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File #: 153583

September 3, 2019

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. - Electric Division for Approval of its Distribution System Improvement Charge - Docket No. P-2019-

Dear Secretary Chiavetta:

Enclosed for filing is the Petition of UGI Utilities, Inc. – Electric Division for Approval of a Distribution System Improvement Charge. Copies will be provided as indicated on the Certificate of Service.

Very truly yours,

Jessica R. Rogers

JRR/cdy
Enclosures

cc: Certificate of Service

CERTIFICATE OF SERVICE

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

Tanya J. McCloskey, Esquire
Acting Consumer Advocate
Office of Consumer Advocate
555 Walnut Street
Forum Place, 5th Floor
Harrisburg, PA 17101-1923

John R. Evans
Small Business Advocate
Office of Small Business Advocate
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Harrisburg, PA 17101

Richard Kanaskie, Esquire
Director, Bureau of Investigation &,
Enforcement
Commonwealth Keystone Building
400 North Street, 2nd Floor West
PO Box 3265
Harrisburg, PA 17105-3265

Date: September 3, 2019

Jessica R. Rogers

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of UGI Utilities, Inc. – Electric Division for Approval of a Distribution System Improvement Charge	: : :	Docket No. P-2019-_____

Petition of UGI Utilities, Inc. – Electric Division for Approval of a Distribution System Improvement Charge

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Pursuant to 66 Pa. C.S. § 1353 and the Pennsylvania Public Utility Commission's ("Commission's") regulations at 52 Pa. Code § 121.1 *et. seq.*, UGI Utilities, Inc. – Electric Division ("UGI Electric" or the "Company") hereby files this Petition seeking approval of a Distribution System Improvement Charge ("DSIC") to recover, between base rate cases, capital expenses related to eligible property constructed or installed to rehabilitate, improve and replace portions of the Company's electric distribution system.

Before a public utility may be eligible to recover costs through a DSIC, it must first have a Commission-approved Long Term Infrastructure Improvement Plan ("LTIIP"). 66 Pa. C.S § 1352. UGI Electric's LTIIP was approved by the Commission on December 21, 2017.[1] UGI Electric's LTIIP will achieve a significant acceleration of infrastructure replacements over those installed during the Company's baseline period (*i.e.*, 2012-2015). Specifically, UGI Electric's LTIIP is a 5-year program (2018-2022), which increases projected capital expenditures by approximately $22.2 million (during the five-year term of the LTIIP) over the level of investments made during the baseline period. The LTIIP enhances system safety and reliability by replacing aging facilities with newer/safer equipment. Accordingly, the public will receive

[1] *Petition of UGI Utilities Inc. – Electric Division for Approval of its Long-Term Infrastructure Improvement Plan*, Docket No. P-2017-2619834 (Order entered Dec. 21, 2017) ("LTIIP Petition"). A copy of the LTIIP is included with this Petition as Appendix B.

improved reliability, with decreased risk of service disruption. To maintain the accelerated level of investment identified above, the Company seeks the authority to utilize a DSIC as proposed herein.

By this Petition, the Company respectfully requests that the Commission (1) find that UGI Electric's DSIC contains all necessary items identified in 66 Pa. C.S. § 1353, and (2) approve the DSIC with an effective date of January 1, 2020.

I. INTRODUCTION

1. UGI Electric is a division of UGI Utilities, Inc. ("UGI Utilities"), a corporation organized and existing under the laws of the Commonwealth of Pennsylvania, and a wholly owned subsidiary of UGI Corporation. UGI Electric primarily provides electric distribution service to approximately 62,000 customers in Luzerne and Wyoming counties in Northeastern Pennsylvania, pursuant to certificates of public convenience granted by the Commission. UGI Electric is a "public utility" and an "electric distribution company" ("EDC") within the meaning of Sections 102 and 2803 of the Public Utility Code, 66 Pa. C.S. § 102 and § 2803, subject to the regulatory jurisdiction of the Commission.

2. The names, addresses, and telephone numbers of UGI Electric's attorneys for purposes of this filing are as follows:

Michael S. Swerling (ID # 94748)
UGI Corporation
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Phone: 610-992-3763
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jrogers@postschell.com

UGI Electric's attorneys are authorized to receive all notices and communications regarding this Petition.

3. Act 11 of 2012 ("Act 11") was signed into law on February 14, 2012, amending Chapters 3, 13 and 33 of Title 66 of the Public Utility Code ("Code"). It provides EDCs with the ability to implement a DSIC to recover reasonable and prudent costs incurred to repair, improve or replace certain eligible distribution property that is part of the utility's distribution system. Eligible property for EDCs is defined in Section 1351 of the Code. *See* 66 Pa. C.S. § 1351(1). As a precondition to the implementation of a DSIC, each utility must file an LTIIP with the Commission that is consistent with the provisions of Section 1352. *See* 66 Pa. C.S. § 1352(a).

4. On August 2, 2012, the Commission issued the Final Implementation Order establishing procedures and guidelines necessary to implement Act 11.[2] The Final Implementation Order also provided a model tariff which utilities were instructed to use in preparing their DSIC tariffs. Moreover, the Final Implementation Order adopted the requirements established in Section 1353 for DSIC filings. These requirements are reflected in the Commission's regulations at 52 Pa. Code § 121.1 *et. seq*.

5. Specifically, Section 1353(b) requires utilities to file a petition seeking Commission approval of a DSIC. The statute lays out the following major requirements for a

[2] *Implementation of Act 11 of 2012*, Docket No. M-2012-2293611 (Pa. Pub. Util. Comm'n Aug. 2, 2012) ("Final Implementation Order.")

proposed DSIC tariff:

> (1) An initial tariff that complies with the model tariff adopted by the Commission, which will include:
>
> (i) A description of eligible property;
>
> (ii) The effective date of the DSIC;
>
> (iii) Computation of the DSIC;
>
> (iv) The method for quarterly updates of the DSIC; and
>
> (v) A description of consumer protections.
>
> (2) Testimony, affidavits, exhibits, and other supporting evidence demonstrating that the DSIC is in the public interest;
>
> (3) An LTIIP, as described in Section 1352; and
>
> (4) Certification that a base rate case has been filed within five years prior to the filing of the DSIC petition.

6. UGI Electric's DSIC Petition addresses each of the elements listed in the statute, as detailed in the following sections.

II. UGI ELECTRIC'S PETITION FOR A DSIC MEETS THE REQUIREMENTS ESTABLISHED IN 66 PA. C.S. § 1353.

A. UGI ELECTRIC'S DSIC TARIFF COMPLIES WITH THE COMMISSION'S MODEL TARIFF

7. UGI Electric developed its proposed DSIC tariff in compliance with Section 1353(b)(1) and according to the model tariff included in the Final Implementation Order. As described below, UGI Electric's proposed tariff contains all of the statutory elements listed in Section 1353(b)(1), and, therefore, should be approved by the Commission. UGI Electric's proposed *pro forma* tariff supplement is included with this Petition as Appendix A, and is discussed further in the direct testimony of UGI Electric witness Stephen F. Anzaldo. Mr. Anzaldo's testimony is included with this Petition as UGI Electric Statement No. 1.

1. Description of Eligible Property

8. UGI Electric has included the same eligible property in both its DSIC tariff and its LTIIP, as that term is defined in Section 1351(1). For EDCs, eligible property shall include: poles and towers; overhead and underground conductors; transformers and substation equipment; any fixture or device related to eligible property under subparagraphs (i), (ii) and (iii) of Section 1351(1), including insulators, circuit breakers, fuses, reclosers, grounding wires, crossarms and brackets, relays, capacitors, converters and condensers; unreimbursed costs related to highway relocation projects (where an EDC must relocate its facilities); and other related capitalized costs. UGI Electric's LTIIP describes in detail its plans for replacing the DSIC-eligible property identified in Section 1351(1).

2. Effective Date of the DSIC

9. UGI Electric is requesting permission to implement its DSIC for bills rendered on and after January 1, 2020. UGI Electric cannot recover any costs associated with infrastructure replacements through the DSIC until it has placed in service a level of plant that exceeds the level approved by the Commission for base rate recovery in Docket No. R-2017-2640058, or as otherwise directed by the Commission. In the base rate proceeding at Docket No. R-2017-2640058, UGI Electric used a Fully Projected Future Test Year ("FPFTY") ending September 30, 2019 to establish its current base rates. As determined by the Commission, the current base rates reflect $115,522,000 of net plant placed in service. *See Pa. P.U.C. v. UGI Utilities, Inc. – Electric Division*, Docket No. R-2017-2640058 (Order entered October 25, 2018). Once UGI Electric exceeds this level of plant placed in service, dollars associated with DSIC-eligible plant that are above that amount will be considered eligible for recovery through the DSIC. Until that time, UGI Electric will reflect a DSIC of 0.0%.

10. Once UGI Electric is allowed to implement a non-0.0% DSIC, the DSIC will be calculated to reflect all eligible plant placed in service which has not been included in rate base as part of Docket No. R-2017-2640058.

3. Computation of DSIC

11. UGI Electric's DSIC will be calculated consistent with the Commission's model tariff. As explained in Mr. Anzaldo's testimony, the Company will follow Section 2 of the Commission's model tariff and apply the formula set forth in subsection 2(D) of the model tariff. Ten days before the day that the DSIC rate becomes effective or is modified, UGI Electric will update its computation to reflect the cost of DSIC-eligible projects that were actually placed into service during the relevant quarterly period, as well as UGI Electric's actual capital structure and cost of long-term debt.

12. Initially, UGI Electric will use the rate of return on equity determined in Docket No. R-2017-2640058, which was 9.85%, and in the future will calculate the rate of return in accordance with 66 Pa. C.S. § 1357.

4. Quarterly Updates

13. The DSIC will be updated on a quarterly basis to reflect eligible plant additions placed in service during the three-month period ending one month prior to the effective date of any DSIC update. As explained above, the DSIC rate will be 0.0%, until UGI Electric has placed in service a level of plant that exceeds the level approved by the Commission for base rate recovery in the Company's recent electric base rate case, or as otherwise directed by the Commission.

14. UGI Electric has provided a chart in its *pro forma* tariff of the effective dates of its proposed DSIC updates, and the corresponding period for eligible plant additions that will be

reflected in each update. *See* Appendix A, Pro Forma Tariff Addendum to UGI Electric Pa. P.U.C. No. 6, page 50.

15. Once UGI Electric has implemented its DSIC, customers will receive notice of quarterly changes in the DSIC through bill messages. This is consistent with Act 11, the Commission's Final Implementation Order, and the method used by other utilities and approved by the Commission as part of prior DSIC proceedings. *See, e.g., Petition of UGI Utilities, Inc.-Gas Division for Approval of a Distribution System Improvement Charge*, Docket No. P-2013-2398833 (Opinion and Order entered November 9, 2016)*; Petition of UGI Central Penn Gas, Inc. for Approval of a Distribution System Improvement Charge*, Docket No. P-2013-2398835 (Opinion and Order entered September 11, 2013); *Petition of UGI Penn Natural Gas, Inc. for Approval of a Distribution System Improvement Charge*, Docket No. P-2013-2397056 (Opinion and Order entered September 11, 2013).

5. Consumer Protections

16. The Commission's model tariff includes customer safeguards which UGI Electric has adopted as part of its proposed tariff. These safeguards include: (1) a cap on the total amount of distribution revenue that can be collected through the DSIC as determined on an annualized basis, in this case, 5.0%; (2) periodic audit reviews conducted by the Commission; (3) annual reconciliations performed by UGI Electric; (4) a reset of the DSIC to zero as of the effective date of new base rates; (5) customer notices of any changes in the DSIC; (6) equal application of the DSIC to all customer classes; and (7) provisions for the charge to be set at zero if, in a quarter, UGI Electric's most recent earnings report shows that UGI Electric is earning a rate of return that exceeds the allowable rate of return used to calculate its fixed costs under the DSIC.

B. UGI ELECTRIC HAS A COMMISSION-APPROVED LTIIP

17. Section 1353 requires a utility to have a Commission-approved LTIIP in order to be eligible for a DSIC. Pursuant to 52 Pa. Code § 121.1 *et. seq.* and the Commission's Final Implementation Order, the LTIIP must include the following eight major elements:

(a) Types and age of eligible property;

(b) Schedule for planned repair and replacement;

(c) Location of eligible property;

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

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

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

(g) A workforce management and training program; and

(h) Outreach and coordination activities with other utilities, Department of Transportation and local governments.

18. On August 16, 2017, UGI Electric filed its LTIIP Petition. In its LTIIP Petition, the Company identified how its LTIIP contained all of the applicable elements of 66 Pa C.S. § 1352(a)(1)-(6) and 52 Pa. Code § 121.1 *et. seq*. Further, UGI Electric described its plans to address the aging components of its distribution system in order to avoid degradation of service to its customers. The Commission approved UGI Electric's LTIIP in an order entered on December 21, 2017.

C. UGI ELECTRIC'S LTIIP COMPLIES WITH SECTION 1352 OF ACT 11

19. UGI Electric's Commission-approved LTIIP is attached as Appendix B to this Petition. The LTIIP, including its procedural history and content, is discussed in the direct

testimony of Eric W. Sorber, which is attached to this Petition as UGI Electric Statement No. 2. The Commission's December 21, 2017 Order in Docket No. P-2017-2619834 approved UGI Electric's LTIIP and stated:

> The Commission finds [UGI Electric's] Long-Term Infrastructure Improvement Plan and manner in which it was filed conforms to the requirements of Act 11 and our Regulations.

(Order at 25). Accordingly, UGI Electric's LTIIP complies with Act 11, the Commission's regulations and the Final Implementation Order.

20. UGI Electric's LTIIP was developed to address the wave of equipment retirements and failures that are anticipated to occur due to the age of the Company's distribution assets. UGI Electric has a number of facilities that are at or near the end of their service life, and the Company sought to implement a plan that would repair or replace those facilities on an ongoing, cost effective and systemic basis (to reduce the impact equipment failures have on the service experienced by customers). The plan included replacements in kind, as well as upgrades to current standards, including new technologies. In some cases, the Company will make replacements on an individual component basis. In other cases, the Company undertakes more comprehensive replacement plans where it appears more economical and more effective to replace equipment components on a broader project scale.

21. The investments included in the LTIIP are expected to mitigate the anticipated growth in equipment failures. UGI Electric continues to analyze equipment failure trends and system-level reliability metrics on an ongoing basis to ensure that funding is invested appropriately.

22. UGI Electric's LTIIP identified many programs that the Company is currently undertaking to address its aging infrastructure. The LTIIP provides program specific details including a description of the program and its purpose; the scope of the program; a reasonable

estimate of the quantity of property to be improved where applicable; the location of planned replacements where applicable; and the total amount projected to be spent by the Company annually and over the life of the five-year plan.

23. The Company will conduct ongoing reviews to ensure that the programs in the LTIIP are effective and will utilize the information from its ongoing reviews to determine cost effective strategies for replacing its distribution infrastructure on a going forward basis. This process ensures effective use of resources and minimizes both the financial and operational burden on the customers and municipalities that UGI Electric serves.

D. UGI ELECTRIC'S DSIC PETITION IS IN THE PUBLIC INTEREST

24. Implementing UGI Electric's proposed DSIC tariff is in the public interest because the DSIC will ensure that customers continue to receive safe and reliable service in the future as required by 66 Pa. C.S. § 1501.

25. When the Company developed its LTIIP, it identified that much of the core UGI Electric distribution system is over 40 years old, and that these aging facilities exist in all parts of the Company's service territory. UGI Electric's primary focus in its LTIIP is to maintain the highly reliable service its customers have historically experienced, while addressing the risk to continued reliability associated with aging infrastructure. Therefore, UGI Electric's LTIIP includes a number of programs, all of which are expected to ensure overall system reliability and reduce historical weather-related variability (by replacing aging equipment on an accelerated basis).

26. The LTIIP includes programs that place an accelerated focus on infrastructure repair and replacement, and technology-based enhancements, including accelerated underground cable and wood pole replacements, Distribution Automation, enhanced feeder sectionalizing and primary substation tie-line additions. These programs address significant long-term reliability

challenges. The LTIIP also includes a comprehensive inspection and maintenance program to ensure equipment is properly maintained or replaced. It identifies and prioritizes maintenance plans to avoid immediate or long-term systemic impacts to reliability. This process ensures effective use of resources and minimizes disruption to the customers and municipalities that UGI Electric serves.

27. As a result of the accelerated programs adopted by UGI Electric to meet its obligations to provide safe and reliable service to its customers, the Company has significantly increased the amount it invests in repairing and replacing its distribution infrastructure. Over the baseline period identified in the LTIIP (2012 through 2015), UGI Electric invested approximately $3.5 million annually on repairing and replacing its distribution infrastructure. For the five years of the LTIIP, UGI Electric committed to an increase in capital spending that is 134% over the investment level set forth in the baseline period. Total DSIC eligible spending, as reflected in the LTIIP, shows that UGI Electric will invest between $7.6 and $8.3 million per year in accelerated capital replacement projects during the term of the LTIIP.

28. UGI Electric believes that replacement of aging distribution equipment and facilities will reduce the number of outages customers experience, facilitate installation of additional safety mechanisms, and generally improve service to its customers. The DSIC will allow UGI Electric to continue its already accelerated pace for replacing its distribution infrastructure without delay or interruption.

29. Additionally, the DSIC will allow UGI Electric to remove deteriorating portions of its system and enhance safety by ensuring replacement of facilities with newer, longer lasting and safer materials. The public will receive better service, with fewer interruptions, consistent with the Company's obligations under the Public Utility Code.

30. Further details regarding why the DSIC is in the public interest are provided in the

testimony accompanying this Petition.

E. BASE RATE CASE CERTIFICATION

31. As part of its filing, a utility is required to certify that it has filed a base rate case within five years of the date of its DSIC petition. 66 Pa. C.S. §1353(b)(4). UGI Electric has included the required certification as Appendix C to this Petition. UGI Electric filed its last base rate case on January 26, 2018. A Final Order was entered by the Commission at Docket No. R-2017-2640058 on October 25, 2018.

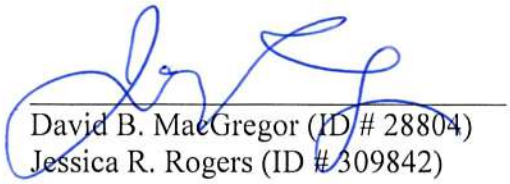
F. CUSTOMER NOTICE

32. Consistent with Act 11 and the Commission's regulations, customers will receive notice of the initial filing of this proposed DSIC Petition through bill inserts subsequent to the time of filing and continuing throughout a 30-day billing cycle. UGI Electric will begin the bill insert process within seven days of this filing. A copy of the customer notice to be provided is included as UGI Electric Exhibit SFA-3 to UGI Electric Statement No. 1.

III. CONCLUSION

WHEREFORE, UGI Utilities, Inc. – Electric Division respectfully requests that the Pennsylvania Public Utility Commission: (1) find that UGI Electric's Distribution System Improvement Charge contains all necessary items identified in 66 Pa. C.S. § 1353 and 52 Pa. Code § 121.1 *et. seq.*, and (2) approve the Distribution System Improvement Charge with an effective date of January 1, 2020 and an effective rate of 0.0%, until UGI Electric exceeds $115,522,000 of net plant placed in service, for the good cause shown herein.

Respectfully submitted,



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Of Counsel:

Post & Schell, P.C.

Attorneys for UGI Utilities, Inc. – Electric Division

Date: September 3, 2019

VERIFICATION

I, Hans G. Bell, Chief Operating Officer ("COO") for UGI Utilities, Inc., hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect that UGI Utilities, Inc. – Electric Division 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: September 3, 2019

Hans G. Bell
Chief Operating Officer
UGI Utilities, Inc.
1 UGI Drive
Denver, PA 17517

APPENDIX A

UGI UTILITIES, INC. – ELECTRIC DIVISION

ELECTRIC SERVICE TARIFF

RULES AND RATES
FOR ELECTRIC DISTRIBUTION SERVICE AND
CHOICE AGGREGATION SERVICE

in the following service territory:

LUZERNE COUNTY

City of Nanticoke, and Boroughs of Courtdale, Dallas, Edwardsville, Forty-Fort, Harvey's Lake, Kingston, Larksville, Luzerne, New Columbus, Plymouth, Pringle, Shickshinny, Sugar Notch, Swoyersville, Warrior Run, West Wyoming and Wyoming.

First Class Townships of Hanover and Newport, and Second Class Townships, of Conyngham, Dallas, Fairmount, Franklin, Hunlock, Huntington, Jackson, Kingston, Lake, Lehman, Plymouth, Ross and Union.

WYOMING COUNTY

Townships of Monroe and Noxen

Issued: Effective:

Issued by:
Paul J. Szykman
Chief Regulatory Officer
1 UGI Drive
Denver, PA 17517

NOTICE

THIS TARIFF MAKES CHANGES TO THE COMPANY'S RATES (PAGE 2).

LIST OF CHANGES MADE BY THIS SUPPLEMENT

(Page Numbers Refer to Official Tariff)

Table of Contents, Page 3.

- The Table of Contents has been changed to include new pages, Pages 50-52(a), to include Rider G – DSIC - Distribution System Improvement Charge.

Rider G – DSIC – Distribution System Improvement Charge, Pages 50 – 52(a).

- Rider G – Distribution System Improvement Charge has been added.

Rider G – DSIC – Distribution System Improvement Charge has been added to the list of Surcharges and Riders applicable to the following rate schedules:

- Rate Schedule R – Residential Service, Page 53.
- Rate Schedule OL – Outdoor Lighting Service, Page 55.
- Rate Schedule SOL – Sodium Outdoor Lighting Service, Page 57.
- Rate Schedule MHOL – Metal Halide Outdoor Lighting Service, Page 59.
- Rate Schedule LED-OL – Light-Emitting Diode Outdoor Lighting Service, Page 61.
- Rate Schedule GS-1 – General Service, Page 62.
- Rate Schedule GS-4 – General Service (5 kW minimum) , Page 63.
- Rate Schedule GS-5 – General Service, Page 65.
- Rate Schedule LP – Large Power Service, Pages 67.
- Rate Schedule HTP – High Tension Power Service, Page 68.
- Rate Schedule SL – Street Lighting Service, Page 69.
- Rate Schedule SSL – Sodium Street Lighting Service, Page 71.
- Rate Schedule MHSL – Metal Halide Street Lighting Service, Page 73.
- Rate Schedule LED-SL - Light-Emitting Diode Street Lighting Service, Page 75.
- Rate Schedule LED-CO – Customer-Owned Light-Emitting Diode Street Lighting Service, Page 77.
- Rate Schedule FCP – Flood Control Power Service, Page 80.
- Rate Schedule BLR – Borderline Resale Service, Page 81.

TABLE OF CONTENTS

(C) Indicates Change

TABLE OF CONTENTS (Continued)

(C) Indicates Change

RIDER G

DSIC – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE **(C)**

In addition to the net charges provided for in this Tariff, a charge of 0.00% will apply consistent with the Commission Order entered _____, at Docket No. P-2019-_____, approving the Distribution System Improvement Charge ("DSIC").

A.1 Purpose. To recover the reasonable and prudent costs incurred to repair, improve, or replace eligible property which is completed and placed in service and recorded in the individual accounts, as noted below, between base rate cases and to provide the Company with the resources to accelerate the replacement of aging infrastructure, to comply with evolving regulatory requirements and to develop and implement solutions to regional supply problems.

The costs of extending facilities to serve new customers are not recoverable through the DSIC.

A.2 Eligible Property.

The DSIC-eligible property will consist of the following:

- Poles and Tower (364);
- Overhead conductors (365)
- Underground Conduit and Conductors (366 & 367)
- Line Transformers (368)
- Substation Equipment (362)
- Any fixture or device related to eligible property listed above, including insulators, circuit breakers, fuses, reclosers, grounding wires, crossarms and brackets, relays, capacitors, convertors and condensers;
- Unreimbursed costs related to highway relocation projects where an electric distribution company must relocate its facilities; and
- Other related capitalized costs.

A.3 Effective Date. The DSIC will become effective for bills rendered on and after January 1, 2020.

A.4 Computation of the DSIC. The initial DSIC, effective for bills rendered on and after January 1, 2020, shall be 0.00%. Thereafter, the DSIC will be updated on a quarterly basis to reflect eligible plant additions placed in service during the three-month periods ending one month prior to the effective date of each DSIC update.

Thus, changes in the DSIC rate will occur as follows:

Effective Date of Change	**Date to which DSIC-Eligible Plant Additions Reflected**
April 1	December 1 through February 28
July 1	March 1 through May 31
October 1	June 1 through August 31
January 1	September 1 through November 30

(C) Indicates Change

RIDER G

DSIC – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (Continued) (C)

A.5 Determination of Fixed Costs. The fixed costs of eligible distribution system improvements will consist of depreciation and pre-tax return, calculated as follows:

1. Depreciation: The depreciation expense shall be calculated by applying the annual accrual rates employed in the Company's most recent base rate case for the plant accounts in which each retirement unit of DSIC-eligible property is recorded to the original cost of DSIC-eligible property.
2. Pre-Tax Return: The pre-tax return shall be calculated using the statutory state and federal income tax rates, the Utility's actual capital structure and actual cost rates for long-term debt and preferred stock as of the last day for the three-month period ending one month prior to the effective date of the DSIC and subsequent updates. The cost of equity will be the equity return rate approved in the last fully litigated base rate proceeding for which a final order was entered not more than two years prior to the effective date of the DSIC. If more than two years shall have elapsed between the entry of such a final order and the effective date of the DSIC, then the equity return rate used in the calculation will be the equity return rate calculated by the Commission in the most recent Quarterly Report on the Earnings of the Jurisdictional Utilities released by the Commission.

A.6 Application of DSIC. The DSIC will be expressed as a percentage carried to two decimal places and will be applied to the total amount billed to each customer for distribution service under the otherwise applicable rates and charges, excluding amounts billed for the State Tax Adjustment Surcharge (STAS).

To calculate the DSIC, one-fourth of the annual fixed costs associated with all property eligible for cost recovery under the DSIC will be divided by the projected revenue for distribution service (including all applicable clauses and riders) for the quarterly period during which the charge will be collected, exclusive of STAS.

Formula: The formula for the calculation of the DSIC is as follows:

$$DSIC = \frac{(DSI*PTRR)+Dep+e}{PQR}$$

Where:

DSI = Original cost of eligible distribution system improvement projects net of accrued depreciation.

PTRR = Pre-tax return rate applicable to DSIC-eligible property.

Dep = Depreciation expenses related to DSIC-eligible property.

e = Amount calculated under the annual reconciliation feature or Commission audit, as described below.

PQR = Projected quarterly revenues for distribution service (including all applicable clauses and riders) from existing customers plus netted revenue from any customers which will be gained or lost by the beginning of the applicable service period.

Revenues will be determined as one-fourth (1/4) of projected annual revenues as determined in accordance A.8.5.

(C) Indicates Change

RIDER G

DSIC – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (Continued) **(C)**

A.7 Quarterly Updates. Supporting data for each quarterly update will be filed with the Commission and served upon the Commission's Bureau of Audits, Bureau of Investigation and Enforcement, the Office of Consumer Advocate, and the Office of Small Business Advocate at least ten (10) days prior to the effective date of the update.

A.8 Customer Safeguards.

1. Cap: The DSIC is capped at 5.0% of the amount billed to customers for distribution service (including all applicable clauses and riders) as determined on an annualized basis.
2. Audit/Reconciliation: The DSIC is subject to audit at intervals determined by the Commission. Any cost determined by the Commission not to comply with any provision of 66 Pa C.S. § 1350, et seq., shall be credited to customer accounts. The DSIC is subject to annual reconciliation based on a reconciliation period consisting of the twelve months ending December 31 of each year or the Company may elect to subject the DSIC to quarterly reconciliation but only upon request and approval by the Commission. The revenue received under the DSIC for the reconciliation period will be compared to the Company's eligible costs for that period. The difference between revenue and costs will be recouped or refunded, as appropriate, in accordance with Section 1307(e), over a one-year period commencing on April 1 of each year or in the next quarter if permitted by the Commission. If DSIC revenues exceed DSIC-eligible costs, such over-collections will be refunded with interest. Interest on over-collections and credits will be calculated at the residential mortgage lending specified by the Secretary of Banking in accordance with the Loan Interest and Protection Law (41 P.S. § 101, et seq.) and will be refunded in the same manner as an over-collection. The Company is not permitted to accrue interest on under collections.
3. New Base Rates: The DSIC will be reset to zero upon application of new base rates to customer billings that provide for prospective recovery of the annual costs that had previously been recovered under the DSIC. Thereafter, only the fixed costs of new eligible plant additions that have not previously been reflected in the Company's rates or rate base will be reflected in the quarterly updates of the DSIC.
4. Customer Notice: Customers shall be notified of changes in the DSIC by including appropriate information on the first bill they receive following any change. An explanatory bill insert shall also be included with the first billing.
5. All Customer Classes: The DSIC shall be applied equally to all customer classes.
6. Earnings Reports: The DSIC will also be reset to zero, if, in any quarter, data filed with the Commission in the Company's then most recent Annual or Quarterly Earnings reports show that the Company would earn a rate of return that would exceed the allowable rate of return used to calculate its fixed costs under the DSIC as described in the pre-tax return section. The Company shall file a tariff supplement implementing the reset to zero due to overearning on one-day's notice and such supplement shall be filed simultaneously with the filing of the most recent Annual or Quarterly Earnings reports indicating that the Company has earned a rate of return that would exceed the allowable rate of return used to calculate its fixed costs.

(C) Indicates Change

RIDER G

(C)

DSIC – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (Continued)

7. Residual E-Factor Recovery Upon Reset To Zero: The Company shall file with the Commission interim rate revisions to resolve the residual over/under collection or E-factor amount after the DSIC rate has been reset to zero. The Company can collect or credit the residual over/under collection balance when the DSIC rate is reset to zero. The Company shall refund any overcollection to customers and is entitled to recover any undercollections as set forth in Section A.8.2. Once the Company determines the specific amount of the residual over or under collection amount after the DSIC rate is reset to zero, the utility shall file a tariff supplement with supporting data to address that residual amount. The tariff supplement shall be served upon the Commission's Bureau of Investigation and Enforcement, the Bureau of Audits, the Office of Consumer Advocate, and the Office of Small Business Advocate at least ten (10) days prior to the effective date of the supplement.

(C) Indicates Change

RATE R
RESIDENCE SERVICE

AVAILABILITY
Available to Customers located on Company's distribution lines and desiring service for household and non-residential uses (where the non-residential use(s) is limited to less than 2 kW) in a single private dwelling, or an individual dwelling unit in a multiple dwelling structure, and its appurtenant detached buildings.

CHARACTER OF SERVICE
Alternating current, 60 cycles, single phase; 120 volts, 2 wire; 120-208 volts, 3 wire; or 120-240 volts, 3 wire.

RATE TABLE

Customer Charge: $8.74 per Month

Distribution Charge (all usage): 2.812 ¢/kWh

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider C - Universal Service Program Rider
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

MINIMUM MONTHLY CHARGE
The Minimum Monthly Charge shall be the Customer Charge.

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE OL - (Continued)
OUTDOOR LIGHTING SERVICE

MAINTENANCE
All facilities shall be owned and maintained by the Company. Lamp renewal service, during normal working hours will be provided upon notice to the Company for lamps burned out or broken. Burned out or broken lamps will be replaced as long as the supply of mercury vapor lighting is available to the Company.

RURAL LINE MINIMUMS
Rural line minimums shall not be applicable to charges under this Rate.

APPROVAL
Customer shall obtain proper approval for lights to be located on public thoroughfares.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E- Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicated Change

RATE SOL - (Continued)
SODIUM OUTDOOR LIGHTING SERVICE

(d) Customer shall obtain proper approval for lights to be located on public thoroughfares

(e) Operation shall be from dusk to dawn, a total of approximately 4,000 hours per year. Lamp renewal service, during normal working hours, will be provided upon notice to Company for lamps burned out or broken and no credit for outages allowed. Company will supply, install, operate, and maintain necessary lighting facilities.

REMOVAL OF MERCURY VAPOR

When, at the request of the Customer, a sodium vapor light replaces a fully operational mercury vapor light that has been installed for less than 10 years, the Customer shall pay the Company for the Company's estimated cost of removal and rehabilitation plus the estimated remaining value of the system. When, at the request of the Customer, a sodium vapor light replaces a failed mercury vapor light that can neither be repaired nor replaced, the installation will be completed at no charge to the Customer.

SURCHARGES AND RIDERS

Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS

Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE MHOL - (Continued)
METAL HALIDE OUTDOOR LIGHTING SERVICE

(d) Customer shall obtain proper approval for lights to be located on public thoroughfares.

(e) Operation shall be from dusk to dawn, a total of approximately 4,000 hours per year. Lamp renewal service, during normal working hours, will be provided upon notice to Company for lamps burned out or broken and no credit for outages allowed. Company will supply, install, operate, and maintain necessary lighting facilities.

REMOVAL OF MERCURY VAPOR & HIGH PRESSURE SODIUM

When, at the request of the Customer, a metal halide light replaces a fully operational mercury vapor or high pressure sodium light that has been installed for less than 1 or 2 years respectively, the Customer shall pay the Company for the Company's estimated cost of removal and rehabilitation plus the estimated remaining value of the system. When, at the request of the Customer, a metal halide light replaces a failed mercury vapor light that can neither be repaired nor replaced, the installation will be completed at no charge to the Customer.

TERMINATION

If Customer terminates outdoor lighting service under this schedule for any reason prior to expiration of the two-year term, Customer shall pay removal cost.

SURCHARGES AND RIDERS

Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS

Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE LED-OL (continued)
LIGHT-EMITTING DIODE OUTDOOR LIGHTING SERVICE

(b) If Customer requires an additional wood pole, or poles, to be installed for mounting heights up to 25 feet, a monthly charge of $5.99 per pole shall be added to the above rates.

(c) Any additional facilities other than specified herein and the cost of rearranging facilities required to change mounting height shall be paid by the Customer in advance.

(d) Customer shall obtain proper approval for lights to be located on public thoroughfares.

(e) Operation shall be from dusk to dawn, a total of approximately 4,000 hours per year. Lamp renewal service, during normal working hours, will be provided upon notice to Company for lamps burned out or broken and with no credit for outages. Company will supply, install, operate, and maintain necessary lighting facilities.

REMOVAL OF MERCURY VAPOR, HIGH PRESSURE SODIUM AND METAL HALIDE

When, at the request of the Customer, a LED light replaces a fully operational mercury vapor, high pressure sodium or metal halide light that has been installed for less than the applicable contract term, the Customer shall pay the Company for the Company's estimated cost of removal and rehabilitation plus the estimated remaining value of the system. When, at the request of the Customer, a LED light replaces a failed mercury vapor, high pressure sodium or metal halide light that can neither be repaired nor replaced, the installation will be completed at no charge to the Customer.

TERMINATION

If Customer terminates outdoor lighting service under this schedule for any reason prior to expiration of the two-year term, Customer shall pay removal cost.

SURCHARGES AND RIDERS

Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS

Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE GS-1
GENERAL SERVICE

AVAILABILITY
Available to Customers located on Company's distribution lines desiring electric service for general lighting and/or power service outside the scope of the Residence Service Rate Schedules and whose demand at any time of the year is not in excess of five (5) kilowatts, and any building the primary use of which is public worship.

CHARACTER OF SERVICE
Alternating current, 60 cycles, single phase, 120 volts, 2 wire; or 120-240 volts, 3 wire; and 3 phase, 120-240 volts, 4 wire, except in areas where only 120/208 volts are available.

CONTRACT TERM AND BILLING
Standard contracts are on a yearly basis with monthly payments for service taken.

RATE TABLE

Customer Charge: $9.83 per Month

Distribution Charge (all usage): 4.311 ¢/kWh

MINIMUM MONTHLY CHARGE
The Minimum Monthly Charge is the Customer Charge.

DETERMINATION OF DEMAND
The demand will be determined at the option of the Company by estimate or by test at the time of maximum use or by demand meter measurement. Demands of Customers with monthly consumption over two thousand (2,000) kilowatt-hours on a recurring basis will be metered unless otherwise shown to be eligible for this rate.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE GS-4 SERVICE
(5 kW minimum)

AVAILABILITY
Available to Customers located on Company's distribution lines desiring electric service for general lighting and/or power service and whose minimum billing demand is not less than five (5) kilowatts.

CHARACTER OF SERVICE
Alternating current, 60 cycles, 3 phase, 120-240 volts, 4 wire; 120-208 volts, 4 wire; or 240 volts, 3 wire; 480 volts, 3 wire; or 277-480 volts, 4 wire, may be supplied. In addition, alternating current, 60 cycles, single phase, 120-240 volts, 3 wire, and where available 120-208 volts, 3 wire.

CONTRACT TERM AND BILLING
Contracts shall be for a term of not less than one (1) year with monthly payments for service taken. Contracts for a longer term may be required where new investment by Company is necessary.

RATE TABLE

Customer Charge: $15.00 per Month

	Distribution ($/kW)	Distribution (¢/kWh)
First 20 kW of billing demand	$3.59	
Over 20 kW of billing demand	$2.20	
First 200 hours use of demand		2.480
Next 300 hours use of demand		1.709
All over 500 hours use of demand		1.406

MINIMUM MONTHLY CHARGE

The Minimum Monthly Charge is the charge in the Rate Table for the billing demand. The minimum billing demand will not be less than five (5) kilowatts nor less than the minimum value stated in a contract for service.

DETERMINATION OF DEMAND
The demand shall be the greatest fifteen (15) minute load in kilowatts established during the month, taken for billing purposes to the nearest kilowatt.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
Rider F - Power Factor Surcharge
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

POWER FACTOR
The Power Factor Charge contained in this Tariff is applied to this Rate

(C) Indicates Change

RATE GS-5 (continued)
GENERAL SERVICE
(VOLUNTEER FIRE COMPANY, NON-PROFIT SENIOR CITIZEN CENTER, NON-PROFIT RESCUE SQUAD, AND NON-PROFIT AMBULANCE SERVICE)

RATE TABLE

Customer Charge: $8.74 per Month

Distribution Charge (all usage): 2.812 ¢/kWh

MINIMUM MONTHLY CHARGE
The Minimum Monthly Charge shall be the Customer Charge.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE LP - (Continued)
LARGE POWER SERVICE

DETERMINATION OF DEMAND
The demand shall be determined by meters which will, at the option of the Company, either indicate or record the demand. The billing demand shall be the highest fifteen (15) minute demand recorded during the month, provided that the Company reserves the right to use for billing purposes the single maximum demand established during a five (5) minute interval when power installation includes hoists, elevators, welding machines, electric furnaces, or other load having high intermittent peak load requirements. In no event, however, shall the billing demand be less than one hundred (100) kilowatts.

SECONDARY SERVICE
At the Company's option, service may be metered at secondary voltage of transforming equipment. When so metered energy charges will be increased two (2) percent.

POWER FACTOR
The Power Factor Charge contained in this Tariff is applied to this Rate.

MINIMUM MONTHLY CHARGE
The Minimum Monthly Charge shall be an amount equal to the demand charge plus the power factor charge for the month.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
Rider F - Power Factor Surcharge
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE HTP
HIGH TENSION POWER SERVICE

AVAILABILITY
Available to Customers taking general light and power service at each delivery point and whose minimum billing demand is not less than two thousand (2,000) kilowatts.

CHARACTER OF SERVICE
Alternating current, 60 cycles, 3 phase, 66,000 volts with metering on the primary side of transformers and substation equipment supplied by the Customer.

CONTRACT TERM AND BILLING
Contract shall be for a term of not less than one (1) year with monthly payments for service taken. Contracts for a longer term may be required where new investment by Company is necessary.

RATE TABLE

CUSTOMER CHARGE

Primary Metered: $1,703.44 per Month

Secondary Metered: $629.88 per Month

POWER FACTOR
The Power Factor Charge contained in this Tariff is applied to this Rate.

MINIMUM MONTHLY CHARGE
The Minimum Monthly Charge shall be an amount equal to the customer charge plus the power factor charge for the month.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation (EEC) Rider
Rider F - Power Factor Surcharge (PFS)
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

(C) Indicates Change

RATE SL
STREET LIGHTING SERVICE

AVAILABILITY
This Rate is available for street, bridge, parks and outdoor lighting in the entire territory served by the Company.

CONTRACT TERM
Standard contracts are for the term of five (5) years. Contracts for a longer term may be required where new investment by Company is necessary.

RATE TABLE
Rates per lamp per month for standard construction with monthly payments for service rendered.
Mercury Vapor

	Municipal or Public Authority	
	Customer Charge (Per Lamp)	Distribution (¢/kWh)
3,750 Lumen	$3.88	4.035
7,000 Lumen	$4.05	4.035
11,000 Lumen	$6.37	4.035
20,000 Lumen	$7.65	4.035
60,000 Lumen	$6.43	4.035

Low mounted, decorative fixture and pole ..... $ 7.46 per month
for underground service, provided that in addition to charge
no trenching and back-filling is required in Rate Table above

Additional wood pole installed for the sole ..... $ 5.99 per month
purpose of supporting lighting fixtures or circuits

The number of kWh supplied is based upon the average hours' use and size of lamps.

Distribution and Generation Supply rates will be applied to per kilowatt hour of energy used each month. The number of kWh supplied is based upon the average hours' use and size of lamps.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

STANDARD CONSTRUCTION
The prices specified in the Rate Table for Standard Construction cover the supply of lamps and equipment to mount lighting fixtures on wood poles and include electric current and maintenance for complete street lighting service when supplied from circuits, mast arms, and fixtures of overhead construction. When Customer desires an underground or ornamental system, or non-standard construction conditions exist, the additional cost shall be borne by Customer; also, if Customer desires to supply equipment such as conductors, conduit, poles and fixtures, a monthly construction credit for such equipment supplied shall be given Customer over the term of the contract.

Other special equipment such as is used for channel lighting on bridges shall be installed and maintained by Customer except lamp bulbs which shall be furnished and renewed by Company.

C) Indicates Change

RATE SSL
SODIUM STREET LIGHTING SERVICE

AVAILABILITY
This Rate schedule for high pressure sodium vapor lighting is available for public roadway, bridge and parks.

CONTRACT TERM
Ten years and thereafter in accordance with contract provisions. The contract may be terminated with sixty (60) days' notice prior to expiration period of contract by either party.

NET MONTHLY RATE

	Municipal or Public Authority	
	Customer Charge (Per Lamp)	Distribution (¢/kWh)
9,500 Lumen	$7.51	4.035
16,000 Lumen	$7.58	4.035
25,000 Lumen	$8.57	4.035
50,000 Lumen	$9.10	4.035

Low mounted, decorative fixture and pole for underground service, provided that no trenching and back-filling is required ..... $ 7.46 per month in addition to charge in Rate Table above

Additional wood pole installed for the sole purpose of supporting lighting fixtures or circuits ..... $ 5.99 per month

The number of kWh supplied is based upon the average hours' use and size of lamp.

Distribution and Generation Supply rates will be applied to per kilowatt hour of energy used each month. The number of kWh supplied is based upon the average hours' use and size of lamps.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge p

GENERAL PROVISIONS

(a) Necessary street lighting facilities are supplied and installed, operated and maintained by Company and are connected to Company's available general distribution system.

(b) Prices include the standard type luminaire currently being offered at the time service is contracted for and up to 150 circuit feet of overhead secondary extension.

(c) Customer shall pay the cost of any additional facilities required to extend service and the cost of rearranging facilities required to change mounting height.

(d) Company will provide underground and decorative systems of a type being offered by the Company at the time service is contracted for when the additional cost in excess of the estimated cost of a standard overhead system for the same application is paid by Customer. Company shall take title to this system and shall operate and maintain the facilities. At the termination, for any reason, of the useful life of these systems or designated components, a new system or component shall be installed under similar conditions.

(C) Indicates Change

RATE MHSL
METAL HALIDE STREET LIGHTING SERVICE

AVAILABILITY
This Rate is available to municipalities or other public authorities for street, bridge, parks and outdoor lighting in the entire territory served by the Company.

CONTRACT TERM
Ten years and thereafter in accordance with contract provisions. The contract may be terminated with sixty (60) days' notice prior to expiration period of contract by either party

NET MONTHLY RATE

	Municipal or Public Authority	
	Customer Charge (Per Lamp)	Distribution (¢/kWh)
9,000 Lumen	$6.71	4.035
12,900 Lumen	$5.42	4.035
13,000 Lumen	$4.92	4.035
20,500 Lumen	$7.29	4.035
36,000 Lumen	$6.20	4.035

(1) Low mounted, decorative fixture and pole for underground service, provided that no trenching and back-filling is required ..... $ 7.46 per month in addition to charge in Rate Table above

Additional wood pole installed for the sole purpose of supporting lighting fixtures or circuits ..... $ 5.99 per month

The number of kWh supplied is based upon the average hours' use and size of lamp.

Distribution and Generation Supply rates will be applied to per kilowatt hour of energy used each month. The number of kWh supplied is based upon the average hours' use and size of lamps.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

GENERAL PROVISIONS

(a) Necessary street lighting facilities are supplied and installed, operated and maintained by Company and are connected to Company's available general distribution system.
(b) Prices include the standard type luminaries currently being offered at the time service is contracted for and up to 150 circuit feet of overhead secondary extension.
(c) Customer shall pay the cost of any additional facilities required to extend service and the cost of rearranging facilities required to change mounting height.
(d) The cost of any change of location of lamps, from the original location specified by Customer, shall be borne by the Customer and paid to the Company.

(C) Indicates Change

RATE LED-SL
LIGHT-EMITTING DIODE STREET LIGHTING SERVICE

AVAILABILITY
This Rate is available to municipalities or other public authorities for street, bridge, parks and outdoor public lighting in the entire territory served by the Company.

CONTRACT TERM
Ten years and thereafter in accordance with contract provisions, which shall be consistent with this rate schedule and shall be of a standard form provided by and satisfactory to the Company. The contract may be terminated with sixty (60) days' notice prior to expiration period of contract by either party subject to the termination provision below.

NET MONTHLY RATE

	Municipal or Public Authority	
Nominal Lamp Wattage Range	Customer Charge (Per Lamp)	Distribution (¢/kWh)
50-60	$10.29	4.035
100-110	$12.16	4.035
140-160	$14.00	4.035
250-280	$21.25	4.035

Additional wood pole installed for the sole purpose of supporting lighting fixtures or circuits ..... $ 5.99 per month

Distribution and Generation Supply rates will be applied to per kilowatt hour of energy used each month. Service hereunder is unmetered with the number of kWh billed for each size lamp calculated based on the estimated input wattage of the lamp and approximately 4,000 burning hours per year.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

GENERAL PROVISIONS

(a) Necessary street lighting facilities are supplied and installed, operated and maintained by Company and are connected to Company's available general distribution system.

(b) Prices include the standard type luminaries currently being offered at the time service is contracted for and up to 150 circuit feet of overhead secondary extension. Prices include normal operation and maintenance.

(c) Customer shall pay the cost of any additional facilities required to extend service and the cost of rearranging facilities required to change mounting height.

(d) The cost of any change of location of lamps, from the original location specified by Customer, shall be borne by the Customer and paid to the Company.

(C) Indicates Change

RATE LED-CO
CUSTOMER-OWNED LIGHT-EMITTING DIODE STREET LIGHTING SERVICE

AVAILABILITY
This Rate is available to non-residential Customers and municipalities or other public authorities in the entire territory served by the Company for the operation of Light-Emitting Diode (LED) street lighting systems on private or public areas where the Customer wholly owns and installs the street lighting system.

CONTRACT TERM
Ten years and thereafter in accordance with contract provisions, which shall be consistent with this rate schedule and shall be of a standard form provided by and satisfactory to the Company. The contract may be terminated with sixty (60) days' notice prior to expiration period of contract by either party subject to the termination provision below.

NET MONTHLY RATE

Distribution Charge…….. 4.035 (¢/kWh)

Customer Charge (Per Lamp)*……$2.00 per month

* Applicable where, upon Customer election, Company provides operation and maintenance of Customer-owned street lighting system in accordance with the provisions below.

Additional wood pole installed for the sole purpose of supporting lighting fixtures or circuits ..... …..$ 5.99 per month

Distribution and Generation Supply rates will be applied to per kilowatt hour of energy used each month. Service hereunder is unmetered with the number of kWh billed for each size lamp calculated based on the estimated input wattage of the lamp and approximately 4,000 burning hours per year. Rate offering applicable to Customer-owned street lights sized within the standard nominal lamp wattage ranges offered by the Company under Rate Schedule LED-SL, not to exceed 280 nominal lamp wattage. If the Customer-owned street light is of a size outside of the Company's standard size offerings under Rate Schedule LED-SL, but in no event not to exceed 280 nominal lamp wattage, the Customer's kWh billed will be determined based on the next higher nominal lamp wattage range set forth under Rate Schedule LED-SL.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

STANDARD INSTALLATION AND SERVICE
Upon Customer election, the Company shall operate and maintain the Customer-owned street lighting system subject to Customer payment of the monthly Customer charge (per lamp) above.

Customer-owned street lighting equipment shall be installed in accordance with company and industry safety codes and, where installed on Company poles, in accordance with general Company specifications for similar equipment.

Company shall make all connections of Customer's street lighting system to the Company's available general distribution system.

(C) Indicates Change

RATE FCP
FLOOD CONTROL POWER SERVICE

AVAILABILITY
This Rate is available to municipalities and townships in Company's territory requiring power service for the operation of flood pumping stations during periods of public emergency, and for periodic testing of same as hereinafter provided.

CHARACTER OF SERVICE
Alternating current, 60 cycles, three phase, 13,800 volts.

CONTRACT TERM AND BILLING
Term of contract shall be not less than one (1) year, with monthly payments for service taken.

RATE TABLE

	Distribution ($/Month)	Distribution (¢/kWh)
First 100 kWh or less per month for each electrically driven pump installed	$4.69	
All additional kWh		2.090

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

SPECIAL PROVISIONS

(1) The Customer shall own, install, operate and maintain the lines necessary to connect its pumping stations to the Company's existing facilities, and the transforming equipment and auxiliary apparatus necessary to secure voltages less than the supply voltage specified above.
(2) Periodic testing shall be prearranged between the Customer and Company upon at least twenty-four (24) hours' notice to the Company and shall occur on weekdays during the hours between 12 midnight and 6 A.M. unless otherwise justified by load conditions on Company's system, of which conditions the Company's judgment shall be final.
(3) Supply lines at each pumping station shall normally be disconnected and shall be connected only when necessary during periods of public emergency and for periodic testing.

(C) Indicates Change

RATE BLR
BORDERLINE RESALE SERVICE

AVAILABILITY
Available under reciprocal agreements to neighboring public utilities supplying electric service for resale in territory immediately adjacent to the charter territory of the Company, provided the Company, in its opinion has available capacity over and above that required to meet the demands, present and prospective, for service in its own territory.

CHARACTER OF SERVICE
Alternating current, 60 cycles, single or three phase, 2,400 volts, 4,160 volts, 8,320 volts, or 13,800 volts.

CONTRACT TERM AND BILLING
Standard contracts are for a term of five (5) years with monthly payments for service taken.

RATE TABLE
Service will be provided under the appropriate Company Tariff Rate. The appropriate rate is that under which the Customer would be served if they were located within the Company's franchised service territory.

SURCHARGES AND RIDERS
Rider A - State Tax Adjustment Surcharge
Rider B - Generation Supply Service
Rider E - Energy Efficiency and Conservation Rider
Rider F - Power Factor Surcharge
(C) Rider G - Distribution System Improvement Charge

PAYMENT TERMS
Late Payment Charges shall be billed in accordance with Section 13, Payment Terms, paragraph 13-f.

POWER FACTOR
The Power Factor Charge contained in this Tariff is applied to this Rate.

(C) Indicates Change

APPENDIX B

UGI Utilities Inc. - Electric Division

Long Term Infrastructure Improvement Plan

2018 to 2022

Introduction

This document is being submitted by UGI Utilities Inc. - Electric Division (UGI-ED) pursuant to the requirements of Section 1352 of the Pennsylvania Public Utility Code, 66 Pa.C.S. § 1352, the Commission's implementing regulations at 52 Pa. Code §§ 121.1 – 121.8, and the Pennsylvania Public Utility Commission's (PUC or Commission) Final Implementation Order *for Implementation of Act 11 of 2012*, at Docket No. M-2012-2293611 (Order entered on August 2, 2012). This document describes UGI-ED's existing and proposed betterment initiatives, and is respectfully submitted for approval as the Company's Long-Term Infrastructure Improvement Plan (LTIIP).

The UGI-ED LTIIP is structured to address the following specific components of an LTIIP as set forth at 52 Pa. Code §121.3(a):

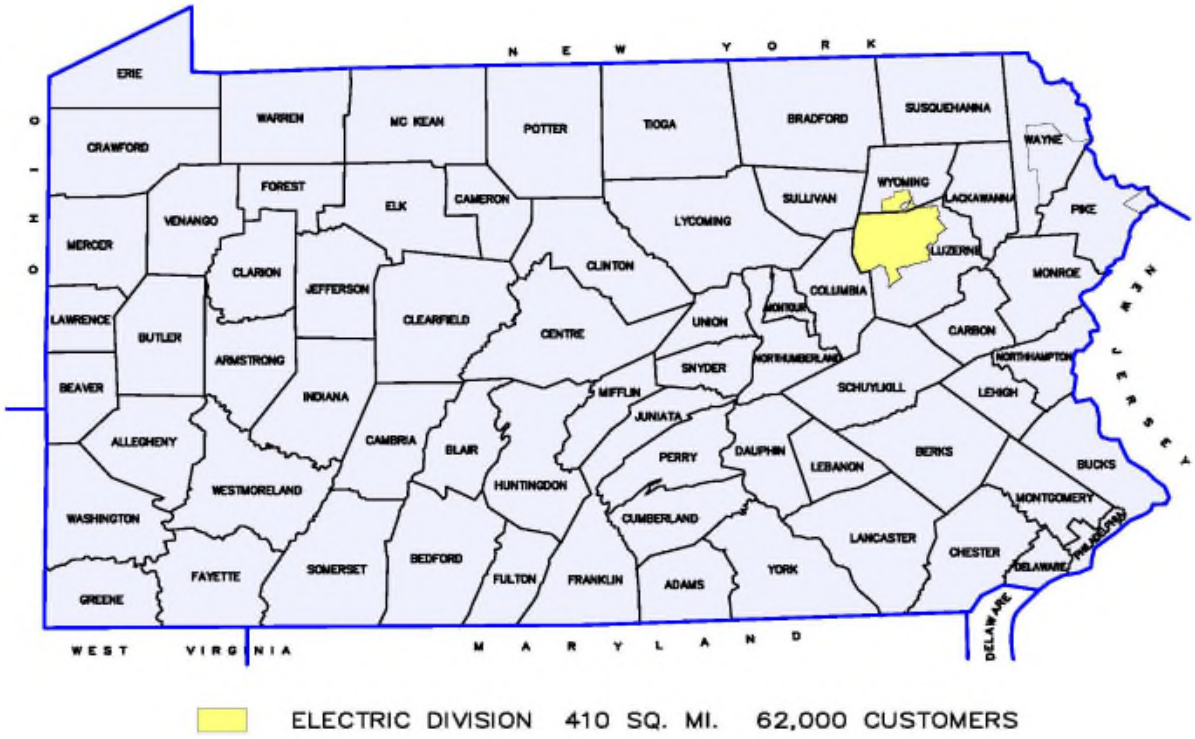
(1) Identification of the types and age of eligible property owned or operated by the utility for which it is seeking recovery;
(2) An initial schedule for the planned repair and replacement of eligible property;
(3) A general description of the location of the eligible property;
(4) A reasonable estimate of the quantity of eligible property to be improved or repaired;
(5) Projected annual expenditures and means to finance the expenditure;
(6) A description of the manner in which infrastructure replacement will be accelerated and how the repair, improvement or replacement will ensure and maintain adequate, efficient, safe, reliable and reasonable service.
(7) A workforce management and training program designed to ensure that the utility will have access to a qualified workforce to perform work in a cost-effective, safe and reliable manner.
(8) A description of a utility's outreach and coordination activities with other utilities, Department of Transportation and local governments regarding the planned maintenance/ construction projects and roadways that may be impacted by the LTIIP.

UGI-ED will address each of these in more detail below.

Corporate Background

UGI Corporation is a holding company whose principal subsidiaries, UGI Utilities, Inc., AmeriGas, Inc. and UGI Enterprises, Inc., engage in the distribution and marketing of energy products and services including natural gas, electricity, propane and butane. UGI Utilities is a public utility, providing natural gas distribution service through its Gas Division and electric distribution service through its Electric Division, subject to the jurisdiction of the Commission. UGI Utilities also owns two natural gas distribution subsidiaries UGI Penn Natural Gas and UGI Central Penn Gas, Inc. that provide service to the public subject to the jurisdiction of the Commission.

The Electric Division of UGI Utilities, Inc. is a small Electric Distribution Company ("EDC") serving approximately 62,000 customers in parts of Luzerne and Wyoming counties in Northeastern Pennsylvania. UGI-ED is predominantly a distribution company which operates and maintains over 1,200 circuit miles of overhead and underground primary distribution lines and associated equipment and twelve (12) distribution substations.



As with any public utility, safety and reliability are at the core of the service the Company provides to its customers. UGI-ED continues a long history of reliable service, as demonstrated by positive reliability performance metrics, while at the same time controlling costs, which has resulted in stable distribution rates for customers.

However, UGI-ED like many other utilities, is facing a point where accelerated investment in core distribution equipment and facilities is necessary to ensure continued safe and reliable service and to avoid potential reliability impacts due to aging infrastructure. Without the accelerated investment identified in this LTIIP, UGI-ED believes there would be increased risk to system reliability, as well as the prospect of increasing maintenance costs.

Types and Age of Eligible Property

UGI-ED has identified the following types of property as DSIC-eligible distribution infrastructure that will be replaced as part of its plan, consistent with 66 Pa.C.S. § 1351(1):

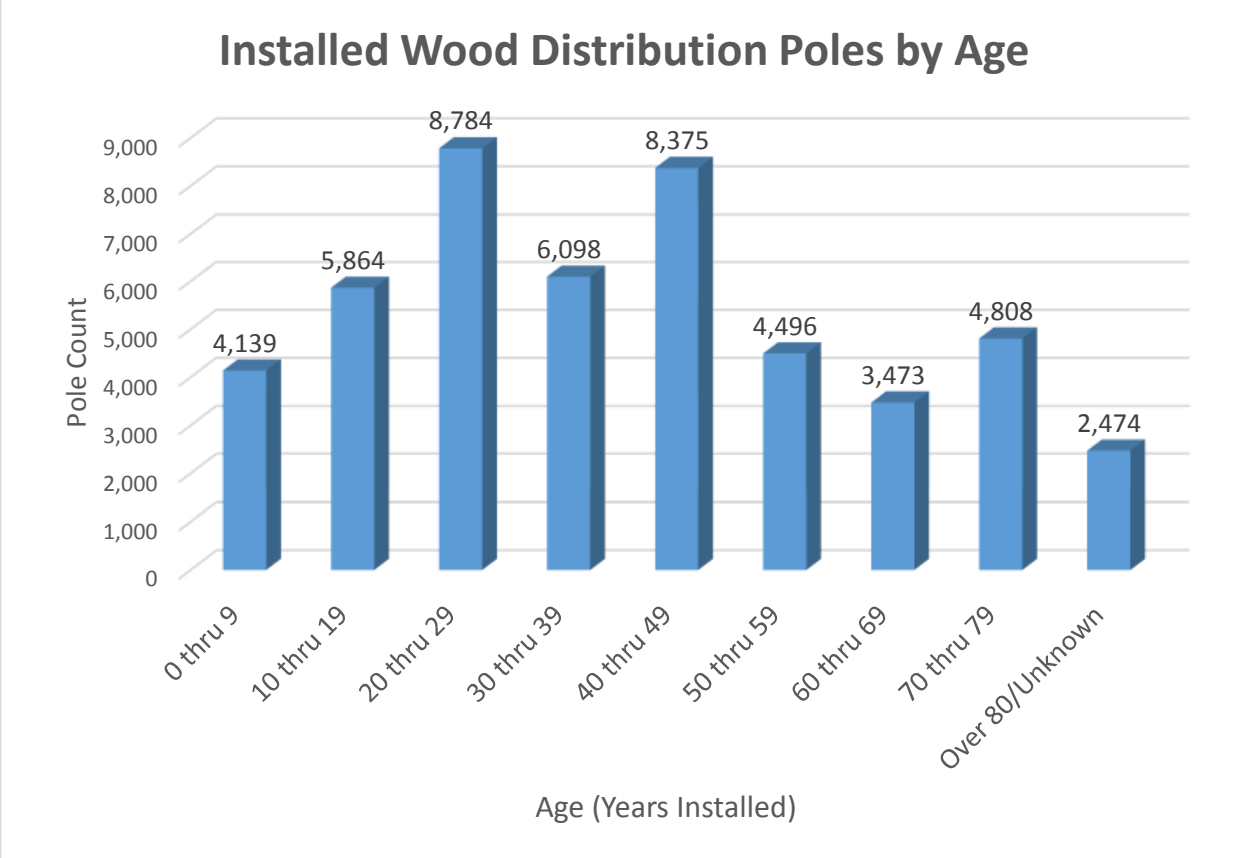
- Poles and towers.
- Overhead and underground conductors.
- Transformers and substation equipment.
- Any fixture or device related to eligible property under subparagraphs (i), (ii) and (iii), including insulators, circuit breakers, fuses, reclosers, grounding wires, crossarms and brackets, relays, capacitors, converters and condensers.

- Unreimbursed costs related to highway relocation projects where an electric distribution company must relocate its facilities.
- Other related capitalized costs – such as equipment, tools, corrosion control equipment, vehicles, and supporting information technology and any other capitalized costs that the Commission determines should be appropriately included as part of the LTIIP.

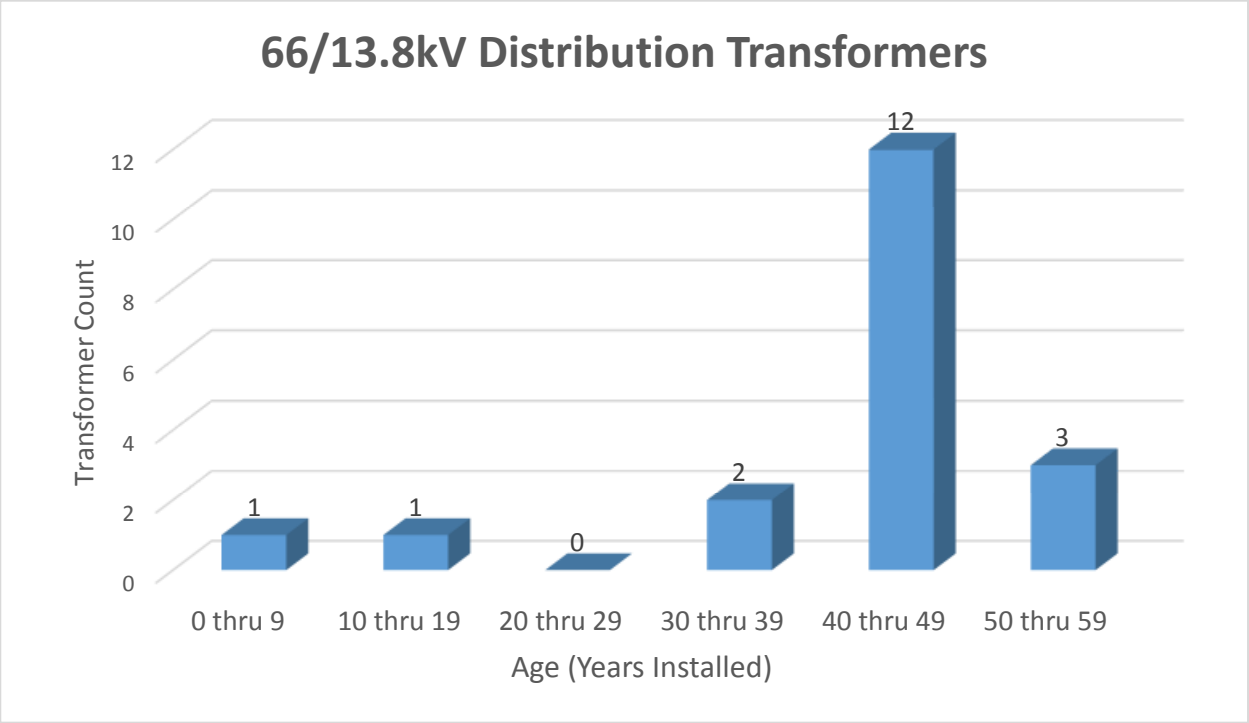
UGI-ED's LTIIP encompasses prudent and cost effective programs, focused on a global improvement to the electric distribution system, and specifically to the eligible property identified in Section 1351(1).

Over time, core electric distribution components impacted continually by mechanical, environmental and electrical stress, degrade toward a point which is no longer considered optimal for system performance. Through regular maintenance and good engineering practices, most components will continue to operate beyond this period with some expectation of increased failure rates and resulting reliability impacts. This is the primary concern with aging electric infrastructure. A significant amount of capital expenditures included in this LTIIP focus on replacing aging infrastructure. The age distribution of various UGI-ED facilities included in the LTIIP is shown below:

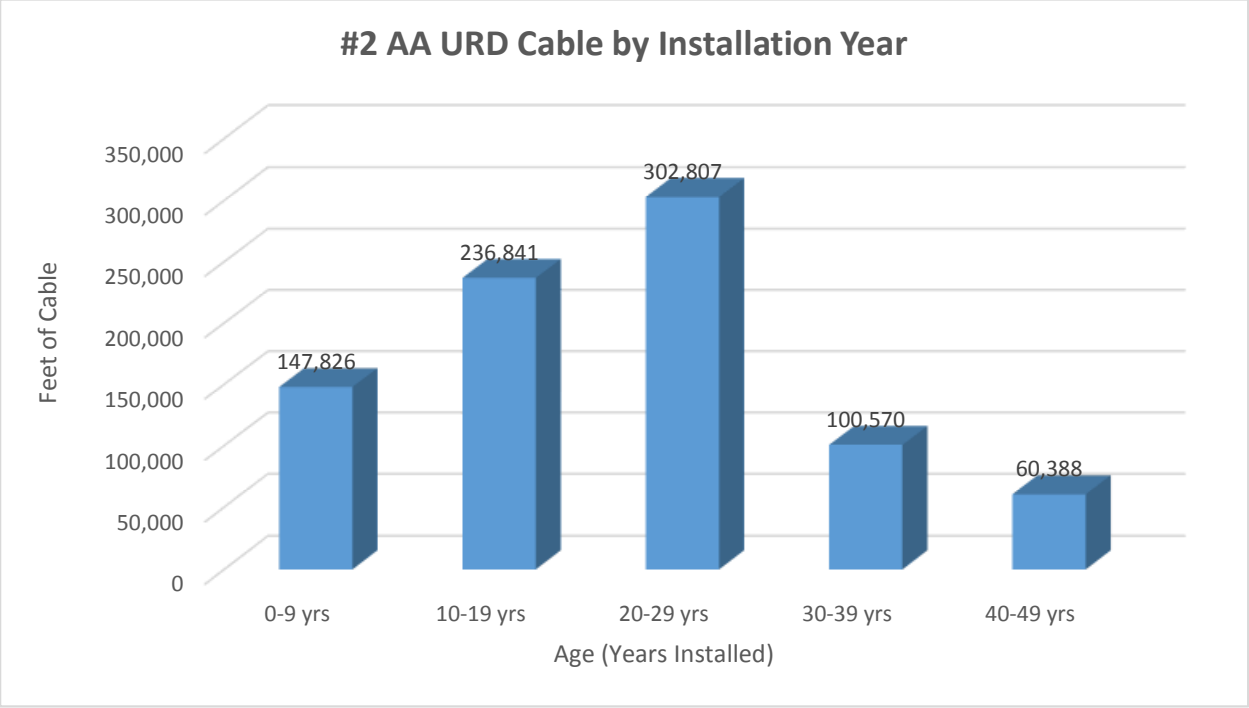
Distribution Poles (and associated appurtenances)



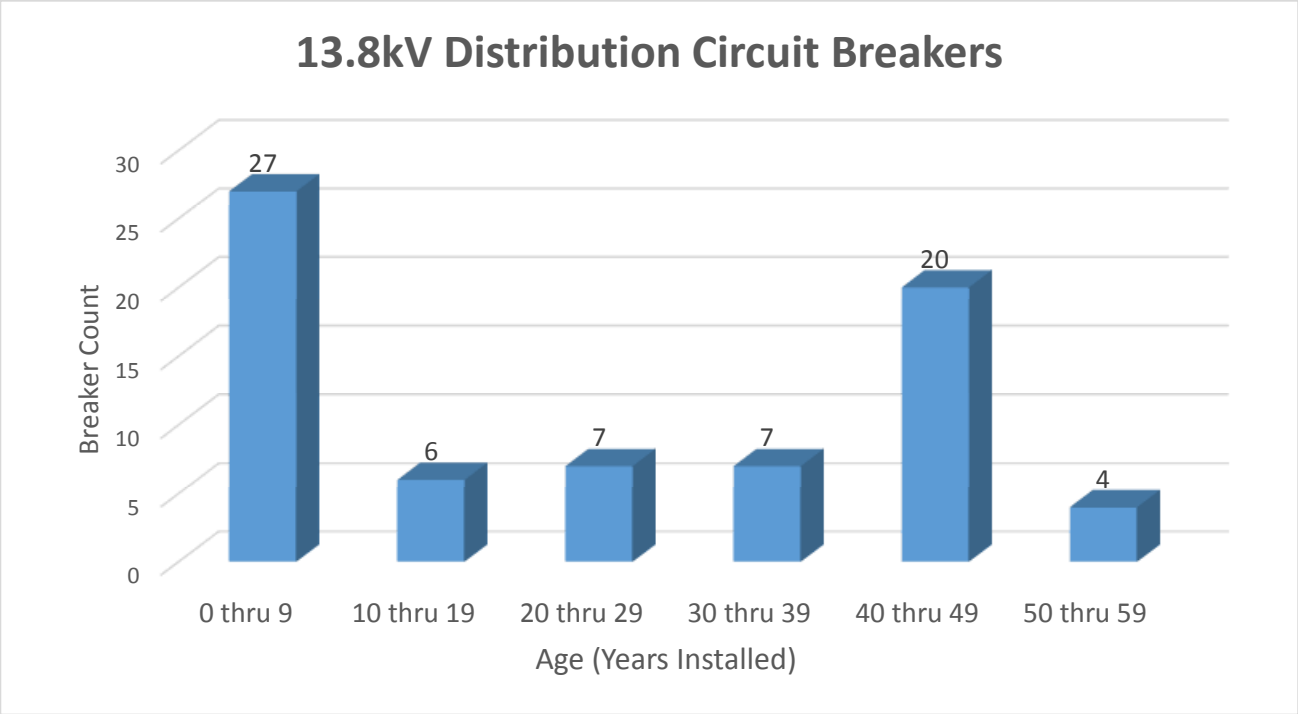
Substation Distribution Transformers



Underground Residential Cable



Distribution Circuit Breakers



With an approved LTIIP, UGI-ED expects to be in a better position to ensure the safe and reliable delivery of electric service today and in the future, commensurate with customer needs and expectations.

Reliability Focus

Reliability is primarily a function of physical lines and equipment, associated inspection and maintenance programs, operational response, vegetation management and system planning. A decline or failure in one or more of these categories will result in a corresponding long -term decline in system reliability. Correcting a downward reliability trend can take a significant amount of time due to the systemic nature of these functions and facilities, their widespread distribution throughout the Company's service territory, and the labor and capital intensive nature of the required remediation efforts. Therefore, addressing and resolving issues involves, by necessity, a multi-year approach.

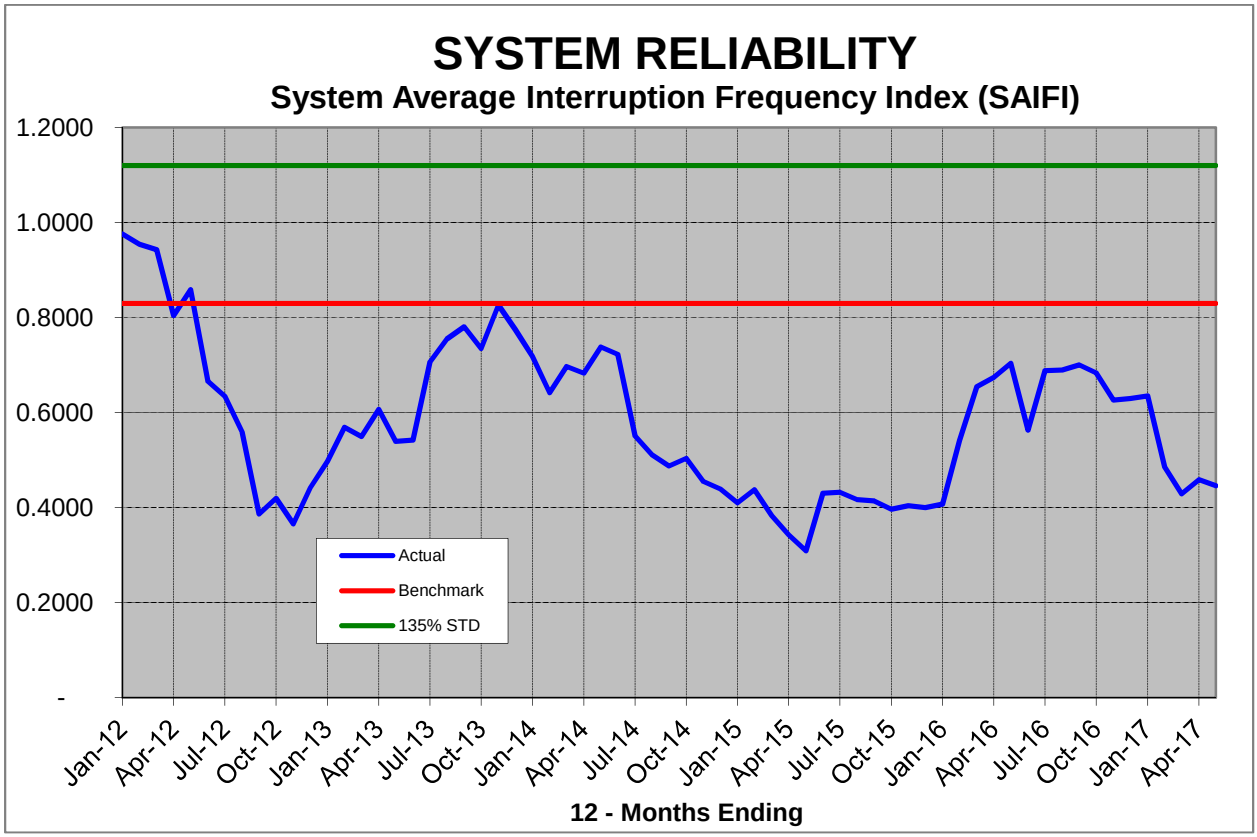
Age is only one consideration when evaluating reliability impacts. UGI-ED also relies on a comprehensive inspection and maintenance program to ensure equipment is properly maintained or replaced and to identify and prioritize maintenance issues or trends which may have an immediate or long term system impact. UGI-ED's inspection programs and goals are documented in the biennial PUC Inspection & Maintenance Plan (PUC I&M) and the Annual PUC Reliability Report. These programs include:

- Wood Distribution Pole Inspection and Treatment
- Overhead Line and Transformer Inspections
- Capacitor Inspections

- Distribution Switch Inspections
- Underground Cable Testing
- Pad Mounted Transformer & Switch Inspection & Maintenance
- Substation Circuit Breaker, Transformer & Relay Testing and Maintenance

With respect to UGI-ED's LTTIP, certain I&M programs are an immediate driver for accelerated replacement of facilities as is the case with the wood pole inspection program. In other instances, the I&M program supports the "aging infrastructure" and or reliability based initiatives by providing data necessary to develop a cost-effective replacement schedule. UGI-ED continues to demonstrate good system reliability as indicated by the positive results in all reportable reliability indices. UGI-ED has a recent history of performing better than PUC established benchmark standards (See Figure 1).

Figure 1



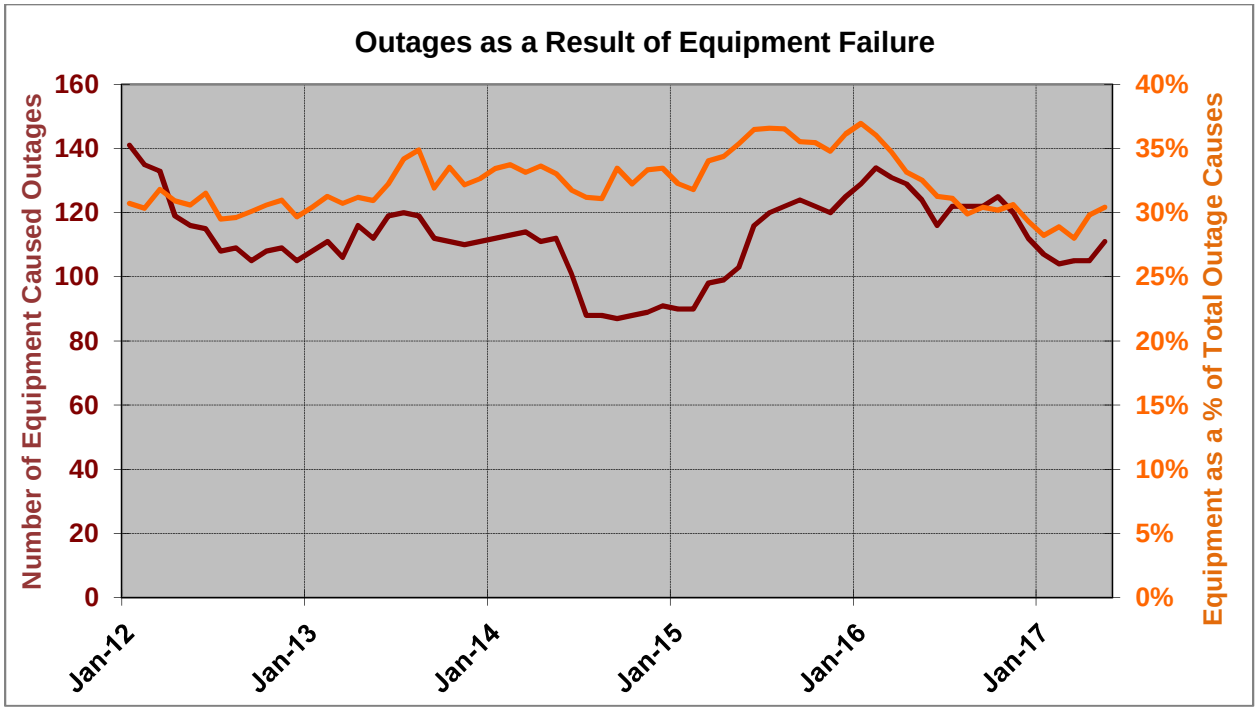
Primary drivers for this favorable trend are UGI-ED's robust vegetation management program, relatively low equipment failure rates and effective operational response by field crews and supervisors. However, to maintain current reliability levels, increased capital investment is necessary to address the long-term risk posed by aging infrastructure. In addition, incremental improvements to reliability must be addressed by proper system planning, considering operational flexibility and the use of new technologies which can reduce the scope and duration of outages.

UGI-ED has already undertaken an accelerated focus on infrastructure and implemented several infrastructure and technology-based reliability programs including accelerated underground cable and wood pole replacement, Distribution Automation (DA), enhanced feeder sectionalizing and primary substation tie-line additions. These programs have been developed to address significant long-term reliability factors. Considering these programs and the additional programs documented in the UGI-ED LTIIP, UGI-ED fully expects to improve overall system reliability and, to some extent, smooth out historical weather-related variability.

Need for an LTIIP

The Long-Term Infrastructure Improvement Plan and associated Distribution System Improvement Charge (DSIC) are intended to provide a mechanism for utilities including Electric Distribution Companies (EDC) like UGI-ED, to accelerate their infrastructure repair and replacement programs by supporting more timely recovery of approved infrastructure investments aimed at modernizing and improving distribution systems. UGI-ED, like other utilities, faces an aging infrastructure issue affecting key system components such as wood poles, underground cable, circuit breakers and substation transformers. Globally much of the core UGI-ED distribution system is over 40 years old. Although equipment related outages have remained somewhat constant over the last 10 years (See Figure 2), given the current age of many of these components the expectation and the industry norm is to see gradually increasing failure rates.

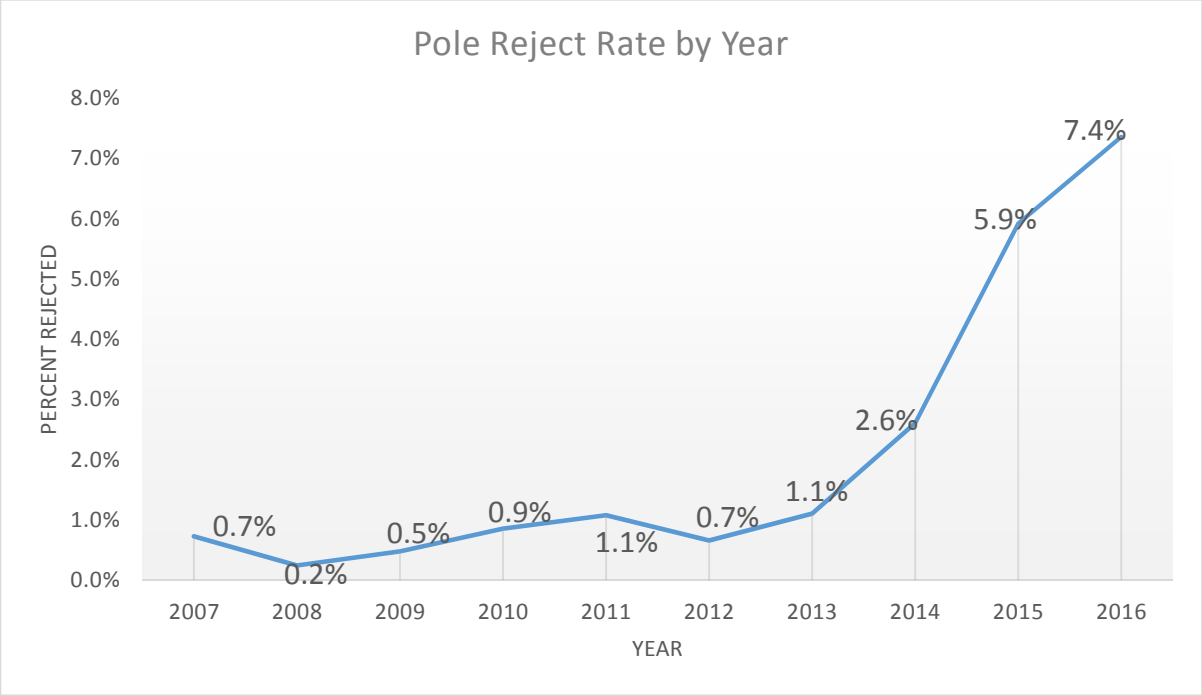
Figure 2



UGI-ED's distribution wood pole inventory, which has an average age of 40 years, is an example of the aging infrastructure issue. As documented in UGI-ED's PUC I&M Plan, all wood poles are inspected on a

12-year cycle. This process includes both visual and physical inspections to determine a pole's condition and capacity to perform as designed. Although UGI-ED has a comprehensive inspection and maintenance program, indications of age-related issues have been observed during recent annual inspections which saw a significant increase in reject rates over the last three years (See Figure 3).

Figure 3



Similarly, UGI-ED's 66/13.8kV power distribution transformers have an average age of 41 years with 63% of the units exceeding 40 years old. Although properly maintained, UGI's aging power transformers are subject to an increased risk of failure. In addition, several are showing signs of problems such as elevated levels of dissolved gas. Considering a substation transformer outage can impact thousands of customers, and the significant time required to manufacture and replace transformers, a prioritized and accelerated replacement schedule is warranted.

Finally, increased investment in technology and system planning-based reliability enhancements included in the LTIIP will have immediate and long-term impacts on reducing customer outage minutes and frequency. This includes UGI-ED's ongoing feeder sectionalizing initiative which is intended to reduce the number of customers impacted by a single outage by limiting the number of customers under individual protection devices or manual switches. The sectionalizing/automation goal is to place a maximum of 500 customers under a single device. This project also includes Distributed Automation which will provide for remote monitoring and control of field devices (i.e. OCRs) reducing switching times and providing valuable data to UGI's distribution planning engineers and system operations personnel.

UGI-ED will continue to rely on various I&M programs coupled with the tracking of equipment failures, to monitor the overall "health" of core UGI-ED facilities as they age. UGI-ED recognizes that without active intervention the pace of failures and replacements may outpace its capacity to respond in a cost-efficient manner with potential impacts to reliability and the safety of customers and employees. The individual programs identified to address aging infrastructure and other appropriate reliability initiatives are discussed in Appendix A.

Implementation of the LTIIP

As good utility practice, UGI-ED continually makes infrastructure investments to address aging infrastructure, reliability improvements and to deploy beneficial technology enhancements. This is evidenced by historical and ongoing projects included in this proposed LTIIP related to wood pole and underground cable replacement, secondary modernization, lower voltage conversions, distribution sectionalizing and primary reconductor projects. In 2016, UGI-ED significantly accelerated capital expenditures in two key areas, wood pole and underground residential cable replacements. In total, investment in these two areas increased by over $1.3 million dollars or 247% versus the average investment during the baseline period from 2012 through 2015. Approval of the UGI-ED LTIIP will enable UGI to maintain and/or further accelerate the infrastructure improvements and repairs necessary to ensure safe, reliable and efficient delivery of electric service to our customers.

UGI-ED is proposing a five-year LTIIP covering the period from 2018 through 2022. Increased capital investment associated with specific LTIIP programs is planned to exceed $4.0 million annually compared to average spending over the baseline period from 2012 through 2015. Primary drivers for the increased spending are replacement of wood poles, underground cable replacement, major system improvement projects and substation transformer replacements. These programs are aimed at addressing critical aging infrastructure issues before significant failures and increased customer outages occur. In addition, based on system planning recommendations, new facilities will provide operational flexibility or sectionalizing to limit the number of customers impacted by individual outages. Table 1 shows UGI-ED's historical and projected capital spending levels under the proposed LTIIP.

Table 1

Annual LTIIP Expenditures (dollars in thousands)								
				Proposed 5-year LTIIP Plan				
Capital Investment Period (Fiscal Year)	2012-2015 (Baseline)	2016 (Actual)	2017 (Forecast)	2018	2019	2020	2021	2022
Replacement & Betterment	$3,528	$5,710	$6,156	$7,646	$7,766	$8,012	$8,152	$8,263
Capital Increase over Baseline Period	N/A	$2,182	$2,628	$4,118	$4,238	$4,484	$4,624	$4,735
% Increase over Baseline Period	N/A	62%	74%	117%	120%	127%	131%	134%

Individual LTIIP program budget schedules are provided along with the specific program details in Attachment A. Core LTIIP programs such as pole replacements, URD re-cabling and transformer replacements are intended to address aging infrastructure before reliability is impacted. The results of these core programs are anticipated to be reflected in a continuation of UGI-ED's excellent reliability statistics. To validate this expectation, UGI-ED will track and measure the performance of the various distribution programs with respect to reliability benefits and cost effectiveness. On an annual basis, the impact to reliability will be measured by comparing historical and post plan implementation reliability indices on a per feeder basis. In addition to reliability, UGI-ED will utilize a competitive bid process where appropriate, to acquire construction resources and material to ensure the expected benefits are achieved in a cost-effective manner.

Access to Qualified Workforce

The UGI-ED workforce has traditionally been a mix of fulltime company and contractor resources. Most overhead distribution capital work measured from both an expenditure and volume standpoint relies predominately on the larger contractor workforce. The composition of the workforce is managed to accommodate planned capital projects, routine maintenance activities, anticipated new business growth and typical weather-related outages.

Training is an essential component of any utility workforce. UGI-ED is subject to the training requirements set forth in the Occupational Safety and Health Administration (OSHA) Regulation 29 CFR §1910.269 Electrical Power Generation, Transmission and Distribution in addition to internally developed training programs. With respect to overhead line maintenance and construction, UGI-ED only hires fully qualified Journeyman linemen. Within the UGI-ED Substation Department, on the job training via supervision and senior personnel provide for a progression through the various job positions and associated qualifications. Employees also participate in OSHA 1910.269 refreshers and reviews of applicable safety-related work practices and procedures. This, coupled with regular supervisor inspections, ensures employees are qualified and complying with all safety related work practices.

Contractor Workforce

A significant portion of LTIIP related programs including pole replacements, PennDOT relocations, and primary tie-line distribution projects have traditionally and are planned to continue to be been handled by UGI-ED's contractor workforce. Flexibility under the existing line construction agreement allows UGI-ED to scale the contractor workforce to meet emergent resource requirements including those associated with active or proposed LTIIP programs. Currently UGI-ED employs seven (7) contractor crews totaling 28 full-time resources. This workforce was increased by seven (7) additional full time resources during the 2016 -2017 time period to support the acceleration in planned capital work. UGI-ED typically renews the contractor resource agreement through a competitive bid process every three to five years, the next being late 2018. UGI will continue to utilize a competitive procurement process to ensure a safe and cost-efficient utilization of the contractor workforce.

Beyond traditional overhead line construction work, UGI-ED employs additional qualified contractors paired with internal UGI-ED employees to perform more specialized work such as URD re-cabling projects and substation upgrades. With respect to URD re-cabling projects, UGI-ED recently approved several new contractors for inclusion in the bid process which will provide for sufficient resources and competitive pricing to complete proposed re-cabling projects. Contractor resources will also be utilized to supplement UGI-ED resources, as necessary, for substation specific LTIIP projects. Again, depending on the magnitude of the project, UGI-ED utilizes a competitive bid process for qualified contractors to evaluate and select appropriate resources.

In all cases where contractor personnel work independently of qualified UGI-ED supervision, contractors must confirm and acknowledge during the bid process that employees are OSHA 1910.269 qualified and only those employees will work in restricted areas. UGI-ED also reviews contractor safety and training records, safety rules and programs, drug and alcohol policies and OSHA 300 Logs prior to making a contractor selection. Once on property, UGI-ED requires contract line construction employees to participate in De-Energizing Lines and Equipment training which qualifies the employee to become a "tag-holder" as part of the electric permit process. This training also provides information on UGI facilities, distribution equipment and the standard communication protocols between System Operations and field personnel, particularly during switching operations and system emergencies. UGI-ED also sponsors training on equipotential grounding for all field personnel responsible for installing or overseeing the installation of grounds to de-energize electric conductors.

UGI-ED employs a company supervisor that has direct oversight responsibility for contractor performance including quality, safety, efficiency and billing activities. All personnel, whether company or contractor, have "stop-job" authority if a safety concern is identified, after which UGI-ED operations and safety personnel would investigate and address as necessary. To further support the overall safety and training goals with respect to the contractor workforce, and UGI-ED as a whole, UGI-ED now maintains a dedicated electric safety and training resource. This employee oversees the advancement of electric specific safety policies and procedures.

UGI-ED also initiated a construction quality control program which samples both contractor and company line work. The program evaluates several key areas when reviewing the final as-built product including overall quality, compliance with construction and safety standards as well as "as-built" versus original design variances. Identified issues are compiled and discussed with the operations team to identify the source of the issue and the subsequent resolution, which may be additional training or even changes to construction standards.

UGI Workforce

The UGI-ED line distribution workforce is comprised of ten (10) Journeymen linemen that perform a more versatile mix of capital and maintenance projects along with a customer troubleshooting function. These employees are typically utilized to complete less extensive capital projects such as single point equipment installations or replacements. The division of work between contractor and Company crews is necessary to provide enough flexibility to ensure adequate and timely resources are available to address non-LTIIP-related maintenance and capital projects including new business installations. UGI-ED also employs five (5) fulltime substation employees supported by in-house engineering and supervision

to complete planned substation maintenance and capital improvements. Again, this workforce is supplemented as necessary with both internal and external contractor resources.

Coordination with PennDOT and Local Municipalities

Where UGI-ED facilities are located in PennDOT or local municipality-owned roads or other public places, UGI-ED will obtain all required permits, and through the permitting process will address any traffic control or restoration requirements. Overall, UGI-ED does not believe its proposed LTIIP programs will have a significant impact on PennDOT or local communities. Where the opportunity is presented to UGI-ED, for example upon notice from PennDOT of potential relocations, the Company will proactively seek to work with agency and local officials to reduce the cost and impact to the local community of any necessary projects.

Conclusion

UGI-ED's proposed LTIIP is primarily intended to address, at an accelerated rate, core aging infrastructure replacement. As detailed above and in Appendix A, UGI-ED like most EDCs, has a distribution system designed and installed many decades ago which was expanded and upgraded as necessary to serve new and increasing customer load. Without accelerated investment resulting in the expedited and strategic replacement of facilities, the sheer magnitude of the aging infrastructure will eventually overwhelm traditional replacement programs, impacting the Company's ability to provide safe and reliable service. In response UGI-ED has already accelerated key infrastructure replacements and is proposing several additional programs. An approved LTIIP will enable UGI-ED to stay ahead of the aging infrastructure curve and provide for additional reliability enhancements such as targeted distribution automation. An approved LTIIP will also permit UGI-ED to pursue a Distribution System Improvement Charge (DSIC) recovery mechanism in the future.

Appendix A lists proposed LTIIP projects and corresponding projected capital expenditures for the 2018 to 2022 period. If approved, UGI-ED expects to meet the capital expenditure schedule baring any significant factors such as major storm events or unforeseen regulatory requirements.

Appendix A

	Baseline (avg)	Actual	Budget	Planned Expenditure Schedule (dollars in thousands)					Plan Year Total
LTIIP Program Initiatives	2012-2015	2016	2017	2018	2019	2020	2021	2022	
Wood Pole Replacements	$187	$1,122	$1,000	$1,000	$1,100	$1,300	$1,400	$1,500	$6,300
Wood Pole Reinforcements	$9	$83	$40	$48	$48	$49	$49	$50	$244
URD Cable Replacements	$346	$727	$900	$1,000	$1,000	$1,000	$1,000	$1,000	$5,000
Secondary Modernization	$452	$740	$500	$573	$573	$573	$573	$573	$2,865
Distribution Failed OH Equipment	$1,025	$838	$1,030	$1,100	$1,100	$1,100	$1,100	$1,100	$5,500
Porcelain Insulator & Cutout Replacements	$19	$0	$0	$50	$50	$50	$50	$50	$250
Replacement and Improvement of Services	$180	$130	$170	$170	$170	$170	$180	$180	$870
Facility Relocations (PennDOT)	$334	$684	$331	$465	$465	$465	$465	$465	$2,325
Right of Way Reliability Relocations	$37	$167	$100	$100	$100	$100	$100	$100	$500
Major System Improvement Projects	$729	$968	$1,535	$1,900	$1,900	$1,900	$1,900	$1,900	$9,500
Distribution Sectionalizing	$90	$58	$100	$100	$100	$100	$100	$100	$500
Distribution Automation	$8	$73	$200	$260	$260	$260	$260	$260	$1,300
8kV and 4kV Distribution System Conversions	$77	$0	$125	$125	$125	$150	$150	$150	$700
Replace Failed UG Secondary & Service Cable	$25	$53	$75	$75	$75	$75	$75	$75	$375
Distribution Relay Replacements	$1	$0	$0	$60	$60	$60	$60	$60	$300
Distribution Circuit Breaker Replacements	$10	$65	$50	$140	$140	$140	$150	$150	$720
Substation Transformer Replacements	$0	$0	$0	$480	$500	$520	$540	$550	$2,590
Total	$3,528	$5,707	$6,156	$7,646	$7,766	$8,012	$8,152	$8,263	$39,839

Distribution Pole Replacements

Program Description and Purpose

This ongoing program was established to identify and replace UGI-ED wood poles based on condition, age or construction requirements. The purpose is to ensure installed wood poles have a manageable service life while meeting current construction and clearance standards. Most replacements are identified during the annual pole inspection and treatment program. However additional poles may be targeted based on company records or via general field observations by Company employees during normal work or patrols. Pole replacements are necessary when deterioration or damage is sustained which weakens the pole, clearance requirements cannot be achieved, construction specifications are updated or minimum strength requirements can no longer be maintained to support the attached facilities. The replacement program improves public and employee safety and overall system reliability.

Background/Justification

UGI-ED has over 45,000 wood distribution poles spread across a mainly rural service territory. Pole material varies, but the majority of poles are either Southern Pine or Western Cedar. The average pole age is 40 years old with nearly 14,000 poles greater than 50 years old. The current inspection and treatment cycle per the UGI-ED I&M Plan is 10 to 12 years. During the period from 2004 through 2013 UGI-ED identified an average of 30 reject poles per year (less than 1%). In 2014, 2015 and 2016 reject rates rose to 2.6%, 5.9% and 7.4% respectively, which resulted in a combined 658 reject poles based on the inspection population. A percentage of these rejects could be reinforced by way of C-truss methods which mitigated the total replacement volume.

Given the increased rejection rate and the age of the UGI-ED pole inventory. UGI-ED accelerated the rate of targeted pole replacements to 165 in 2016 and proposes to continue at a rate of between 150 and 200 poles per year in subsequent years. This targeted replacement rate combined with an increase in pole reinforcements will ensure a reliable and manageable pole infrastructure into the future.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Replacements	34 (avg)	150 – 200	150 - 200	150 – 200	150 - 200	150 – 200
Expenditures ($ thousands)	$187 (avg)	$1,000	$1,100	$1,300	$1,400	$1,500

Locations

Replacement locations are driven mainly by the pole inspection and treatment program locations listed biennially in the UGI-ED I&M Plan. In addition, system-wide vegetation and line inspection patrols conducted by UGI-ED employees under the UGI-ED I&M Plan along with analysis of company records to evaluate age and construction, will identify an additional number of replacements.

Distribution Pole Reinforcements

Program Description and Purpose

In conjunction with UGI-ED's wood pole replacement program, pole reinforcement via steel truss bracing and fiber-wrap techniques, plays an important role in maintaining a serviceable installed pole inventory. Pole reinforcement is an ongoing UGI-ED program which can restore pole strength and extend service life at a significantly lower cost than replacement. Poles suitable for reinforcement are identified during the annual pole inspection and treatment program. As with replacements, pole deterioration or damage which reduces the overall pole strength is the primary driver for consideration under this program.

Background/Justification

Pole reinforcement has a proven track record of providing a low-cost solution for maintaining pole integrity and extending service life. UGI-ED utilizes both steel truss bracing and, to a lesser extent, fiber-wrap to reinforce damaged or deteriorated poles. Steel-truss bracing which is the most common and least expensive restoration method, involves driving a single or double steel member (truss) into the ground alongside the pole and banding the truss to the pole. Fiber-wrap is more-costly and is used when steel truss restoration is not allowed (state highway right-of-way) or would not be effective or impractical due to overhead obstructions. Candidates for restoration are identified during the annual pole inspection and treatment program where they are classified as restorable or non-restorable. Typically, restorable poles have limited degradation near the ground line and can be restored to at or near full strength with either restoration method.

UGI-ED has over 45,000 wood distribution poles spread across a mainly rural service territory with an average pole age of 40 years. The current inspection & treatment cycle per the UGI-ED I&M Plan is 10 to 12 years. Results from recent inspections indicated an average rejection rate of 5.3% over the last three (3) years, of which 25% of rejected poles were deemed to be restorable based on UGI-ED evaluation criteria. The final decision to replace or restore is based on an engineering review which considers additional factors such as location, current construction, overall age and condition, and existing and proposed attachments.

Historically, given a lower reject rate (<2%), UGI-ED has reinforced approximately 10 poles per year. In recent years, rejection rates have begun to increase as a result of pole age. As a result, UGI-ED significantly accelerated pole replacements and correspondingly, pole reinforcements. Pole reinforcement offers a substantial savings over replacement costs and takes significantly less time to complete, allowing for more reinforcements to be completed annually.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Reinforcements	12(avg)	50-70	50-70	50-70	50-70	50-70
Expenditures ($ thousands)	$9(avg)	$48	$48	$49	$49	$50

Locations

Candidates for reinforcement are identified during the annual inspection and maintenance program.

Underground Primary Cable Replacement/Restoration

Program Description and Purpose

This program will accelerate the replacement or restoration of underground primary, secondary and service cable, that serves over 5,000 UGI-ED customers through nearly 200 underground (UG) systems, primarily installed in underground residential developments (URD's). In total UGI-ED has installed over 800,000 feet of underground primary cable over the last 50 years. UGI-ED has a mix of radial-fed and loop UG systems. UG cable failures often result in extended customer outages, particularly on radial systems due to the length of time needed to locate, excavate and repair the cable. Complete replacement of older UG cable systems or restoration via cable injection methods, will improve overall customer reliability by eliminating or restoring the degrading cable and, in the case of replacement, provide new opportunities for developing switching/sectionalizing points to reduce outage times.

Background/Justification

The average life expectancy of UG cable is between 40 and 50 years. Over 60% of the cable installed on the UGI-ED system is at least 30 years old. UGI-ED has installed a variety of cable types over the years, including a large amount of direct buried with bare concentric neutral. UGI-ED performs primary neutral testing on a 10-year cycle as part of our normal maintenance activities, along with basic tracking of cable type, age and installation method. Over the last five years UGI-ED has replaced over 41,000 feet of primary cable. These projects have historically focused on known reliability issues and/or cable sections with poor test results.

Given the overall age of underground primary cable on the UGI-ED system, and the large percentage of direct buried bare concentric neutral, the number of in-service primary cable failures and failed neutral inspections is expected to increase. This expected increase would be in-line with industry trends. As a result, UGI-ED accelerated the replacement of UG cable in 2016, increasing capital investment by 110% over the baseline period, and replacing over 23,000 feet of primary, secondary and service cable. This acceleration will improve or maintain current reliability statistics and ensure that in-service failures do not exceed operational capabilities. The program is currently focused on direct buried, bare concentric neutral cable installed between 1968 and 1982. UGI-ED is also incorporating cable injection methods, where applicable, to restore the insulation quality of existing cables. Cable injection provides a lower cost option where conditions permit. At a minimum, UGI-ED expects to continue at an accelerated replacement/restoration rate until all bare concentric cable is replaced. The Company anticipates that all bare concentric cable will be replaced over the next five years.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures ($ thousands)	$346(avg)	$1,000	$1,000	$1,000	$1,000	$1,000

Locations

In addition to the current process of identifying cable replacement projects based on in-service failures (known reliability issues) and neutral testing, UGI-ED will focus on the replacement of the oldest facilities which are primarily direct buried bare concentric neutral type installations.

Distribution Sectionalizing

Program Description and Purpose

The UGI-ED Distribution Sectionalizing Enhancement Program began in 2013, with the goal of reducing customer outage minutes through the addition of both automatic and manual distribution sectionalizing devices. The program is primarily focused on the installation of traditional, non-communication assisted equipment on single phase and multi-phase circuit elements. This includes reclosers, air-break switches, fuses, disconnects and fault detectors. The addition of each device is intended to limit the number of customers exposed to a single outage or to reduce outage durations via identifying and sectionalizing faulted sections.

Background/Justification

The UGI system has evolved over time from a multi-voltage system with numerous stepdown substations at 8kV and 4kV to a primarily single distribution voltage system. As these substations were converted some existing points of sectionalizing were removed. In 2013, UGI-ED began a program to patrol each of the 41 overhead feeders to identify appropriate points for the addition of new sectionalizing devices. To date 26, or 63%, of the feeders have been patrolled. The patrols are performed by UGI-ED vegetation and system planning personnel, and locations are determined based on customer concentration, logical sectionalizing points, vegetation risk, and protection coordination requirements. As a result of the ongoing program, 142 new devices have been installed and an additional 45 devices/locations have been identified.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	20222
Planned Installations	29(avg)	20-40	20-40	20-40	20-40	20-40
Expenditures ($ thousands)	$90(avg)	$100	$100	$100	$100	$100

Locations

Locations for the addition of new sectionalizing devices are prioritized based on the worst performing circuits, and the ability to minimize potential customer interruption minutes.

Right-of-Way Reliability Relocations

Program Description and Purpose

This program is focused on the relocation of primary conductors to road right-of-way, which will improve reliability and restoration times. UGI-ED continually looks for opportunities to relocate sections of the primary distribution system currently routed through rural or "rear-lot" right-of-way which may be subject to lower reliability and longer restoration times.

Background/Justification

Select sections of the primary distribution system, particularly single phase primary in rural areas, was extended along off-road right-of-way, to serve a limited number of customers and then expanded as load growth in those areas continued. As compared to on-road right-of-way facilities, restoration requires a significant amount of manual effort due to limited or no vehicle access. This type of restoration also increases the safety risk to field personnel during restoration work.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Projects	2(avg)	2-4	2-4	2-4	2-4	2-4
Expenditures ($ thousands)	$37(avg)	$100	$100	$100	$100	$100

Locations

Right-of-way relocation projects are identified based on field inspections and feeder-based reliability metrics.

Secondary Modernization

Program Description and Purpose

This program focuses on the replacement of mainly open-wire secondary and service distribution conductors and, as necessary, the associated transformers. The existing open-wire conductors are replaced with a modern triplex wire to reduce space utilization on the pole, increase reliability, and are sized with respect to capacity to accommodate existing and future load growth.

Background/Justification

Much of UGI-ED's overhead secondary supply system was installed in the 1960's and 1970's and was designed to accommodate then current customer loads and load growth over a projected horizon. Over the last 30 years the secondary supply system has become overloaded in some areas resulting in voltage issues and or outages due to overloaded and failed transformers, and open-wire construction which is more susceptible to outages due to deterioration of the wire covering.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures* ($ thousands)	$452(avg)	$573	$573	$573	$573	$573

*The number of planned projects varies annually depending on location and scope of project.

Locations

Upgrade priorities are identified by power quality issues, customer calls, field inspections focused on reliability and/or safety, internal transformer loading reports and outages. Many of UGI-ED's more urban areas are prime candidates for this program due to the age and the extent of the open-wire secondary supply system. The annual number of secondary projects are based on emergent needs and a defined replacement plan.

Overhead Distribution Equipment Repair & Replacement

Program Description and Purpose

This program focuses on the replacement of failed or deteriorated overhead distribution equipment. This primarily includes poles and conductors, reclosers, sectionalizers, switches, transformers and capacitors.

Background/Justification

Distribution system components are subject to failure due to a variety of causes including age-related deterioration, physical damage, thermal overloads, malfunctions, etc. These failures often result in customer outages or service quality issues requiring immediate repair or replacement. In addition, field inspections, both planned and as a course of normal work activities, serve as a secondary source for identifying failed or damaged equipment.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures ($ thousands)*	$1,025(avg)	$1,100	$1,100	$1,100	$1,100	$1,100

*Forecasted expenditures are based on an historical average.

Locations

As this category encompasses equipment utilized across the UGI-ED service territory, locations will be identified as failures occur, as well as resulting from field observations/investigations.

Replace Failed Underground Secondary and Service Cable

Program Description and Purpose

This program focuses on the replacement of failed underground residential secondary and service cable.

Background/Justification

Failed or deteriorated underground secondary/service cable will result in a full or partial customer power outage or power quality issue. Underground secondary and service cable was installed in conjunction with the build-out of the primary cable system in underground residential developments. As a result, a significant amount of this cable has been in-service for 30 or more years. Replacements are identified via customer calls related to electric service issues.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures ($ thousands)*	$25(avg)	$75	$75	$75	$75	$75

*Forecasted expenditures are based on historical costs considering an increasing trend in failures.

Locations

As this category encompasses underground cable installed throughout the UGI-ED service territory, locations will be identified as failures occur.

Major Distribution System Improvement Projects

Program Description and Purpose

This program focuses primarily on planning based projects supporting the creation of new circuit ties between substations, development of new substations and feeder circuits to improve reliability, and adds capacity and replacement of legacy primary conductors mainly on the backbone distribution system with higher capacity wire, such as 397.5 ACSR.

Background/Justification

These large-scale projects, which may span multiple years, are initiated and/or approved by distribution planning to address current and forecasted load growth and reliability issues such as worst performing circuits. System planning is focused on reliability based projects that create multiple sources into load centers to provide for sectionalizing and faster service restoration. In addition, much of UGI-ED's three-phase primary distribution system was originally constructed using copper conductors, primarily #1 and 1/0 Cu. This is particularly true in areas where lower voltage (8kV and 4kV) distribution substations were built in urban areas in the 1940s, 50s and 60s. As load increased and facility upgrades became necessary, updated construction standards and modern conductors have been utilized to provide additional capacity and to improve reliability.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Projects	3(avg)	3-6	3-6	3-6	3-6	3-6
Expenditures ($ thousands)	$729(avg)	$1,900	$1,900	$1,900	$1,900	$1,900

Locations

Projects are identified as part of the annual distribution planning review or based on operational/reliability issues.

Facility Relocation Projects (PennDOT)

Program Description and Purpose

This program is associated with the relocation of electric facilities impacted by highway and bridge projects initiated by the Pennsylvania Department of Transportation (PennDOT) or other state and local agencies.

Background/Justification

As necessary, UGI-ED works with state and local agencies, primarily PennDOT, to relocate electric facilities to provide for construction access and in most cases expanded road and bridge right-of-way. UGI-ED must comply with relocation timelines and is responsible for all incurred costs including acquisition of private right-of-way, if necessary. Costs associated with this program are only those costs associated with unreimbursed portions of the total project cost. The frequency and number of relocation projects varies annually depending on requests.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures* ($ thousands)	$334(avg)	$465	$465	$465	$465	$465

* Unreimbursed cost projections based on historical average.

Locations

Location for these projects are dictated by the interested entity.

Distribution Automation

Program Description and Purpose

This program is focused on the deployment of intelligent, communication enabled, protection, power quality and remote monitoring devices to key areas of the distribution system. The program will provide a number of customer benefits including reduced outage times, improved power quality, faster and more accurate outage identification and an enhanced ability to monitor and control remote field devices during emergency situations.

Background/Justification

The extent of UGI-ED's real-time visibility of the distribution system ends at the individual substation feeder breaker. Beyond the circuit breaker, normal system conditions such as device status, voltage and loading must be gathered/confirmed by field visits. In addition, switching of 3-phase devices such as circuit tie-reclosers and air-breaks requires a crew dispatch, which can take more than an hour during off-shift periods, ultimately extending sectionalizing times and corresponding outage minutes. UGI-ED has already successfully implemented, under a pilot program, the technology to securely and reliably monitor and control a number of automatic circuit reclosers (ACRs). This program will continue the deployment of new "smart devices" such as ACRs and fault detectors along with the necessary communication network, in addition to extending the remote monitoring and control capability to existing devices including voltage regulators and distribution capacitors. Ultimately the additional real-time device status information will be integrated with the UGI-ED Outage Management System to provide a more accurate and much quicker picture of outage cases during storm events.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Installations*	3(avg)	6-8	6-8	6-8	6-8	6-8
Expenditures ($ thousands)	$8(avg)	$260	$260	$260	$260	$260

* Number of installations depends on type, new versus upgrade, location, and operational requirements.

Locations

UGI-ED has nearly 80, 3-phase automatic circuit reclosers which will serve as the primary focus of future deployment efforts. These devices are already situated in critical locations based on their protection functionality and/or use as a tie-recloser between adjacent feeders. These locations will be prioritized based on frequency of operation, customer count (load) and cellular communication availability.

Porcelain Cutout and Insulator Replacements

Program Description and Purpose

This program is associated with the replacement of porcelain distribution cutouts and porcelain insulators. Utilized in a variety of applications, including transformer and line protection, porcelain cutouts and insulators are being replaced with polymer style cutouts and insulators, which are less susceptible to damage from handling and extreme cold temperatures.

Background/Justification

Porcelain cutouts and insulators have long been a standard within the utility industry. Porcelain is more brittle and susceptible to moisture ingress and subsequent cracking/failure during extreme cold periods. With the advent of polymer, UGI-ED transitioned to requiring polymer cutouts on all new installations and as replacements for failed porcelain installations around 2010. Based on elevated failure rates, UGI-ED proactively replaced all porcelain cutouts of a specific type over the last 10 years. However, a significant number of porcelain cutouts and insulators remain on the UGI-ED system. Specifically, cutout failures can result in pole fires and customer outages. Replacement of porcelain cutouts and insulators will improve overall system reliability.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Replacements	38(avg)	50-80	50-80	50-80	50-80	50-80
Expenditures ($ thousands)	$19	$50	$50	$50	$50	$50

Locations

Locations subject to replacement will be identified via results of the annual inspection program and prioritized based on the number of customers impacted and density of installations.

8kV and 4kV Distribution System Conversions

Program Description and Purpose

This program is intended to convert the remaining sections of the UGI-ED distribution system operated at 8kV and 4kV to the standard 13.8kV primary system voltage. Areas served by these voltages are remnants of the early build-out of the UGI-ED distribution network. Voltage conversions will eliminate an additional failure point, the need for non-standard equipment (reduce inventory), provide for restoration tie-points and modernize facilities to 13.8kV construction standards.

Background/Justification

UGI-ED operates a single 3-phase 8kV substation and 15, 8kV and 4kV stepdown transformers. Facilities are typically original construction, which means they are now outside current standards and end-of-life. A conversion project involves a pole by pole review to design and construct upgrades as necessary along with a protection coordination study. Facility upgrades may include as necessary, replacement of wire, poles, insulators, transformers and secondary. The goal of each conversion project is to improve reliability by modernizing facilities and reducing restoration times. Conversion projects have been ongoing for several years. With the amount of remaining locations, UGI-ED plans to continue including several distinct projects or phases annually.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures ($ thousands)	$77(avg)	$125	$125	$150	$150	$150

Locations

Locations are prioritized based on customer impact, load and reliability performance.

Overhead and Underground Service Conductors

Program Description and Purpose

This program addresses the replacement and/or upgrade of residential and small commercial overhead and underground services due to capacity limitations, general condition, location or safety.

Background/Justification

Primary activity within this category involves upgrading customer service conductors to accommodate increased loading. In addition, service conductors, including “open-wire” services, are replaced with modern triplex conductors based on condition and/or relocation to a different service attachment point.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Expenditures ($ thousands)	$180(avg)	$170	$170	$170	$180	$180

Locations

Locations are identified based on customer upgrade requests, service issues and field observations.

Substation Transformers and Distribution Circuit Breaker Replacement Projects

Program Description and Purpose

This program is associated with the replacement of major substation components, primarily 66/13.8 kV distribution transformers and 13.8kV distribution circuit breakers. The facilities identified under this program are at or near end of life, which increases associated maintenance and reliability issues.

Background/Justification

Transformers

UGI-ED has twelve (12) area distribution substations which transform power from the 66kV transmission system to the 13kV distribution system. All UGI-ED load is served from the distribution substations. The substations are configured as either single or double transformer facilities depending on load and tie-line support availability. The distribution transformers must provide the necessary capacity to serve existing and new load under normal and peak conditions. Substations also serve as backups for other substations in the event of transformer outages or peak loading conditions via distribution tie-lines. As a result, the failure of a single distribution substation transformer can have an immediate and large scale impact on customers and limit the ability to guard against other outage contingencies. Therefore, the need for maintaining transformer reliability is of critical importance.

UGI-ED's installed transformer inventory consists of eighteen (18) 66/13.8kV transformers and one (1) 66/13.8kV mobile substation. The average age is 42 years old, with 13 transformers exceeding 40 years. The design life of a typical substation transformer is 40 years. Subject to loading, transformer failure rates typically follow a "bathtub" curve with an elevated percentage occurring early on due to manufacturing and installation issues, a relatively low rate of failures during the normal lifespan and then rapidly increasing failures beyond the design life of the transformer. Transformer failures can result from both internal and external causes. With regular testing and good maintenance practices, it is possible to determine if a transformer is starting to develop certain types of problems. However, not all potential problems can be foreseen and because all transformers are different and undergo varying load cycles, it is impossible to predict if and when a transformer will fail.

Historically, transformer replacements have occurred upon failure or after maintenance activities such as field processing of the transformer oil have failed to improve test results. Going forward with the number of units reaching the end of their design age, transformer replacements will be prioritized based on a combination of age, test results, location with respect to customer load and system support and typical load cycle. Given the magnitude and cost of these projects, UGI-ED is looking to schedule replacements as indicated below.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Installation	0	1	1	1	1	1
Expenditures ($ thousands)	$0	$480	$500	$520	$540	$550

Locations

The transformers are located within UGI-ED's twelve (12) distribution substations. Replacement priority will be based on test results, maintenance issues and age.

Distribution Circuit Breakers

UGI-ED's twelve distribution substations serve customers through 45 distribution circuit breakers and associated transformer bank and bus-tie circuit breakers. UGI-ED's distribution feeders were developed over time, as load increased and additional capacity was required to serve customer load. Current circuit breakers vary in style, manufacturer and age.

Background/Justification

UGI-ED has undertaken a distribution breaker replacement/modernization program aimed at replacing older style circuit breakers that have increased maintenance and reliability issues, while at the same time consolidating circuit breaker inventory. UGI-ED currently has twelve (12) different varieties of distribution circuit breakers in operation. Considering the older style oil circuit breakers and early type vacuum interrupter circuit breakers, the average age of the equipment exceeds 40 years. Lead time for replacement circuit breakers can be 16 weeks or more, and spare components such as vacuum bottles for some older breakers are no longer available, which requires custom manufacturing. As a result, breakers which fail and are switched out can burden the supporting distribution system for the duration of the replacement period, exposing a larger number of customers to potential outages.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Planned Installation	1(avg)	3	3	3	3	3
Expenditures ($ thousands)	$10(avg)	$140	$140	$140	$150	$150

Locations

Priority of circuit breaker replacements will be based on maintenance history, age and location relative to load.

Distribution Relay Replacements

Program Description and Purpose

This program is intended to replace distribution protection relays and associated equipment which are "end-of-life" and experiencing an increased number of failures. The bulk of these relays are first generation microprocessor units utilized as the UGI-ED standard installation for distribution feeder line protection, as well as transformer protection schemes. The balance are older electro-mechanical protection relays which were never upgraded.

Background/Justification

UGI-ED has 34 installations of a common type and manufacturer which were installed starting in the late 1990s and early 2000s. Most relays are microprocessor based, and require no routine maintenance. However, like all electronic devices, the relays are subject to component failure from extended continual use. Of the 34 microprocessor-based relays in-service, four (4) or nearly 12% have completely failed in the last four years. Units will be replaced with new microprocessor based platforms that have some additional functionality, including the ability to interface with other logical devices in the substation.

Scope

Plan Years	2012-2015	2018	2019	2020	2021	2022
Feeder Replacements	0	3	3	3	3	3
Expenditures ($ thousands)	$0	$60	$60	$60	$60	$60

Locations

Locations subject to replacement will be identified by company records and prioritized based on age and customer impact.

APPENDIX C

Certification Regarding
Base Rate Proceeding

I, Hans G. Bell, Chief Operating Officer ("COO") for UGI Utilities, Inc., hereby certify that pursuant to 66 Pa. C.S. § 1353(b)(4), UGI Utilities, Inc. – Electric Division ("UGI Electric") has filed a base rate proceeding within five years of August 29, 2019, which is the date of its initial petition to establish a Distribution System Improvement Charge authorized by 66 Pa. C.S. § 1353. Specifically, UGI Electric's most recent base rate proceeding before the Commission was filed on January 26, 2018 at Docket No. R-2017-2640058.

Dated: August 29, 2019

Hans G. Bell
Chief Operating Officer
UGI Utilities, Inc.
1 UGI Drive
Denver, PA 17517

UGI ELECTRIC
TESTIMONY

UGI ELECTRIC
STATEMENT NO. 1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

UGI UTILITIES, INC. – ELECTRIC DIVISION

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE

UGI ELECTRIC
STATEMENT NO. 1

DIRECT TESTIMONY OF
STEPHEN F. ANZALDO

Dated: September 3, 2019

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. My name is Stephen F. Anzaldo. My business address is 1 UGI Drive, Denver, Pennsylvania 17517.

Q. By whom are you employed and in what capacity?

A. I am employed by UGI Utilities, Inc. ("UGI") as Director, Rates and Regulatory Planning. UGI has two operating divisions, the Electric Division ("UGI Electric" or the "Company") and the Gas Division ("UGI Gas"), each of which is a public utility regulated by the Pennsylvania Public Utility Commission ("Commission" or "PUC"). UGI is a wholly-owned subsidiary of UGI Corporation ("UGI Corp.").

Q. What are your responsibilities as Director, Rates and Regulatory Planning?

A. I have overall responsibility for the utility business unit rate and regulatory filings before federal and state regulatory commissions, as well as the central coordination of regulatory planning for all UGI utility operating companies. In this capacity, I report directly to the Vice President and General Manager of Rates and Supply of UGI. On behalf of the Rates Department, I am responsible for budgeting/financial planning for UGI Electric, which is a joint effort between the Rates Department (preparing the revenue and margin budgets) and the Financial Planning and Analysis Department (preparing the operating and capital budgets).

Q. What is your educational background?

A. I received an undergraduate degree in Accounting from St. Joseph's University and a Masters Degree in Business Administration from St. Joseph's University. I am also a Certified Public Accountant in the Commonwealth of Pennsylvania.

Q. Please describe your professional experience.

A. Please see my resume, UGI Electric Exhibit SFA-1, which is attached to my testimony.

Q. Have you testified previously before this Commission?

A. Yes. UGI Electric Exhibit SFA-1 contains a list of those proceedings.

Q. What is the purpose of your testimony?

A. My testimony supports the *Petition of UGI Utilities, Inc. – Electric Division for Approval of a Distribution System Improvement Charge* ("Petition"). UGI Electric's Petition proposes to implement a Distribution System Improvement Charge ("DSIC") pursuant to 66 Pa. C.S. § 1353(A).[1] The DSIC will be used to recover the reasonable and prudent costs that UGI Electric incurs to repair, improve or replace eligible property in its distribution system between rate cases (*i.e.*, costs not included in the revenue requirement being recovered through existing base rates). My testimony will describe: 1) the

[1] Section 1353(A) states:

> Except as provided under this subchapter, after January 1, 2013, a utility may petition the commission, or the commission, after notice and hearing, may approve the establishment of a distribution system improvement charge to provide for the timely recovery of the reasonable and prudent costs incurred to repair, improve or replace eligible property in order to ensure and maintain adequate, efficient, safe, reliable and reasonable service.

proposed DSIC calculation and the method used to determine the DSIC rate; 2) the method for applying the DSIC across the Company's various customer groups; 3) the tariff changes, which reflect the implementation of the DSIC; and 4) the Company's plan to implement the DSIC, including accounting practices, customer notices and ongoing communication plans. Finally, my testimony will explain why the establishment of a DSIC is in the public interest.

Q. What exhibits are you sponsoring with your testimony?

A. In addition to UGI Electric Exhibit SFA-1, I will sponsor UGI Electric Exhibit SFA-2 and UGI Electric Exhibit SFA-3. UGI Electric Exhibit SFA-2 is an illustrative schedule showing how the Company will calculate the DSIC. UGI Electric Exhibit SFA-3 is the Company's bill insert notifying customers of the DSIC.

II. UGI ELECTRIC'S PROPOSED DSIC

A. DSIC Eligible Capital

Q. Act 11 requires UGI Electric to have a Commission-approved LTIIP. Does UGI Electric have a Commission-approved LTIIP?

A. Yes, UGI Electric has a Long-Term Infrastructure Improvement Plan ("LTIIP"), which was approved by the Commission in an order entered on December 21, 2017 at Docket No. P-2017-2619834. The Company's LTIIP is described in the direct testimony of Eric W. Sorber (UGI Electric Statement No. 2), which accompanies and supports the Company's DSIC Petition.

Q. Please describe the DSIC eligible capital which will be included in the calculation of the Company's proposed DSIC.

A. The Company has identified DSIC eligible property pursuant to § 1351(1) of the Public Utility Code. Also, consistent with the Commission's Final Implementation Order,[2] UGI Electric identified eligible property in its proposed tariff rider according to FERC account number. The eligible property, as more fully explained in the Company's LTIIP, includes items such as poles and towers; overhead and underground conductors; transformers and substation equipment; insulators, circuit breakers, fuses, reclosers, grounding wires, crossarms and brackets, relays, capacitors, converters and condensers; and unreimbursed costs related to highway relocation projects (where an electric distribution company must relocate its facilities). Electric distribution companies are permitted to recover fixed costs associated with improvements, repairs or replacements to these eligible property items. Fixed costs for these assets include depreciation and pre-tax return.

Q. Does UGI Electric's DSIC also include the costs of tools, equipment and vehicles?

A. Yes, it does. Act 11 specifically provides for the inclusion of "other related capitalized costs" in the definition of property which is DSIC-eligible. 66 Pa. C.S. § 1351(1)(vi). Inclusion of other related capitalized costs (in the DSIC) will encourage the acceleration of infrastructure upgrades by UGI Electric. The cost of tools, equipment, and vehicles are capitalized as overhead as part of the DSIC-eligible projects identified for DSIC-recovery.

[2] *Implementation of Act 11 of 2012*, Docket No. M-2012-2293611 (Pa. Pub. Util. Comm'n Aug. 2, 2012) ("Final Implementation Order.")

Q. Please explain how tools, power equipment and vehicles are capitalized as overhead as part of the DSIC-eligible projects for DSIC recovery.

A. Pursuant to the Company's standard accounting procedure, the costs of tools, equipment, and vehicles (whether existing or newly purchased) will be capitalized as overhead as part of the DSIC-eligible capital project with which they are associated. Specifically, the depreciation expense and other costs, (*e.g.,* maintenance, license fees, etc.) related to capitalized tools, power equipment and vehicles goes to a clearing account (FERC Account 184). UGI Electric's accounting procedure allocates a pro rata portion of the clearing account to capital and expense (operating and maintenance work) based upon the percentage of payroll going to each category, with such percentage adjusted quarterly. The costs allocated to capital are then subsequently allocated between repair and betterment projects (which are DSIC-eligible) and new business projects (which are not DSIC-eligible). Under UGI Electric's current accounting procedure, if the capital project is DSIC-eligible, an allocated portion of the costs of the tools, vehicles and equipment will be capitalized as DSIC overhead. Additionally, while the Company has no current plans to install any DSIC-eligible software or electronic systems which directly support DSIC-eligible repair and betterment projects, it could do so in the future and such costs would be appropriately included in the DSIC.

Q. Are the costs for DSIC-eligible assets included in the DSIC calculation consistent with those in the LTIIP?

A. Yes. The costs presented within the proposed *pro forma* DSIC tariff (included as Appendix A to the DSIC Petition) are the same costs identified by the Company related to the DSIC-eligible items in the LTIIP (included as Appendix B to the DSIC Petition).

B. DSIC Calculation

Q. Describe how you designed the DSIC rate?

A. The Company based its DSIC on the model tariff issued by the Commission in its Final Implementation Order. UGI Electric's proposed *pro forma* DSIC tariff will follow Section 2 of the Commission's model tariff, and apply the formula set forth in subsection 2(D) of the model tariff. In addition, the Company's DSIC tariff incorporates the customer safeguards identified in Section 4 of the model tariff. The *pro forma* tariff further reflects the addition of the Rider DSIC on pages 50 through 52(a). The DSIC surcharge will be applied to a customer's total bill exclusive of generation supply charge and state tax surcharge revenues. Thus, the Rider DSIC has been added to each of the rate schedule *pro forma* tariff pages.

Q. Please describe how the Company's DSIC rate will be calculated.

A. The formula for calculating the DSIC is provided on page 51 of the *pro forma* tariff. In addition, the Company is also providing UGI Electric Exhibit SFA-2, page 1, which is an illustrative example of the DSIC surcharge calculation. As is shown in the example, the starting point would be DSIC-eligible property additions related to the quarterly period

included in the filing that will be made in December 2019, to be effective on January 1, 2020. While this example assumes no net DSIC eligible additions, updates for actual DSIC eligible additions may be non-zero for the initial January 1, 2020 DSIC rate. The Company's current base rates reflect $115,522,000 of net plant placed in service. *See Pa. P.U.C. v. UGI Utilities, Inc. – Electric Division*, Docket No. R-2017-2640058 (Order entered October 25, 2018). Once UGI Electric exceeds this level of net plant placed in service, dollars associated with DSIC-eligible plant that are above that amount will be considered eligible for recovery through the DSIC. Until that time, UGI Electric will reflect a DSIC of 0.00%.

Accumulated depreciation will be deducted from DSIC-eligible additions resulting in net DSIC eligible property. The net DSIC eligible property is then multiplied by the pre-tax return rate (projected at 9.64%, UGI Electric Exhibit SFA-2, page 3) times 1/4 to generate the quarterly return component of DSIC fixed costs. Added to this return component is related quarterly depreciation expense. The sum of these two components is then divided by total DSIC projected quarterly revenue. UGI Electric has elected the quarterly revenue approach to determine the DSIC surcharge. Thus, both the fixed costs and annual revenues are divided by four. UGI Electric's quarterly DSIC filings will be predicated on actual amounts related to DSIC eligible property and will include the detailed schedules supporting the calculated DSIC surcharge (in a similar fashion as is done for UGI Gas).[3]

[3] *See e.g.*, Docket No. P-2013-2398833.

Q. Please describe how the Company calculates the pre-tax return for DSIC purposes.

A. The pre-tax return will be calculated using the statutory state and federal income tax rates, UGI's actual capital structure, and the actual cost rates for long-term debt and preferred stock as of the last day for the three-month period ending one month prior to the effective date of the DSIC and subsequent updates. The initial cost of equity for the DSIC will be the equity return rate approved in R-2017-2640058 of 9.85%. *See* Order entered on October 25, 2018).

Q. How will the Company calculate the quarterly depreciation expense used in the DSIC calculation?

A. As described in the proposed tariff, the depreciation expense will be calculated by applying the annual accrual rates employed in the Company's most recent base rate case proceeding (*i.e.*, Docket No. R-2017-2640058) for the plant accounts in which each retirement unit of DSIC-eligible property is recorded to the original cost of DSIC-eligible property.

Q. Please explain what projected revenues are being utilized to calculate the DSIC rate.

A. As stated on page 51 of the proposed tariff, the Company will utilize one quarter of the annual revenue to calculate the projected revenue. The initial annual revenue reflected in the DSIC calculation will be based on forecasted revenues for all customers for twelve months ending September 30, 2020, normalized for weather. The quarterly amount will exclude generation supply revenue and state tax surcharge revenue. The use of one

quarter of annual revenue will result in a more consistent DSIC rate from quarter to quarter.

Q. How will the DSIC apply to customers?

A. The DSIC will apply equally to all of UGI Electric's distribution customers.

C. Proposed Effective Date

Q. Please describe the effective date.

A. UGI Electric is proposing an effective date of January 1, 2020 (for the DSIC). UGI Electric's recent base rate proceeding at Docket No. R-2017-2640058 utilized a fully projected future test year ("FPFTY") ending on September 30, 2019. UGI Electric seeks to have a DSIC in place to allow for recovery of any qualifying investments made beyond those projected in the FPFTY. A DSIC effective January 1, 2020 will allow for timely recovery. UGI Electric believes this is appropriate in order to avoid regulatory lag or a gap between the end of its FPFTY and the date when UGI Electric can recover eligible investments through the DSIC.

Q. Once the DSIC becomes effective, what plant will be reflected in the DSIC?

A. As noted above, the currently effective rates reflect total net plant placed in service of $115,522,000, as established in Docket No. R-2017-2640058. Once UGI Electric exceeds this level of plant placed in service, dollars associated with DSIC-eligible plant will be considered eligible for recovery through the DSIC.

D. Proposed Implementation Plans

Q. Please describe UGI Electric Exhibit SFA-3.

A. The Company has prepared a bill insert that will notify UGI Electric's distribution customers of the DSIC filing. A copy of the bill insert is included with this testimony as UGI Electric Exhibit SFA-3. This bill insert is modeled after the bill insert used in the DSIC Petition proceedings for UGI Gas.[4] The bill insert will be included in bills to all electric customers beginning no later than seven days after the date of the filing of this Petition and continuing through one billing cycle. This bill insert is consistent with the requirements in Section 1354(1) and the Commission's *Final Implementation Order*.

Q. Once approval for the DSIC rate is received, do you plan further communication with your customers?

A. Yes. First, upon receipt of the Commission's Order approving the DSIC, the Company will notify its customers of the Commission's disposition, pursuant to Section 1354(2). Consistent with Section 1354(3), the Company will then subsequently provide notice to customers of changes that occur due to the quarterly adjustments though the use of bill messages, with the bill messages identifying the level of DSIC changes and their effective dates. These messages will allow customers to monitor the quarterly updates to the Company's DSIC rate.

[4] *See* UGI Gas Exhibit WJM-2 to UGI Gas Statement No. 1 in Docket No. P-2013-2397056 (UGI-PNG DSIC Filing), Docket No. P-2013-2398835 (UGI-CPG DSIC Filing), and Docket No. P-2013-2398833 (UGI Gas DSIC filing).

Q. Has UGI Electric met the requirement established in § 1353(b)(4)?

A. Yes, UGI Electric has met the requirement established in §1353(b)(4). Included as Appendix C to the Petition is a certification from Hans G. Bell, Chief Operating Officer of UGI Utilities, Inc., establishing that UGI Electric has filed a base rate case within the last five years. On January 26, 2018, UGI Electric filed a base rate proceeding at Docket No. R-2017-2640058. A Final Order was entered by the Commission on October 25, 2018.

E. The DSIC is in the Public Interest

Q. Do you believe that the proposed DSIC is in the best interest of UGI Electric's customers?

A. Yes. As explained in the LTIIP, UGI Electric is undertaking a substantial infrastructure repair and replacement program to address and combat its aging infrastructure and maintain system reliability. These investments (and recovery thereof) are critical to the continued provision of safe and reliable service. Accordingly, the DSIC is vital to support the Company's efforts to undertake this replacement program.

Q. Does the proposed DSIC tariff contain consumer protections?

A. Yes. The model tariff provided by the Commission included customer safeguards in its structure. These protections have been adopted by the Company and are reflected in the *pro forma* tariff provided as Appendix A. The safeguards include: (1) a cap on the total amount of revenue that can be collected by the Company through the DSIC as determined on an annualized basis, in this case, 5.0%; (2) periodic audit reviews conducted by the Commission; (3) annual reconciliations performed by UGI Electric; (4) a reset of the

DSIC to zero as of the effective date of new base rates that include relevant DSIC-eligible plant; (5) customer notice for any changes in the DSIC; (6) equal application of the DSIC to all customer classes; and (7) provisions for the charge to be set at zero if, in a quarter, UGI Electric's most recent earnings report shows that UGI Electric is earning a rate of return that exceeds the allowable rate of return used to calculate its fixed costs under the DSIC.

III. CONCLUSION

Q. Does that conclude your direct testimony?

A. Yes, it does.

UGI Electric Exhibit SFA-1

(Resume)

Stephen F. Anzaldo
Director – Rates and Regulatory Planning

Work Experience

2015 – current	Director – Rates and Regulatory Planning UGI Utilities, Inc., Denver, PA
2011 – 2013	Director – FP&A, Mid-Atlantic Region America Water Inc., Hershey, PA
2009 – 2011	Vice President - Finance Pennsylvania American Water Inc., Hershey, PA
2006 – 2009	Treasurer Aqua America Inc., Bryn Mawr, PA
2004 – 2006	Assistant Treasurer Aqua America Inc., Bryn Mawr, PA
1996 – 2003	Accounting Manager Trigen-Philadelphia Energy Corp., Philadelphia., PA
1991 – 1996	Financial Planning Manager Trigen-Philadelphia Energy Corp., Philadelphia., PA
1985 – 1991	Corporate Accountant General Waterworks Corporation, King of Prussia, PA
1983 – 1985	Certified Public Accountant Cogen, Sklar, Levick & Company, Bala Cynwyd, PA
1981 - 1983	Certified Public Accountant Morris J. Cohen & Company, Philadelphia, PA

Previous Testimony

Default Service Plan:	Docket Nos. P-2016-2543523, G-2016-2543527
UGI Electric Base Rate Case:	Docket No. R-2017-2640058
UGI Gas Base Rate Case:	Docket No. R-2018-3006814

Education

MBA - Finance from St. Joseph's University, 1998
B.S. in Accounting from St. Joseph's University, 1981
Certified Public Accountant - Commonwealth of Pennsylvania

UGI Electric Exhibit SFA-2

(Illustrative Example of DSIC Calculation)

ILLUSTRATIVE EXAMPLE

UGI Utilities, Inc. - Electric Division
DSIC Computation
As of January 1, 2020

DSIC = $\frac{(DSI \times PTRR) + Dep + e}{PQR}$

Line			Annual	Quarterly	Source
1		Distribution System Improvement Costs		$ -	Page 2, Col. (6), Line 9
2		Less Accumulated Depreciation		$ -	Page 2, Col. (6), Line 18
3	DSI	Net Distribution System Improvement Costs		$ -	Ln 1 + Ln 2
4	PTRR	Annual Pretax Rate of Return	9.64%		Page 3, Col. (6), Line 3
5		Quarterly Pretax Rate of Return		2.41%	Ln 4 / 4
6	DSI x PTRR	Quarterly Capital Cost Recovery		$ -	Ln 3 * Ln 5
7		Annual Depreciation Expense	$ -		Page 2, Col. (7), Line 9
8	Dep	Quarterly Depreciation Expense		$ -	Ln 7 / 4
9	(DSI x PTRR) + Dep	Current Period Recoverable Cost Amount		$ -	Ln 6 + Ln 8
10		Over/(Under) Collection		$ -	
11		Audit Adjustment		$ -	
12		Interest Refundable		$ -	
13		Prior Period "E" Factor Residual		$ -	
14		Misc. Adjusments Refund/(Recoup)		$ -	
15		Net "E" Factor Amount		$ -	
16	e	Quarterly "E" Factor Amount		$ -	Sum Lines 10 - 15
17	(DSI x PTRR)+Dep+-e	Total DSIC Revenue Requirement		$ -	Ln 9 + - Ln 16
18	PQR	Projected Quarterly Revenue		$ -	
19	DSIC	Distribution System Improvement Charge (DSIC)		0.00%	Ln 17 / Ln 18
20		**DSIC Effective January 1, 2020**		**0.00%**	

ILLUSTRATIVE EXAMPLE

UGI Utilities, Inc. - Electric Division
Depreciation on DSIC Eligible Property
As of January 1, 2020

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Line	**Annual Depreciation**						
			Additions				
	Description	Depreciation Rate 1/	Projected Sep-19	Projected Oct-19	Projected Nov-19	Total	Annual Depreciation
1	Poles and Towers	1.98%	$ -	$ -	$ -	$ -	$ -
2	Overhead Conductors	2.27%	$ -	$ -	$ -	$ -	$ -
3	Underground Conduit	1.54%	$ -	$ -	$ -	$ -	$ -
4	Underground Conductors	3.07%	$ -	$ -	$ -	$ -	$ -
5	Line Transformers	2.04%	$ -	$ -	$ -	$ -	$ -
6	Substation Equipment	3.51%	$ -	$ -	$ -	$ -	$ -
7			$ -	$ -	$ -	$ -	$ -
8			$ -	$ -	$ -	$ -	$ -
9			$ -	$ -	$ -	$ -	$ -

Accumulated Depreciation

			Additions			
	Description	Depreciation Rate 1/	Projected Sep-19	Projected Oct-19	Projected Nov-19	Total
10	Poles and Towers	1.98%	$ -	$ -	$ -	$ -
11	Overhead Conductors	2.27%	$ -	$ -	$ -	$ -
12	Underground Conduit	1.54%	$ -	$ -	$ -	$ -
13	Underground Conductors	3.07%	$ -	$ -	$ -	$ -
14	Line Transformers	2.04%	$ -	$ -	$ -	$ -
15	Substation Equipment	3.51%	$ -	$ -	$ -	$ -
16			$ -	$ -	$ -	$ -
17			$ -	$ -	$ -	$ -
18	Accumulated Depreciation		$ -	$ -	$ -	$ -

1/ In accordance with the 2019 Depreciation Study filed at Docket No. R-2017-2640058 and the Final Order at the above Docket No. Entered on October 25, 2018.

ILLUSTRATIVE EXAMPLE

UGI Utilities, Inc. - Electric Division
Weighted Cost of Capital
As of January 1, 2020

Line	(1)	(2) Capital Structure 1/	(3) Cost Rate 1/	(4) Weighted Average Cost Rates	(5) Tax Multiplier 2/	(6) Pre-Tax Rate of Return
1	Long Term Debt	45.98%	4.69%	2.16%	-	2.16%
2	Common Equity	54.02%	9.85%	5.32%	1.4063	7.48%
3		100.00%				9.64%

1/ - In accordance with the rate of return determined in Docket No. R-2017-2640058.

2/ - The tax multiplier is calculated as follows: 1/((1-PA Tax Rate) X (1 - Fed. Tax Rate)) where the PA Tax Rate is 9.99% and the Federal Tax Rate is 21.00%.

UGI Electric Exhibit SFA-3

(Customer Notice)

Notice of Proposed Distribution System Improvement Charge

UGI Utilities, Inc. – Electric Division (UGI Electric) has filed a request with the Pennsylvania Public Utility Commission (PUC) to implement a Distribution System Improvement Charge (DSIC) to recover reasonable costs incurred for UGI Electric to accelerate the improvement and replacement of infrastructure that UGI Electric uses to deliver electric distribution services to its customers.

The PUC encourages the use of a DSIC, which allows natural gas, electric, water and wastewater companies to accelerate the replacement of aging facilities. DSIC charges reduce the frequency and the associated costs of base rate cases while maintaining a high level of customer protection. DSIC charges are designed to provide customers with improved service quality, greater rate stability, increased safety and fewer system interruptions.

UGI Electric's request is subject to review by the PUC, and the PUC may approve, modify, or reject the request. The PUC will examine the requested DSIC and may delay the implementation of a DSIC until it investigates and/or holds hearings on the request. You may examine the material filed with the PUC, which explains the requested DSIC and the reasons for it. A copy of this material is also kept at UGI Electric's office.

If the PUC approves the DSIC, it must be updated on a quarterly basis to reflect eligible infrastructure that UGI Electric places in service. The DSIC charge is limited to 5 percent of distribution revenues.

The proposed effective date for the initial DSIC is January 1, 2020. The actual effective date will depend on when the DSIC is approved by the PUC. The proposed initial rate is 0.00%, until such time as UGI Electric exceeds the plant included in its base rate proceeding at Docket No. R-2017-2640058.

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There are three ways to challenge a company's request to implement a DSIC:

1 You may file a formal complaint. If you want a hearing before a judge, you must file a formal complaint. By filing a formal complaint, you assure yourself the opportunity to take part in any hearing about the DSIC request. All complaints should be filed as soon as possible. The PUC may grant all, some, or none of the request without holding a hearing before a judge.

2 You may send the PUC a letter stating your objection to the requested DSIC. Information in these letters can be helpful when the PUC reviews the DSIC request. Send your letter to the Pennsylvania Public Utility Commission, P.O. Box 3265, Harrisburg, PA 17105-3265.

3 You may be a witness at a public input hearing. Public input hearings are held if the PUC opens an investigation of the company's DSIC request and if there are a large number of customers interested in the case. At these hearings, you have the opportunity to present your views to the PUC judge hearing the case and the company representatives. All testimony given under oath becomes part of the official rate record.

For more information, call the PUC at 1-800-692-7380. You may leave your name and address so that you can be notified of any hearings that may be scheduled in this case.

UGI

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UGI ELECTRIC
STATEMENT NO. 2

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

UGI UTILITIES, INC. – ELECTRIC DIVISION

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE

UGI ELECTRIC
STATEMENT NO. 2

DIRECT TESTIMONY OF
ERIC W. SORBER

Dated: September 3, 2019

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. My name is Eric W. Sorber. My business address is One UGI Center, Wilkes Barre, Pennsylvania 18711.

Q. By whom are you employed and in what capacity?

A. I am employed as Director Engineering and Operations, by UGI Utilities, Inc. ("UGI"). UGI has two operating divisions, the Electric Division ("UGI Electric" or the "Company") and the Gas Division ("UGI Gas"), each of which is a public utility regulated by the Pennsylvania Public Utility Commission ("Commission" or "PUC"). UGI is a wholly-owned subsidiary of UGI Corporation ("UGI Corp.").

Q. What are your responsibilities as Director Engineering and Operations?

A. As Director Engineering and Operations, I provide leadership for engineering, operations, and technical services functions for UGI Electric, an electric distribution company ("EDC") certificated by the Commission. I report directly to the Chief Operations Officer ("COO"). I assist the COO in budgeting, capital planning and developing the long-term strategic infrastructure investment plans for UGI Electric. Under my direction is the UGI Electric engineering and operations staff, which is responsible for five major areas: (1) distribution and construction; (2) transmission and standards; (3) substations; (4) planning and compliance; and (5) safety.

Q. What is your educational background?

A. I received a Bachelor's of Science Degree in Electrical Engineering from Pennsylvania State University.

Q. Please describe your professional experience.

A. Please see my resume, UGI Electric Exhibit EWS-1, which is attached to my testimony.

Q. Have you testified previously before this Commission?

A. Yes. UGI Electric Exhibit EWS-1 contains a list of those proceedings.

Q. What is the purpose of your testimony?

A. First, I will describe the Long Term Infrastructure Improvement Plan ("LTIIP") of UGI Electric. Second, I will provide an overview of our accelerated plan and provide a brief explanation of how we prioritize our infrastructure repair work. Third, I will identify the baseline reliability metrics on a per feeder basis, which will be utilized to measure overall long-term LTIIP performance. Fourth, I will touch on some of the specific programs incorporated into UGI Electric's LTIIP. Finally, I will discuss the Company's reporting obligations and its LTIIP progress.

Q. Are you sponsoring any exhibits with your testimony?

A. I am sponsoring UGI Electric Exhibit EWS-1 (which is a copy of my resume), UGI Electric Exhibit EWS-2 (which provides the 2018 reliability baseline for LTIIP

effectiveness on a per feeder basis) and UGI Electric Exhibit EWS-3 (which documents the Company's overall LTIIP performance).

II. LTIIP OVERVIEW

Q. Please describe the history of the UGI Electric LTIIP.

A. On August 16, 2017, the Company filed the *Petition of UGI Utilities Inc. – Electric Division for Approval of its Long-Term Infrastructure Improvement Plan* at Docket No. P-2017-2619834. The Commission approved UGI Electric's LTIIP in an order entered on December 21, 2017. The LTIIP achieves a significant acceleration of infrastructure replacements over those installed during the Company's baseline period (*i.e.*, 2012-2015). Specifically, UGI Electric's LTIIP is a five-year program running from 2018 through 2022, which increases projected capital expenditures by approximately $22.2 million during the five-year term of the LTIIP over the level of investments made during the baseline period.

Q. What does the LTIIP accomplish?

A. The LTIIP provides the Company's plans for accomplishing accelerated infrastructure repair, improvement and replacement activities for the five-year period from 2018 through 2022. The accelerated investments identified in the LTIIP will, in time, avoid increased risks to system reliability and reduce operation and maintenance costs. It facilitates the removal of aging portions of the system (prior to failure), which enhances safety. The LTIIP also ensures replacement of facilities with newer equipment and materials that are designed and installed using modern construction specifications and standards. The plan also provides for inspection and assessment of facilities, which will ensure effective use of

LTIIP resources. The LTIIP identifies the areas of the system to be repaired, replaced and improved, the timeframe for doing the work, and the procedures that ensure the Company is working in a cost-effective manner while reducing inconvenience to local communities. As a result of the LTIIP, the public will receive improved service, with decreased risk of service disruption.

Q. What is the primary focus of the LTIIP?

A. The primary focus of the LTIIP is to maintain the highly reliable service UGI Electric's customers have historically experienced, while addressing the risk to continued reliability associated with aging infrastructure. UGI Electric's LTIIP continues the Company's recent focus on accelerated infrastructure repair and replacement, including several infrastructure and technology-based reliability programs (*e.g.*, accelerated underground cable and wood pole replacements, Distribution Automation, enhanced feeder sectionalizing and primary substation tie-line additions). These programs have been developed to address significant long-term reliability factors. In addition to these programs, the LTIIP includes other infrastructure replacement programs, which the Company fully expects will improve overall system reliability and reduce outages associated with historical weather-related variability. These LTIIP initiatives will be discussed further in Section III of my testimony.

Q. What other infrastructure goals are identified in the LTIIP?

A. In addition to the specifically identified plant that will be proactively replaced, UGI Electric also focuses a portion of its LTIIP on unanticipated equipment/facility failures, and

emergent facility issues. These projects occur during the normal course of business and result from numerous causes that impact facilities and equipment such as age-based deterioration, mechanical failures, thermal loading, and forced outages. UGI Electric relies on a comprehensive inspection and maintenance program to ensure equipment is properly maintained or replaced and to identify and prioritize maintenance issues or trends which may have an immediate or long-term system impact.

Q. What steps is UGI Electric taking to measure the reliability effectiveness of its LTIIP programs?

A. UGI Electric's inspection programs and goals are documented in its biennial *Inspection and Maintenance Plan* and the *Annual Reliability Report* that are submitted to the Commission. These documents measure the overall reliability effectiveness of LTIIP initiatives. In addition, the Company conducts ongoing reviews (to ensure that its LTIIP programs are effective) and utilizes the information gathered (to determine cost effective strategies for replacing its distribution infrastructure) on a going forward basis. Specifically, UGI Electric reviews the impact to reliability that LTIIP programs have by measuring and comparing post-plan implementation reliability indices with historical reliability indices on a per feeder basis. UGI Electric Exhibit EWS-2 establishes the Company's 2018 reliability baseline[1] (for LTIIP effectiveness) on a per feeder basis. Reliability metric performance may result in the redirection of spending to facilitate UGI Electric's ability to meet its identified reliability targets in a cost-effective manner. This

[1] The reliability baseline provides reliability metrics (SAIFI, SAIDI and CAIDI) for all of UGI Electric's distribution system feeders.

process ensures effective use of LTIIP resources and minimizes both the financial and operational burden on the customers and municipalities that UGI Electric serves.

Q. How does the LTIIP enhance the safety and reliability of service to customers?

A. UGI Electric believes that replacement of aging distribution equipment and facilities will: 1) reduce the number and duration of outages that customers experience; 2) improve public and employee safety by modernizing equipment and facilities; and 3) generally improve service to its customers. The Company is proactively addressing its aging infrastructure to avoid an increase in customer outages as aged equipment fails.

III. LTIIP PROGRAMS

Q. Please describe the planned replacements incorporated into the LTIIP.

A. Consistent with Section 1351(1), the Company has identified a wide variety of planned repairs and replacements to DSIC-eligible property that impact the safe and efficient operation of the distribution system. These assets include wood poles; overhead and underground conductors; transformers and substation equipment; insulators, circuit breakers, fuse cutouts, reclosers, grounding wires, crossarms and brackets, relays, and capacitors. Many of these items will be replaced through broader projects, which will allow for efficient use of resources and will reduce the impact on customers and local communities.

Q. What Program Initiatives are specified in the LTIIP?

A. UGI Electric's LTIIP contains programs designed to comprehensively address the Company's infrastructure repair and replacement needs. Those programs are:

- Distribution Pole Replacements - This ongoing program was established to identify and replace UGI Electric's wood poles based on condition, age or construction requirements. The purpose of this program is to ensure installed wood poles have a manageable service life while meeting current construction and clearance standards.

- Distribution Pole Reinforcements - Pole reinforcement, via steel truss bracing and fiber-wrap techniques, plays an important role in maintaining a serviceable installed pole inventory. Pole reinforcement is an ongoing UGI Electric program which can restore pole strength and extend service life at a significantly lower cost than replacement.

- Underground Primary Cable Replacement/Restoration - This program will accelerate the replacement or restoration of underground primary, secondary and service cable, that serves over 5,000 UGI Electric customers through nearly 200 underground systems, primarily installed in underground residential developments.

- Distribution Sectionalizing - The Distribution Sectionalizing Enhancement Program began in 2013, with the goal of reducing customer outage minutes through the addition of both automatic and manual distribution sectionalizing devices. The program is primarily focused on the installation of traditional, non-communication assisted equipment on single-phase and multi-phase circuit elements.

- Right of Way Reliability Relocations - This program is focused on the relocation of primary conductors to road right-of-way, which will improve reliability and restoration times. UGI Electric continually looks for opportunities to relocate sections of the primary distribution system currently routed through rural or "rear-lot" right-of-way, which may be subject to lower reliability and longer restoration times.

- Secondary Modernization - This program focuses on the replacement of mainly open-wire secondary and service distribution conductors and, as necessary, the associated transformers. The existing open-wire conductors are replaced with a modern triplex wire to reduce space utilization on the pole, increase reliability, and are sized with respect to capacity to accommodate existing and future load growth.

- Overhead Distribution Equipment Repair and Replacement - This program focuses on the replacement of failed or deteriorated overhead distribution equipment. It primarily includes remediation of poles and conductors, reclosers, sectionalizers, switches, transformers and capacitors.

- Failed Underground Secondary and Service Cable - This program focuses on the replacement of failed underground residential secondary and service cable.

- Major Distribution System Improvement Projects - This program focuses primarily on planning-based projects supporting the creation of new circuit ties between substations, and the development of new substation feeder circuits to improve reliability. These projects add capacity and replace legacy primary conductors mainly on the backbone distribution system with higher capacity wire, such as 397.5 ACSR.

- Facility Relocation Projects (PennDOT) - This program is associated with the relocation of electric facilities impacted by highway and bridge projects initiated by the Pennsylvania Department of Transportation ("PennDOT") or other state and local agencies.

- Distribution Automation - This program is focused on the deployment of intelligent, communication enabled, protection, power quality and remote monitoring devices to key areas of the distribution system. It provides customer benefits including reduced outage times, improved power quality, faster and more accurate outage identification and an enhanced ability to monitor and control remote field devices during emergency situations.

- Porcelain Cutout and Insulator Replacements - This program is associated with the replacement of porcelain distribution cutouts and porcelain insulators. Utilized in a variety of applications, including transformer and line protection, porcelain cutouts and insulators are being replaced with polymer style cutouts and insulators, which are less susceptible to damage from handling and extreme cold temperatures.

- 8kV and 4kV Distribution System Conversions - This program is intended to convert the remaining sections of the UGI Electric distribution system operated at 8kV and 4kV to the standard 13.8kV primary system voltage. Areas served by these voltages are remnants of the early build-out of the UGI Electric distribution network. Voltage conversions will eliminate an additional failure point, the need for non-standard equipment (reduce inventory), provide for restoration tie-points and modernize facilities to 13.8kV construction standards.

- Overhead and Underground Service Conductors - This program addresses the removal, replacement and/or upgrade of residential and small commercial overhead and underground services due to capacity limitations, general condition, location or safety.

- Substation Transformers and Distribution Circuit Breaker Replacement Projects - This program is associated with the replacement of major substation components, primarily 66/13.8kV distribution transformers and 13.8kV distribution circuit breakers. The facilities identified under this program are at or near end of life, which increases associated maintenance and reliability issues.

- Distribution Relay Replacements - This program is intended to replace distribution protection relays and associated equipment which are "end-of-life" and experiencing an increased number of failures. The bulk of these relays are first generation microprocessor units utilized as the UGI Electric standard installation for distribution feeder line protection, as well as transformer protection schemes. The balance are older electro-mechanical protection relays which were never upgraded.

A full description of each of these programs can be found in the LTIIP. Each program has a budget identified for each year of the LTIIP, as well as an estimate for planned replacements in each LTIIP year where it was practicable to make such estimates. On a combined basis, these programs address the entirety of the infrastructure used by UGI Electric to provide service to its customers.

Q. Does the LTIIP include any other cost categories?

A. Yes. The LTIIP includes items under § 1351(1)(vi), which provides recovery for "other related capitalized costs" when the items are used for DSIC-eligible projects.

Q. Please describe the DSIC-eligible costs included as "other related capitalized costs".

A. The replacement of DSIC-eligible property may result in additional related costs incurred that are essential and necessary in order to efficiently undertake specific accelerated capital improvement projects. For UGI Electric's LTIIP, the accelerated infrastructure replacement program may require the purchase of additional equipment, tools, vehicles, new technology, and supporting information technology investments. Inclusion of these items in the DSIC will allow the Company to accelerate infrastructure upgrades by ensuring that the Company has the necessary means to complete DSIC-eligible projects.

The accounting treatment used on these other capitalized costs is described in the testimony of UGI Electric witness Stephen F. Anzaldo.

Q. Does the Company's LTIIP currently address any other related capitalized costs associated with electronic systems or software?

A. The Company does not currently anticipate that it may need electronic systems and software in the immediate future. However, such updates may be required in order to ensure the safety of its distribution system and facilitate the repair and replacement of its distribution infrastructure. Therefore, consistent with the settlement reached in the DSIC proceedings for the UGI Gas rate districts,[2] UGI Electric believes that electronic systems and software may be included in the DSIC at some point in the future.

IV. REPORTING REQUIREMENTS

Q. Does the Company have any reporting requirements associated with having a DSIC?

A. Yes, it does. Pursuant to 66 Pa. C.S. § 1356, a utility that has a DSIC must file an Annual Asset Optimization Plan ("AAOP"). Section 1356 provides:

> *A utility with an approved distribution system charge and long-term infrastructure plan shall file annual asset optimization plans. The plan shall include the following:*
>
> *(1) A description that specifies all eligible property repaired, improved and replaced in the immediately preceding 12-month period pursuant to the utility's long-term infrastructure improvement plan and prior year's asset optimization plan.*
>
> *(2) A detailed description of all the facilities to be improved in the upcoming 12-month period.*

[2] *See* Docket No. P-2013-2397056 (UGI-PNG DSIC), Docket No. P-2013-2398835 (UGI-CPG DSIC), and Docket No. P-2013-2398833 (UGI Gas DSIC).

Q. Has UGI Electric filed an AAOP?

A. No, the Company has not. It is my understanding, based on the advice of counsel, an AAOP is only required if a utility has a DSIC in place, pursuant to 66 Pa. C.S. § 1356. UGI Electric did not have a DSIC in place for the first year of its LTIIP, and therefore it did not file an AAOP.

Q. Does the Company plan to file an AAOP?

A. Yes, the Company currently plans to file its first AAOP within 60 days after the end of the current LTIIP year, consistent with 52 Pa. Code § 121.6(a). This means that the Company's first AAOP will be filed on December 1, 2019. At that time, the AAOP will reflect the most recent year of LTIIP progress, from October 1, 2018 through September 30, 2019, and the upcoming year, from October 1, 2019 through September 30, 2020. These years are consistent with the requirements established in 52 Pa. Code § 121.6(b).

Q. Has the Company compiled information from its current experience that is similar to the data that will be reflected in the AAOP?

A. Yes. The Company has prepared a preliminary analysis of its LTIIP progress. I have included this analysis with my testimony as UGI Electric Exhibit EWS-3. The information captured in this Exhibit will be updated and incorporated into the Company's first AAOP.

Q. Please provide a summary of the information in UGI Electric Exhibit EWS-3.

A. UGI Electric Exhibit EWS-3(a) provides a comparison between projected and actual LTIIP expenditures and installations for Fiscal Year (FY) 2018 (in each LTIIP program category). For FY2018, UGI Electric projected a total LTIIP budget of $7,646,000 and actual results were $8,506,756 (a budget to actual variance of 11 percent). Additionally in FY2018, the Company either met or exceeded a majority of its LTIIP installation targets. UGI Electric Exhibit EWS-3(b) projects LTIIP expenditures and installations for FY2019. For FY2019, UGI Electric projects a total LTIIP expenditure of $7,766,000 and plans to meet or exceed its LTIIP installation targets for each of the identified program categories.

V. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes.

UGI Electric Exhibit EWS-1

(Resume)

Eric W Sorber
UGI Utilities Inc. – Electric Division
Director Engineering and Operations
One UGI Center
Wilkes-Barre, PA 18711

EXPERIENCE

UGI Utilities

Director Engineering and Operations 11/2014 to Present

- Have overall responsibility for Electric Division engineering and operating functions related to transmission, distribution and substation activities including electric safety, reliability, labor management and System Operations.
- Responsible for the Electric Division's compliance with applicable FERC Reliability and PAPUC Inspection and Maintenance Standards and PAPUC Electric Safety.
- Responsible for preparing and managing the annual capital and expense budgets.
- Currently represents Electric Division on the PJM Members Committee, Markets and Reliability Committee, and the Transmission Owners Agreement Administrative Committee and on the Energy Association of PA Reliability Committee.
- Primary author for the Electric Division's Long-Term Infrastructure and Improvement Plan.

Manager – Planning and Operations 03/2008 to 11/2014

- Manage the Electric Division System Operations department to assure the Division's transmission and distribution systems are operated reliably and consistent with PJM Directives.
    - Responsible for storm restoration planning and coordination of storm restoration activities.
    - Responsible for implementing and maintaining the Division's Outage Management System (OMS)
- Manage the Division's NERC Reliability Compliance Program including identification of all applicable Reliability Standard requirements (NERC, FERC, RFC, PJM etc.), responsible parties, schedules, training and documentation necessary to comply with all reliability requirements; periodic audit preparation in support of the Division's compliance program; implementation and administration of the Division's compliance software.
    - Served as the lead audit contact and witness for the 2010 and 2013 RFC Compliance Audits.
- Responsible for short and long term transmission and distribution system planning including the development of capital budget recommendations.
- Responsible for all generation interconnection projects on the UGI system from customer owned solar and wind to large scale commercial projects such as the Hunlock T117 project.
- Supervise the Electric Mapping and Records Department. Responsible for all facility data and for maintaining the Divisions GIS. Evaluate, develop, and integrate new business processes and technology into the Department to advance and support the mission and goals of the Division.
- Supervise and direct the Division's Pennsylvania One Call and underground facility location program.
- Supervise the Electric New Service and Maintenance Call Group
- Represent the Electric Division on the PJM Planning Committee and serve as the Chairman of the EHV Agreement Administrative Committee.
- Coordinate the preparation of the Electric Division's yearly budgets and prepare monthly, quarterly and annual variance reports.

Project Engineer, Maps and Records Department 03/2006 to 03/2008

Staff Engineer, Maps and Records Department 12/2005 to 03/2006

- Supervised Electric Division Maps and Records Department. Responsible for maintaining all facility data and for keeping all T&D maps current.
- Evaluated, developed and integrated new technology into the Department including research, selection and implementation of the Division's first GIS.
- Coordinate the preparation of the Electric Operation Capital and O&M Budgets along with variance reports and year-end analysis.
- Responsible for overall system planning on the transmission and distribution system.
- Prepared the annual T&D System Planning Recommendations for the Capital Budget.
- Responsible for investigating and resolving all damage and injury claims against the Division.
- Participated in various PJM Committees and working groups including the Planning Committee and the Small Generator Interconnection Working Group.
- Developed the Electric Divisions Distributed Generation Interconnection Requirements

Staff Engineer, Distribution Engineering Department 11/2002 to 12/2005

- Design and engineer large distribution projects including production of design packages and cost estimates. Optimize plans for the expansion of the T&D system. Evaluate/Develop programs to improve EUD planning, engineering and operations functions.
- Coordinated the design and planning studies leading to the approval of the $4.0M Mountain Substation expansion project.
- Responsible for performing transmission load flow analysis using PSLF software and for making planning recommendations based on the results.

Staff Engineer, Rates and Regulatory Department 02/1999 to 11/2002

- EDI Administrator Responsible for all areas of the Electric & Gas Division's Electronic Data Interchange (EDI) Program including, mapping, testing, trading partner set-up and interaction as well as the GISB Internet Transfer Mechanism and the Value-Added Network connection.
- Responsible for developing and implementing business practices and requirements regarding EDI and the Pennsylvania Electric Deregulation Customer Choice Program.
- Member of the Pennsylvania Electronic Data Exchange Working Group.
- Responsible for Rate Design, Cost of Service Model, Regulatory Compliance, PJM Energy Reconciliation, Demand Side Response Program, Distributed Generation, Supplier Management System.

Engineer I & II, Resource Planning Department 02/1992 to 02/1999

- Coordinated the purchase, installation, and implementation of the Division's EDI System, including integration with mainframe application programs.
- Assisted with the implementation and management of the Division's Electric Deregulation Customer Choice Program.
- Assisted with the preparation of the 1997 Restructuring Filing and 1995 and 1993 Rate Case Filings.
- Responsible for relay protection and coordination on the 66KV and 230KV transmission systems.

EDUCATION

B.S. Electrical Engineering – Pennsylvania State University 1988

UGI Electric Exhibit EWS-2

(Baseline Reliability Metrics)

UGI Utilities Inc. - Electric Division
Reliability Indices for LTIIP Baseline Period
12 Months Ending September 2018

Feeder Count	Distribution Feeders	SAIFI		Distribution Feeders	SAIDI		Distribution Feeders	CAIDI
1	KV7536	0.5010		KV7540	97.9787		DL1954	747.9706
2	KV7540	0.3341		HL0420	83.3209		LS0606	447.0508
3	CT8003	0.2537		KV7536	70.8268		DL1930	423.1364
4	HL0420	0.2191		HL0419	47.9642		HL0420	380.3199
5	KU0500	0.2117		HV0240	38.4984		GV8004	334.9234
6	HL0419	0.2070		HV0244	35.5948		GV0370	315.4760
7	SW0347	0.1691		KU0500	29.2820		KU0510	305.4643
8	PL0080	0.1678		GV8004	28.7014		KV7540	293.2831
9	HV0240	0.1522		KU0510	25.9565		HV0244	258.4002
10	DL0350	0.1411		CT8000	21.3555		HV0240	252.9541
11	GV0372	0.1407		DL1954	19.8061		HL0419	231.6761
12	HL0421	0.1405		DL1930	18.3248		HI8007	221.0000
13	CT8000	0.1402		HL0421	18.2961		PL0023	211.1549
14	HV0244	0.1378		GV0370	18.2296		LS0604	207.4331
15	KI0315	0.1047		PL0080	17.9793		HI0070	181.5882
16	HV0759	0.1013		GV0372	15.4997		PL0067	162.0000
17	SW0116	0.0890		KI0315	13.5028		CT8000	152.3586
18	SW0247	0.0860		HI8007	11.5600		KV7536	141.3724
19	GV8004	0.0857		CT8003	9.9008		KU0520	139.0548
20	KU0510	0.0850		HI8005	7.9061		KU0500	138.3377
21	CT8002	0.0838		SW0347	7.5842		HL0421	130.2656
22	HI8005	0.0830		KU0520	7.4590		KI0315	128.9445
23	HV0242	0.0680		HV0242	6.9146		GV0372	110.1746
24	GV0370	0.0578		HV0759	4.9016		PL0080	107.1442
25	KU0520	0.0536		SW0116	4.0673		LS0603	104.5467
26	HI8007	0.0523		CT8002	3.9308		HV0242	101.7290
27	DL1930	0.0433		HV0757	3.7350		HV0757	99.0000
28	HV0757	0.0377		DL0350	3.3124		HI8005	95.2674
29	LS0602	0.0370		SW0247	3.3040		SW0237	95.0000
30	KI2530	0.0306		KI2530	2.8484		KI2530	93.0107
31	DL1954	0.0265		LS0602	2.6056		SW0216	90.8837
32	PL0045	0.0140		LS0606	1.3183		PL0045	90.6474
33	LS0603	0.0081		PL0045	1.2735		LS0602	70.4435
34	PL0023	0.0041		PL0023	0.8693		PL0010	67.0000
35	LS0604	0.0037		LS0603	0.8431		SW0147	65.1364
36	SW0216	0.0031		LS0604	0.7682		HV0759	48.3778
37	LS0606	0.0029		PL0067	0.4294		CT8002	46.9172
38	SW0237	0.0028		HI0070	0.3254		SW0116	45.7069
39	PL0067	0.0027		SW0216	0.2810		SW0347	44.8400
40	HI0070	0.0018		SW0237	0.2707		CT8003	39.0222
41	KI1215	0.0009		SW0147	0.0526		SW0247	38.4268
42	SW0147	0.0008		KI1215	0.0345		KI1215	38.0000
43	PL0010	0.0001		PL0010	0.0060		DL0350	23.4695
44	HI0075	0.0000		HI0075	0.0000		HI0075	0.0000
45	HI8006	0.0000		HI8006	0.0000		HI8006	0.0000
46	HI8010	0.0000		HI8010	0.0000		HI8010	0.0000
47	HV0755	0.0000		HV0755	0.000		HV0755	0.0000
48	KI2555	0.0000		KI2555	0.0000		KI2555	0.0000

UGI Electric Exhibit EWS-3

(Overall LTIIP Performance To Date)

Exhibit EWS-3(a)	2018 Investments			2018 Installations	
LTIIP Programs	2018 Budget ($)	2018 Actual ($)	Variance	Planned Installations	Actual Installations
Distribution Pole Replacements	$1,000,000	$1,345,652	$345,652	150-200	153
Distribution Pole Reinforcements	$48,000	$57,689	$9,689	50-70	54
Underground Primary Cable Replacements (Ft.)	$1,000,000	$992,337	($7,663)	13,333	17,205
Secondary Modernization (Wires/Ft.)	$573,000	$682,462	$109,462	16,200	11,497
Overhead Distribution Equipment Repair & Replacement	$1,100,000	$509,255	($590,745)	200	86
Porcelain Insulator & Cutout Replacements	$50,000	$66,973	$16,973	50-80	120
Overhead and Underground Service Conductors	$170,000	$71,218	($98,782)	120	199
Facility Relocation Projects (PennDOT)	$465,000	$554,927	$89,927	11	12
ROW Reliability Relocation Projects	$100,000	$105,464	$5,464	2-4	2
Major Distribution System Improvement Projects	$1,900,000	$3,081,131	$1,181,131	3-6	8
Distribution Sectionalizing Equipment	$100,000	$62,191	($37,809)	20-40	14
Distribution Automation Equipment	$260,000	$330,531	$70,531	6-8	33
8kV and 4kV Distribution System Coversions	$125,000	$112,126	($12,874)	1-2	2
Failed Underground Secondary & Service Cable Installations	$75,000	$94,730	$19,730	6-10	15
Distribution Relay Replacements	$60,000	$31,893	($28,107)	3	3
Distribution Circuit Breaker Replacements	$140,000	$122,402	($17,598)	3	3
Substation Transformer and Distribution Circuit Breaker Replacements	$480,000	$285,775	($194,225)	1	1
TOTAL	$7,646,000	$8,506,756	$860,756		

Exhibit EWS-3(b)	2019 Investments (Forecasted)	2019 Installations (Planned)
LTIIP Programs	**2019 Budget ($)**	**Planned Installations**
Distribution Pole Replacements	$1,100,000	150-200
Distribution Pole Reinforcements	$48,000	50-70
Underground Primary Cable Replacements (Ft.)	$1,000,000	13,333
Secondary Modernization (Wires/Ft.)	$573,000	16,200
Overhead Distribution Equipment Repair & Replacement	$1,100,000	200
Porcelain Insulator & Cutout Replacements	$50,000	50-80
Overhead and Underground Service Conductors	$170,000	120
Facility Relocation Projects (PennDOT)	$465,000	11
ROW Reliability Relocation Projects	$100,000	2-4
Major Distribution System Improvement Projects	$1,900,000	3-6
Distribution Sectionalizing Equipment	$100,000	20-40
Distribution Automation Equipment	$260,000	6-8
8kV and 4kV Distribution System Coversions	$125,000	1-2
Failed Underground Secondary & Service Cable Installations	$75,000	6-10
Distribution Relay Replacements	$60,000	3
Distribution Circuit Breaker Replacements	$140,000	3
Substation Transformer and Distribution Circuit Breaker Replacements	$500,000	1
TOTAL	$7,766,000	