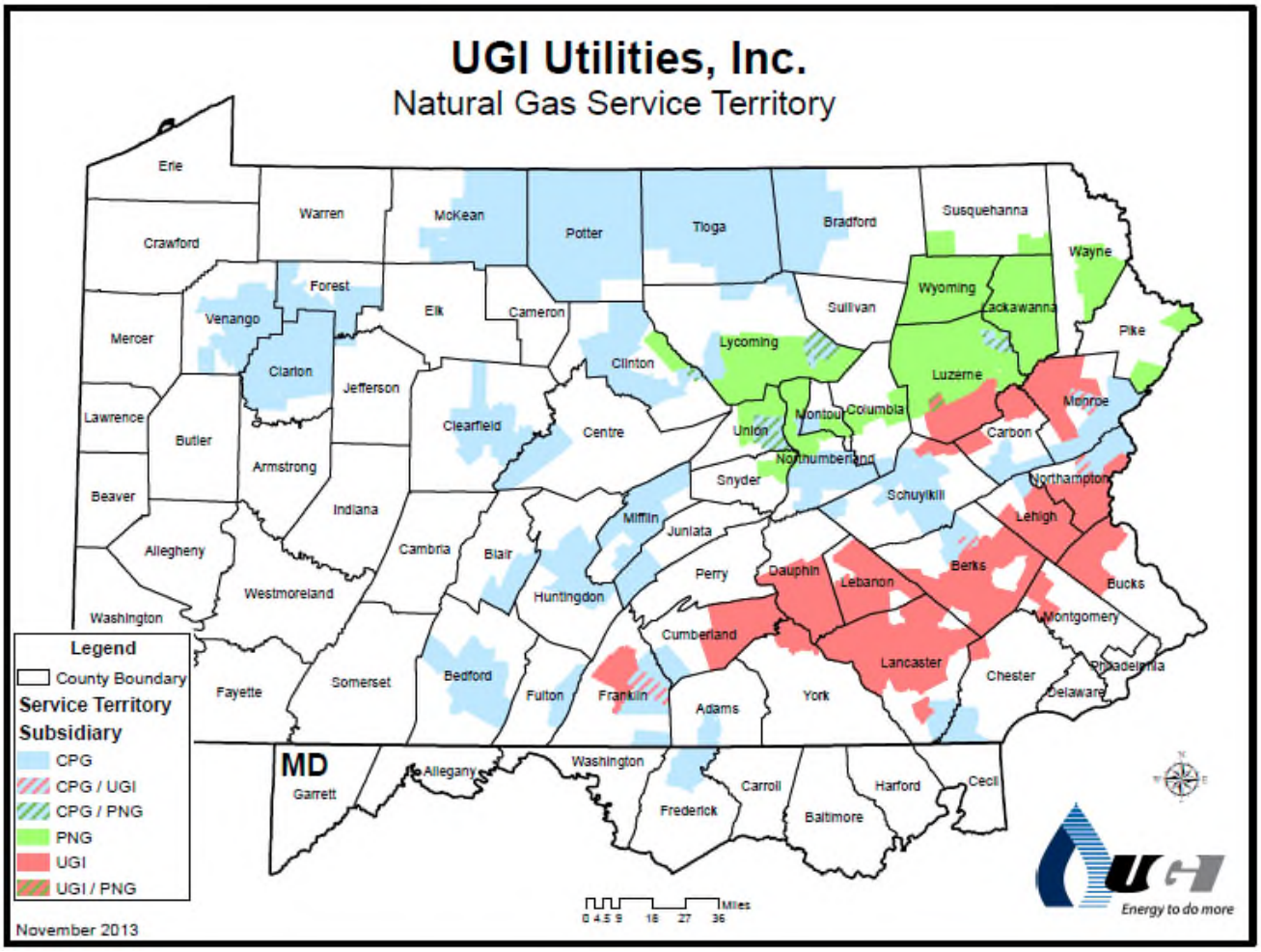
decade and operate under the shared executive management of UGI-GD. UGI-PNG began operations as a wholly owned subsidiary of UGI Utilities on September 1, 2006, through an acquisition of the assets from Southern Union Company.[1] UGI-CPG began operations as the wholly-owned subsidiary of UGI Utilities on October 1, 2008, via an acquisition of the stock of PPL Gas Utilities Corporation.[2]

The UGI Distribution Companies serve approximately 600,000 residential, commercial and industrial natural gas customers located in 45 of Pennsylvania's total 67 counties and spanning more than 700 municipalities. As shown in the map below, the service territories of the UGI Distribution Companies include the following cities: Allentown, Bethlehem, Easton, Harrisburg, Hazelton, Lancaster, Lebanon, Reading, Scranton, Wilkes-Barre, Lock Haven, Pittston, Pottsville, and Williamsport.

[1] In an Opinion and Order entered on August 18, 2006 at Docket Nos. A-120011F2000, A-125146F5000 and A-125146, the Commission, among other things, authorized UGI-PNG to: (1) become a wholly-owned subsidiary of UGI Utilities; (2) receive the gas distribution assets of the PG Energy Division of Southern Union Company; and (3) commence the provision of natural gas distribution service to the approximately 160,000 customers previously served by PG Energy in thirteen counties in northeastern Pennsylvania.

[2] In an Opinion and Order entered on August 21, 2008 at Docket Nos. A-2008-2034045, A-2008-2034047, A-2008-2034115 and A-2008-2034132, the Commission, among other things: (1) authorized UGI-CPG (formerly known as PPL Gas Utilities Corporation) to become a wholly owned subsidiary of UGI Utilities; and (2) affirmed CPG's right to render natural gas distribution service to customers residing in numerous municipalities located in 35 counties in Pennsylvania.

Figure 1. Map of UGI Distribution Companies' Service Territories



UGI-GD, UGI-PNG and UGI-CPG each is a "public utility" and a "natural gas distribution company," as such terms are defined under the Public Utility Code, 66 Pa.C.S. §§ 102 and 2202, subject to the Commission's regulatory jurisdiction. Each company renders natural gas distribution and purchase gas cost service to customers pursuant to their individual Commission-approved tariffs and certificate authorities. Together, the UGI Distribution Companies operate approximately 12,000 miles of natural gas mains in the Commonwealth of Pennsylvania.

More specifically, as of September 30, 2013, UGI-GD provides natural gas service to 356,075 customers located throughout its certificated service territory, which includes 16 counties in and around Eastern and Central Pennsylvania. The UGI-GD service territory includes five of Pennsylvania's 10 largest cities: Allentown, Bethlehem, Harrisburg, Lancaster and Reading, along with the suburban communities surrounding them. The UGI-GD service territory also includes rural communities as well. Its distribution system contains 5,423 miles of natural gas distribution mains and 117 miles of natural gas transmission mains.

UGI-PNG provides natural gas service to 162,523 customers as of September 30, 2013. These customers are located throughout a certificated service territory which includes 13 counties in and around Northeast Pennsylvania. The service territory of UGI-PNG is somewhat densely populated in and around the Cities of Wilkes-Barre, Scranton and Williamsport but otherwise consists of sparsely populated rural or suburban communities. Its system contains 2,575 miles of natural gas distribution mains and 66 miles of natural gas transmission mains.

UGI-CPG provides natural gas service to 78,175 Pennsylvania customers as of September 30, 2013. These customers are located throughout its certificated service territory, which includes 37 counties in Northeastern, Central and Northwestern Pennsylvania. UGI-CPG’s service area is sparsely populated and non-integrated, as it is composed of mostly rural or distant suburban communities. Its distribution system contains 3,713 miles of natural gas mains and 110 miles of natural gas transmission mains.

1. TYPES AND AGE OF ELIGIBLE PROPERTY

UGI-GD has identified the following types of property as DSIC-eligible distribution infrastructure that will be replaced as part of its plan:

- Gas distribution & transmission mains, valves, fittings, couplings, and appurtenances
- Gas service lines including tees, excess flow valves, curb valves, first stage regulators, tubing / piping, and risers
- Gas meter sets including regulators, meter bars, meter set piping, meters, and telemetry
- District regulator stations and city gate stations including telemetry
- Mandated facility relocations, as related to highway projects (unreimbursed costs)
- Related capitalized costs - equipment, tools, corrosion control equipment, vehicles, and supporting information technology

In the following section of its Plan, the Company will address each of these categories of property.

Distribution Mains

Distribution mains are DSIC-eligible property under Section 1351(2)(i) of the Public Utility Code. UGI-GD's distribution mains are comprised of several different types of material including cast iron, wrought iron, unprotected bare steel, unprotected coated

steel, protected bare steel, protected coated steel, and plastic. Cast iron and bare steel make up approximately 15% of UGI Distribution Companies pipelines. For UGI-GD, those materials comprise 13.6% of its system. The remaining approximately 85% of pipelines of the UGI Distribution Companies are comprised of contemporary materials which include plastic and coated steel. For UGI-GD, contemporary materials compose 86.4% of the system.

Cast iron distribution and bare steel distribution mains are considered legacy distribution assets and are widely recognized as warranting prioritized attention in terms of risk management and accelerated replacement.

As of December 31, 2012, UGI-GD had a total of 5,423 miles of distribution mains in its system.

Figure 2. Miles of Distribution Mains as of 12/31/2012[3]

Type of Material	Miles	Percent of Total
Unprotected bare steel	260.2	4.8
Unprotected coated steel	129.2	2.4
Protected bare steel	131.8	2.4
Protected coated steel	1613.0	29.7
Ductile iron	0	0.0
Copper	0.1	0.0

[3] Per UGI-GD 2012 Department of Transportation ("DOT") report.

Cast / wrought iron	347.5	6.4
Plastic	2938.3	54.2
Other	3.0	0.1
Total	5423.1	100.0

Beginning in 2014, UGI-GD's Plan reflects the accelerated replacement and removal of all cast iron and bare steel / wrought iron pipelines within 13 and 28 years, respectively, or by February 2017 and September 2041. Other mains will be replaced as may be necessary to maintain or improve system integrity and reliability, or as may be required to accommodate highway related projects.

UGI-GD distribution mains were installed over a significant period of time. While many of these older distribution mains are composed of contemporary materials, the majority of the older facilities are made of vintage materials. Accelerating the replacement of cast iron mains, bare steel mains, vintage plastic mains, and the appurtenances associated with them will significantly improve the overall age profile and performance of the UGI-GD distribution system.

Figure 3. Age Profile of UGI-GD Distribution Mains as of 12/31/12[4]

Decade of Installation	Mileage	Percent of Total
Unknown	1.8	0.0
Pre-1940	508.1	9.4

[4] Ibid

1940s	77.1	1.4
1950's	536.6	9.9
1960's	729.6	13.4
1970's	421.2	7.8
1980's	693.2	12.8
1990's	1074.7	19.8
2000's	1214.0	22.4
2010's	166.8	3.1
Total	5423.1	100.0

Gas Service Lines

Gas service lines are the piping and/or tubing that connect the Company's mains to the meter sets. Service lines are constructed using the same materials as mains and are subject to the same elements that affect the physical integrity of the mains. In order to ensure that distribution service is reliable and safe, these service lines must be periodically replaced on the basis of condition or planned obsolescence. Gas service lines are DSIC eligible property under Section 1351(2) (iii) of the Public Utility Code.

Figure 4. Service Lines by Material as of 12/31/2012[5]

Service Material	Number of Services	Percent of Total
Unprotected bare steel	14,311	4.1
Unprotected coated steel	9,196	2.7
Protected bare steel	799	0.2
Protected coated steel	39,621	11.4

[5] Ibid.

Ductile iron	0	0
Copper	10,871	3.2
Cast / wrought iron	2	0
Plastic	271,696	78.4
Other	23	0
Total Services	346,519	100.0

Gas services are typically replaced on a planned basis in conjunction with the replacement of the main to which they are connected. Coordinating replacements in this manner maximizes the efficient use of Company resources, and minimizes the inconvenience to customers. At the time of service line replacement, inside meters will be replaced with outside meters wherever practical to better facilitate company access.

Gas services may also be replaced in conjunction with meter move-outs. When meters are relocated from inside customer premises to outside, it is often convenient to simultaneously replace the affected service line. When coordinated in such a manner, future inconvenience to the customer is minimized by upgrading Company facilities in a single mobilization. Pursuant to the Commission's Final Order issued on May 23, 2014 in Docket No. L-2009-2107155, UGI-GD must address all relocations on its system by September 13, 2034. As a result, the number of service line replacements will increase in proportion to the number of meter move-outs.

Excess Flow Valves

Excess flow valves are safety devices installed on gas service lines which interrupt the flow of gas in the event of a fully severed line, typically in the case of damage caused by excavation. As service lines are replaced, excess flow valves are installed in accordance with Subpart H of CFR 49 Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards Section 192.381. Excess flow valves are DSIC-eligible property under Section 1351(2)(v) of the Public Utility Code.

Mercury Regulators

Mercury regulators are a type of pressure reduction device which incorporate liquid mercury as over-pressure protection. Mercury regulators were generally installed prior to the early 1960s when spring loaded relief valves became the industry standard. As part of the LTIIP, UGI plans to continue the replacement of mercury regulators. An estimated 7,000 mercury regulators remain in the UGI-GD system. Mercury regulators are DSIC-eligible property under Section 1351(2)(iii) of the Public Utility Code.

City Gate & District Regulator Stations

City Gate and District Regulator Stations are facilities which reduce system pressures as gas is distributed throughout the piping network. City Gate Stations are generally located at the point of custody transfer between the interstate pipelines and distribution systems, whereas District Regulator Stations are located within distribution systems. Regulator stations must be periodically updated or replaced as components such as piping and mechanical equipment age and wear. Additionally, over time mechanical components

such as regulators become obsolete and must be replaced with modern equipment to ensure availability of replacement parts and reliability. Regulating facilities may be replaced in whole or part depending upon the project objectives. Partial replacements could encompass equipment including but not limited to regulators, valves, heaters, metering, Supervisory Control And Data Acquisition ("SCADA"), and odorization. Some facilities will be eliminated through main replacement programs as low pressure systems are eliminated or where systems are otherwise consolidated. City Gate Stations and Distribution Regulator Stations are DSIC-eligible property under Section 1351(2)(i) and § 1351(2)(iv) of the Public Utility Code.

Figure 5. Number and Type of Regulator Stations

	City Gate Station	District Regulator Station	Total
UGI-GD	41	378	419

Vintage Plastic Pipe, Plastic Pipe Components, and Mechanical Fittings

Certain plastic pipe materials and fittings have been found to exhibit a higher than average potential for failure. UGI-GD has identified a type of tee, the fitting which joins the service line to the main, which may fail as the result of a compromised mechanical connection between the tee and main. A second type of plastic fitting, a service line curb valve with compression connections, has similarly exhibited a higher potential for failure. UGI-GD is engaged in ongoing surveillance and proactive repair and replacement of these fittings. When mechanical tees are replaced, a section of the host main is replaced,

and a new tee is connected by plastic fusion. Compression connection service line valves are addressed by replacing the affected service line. Finally, early vintage plastic pipes have been found to be subject to higher potential for brittle cracking type failures and are replaced on a risk prioritized basis. In total, approximately 2,900 compression connection valves and 19,800 mechanical tees will be reviewed and addressed as may be appropriate at UGI-GD. Finally, certain types of early vintage plastic pipes have been found to be subject to higher potential for brittle cracking type failures. UGI-GD will monitor vintage plastic pipe performance perform replacements on a risk prioritized basis as may be necessary to maintain reliability and integrity. The aforementioned plastic pipe and pipe components are DSIC-eligible property under Sections 1351(2)(i), 1351(2)(ii), 1351(2)(iii), 1351(2)(iv), and 1351(2)(v) of the Public Utility Code.

Transmission Mains & Infrastructure

UGI-GD maintains approximately 117 miles of natural gas transmission pipelines. Transmission pipelines are those mains which provide large volumes of gas at high pressures to provide service to entire cities and towns or large volume customers such as gas fired electric generation plants.

Maintaining the integrity of transmission infrastructure is necessary for both reliability and safety. In terms of reliability, transmission lines often provide service to many thousands of customers. Service interruptions can have wide spread regional consequences for many stakeholders. For these reasons, maintaining transmission

infrastructure to a high degree of integrity is paramount. Transmission mains are DSIC – eligible property under Sections 1351(2)(i) and 1351(2)(iv) of the Public Utility Code.

Figure 6. UGI-GD Transmission Mains by Material as of 12/31/12[6]

Type of Material	Miles	Percent of Total
Protected bare steel	0.5	0.4
Protected coated steel	115.9	99.4
Unprotected bare steel	0.1	0.1
Unprotected coated steel	0.1	0.1
Cast iron	0	0
Wrought Iron	0	0
Plastic	0	0
Composite	0	0
Other	0	0
Total	116.6	100.0

Figure 7. UGI-GD Transmission Mains by Age as of 12/31/12[7]

Decade of Installation	Mileage	Percent of Total
Unknown	0	0
Pre-1940	0	0
1940s	1.9	1.6
1950's	20.2	17.3

[6] Per UGI-GD 2012 Department of Transportation ("DOT") Transmission report.
[7] Ibid

1960's	30	25.7
1970's	14.4	12.4
1980's	25.2	21.6
1990's	12.2	10.5
2000's	12.7	10.9
2010's	0	0
Total	116.6	100.0

Approximately 19% of the UGI-GD transmission system is pre-1960s vintage, or more than 50 years old. Ongoing investments in transmission infrastructure are necessary to maintain these assets to ever increasing contemporary standards. Specifically, investment in the retrofit of transmission pipelines to facilitate internal inspection, pressure testing, and other integrity assessment techniques may be required to meet transmission integrity management regulations. Furthermore, replacement of transmission assets, in response to assessment findings, may be required to maintain system integrity.

System Reliability Improvements

System Reliability Improvements are those investments required to maintain ongoing system reliability. Typical projects include investments in distribution or transmission infrastructure needed to reinforce system pressures to ensure firm peak-day deliverability. Investment in transmission and distribution mains is DSIC-eligible under Section 1351(2)(i) of the Public Utility Code.

UGI-GD utilizes system network models to predict system performance under peak operating conditions. Model results are validated against actual system operating

conditions using data from remote SCADA monitoring, system regulator station charts, and winter survey gauges. Specific reliability projects have been identified to improve system pressures as needed to maintain system reliability design criteria to firm customers. Additional projects may be identified in the future subject to system performance and reliability.

Meters

UGI-GD replaces meters as may be necessary to maintain compliance with gas measurement accuracy standards as stipulated in 52 PA Code Section 59.21. UGI-GD maintains a statistical sampling program to evaluate meter accuracy. Should a grouping of meters fail to meet accuracy requirements, the meters are repaired or replaced. Replacement meters are DSIC eligible property under Section 1351(2)(viii) of the Public Utility Code.

Mandated Facility Relocations

UGI-GD is periodically required to relocate gas facilities to accommodate highway improvement projects. The unreimbursed portion of these costs is DSIC eligible property under Section 1351(2)(ix) of the Public Utility Code. When contemporary facilities are impacted, UGI-GD seeks to coordinate such projects to minimize the extent of facility relocation. When non-contemporary facilities, such as cast iron, bare steel, or vintage plastic are involved, the relocation projects provide an opportunity for infrastructure replacement.

Related Capitalized Costs

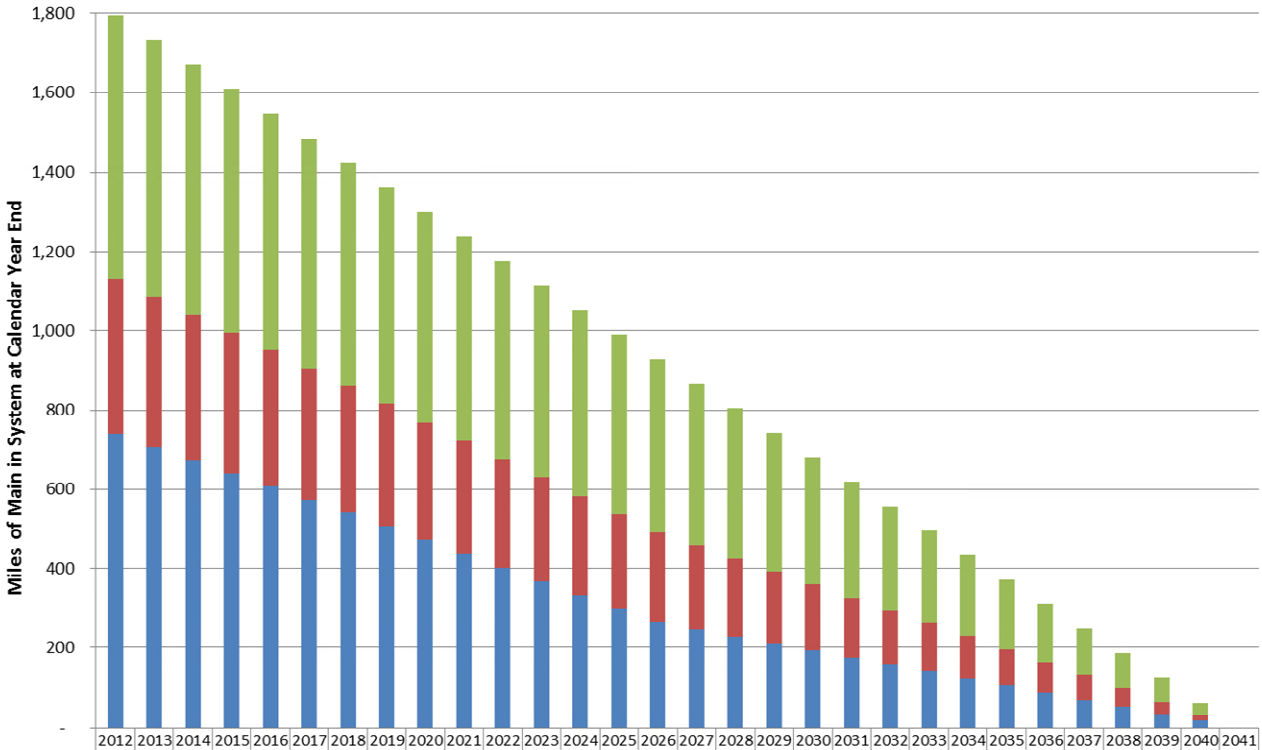
The replacement of DSIC eligible property described above may result in additional related costs incurred that are essential and necessary in order to efficiently manage specific accelerated capital improvement projects. Examples include but are not limited to tools, equipment, fleet, corrosion control, and information technology investments. These related costs are DSIC eligible property under Section 1351(2)(x) of the Public Utility Code.

2. SCHEDULE FOR PLANNED REPLACEMENT OF ELIGIBLE PROPERTY

The UGI-GD LTIIP reflects acceleration in the rate of infrastructure repair, improvement and replacement over historical levels. In particular, the accelerated replacement in this plan conforms with the Settlement Agreement approved by the Pennsylvania Public Utility Commission at Docket No. C-2012-2308997 ("Settlement Agreement"). Under the Settlement Agreement, the UGI Distribution Companies will replace all cast iron and bare steel pipelines located within their combined systems. As of the date of the Plan filing, cast iron replacement will be completed in 13 years ending in February 2027, and bare steel / wrought iron replacement will be completed in 28 years ending in September 2041. This replacement rate, on a combined basis, represents a significant acceleration over historical replacement rates.

As depicted in the Figure 8[8] below, it is anticipated that UGI-GD will replace approximately 33 miles of combined cast iron and bare steel mains in 2014. The specific allocation of mileage between cast iron and bare steel main replacement will vary annually depending on annual risk evaluations and project specific considerations. Additionally, the amount of the annual UGI Distribution Companies' 62 mile main replacement plan allocated to UGI-GD will vary as risks are annually re-evaluated and re-prioritized across all UGI Distribution Companies.

Figure 8 - Approximate Main Replacement Schedule
Cast Iron / Bare Steel / Wrought Iron Combined



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
CPG	664	647	630	613	596	579	562	546	531	515	500	485	469	454	438	409	380	350	321	292	263	234	204	175	146	117	88	58	29	-
PNG	390	379	367	355	344	332	321	309	297	286	274	262	251	239	227	212	197	182	167	152	136	121	106	91	76	61	45	30	15	-
UGI-GD	740	707	674	640	607	574	541	506	471	437	402	367	332	297	263	245	228	210	193	175	158	140	123	105	88	70	53	35	18	-

[8] The replacement schedule presented in Figure 8 is a forecast based on known mileage of cast iron, bare steel, and wrought iron as of 12/31/12. Subsequent revisions of main classifications, as determined through field verification or records review, will modify this projection.

Under the accelerated main replacement program UGI-GD will focus on replacing existing cast iron and bare steel /wrought iron mains and related facilities. While certain bare steel facilities will be replaced in early years, the initial schedule emphasizes cast iron replacement until the final cast iron retirements are completed by March 1, 2027. Subsequently, replacement efforts shift to an emphasis on bare steel.

Main replacement risk evaluation is based on numerous factors, including the pipe condition, age, coating, type of ground cover, geographical proximity to structures, and prior leak and/or break history. Appendix A provides a detailed listing of factors considered in the risk based evaluation. Additionally, specific projects may be escalated to enable coordination of replacement efforts with municipal roadway resurfacing projects.

The UGI Distribution Companies perform an annual review to identify the highest risk pipe segments and prioritize those replacements each year. UGI Distribution Companies utilize commercial risk evaluation software in concert with a team of Subject Matter Experts to evaluate, prioritize, and bundle replacement projects. This hybrid approach targets the highest risk mains first while also balancing the need to maximize the efficient deployment of capital and resources.

This approach is consistent with the UGI Distribution Companies' Transmission Integrity Management Program ("TIMP") and Distribution Integrity Management Program

("DIMP") in accordance with Subpart P of 49 CFR Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. The purpose of the UGI Distribution Companies' TIMP & DIMP is to enhance public safety by identifying risks, assessing and prioritizing the risks, and implementing additional and accelerated actions or preventative and mitigative measures to reduce risks. As the UGI Distribution Companies continue to implement the TIMP & DIMP, other pipeline assets may be identified for repair, improvement or replacement as their conditions are evaluated and relative risks are reviewed and prioritized.

A list of planned DSIC eligible main replacement projects is included with the Company's Annual Asset Optimization Plan ("AAOP"). This listing is developed and reviewed one or more times each year based on a reassessment of the most current data available. Therefore, this is a dynamic list of projects that is subject to modification. In addition to the identified projects, UGI-GD must address mandatory replacements, non-repairable leakage, and emerging main issues that develop in the field and require immediate attention. Replacement of such segments of pipe is not reflected in the AAOP and will impact the ultimate timing of the completion of identified projects.

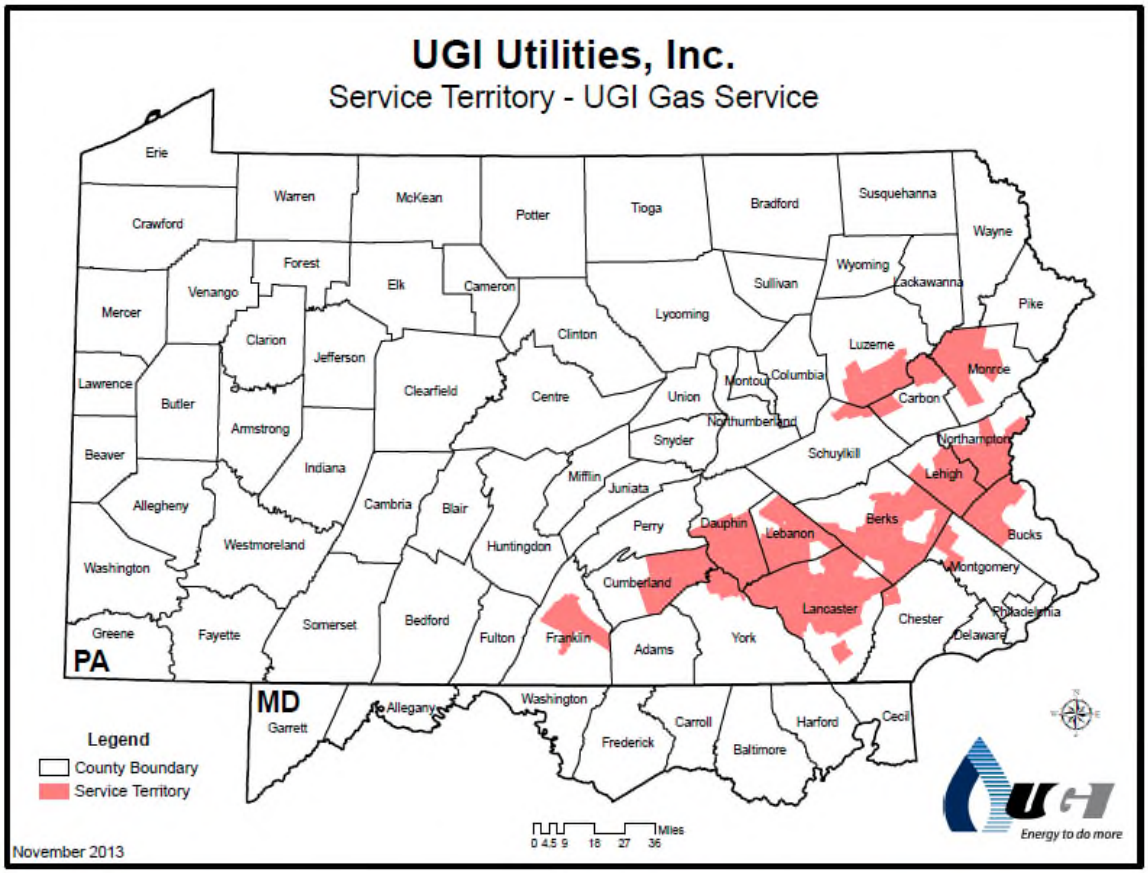
Certain circumstances, such as municipal government and Pennsylvania Department of Transportation construction projects, or changes in state or federal pipeline safety code also could impact UGI-GD's schedule and scale. Long term infrastructure improvement projects performed by the UGI-GD, and human and material assets associated with those projects, will be adjusted or changed as required to align with changing circumstances.

Projects will be regularly reviewed and updated to ensure all projects are cost effective and provide the expected system integrity and reliability benefits.

3. LOCATION OF ELIGIBLE PROPERTY

UGI-GD will conduct projects distributed throughout its service territory. As described earlier, UGI-GD's service territory contains approximately 5,423 miles of natural gas distribution mains and 117 miles of natural gas transmission mains throughout 16 counties in and around Eastern and Central Pennsylvania. The UGI-GD map below identifies the UGI-GD service territory. Eligible property is located in all parts of UGI-GD's service territory as depicted in Figure 9 below.

Figure 9. (UGI-GD Service Territory Map)



4. REASONABLE ESTIMATE OF THE QUANTITY OF PROPERTY TO BE IMPROVED

As described in the prior sections, the Company has identified numerous property types including cast iron and bare steel pipeline for replacement. The Company estimates that in 2014 approximately 62 miles of cast iron and bare steel mains will be replaced across all UGI Distribution Companies. For UGI-GD, the 2014 replacement plan includes replacement of approximately 33 miles of cast iron and bare steel mains. In each annual asset optimization plan filed by UGI-GD, the Company will provide updated yearly replacement plans, based on its latest risk assessment process.

The following table provides estimates of the approximate schedule and units of property to be replaced at UGI-GD under the LTIIP plan. UGI-GD anticipates replacing or repairing the following approximate amounts of DSIC eligible infrastructure.

Figure 10. Replacement Quantities and Rates

Asset Type	**Strategy**	**LTIIP Schedule / Replacement Rate**
Distribution Mains – Cast Iron	Replace cast iron mains on a risk prioritized basis consistent with DIMP criteria	All mains replaced in 13 years, ending February 2027
Distribution Mains – Bare Steel	Replace bare steel mains on a risk prioritized basis consistent with DIMP criteria	All mains replaced in 28 years, ending September 2041
Coated Steel Mains	Replace coated steel main as required per mandatory replacements, non-repairable leakage, and	Replace as necessary to maintain system integrity

	emerging main issues	
Transmission Mains	Retrofit transmission lines as required to perform assessments, replace / remediate as may be required per assessment findings	To be determined based upon requirement for assessments and assessment results
Services	Replace services in concert with main replacements	Replacement rate will be proportional to accelerated main replacement rates
Regulator & City Gate Stations	Replace stations and components on obsolescence / condition basis	Variable rate per year based on facility condition assessment & prioritization
Vintage Plastic	Replace mechanical tees, mechanical coupled valves, on an assessed condition basis, including replacement of header main as may be required	Replace as needed to maintain system integrity or at rate as determined by relative risk prioritization
Mandated Facility Relocations	Relocate infrastructure as required by highway agencies. Replace vintage infrastructure in path of highway improvements opportunistically to minimize future paving costs	As required by highway agencies
Related Capital Costs	Invest in tools, equipment, fleet, corrosion control, and information technology as required to enable LTIIP	As required

5. PROJECTED ANNUAL EXPENDITURES AND MEASURES TO ENSURE THAT THE LTIIP IS COST-EFFECTIVE

Projected Annual Budget for Upgrades

The table below provides a projection of total annual expenditures for the LTIIP period, 2014 through 2019, for both UGI-GD specifically as well as the UGI Companies in total.

Figure 11. Projected LTIIP Annual Expenditures 2014-2019[9]

Fiscal Year	Capital Investment UGI-Gas ($MM)	Capital Investment All UGI Companies ($MM)
2014 Actual	$52.1	$79.8
2015 Actual	$61.6	$104.1
2016 Actual	$72.0	$130.3
2017 Actual	$95.7	$152.1
2018 Projected	$105.2	$169.5
2019 Projected	$113	$185.0

Cost-Effectiveness

UGI-GD will be employing numerous oversight and control processes in order to ensure resources expended on its LTIIP projects are being prudently spent. The following methods are planned to increase cost effectiveness:

- Competitive bidding of multi-year pipeline construction and restoration contracts
- Utilization of unit based pricing to limit change order impacts
- Aggregation of UGI Distribution Companies' projects for bid purposes to gain economy of scale benefits
- Provision of minimum guaranteed volume contracts to benefit from economies of scale
- Issuance of special bids for large or unconventional projects
- Recruitment of additional qualified contractors to increase the competitive nature of the process.

[9] LTIIP year totals for 2014 and 2015 are being adjusted to correct for classification issues discovered and discussed with Commission Technical Staff during the audit process in 2017. For UGI-CPG and UGI-PNG, these actuals have already been reflected in filings made on December 22, 2017, with rates associated with those filings effective on January 1, 2018.

- Evaluation and implementation of new or improved technologies to decrease costs, such as:
    - Directional drilling, insertion, and other minimally disruptive trenchless technology versus traditional direct burial
    - Key hole / core bore service replacement
- Perform periodic HR staffing allocation reviews to assure optimal resource utilization and deployment.

In addition to the above, UGI-GD will monitor safety and reliability indicators for the natural gas distribution system over time in particular with a focus to evaluate corrosion and leak resolution performance, track emergency response, pursue damage prevention, and reinforce employee safety and safety improvement.

In order to increase construction efficiency in a way that maximizes the effectiveness of replacement capital, efforts shall be made at the start of each fiscal year to group planned replacement projects with others in a geographic region. Such an approach reduces costs associated with mobilization, materials delivery and stockpiling, and also improves inspection efficiency and safety performance.

Geographic planning of projects as described above will also reduce the impact to the community in which the projects occur by ensuring that replacement activities are completed with fewer mobilizations into and out of a community. As the construction crew completes main and service replacements, construction should move logically from

one portion of an area to another, so that disruptions such as road closures, parking restrictions, construction noise and interruption of service are restricted to only the time required to complete the main and service replacement in the immediate area.

Overall, the UGI Distribution Companies will focus on continuously enhancing planning, response and facility restoration efforts. Changing circumstances impacting the accelerated facility restoration efforts will cause a need for constant review and update of the responses and techniques used. In addition, communication approaches, information management systems and operations protocols used in facility improvement will need to be adjusted and continuously improved as well. The UGI Distribution Companies are refining the planning and resource alignment processes used in accelerated facilities improvement initiatives. The UGI Distribution Companies are constantly reviewing and evaluating facility information to continually enhance and refine the accuracy of infrastructure data.

Finally, UGI Distribution Companies will continue an evaluation of industry best practices, collaboration with industry partners, and interaction with regulatory agencies. Opportunities to enhance and expand the effectiveness of processes and procedures will be evaluated and considered to ensure continuous improvement of infrastructure that is cost-effective.

6. MANNER IN WHICH REPLACEMENT OF AGING INFRASTRUCTURE WILL BE ACCELERATED AND HOW REPAIR, IMPROVEMENT, OR REPLACEMENT WILL MAINTAIN SAFE AND RELIABLE SERVICE.

Acceleration

The UGI-GD LTIIP reflects acceleration that has previously been agreed to by the UGI Distribution Companies and the Public Utility Commission. In an Order entered on February 19, 2013, the Pennsylvania Public Utility Commission approved a Joint Settlement Petition which, among other conditions, requires the UGI Distribution Companies to replace all cast iron mains over a 14 year period ending in February 2027 and all bare steel / wrought iron mains over a 30 year period ending in September 2041.[10] The impact this commitment has on the overall infrastructure replacement rate and capital expenditures for the UGI Distribution Companies has been dramatic.

Accelerated Capital Investment by UGI-GD

In accordance with the accelerated replacement plan described above, the UGI Distribution Companies have already begun to ramp-up needed resources and capital spending levels. This acceleration started in 2012, and while prioritization of activities initially were largest at UGI-GD, the acceleration impacts – both current and planned – are evident across all of the UGI Distribution Companies, including UGI-GD.

For purposes of demonstrating the acceleration commitment made by the UGI Distribution Companies in this LTIIP for 2014 through 2019, a comparison to a three-

[10] Pennsylvania Public Utility Commission Opinion and Order Entered February 19, 2013, Docket C-2012-2308997

year baseline average comprised of capital expenditures for 2009 through 2011 is shown below for both UGI-GD specifically, as well as the UGI Distribution Companies, in total.

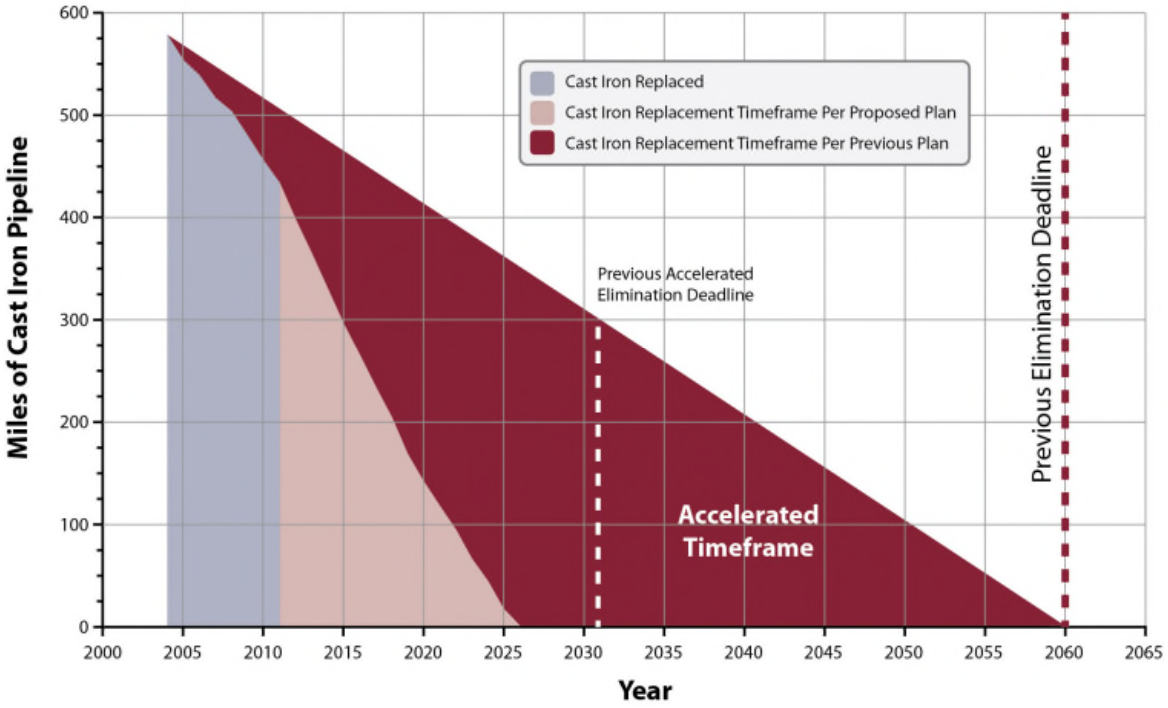
Fiscal Year	Capital Investment UGI-Gas ($MM)	Capital Investment All UGI Distribution Companies ($MM)
2009-2011 Baseline (Avg/yr)	$26.1	$50.6
2012 Actual	$35.7	$61.1
2013 Actual	$54.3	$93.9
2014 Actual	$52.1	$79.8
2015 Actual	$61.6	$104.1
2016 Actual	$72.0	$130.3
2017 Actual	$95.7	$152.1
2018 Projected	$105.2	$169.5
2019 Projected	$ 113.0	$185.0

As demonstrated above the acceleration in UGI-GD DSIC eligible spend between 2018 projected spend and the 2009-2011 baseline period increases by 303%. This acceleration is 333% comparing 2019 projections to the baseline period. Total DSIC eligible spend for all UGI Distribution Companies increases by 236% through 2018, and 266% through 2019. This investment acceleration relates to a 21% increase in the amount of bare steel and cast iron main replaced (average 53.2 miles per year replaced in 2009-2011 baseline period vs. 64 miles per year during LTIIP) for the period through 2018 and 21% for the period through 2019.

The overall plan to address cast iron distribution mains is to replace all such facilities by the end of February, 2027. The graph in Figure 12 below provides a visual representation of this plan versus the previous replacement timeframe which is based on the historical

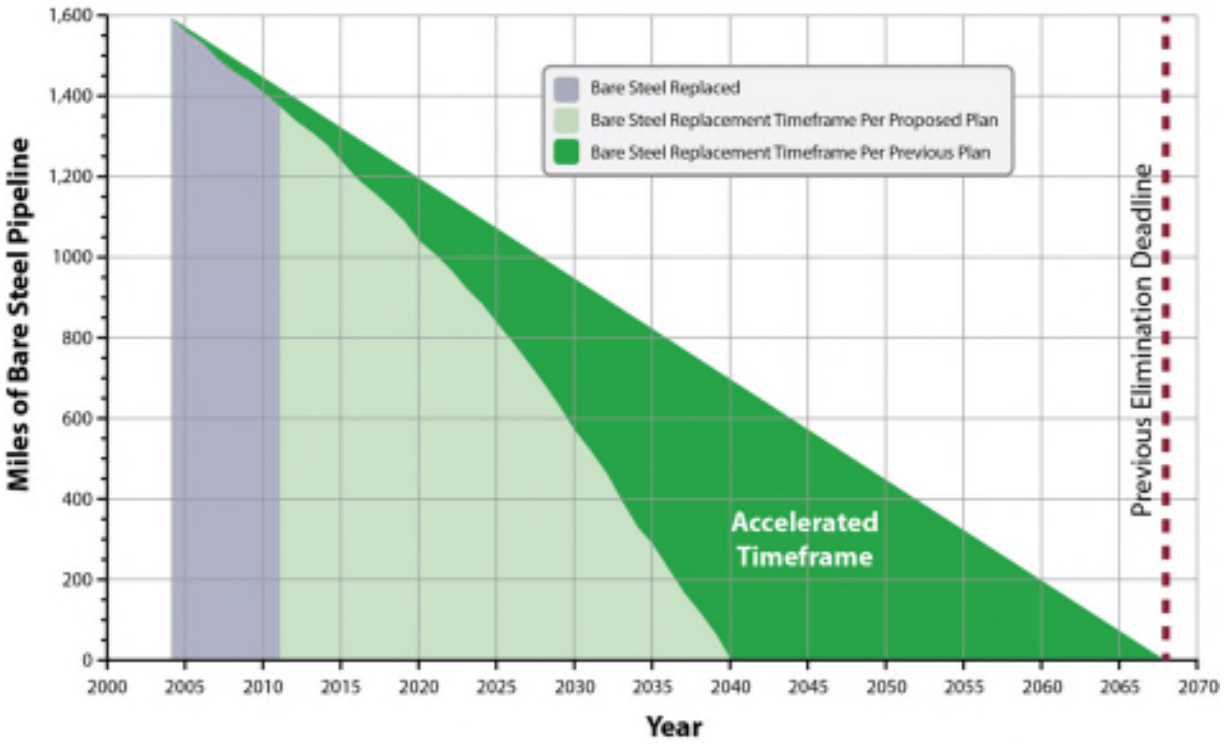
replacement trend. Per the accelerated replacement rate, all cast iron mains will be eliminated from the UGI Distribution Companies 33 years ahead of the prior timetable.

Figure 12. Accelerated Cast Iron Replacement



The overall plan to address bare steel and wrought iron mains is to replace all such facilities by October 2041. The graph in Figure 13 below provides a visual representation of this plan versus the previous replacement timeframe which is based on the historical replacement trend. Per the accelerated replacement rate, all bare steel / wrought iron mains will be eliminated from the UGI Distribution Companies 27 years ahead of the prior timetable.

Figure 13. Accelerated Bare Steel / Wrought Iron Replacement



While the overall replacement deadlines will remain fixed, for any given intermediate period the sequence of projects and amount of specific facilities to be addressed may be adjusted in response to changing conditions. A variety of factors, due to the nature of the natural gas distribution business, may cause these changes to occur. These factors include but are not limited to state and municipal relocation projects, other private construction

projects, system upgrades due to pressure requirements, regulatory changes, and legislative changes.

Safe and Reliable Service

UGI-GD expects that the investment enumerated in this LTIIP will provide customers with significant improvements in safety and reliability. Proposed LTIIP replacement investments have been identified and prioritized on a risk basis in accordance with UGI Distribution Companies' DIMP and TIMP plans. Risk based prioritization ensures that those projects which deliver the most significant reductions are addressed first. As the investment plan progresses, customer benefits will be manifested over time in terms of reduced leakage rates, fewer main breaks, and fewer unplanned customer interruptions. Additionally, it is expected that the amount of lost and unaccounted for gas due to system leakage and measurement inaccuracy will be reduced as leaks are eliminated and meters are replaced. Finally, peak day reliability will improve as pressure improvement projects will elevate system low points under peak day design conditions.

Project Coordination & Municipal Outreach

UGI-GD, as part of the UGI Distribution Companies, has a long-standing and active outreach program with local municipalities in its service territories aimed at coordinating construction projects. The municipal outreach program allows for clear communication of information about the natural gas distribution system safety, design and operations, as well as information regarding upcoming facility improvement projects. Coordination

with municipal governments minimizes disruptions to residents in the area of proposed construction, enables efficient replacement of facilities, and promotes awareness of construction projects being performed around UGI Distribution Companies infrastructure.

Section 59.38, from Chapter 59 - Gas Service, requires each public utility to notify the Commission of all major construction, reconstruction or maintenance of plant at least 30 days prior to the commencement of work. Notification must be given when the estimated expenditure for any single project exceeds $300,000 on the sum of main, paving and service replacement costs. In order to increase communication with the Commission, notification shall be sent for multiple projects grouped by a close proximity that are estimated to total $300,000 or more for main, paving and service replacements.

7. WORKFORCE MANAGEMENT AND TRAINING

Training and Operator Qualifications

Safety has always been a core value at UGI-GD. The UGI Distribution Companies conduct an Operator Qualification (OQ) Program to ensure that personnel performing critical tasks on all pipeline facilities have the necessary knowledge, skills and abilities. The OQ program includes more than 120 identified tasks, with many sub-parts within tasks, requiring extensive training, testing and qualification verification. Field technicians complete comprehensive safety courses including jobsite safety, driver safety, fire extinguisher use, pipefitting, hazardous materials recognition, abnormal operating condition recognition, emergency response, basic gas piping construction and maintenance, and leak detection.

UGI Distribution Companies utilizes an internal compliance department to perform regular quality and safety inspections of construction activities, and verification of qualifications of those individuals performing operator qualification covered tasks. Compliance inspectors perform unannounced job site inspections of both Company and contractor crews. Any deficiencies identified are escalated to Company or contractor management for investigation and correction.

UGI-GD currently utilizes construction inspectors, both internal and external, to inspect natural gas distribution facility projects constructed by contractor crews. Contractors working on the UGI-GD system must pass a rigorous review and meet all Department of Transportation regulatory requirements. Contractors must maintain current written documentation including operator qualification plans, safety plans, drug and alcohol abuse prevention plans.

Resource Requirements

It is anticipated that UGI Distribution Companies will hire incremental managers, supervisors, engineers, project managers, inspectors, and contractors in order to accelerate the replacement of the facilities per this plan. Currently, UGI Distribution Companies have hired external consulting resources to assist with engineering design workload as needed.

The UGI Distribution Companies have allied with universities and post-secondary technical schools and are partnering with the veteran's group Helmets to Hardhats to serve as resources in responding to the resource ramp-up required to support the LTIIPs.

The UGI Distribution Companies are also engaged in developing plans to recruit qualified individuals able to serve in Construction & Maintenance (C&M), Utility, Mechanic, and Technician positions.

Appendix A

Distribution Integrity Risk Evaluation

As part of the UGI Distribution Companies' Distribution Integrity Management Plan, on an ongoing basis several methods are employed to perform a relative risk ranking of assets for each Company. Commercially available pipeline risk evaluation software is utilized in conjunction with the data available from the UGI Distribution Companies' Geographic Information Systems to compute risks on individual main segments. The computed risks are utilized to prioritize the sequence of planned main replacements. Additionally, supplemental to the computerized risk model, on a quarterly basis, the UGI Distribution Companies gather individual Subject Matter Experts from each Company to update and validate the relative risk assessment of all distribution assets, discuss any new or emergent threats, and to communicate any recent distribution integrity issues.
The outlines below summarize distribution infrastructure data considerations and distribution integrity threats incorporated in the UGI DIMP plan.

Physical Infrastructure

Pipe material

A. Plastic
    1) Polyethylene (PE)
    2) Polyamide 11 (PA11)
    3) Poly Vinyl Chloride (PVC)
    4) Fiberglass
B. Steel
    1) Coated, protected
    2) Coated, non-protected
    3) Bare, protected
    4) Bare, non-protected
C. Copper

D. Cast iron
E. Wrought iron
F. Other

Pipe specifications

A. Diameter
B. Joint length, primarily for cast iron
C. Steel pipe specifics as appropriate
    1) Grade (not typically relevant for low hoop stress operating pressures)
    2) Wall thickness
D. Plastic pipe specifics
    1) Medium density/high density
    2) SDR
    3) Straight lengths (stick) or coil

Construction

A. Year installed
B. Joining Method (e.g., coupling, mechanical joint, bell and spigot, welded, threaded, fused, electro-fusion, adhesive)
C. Installation method (e.g., open trench, inserts, boring, directional drilling, pad by others, common trench, etc.)
D. Location (e.g., in street, behind curb, in private r/w)
E. Cover
    a. Depth (original, current, restored)
    b. Type (e.g. backfill, pavement, grass/dirt, gravel/slag, aboveground)
F. Company/contractor completing installation
G. Casings
H. Crossings (e.g. highway, bridge, underwater)
I. Expansion loops (thermal effects)
J. Pipe support systems

Corrosion control

A. Below ground coating type – mill and field applied_(e.g. coal tar, PE, fusion bonded epoxy, wax, cold or hot applied tapes, etc.)
B. Cathodic protection type (e.g., galvanic anode, impressed current;)
C. Electrical isolation (e.g., type, location)
D. Stray current areas (e.g., interference, bonds, reverse current switch)
E. Rock shield
F. Above ground coating type

Valves

A. Size
B. Type (e.g., ball, gate, plug)
C. Location
D. Usage (e.g., emergency, station shutoff, bypass, convenience)
E. Manufacturer

F. Material of construction (e.g., same as pipe?)
G. End connections
H. Pressure rating (e.g., ANSI or WOG class)

System pressure regulation
A. Regulator specification
B. Location
C. Design and typical inlet and outlet pressures
D. Regulator capacity
E. Operation (e.g., pilot, spring, weight)
F. Manufacturer
G. Means of overpressure protection (e.g., relief valve, monitor, slam shut, and combinations)
H. Relief valve capacity and build-up as required.

Other
A. Specialized components (e.g., EFVs, insulating joint or union, anodeless riser, expansion or other flexible joint)
B. Field Fabricated fittings (e.g., reducing coupling, service entry jacket, leak repair device)
C. "Priority facilities" under physical facilities security program

<u>Historical Operating Information & Attributes</u>

Results of inspections and surveys
A. Leak surveys
B. Corrosion inspections
C. Valve inspections
D. District regulator inspections
E. Patrols
F. Special field surveys or patrols (e.g., post-flooding patrols or winter/frost leak surveys
G. Liquids removal

Documentation of leaks and other maintenance performed
A. Leak grade ("C" hazardous; "B"; and "A")
B. Repair type
C. Exposed metallic pipe inspections
D. Corrosion control systems
E. Equipment or component replacements
F. Material or equipment failure reports
G. Number of leaks eliminated/repaired by cause of leak category (Part C of the Annual DOT Report)
H. Incident reports

Damage Prevention Locate / Excavation activity

A. Damage records (e.g., Operator, one-call center)
B. Responsible parties
C. The number of underground locate requests received
D. Proposed or completed significant construction activities

Geologic/environmental conditions

A. Surface type at grade over pipeline
B. Proximity to varying building types and density
C. Earthquake zone
D. Known washout areas
E. Flood zones
F. Minimum and maximum temperatures
G. Soil types
H. Land subsidence areas

Operating pressure

A. Maximum actual/allowable operating pressure
B. Minimum operating pressure experienced (e.g., peak day)
C. Normal operating pressure
D. Fluctuations (e.g., seasonal, random)
E. Uprating performed in the past.

General Industry Information

In addition to company specific information, UGI monitors the activities of PHMSA, the American Gas Association, Plastic Pipe Data Committee, Gas Piping Technology Committee and industry publications to ensure that information related to failures experienced by other operators is known to UGI. Such information is used to compare information about other operators to that of UGI and to offer an additional source of information about failure data and materials and operating problems throughout the gas industry.

Threat Identification

The following general threat categories are considered in the DIMP plan:

1) Corrosion – resulting from a hole in the pipe or other component that was caused by galvanic, bacterial, chemical, stray current, or other corrosive action.

2) Natural Forces – resulting from earth movements, earthquakes, landslides, subsidence, lightning, heavy rains/floods, washouts, flotation, mudslide, scouring, temperature, frost heave, frozen components, high winds, or similar natural causes.

3) Excavation Damage – resulting from damage caused by earth moving or other equipment, tools, or vehicles. Include leaks from damage by operator's personnel or contractor or people not associated with the operator.

4) Other Outside Force Damage – caused by fire or explosion and deliberate or willful acts, such as vandalism and due to vehicle damage.

5) Material, Weld or Joint Failure – resulting from failure of original sound material from force applied during construction that caused a dent, gouge, excessive stress, or other defect that eventually resulted in a leak. This includes those due to faulty wrinkle bends, faulty field welds, and damage sustained in transportation to the construction or fabrication site, resulting from a defect in the pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures.

6) Equipment Failure – resulting from malfunction of control/relief equipment including valves, regulators, or other instrumentation; stripped threads or broken pipe couplings on nipples, valves, or mechanical couplings; or seal failures on gaskets, O-rings, seal/pump packing, or similar leaks.

7) Incorrect Operation – resulting from inadequate procedures or safety practices, or failure to follow correct procedures, or other operator error.

8) Other – resulting from any other cause, such as exceeding the service life, not attributable to the above causes.

Consequence Factors

Weighting factors are established to represent consequences that may be anticipated in case of an integrity breach or failure involving the facility groups. Consequence factors are related to the location of the facility in relation to people and property as well as the amount of gas that could potentially be released. These are assigned in three general categories of (1) population / location, (2) operating pressure and (3) piping size.

Appendix B

See Appendices B and C in the Company's Annual Asset Optimization Plan.

APPENDIX B

UGI Utilities Inc. - Gas Division

Long Term Infrastructure Improvement Plan

2014-2019~~8~~

December 12, 2013
Modified on February 29, 2016
Extended on June 15, 2018

Introduction

UGI Utilities, Inc. – Gas Division ("UGI-GD" or the "Company") respectfully submits this Long-Term Infrastructure Improvement Plan ("LTIIP" or "Plan") for the approval of the Pennsylvania Public Utility Commission ("Commission") in accordance with the requirements of 66 Pa. C.S. § 1352(a) and the Commission's Final Implementation Order, entered August 2, 2012, at Docket M-2012-2293611 ("Final Implementation Order"). As approved by the Commission, the UGI-GD LTIIP shall serve to guide the Company's accelerated infrastructure repair, improvement and replacement activities for the ~~five year~~ period 2014 through 201~~98~~ for its natural gas transmission and distribution facilities used in providing natural gas service to its customers located within the UGI-GD service territory.

The UGI-GD LTIIP is being filed simultaneously with the LTIIPs of UGI Penn Natural Gas ("UGI-PNG") and UGI Central Penn Gas, Inc. ("UGI-CPG"). Hereinafter, UGI-GD, UGI-PNG and UGI-CPG shall be referred to collectively as the "UGI Distribution Companies." Each company's LTIIP incorporates the joint facility replacement and betterment program of the UGI Distribution Companies.

The UGI-GD LTIIP is structured to address the six specific factors set forth in the Commission's Final Implementation Order. Accordingly, this LTIIP includes the following sections:

(1) Identification of the types and age of eligible property owned or operated by the utility for which the utility would seek recovery;

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

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

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

(5) Projected annual expenditures to implement the plan and measures taken to ensure that the plan is cost effective; and

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

UGI-GD will address each section in more detail below. Additionally, the Company will provide certain information about maintaining a qualified work force, as identified by the Commission in the Final Implementation Order.

Corporate Background

UGI Utilities, Inc. ("UGI Utilities") is the wholly owned, utility subsidiary of UGI Corporation. It operates two regulated divisions encompassing a natural gas distribution operation, UGI-GD, and an electric distribution operation, UGI Utilities. – Electric Division ("UGI-ED"). It also wholly owns two natural gas distribution companies, UGI-PNG and UGI-CPG, which were separately acquired by UGI Utilities within the last

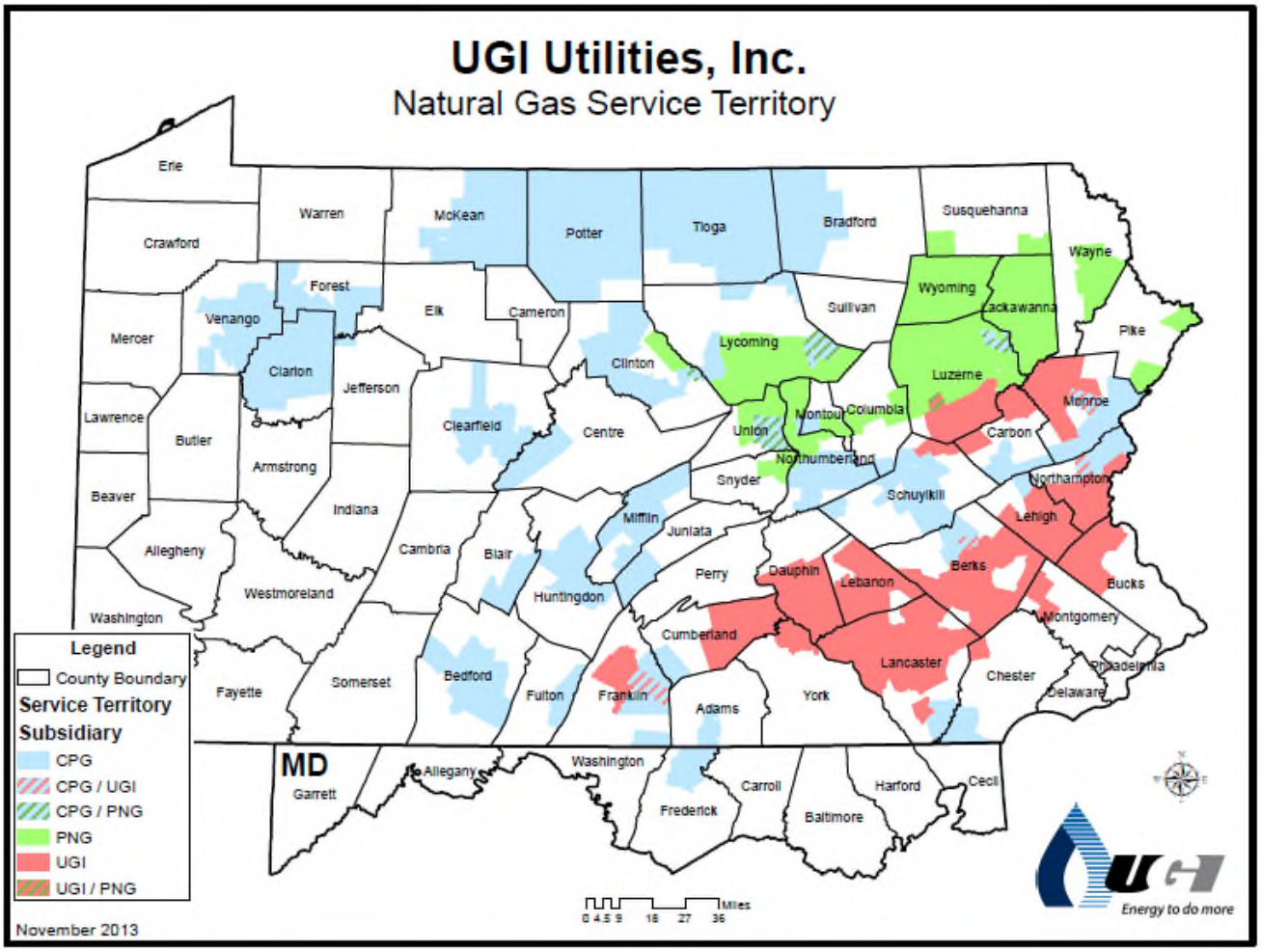
decade and operate under the shared executive management of UGI-GD. UGI-PNG began operations as a wholly owned subsidiary of UGI Utilities on September 1, 2006, through an acquisition of the assets from Southern Union Company.[1] UGI-CPG began operations as the wholly-owned subsidiary of UGI Utilities on October 1, 2008, via an acquisition of the stock of PPL Gas Utilities Corporation.[2]

The UGI Distribution Companies serve approximately 600,000 residential, commercial and industrial natural gas customers located in 45 of Pennsylvania's total 67 counties and spanning more than 700 municipalities. As shown in the map below, the service territories of the UGI Distribution Companies include the following cities: Allentown, Bethlehem, Easton, Harrisburg, Hazelton, Lancaster, Lebanon, Reading, Scranton, Wilkes-Barre, Lock Haven, Pittston, Pottsville, and Williamsport.

[1] In an Opinion and Order entered on August 18, 2006 at Docket Nos. A-120011F2000, A-125146F5000 and A-125146, the Commission, among other things, authorized UGI-PNG to: (1) become a wholly-owned subsidiary of UGI Utilities; (2) receive the gas distribution assets of the PG Energy Division of Southern Union Company; and (3) commence the provision of natural gas distribution service to the approximately 160,000 customers previously served by PG Energy in thirteen counties in northeastern Pennsylvania.

[2] In an Opinion and Order entered on August 21, 2008 at Docket Nos. A-2008-2034045, A-2008-2034047, A-2008-2034115 and A-2008-2034132, the Commission, among other things: (1) authorized UGI-CPG (formerly known as PPL Gas Utilities Corporation) to become a wholly owned subsidiary of UGI Utilities; and (2) affirmed CPG's right to render natural gas distribution service to customers residing in numerous municipalities located in 35 counties in Pennsylvania.

Figure 1. Map of UGI Distribution Companies' Service Territories



UGI-GD, UGI-PNG and UGI-CPG each is a "public utility" and a "natural gas distribution company," as such terms are defined under the Public Utility Code, 66 Pa.C.S. §§ 102 and 2202, subject to the Commission's regulatory jurisdiction. Each company renders natural gas distribution and purchase gas cost service to customers pursuant to their individual Commission-approved tariffs and certificate authorities. Together, the UGI Distribution Companies operate approximately 12,000 miles of natural gas mains in the Commonwealth of Pennsylvania.

More specifically, as of September 30, 2013, UGI-GD provides natural gas service to 356,075 customers located throughout its certificated service territory, which includes 16 counties in and around Eastern and Central Pennsylvania. The UGI-GD service territory includes five of Pennsylvania's 10 largest cities: Allentown, Bethlehem, Harrisburg, Lancaster and Reading, along with the suburban communities surrounding them. The UGI-GD service territory also includes rural communities as well. Its distribution system contains 5,423 miles of natural gas distribution mains and 117 miles of natural gas transmission mains.

UGI-PNG provides natural gas service to 162,523 customers as of September 30, 2013. These customers are located throughout a certificated service territory which includes 13 counties in and around Northeast Pennsylvania. The service territory of UGI-PNG is somewhat densely populated in and around the Cities of Wilkes-Barre, Scranton and Williamsport but otherwise consists of sparsely populated rural or suburban communities. Its system contains 2,575 miles of natural gas distribution mains and 66 miles of natural gas transmission mains.

UGI-CPG provides natural gas service to 78,175 Pennsylvania customers as of September 30, 2013. These customers are located throughout its certificated service territory, which includes 37 counties in Northeastern, Central and Northwestern Pennsylvania. UGI-CPG’s service area is sparsely populated and non-integrated, as it is composed of mostly rural or distant suburban communities. Its distribution system contains 3,713 miles of natural gas mains and 110 miles of natural gas transmission mains.

1. TYPES AND AGE OF ELIGIBLE PROPERTY

UGI-GD has identified the following types of property as DSIC-eligible distribution infrastructure that will be replaced as part of its plan:

- Gas distribution & transmission mains, valves, fittings, couplings, and appurtenances
- Gas service lines including tees, excess flow valves, curb valves, first stage regulators, tubing / piping, and risers
- Gas meter sets including regulators, meter bars, meter set piping, meters, and telemetry
- District regulator stations and city gate stations including telemetry
- Mandated facility relocations, as related to highway projects (unreimbursed costs)
- Related capitalized costs - equipment, tools, corrosion control equipment, vehicles, and supporting information technology

In the following section of its Plan, the Company will address each of these categories of property.

Distribution Mains

Distribution mains are DSIC-eligible property under Section 1351(2)(i) of the Public Utility Code. UGI-GD's distribution mains are comprised of several different types of material including cast iron, wrought iron, unprotected bare steel, unprotected coated

steel, protected bare steel, protected coated steel, and plastic. Cast iron and bare steel make up approximately 15% of UGI Distribution Companies pipelines. For UGI-GD, those materials comprise 13.6% of its system. The remaining approximately 85% of pipelines of the UGI Distribution Companies are comprised of contemporary materials which include plastic and coated steel. For UGI-GD, contemporary materials compose 86.4% of the system.

Cast iron distribution and bare steel distribution mains are considered legacy distribution assets and are widely recognized as warranting prioritized attention in terms of risk management and accelerated replacement.

As of December 31, 2012, UGI-GD had a total of 5,423 miles of distribution mains in its system.

Figure 2. Miles of Distribution Mains as of 12/31/2012[3]

Type of Material	Miles	Percent of Total
Unprotected bare steel	260.2	4.8
Unprotected coated steel	129.2	2.4
Protected bare steel	131.8	2.4
Protected coated steel	1613.0	29.7
Ductile iron	0	0.0
Copper	0.1	0.0

[3] Per UGI-GD 2012 Department of Transportation ("DOT") report.

Cast / wrought iron	347.5	6.4
Plastic	2938.3	54.2
Other	3.0	0.1
Total	5423.1	100.0

Beginning in 2014, UGI-GD's Plan reflects the accelerated replacement and removal of all cast iron and bare steel / wrought iron pipelines within 13 and 28 years, respectively, or by February 2017 and September 2041. Other mains will be replaced as may be necessary to maintain or improve system integrity and reliability, or as may be required to accommodate highway related projects.

UGI-GD distribution mains were installed over a significant period of time. While many of these older distribution mains are composed of contemporary materials, the majority of the older facilities are made of vintage materials. Accelerating the replacement of cast iron mains, bare steel mains, vintage plastic mains, and the appurtenances associated with them will significantly improve the overall age profile and performance of the UGI-GD distribution system.

Figure 3. Age Profile of UGI-GD Distribution Mains as of 12/31/12[4]

Decade of Installation	Mileage	Percent of Total
Unknown	1.8	0.0
Pre-1940	508.1	9.4

[4] Ibid

1940s	77.1	1.4
1950's	536.6	9.9
1960's	729.6	13.4
1970's	421.2	7.8
1980's	693.2	12.8
1990's	1074.7	19.8
2000's	1214.0	22.4
2010's	166.8	3.1
Total	5423.1	100.0

Gas Service Lines

Gas service lines are the piping and/or tubing that connect the Company's mains to the meter sets. Service lines are constructed using the same materials as mains and are subject to the same elements that affect the physical integrity of the mains. In order to ensure that distribution service is reliable and safe, these service lines must be periodically replaced on the basis of condition or planned obsolescence. Gas service lines are DSIC eligible property under Section 1351(2) (iii) of the Public Utility Code.

Figure 4. Service Lines by Material as of 12/31/2012[5]

Service Material	Number of Services	Percent of Total
Unprotected bare steel	14,311	4.1
Unprotected coated steel	9,196	2.7
Protected bare steel	799	0.2
Protected coated steel	39,621	11.4

[5] Ibid.

Ductile iron	0	0
Copper	10,871	3.2
Cast / wrought iron	2	0
Plastic	271,696	78.4
Other	23	0
Total Services	346,519	100.0

Gas services are typically replaced on a planned basis in conjunction with the replacement of the main to which they are connected. Coordinating replacements in this manner maximizes the efficient use of Company resources, and minimizes the inconvenience to customers. At the time of service line replacement, inside meters will be replaced with outside meters wherever practical to better facilitate company access.

Gas services may also be replaced in conjunction with meter move-outs. When meters are relocated from inside customer premises to outside, it is often convenient to simultaneously replace the affected service line. When coordinated in such a manner, future inconvenience to the customer is minimized by upgrading Company facilities in a single mobilization. Pursuant to the Commission's Final Order issued on May 23, 2014 in Docket No. L-2009-2107155, UGI-GD must address all relocations on its system by September 13, 2034. As a result, the number of service line replacements will increase in proportion to the number of meter move-outs.

Excess Flow Valves

Excess flow valves are safety devices installed on gas service lines which interrupt the flow of gas in the event of a fully severed line, typically in the case of damage caused by excavation. As service lines are replaced, excess flow valves are installed in accordance with Subpart H of CFR 49 Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards Section 192.381. Excess flow valves are DSIC-eligible property under Section 1351(2)(v) of the Public Utility Code.

Mercury Regulators

Mercury regulators are a type of pressure reduction device which incorporate liquid mercury as over-pressure protection. Mercury regulators were generally installed prior to the early 1960s when spring loaded relief valves became the industry standard. As part of the LTIIP, UGI plans to continue the replacement of mercury regulators. An estimated 7,000 mercury regulators remain in the UGI-GD system. Mercury regulators are DSIC-eligible property under Section 1351(2)(iii) of the Public Utility Code.

City Gate & District Regulator Stations

City Gate and District Regulator Stations are facilities which reduce system pressures as gas is distributed throughout the piping network. City Gate Stations are generally located at the point of custody transfer between the interstate pipelines and distribution systems, whereas District Regulator Stations are located within distribution systems. Regulator stations must be periodically updated or replaced as components such as piping and mechanical equipment age and wear. Additionally, over time mechanical components

such as regulators become obsolete and must be replaced with modern equipment to ensure availability of replacement parts and reliability. Regulating facilities may be replaced in whole or part depending upon the project objectives. Partial replacements could encompass equipment including but not limited to regulators, valves, heaters, metering, Supervisory Control And Data Acquisition ("SCADA"), and odorization. Some facilities will be eliminated through main replacement programs as low pressure systems are eliminated or where systems are otherwise consolidated. City Gate Stations and Distribution Regulator Stations are DSIC-eligible property under Section 1351(2)(i) and § 1351(2)(iv) of the Public Utility Code.

Figure 5. Number and Type of Regulator Stations

	City Gate Station	District Regulator Station	Total
UGI-GD	41	378	419

Vintage Plastic Pipe, Plastic Pipe Components, and Mechanical Fittings

Certain plastic pipe materials and fittings have been found to exhibit a higher than average potential for failure. UGI-GD has identified a type of tee, the fitting which joins the service line to the main, which may fail as the result of a compromised mechanical connection between the tee and main. A second type of plastic fitting, a service line curb valve with compression connections, has similarly exhibited a higher potential for failure. UGI-GD is engaged in ongoing surveillance and proactive repair and replacement of these fittings. When mechanical tees are replaced, a section of the host main is replaced,

and a new tee is connected by plastic fusion. Compression connection service line valves are addressed by replacing the affected service line. Finally, early vintage plastic pipes have been found to be subject to higher potential for brittle cracking type failures and are replaced on a risk prioritized basis. In total, approximately 2,900 compression connection valves and 19,800 mechanical tees will be reviewed and addressed as may be appropriate at UGI-GD. Finally, certain types of early vintage plastic pipes have been found to be subject to higher potential for brittle cracking type failures. UGI-GD will monitor vintage plastic pipe performance perform replacements on a risk prioritized basis as may be necessary to maintain reliability and integrity. The aforementioned plastic pipe and pipe components are DSIC-eligible property under Sections 1351(2)(i), 1351(2)(ii), 1351(2)(iii), 1351(2)(iv), and 1351(2)(v) of the Public Utility Code.

Transmission Mains & Infrastructure

UGI-GD maintains approximately 117 miles of natural gas transmission pipelines. Transmission pipelines are those mains which provide large volumes of gas at high pressures to provide service to entire cities and towns or large volume customers such as gas fired electric generation plants.

Maintaining the integrity of transmission infrastructure is necessary for both reliability and safety. In terms of reliability, transmission lines often provide service to many thousands of customers. Service interruptions can have wide spread regional consequences for many stakeholders. For these reasons, maintaining transmission

infrastructure to a high degree of integrity is paramount. Transmission mains are DSIC – eligible property under Sections 1351(2)(i) and 1351(2)(iv) of the Public Utility Code.

Figure 6. UGI-GD Transmission Mains by Material as of 12/31/12[6]

Type of Material	Miles	Percent of Total
Protected bare steel	0.5	0.4
Protected coated steel	115.9	99.4
Unprotected bare steel	0.1	0.1
Unprotected coated steel	0.1	0.1
Cast iron	0	0
Wrought Iron	0	0
Plastic	0	0
Composite	0	0
Other	0	0
Total	116.6	100.0

Figure 7. UGI-GD Transmission Mains by Age as of 12/31/12[7]

Decade of Installation	Mileage	Percent of Total
Unknown	0	0
Pre-1940	0	0
1940s	1.9	1.6
1950's	20.2	17.3

[6] Per UGI-GD 2012 Department of Transportation ("DOT") Transmission report.
[7] Ibid

1960's	30	25.7
1970's	14.4	12.4
1980's	25.2	21.6
1990's	12.2	10.5
2000's	12.7	10.9
2010's	0	0
Total	116.6	100.0

Approximately 19% of the UGI-GD transmission system is pre-1960s vintage, or more than 50 years old. Ongoing investments in transmission infrastructure are necessary to maintain these assets to ever increasing contemporary standards. Specifically, investment in the retrofit of transmission pipelines to facilitate internal inspection, pressure testing, and other integrity assessment techniques may be required to meet transmission integrity management regulations. Furthermore, replacement of transmission assets, in response to assessment findings, may be required to maintain system integrity.

System Reliability Improvements

System Reliability Improvements are those investments required to maintain ongoing system reliability. Typical projects include investments in distribution or transmission infrastructure needed to reinforce system pressures to ensure firm peak-day deliverability. Investment in transmission and distribution mains is DSIC-eligible under Section 1351(2)(i) of the Public Utility Code.

UGI-GD utilizes system network models to predict system performance under peak operating conditions. Model results are validated against actual system operating

conditions using data from remote SCADA monitoring, system regulator station charts, and winter survey gauges. Specific reliability projects have been identified to improve system pressures as needed to maintain system reliability design criteria to firm customers. Additional projects may be identified in the future subject to system performance and reliability.

Meters

UGI-GD replaces meters as may be necessary to maintain compliance with gas measurement accuracy standards as stipulated in 52 PA Code Section 59.21. UGI-GD maintains a statistical sampling program to evaluate meter accuracy. Should a grouping of meters fail to meet accuracy requirements, the meters are repaired or replaced. Replacement meters are DSIC eligible property under Section 1351(2)(viii) of the Public Utility Code.

Mandated Facility Relocations

UGI-GD is periodically required to relocate gas facilities to accommodate highway improvement projects. The unreimbursed portion of these costs is DSIC eligible property under Section 1351(2)(ix) of the Public Utility Code. When contemporary facilities are impacted, UGI-GD seeks to coordinate such projects to minimize the extent of facility relocation. When non-contemporary facilities, such as cast iron, bare steel, or vintage plastic are involved, the relocation projects provide an opportunity for infrastructure replacement.

Related Capitalized Costs

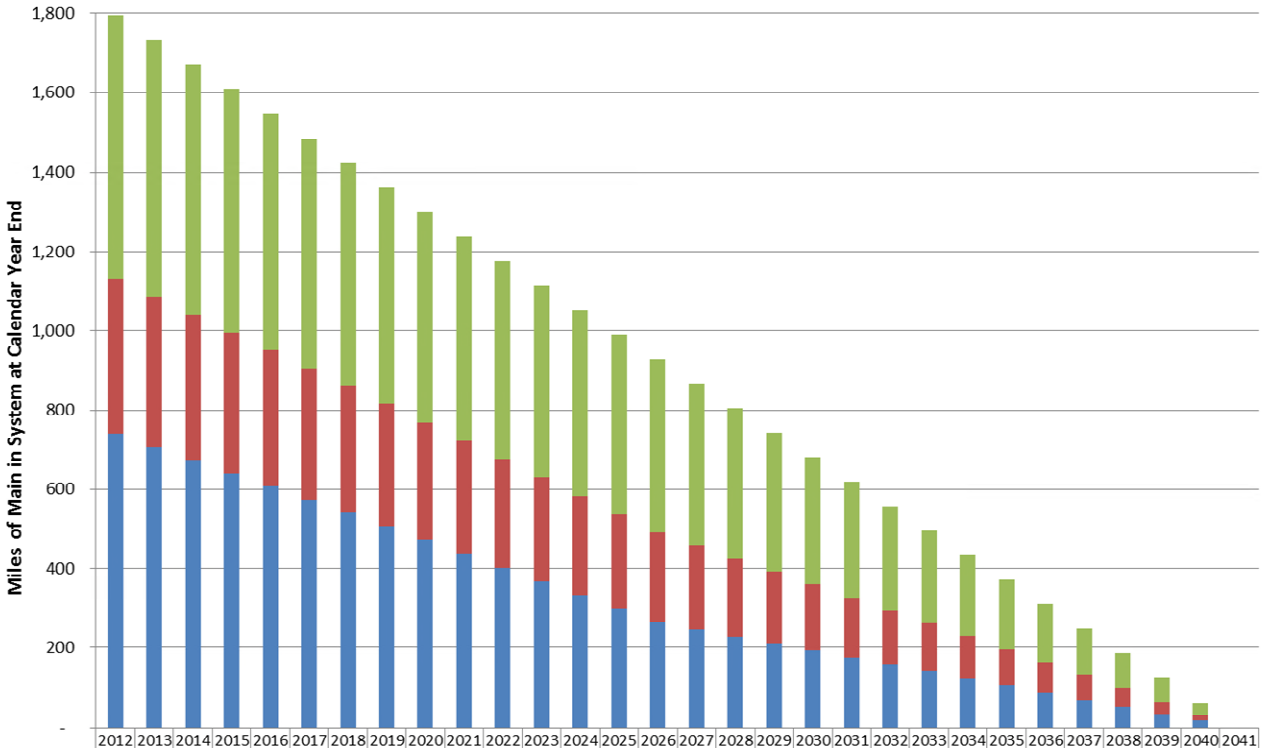
The replacement of DSIC eligible property described above may result in additional related costs incurred that are essential and necessary in order to efficiently manage specific accelerated capital improvement projects. Examples include but are not limited to tools, equipment, fleet, corrosion control, and information technology investments. These related costs are DSIC eligible property under Section 1351(2)(x) of the Public Utility Code.

2. SCHEDULE FOR PLANNED REPLACEMENT OF ELIGIBLE PROPERTY

The UGI-GD LTIIP reflects acceleration in the rate of infrastructure repair, improvement and replacement over historical levels. In particular, the accelerated replacement in this plan conforms with the Settlement Agreement approved by the Pennsylvania Public Utility Commission at Docket No. C-2012-2308997 ("Settlement Agreement"). Under the Settlement Agreement, the UGI Distribution Companies will replace all cast iron and bare steel pipelines located within their combined systems. As of the date of the Plan filing, cast iron replacement will be completed in 13 years ending in February 2027, and bare steel / wrought iron replacement will be completed in 28 years ending in September 2041. This replacement rate, on a combined basis, represents a significant acceleration over historical replacement rates.

As depicted in the Figure 8[8] below, it is anticipated that UGI-GD will replace approximately 33 miles of combined cast iron and bare steel mains in 2014. The specific allocation of mileage between cast iron and bare steel main replacement will vary annually depending on annual risk evaluations and project specific considerations. Additionally, the amount of the annual UGI Distribution Companies' 62 mile main replacement plan allocated to UGI-GD will vary as risks are annually re-evaluated and re-prioritized across all UGI Distribution Companies.

Figure 8 - Approximate Main Replacement Schedule
Cast Iron / Bare Steel / Wrought Iron Combined



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
CPG	664	647	630	613	596	579	562	546	531	515	500	485	469	454	438	409	380	350	321	292	263	234	204	175	146	117	88	58	29	-
PNG	390	379	367	355	344	332	321	309	297	286	274	262	251	239	227	212	197	182	167	152	136	121	106	91	76	61	45	30	15	-
UGI-GD	740	707	674	640	607	574	541	506	471	437	402	367	332	297	263	245	228	210	193	175	158	140	123	105	88	70	53	35	18	-

[8] The replacement schedule presented in Figure 8 is a forecast based on known mileage of cast iron, bare steel, and wrought iron as of 12/31/12. Subsequent revisions of main classifications, as determined through field verification or records review, will modify this projection.

Under the accelerated main replacement program UGI-GD will focus on replacing existing cast iron and bare steel /wrought iron mains and related facilities. While certain bare steel facilities will be replaced in early years, the initial schedule emphasizes cast iron replacement until the final cast iron retirements are completed by March 1, 2027. Subsequently, replacement efforts shift to an emphasis on bare steel.

Main replacement risk evaluation is based on numerous factors, including the pipe condition, age, coating, type of ground cover, geographical proximity to structures, and prior leak and/or break history. Appendix A provides a detailed listing of factors considered in the risk based evaluation. Additionally, specific projects may be escalated to enable coordination of replacement efforts with municipal roadway resurfacing projects.

The UGI Distribution Companies perform an annual review to identify the highest risk pipe segments and prioritize those replacements each year. UGI Distribution Companies utilize commercial risk evaluation software in concert with a team of Subject Matter Experts to evaluate, prioritize, and bundle replacement projects. This hybrid approach targets the highest risk mains first while also balancing the need to maximize the efficient deployment of capital and resources.

This approach is consistent with the UGI Distribution Companies' Transmission Integrity Management Program ("TIMP") and Distribution Integrity Management Program

("DIMP") in accordance with Subpart P of 49 CFR Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. The purpose of the UGI Distribution Companies' TIMP & DIMP is to enhance public safety by identifying risks, assessing and prioritizing the risks, and implementing additional and accelerated actions or preventative and mitigative measures to reduce risks. As the UGI Distribution Companies continue to implement the TIMP & DIMP, other pipeline assets may be identified for repair, improvement or replacement as their conditions are evaluated and relative risks are reviewed and prioritized.

A list of planned DSIC eligible main replacement projects is included with the Company's Annual Asset Optimization Plan ("AAOP"). This listing is developed and reviewed one or more times each year based on a reassessment of the most current data available. Therefore, this is a dynamic list of projects that is subject to modification. In addition to the identified projects, UGI-GD must address mandatory replacements, non-repairable leakage, and emerging main issues that develop in the field and require immediate attention. Replacement of such segments of pipe is not reflected in the AAOP and will impact the ultimate timing of the completion of identified projects.

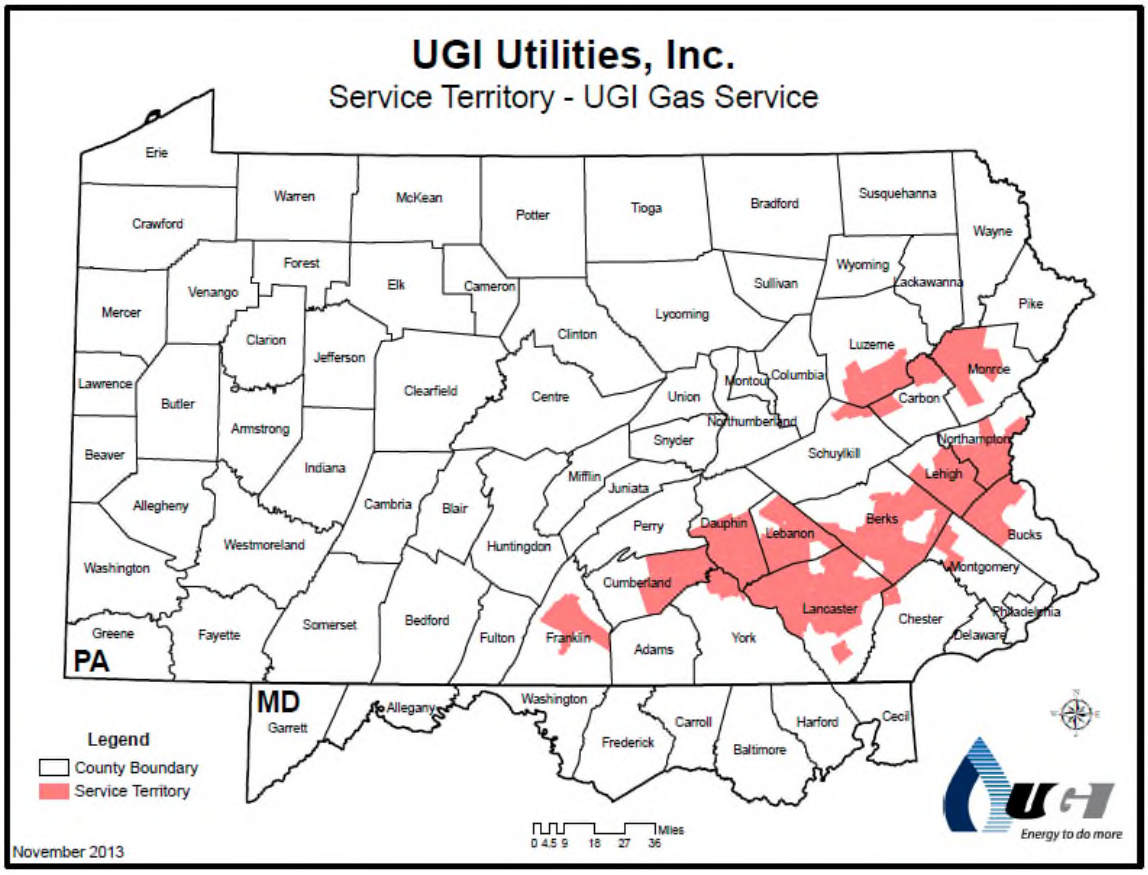
Certain circumstances, such as municipal government and Pennsylvania Department of Transportation construction projects, or changes in state or federal pipeline safety code also could impact UGI-GD's schedule and scale. Long term infrastructure improvement projects performed by the UGI-GD, and human and material assets associated with those projects, will be adjusted or changed as required to align with changing circumstances.

Projects will be regularly reviewed and updated to ensure all projects are cost effective and provide the expected system integrity and reliability benefits.

3. LOCATION OF ELIGIBLE PROPERTY

UGI-GD will conduct projects distributed throughout its service territory. As described earlier, UGI-GD's service territory contains approximately 5,423 miles of natural gas distribution mains and 117 miles of natural gas transmission mains throughout 16 counties in and around Eastern and Central Pennsylvania. The UGI-GD map below identifies the UGI-GD service territory. Eligible property is located in all parts of UGI-GD's service territory as depicted in Figure 9 below.

Figure 9. (UGI-GD Service Territory Map)



4. REASONABLE ESTIMATE OF THE QUANTITY OF PROPERTY TO BE IMPROVED

As described in the prior sections, the Company has identified numerous property types including cast iron and bare steel pipeline for replacement. The Company estimates that in 2014 approximately 62 miles of cast iron and bare steel mains will be replaced across all UGI Distribution Companies. For UGI-GD, the 2014 replacement plan includes replacement of approximately 33 miles of cast iron and bare steel mains. In each annual asset optimization plan filed by UGI-GD, the Company will provide updated yearly replacement plans, based on its latest risk assessment process.

The following table provides estimates of the approximate schedule and units of property to be replaced at UGI-GD under the LTIIP plan. UGI-GD anticipates replacing or repairing the following approximate amounts of DSIC eligible infrastructure.

Figure 10. Replacement Quantities and Rates

Asset Type	**Strategy**	**LTIIP Schedule / Replacement Rate**
Distribution Mains – Cast Iron	Replace cast iron mains on a risk prioritized basis consistent with DIMP criteria	All mains replaced in 13 years, ending February 2027
Distribution Mains – Bare Steel	Replace bare steel mains on a risk prioritized basis consistent with DIMP criteria	All mains replaced in 28 years, ending September 2041
Coated Steel Mains	Replace coated steel main as required per mandatory replacements, non-repairable leakage, and	Replace as necessary to maintain system integrity

	emerging main issues	
Transmission Mains	Retrofit transmission lines as required to perform assessments, replace / remediate as may be required per assessment findings	To be determined based upon requirement for assessments and assessment results
Services	Replace services in concert with main replacements	Replacement rate will be proportional to accelerated main replacement rates
Regulator & City Gate Stations	Replace stations and components on obsolescence / condition basis	Variable rate per year based on facility condition assessment & prioritization
Vintage Plastic	Replace mechanical tees, mechanical coupled valves, on an assessed condition basis, including replacement of header main as may be required	Replace as needed to maintain system integrity or at rate as determined by relative risk prioritization
Mandated Facility Relocations	Relocate infrastructure as required by highway agencies. Replace vintage infrastructure in path of highway improvements opportunistically to minimize future paving costs	As required by highway agencies
Related Capital Costs	Invest in tools, equipment, fleet, corrosion control, and information technology as required to enable LTIIP	As required

5. PROJECTED ANNUAL EXPENDITURES AND MEASURES TO ENSURE THAT THE LTIIP IS COST-EFFECTIVE

Projected Annual Budget for Upgrades

The table below provides a projection of total annual expenditures for the LTIIP period, 2014 through 2019~~98~~, for both UGI-GD specifically as well as the UGI Companies in total.

Figure 11. Projected LTIIP Annual Expenditures 2014-20198[9]

Fiscal Year	Capital Investment UGI-Gas ($MM)	Capital Investment All UGI Companies ($MM)
2014 Actual	$52.19.0	$93.579.8
2015 Actual	$62.51.6	$108.24.1
2016 ActualProjected	$92.972.0	$155.930.3
2017 ActualProjected	$90.55.7	$135.752.1
2018 Projected	$66.0105.2	$111.269.5
2019 Projected	$113	$185.0

Cost-Effectiveness

UGI-GD will be employing numerous oversight and control processes in order to ensure resources expended on its LTIIP projects are being prudently spent. The following methods are planned to increase cost effectiveness:

- Competitive bidding of multi-year pipeline construction and restoration contracts
- Utilization of unit based pricing to limit change order impacts
- Aggregation of UGI Distribution Companies' projects for bid purposes to gain economy of scale benefits
- Provision of minimum guaranteed volume contracts to benefit from economies of scale
- Issuance of special bids for large or unconventional projects

[9] LTIIP year totals for 2014 and 2015 are being adjusted to correct for classification issues discovered and discussed with Commission Technical Staff during the audit process in 2017. For UGI-CPG and UGI-PNG, these actuals have already been reflected in filings made on December 22, 2017, with rates associated with those filings effective on January 1, 2018.

- Recruitment of additional qualified contractors to increase the competitive nature of the process.
- Evaluation and implementation of new or improved technologies to decrease costs, such as:
    - Directional drilling, insertion, and other minimally disruptive trenchless technology versus traditional direct burial
    - Key hole / core bore service replacement
- Perform periodic HR staffing allocation reviews to assure optimal resource utilization and deployment.

In addition to the above, UGI-GD will monitor safety and reliability indicators for the natural gas distribution system over time in particular with a focus to evaluate corrosion and leak resolution performance, track emergency response, pursue damage prevention, and reinforce employee safety and safety improvement.

In order to increase construction efficiency in a way that maximizes the effectiveness of replacement capital, efforts shall be made at the start of each fiscal year to group planned replacement projects with others in a geographic region. Such an approach reduces costs associated with mobilization, materials delivery and stockpiling, and also improves inspection efficiency and safety performance.

Geographic planning of projects as described above will also reduce the impact to the community in which the projects occur by ensuring that replacement activities are

completed with fewer mobilizations into and out of a community. As the construction crew completes main and service replacements, construction should move logically from one portion of an area to another, so that disruptions such as road closures, parking restrictions, construction noise and interruption of service are restricted to only the time required to complete the main and service replacement in the immediate area.

Overall, the UGI Distribution Companies will focus on continuously enhancing planning, response and facility restoration efforts. Changing circumstances impacting the accelerated facility restoration efforts will cause a need for constant review and update of the responses and techniques used. In addition, communication approaches, information management systems and operations protocols used in facility improvement will need to be adjusted and continuously improved as well. The UGI Distribution Companies are refining the planning and resource alignment processes used in accelerated facilities improvement initiatives. The UGI Distribution Companies are constantly reviewing and evaluating facility information to continually enhance and refine the accuracy of infrastructure data.

Finally, UGI Distribution Companies will continue an evaluation of industry best practices, collaboration with industry partners, and interaction with regulatory agencies. Opportunities to enhance and expand the effectiveness of processes and procedures will be evaluated and considered to ensure continuous improvement of infrastructure that is cost-effective.

6. MANNER IN WHICH REPLACEMENT OF AGING INFRASTRUCTURE WILL BE ACCELERATED AND HOW REPAIR, IMPROVEMENT, OR REPLACEMENT WILL MAINTAIN SAFE AND RELIABLE SERVICE.

Acceleration

The UGI-GD LTIIP reflects acceleration that has previously been agreed to by the UGI Distribution Companies and the Public Utility Commission. In an Order entered on February 19, 2013, the Pennsylvania Public Utility Commission approved a Joint Settlement Petition which, among other conditions, requires the UGI Distribution Companies to replace all cast iron mains over a 14 year period ending in February 2027 and all bare steel / wrought iron mains over a 30 year period ending in September 2041.[10] The impact this commitment has on the overall infrastructure replacement rate and capital expenditures for the UGI Distribution Companies has been dramatic.

Accelerated Capital Investment by UGI-GD

In accordance with the accelerated replacement plan described above, the UGI Distribution Companies have already begun to ramp-up needed resources and capital spending levels. This acceleration started in 2012, and while prioritization of activities initially were largest at UGI-GD, the acceleration impacts – both current and planned – are evident across all of the UGI Distribution Companies, including UGI-GD.

[10] Pennsylvania Public Utility Commission Opinion and Order Entered February 19, 2013, Docket C-2012-2308997

For purposes of demonstrating the acceleration commitment made by the UGI Distribution Companies in this LTIIP for 2014 through 2019~~98~~, a comparison to a three-year baseline average comprised of capital expenditures for 2009 through 2011 is shown below for both UGI-GD specifically, as well as the UGI Distribution Companies, in total.

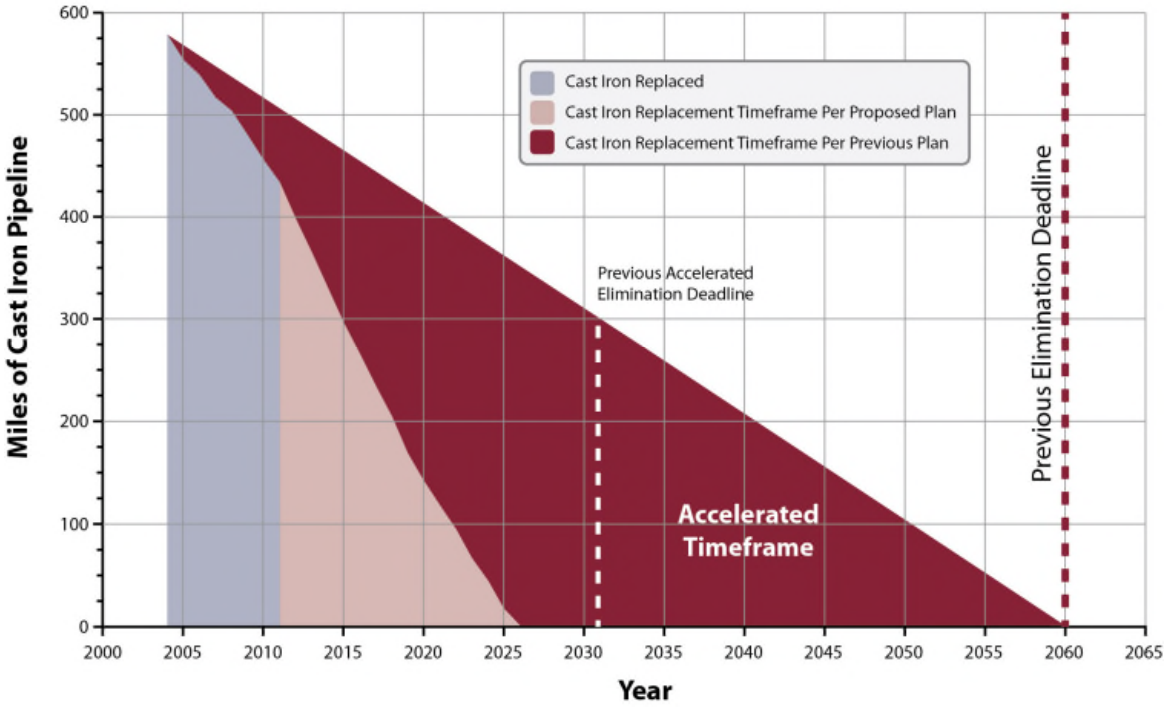
Fiscal Year	Capital Investment UGI-Gas ($MM)	Capital Investment All UGI Distribution Companies ($MM)
2009-2011 Baseline (Avg/yr)	$26.1	$50.6
2012 Actual	$35.7	$61.1
2013 Actual	$54.3	$93.9
2014 Actual	$59.02.1	$93.579.8
2015 Actual	$62.51.6	$108.24.1
2016 ~~Projected~~Actual	$92.972.0	$155.930.3
2017 ~~Projected~~Actual	$90.55.7	$135.752.1
2018 Projected	$66.0105.2	$111.269.5
2019 Projected	$ 113.0	$185.0

As demonstrated above the acceleration in UGI-GD DSIC eligible spend between 2018 projected spend and the 2009-2011 baseline period increases by ~~153~~303%. This acceleration is 333% comparing 2019 projections to the baseline period. Total DSIC eligible spend for all UGI Distribution Companies increases by 236~~120~~% through 2018, and 266% through 2019. This investment acceleration relates to a ~~17~~21% increase in the amount of bare steel and cast iron main replaced (average 53.2 miles per year replaced in 2009-2011 baseline period vs. 6~~4~~2 miles per year during LTIIP) for the period through 2018 and 21% for the period through 2019.

The overall plan to address cast iron distribution mains is to replace all such facilities by the end of February, 2027. The graph in Figure 12 below provides a visual representation

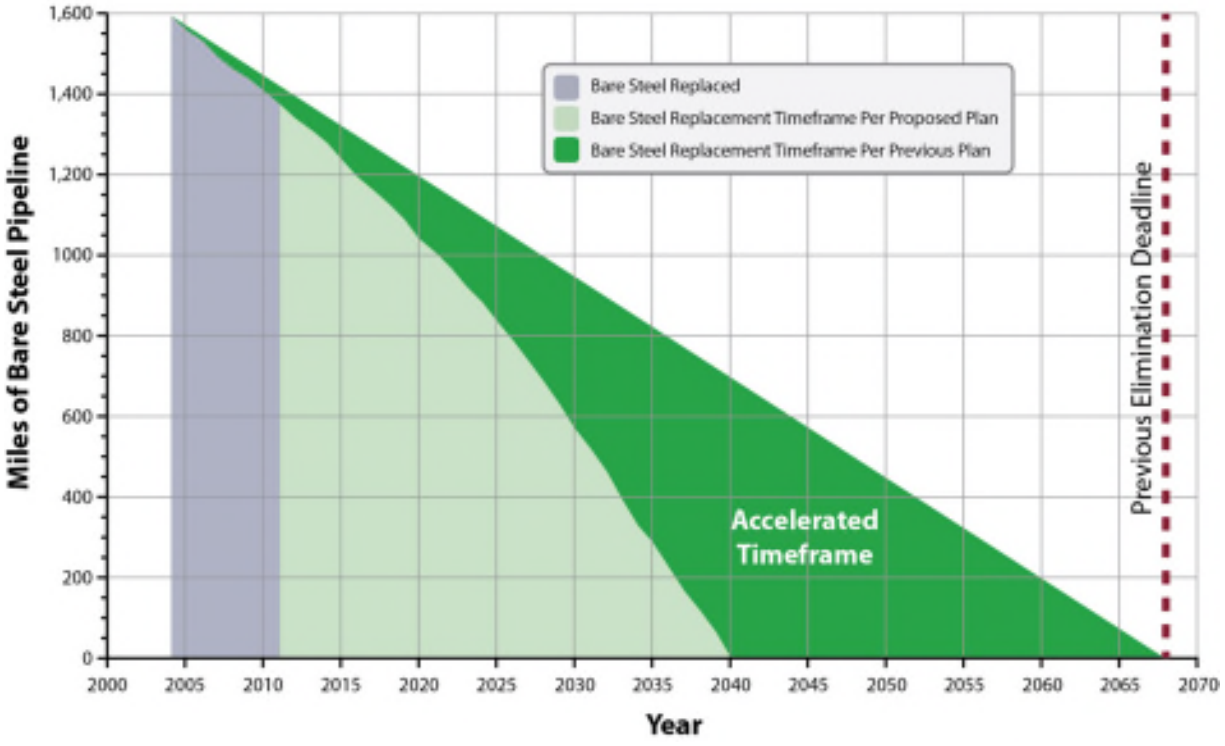
of this plan versus the previous replacement timeframe which is based on the historical replacement trend. Per the accelerated replacement rate, all cast iron mains will be eliminated from the UGI Distribution Companies 33 years ahead of the prior timetable.

Figure 12. Accelerated Cast Iron Replacement



The overall plan to address bare steel and wrought iron mains is to replace all such facilities by October 2041. The graph in Figure 13 below provides a visual representation of this plan versus the previous replacement timeframe which is based on the historical replacement trend. Per the accelerated replacement rate, all bare steel / wrought iron mains will be eliminated from the UGI Distribution Companies 27 years ahead of the prior timetable.

Figure 13. Accelerated Bare Steel / Wrought Iron Replacement



While the overall replacement deadlines will remain fixed, for any given intermediate period the sequence of projects and amount of specific facilities to be addressed may be adjusted in response to changing conditions. A variety of factors, due to the nature of the natural gas distribution business, may cause these changes to occur. These factors include but are not limited to state and municipal relocation projects, other private construction

projects, system upgrades due to pressure requirements, regulatory changes, and legislative changes.

Safe and Reliable Service

UGI-GD expects that the investment enumerated in this LTIIP will provide customers with significant improvements in safety and reliability. Proposed LTIIP replacement investments have been identified and prioritized on a risk basis in accordance with UGI Distribution Companies' DIMP and TIMP plans. Risk based prioritization ensures that those projects which deliver the most significant reductions are addressed first. As the investment plan progresses, customer benefits will be manifested over time in terms of reduced leakage rates, fewer main breaks, and fewer unplanned customer interruptions. Additionally, it is expected that the amount of lost and unaccounted for gas due to system leakage and measurement inaccuracy will be reduced as leaks are eliminated and meters are replaced. Finally, peak day reliability will improve as pressure improvement projects will elevate system low points under peak day design conditions.

Project Coordination & Municipal Outreach

UGI-GD, as part of the UGI Distribution Companies, has a long-standing and active outreach program with local municipalities in its service territories aimed at coordinating construction projects. The municipal outreach program allows for clear communication of information about the natural gas distribution system safety, design and operations, as well as information regarding upcoming facility improvement projects. Coordination

with municipal governments minimizes disruptions to residents in the area of proposed construction, enables efficient replacement of facilities, and promotes awareness of construction projects being performed around UGI Distribution Companies infrastructure.

Section 59.38, from Chapter 59 - Gas Service, requires each public utility to notify the Commission of all major construction, reconstruction or maintenance of plant at least 30 days prior to the commencement of work. Notification must be given when the estimated expenditure for any single project exceeds $300,000 on the sum of main, paving and service replacement costs. In order to increase communication with the Commission, notification shall be sent for multiple projects grouped by a close proximity that are estimated to total $300,000 or more for main, paving and service replacements.

7. WORKFORCE MANAGEMENT AND TRAINING

Training and Operator Qualifications

Safety has always been a core value at UGI-GD. The UGI Distribution Companies conduct an Operator Qualification (OQ) Program to ensure that personnel performing critical tasks on all pipeline facilities have the necessary knowledge, skills and abilities. The OQ program includes more than 120 identified tasks, with many sub-parts within tasks, requiring extensive training, testing and qualification verification. Field technicians complete comprehensive safety courses including jobsite safety, driver safety, fire extinguisher use, pipefitting, hazardous materials recognition, abnormal operating condition recognition, emergency response, basic gas piping construction and maintenance, and leak detection.

UGI Distribution Companies utilizes an internal compliance department to perform regular quality and safety inspections of construction activities, and verification of qualifications of those individuals performing operator qualification covered tasks. Compliance inspectors perform unannounced job site inspections of both Company and contractor crews. Any deficiencies identified are escalated to Company or contractor management for investigation and correction.

UGI-GD currently utilizes construction inspectors, both internal and external, to inspect natural gas distribution facility projects constructed by contractor crews. Contractors working on the UGI-GD system must pass a rigorous review and meet all Department of Transportation regulatory requirements. Contractors must maintain current written documentation including operator qualification plans, safety plans, drug and alcohol abuse prevention plans.

Resource Requirements

It is anticipated that UGI Distribution Companies will hire incremental managers, supervisors, engineers, project managers, inspectors, and contractors in order to accelerate the replacement of the facilities per this plan. Currently, UGI Distribution Companies have hired external consulting resources to assist with engineering design workload as needed.

The UGI Distribution Companies have allied with universities and post-secondary technical schools and are partnering with the veteran's group Helmets to Hardhats to serve as resources in responding to the resource ramp-up required to support the LTIIPs.

The UGI Distribution Companies are also engaged in developing plans to recruit qualified individuals able to serve in Construction & Maintenance (C&M), Utility, Mechanic, and Technician positions.

Appendix A

Distribution Integrity Risk Evaluation

As part of the UGI Distribution Companies' Distribution Integrity Management Plan, on an ongoing basis several methods are employed to perform a relative risk ranking of assets for each Company. Commercially available pipeline risk evaluation software is utilized in conjunction with the data available from the UGI Distribution Companies' Geographic Information Systems to compute risks on individual main segments. The computed risks are utilized to prioritize the sequence of planned main replacements. Additionally, supplemental to the computerized risk model, on a quarterly basis, the UGI Distribution Companies gather individual Subject Matter Experts from each Company to update and validate the relative risk assessment of all distribution assets, discuss any new or emergent threats, and to communicate any recent distribution integrity issues.
The outlines below summarize distribution infrastructure data considerations and distribution integrity threats incorporated in the UGI DIMP plan.

Physical Infrastructure

Pipe material

A. Plastic
    1) Polyethylene (PE)
    2) Polyamide 11 (PA11)
    3) Poly Vinyl Chloride (PVC)
    4) Fiberglass
B. Steel
    1) Coated, protected
    2) Coated, non-protected
    3) Bare, protected
    4) Bare, non-protected
C. Copper

D. Cast iron
E. Wrought iron
F. Other

Pipe specifications

A. Diameter
B. Joint length, primarily for cast iron
C. Steel pipe specifics as appropriate
    1) Grade (not typically relevant for low hoop stress operating pressures)
    2) Wall thickness
D. Plastic pipe specifics
    1) Medium density/high density
    2) SDR
    3) Straight lengths (stick) or coil

Construction

A. Year installed
B. Joining Method (e.g., coupling, mechanical joint, bell and spigot, welded, threaded, fused, electro-fusion, adhesive)
C. Installation method (e.g., open trench, inserts, boring, directional drilling, pad by others, common trench, etc.)
D. Location (e.g., in street, behind curb, in private r/w)
E. Cover
    a. Depth (original, current, restored)
    b. Type (e.g. backfill, pavement, grass/dirt, gravel/slag, aboveground)
F. Company/contractor completing installation
G. Casings
H. Crossings (e.g. highway, bridge, underwater)
I. Expansion loops (thermal effects)
J. Pipe support systems

Corrosion control

A. Below ground coating type – mill and field applied_(e.g. coal tar, PE, fusion bonded epoxy, wax, cold or hot applied tapes, etc.)
B. Cathodic protection type (e.g., galvanic anode, impressed current;)
C. Electrical isolation (e.g., type, location)
D. Stray current areas (e.g., interference, bonds, reverse current switch)
E. Rock shield
F. Above ground coating type

Valves

A. Size
B. Type (e.g., ball, gate, plug)
C. Location
D. Usage (e.g., emergency, station shutoff, bypass, convenience)
E. Manufacturer

F. Material of construction (e.g., same as pipe?)
G. End connections
H. Pressure rating (e.g., ANSI or WOG class)

System pressure regulation
A. Regulator specification
B. Location
C. Design and typical inlet and outlet pressures
D. Regulator capacity
E. Operation (e.g., pilot, spring, weight)
F. Manufacturer
G. Means of overpressure protection (e.g., relief valve, monitor, slam shut, and combinations)
H. Relief valve capacity and build-up as required.

Other
A. Specialized components (e.g., EFVs, insulating joint or union, anodeless riser, expansion or other flexible joint)
B. Field Fabricated fittings (e.g., reducing coupling, service entry jacket, leak repair device)
C. "Priority facilities" under physical facilities security program

<u>Historical Operating Information & Attributes</u>

Results of inspections and surveys
A. Leak surveys
B. Corrosion inspections
C. Valve inspections
D. District regulator inspections
E. Patrols
F. Special field surveys or patrols (e.g., post-flooding patrols or winter/frost leak surveys
G. Liquids removal

Documentation of leaks and other maintenance performed
A. Leak grade ("C" hazardous; "B"; and "A")
B. Repair type
C. Exposed metallic pipe inspections
D. Corrosion control systems
E. Equipment or component replacements
F. Material or equipment failure reports
G. Number of leaks eliminated/repaired by cause of leak category (Part C of the Annual DOT Report)
H. Incident reports

Damage Prevention Locate / Excavation activity

A. Damage records (e.g., Operator, one-call center)
B. Responsible parties
C. The number of underground locate requests received
D. Proposed or completed significant construction activities

Geologic/environmental conditions

A. Surface type at grade over pipeline
B. Proximity to varying building types and density
C. Earthquake zone
D. Known washout areas
E. Flood zones
F. Minimum and maximum temperatures
G. Soil types
H. Land subsidence areas

Operating pressure

A. Maximum actual/allowable operating pressure
B. Minimum operating pressure experienced (e.g., peak day)
C. Normal operating pressure
D. Fluctuations (e.g., seasonal, random)
E. Uprating performed in the past.

General Industry Information

In addition to company specific information, UGI monitors the activities of PHMSA, the American Gas Association, Plastic Pipe Data Committee, Gas Piping Technology Committee and industry publications to ensure that information related to failures experienced by other operators is known to UGI. Such information is used to compare information about other operators to that of UGI and to offer an additional source of information about failure data and materials and operating problems throughout the gas industry.

Threat Identification

The following general threat categories are considered in the DIMP plan:

1) Corrosion – resulting from a hole in the pipe or other component that was caused by galvanic, bacterial, chemical, stray current, or other corrosive action.

2) Natural Forces – resulting from earth movements, earthquakes, landslides, subsidence, lightning, heavy rains/floods, washouts, flotation, mudslide, scouring, temperature, frost heave, frozen components, high winds, or similar natural causes.

3) Excavation Damage – resulting from damage caused by earth moving or other equipment, tools, or vehicles. Include leaks from damage by operator's personnel or contractor or people not associated with the operator.

4) Other Outside Force Damage – caused by fire or explosion and deliberate or willful acts, such as vandalism and due to vehicle damage.

5) Material, Weld or Joint Failure – resulting from failure of original sound material from force applied during construction that caused a dent, gouge, excessive stress, or other defect that eventually resulted in a leak. This includes those due to faulty wrinkle bends, faulty field welds, and damage sustained in transportation to the construction or fabrication site, resulting from a defect in the pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures.

6) Equipment Failure – resulting from malfunction of control/relief equipment including valves, regulators, or other instrumentation; stripped threads or broken pipe couplings on nipples, valves, or mechanical couplings; or seal failures on gaskets, O-rings, seal/pump packing, or similar leaks.

7) Incorrect Operation – resulting from inadequate procedures or safety practices, or failure to follow correct procedures, or other operator error.

8) Other – resulting from any other cause, such as exceeding the service life, not attributable to the above causes.

Consequence Factors

Weighting factors are established to represent consequences that may be anticipated in case of an integrity breach or failure involving the facility groups. Consequence factors are related to the location of the facility in relation to people and property as well as the amount of gas that could potentially be released. These are assigned in three general categories of (1) population / location, (2) operating pressure and (3) piping size.

Appendix B

See Appendices B and C in the Company's Annual Asset Optimization Plan.

APPENDIX C

Appendix C
Cast Iron, Bare Steel, Wrought Iron
Replacement Projects Placed in Service
Calendar Year Ended December 31, 2019

PROJECT DESCRIPTION	CAST IRON (FT)	BARE STEEL / WROUGHT IRON (FT)	TOTAL PIPE (BS, CI OR WI) ABANDONED (FT)
Various Locations	7,920	0	7,920
Linden Street, 500	4,662	253	4,915
Filmore Street, 800-900	3,941	535	4,476
S 5th Street, 100-400	4,227	0	4,227
2nd Street, 1000-1200	2,614	1,325	3,939
N 5th Street, 500-900	3,632	0	3,632
E 3rd Street, 600	2,775	795	3,570
Butter Lane, 900-1100	0	3,476	3,476
S Bergen Street, 500	3,449	0	3,449
E Cedar Street, 900-1100	3,407	0	3,407
2nd Street, 1600	3,264	3	3,267
State Street, 600	3,264	0	3,264
Walnut Street, 800	2,952	296	3,248
Line Street, 700-1000	1,850	1,189	3,039
Race Street, 600	2,686	255	2,941
2nd Street, 2800	2,795	0	2,795
Emerald Street, 200	2,719	12	2,731
N 19th Street, 1200	2,686	0	2,686
W Spring Street, 200	0	2,670	2,670
Williams Street, 700-800	2,073	560	2,633
Linden Street, 800	2,356	222	2,578
Arch Street, 200-400	2,182	373	2,555
2nd Street, 2300	2,535	3	2,538
Delwood Street, 700	2,517	0	2,517
2nd Street, 900	2,516	0	2,516
S Prince Street, 300-600	2,440	56	2,496
N President Avenue, 800	2,232	187	2,419
Pine Street, 100-300	928	1,420	2,348
Kenmore Avenue, 1800-1900	2,296	0	2,296
Peffer Street, 200	2,151	0	2,151
Ruth Street, 1700	2,130	0	2,130
N Irving Street, 600-800	2,108	0	2,108
W North Street, 1100	1,782	270	2,052
N Prince Street, 200-400	2,043	4	2,047
17th Street, 1100-1300	2,002	0	2,002
W North Street, 1700	1,957	0	1,957
S Prince Street, 000-200	1,854	75	1,929
Sycamore Street, 900-1100	1,928	0	1,928
Centre Street, 400-800	1,629	296	1,925

Appendix C
Cast Iron, Bare Steel, Wrought Iron
Replacement Projects Placed in Service
Calendar Year Ended December 31, 2019

PROJECT DESCRIPTION	CAST IRON (FT)	BARE STEEL / WROUGHT IRON (FT)	TOTAL PIPE (BS, CI OR WI) ABANDONED (FT)
Hampden Boulevard, 1300-1500	1,920	0	1,920
N 11th Street Phase 2, 1400-1600	1,898	0	1,898
Spruce Street, 200-500	2	1,894	1,896
Pine Street, 000-200	0	1,859	1,859
N 19th Street, 1500	1,830	0	1,830
Buchanan Avenue, 1000	1,822	0	1,822
Union Boulevard, 400-700	1,784	0	1,784
W North Street, 1400	1,731	0	1,731
Verbeke Street, 200	1,052	621	1,673
Calder Street, 200	1,646	6	1,652
Kelker Street, 200	1,622	10	1,632
Cedarbrook Road, 000-100	1,609	0	1,609
N Lime Street, 500-700	1,606	0	1,606
N 5th Street, 1000-1200	1,546	50	1,596
N 11th Street Phase 1, 1200-1300	1,576	0	1,576
Freemansburg Avenue, 800	0	1,550	1,550
Kenmore Avenue, 2000	1,531	0	1,531
Main Street, 000	0	1,460	1,460
N 29th Street, 100	1,439	0	1,439
Woodbine Street, 200	1,252	182	1,434
N 5th Street, 000	1,415	0	1,415
Locust Street, 1000	928	478	1,406
E South St and S Hanover Street, 000-100	1,325	55	1,380
Hamilton Street, 200	1,348	0	1,348
13th Avenue, 500	1,335	0	1,335
N 31st Street, 100	1,279	0	1,279
Hampden Boulevard, 1600	1,270	0	1,270
Bern Street, 1500	1,257	0	1,257
E Wyomissing Avenue, 900	0	1,250	1,250
N Prince Street, 000-100	1,175	60	1,235
Reily Street, 200	1,192	3	1,195
N Lime Street, 800-1000	1,115	0	1,115
Lime Street, 000-000	778	276	1,054
N 16th Street, 1700	964	0	964
Grant Street, 000	60	821	881
N Lime Street, 100-200	874	0	874
Schuylkill Avenue, 300	839	0	839
E Lincoln Avenue, 000	0	762	762
N Market Street and 400blk Poplar Street, 500	0	755	755

Appendix C
Cast Iron, Bare Steel, Wrought Iron
Replacement Projects Placed in Service
Calendar Year Ended December 31, 2019

PROJECT DESCRIPTION	CAST IRON (FT)	BARE STEEL / WROUGHT IRON (FT)	TOTAL PIPE (BS, CI OR WI) ABANDONED (FT)
Harvard Boulevard, 100-200	0	721	721
N Lime Street, 300-400	720	0	720
Pierce Street, 300	700	0	700
E Goepp Street, 000	634	0	634
Harold Avenue, 2000	586	0	586
Charles Alley, 00	0	546	546
E Street, 000	534	5	539
N 15th Street, 1700	507	0	507
S Poplar Street, 100	327	104	431
Grove Avenue, 1900	284	0	284
E Park Street, 400	0	236	236
Herr Street, 200	192	0	192
W 8th Street, 300	0	172	172
Wilkes Barre Street, 900-1000	135	0	135
Olive Street, 1700	2	0	2

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Farm Tap Replacement	East - Farm Tap Replacement	$4,260,000
Cemetary Road, 000	Build new City Gate Station for Hobbie High Line	$3,860,000
Westminster Drive To Hanover Street, 100	Carlisle Reinforcement - 4 miles of 12" high pressure steel pipeline.	$3,440,000
Blanket Project	West - Replacement Services Blanket	$3,380,000
Blanket Project	Reading - Replacement Services Blanket	$2,420,000
ERT Replacement	ERT Replacement	$2,420,000
AOP Main Replacement Project Blanket	East Ahead of Paving Main Replacement	$1,930,000
Blanket Project	UGI Gas - Maintenance Meters	$1,640,000
Harrisburg Pike, 1200-1900	West - Elizabethtown Reinforcement via tie-in from east from Mt Joy	$1,550,000
Blanket Project	Mechanical Tee Main Replacement Blanket	$1,450,000
Blanket Project	West - Ahead of Paving Blankets Projects	$1,450,000
Sullivan Trail, 3400	Easton Reinforcement Phase II	$1,450,000
Powder Rd Reinforcement	Powder Rd Reinforcement	$1,210,000
State Route 422, 000	RT 422E Amity Township Stream Exposure	$1,150,000

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Blanket Project	Reading - Ahead of Paving Blankets Projects	$970,000
State Route 940, 000	Harleigh Station Full Rebuild	$820,000
New Holland Avenue, 1000	Replace approximately 2,000' of 6" MP service line. Regulators and meter sets are in a limited access	$720,000
Blanket Project	West - Maintenance to Capital Replacements	$480,000
Blanket Project	Reading - Miscellaneous Main Replacements - UGI Jobbing	$480,000
Blanket Project	Mechanical Tee Replacement-East	$480,000
Blanket Project	Bridge Relocation Blanket	$430,000
Rose Street, 1700	Rose & Bern Regulator Station	$390,000
Blanket Project	Reading Meter Work - Main Replacement Projects	$390,000
Towanda Street, 600	Alleghany & Towanda (51010) Regulator Station Replacement and Relocation	$390,000
E Wall Street, 1	E Wall St Bridge	$390,000
Blanket Project	Replace 24 Inch Manhole Vaulted and Corroded Regulator Stations	$310,000
N Front Street, 000	West - Pipeline Integrity - Replacement of Cased Crossing @Front & Market Sts - Harrisburg	$290,000
AIP Drive, 1301	Stream Exposure Blanket	$290,000

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Blanket Project	West Reg Station Rebuilds	$290,000
N Lime Street, 500	West - N Lime & Frederick Sts, Lancaster City - Rebuild/relocate existing MP>LP Regulator Station	$290,000
Blanket Project	East - Maintenance to Capital Blanket	$290,000
River Road, 3300	3300 River Road - Gibralter	$290,000
N Front Street, 800-900	West - Pipeline Integrity - Replacement of Cased Crossing @Front & Forster Sts - Harrisburg	$240,000
W Orange Street, 300-400	West - Lititz & Rt 501 Reinforcement	$240,000
Maytown Road, 000	West - 000blk Maytown Rd - West Donegal Twp.- Segment II - S Market St to Railroad Tracks	$240,000
Easton Road, 2400	Hellertown Station Relief Rebuild	$240,000
South Street, 183	Rebuild South and Park Station	$240,000
6th Avenue, 200	200Blk 6th Ave - 6th and Martin Station Replacement	$200,000
Auburn Street, 300-400	LTIIP POD - Saucon and Filmore 2 - Phase 3 - 300-400 BLK Auburn St, Allentown	$180,000
W Main Street, 200	SR 23 W. Main St Regulator Station	$140,000
N 6th Street, 1100	New MP to LP Regulator Station	$140,000
Foxianna Road, 2000	West - Harrisburg - Foxianna Station Piping Replacement	$140,000

Appendix C
Other Replacement Projects
Calendar Year Ended December 31, 2019

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
N Locust Street, 000	West - E Main & Locust Sts, Lititz - Rebuild/relocate Existing MP>LP Regulator Station	$140,000
2nd Street, 400	West - Second & Locusts Sts, Lititz - Rebuild/relocate Existing MP>LP Regulator Station	$140,000
E Market Street, 000	West - N Market & Broad Sts, Lititz - Rebuild/relocate Existing MP>LP Regulator Station	$140,000
Perkiomen Avenue, 2500	SR 2021 (Mt. Penn) Phase 2	$140,000
Morgantown Road, 000	Blanket Account Maintenance - Regulator Installations	$140,000
W Main Street, 200-300	W Main Street SR 23 PennDOT HP relocate	$140,000
Blanket Project	Meters in to out blanket	$140,000
Brown Street, 1700	1700 Brown St - FY19 - South Whitehall AOP - Phase 5	$140,000
Jefferson Street	Replace Jefferson & Tioga HP-MP DRS	$140,000
Green Street, 1300	1300 Blk Green St	$140,000
County Line Road, 400	County Line Road Bridge Replacement Project	$130,000
State Route 724, 000	Farm tap replacement	$130,000
E Cumberland Street, 1300	E. Old Cumberland Bore / Bore 12" casing and 8" MP HDPE main under Norfolk Southern Railroad	$120,000
Blanket Project	Replacement or Repair of 24 inch or corroded regulator stations	$120,000

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Blanket Project	Capital Station Projects	$110,000
Harrisburg Pike At Letort Springs Creek Road, 120	West - 1200blk Harrisburg Pk, Middlesex Twp. -Relocate 8" MP Stl in conflict w/PennDOT Bridge Rebuild	$100,000
Main Street, 2100	2100Blk Main St - Station and Main DRS	$100,000
Blanket Project	Mechanical Tee Project	$100,000
Center Road, 000	Rebuild Center Road Post Regulator Station	$100,000
Poplar Street, 000	West - 000-100 blocks of Poplar St, Mount Joy - Direct bury 560' of 4" PE to replace 4" coal tar coated steel	$90,000
Market Street, 2100-2200	West - 21-2200 blks Market St, Harrisburg (Whitehall to McDevitt HS) - D Bury 650 ft of 4" MP PL	$90,000
Blanket Project	Reading - Projects to replace or remediate 24 inch manhole or corroded regulator stations	$90,000
Blanket Project	Install satellite communications at 23 SCADA sites that currently use leased lines.	$80,000
Ironville Road, 1100	West - Ironville & Spruce Sts, Columbia Boro - Rebuild/relocate Existing HP>MP>LP Regulator Station	$80,000
W Buttonwood Street, 300	Buttonwood Street Regulator Station	$80,000
No	West - Replace Corroded meter sets and/or obsolete meter set equipment	$80,000
N Front Street, 2000	Peffer St and N Front Station Main Relocation	$70,000
Pike Street, 1336	12th & Pike Regulator Station	$70,000

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Houck Road, 000	Boyertown Reg Station Relief Installation	$70,000
Kemp Road, 200	Coventry Reg Station Relief Installation	$70,000
New Schuylkill Avenue, 3000	Parkerford Reg Station Relief Installation	$70,000
Black Matt Road, 000	Regulator station Replacement	$70,000
Willow Creek Road	Temple Gate Station Relief	$70,000
No	Reading - M&R Replace Corroded meter sets and/or obsolete meter set equipment	$70,000
Cocalico Road, 269	Millway Reg Station Relief Installation	$70,000
E 7th Street, 700	700 Blk E 7th St	$60,000
Blanket Project	West - Electronic Chart Conversion	$60,000
Blanket Project	Reading - Capital Station Projects	$60,000
Blanket Project	Install new 4G Modems at SCADA RTU sites to enable fail-over from primary to backup communications	$50,000
Blanket Project	East - M&R Capital Station Projects	$50,000
Blanket Project	West - M&R Line - replace reliefs and corroded meter sets	$50,000
Mitchell Drive, 1200	Mitchell Dr Relocate / Remove exposed main/casing pipe in drain culvert	$50,000

Appendix C
Other Replacement Projects
Calendar Year Ended December 31, 2019

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Blanket Project	Electrical Upgrades at SCADA sites.	$40,000
Lehigh Street, 400	LTIIP POD - Saucon and Filmore 2 - Phase 2 - 400 BLK Lehigh St, Allentown	$40,000
Blanket Project	Install 4 backup generators at critical City Gate stations.	$30,000
Carsonia Avenue, 1400	PADOT Bridge Replacement Project - Retire 2" PE	$30,000
Blanket Project	West - Regulator Station Heater Projects	$30,000
Race Street, 00	Race St Manhole Valve replacement	$30,000
Fisher Ave At Lickdale Gate Station, 100	West - Lickdale Gate Station #999 - Replace reg outlet valves - hard to turn & wrong pressure class	$20,000
Blanket Project	East - M&R Station Heater Projects	$20,000
Blanket Project	West - Project to replace obsolete regulator station equipment	$20,000
Blanket Project	Reading - Replace Obsolete Regulator Station Equipment	$20,000
Blanket Project	Reading - M&R Station Heater Projects	$20,000
Blanket Project	East - Replace obsolete regulators, spare parts no longer available, cannot replace worn parts.	$20,000
Sullivan Trail, 3400	3400 Sullivan Trail	$10,000
Blanket Project	East - Conversion to Electronic Pressure Chart Recorders	$10,000

Appendix C
Other Replacement Projects
Calendar Year Ended December 31, 2019

DESCRIPTION	EXTENDED DESCRIPTION	2019 Budget Total
Blanket Project	Reading - Project to Upgrade Pressure Chart Recorders	$5,000