Elizabethtown Gas™
An AGL Resources Company

520 Green Lane
Union, NJ 07083

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September 22, 2015

Irene Kim Asbury
Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue
9th Floor
P.O. Box 350
Trenton, New Jersey 08625-0350

**Re: In The Matter Of The Petition Of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas For Approval Of A Safety, Modernization And Reliability Program And Associated Cost Recovery Mechanism**
**BPU Docket No. _____**

Dear Secretary Asbury:

Enclosed for filing are an original and ten copies of the Petition of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("Elizabethtown" or "Company") for approval of a safety, modernization and reliability program and a related rider to the Company's tariff – the Safety, Modernization and Reliability Tariff – to permit the Company to recover the costs of the program. Collectively, the proposed program and Tariff rider will be referred to as the SMART Program. The Company's Petition is accompanied by the testimony and supporting schedules of the following witnesses:

1. Brian MacLean – President of Elizabethtown
2. Michael P. Scacifero – Elizabethtown's Director of Engineering Services
3. Thomas Kaufmann – Elizabethtown's Manager of Rates and Tariffs
4. Salvatore D. Marano – Jacobs Consultancy
5. Daniel P. Yardley – Yardley Associates

Under the SMART Program, Elizabethtown proposes over a ten-year period to modernize and enhance the safety and reliability of its gas distribution system by replacing its vintage, at-risk facilities which include aging cast iron mains, unprotected and bare steel mains and services, ductile iron, copper and vintage plastic mains and vintage plastic and copper services. Elizabethtown also proposes to locate inside meter sets outside, to upgrade its legacy low pressure system to an elevated pressure system and, as a consequence, to install excess flow

valves and to retire district regulators that are presently required to operate the low pressure system. The total expenditures associated with the SMART Program are projected to approximate $1,102 million in 2014 dollars. Elizabethtown projects that these expenditures will enable the Company to replace approximately 630 miles of main and approximately 67,000 services.

Elizabethtown is not proposing a rate change at this time to recover the costs of the SMART Program and there is no immediate rate impact associated with this Petition. Elizabethtown is proposing to include a rider to its Tariff that will enable the Company to obtain timely recovery of its SMART Program costs when those costs are incurred. The rates to be established under the rider will be determined in future proceedings before the Board.

Elizabethtown respectfully requests the Board to retain this matter and to establish a procedural schedule that will permit the Board to issue a final order in this proceeding no later than March 31, 2016.

Please contact the undersigned if you have any questions or require further information.

Respectfully submitted,

*s/ Mary Patricia Keefe*

Mary Patricia Keefe
Vice President, Regulatory Affairs
And Business Support

Enclosures

cc: Richard Mroz, President
Upendra Chivukula, Commissioner
Joseph L. Fiordaliso, Commissioner
Mary-Anna Holden, Commissioner
Dianne Solomon, Commissioner
Paul Flanagan, Executive Director
Jerome May, Division of Energy
Stefanie A. Brand, Director, Rate Counsel
Felicia Thomas-Friel, Division of Rate Counsel (6 copies)

**STATE OF NEW JERSEY**
**BOARD OF PUBLIC UTILITIES**

| | | |
|---|---|---|
| **In The Matter Of The Petition Of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas For Approval Of A Safety, Modernization And Reliability Program And Associated Cost Recovery Mechanism** | **:** | **BPU Docket No. GR** **PETITION** |

**To The Honorable Board of Public Utilities:**

## Introduction

Pursuant to *N.J.S.A.* 48:2-21 and 48:2-21.1, Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("Petitioner," "Elizabethtown" or "Company"), a public utility corporation duly organized under the laws of the State of New Jersey subject to the jurisdiction of the Board, respectfully states:

1. Petitioner's principal business office is located at 520 Green Lane, Union, New Jersey 07083.

2. Communications and correspondence concerning these proceedings should be sent as follows:


Mary Patricia Keefe
Vice President, Regulatory Affairs
and Business Support
Pivotal Utility Holdings, Inc.
d/b/a Elizabethtown Gas
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3. Petitioner is engaged in the business of transmission and distribution of natural gas to approximately 280,000 customers in its service territory located principally in Hunterdon, Mercer, Middlesex, Morris, Sussex, Union and Warren Counties.

**The Proposed SMART Program**

4. Petitioner is filing this Petition to request Board approval of a safety, modernization and reliability construction program and a related rider to the Company's Tariff for Gas Service ("Tariff")[1] -- the Safety, Modernization and Reliability Tariff -- to permit Petitioner to recover the costs of the proposed program (collectively, the program and proposed Tariff rider will be referred to as the "SMART Program"). Under the SMART Program, Elizabethtown proposes to undertake and implement a ten-year program to modernize and enhance the reliability and safety of its gas distribution system by replacing and retiring its vintage, at-risk facilities which include aging cast iron mains, unprotected and bare steel[2] mains and services, ductile iron, vintage plastic and copper mains, and vintage plastic and copper services. As part of the SMART Program, Elizabethtown also proposes to relocate inside meter sets outside, to upgrade its legacy low pressure system to an elevated pressure system, and, as a consequence, to install excess flow valves and retire district regulators that are presently required

[1] Elizabethtown's currently effective Tariff is designated as "BPU No. 14."
[2] Unprotected steel facilities are facilities that are not cathodically protected and include both bare steel and coated steel.

to operate the existing low pressure system.[3] Elizabethtown proposes to commence investment under the Program on the first day of the month following Board approval of this Petition and continue the Program for a period of ten years. The total expenditures associated with the Program are projected to approximate $1,102 million in 2014 dollars.[4] Elizabethtown anticipates that these expenditures will enable the Company to replace and retire approximately 630 miles of main that consists primarily of vintage, at-risk pipe and approximately 67,000 services, which would include all existing unprotected steel and copper services.

5. Under the SMART Program, the Company will effectuate the retirement of vintage, at-risk facilities utilizing an analytical approach that will balance customers' needs against risks. Specifically, in advance of each year, the Company will identify specific retirement/replacement projects using an analytical approach that considers:

(i) prioritization of selected facilities for safety and reliability;

(ii) the latest technologies for system design and materials;

(iii) the potential for environmentally friendly construction;

(iv) the impact on customers and communities;

(v) the ability to upgrade system pressures for increased reliability;

(vi) opportunities to utilize existing embedded system components that do not need to be replaced;

(vii) opportunities to "right size" new facilities for cost effectiveness;

(viii) opportunities to maximize the ratio of retirements to new installations; and

(ix) opportunities to coordinate work among other Company programs, work by other utilities and municipal pavement work.

[3] In this Petition, references to low pressure facilities refer to facilities that operate at pressures less than 1 psig. Elevated pressure facilities refer to facilities operated at between 10 psig and 60 psig.
[4] The total expenditures include the cost of removing the facilities that will be retired.

## The Justification For The SMART Program

6. Elizabethtown was formed in 1854. The Company's original gas distribution system in the eastern part of its service territory located in Union and Middlesex Counties was constructed to distribute gas manufactured from coal at low pressures. Some of Elizabethtown's existing low pressure mains date back to the 1890s. From the 1890s to the 1960s, the principle material used for distribution mains was cast iron while unprotected steel was used for services. In the 1950s, unprotected steel also began to be used for mains. Elizabethtown's current distribution system includes (i) mains constructed of cast iron, ductile iron, unprotected and protected steel, copper and plastic, and (ii) services constructed of protected and unprotected steel, plastic, and in a very small percentage of cases, copper. Most of the cast iron, ductile iron, unprotected steel and copper facilities are located in Union County.

7. Since the late 1990s, Elizabethtown has undertaken a number of infrastructure replacement programs that have enabled it to retire all elevated pressure cast iron mains up to 12" diameter as well as portions of its low pressure cast iron main. Currently, as part of the Board-approved Accelerated Infrastructure Replacement ("AIR") and Elizabethtown Natural gas Distribution Utility Reinforcement Effort ("ENDURE") programs, the Company is retiring approximately 74 miles of low pressure cast iron main under the AIR Program, and approximately 10 miles of such main under ENDURE.[5] These programs have enhanced, and will continue to enhance, the safety and reliability of Elizabethtown's distribution system in an efficient manner while also providing economic development, job growth and retention, and environmental benefits.

8. The SMART Program is intended to permit Elizabethtown to continue to proceed with the modernization of its system in an efficient and cost effective manner over the next ten

[5] The ENDURE Program projects are designed to replace and retire main in flood prone areas.

years and to enable the Company to continue to provide the economic stimulus associated with an ongoing infrastructure replacement program. The SMART Program is designed in a manner that will enable Elizabethtown to comprehensively modernize its system while minimizing the adverse impact of necessary modernization activities on the communities that Elizabethtown serves. The implementation of the SMART Program will also provide environmental benefits to the State. Methane emission reduction associated with the SMART Program is estimated at approximately 58,100 metric tons of $CO_2$ equivalent per year once the program is completed.[6]

9. Elizabethtown submits that the continued modernization of its distribution facilities is supported by Federal and State policy. Specifically in 2011, the United States Secretary of the Department of Transportation ("DOT") and the Pipeline and Hazardous Materials Safety Administration ("PHMSA") announced a "Call to Action"[7] to pipeline operators and other stakeholders to conduct a comprehensive review of pipeline facilities, identify areas representing greater risk, and accelerate repair and replacement efforts. This "Call to Action" recognized that investments in modernizing pipeline infrastructure enhance public safety and reliability both immediately and well into the future. Elizabethtown's proposed SMART Program is intended to respond to and achieve the goals of the "Call to Action" and other relevant policies.

10. Adoption of a 10-year program to replace the remaining vintage at-risk pipe facilities on Elizabethtown's system is consistent with previous Board decisions that have approved infrastructure replacement programs for Elizabethtown and other New Jersey utilities. A systematic long-term approach to infrastructure replacement will permit the Company to execute the replacement of aging facilities more efficiently, attain greater economies of scope

[6] This estimate was determined using the AGA Energy Analysis Study, April 2014

[7] http://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/110404%20Action%20Plan%20Executive%20Version%20_2.pdf

and scale, and avoid unnecessary disruption in the communities that will be affected by the construction of replacement facilities.

**The Proposed SMART Program Is A Logical Extension Of Elizabethtown's Recent Infrastructure Modernization Programs**

11. In 2008, the State of New Jersey called upon its energy utilities to play a role in assisting in the economic recovery of the State by increasing investments in necessary and beneficial energy infrastructure. In response, Elizabethtown submitted a Utility Infrastructure Enhancement ("UIE") program that was approved by the Board by Orders dated April 28, 2009 in BPU Docket Nos. EO09010049 and GO09010053 *et al* and May 16, 2011 in BPU Docket Nos. GO10120969 and GR09030195. Pursuant to those Orders, Elizabethtown completed certain UIE I and UIE II projects that included:

(i) the replacement of approximately 29 miles of elevated pressure, ten to twelve-inch cast iron main;

(ii) the replacement of approximately 36 miles of low pressure, four-inch cast iron main.

12. At the UIE program's conclusion, Elizabethtown received approval from the Board by Order dated August 21, 2013 in BPU Docket No. GO12070693 ("August 21 Order") to implement the four-year AIR program that authorized the Company to invest over $115 million to, *inter alia*, continue replacement of bare steel, cast iron and other facilities. The AIR program will expire September 1, 2017.[8] The Company projects that the AIR program will effectuate the replacement of approximately 74 miles of low pressure cast iron main and 5 miles of elevated pressure cast iron main.

[8] The Board's August 21 Order became effective September 1, 2013.

13. Finally, in response to the Board's March 20, 2013 Order in BPU Docket No. AX13030197, which invited the submission of proposals for infrastructure upgrades designed to protect the State's utility infrastructure from major storm events, Elizabethtown sought and received approval from the Board to implement the ENDURE program which, *inter alia*, will permit the Company to replace approximately 600 inside meter sets and approximately 10 miles of low pressure cast iron main with facilities uprated to elevated pressure. The Company's ENDURE projects were authorized by the Board by Order dated July 23, 2014 in BPU Docket Nos. AX13030197 and GO13090826.

14. While the UIE, AIR and ENDURE programs, as well as other efforts undertaken by Elizabethtown in the past to replace cast iron mains,[9] have resulted in the replacement of a significant amount of Elizabethtown's vintage, at-risk pipe materials, the Company nonetheless, at the completion of the AIR and ENDURE programs, will continue to operate (i) approximately 630 miles of main in low pressure areas of its distribution system that consists primarily of vintage, at-risk pipe, (ii) approximately 67,000 bare steel and copper services, and (iii) approximately 84,000 inside meter sets. As discussed more fully by Company witnesses Brian MacLean, Michael Scacifero, Salvatore D. Marano and Daniel P. Yardley, the establishment of the SMART Program to replace these facilities with a modern system will enhance the reliability and safety of Elizabethtown's distribution system by building upon the previous infrastructure replacement programs approved by the Board and is therefore in the public interest.

[9] By Order dated August 18, 2006 in BPU Docket No. GR05040371, the Board approved a stipulation that committed the Company to use its commercially reasonable best efforts to replace approximately 60 miles of elevated pressure, 8-inch cast iron main by June 30, 2010. Prior to that order, the Company had systematically replaced its 4 to 6-inch elevated pressure cast iron main over a number of years.

## Applicable Federal And State Policies Support The SMART Program

15. The proposed SMART program will help Elizabethtown achieve important safety and reliability objectives in a manner consistent with applicable Federal and State policies. As discussed supra, in 2011 the DOT and PHMSA issued a "Call to Action" that sought more aggressive action on the part of pipeline operators to repair and replace infrastructure that is determined to be at-risk. PHMSA specifically characterized cast iron and unprotected steel pipe as categories of infrastructure that require attention. The "Call to Action" was followed by an advisory bulletin issued by PHMSA on March 23, 2012 to owners and operators of natural gas cast iron distribution pipelines and state pipeline safety representatives. The bulletin urged operators of natural gas distribution systems to accelerate replacement of aging infrastructure to enhance safety and requested state agencies to consider enhancements to cast iron replacement plans and programs. In addition, in 2015, the White House released a "New Agenda To Modernize Energy Infrastructure" in the Quadrennial Energy Review, specifically calling for programs to accelerate pipeline replacement in natural gas distribution systems. Retirement and replacement of aging gas distribution infrastructure are also supported by Federal and State policies reflected in (i) PHMSA's requirement that all gas distribution operators implement a Distribution Integrity Management Plan, and (ii) the New Jersey Energy Master Plan, which supports investments in natural gas infrastructure as a means of reducing energy costs and enhancing energy security. The applicability of these policies is further discussed in the attached testimony of Company witnesses Scacifero, Marano and Yardley.

## The SMART Program Will Provide Significant Benefits To Customers And New Jersey

16. The proposed SMART Program, like the previous UIE, AIR and ENDURE programs, will provide benefits to both Elizabethtown's customers and the State of New Jersey.

In addition to the obvious enhancements to the safety and reliability of Elizabethtown's distribution system, such benefits include, (i) the ability to achieve economies of scope and scale in implementing the Program, (ii) the ability to attain scheduling efficiencies by executing a multi-year coordinated infrastructure replacement program, (iii) environmental benefits associated with reduced methane emissions, (iv) the upgrading of Elizabethtown's existing low pressure system to elevated pressure to permit the installation of smaller size pipe, excess flow valve safety devices, and the increased use of high efficiency appliances by Elizabethtown's customers, and (v) the economic benefits associated with maintaining and utilizing a significant workforce of contractors to carry out the Program. Many of these benefits, which are discussed more fully in the testimony of Witnesses MacLean, Scacifero, and Marano , will exist for decades to come.

17. While Elizabethtown acknowledges that the proposed SMART program will, all else being equal, result in increases in customers' bills. Elizabethtown believes that these increases are reasonable and necessary to obtain the safety, reliability and other societal benefits of the SMART Program. In addition, given that commodity gas prices are considerably lower than they were a few years ago, it is an opportune time to implement the SMART program.

**Cost Recovery**

18. As explained more fully in the accompanying testimony of Thomas Kaufmann, Elizabethtown is proposing to recover the revenue requirements associated with the SMART Program through a combination of traditional base rate recovery and the operation of a tariff rider comparable to that approved by the Board for Elizabethtown's UIE program in BPU Docket Nos. EO09010049 and GO09010053. Under the Board's Order dated August 21, 2013 in BPU Docket No. GO12070693 that authorized Elizabethtown's AIR Program, Elizabethtown

is required to file a base rate case no later than September 1, 2016. That case will be based on a test year consisting of three months of actual data and nine months of projected data. Elizabethtown proposes that the costs associated with all SMART Program investments placed in service as of the end of the test year of the 2016 rate case should be reflected in the Company's base rates as approved by the Board in that case. Elizabethtown further submits that the prudence of SMART Program investments placed in service by the end of the test year can be examined in the 2016 rate case.

19. For the revenue requirement associated with SMART programs placed in service after the end of the 2016 rate case test year, Elizabethtown proposes to recover such revenue requirements through the operation of a tariff rider similar to that approved by the Board in its April 28, 2009 Order in Elizabethtown's UIE proceeding in BPU Docket Nos. EO09010049 and GO09010053. Specifically, the proposed rider is designed to permit Elizabethtown to recover (i) the after-tax return on capital associated with its SMART projects, grossed up for the appropriate revenue expansion factor, (ii) depreciation expense associated with such projects, (iii) carrying costs on the over and under recovery balances resulting from the operation of the SMART rider, and (iv) all applicable taxes and assessments. To determine the revenue requirement that the SMART rider will be designed to recover, the Company will multiply the after-tax return on capital by the gross plant additions[10] associated with SMART Program projects projected to be placed in service less the accumulated depreciation and accumulated deferred taxes associated with such projects. The applicable after-tax cost of capital, depreciation rates and revenue expansion factor applicable to the SMART rider will be determined initially by the Board in Elizabethtown's 2016 rate case and will be subject to prospective adjustment in any future

[10] Such plant additions would include an accrued Allowance for Funds Used During Construction ("AFUDC") until they are placed in service. The AFUDC rate applied to SMART projects would be based upon the modified Federal Energy Regulatory Commission method used by Elizabethtown.

Elizabethtown base rate case during the term of the SMART Program. Elizabethtown proposes that the SMART rider rate would be assessed to all firm customers served under Service Classifications RDS, SGS, GDS, LVD, EGF, GLS, NGV and FTS.

20. Elizabethtown proposes that the initial SMART rider rate be established by the Board in Elizabethtown's 2016 rate case based on the projected SMART Program costs for the period April 1, 2017 through March 31, 2018. All costs and cost recoveries through the SMART Rider will be subject to a full annual reconciliation. The monthly over and under recovery balance will be determined on the basis of a comparison of the actual revenues billed under the SMART Rider and the actual revenue requirement for SMART Projects each month. The monthly interest on net over and under recoveries will be based upon the Company's actual interest rate on its commercial paper and/or bank credit lines, or if such commercial paper and/or bank credit lines have been fully utilized, the interest rate will be equal to the Company's pre-tax return as established in its most recent rate case.

21. Elizabethtown proposes to file an annual petition to adjust the SMART rider rate no later than January 1 of each year. Such filing will reflect a reconciliation of actual and projected SMART Program costs through March 31 of the same year as well as a projection of SMART Program costs for the next succeeding April 1 through March 31 period. The first SMART filing would be made January 1, 2018. The Company's proposed SMART rider rates would be recovered on a provisional basis but would only be subject to a disallowance if the Board found that specific SMART Program expenditures were imprudently incurred. The prudence of SMART Program investments would be reviewed in Elizabethtown's periodic base rate cases, or if a base rate case were not filed within two years of the completion of the SMART Program, through a reopener of Elizabethtown's then-most recent base rate proceeding.

22. Although Elizabethtown is not proposing any change in rates associated with the SMART Program at this time, Mr. Kaufmann's testimony sets forth the illustrative bill impacts associated with the SMART Program. These illustrative bill impacts were calculated using the following inputs:

(i) a composite depreciation rate of 1.94%, the rate that is currently being utilized to determine Elizabethtown's AIR Program deferral balance;

(ii) a weighted average after-tax cost of capital of 6.53% as established in Elizabethtown's most recent base rate case; and

(iii) a revenue expansion factor of 1.72431, which is the factor established in Elizabethtown's most recent rate case adjusted for the change in the Corporate Business Tax rate that took effect in 2010.

Mr. Kaufmann's analysis shows estimates that the operation of the SMART Rider will result in annual rate adjustments of between 1.4% and 3.2% to the Company's residential heating customers over the life of the Program.

**Management Plan**

23. Elizabethtown is developing a detailed plan for managing the SMART Program. It will provide a detailed description of the SMART Program and its objectives, how it will be managed and how it will be executed. It will discuss the internal and external resources available to administer the Program and explain why those resources are sufficient to effectively administer the Program. It will also set forth detailed processes to be followed in managing the Program. To the extent that the Company incurs incremental operation and maintenance expenses to administer the Program, Elizabethtown will seek to recover such costs in future base rates, not through the operation of the SMART rider.

## Communications Plan

24. Implementation of the SMART Program will require Elizabethtown to engage in extensive construction in the portion of its service territory located in Union and Middlesex Counties over the next ten years.[11] To facilitate the Program, Elizabethtown will develop a comprehensive communications and public outreach program for the purpose of communicating details about the Program and obtaining input from governmental officials, affected business communities and local citizens about anticipated construction activities. Elizabethtown submits that a proactive, interactive program of community outreach will help the Company to maximize support for the Program and minimize disruptions in local communities.

## Government Funding

25. If Elizabethtown receives any federal, state, county or municipal funds or credits directly applicable to SMART projects, it will use such funding to offset its SMART Program costs to the extent permitted by law.

## Reporting Requirements

26. Elizabethtown will provide the Board and parties to this proceeding with reports concerning the SMART Program in the same format as the Company's reports concerning the AIR and ENDURE programs. Elizabethtown submits that its reports, coupled with its annual SMART Rider reconciliation filings, will keep the Board and all parties fully informed concerning the progress of the SMART Program.

## Public Notice And Hearings

27. This Petition does not propose any rate increase, and, for that reason, no public hearings are required. Nonetheless, Elizabethtown proposes public hearings similar to those that

[11] A small portion of the SMART Program construction will also take place in the Northwest portion of the Company's service territory.

are held when rate increases are proposed. A proposed Form of Public Notice, including the proposed rates and bill impacts attributable to the SMART program, is attached to this Petition as Exhibit P-6. Elizabethtown proposes that the form of notice be placed in newspapers having circulation within the Company's gas service territory to provide notice of public hearings that will be held in Elizabethtown's Union and Northwest service territories. A copy of this Notice will be served on the County Executives and Clerks of any municipalities within the Company's service territory once public hearing dates are established.

**Miscellaneous**

28. Attached to and made a part of this Petition are the following exhibits and schedules which Petitioner suggests be marked as indicated:

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| Exhibit P-1 | Testimony and Schedules of Brian MacLean |
| Exhibit P-2 | Testimony and Schedules of Michael P. Scacifero |
| Exhibit P-3 | Testimony and Schedules of Salvatore A. Marano |
| Exhibit P-4 | Testimony and Schedules of Daniel P. Yardley |
| Exhibit P-5 | Testimony and Schedules of Thomas Kaufmann |
| Exhibit P-6 | Draft Public Notice |

29. Seven copies of this Petition are being served on Stefanie A. Brand, Director, Rate Counsel, 140 East Front Street, Trenton, New Jersey, 08625 and as otherwise required under *N.J.A.C.* 1:5-12[12] and on the individuals identified below.

30. Given the significance of the proposed SMART program and Petitioner's desire to implement the program as quickly as possible, Elizabethtown respectfully requests the Board

[12] Although this filing proposes no increase in rates, it is nonetheless being served in the manner required by *N.J.A.C.* 14:1-5.12.

to retain this matter and establish a procedural schedule that will permit the Board to issue a final order in this proceeding no later than March 31, 2016.

## Conclusion

For the foregoing reasons, Elizabethtown respectfully requests the Board to issue an order approving this Petition no later than March 31, 2016 and specifically find that:

(1) the SMART program is in the public interest, and that it is reasonable and prudent for Elizabethtown to proceed with the SMART Program as described herein,

(2) Elizabethtown will be permitted to recover SMART program costs incurred after the test year of its 2016 rate case through the operation of the SMART rider as described in the Petition and Mr. Kaufmann's testimony.

Respectfully submitted,

By: /s/ Mary Patricia Keefe

Mary Patricia Keefe, Esq.
Vice President, Regulatory Affairs
And Business Support
Pivotal Utility Holdings, Inc.
d/b/a Elizabethtown Gas
520 Green Lane
Union, New Jersey 07083
(908) 662-8452

Dated: September 22, 2015

**VERIFICATION**

STATE OF NEW JERSEY )
) ss:
COUNTY OF UNION )

I, Thomas Kaufmann, being duly sworn according to law, upon his oath, deposes and says:

1. I am Manager of Rates and Tariffs for the Petitioner in the foregoing Petition and I am authorized to make this Affidavit on behalf of the Petitioner.

2. The statements made in the foregoing Petition and exhibits and schedules submitted therewith correctly portray the information set forth therein, to the best of my knowledge, information and belief.

Thomas Kaufmann
Manager of Rates and Tariffs

Sworn to and subscribed to before me this
21st day of Sept., 2015.

Notary Public

JANE JAMES
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires December 20, 2016

# VERIFICATION

STATE OF NEW JERSEY )
) ss:
COUNTY OF UNION )

I, Michael P. Scacifero, being duly sworn according to law, upon his oath, deposes and says:

1. I am Director of Engineering Services for the Petitioner in the foregoing Petition and I am authorized to make this Affidavit on behalf of the Petitioner.

2. The statements made in the foregoing Petition and the exhibits and schedules submitted therewith correctly portray the information set forth therein, to the best of my knowledge, information and belief.

Michael P. Scacifero
Director of Engineering Services

Sworn to and subscribed to before me this
22 day of Sept, 2015.

Notary Public

JANE JAMES
NOTARY PUBLIC
STATE OF NEW JERSEY
My Commission Expires December 20, 2016

**STATE OF NEW JERSEY**
**BOARD OF PUBLIC UTILITIES**

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| **In the Matter of the Petition of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas For Approval Of A Safety, Modernization And Reliability Program And Associated Cost Recovery Mechanism** | : | **Docket No.** **SUMMARY SHEET** |

This Petition presents the request of Pivotal Utility Holdings, Ind. d/b/a Elizabethtown Gas ("Elizabethtown" or "Company") for approval by the Board of Public Utilities ("Board") of a safety, modernization and reliability construction program and a related rider to the Company's Tariff – the Safety, Modernization and Reliability Tariff – to permit Elizabethtown to recover the costs of the proposed program (collectively the program and proposed Tariff rider will be referred to as "the SMART Program"). Under the SMART Program, Elizabethtown proposes, over a ten-year period, to modernize and enhance the reliability and safety of its gas distribution system by replacing its vintage, at-risk facilities which include aging cast iron mains, unprotected and bare steel mains and services, ductile iron, copper and vintage plastic mains and vintage plastic and copper services. Elizabethtown also proposes to relocate inside meter sets outside, to upgrade its legacy low pressure system to an elevated pressure system and, as a consequence, to install excess flow valves and retire district regulators that are presently required to operate the existing low pressure system. The total expenditures associated with the SMART Program are projected to approximate $1,102 million in 2014 dollars. Elizabethtown projects that these expenditures will enable the Company to replace approximately 630 miles of main and approximately 67,000 services.

Elizabethtown is not proposing a rate change at this time and therefore there is no immediate rate impact associated with this Petition. Elizabethtown is proposing to include a rider to its Tariff that will enable the Company to obtain timely recovery of its SMART Program costs when those costs are incurred. The rates to be established under the rider will be determined in future proceedings before the Board.

**EXHIBIT P-1**

**PIVOTAL UTILITY HOLDINGS, INC.**
**d/b/a ELIZABETHTOWN GAS**
**DIRECT TESTIMONY OF**
**BRIAN MACLEAN**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

**A.** My name is Brian MacLean. My business address is 520 Green Lane, Union, New Jersey 07083.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

**A.** I am employed by Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("Elizabethtown" or "Company") as President.

**Q. PLEASE DESCRIBE YOUR PROFESSIONAL RESPONSIBILITIES.**

**A.** As President of Elizabethtown, I am responsible for the day-to-day operations of Elizabethtown including ensuring safety, compliance, operational excellence and financial integrity. In this capacity, I oversee all aspects of Elizabethtown's operations, including all infrastructure replacement efforts

**Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS AND BUSINESS EXPERIENCE.**

**A.** I have been employed by AGL Resources Inc. ("AGLR") Elizabethtown's parent company, for more than 19 years.

Prior to assuming my current position, I served as the Vice President of Operations for Elizabethtown. In that role, I was responsible for all aspects of local operations, including managing distribution, field service and meter reading functions. Prior to that, I served as Region Manager for Elizabethtown. With a focus on safety, compliance and operational quality, I was responsible for all aspects of local operations, including distribution. Prior to that, I served as a Managing Director, Business Process Improvement and Business Systems Support for AGLR. In this capacity I was responsible for identifying and implementing process improvement initiatives designed to decrease operating expenses while improving safety and customer service. Earlier I served as Managing Director, Operations Management for AGLR. My responsibilities included providing support for AGLR's utilities in six states in areas such as preventative and corrective maintenance programs for transmission and distribution systems, and the development of safety, risk management and total quality programs. I began my career with AGLR by working in various roles at Virginia Natural Gas, including Region Manager, Southern Operations.

I earned my undergraduate degree from the University of Prince Edward Island. I also completed an Electrical Engineering Technology Co-Op program at NASA Langley Research Center. I also hold multiple professional certifications in corrosion control, process control & instrumentation and information technology from NACE International, the Instrument Society of America and Microsoft.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

**A.** The purpose of my testimony is to provide an overview of the need for the Safety, Modernization and Reliability Tariff ("SMART") Program and associated cost recovery mechanism that the Company is seeking to implement. I explain why it is in the public interest for Elizabethtown to undertake a comprehensive program to modernize the Company's utility infrastructure over a ten-year period at this time and to allow for prompt recovery of the associated costs.

**Q. PLEASE DESCRIBE THE COMPANY'S PROPOSED SMART PROGRAM.**

**A.** The proposed SMART Program is designed to facilitate the retirement of Elizabethtown's vintage, at-risk facilities and their replacement with modern infrastructure over a

ten-year period to enhance the safety, reliability and integrity of the Company's distribution system. Specifically, the Company is proposing to (i) retire approximately 630 miles of vintage, at-risk mains and associated customer services, and (ii) retire and replace certain appurtenances, including inside meter sets and district regulators. The proposed SMART Program will enable Elizabethtown to upgrade its legacy low pressure system to elevated pressure and enable the Company to install excess flow valves throughout the upgraded system. The Company projects that the proposed SMART Program will require expenditures of approximately $1,102 million in 2014 dollars over the next ten years. Further details concerning the scope and costs of the proposed SMART Program are described by Company witnesses Michael P. Scacifero and Salvatore D. Marano.

**Q. PLEASE EXPLAIN WHY ELIZABETHTOWN IS SEEKING APPROVAL OF THE SMART PROGRAM.**

**A.** Safety and reliability are essential elements of the AGLR corporate culture and we work very hard to ensure that all of our gas utilities, including Elizabethtown, are committed to the safe and reliable operation of their individual distribution systems. The safe operation of

our system is a core value to AGLR. We work closely with industry associations and regulators to continually assess and improve the infrastructure safety of our operations. Over the years, Elizabethtown and other AGLR affiliates have undertaken a number of accelerated infrastructure programs to enhance the safe and reliable operation of AGLR's natural gas distribution systems. While Elizabethtown's efforts in this regard have enabled the Company to provide safe and reliable service for many years, the practical reality is that portions of Elizabethtown's infrastructure are very old and factors beyond Elizabethtown's control make these facilities subject to corrosion, unpredictable breakage and leaks. Although the Company believes that it is managing its system in a reasonable and prudent manner, the distribution system is aging and the Company must manage a mix of several types of vintage, at-risk materials. Our proposed SMART Program is designed to facilitate a safer and more reliable system by accelerating the replacement of vintage, at-risk infrastructure. Notwithstanding our continue efforts to manage the risks posed by our legacy system, the probability of a failure remains as the system ages. The Company is seeking to

implement the SMART Program to minimize risk prospectively.

**Q. WHY IS IT APPROPRIATE TO UNDERTAKE THE PROPOSED SMART PROGRAM AT THIS TIME?**

**A.** Eventually all the vintage, at-risk material will require replacement and the costs associated with doing so will only increase as Elizabethtown's system continues to age. In the face of these circumstances, we are seeking to implement a proactive, planned and managed approach over a ten-year period to replacing vintage, at-risk facilities rather than a reactive approach, which would likely prove, in the long run, to be more costly, difficult to manage and disruptive to customers and the communities served.

**Q. ARE THERE FEDERAL AND STATE POLICIES THAT HAVE PROMPTED THE COMPANY TO MAKE THESE PROPOSALS?**

**A.** Yes. Company witnesses Scacifero, Marano and Daniel P. Yardley describe in detail the federal and state policy pronouncements that support enhanced efforts to replace aging natural gas pipeline infrastructures and the use of innovative cost recovery mechanisms to facilitate those efforts. The proposed SMART Program is intended to

achieve the goals that federal and state policymakers are encouraging and actively recommending.

**Q. BESIDES THE SAFETY AND RELIABILITY BENEFITS ASSOCIATED WITH THE SMART PROGRAM, ARE THERE OTHER BENEFITS THAT SUPPORT THE APPROVAL OF THE SMART PROGRAM?**

**A.** While the safety and reliability benefits associated with the proposed SMART Program are the paramount reason why the Board should approve the Program, there are several other benefits that also support its approval. These additional benefits include:

- **Customer benefits**
  - Increased consumer appliance choice and use of higher-efficiency and other gas utilization equipment;
  - Conveniences and safety enhancements associated with outside meters; and
  - Greater application of residential service line excess flow valves.

- **Community benefits**
  - Economic benefits from increased permits and street restoration;
  - Greater first responder access to above ground outside service shut-off valves and meter sets;
  - Less disruption from maintenance activities;
  - Potential job growth and stimulation of the economy; and
  - Reduced greenhouse gas emissions.

- **Elizabethtown benefits**

- Improved resiliency and efficiency;
- Fewer unplanned responses to insufficient delivery pressure and odor of gas reports; and
- Simplification of operation and maintenance.

These benefits are discussed in detail by Company witnesses Scacifero and Marano.

**Q. PLEASE DESCRIBE THE POTENTIAL AVOIDED COST SAVINGS ASSOCIATED WITH THE PROPOSED SMART PROGRAM.**

**A.** As noted earlier, in the long run, the vintage, at-risk facilities that we propose to replace through the SMART Program will need to be replaced. By replacing those facilities now using a planned multi-year approach, we have the opportunity to obtain increased economies of scale and scope that can result from bulk purchases of materials, the ability to efficiently utilize experienced internal and contractor employees who are already working on our other infrastructure projects, greater coordination with municipalities, and the ability to enter into longer-term arrangements with outside contractors. In addition, the replacement of Elizabethtown's vintage, at-risk infrastructure will reduce leaks on mains and service and enable the Company to avoid the greater costs associated with unplanned replacements of leaking or broken pipe. Once a

significant amount of the Company's vintage, at-risk infrastructure is replaced, the Company should also avoid a portion of the costs associated with identifying, repairing and/or monitoring leaks.

**Q. WILL PROCEEDING WITH A PLANNED INFRASTRUCTURE REPLACEMENT PROGRAM LIKELY HAVE COMMUNITY RELATIONS AND CUSTOMER SATISFACTION BENEFITS?**

**A.** Yes, the proposed SMART Program will result in a more coordinated infrastructure replacement effort that will minimize disruptions to counties and municipalities we serve and the businesses and residents of those communities. These and other benefits are discussed in further detail by Company witnesses Scacifero and Marano.

**Q. WHY IS THE COMPANY PROPOSING TO COMPLETE THE SMART PROGRAM OVER A TEN-YEAR PERIOD?**

**A.** The proposed timing of the SMART Program is the product of a balancing of several factors. First, as I discussed previously, we recognize that Elizabethtown's vintage, at-risk infrastructure is susceptible to unpredictable breaks and leaks. Second, we need to propose a time frame that would enable us to manage the program effectively and efficiently and allow the Company to have

a realistic opportunity to work with the communities it serves to complete the construction required without undue disruption in any one year or period of years. Third, a long term construction program allows third party contractors to better plan asset and qualified labor deployment and will enable Elizabethtown to better control program costs and quality. Finally, we believe that our program will not have an unreasonable bill impact on our customers. As discussed by Company witness Thomas Kaufmann, we currently estimate that the operation of the SMART Rider cost recovery mechanism will result in annual rate adjustments to our residential heating customers of between 1.4% and 3.2% annually over the life of the program.

**Q. HOW WILL THE COMPANY MANAGE THE SMART PROGRAM?**

**A.** Elizabethtown is developing a detailed plan for managing the SMART Program to ensure that the Company has sufficient internal and external resources available and processes in place to manage and implement the SMART Program. This plan is intended to establish procedures for the proper planning, design, construction, project management, communication (both public and governmental)

and record keeping needed to implement and manage the SMART Program.

**Q. WHAT RESOURCES ARE REQUIRED TO SUCCESSFULLY IMPLEMENT THE SMART PROGRAM?**

**A.** The Company will require a mix of external and internal resources to effectively implement the proposed SMART Program. Specifically, the Company will need to utilize outside contractors for the majority of the planned replacement work under the program. Many of these contractors are the same ones currently working on our main replacement projects. We will also need to ensure that we have sufficient internal labor to implement and manage the SMART Program, including a sufficient number of engineers, project managers, analysts and financial staff.

**Q. IS THE COMPANY'S PROPOSED COST RECOVERY MECHANISM AN ESSENTIAL COMPONENT OF THE SMART PROGRAM?**

**A.** Yes. It is prudent for the Company to make SMART Program investments at this time and it is essential that Elizabethtown be able to recover the associated costs in a timely manner. The SMART Program will require significant investment of incremental capital and it is

essential to the Company's efforts to continue to raise necessary capital in a cost-effective manner that the Company is afforded full and timely recovery of the costs of its SMART Program investments. As described in detail by Company witnesses Kaufmann and Yardley, Elizabethtown is proposing a cost recovery mechanism that will allow it to recover the SMART Program costs through a tariff adjustment rider to be effective after the conclusion of the Company's next base rate case to be filed by September 1, 2016. Approval of this cost recovery mechanism will provide a fair and efficient means of enabling the Company to timely recover costs associated with the substantial SMART Program investments that are largely non-revenue producing and will not materially contribute incremental base rate revenues or result in an immediate reduction in O&M costs.

**Q. PLEASE EXPLAIN WHY TRADITIONAL BASE RATE CASE RECOVERY IS NOT THE APPROPRIATE MEANS OF RECOVERING SMART PROGRAM COSTS?**

**A.** Traditional base rate recovery does not provide the timely recovery needed to support the level of infrastructure investment required by the type of program proposed here. Embarking upon a long-term, large

infrastructure replacement program where the only available way of recovering the associated costs is through base rate filings could result in a significant lag between the expenditure of capital and the effectiveness of new base rates. This has the potential to harm a utility's financial condition and can increase the cost to borrow money. By contrast, the proposed cost recovery mechanism facilitates the Company's investments in the SMART Program by helping to ensure that the Company can continue to raise necessary capital in an efficient manner. Moreover, obtaining even a significantly lagged recovery of SMART Program costs through the traditional base rate process could require Elizabethtown to file multiple rate cases that are expensive and time consuming not only for the Company but also for the other parties that participate. Frequent base rate case filings are not efficient or otherwise in the interest of the utility, its customers or the public. The cost recovery methodology that Elizabethtown is proposing will enable a more efficient process than the traditional base rate case proceeding and has the potential added benefit of reducing the burdens that frequent full blown rate case proceedings would otherwise place on Staff, Rate Counsel and other parties. Federal

and State policymakers and regulators have recognized that alternative cost recovery approaches can facilitate investment in natural gas infrastructure replacement. The Company's proposed cost recovery mechanism is designed to permit it to recover no more than its actual costs associated with investments that will benefit its customers and the State of New Jersey for many years.

**Q. ARE THERE DIFFERENCES BETWEEN THE TYPES OF COSTS THAT THE COMPANY PROPOSES TO INCUR AS A RESULT OF THE SMART PROGRAM AND THE TYPES OF COSTS THAT ARE TYPICALLY RECOVERED THROUGH BASE RATES?**

**A.** Yes. As I mentioned before, the safety and reliability enhancing investments that the Company proposes to make through the SMART Program do not help the Company generate a material increase in revenues or immediate operating efficiencies that act to substantially offset the costs. Where, as here, the Company is proposing to make a significant investment in plant that creates almost no immediate offsetting cost savings or significant revenue growth opportunities, it is appropriate to permit the use of the type of cost recovery mechanism Elizabethtown seeks to establish here.

**Q. WILL THE PROPOSED COST RECOVERY MECHANISM FOR THE SMART PROGRAM ELIMINATE THE NEED FOR THE COMPANY TO FILE RATE CASES IN THE FUTURE?**

**A.** No. While capital costs associated with the replacement of aging infrastructure represent a large component of the Company's cost of service, they are still only one piece of Elizabethtown's overall costs. While the proposed cost recovery mechanism may reduce the frequency of base rate case filings, it will not eliminate the need for periodic base rate cases. Indeed, under Elizabethtown's proposal, the Company will use the base rate case process to obtain a final determination of the prudence of its SMART Program investments.

**Q. WILL ELIZABETHTOWN'S COST RECOVERY PROPOSAL DIMINISH REGULATORY OVERSIGHT OF THE COMPANY'S INFRASTRUCTURE INVESTMENTS?**

**A.** No. If anything, Elizabethtown's cost recovery proposal will result in enhanced regulatory oversight of the SMART Program. Each annual tariff rider reconciliation will be subject to full review by Board Staff and Rate Counsel. Moreover, as discussed by Company witness Scacifero, the Company is proposing to file detailed periodic reports concerning the SMART Program. Finally, the Company

proposes that the prudence of the SMART Program costs will be examined in the Company's periodic base rate cases.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes, it does.

**EXHIBIT P-2**

**PIVOTAL UTILITY HOLDINGS, INC.**
**d/b/a ELIZABETHTOWN GAS**
**DIRECT TESTIMONY OF**
**MICHAEL P. SCACIFERO**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

**A.** My name is Michael P. Scacifero. My business address is 520 Green Lane, Union, New Jersey 07083.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

**A.** I am employed by Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("Elizabethtown" or "Company") as Director of Engineering Services.

**Q. PLEASE DESCRIBE YOUR PROFESSIONAL RESPONSIBILITIES.**

**A.** As Director of Engineering Services for Elizabethtown, I oversee the following activities: engineering planning design and budgeting for all of Elizabethtown's distribution system improvements, renewals, pressure improvements, Department of Transportation projects and large new business projects. I am responsible for conducting system modeling and analysis and providing engineering support to Field Operations and Construction Operations. In addition, I oversee Elizabethtown's Corrosion Department, Asset Protection, and Regulatory Compliance. I am also involved with the development of

Elizabethtown's capital budget and am familiar with its components.

**Q. WHAT ARE YOUR PROFESSIONAL AND EDUCATIONAL QUALIFICATIONS?**

**A.** I received a B.S. in Civil Engineering from New Jersey Institute of Technology in 1988. I am a Licensed Professional Engineer in the State of New Jersey. I have been employed by Elizabethtown for 24 years in Engineering and Operations. Two of those years were spent as a Project Engineer, five years as a Division Engineer, and fourteen years as Manager of Engineering, Manager of Operations and, currently, Director of Engineering Services. Prior to joining Elizabethtown, I was a Project Engineer for four years with Johnson Engineering Inc. specializing in highway and infrastructure design. Prior to that, I was employed for three years by the Township of Warren, New Jersey as a Staff Engineer specializing in municipal engineering.

I am a member of American Society of Civil Engineers and the New Jersey Utilities Association.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

**A.** The purpose of my testimony is to support Elizabethtown's petition in this proceeding to establish a Safety, Modernization and Reliability Tariff ("SMART") Program that will permit the Company to implement a strategic vision to modernize and enhance the reliability and safety of its gas distribution system over a ten-year period and obtain timely recovery of the costs associated with the Program. Specifically, I provide an overview of (i) Elizabethtown's proposal to accelerate the replacement of certain types of vintage, at-risk facilities in its service territory, including a discussion of the need for and associated benefits of the SMART Program and (ii) the associated estimated costs. My testimony complements the testimony of Company witness Salvatore D. Marano and Brian MacLean who are providing additional details about these topics.

**Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY'S SMART PROGRAM PROPOSAL.**

**A.** With the SMART Program, the Company proposes to invest an estimated $1,102 million (in 2014 dollars including the cost of removal) to (i) replace and retire approximately 630 miles of vintage, at-risk mains and associated customer services, (ii) upgrade the legacy low-pressure

system located primarily in the eastern portion of the service territory to elevated pressure, (iii) relocate approximately 84,000 inside meter sets outside, (iv) install excess flow valves on the upgraded system, and (v) retire approximately 210 district regulators that will no longer be needed once the existing low pressure system is upgraded. The proposed SMART Program would proceed over a period of ten years commencing on the first day of the month following the New Jersey Board of Public Utilities ("Board" or "BPU") approval of the Program. For the purposes of project planning and reporting, subsequent program years would continue on a calendar year basis starting on the first January 1 after Board approval.

**Q. WHAT FACILITIES DO YOU CHARACTERIZE AS VINTAGE, AT-RISK FACILITIES?**

**A.** Such facilities include aging cast iron main, unprotected and bare steel mains and services, copper mains and services and certain older plastic mains and services. The characteristics of these facilities are described in greater detail in the testimony of Company witness Marano.

**Q. WOULD THE AMOUNT OF NEW MAIN TO BE INSTALLED BE THE SAME AS THE AMOUNT OF MAIN BEING RETIRED?**

A. No. While the Company is proposing to retire approximately 630 miles of vintage, at-risk main, the amount of new main to be installed to replace the existing vintage infrastructure will be approximately 5% less (or about 600 miles). This reduction is due to certain areas of the Company's distribution system having existing redundant mains. Therefore, in some cases only customer service work would be performed on a particular street along with the vintage main being retired. The cost estimates for the SMART Program reflect this assumption. In addition, all footages used in the estimate are based on pre-design projections based on the Company's main and service records and Geographic Information System ("GIS"). As the scope of the projects develops and plans are designed, the footage numbers will be adjusted accordingly.

**Q. PLEASE PROVIDE AN OVERVIEW OF ELIZABETHTOWN'S DISTRIBUTION SYSTEM.**

**A.** Elizabethtown provides natural gas service to approximately 280,000 customers in two areas of New Jersey: the eastern portion of the service territory

consists of 131 square miles and covers portions of Union and Middlesex Counties ("the Union Division"). The Union Division is a relatively mature service area where the majority of Elizabethtown's capital expenditures are made to replace and upgrade aging infrastructure. In contrast, the northwest portion of the Company's service territory, which consists of 1,373 square miles and covers portions of Sussex, Warren, Hunterdon, Mercer and Morris counties ("Northwest Division"), contains relatively newer facilities. Therefore, most of this area's capital expenditures are associated with new business and work required by municipalities and/or the New Jersey Department of Transportation. Company witness Marano provides further details regarding the Company's current distribution system infrastructure.

**Q. WHERE ARE THE FACILITIES THAT ELIZABETHTOWN SEEKS TO REPLACE AND RETIRE THROUGH THE SMART PROGRAM PRIMARILY LOCATED?**

**A.** The majority of the vintage, at-risk main that Elizabethtown proposes to replace and retire under the SMART Program are located in the Union Division, with, a small percentage located in the Northwest Division.

**Q. WHAT TYPES OF CAPITAL PROJECTS ARE OUTSIDE THE SCOPE OF THE PROPOSED SMART PROGRAM?**

**A.** Capital projects that are not within the scope of the proposed SMART Program include projects associated with new business, work required by municipalities or the New Jersey Department of Transportation, information technology-related investments, the replacement of larger diameter main, and associated services and meter sets, and investments in office and storage facilities and vehicles. These types of capital projects will continue to be funded through the Company's normal capital budget.

**Q. WHY DOES THE COMPANY BELIEVE THAT IT IS IN THE PUBLIC INTEREST TO PROCEED WITH THE SMART PROGRAM?**

**A.** The Company believes that the proposed SMART Program is in the public interest because it will result in a safer and more reliable distribution system. For many years, the Company has had programs dedicated to replacing portions of its vintage, at-risk and in particular, cast iron main infrastructure. This type of infrastructure is very old and in some cases dates back to the pre-1900s. While this main has enabled the Company to provide safe and adequate utility service for many years, cast iron main can, under certain conditions, be prone to graphitic

corrosion and breakage. Breaks in smaller diameter cast iron facilities occur because of ground movement near the pipe that may be caused by seasonal ground freezing and thawing, and/or construction activities near and around the pipe. These breakages are unpredictable.

Cast iron facilities are not only prone to leaks as a result of breakage, they are also prone to leaks from joints. As compared to other types of main, cast iron mains were typically installed in relatively smaller sections, and therefore they rely on various couplings or joints that have become susceptible to leaks at the point where one segment is connected to another. In addition, much of the remaining cast iron mains have old steel services connected to them. These old services also are more prone to leaks. The proposed SMART Program will enable the Company to replace and retire its vintage, at-risk facilities with modern facilities that are less likely to experience breaks and leaks.

**Q. DO INCREASED LEAK RATES INCREASE GREENHOUSE GAS EMISSIONS?**

**A.** Yes. Natural gas is commonly identified as a greenhouse gas. When leaks occur on a pipeline, greenhouse gas

emissions increase. Thus, as Elizabethtown replaces its vintage, at-risk mains it will, all other things being equal, reduce the amount of greenhouse gases released by its system.

**Q. PLEASE DESCRIBE THE RELIABILITY BENEFITS ASSOCIATED WITH THE PROPOSED SMART PROGRAM.**

**A.** From the reliability and integrity perspectives, the benefits of replacing aging infrastructure are clear and compelling. First, if approved, the SMART Program will enable Elizabethtown to retire portions of the Company's pipe inventory that are more susceptible to leaks and breaks over the ten year period. Any leak increases the potential for an incident and leads to higher operating costs associated with leak management. Second, in addition to the elimination of a significant source of leaks and breaks, the proposed SMART Program would replace the existing at-risk vintage facilities with state-of-the-art materials that would provide reliability advantages. These advantages include reduced outages due to water infiltration and the ability to more readily isolate and shut off a smaller area of main when damage occurs, minimizing the impact on customers.

**Q. HAS THE COMPANY PREVIOUSLY UNDERTAKEN PROGRAMS DESIGNED TO ACHIEVE THE REPLACEMENT OF CAST IRON FACILITIES?**

**A.** Yes. In the late 1990s, the Company undertook a program of replacing all elevated pressure ("EP") cast iron mains that were six inches or less in diameter. In 2006, this program was expanded to include the replacement of 8-inch EP main, which was completed in 2009. In the first two phases of its Utility Infrastructure Enhancement ("UIE") Program, the Company completed the replacement of all 10-inch and 12-inch EP cast iron main.

With respect to low pressure ("LP") cast iron main, the Company presently has approximately 550 miles of such main in service on its system. In 2012, the Company commenced the Accelerated Infrastructure Replacement ("AIR") Program to replace portions of its LP cast iron system as well as portions of its remaining large diameter (16-inch and greater) EP cast iron system.

Under the UIE program, the Company retired approximately 36 miles of LP cast iron main. Under the AIR Program, to date, the Company retired approximately 37 additional miles of LP cast iron pipe and expects to retire approximately another 37 miles by August 2017. Finally, in 2014, the Company commenced its ENDURE

Program pursuant to which the Company will retire approximately 10 miles of LP cast iron main located within designated Federal Emergency Management Agency flood zones.

As a result of these programs and additional capital projects, by the end of the AIR Program in 2017 the Company expects to have retired approximately 55 miles of the 550 miles of LP cast iron main that are currently on its system, bringing the total remaining amount of LP cast iron main to approximately 495 miles. The proposed SMART Program would retire this remaining amount of cast iron main along with other LP main, including steel, ductile iron and vintage plastic and copper, bringing the total LP SMART retirement mileage to approximately 630 miles.

**Q. IS THE PROPOSED SMART PROGRAM CONSISTENT WITH FEDERAL AND STATE POLICIES?**

**A.** Yes, the proposed SMART Program is consistent with the safety and reliability goals identified in various federal and state policies. Pipelines are regulated by both federal and state agencies. The United States Department of Transportation (“DOT”) is responsible for

overseeing pipeline safety at the federal level. The Pipeline and Hazardous Materials Safety Administration ("PHMSA"), a branch of DOT, establishes many of the regulations that apply to natural gas transmission and distribution systems. In New Jersey, the BPU administers pipeline safety requirements. Both state and federal regulators have consistently indicated that they support the replacement of aging gas distribution infrastructure. For example, in 2011 the former Secretary of Transportation announced a Pipeline Safety Action Plan that included a call to accelerate the replacement of aging pipeline infrastructure. With this "Call to Action" the then Secretary recommended that pipeline operators and other affected parties conduct a comprehensive review of their pipeline facilities and accelerate their repair and replacement efforts. In addition, PHMSA requires all gas distribution system operators to develop and implement a distribution integrity management plan ("DIMP"). DIMP requires all operators to adopt risk-based approaches to managing the integrity of their facilities. The requirements of DIMP are further described in Company witness Marano's testimony. In addition, on April 21, 2015, the White House released a New Agenda to Modernize Energy

Infrastructure in the Quadrennial Energy Review and called for programs to accelerate pipeline replacement in natural gas distribution systems. Finally, the New Jersey Energy Master Plan supports investments in natural gas infrastructure as a way to reduce energy costs and enhance energy security.

**Q. HOW WILL ELIZABETHTOWN INCORPORATE ITS DIMP INTO ITS SMART PROGRAM?**

**A.** Elizabethtown will continue to utilize its DIMP as the foundation for prioritizing projects that will be undertaken through the SMART Program. DIMP requirements are performance-based and require operators to:

- Know their systems;
- Identify threats;
- Evaluate and rank risks;
- Identify and implement measures to address risks;
- Measure performance, monitor results, and evaluate effectiveness;
- Make periodic evaluations and improvements; and
- Report results.

Thus, the DIMP compliance framework provides an ideal vehicle for identifying the replacement projects that should be undertaken through the SMART Program. As

discussed by Company witness Marano, the Company will employ the following considerations to identify replacement projects as part of the SMART Program, which include DIMP (the first bullet below) and other factors:

- Prioritization of selected facilities for safety and reliability – DIMP;
- Incorporation of the latest technologies for system design and materials;
- Undertaking environmentally friendly construction where applicable;
- Assessment of the impact on customers and communities;
- Leveraging existing embedded system components instead of replacing them, e.g., uprating existing plastic systems;
- Right sizing new facilities for cost effectiveness and to reduce impact as the new pipe will generally be smaller in diameter;
- Maximizing the retire/install ratio;
- Coordinating work with other company programs; and
- Coordinating work with programs by other utilities and with municipal paving projects, where applicable.

**Q. IN ADDITION TO REPLACING VINTAGE, AT-RISK MAIN AND ASSOCIATED SERVICES, WILL THE COMPANY ALSO BE REPLACING OTHER APPURTENANCES AS PART OF THE SMART PROGRAM?**

**A.** Yes, as indicated earlier, as part of the SMART Program, Elizabethtown also proposes to replace and relocate approximately 84,000 inside meters to an outside location, install approximately 67,000 excess flow valves and retire approximately 210 district regulator stations that are presently required to operate the existing low pressure system.

**Q. WHAT ARE SOME OF THE BENEFITS ASSOCIATED WITH THE METER RELOCATION AND OTHER WORK BEING PROPOSED AS PART OF THE SMART PROGRAM?**

**A.** There are several benefits associated with an "all-outside" distribution system, including the potential to avoid water damage due to flooding to meter sets by removing them from basements and relocating them outside. In addition, the Company will no longer have to coordinate appointment times to gain access to a premise for maintenance and inspection. Also, the installation of excess flow valves will enable automatic shut-off in the event of a service line failure.

**Q. HOW DID THE COMPANY DEVELOP THE $1,102 MILLION SMART PROGRAM COST ESTIMATE?**

**A.** This bottom-up cost estimate is based on the Company's 2014 contractor unit pricing, material costs and project estimating practices. The model used to estimate the SMART Program costs was developed with the assistance of Jacobs Consultancy, Inc., an internationally recognized expert in utility infrastructure replacement, after extensive consultation. The budget cost model used to develop the cost estimate is discussed in greater detail in the testimony of Company witness Marano.

**Q. WILL A MULTI-YEAR REPLACEMENT PROGRAM ENABLE THE COMPANY TO DEPLOY ITS INVESTMENT CAPITAL MORE EFFICIENTLY?**

**A.** Yes. Implementing a multi-year program will allow Elizabethtown to address larger sections of pipe within a single construction project, which in turn can lead to lower costs per mile as the costs of engineering and construction mobilization efforts are spread over a larger project. Additionally, over time, the program will reduce the number of unplanned replacements, which have substantially higher costs per mile than planned replacements. As a result, the percentage of replacements that are unplanned should decrease,

enhancing the efficient use of capital to address reliability risks associated with aging infrastructure.

**Q. WHAT IMPACT WILL THE SMART PROGRAM HAVE ON THE COMPANY'S OPERATING AND MAINTENANCE ("O&M") EXPENSES?**

**A.** Once the Program is substantially completed, Elizabethtown anticipates that it will be able to avoid certain costs associated with the operation and maintenance of the system. For example, replacing the aging infrastructure with newer material will help to avoid certain costs that may otherwise be incurred to perform leak surveys and repairs. While the impact is not expected to result in a decrease in the absolute level of annual leak repair work included in the O&M budget in the near term, there may be a reduction in the later years of the program once all older infrastructure is replaced. This issue is addressed further by Company witness Marano.

**Q. WHAT RESOURCES ARE REQUIRED TO SUCCESSFULLY IMPLEMENT THE SMART PROGRAM?**

**A.** The Company will require a mix of external and internal resources to effectively implement the proposed SMART Program. The Company will utilize outside contractors

for the majority of the planned replacement work under the program. While many of these contractors may be the same ones who are currently working on AIR projects, these contractors may require incremental staff and equipment to complete the program. The Company will also need a sufficient number of engineers, project managers, analysts and financial staff to implement the SMART Program. We are developing a detailed plan for managing the SMART Program.

The implementation of a multi-year program offers important opportunities for outside contractors to plan more effectively to meet increased work requirements. The increased level of work will require contractors to add construction jobs, acquire additional equipment and support necessary operator qualifications. Board approval of the Company's ten-year SMART Program will allow Elizabethtown to make a longer commitment to contractors, which, in turn may enable contractors to amortize the costs of additional staff and equipment over a longer period. This has the potential to translate into lower costs for Elizabethtown and a more productive work effort, providing benefits to the New Jersey economy.

**Q. DOES THE COMPANY INTEND TO PROVIDE REGULAR REPORTS TO THE BOARD CONCERNING ITS PROGRESS?**

**A.** Yes. Elizabethtown will provide the BPU quarterly reports similar to those used in the AIR and ENDURE Programs. These reports will provide information on the length and location of the infrastructure that has been retired and will indicate which areas the Company expects to retire in the next quarter. The Company will document the costs incurred for the year as part of an annual SMART cost recovery filing that is described in greater detail in Company witness Thomas Kaufmann's testimony.

**Q. WHY IS THE SMART PROGRAM NECESSARY NOW?**

**A.** The time is ripe for the SMART Program because of the age and material composition of the vintage, at-risk elements of the Company's distribution infrastructure. Decades-old cast iron pipe poses the most significant reliability risks associated with the operation of the system; accordingly, eliminating these risks through accelerated replacement will produce an even safer and more reliable system for ETG's customers. Additionally, acting now to accelerate the replacement of these facilities is consistent with the aforementioned state and federal regulatory policies, including the DOT's Call to Action,

the general requirements of DIMP, the Company's specific DIMP, recent pronouncements by PHMSA concerning the importance of addressing reliability concerns in a timely manner, and the National Association of Regulatory Utility Commissioners' expanded emphasis on pipeline safety and infrastructure replacement.

**Q. HOW WILL CUSTOMERS BENEFIT FROM THE BOARD'S APPROVAL OF THE SMART PROGRAM?**

**A.** Customers will enjoy the enhanced reliability of modern facilities in proximity to their homes and businesses. In addition, by reducing the frequency of leaks and the need for constant repair work, the Program will improve customer satisfaction. Also, the accelerated replacement of vintage infrastructure will enable customers located on the current LP system to have increased options when it comes to selecting appliances and higher efficiency gas utilization equipment. Furthermore, by switching to an "all-outside" distribution system, neither the Company nor its customers will be burdened with having to make appointments so that the Company can gain access to the customer's premises for maintenance and periodic inspections of inside meter sets. Also, the flow of gas to the customer will now be able to be shut off in two

different ways; (1) automatically by an excess flow valve in the event of a service line failure, or (2) manually by the outside meter set. In addition, many of the current inside meters are located below ground level; therefore, moving the meters outside above grade will provide additional protection from flood damage. All of these improvements also have the potential to create O&M savings that are associated with the implementation of an all-outside distribution system.

**Q. HOW WILL THE PROGRAM BENEFIT COMMUNITIES SERVED BY THE SMART PROGRAM?**

**A.** The communities served by the SMART Program will benefit from replacement infrastructure that is capable of meeting current and future needs. The proposed ten-year program and increased scope can also enable Elizabethtown to work with affected communities to plan construction in ways that minimize overall disruption to the community because the Company will have the opportunity to plan the work at times that may be more convenient to all affected parties. A reduction in the level of unplanned repair and replacement work is beneficial to the affected communities as well, because unplanned work leads to

undesirable traffic and business disruptions and the opening of paved streets.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY**?

**A.** Yes, it does.

**Exhibit P-3**

**State of New Jersey**
**New Jersey Board of Public Utilities**

| | |
|---|---|
| **In the Matter of the Petition of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas For Approval Of A Safety, Modernization And Reliability Program And Associated Cost Recovery Mechanism** | **BPU DOCKET NO. _____** |

# Direct Testimony of


**SALVATORE D. MARANO**

**Managing Director, Jacobs Utilities Practice**


**On Behalf of**

**Pivotal Utility Holdings, Inc.**

**d/b/a Elizabethtown Gas**

**Exhibit P-3**

## Table of Contents

**Exhibit P-3**

**PIVOTAL UTILITY HOLDINGS, INC.**
**d/b/a ELIZABETHTOWN GAS**
**DIRECT TESTIMONY OF**
**SALVATORE D. MARANO**
**MANAGING DIRECTOR, JACOBS UTILITIES PRACTICE**

## I. INTRODUCTION

### A. Identification of Witness

**Q. Please state your name, employer and business address.**

**A.** My name is Salvatore D. Marano. I am employed by Jacobs Consultancy, Inc. ("Jacobs Consultancy"). My business address is 5995 Rogerdale Road, Houston, TX 77072.

**Q. What position do you hold at Jacobs Consultancy?**

**A.** I am currently the Managing Director of Jacobs Consultancy's Utilities Practice.

**Q. Please describe the activities of Jacobs Consultancy.**

**A.** Jacobs Engineering Group is one of the largest professional service organizations in the world with over 73,000 employees worldwide. Jacobs Consultancy is part of the Jacobs Engineering Group. Jacobs Consultancy's Utilities Practice serves both the public and private sectors, providing management, engineering and operations related advisory services to clients globally. Engagements in the gas and electric utility industries

include capital investment analysis, litigation support, asset integrity, merger and acquisition assistance, management audits, budget reviews, and policy and procedure reviews.

**Q. Please summarize your professional background and your experience in the utility industry.**

**A.** I hold a Bachelor of Science degree in Mechanical Engineering from Fairleigh Dickinson University and Master's of Science from New Jersey Institute of Technology. I was a registered Professional Engineer in the State of New Jersey from 1975 until 2013 when I retired that license.

I began my career in the Gas Engineering Department at Consolidated Edison Company of New York, Inc. (Con Edison). I then moved to Elizabethtown Gas Company (Elizabethtown Gas) in New Jersey where I spent 16 years in various operating and engineering positions. I then became a Vice President of the parent company of Elizabethtown Gas, NUI Corporation. I have spent the

past 20 years in consulting positions, five years at Stone & Webster Consultants as the Vice President of the Gas Consulting Group and the past 15 years as Director and now Managing Director of Jacobs Consultancy's Utilities Practice. During these consulting assignments, I have led engagements both domestically and internationally, performing numerous asset and capital investment reviews and merger and acquisition due diligence assessments for gas and electric utilities for both potential buyers and government agencies. I have led assignments related to cast iron, ductile iron, steel and plastic replacement programs and risk model assessments, and I have advised on policy decisions relating to the management of those materials. I have also managed numerous assignments related to operations and system safety improvements for gas and electric utilities.

**Q. What is your direct experience relating to operating and maintaining cast iron and bare and unprotected steel natural gas distribution systems?**

**A.** During my career I have been intimately involved with the direct management of gas systems at both Con Edison and Elizabethtown Gas that operated in very dense urban areas and contained large amounts of cast iron, bare and unprotected steel, ductile iron, and various other materials.

Internationally, I have performed numerous assignments for British Gas, Transco (now National Grid UK), which was the largest natural gas operator of cast iron and ductile iron mains in the world. These assignments included: a review of British Gas' risk models for both cast iron and ductile iron; a critique of a proposed 30-year replacement program for cast iron and ductile iron that the United Kingdom (UK) regulator requested British Gas to undertake; and involvement in litigation involving the failure of cast iron and ductile iron pipe. I performed a review of the cast iron gas distribution system for a potential buyer of Coordenadoria Especial de Gestao Institucional (CEGI) in Rio de Janeiro. I also conducted a review of the cast iron zonal replacement

program for the government of the State of Victoria in Australia prior to its privatization of the gas distribution network. In addition, I reviewed and advised Scotia Gas Networks (an operator with 5.9 million customers in the UK) regarding its business case for its 8-year price control (rate case) and a new cast iron replacement regime proposed by the regulator.

My domestic experience includes due diligence reviews of the management and operation of the cast iron gas systems of MichCon Corporation and KeySpan Corporation. I have conducted system safety reviews of Puget Sound Energy (collaboratively with Puget Sound Energy) for the Washington Utilities and Transportation Commission, and UGI Utilities, Inc. (UGI) collaboratively with UGI and the Pennsylvania Public Utility Commission. I recently advised the SourceGas Board of Directors regarding their gas infrastructure capital investment plan. Additionally, in 2008 I presented testimony to the Illinois Commerce Commission in support of a filing, which was successful, for funding for a 20-year capital

investment program to replace nearly 2,000 miles of aging cast and ductile iron on behalf of Peoples Gas Light and Coke of Chicago. Recently, I submitted testimony to the New Jersey Board of Public Utilities on behalf of Public Service Electric & Gas Company in support of its infrastructure replacement program termed the Gas System Modernization Program.

In summary, my background includes 18 years of operating experience in gas utility engineering and operations and 20 years of consulting assignments in the gas and electric utility industries. Many of those assignments, both international and domestic, were focused on assets such as cast iron, bare and unprotected steel, and ductile iron mains.

**B. <u>Purpose of Testimony</u>**

**Q. Please describe the purpose of your testimony.**

**A.** The purpose of my testimony is to provide evidence and analysis in support of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas' ("ETG" or "Company") proposed

Safety, Modernization and Reliability Tariff Program, ("SMART" or "the Program"). ETG's vision for the Program is that it will effectuate the retirement of vintage, at-risk pipe materials on ETG's system, and the replacement of those materials with a modern system.

ETG seeks to modernize its gas distribution system by replacing its vintage, at-risk materials which include aging cast iron (CI) mains, unprotected and bare steel (US) mains and services, low pressure ductile iron mains, vintage plastic and copper mains and services. The SMART Program also includes relocating inside meter sets outside, and upgrading ETG's legacy low pressure system to an elevated pressure system, which as a consequence will provide the opportunity to install excess flow valves and retire district regulators. In the course of retiring approximately 630 miles of primarily vintage, at-risk facilities that will remain at the completion of ETG's existing Accelerated Infrastructure Replacement ("AIR") program, ETG will either uprate or remove approximately 80 miles of post-1983 plastic and protected steel main which would otherwise be all that remained of

the low pressure system. For reasons discussed later in this testimony, it makes sense to address this material so as not to deprive the customers served by this remaining pipe of the benefits of elevated pressure.

**Q. Do you sponsor any schedules as part of your testimony?**

**A.** Yes, I am sponsoring eight schedules that were prepared or compiled under my direction and supervision. These schedules support the SMART Program costs and avoided capital and operation & maintenance (O&M) cost estimates. These schedules are as follows:

1) Schedule SDM-1 – AACE Estimating Classifications
2) Schedule SDM-2 – Detailed SMART Program Summary
3) Schedule SDM-3 – Annual SMART Program Summary
4) Schedule SDM-4 – Mains - Construction Unit Cost Summary
5) Schedule SDM-5 – Services – Construction Unit Cost Summary
6) Schedule SDM-6 – Meter Relocation - Construction Unit Cost Summary

7) Schedule SDM-7 – Regulator Station - Construction Unit Cost Summary
8) Schedule SDM-8 – Estimate of Avoided Costs

**Q. Does the proposed program represent a change in ETG's approach to replacing vintage, at-risk pipe materials?**

**A.** Yes. ETG has to date replaced a significant amount of its vintage, at-risk pipe materials, but now wishes to undertake a ten-year plan to replace the remaining at-risk pipe, and, in so doing enhance safety and reliability and make significant strides toward achieving the modernization of its gas distribution system. ETG has prudently managed its existing system and its inherent risks, even though some of its infrastructure is very old. ETG's performance in this area is consistent with acceptable industry measures; however, it would be appropriate during a period in which gas commodity prices are considerably lower than they were a few years ago and there is a national emphasis on replacing aging infrastructure for Elizabethtown to pursue a proactive and more accelerated approach to upgrading its system.

The SMART Program will enable Elizabethtown to improve the reliability of the service ETG provides and mitigate foreseeable future risk of system and asset failure, while also providing additional higher-efficiency appliance choices to ETG's customers who are currently not able to receive those benefits.

This testimony explains ETG's vision and provides the following:

- An overview of the proposed ten-year continuous modernization effort;
- A detailed description and cost analysis of the proposed SMART Program;
- An explanation of the benefits to be derived by ETG's customers from the SMART Program; and
- An explanation of the benefits to be derived by the community as a whole from the Program.

**Q. Please summarize the process that Jacobs Consultancy utilized to analyze Elizabethtown's vintage, at-risk pipe materials and the appropriateness of the SMART Program.**

**A.** The approach to conducting this independent review and analysis included:

- Identification and review of relevant documents from previous infrastructure cases for both ETG and other New Jersey gas distribution companies;
- Identification and review of ETG records and filings;
- Discussions with the appropriate subject matter experts from ETG who have responsibility for gas operations, engineering, and accounting;
- Examination of ETG gas operations and engineering policies, procedures and practices regarding the conversion of the low-pressure portion of the system to elevated-pressure, and the replacement of vintage, at-risk pipe materials;
- A review of other replacement programs, including those I have worked on; and
- Application of my knowledge and experience in the industry generally and, in particular, my experience with specific comparable utilities and their capital investment programs.

**Q. Who assisted you in performing this work?**

A. This independent review was performed by me and other Jacobs Consultancy professional staff members who, under my direct supervision, supported the review of documents and the development of the system integrity, capital cost and Program benefits analyses.

## II. GENERAL AND BACKGROUND INFORMATION

**Q. Please describe the current distribution system infrastructure that ETG maintains and operates, and the physical characteristics and materials that make up ETG's current distribution system.**

**A.** ETG receives odorized gas from interstate pipeline companies at 18 city gate stations, where gas volumes are measured, and the pressure is reduced to distribution pressure. ETG operates an integrated gas distribution network comprised of multiple pressure systems at low pressure (LP) and elevated pressures (EP) (1-15 psig; 20-60 psig, and 120 psig and above).

As summarized in Table SDM-1.1, the 705.4 mile, low pressure, 0.25 psig (6 inches of water column) system is approximately 20 percent of the distribution network, the 2145.1 mile 1-60 psig system is approximately 70 percent, and the 312.1 mile 120 psig and above system is approximately 10 percent.

**Table SDM-1.1**

**Gas Distribution Network Pressure Systems (miles)**

**December 31, 2014**

| | Distribution Pressure | | | High Pressure | | |
|---|---|---|---|---|---|---|
| **Material** | **LP** | **1 to 15 psig** | **20 to 60 psig** | **75 to 200 psig** | **> 200 psig** | **Total** |
| **Cast Iron** | 559.7 | 0.0 | 20.9 | 0.0 | 0.0 | 580.7 |
| **Ductile Iron** | 19.9 | 0.2 | 11.7 | 0.0 | 0.0 | 31.7 |
| **Steel** | 58.5 | 8.9 | 648.0 | 291.0 | 21.1 | 1,027.5 |
| **Plastic** | 67.1 | 6.8 | 1,448.3 | 0.0 | 0.0 | 1,522.2 |
| **Other (Copper)** | 0.1 | 0.0 | 0.4 | 0.0 | 0.0 | 0.5 |
| **Total** | 705.4 | 15.8 | 2,129.3 | 291.0 | 21.1 | 3,162.6 |

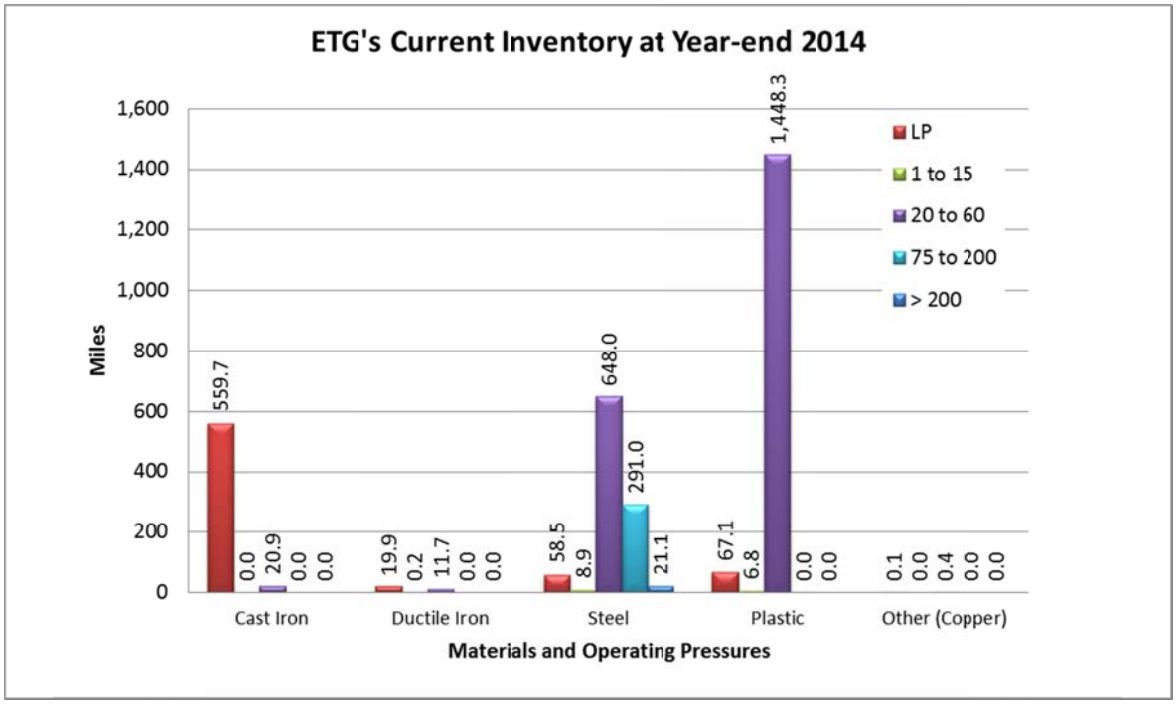
The step-down in pressure from the elevated pressures to low pressure occurs at district regulator stations. The low pressure system is currently supplied by

approximately 210 district regulator stations fed by elevated pressure. In all, ETG operates and maintains approximately 3,163 miles of various pressure gas distribution main, and 223,500 services. ETG serves approximately 280,000 residential, commercial and industrial customers. Table SDM-1.2 shows the various materials that makeup ETG’s distribution system. Approximately 19.6 percent of the mains are cast iron, ductile iron and bare and unprotected steel. This data was gathered from the Company’s latest report to the PHMSA, which contains system data for the year ending 2014.

**Exhibit P-3**

**Table SDM-1.2**

**Materials in ETG's Distribution System and Operating Pressures**




**Q. What is entailed in operating and maintaining a distribution system like ETG's?**

**A.** Although federal and state pipeline safety regulations establish minimum safety standards, operating and maintaining the integrity of assets such as cast iron and bare and unprotected steel pipe necessitates the effective implementation of a robust operating and

maintenance (“O&M”) plan of policies, processes and procedures. The breadth and depth of ETG’s plan is expansive because of the diversity of pipe materials (cast iron, ductile iron, bare steel, coated unprotected steel, vintage plastic, protected steel, polyethylene and copper) and operating pressures (low pressure, 1-15 psig, 20-60 psig and 120 psig and above). The prevention and mitigation activities in the plan include, but are not limited to:

- Instrument surveys for leaks and corrosion;
- Patrolling for excavation activities;
- Inspection of exposed pipe and other facilities;
- Preventative maintenance;
- Repair, rehabilitation or replacement;
- Inside safety inspections;
- Damage prevention programs; and
- Emergency response.

The frequency of ETG’s scheduled surveys, inspections, patrols and maintenance range from daily to once every 10 years.

**Q. How does ETG's gas distribution system compare to other gas operators in New Jersey?**

**A.** There are similarities and differences among the gas systems of the utilities serving New Jersey. My response specifically focuses on the amount of cast iron each of the respective utilities has in its distribution system inventory, as cast iron is the dominant at-risk material common to these systems.

Referring to Table SDM–1.3, ETG's 581 miles of cast iron are the second largest amount of the four New Jersey gas distribution companies. In addition, cast iron constitutes over 18 percent of ETG's 3,163 mile main system. PSE&G has the largest amount of cast iron by miles of pipe, but is comparable to ETG as a percentage of the system. South Jersey Gas Company and New Jersey Natural Gas Company have between them less than 170 miles of cast iron in their distribution networks.

**Exhibit P-3**

**Table SDM-1.3**

**New Jersey Utilities Cast Iron Gas Distribution Systems**

**December 31, 2014**

| Utility | Total Miles of Main | Miles of Cast Iron Main | % of CI Systems of Total Miles of Main |
|---|---|---|---|
| ELIZABETHTOWN GAS | 3,163 | 581 | 18.4% |
| NEW JERSEY NATURAL GAS CO | 7,074 | 16 | 0.2% |
| PUBLIC SERVICE ELECTRIC & GAS CO | 17,857 | 4,044 | 22.6% |
| SOUTH JERSEY GAS CO | 6,339 | 147 | 2.3% |

**Q. Do you have any concerns about the amount of vintage, at-risk pipe materials in ETG's distribution system?**

**A.** Yes. The large amount of cast iron in the Company's network as a percentage of the total system is a concern and the random, relatively small amounts of bare and unprotected steel, vintage plastic, ductile iron and copper should be replaced when updating the system with industry–recognized, state of the art materials because the vintage materials pose an on-going risk of failure and require considerable maintenance and monitoring.

**Q. Please describe the relevant characteristics of the vintage, at-risk materials that are in-service on ETG's system.**

**A.** The largest amount of ETG's remaining cast iron, bare and unprotected steel, ductile iron, vintage plastic and copper is in service in Union County, which is very densely populated. As shown in Table SDM-1.3, the percentage of these vintage, at-risk materials, particularly cast iron, is similar to PSE&G. In addition, the system originated in the manufactured gas era and contains a variety of outdated pipe materials and sizes, which are subject to weather extremes. Nearly 25 percent of ETG's distribution system still operates at low pressure, depriving many customers of better reliability and choice of higher-efficiency appliances.

**Q. Please explain each of these factors in detail.**

**A.** **The Genesis of the Low Pressure System** - ETG was formed in 1854 and operated a manufactured gas system, creating gas from coal and supplying it predominantly for lighting. ETG's low-pressure gas distribution system is

a legacy of these operations. Some of the older cast-iron pipes in the Company's system date back to the 1890s.

**The Variety of Pipe Materials and Sizes** – From the 1890s to the 1960s, the principle material used for distribution main pipe was cast iron, and bare and unprotected steel pipe were the primary materials used for services. In the 1950s there was a transition to bare and unprotected steel materials for mains. Cathodic protection of steel pipe became widespread in the 1960s. The 1970s brought a transition from steel to plastic materials for mains and services except for large diameter installations that continued to rely on steel. The Company's current 3,163 mile distribution system includes cast and ductile iron, steel, plastic and copper mains, steel and plastic services, and a very small percentage of copper services that were installed primarily in the 1960s.

The system design has large diameter trunk mains supplied from a source (initially a manufactured gas plant;

subsequently a city gate station) transporting the gas to a connected network of smaller diameter mains that ultimately supply gas to customers through single service lines. Main and service pipe sizes range from 30″ to ½″ in diameter.

**Weather Extremes** - New Jersey's climate and geography create strong factors that adversely affect pipe integrity. These include poorly drained soils, large temperature variations, and conditions favorable for frost heave, which occurs when the soil expands and contracts due to freezing and thawing.

**Densely Populated Area** - ETG serves Union, Middlesex Sussex, Warren, Hunterdon, Mercer and Morris Counties of New Jersey. The bulk of the work proposed in the SMART Program is in Union County, which is very densely populated. New Jersey is the fourth-smallest state, but the 11th-most populous and the most densely populated of the 50 United States.

**Q. How do the combination of at-risk, vintage, materials, weather extremes and population density impact ETG's distribution system?**

**A.** It is common knowledge in the natural gas industry that cast iron, which is the predominant vintage, at-risk material in ETG's system, is susceptible to unpredictable breaks and exhibits higher leakage rates than post-1970 construction materials. The risks associated with operating and maintaining a legacy cast iron system are exacerbated in a densely populated environment that is subject to climate factors that adversely affect pipeline integrity.

**Q. Are the materials that make up ETG's distribution system the types of materials you would expect in a system of its legacy and vintage?**

**A.** Yes. As I described previously, a significant portion of ETG's system was put in place in the first half of the 20th century when the primary material used for distribution main pipe was cast-iron, and the primary

materials used for services were bare and unprotected steel.

**Q. Do these legacy materials impact safety or system integrity?**

**A.** Yes. Generally, the greatest concern is associated with facilities installed prior to 1970 and the adoption of Federal pipeline safety regulations. This concern is not necessarily based on pipe age, but rather the material types that were installed. These pipe segments typically exhibit higher leakage rates and are more susceptible to breaking than post-1970 construction. Pre-1970 materials constitute 37.8 percent of ETG's mains and 44.6 percent of its services.

**Q. Please explain the potential impacts of these legacy materials in more detail.**

**A.** Both cast iron pipe and bare and unprotected steel pipe are prone to leaks. Cast iron pipe is also subject to breaks. The amount of cast iron, bare and unprotected steel, ductile iron, vintage plastic and copper that

remains in service today represents a current and future concern for ETG. Additionally, from a leak perspective, the bulk of these materials are in the low-pressure system and investigating and repairing leaks, particularly in winter, consumes a significant percentage of ETG's annual O&M budget. The specific issues raised by various types of vintage, at-risk pipe are as follows:

**Cast Iron Pipe** - The primary problems encountered with cast iron systems are twofold:

- First, cast iron pipe has little inherent flexibility and is susceptible to breakage due to surface pressures and ground movement, which is most frequently caused by frost or, nowadays, ever increasing construction activity in the vicinity of the pipes. Ground movement creates an excessive bending stress in the pipe that may cause it to fail in an unpredictable circumferential break resulting in a relatively large release of gas at the point of failure. Cast iron pipes with diameters of 12

inches or less are more susceptible to these unpredictable breaks.

- Second, when originally installed in rigid 12 or 18 foot lengths, pipe sections were joined either with bell and spigot type connections or mechanical joints. The annular space in bell and spigot connections was packed with jute fiber followed by lead or cement to form a gas tight joint, while mechanical joints were installed with bolted connections with a gasket seal. With time, ground movement and/or drying action of gas can cause a joint to leak. Remedial action in the form of external clamps or internal seals then becomes necessary. ETG reports that the occurrence of cast iron joint leaks is 4 to 5 times greater than cast-iron breaks. The larger the diameter of a cast iron pipe, the less susceptible it is to breaks, with joint leaks being most likely. The risk of breaks progressively diminishes as the diameter, and thus the wall thickness of the pipe, increases to a point where a break is highly unlikely.

**Bare and Unprotected Steel Pipe** - The primary problem encountered with bare and unprotected steel pipe is that it will corrode and develop leaks over time. Specifically, steel pipe deteriorates due to contact with moisture present in the soil. The rate of corrosion varies depending on a number of characteristics of the soil, including moisture and acidity ("pH"). Uncontrolled corrosion will ultimately result in numerous, relatively small gas leaks.

Initially, a leak from a bare or unprotected steel pipe starts as a pinhole leak. Over-time metal loss will increase in size and location, allowing more gas to escape, eventually resulting in numerous relatively small gas leaks. Eventually, these small leaks multiply and can grow to the point where they threaten the integrity of the pipe. In general, the deterioration of bare and unprotected steel accelerates as it ages.

When the coating on a coated, but unprotected, steel pipe is breached, rapid metal loss will be experienced at the

location where the coating defects occur, eventually allowing gas to escape.

**Ductile Iron Pipe** - The primary problem encountered with ductile iron pipe is that it will corrode and develop leaks over time. Specifically, ductile iron deteriorates due to contact with moisture present in the soil. The rate of corrosion varies depending on a number of characteristics of the soil, including moisture and pH, and can ultimately result in the development of a corrosion plug which can unpredictably fail, resulting in a relatively large release of gas at the point of failure. Joints can also be a point of concern as ground movement loosens up and affects their performance.

**Vintage Plastic Pipe** - The primary problem encountered with vintage plastic pipe is that some of the early products found in systems have an oxidized inner surface that predisposes the inner surface to initiate cracks faster when certain stresses are applied. The resulting shortened crack initiation time leads to dramatically

reduced overall pipeline longevity through a predominant failure mechanism known as slow crack growth. This unpredictable failure mode can have catastrophic consequences and was the cause of an incident involving multiple fatalities in Puerto Rico in 1996. Incidents in California lead to the California Public Utilities Commission identifying Aldyl A Polyethylene (PE) pipes as a major potential hazard that is not manageable by leak surveying. Additionally, the United States Department of Transportation (DOT) has issued various PHMSA advisory bulletins about this vintage plastic pipe.

**Copper Pipe** - The primary problem encountered with copper is that the couplings are susceptible to failure.

**Q. You mentioned that various types of vintage, at-risk materials are susceptible to leaks, are you aware of ETG's recent experience with respect to leak management?**

**A.** Yes. A disproportionate number of the leaks occurring on ETG's system occur on its cast iron and bare and unprotected steel facilities. ETG's leak repair

statistics indicate that the number of leaks repaired on ETG's system are higher than the national average but comparable to the results reported by other LDCs that have comparable percentages of vintage, at-risk materials in their systems. ETG's leak experience is only likely to get worse as its vintage, at-risk facilities continue to age. Implementation of the proposed SMART Program will, once it is completed, likely reduce the incidence of leaks on ETG's system to levels that approximate the national average.

**Q. Have governmental authorities addressed the issues raised by aging natural gas infrastructures?**

**A.** Yes. In 2011, under the direction of the then Secretary of Transportation, Ray LaHood, the DOT and PHMSA called for stakeholders to address the fitness for service of the nation's natural gas systems, including the replacement of aging facilities. This is the DOT's "Call to Action" which sought more aggressive actions on the part of pipeline owners and operators to repair and replace infrastructure that is considered at-risk.

Secretary LaHood called for an evaluation of the fitness for service of the aging aspects of natural gas infrastructure and for actions to be taken to address safety risks. Such evaluations would involve operators such as Local Distribution Companies (LDCs), utility regulators, safety regulators and other interested stakeholders in the development of a strategy for addressing aging natural gas infrastructure. The "Call to Action" identified the benefits of infrastructure investment to enhance public safety and to provide for the future integrity of the pipeline system. PHMSA specifically included cast iron and unprotected steel pipe as categories of pipeline infrastructure that require repair, rehabilitation and replacement.

The "Call to Action" was followed by an advisory bulletin issued by PHMSA on March 23, 2012, to owners and operators of natural gas cast iron distribution pipelines and state pipeline safety representatives. The bulletin urged operators of natural gas distribution systems to accelerate the replacement of aging infrastructure to

enhance safety, and requests state agencies to consider enhancements to cast iron replacement plans and programs. The focused attention on cast iron pipelines was based upon the agency's assessment of circumstances that may have contributed to recent explosions in Pennsylvania.

In addition, on April 21, 2015, the White House released a New Agenda to Modernize Energy Infrastructure in the Quadrennial Energy Review, specifically calling for programs to accelerate pipeline replacement in natural gas distribution systems. Since the release of this review, the current Secretary of Energy has made a number of speeches and has written editorial pieces in newspapers in support of accelerated main replacement programs for distribution companies.

**Q. Please describe ETG's current approach to gas distribution pipe replacement.**

**A.** ETG's overall approach to distribution replacement is to minimize risk to the public and employees by effectively understanding the condition of its assets and their

probability of failure. This enables the Company to manage replacement of assets in a manner designed to avoid sudden or widespread failure within any asset class. Individual main segments are identified for replacement through an ETG prioritization ranking methodology within its Distribution Integrity Management Program, which will be explained in greater detail below. This methodology is based on a model that integrates breaks and leak history with environmental conditions (i.e., building setback, number of underground utilities, demographic area [urban, suburban, rural], and building types [industrial, commercial, or residential]). It also takes into account asset information (pipe diameter and operating pressure).

**Q. Please describe what the term Distribution Integrity Management (DIM) means in relation to the operation of LDC facilities.**

**A.** DIM is a formal systematic process of identifying, evaluating and addressing direct or potential threats to the safe operation of a gas distribution system. On

December 4, 2009, PHMSA amended Federal Pipeline Safety Regulations and required gas distribution operators to develop and implement integrity management programs by August 2, 2011. Such programs set forth an overall approach by an operator to ensure the integrity of its distribution system, including a DIM Program ("DIMP"). A DIMP is a written explanation of the mechanisms the operator uses to implement its integrity management program. The purpose of the program is to enhance safety by identifying threats and reducing risks to the distribution system. ETG operates a DIMP and identifies Subject Matter Experts ("SMEs") to represent ETG in all matters pertaining to the DIMP.

**Q. Please explain the essential requirements of a DIMP.**

**A.** The purpose of the DIMP is to enhance safety by identifying and reducing system risks. At a minimum, each distribution pipeline operator must have a written integrity management plan that contains procedures for developing and implementing seven major elements defined by PHMSA. These elements are:

(1) **Knowledge**: Knowledge entails the documentation of information to demonstrate an understanding of the gas distribution system developed from reasonably available data. ETG's DIMP references data pertaining to system design, materials, operating characteristics, and environmental factors contained in the Company's Geographic Information System ("GIS"), main and service records, and leak management and corrosion control records.

(2) **Identify threats**: Threat identification requires consideration of broad issues that may affect the safe operation of the distribution system. PHMSA identifies potential threats according to the following eight categories: corrosion, natural forces, excavation, other outside force damage, material or welds, equipment, operations, and other.

(3) **Evaluate and rank risks**: Through the process of evaluating and ranking risks, the company determines the relative importance of all identified risks. This

process takes into consideration both likelihood of occurrence and the consequences of occurrence. ETG relies primarily on internal SMEs and on analysis of leak repair data to evaluate and rank risks.

(4) **Identify and implement measures to address risks**: This element of DIMP documents actions the Company takes to reduce risk of failure. Programs at ETG that address risks include the leak management, damage prevention, corrosion control, public awareness and operator qualification programs. Specific actions include prevention, detection, mitigation and/or replacement and upgrade.

(5) **Measure performance, monitor results, and evaluate effectiveness**: ETG uses monitoring and measurement to evaluate the effectiveness of actions implemented to address risks. ETG measures performance from a variety of information based on completed work, including the collection of data on leak causes, leak classification, and leaks repaired or eliminated. The data is reported

and communicated within ETG for evaluation and analysis and to provide input for future planning.

(6) **Periodic evaluation and improvement**: Periodic evaluation establishes a definitive feedback loop for the overall integrity management process. ETG's written DIMP is reviewed annually and updated as necessary. This is considered DIMP evaluation. Additionally, as knowledge concerning the distribution system or potential threats is gained, the elements of the DIMP or required actions may be revised to take into account the impact of the new information.

(7) **Report results**: Reporting on integrity management actions and results provides information to ETG's internal management and satisfies federal and state mandated reporting requirements. Annually, ETG reports data to regulators concerning the facilities in service by vintage and material, as well as leaks and associated causes.

ETG's DIMP comprehensively documents the Company's risk-based approach to distribution integrity management according to the required elements. ETG's risk-based selection process and criteria, employed to manage pipe material risk, are incorporated into the DIMP. The DIMP also outlines ETG's document and record retention process.

**Q. Has ETG been engaged in replacing vintage, at-risk facilities on its system?**

**A.** ETG has managed pipe replacement through its normal annual capital spending and through various specific programs such as its Pipeline Replacement Program ("PRP"), Utility Infrastructure Enhancement ("UIE") Program, Accelerated Infrastructure Replacement ("AIR") Program and the Elizabethtown Natural gas Distribution Utility Reinforcement Effort ("ENDURE") Program that have resulted and continue to result in the replacement of vintage, at-risk material and a reduction in the probability of its failure. These programs are discussed

in greater detail by Company witness Michael P. Scacifero.

**Q. Does ETG currently operate and manage its system in a safe and reliable manner?**

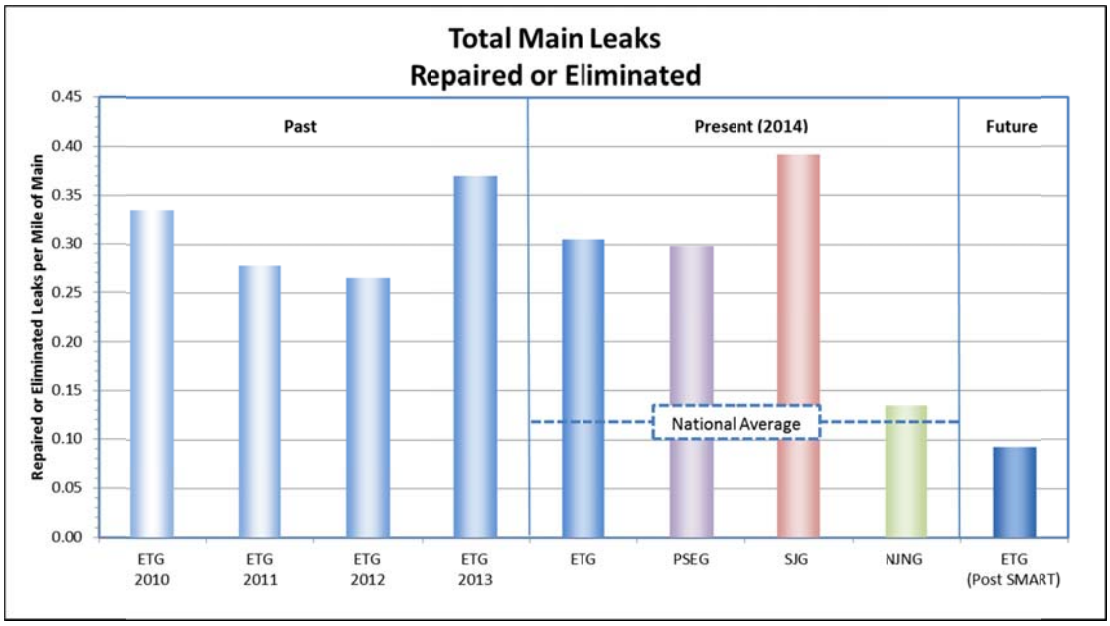
**A.** Yes. In my opinion ETG's operation and management of its distribution system has, and currently provides, a level of safety that compares well to industry standards, including other utilities with a large amount of CI mains and unprotected steel services in their systems.

Gas system operators are required to report annually to the PHMSA the total number of leaks on mains eliminated by repair, replacement or other actions. Table SDM-1.4 compares repaired and eliminated main leaks of ETG, and the other New Jersey gas distribution companies, to that of the national average in 2014. ETG has a greater ratio of main leaks per mile than that of the national average by a factor of more than 2.5; a clear indication that ETG's vintage, at-risk mains and services are leak prone and should be replaced. By the end of the SMART Program, the replacement of the vintage, at-risk low pressure

mains is expected to reduce ETG's total repaired and eliminated mains leaks per mile to a level below that of the current national average.

**Table SDM-1.4**

**Comparison of ETG's Mains and Services Leak Rates**




**Q. Please discuss the approaches that gas distribution operators utilize to manage systems that contain vintage, at-risk materials.**

**A.** One method gas distribution companies use to manage aging vintage at-risk material pipe is to repair leaks. While this is an effective short-term approach, it is not a long-term solution that provides a proactive, systematic

improvement, such as can be achieved by replacing these vintage at-risk pipe materials with modern pipe materials.

The preferred method of managing vintage at-risk material pipe is to replace these materials. Replacement provides for (i) a long-term, proactive, systematic improvement of a company's distribution network, (ii) continuous removal of the risk of unpredictable failure, and (iii) a reduction of greenhouse gases.

## III. SMART MODERNIZATION AND ETG'S PROPOSED SMART PROGRAM

**Q. What is SMART Modernization?**

**A.** The concept of Smart Modernization arises from the "Call to Action" Plan. The intent of Smart Modernization is to balance risk and customer need. In essence, it is part of the implementation of the Company's DIMP and recognizes that the risks inherent in the system must be balanced against cost and impact on customers and the community. In the UK, this approach is reflected in a principle called ALARP, which means the risk is to be

managed at a level that is “as low as reasonably practicable. “Reasonably practicable” in UK law involves weighing a risk against the “trouble, time and money” needed to control it, and this concept is at the heart of UK safety enforcement. It is not prescriptive but instead allows the operator to determine its responses, which it then needs to justify.

Smart Modernization includes the replacement and upgrading of existing mains, services, and equipment by following a methodological approach that considers:

- Prioritization of selected facilities for safety and reliability – DIMP;
- Latest technologies for system design and materials;
- Environmentally friendly construction where applicable;
- Impact on customers and communities;
- Leveraging existing embedded system components instead of replacing them, e.g., uprating existing plastic systems;

- Right sizing new facilities for cost effectiveness and to reduce impact as the new pipe will generally be smaller in diameter;
- Maximizing the retire/install ratio;
- Coordinating work with other company programs; and
- Coordinating work with programs by other utilities and with municipal paving projects, where applicable.

**Q. Has ETG Incorporated The Concepts Of SMART Modernization Into Its Proposed SMART Program?**

A. Yes, ETG has approached the development and execution of its proposed SMART Program following the principles of Smart Modernization as described above.

ETG's proposed SMART Program aims to fulfill the purpose of integrity management by directing resources at reducing system threats associated with the riskiest assets that the DIMP itself outlines in a comprehensive and conscientious manner. It is also aimed at preventing or mitigating threats to the integrity of these

distribution system assets by managing discrete cast-iron and unprotected steel risk as it has in the past.

**Q. What approach does ETG propose to utilize for determining pipe replacement levels under the SMART Program?**

**A.** Under the SMART Program, the Company proposes to reduce vintage, at-risk pipe in its system by managing the probability of failure and threats to the system, as described below:

**Identifying Mains for Replacement** - ETG will target the replacement of its highest priority gas assets through the use of a methodology that prioritizes main segments with the highest risk. This ranking method identifies mains with prior breaks as the principal risk to be prioritized for replacement. Mains are then prioritized for replacement based on their break and leak history and environmental conditions. Environmental conditions include considering: building setback, number of underground utilities, geoographic area (urban, suburban, rural and commercial), hard surfacing like concrete,

building types (industrial, commercial, or residential), asset information (pipe diameter and operating pressure) and other construction activities in the vicinity.

**Identifying Services for Replacement** - ETG will replace unprotected steel services when any of the following conditions are met: (i) a service reaches the point of failure by exhibiting a leak; (ii) if more than 20% of the unprotected services in a defined area have ever leaked, then all of the services in the defined area will be replaced (as required by the New Jersey Administrative Code Section 14:7-1.20); (iii) in conjunction with a proposed main replacement program; (iv) in advance of road reconstruction projects and; (v) for other reasons determined by the ETG DIMP and Engineering groups.

**Q. Under the proposed SMART Program, what materials would ETG use to replace the vintage, at-risk materials in its distribution system, and what are the beneficial characteristics of these materials?**

**A.** PE pipe material will be used. Modern PE pipe is the current state-of-the-art for natural gas distribution systems and is the material of choice due to its non-corrosive properties. When additional capacity is sought, or design conditions require, companies use coated and catholically protected steel pipe.

Plastic systems have far fewer joint connections susceptible to leakage, can withstand ground movement caused by frost, and will not corrode. PE pipe also enables companies to more readily isolate and shutoff smaller areas because it can be “squeezed off,” which is a technique that uses a tool that compresses the pipe to stop escaping gas, thus minimizing the number of customers impacted by a shutoff. This occurrence in a modern, well-built PE system mostly occurs when the pipe is hit by a third party in the course of some digging or excavation activity. Additionally, with an elevated pressure system, it would not be possible for a third party, dangerously, to attempt to repair or hide the damage associated with breakage or leaks by use of duct

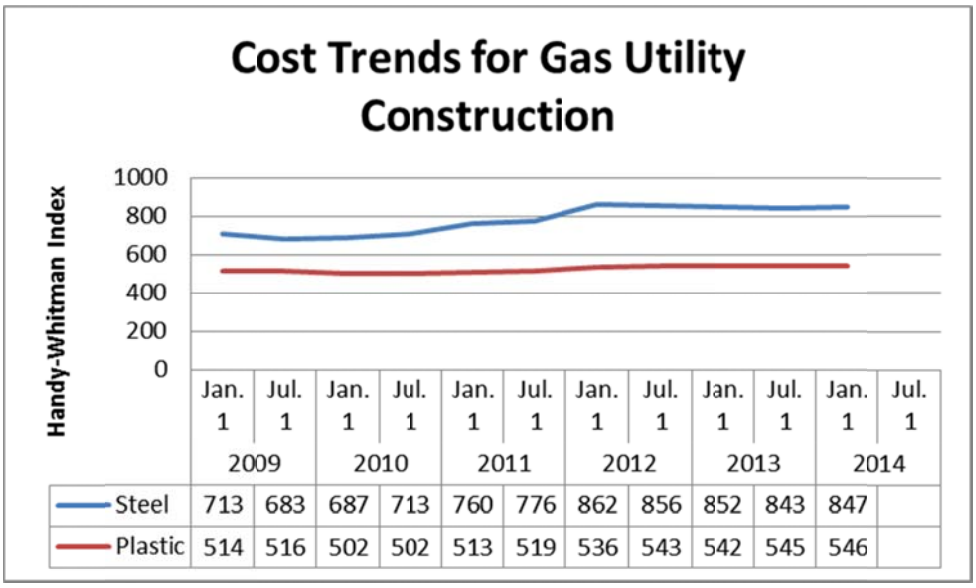
tape or the like, as can be done with low pressure systems. A modern PE system is designed and constructed not to leak because of modern joining techniques and the availability of technology that significantly improves quality control.

One additional advantage of using PE materials is construction cost. Based on the Handy-Whitman's North Atlantic Index of Cost Trends for Gas Utility Construction from 2010 to 2014 as shown in Table SDM-1.5, plastic main construction is 1.52 times less costly than steel main (steel main has an average index of 800 and plastic main has a average index of 528). In January 2014, the steel-to-plastic main construction cost ratio was 1.55.

**Exhibit P-3**

**Table SDM-1.5**

**Cost Trends for Gas Utility Construction**




**Q. Is it appropriate for ETG to move forward with the SMART Program to replace vintage, at-risk gas infrastructure?**

**A.** Yes. While there is no immediate predictable risk posed by ETG's current system and operating practices, the distribution system is aging and ETG must manage a mix of several types of proven vintage at-risk materials. The costs associated with the ongoing management of the risks posed by ETG's aging system will increase as the system

continues to age. While ETG does a good job managing the risks posed by its legacy system, all non PE and coated cathodically protected materials will eventually require replacement, and materials like vintage Aldyl A and copper are already the target of several other operators. As ETG's system continues to age, the probability of a significant failure on its vintage at-risk facilities increases. In the face of such a probability, ETG can either implement a proactive, planned and managed approach such as the SMART Program or a reactive approach, which would likely prove, in the long run, to be costly, difficult to manage and more disruptive to customers and the communities served.

**Q. Will the replacement of the vintage, at-risk materials under the SMART Program mitigate potential risks and enhance the safety aspects of ETG's distribution system?**

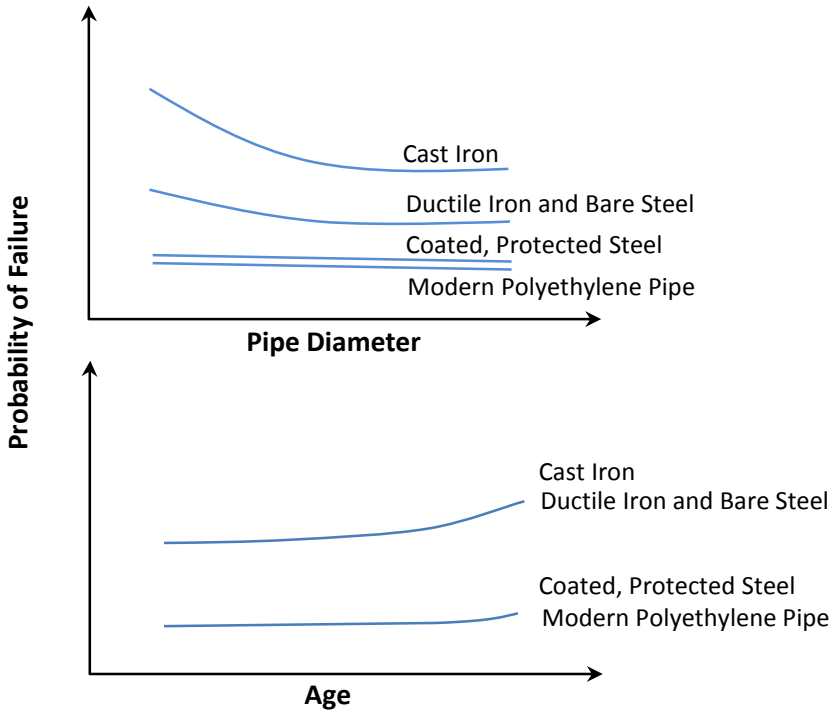
**A.** Yes. A proactive program to replace the vintage, at-risk materials on the low-pressure system would result in the replacement of small diameter CI, DI, bare and unprotected steel, vintage PE and copper pipe. The system

would then have a much greater proportion of modern, smaller PE and protected steel pipes conveying the gas. **Table SDM-1.6** illustrates the relative probability of failure of pipe by material as a function of diameter, and of age. Modern materials like plastic and coated, protected steel pipe demonstrate lower relative probabilities of failure, and are less likely to fail. When properly constructed, modern systems do not fail in an unpredictable manner unless hit by third party activity, nor do they leak unless damaged by third party activity. Based on AGA's annual survey of plastic pipe performance, plastic leakage rates are at least 50 times less than vintage, at-risk materials. ETG's proposed SMART Program may best be described as a precautionary approach to infrastructure replacement. These actions would, in my opinion, further mitigate future potential threats to ETG and its customers and avoid the potential need for a reactive approach in the future. It is my opinion that a potential unpredictable material failure or series of failures could precipitate a reactive approach to accelerating the replacement of these

materials which would deprive customers of the benefits and advantages of pursuing a planned program such as the SMART Program.

**Table SDM-1.6**

**Probability of Failure**




**Q. Can you provide examples of other systems that are undergoing or have undergone smart modernization?**

**A.** A large portion of the natural gas delivery infrastructure in the United States is already operating at elevated pressure, utilizing plastic pipe and protected steel with outside meters. This is certainly the case in most of the Southern and Western States. Typically the older, low-pressure systems are in the Northeast and the Midwest. No one building a gas distribution system today would construct a low pressure system or one of any material other than modern PE and coated and protected steel, and in modern systems, meters are always sited outside. Also, several large distribution companies in the US have removed or are in the process of removing all cast iron from their systems. Peoples Gas Light and Coke (Peoples Gas) in Chicago is embarking on a 20-year program to replace the low-pressure part of its system consisting of approximately 2,000 miles of primarily cast and ductile iron, and the utility has a funding mechanism in place for the first 10 years of this program. Specifically, Peoples Gas is upgrading the low pressure system to elevated pressure and is moving meters outside. Similarly, Washington Gas

Light has a multi-year program that is reviewed by its regulator in five-year increments, and ETG's affiliate, Atlanta Gas Light Company ("AGLC") completed the removal of 2,700 miles of cast iron and unprotected steel over a 15-year plan – an average of 180 miles per year - approved by the George Public Service Commission. AGLC now has a program to remove vintage PE. Southwest Gas Company has aggressively removed other types of vintage, at-risk materials, including Poly Vinyl Chloride, and Pacific Gas and Electric is now removing vintage, at-risk Aldyl A.

Internationally, cast iron, ductile iron, and unprotected steel have been the subject of replacement programs, some for many years. In the UK, replacement programs have existed for more than 25 years and are based on the systematic replacement of at-risk pipe with plastic. These programs are funded in advance, were reviewed by the Health and Safety Executive ("HSE") and the Financial Regulator every five years, and are now reviewed every eight years.

**Q. Have other companies with substantial amounts of these materials in their systems taken an approach similar to what ETG is proposing with the SMART Program?**

**A.** Yes. One example of a proactive, as opposed to reactive, approach to accelerated replacement of low pressure, higher-risk pipe is the actions taken by British Gas in the UK. Following a review of British Gas's risk based methodology, the UK HSE, which has national pipeline safety responsibility, no longer considered a reactive risk-based program to be an acceptable course of action because it:

- Did not constitute adequate action to comply with the requirements of health and safety legislation; and
- Did not address the likelihood and severity of health, safety, social and economic consequences should a rapid deterioration of the network occur.

In 2001, the HSE and the Office of Gas and Electricity Markets ("OFGEM"), which has price control responsibilities, funded British Gas to complete an HSE

requirement to replace 48,625 miles of cast iron and 8,125 miles of ductile iron within 30 years. At the previous replacement rate, it would have taken 51 years. The HSE keeps the replacement policy under review as program implementation proceeds.

**Q. Will the probability of system failure be better managed by implementing the SMART Program?**

**A.** Yes it will. The main goal of the SMART Program is to deliver the principles set out above in answering the "Call to Action" Plan by enhancing and ensuring the safety, reliability (adequacy of service) and resilience (use of state of the art materials and construction methods) of the ETG gas distribution system. It seeks to do this by removing vintage, at-risk materials from the low-pressure system, prioritized as described above, and concurrently upgrade to elevated pressure to allow all customers of ETG to experience all the benefits of a higher pressure system. Currently, all customers are not able to share in the same benefits. These benefits are addressed in greater detail, later in my testimony, and

include access to tankless water heaters; modern cooking equipment; natural gas powered generators, and the knowledge that sufficient natural gas will be available at the burner tip as and when needed, especially in the middle of winter.

**Q. How was the proposed replacement period determined?**

**A.** The proposed replacement period was determined to enable ETG to remove all vintage at-risk materials from the low pressure system and to modernize the system in a managed way with confidence that the available in-house and contractor resources can accomplish the replacement in a cost effective manner while limiting public disruption, minimizing traffic control issues and not overburdening the permitting processes in the various state and local agencies. The proposed 10-year period is in line with the current activities of other operators who are updating and improving infrastructure throughout the nation. The factors considered by the Company in proposing a 10-year period are discussed more fully in the testimony of Company witness Brian MacLean.

**Q. Will the new system involve any foregone functionality?**

**A.** Eliminating at-risk pipe and the low-pressure system will not result in any foregone system functionality; in fact it will enhance system functionality. ETG has delivered natural gas to customers at elevated pressure through more than 70% of its distribution system for many years. On completion of this program, ETG will be able to deliver the same level of reliability through its entire distribution system.

**Q. How will the operating and maintenance functionalities of ETG's system differ following program completion?**

**A.** Operating the system will be simplified. The elimination of elevated to low-pressure regulator stations will reduce maintenance expenditures and operator training associated with these facilities. Outages caused by water infiltration will no longer occur with a higher-pressure system. Additional valves can be planned to isolate portions of the system, as well as create the ability to isolate smaller sections by use of squeeze off. Meter sets relocated outside provide greater access

and improved safety. In a newer system, leaks will be reduced and pipes will be easier to locate, thus minimizing third party damage, and the volume of gas a customer uses will be metered more accurately because the gas volume will be temperature compensated and measured at a constant pressure. The Company and emergency response personnel will be able to shut-off gas to buildings in emergencies, without needing access to the building, and the meter and shutoff valve will be more readily accessible for inspections and surveys.

## IV. COST ANALYSIS

**Q. What is the cost estimate for the SMART Program?**

**A.** The estimated cost of the SMART Program is $1,102 million (Real 2014 Dollars). Table SDM-1.7 shows a summary of the budget level cost estimate.

**Table SDM-1.7**

**SMART Program Summary**

| | Real 2014$ |
|---|---|
| Program Cost ($m) | $ 1,102 |
| Program Miles (Installed) | $ 602 |
| Average Cost $/Mile | $ 1,829,000 |
| Customer Services | $ 66,808 |
| Relocate Inside Meter Sets | $ 84,296 |
| Regulator Station (Retired) | $ 208 |

This cost estimate is based on a review of ETG contractor unit pricing, material costs, and project estimating practices, built into a budgetary cost model. The SMART Program may encompass a range of construction services and solutions, such as open-cut trenching, directional drilling, insertion, relocation, and pipe upgrading. SMART Program projects are in the process of being defined, so the cost model is based on semi-detailed unit cost and is characteristic of an Association for the Advancement of Cost Engineering International ("AACE") International Class 3 estimate. Class 3, which is at the lower end of the level of project definition, is an appropriate level for submittal for budget approval, whereas a Class 1 estimate is one ready for construction.

Schedule SDM-1–AACE Estimating Classifications summarizes the primary and secondary characteristics of each estimate class as set out in the TCM Framework: 7.3 – Cost Estimating and Budgeting AACE International Recommended Practice No. 18R-97.

The cost estimate assumes SMART spending will ramp-up in the first year of the pricing and level off over the next eight years, spending will then decrease or ramp-down in the final year of the program. The cost estimate also calls for engineering to begin project design prior to the Program start. Table SDM-1.8 shows the estimate of capital spend in Real 2014 dollars, as well as the miles of main installed. The construction costs recovered during the 10-year program from 2017 through 2026, exclude the pre-construction activities completed in 2016.

**Exhibit P-3**

**Table SDM-1.8**

**SMART Program**
**Total Construction Costs**

| PROGRAM COST & MILES | Real 2014$ Millions | Miles |
|---|---|---|
| 2016 | $ 38 | 24 |
| 2017 | $ 84 | 48 |
| 2018 | $ 118 | 66 |
| 2019 | $ 120 | 66 |
| 2020 | $ 123 | 66 |
| 2021 | $ 124 | 66 |
| 2022 | $ 124 | 66 |
| 2023 | $ 124 | 66 |
| 2024 | $ 124 | 66 |
| 2025 | $ 124 | 66 |
| TOTAL | $ 1,102 | 602 |
| Difference in totals due to rounding | | |

**Q. How were the projected costs developed?**

**A.** The bottom-up estimate of projected costs was developed using current unit cost information. This data was used to build-up component level estimates for mains installation, service line installation, meter set and relocation, and pressure reducing station retirement. The cost elements that comprise the component level estimate include materials, installation, tie-in, traffic control, restoration, retirement and other costs. In addition to the construction estimate, supporting service

costs were estimated for permitting, engineering, program management, and construction management. These costs were estimated based on a percentage of construction. Schedule SDM-2 – Detailed SMART Program Summary provides a breakdown of the cost elements.

**Q. What is the basis for the development of this estimate of program cost?**

**A.** The basis for the cost estimate is the scope of the SMART Program. The program scope is the replacement or upgrading of vintage, at-risk assets over a 10-year period beginning in 2017. The assets included in the scope are mains, services, meters, EP/LP pressure reducing regulator stations and ancillary materials/equipment. Between now and the start of the SMART Program, the replacement of these assets will continue through existing capital investment and through existing ETG infrastructure replacement programs. Table SDM-1.9 provides the baseline 2014 inventory, planned work in 2015 and the estimated SMART Program asset quantities.

**Exhibit P-3**

**Table SDM-1.9**

**Estimate of Work**

| Assets | 2014 Asset Inventory | 2015 Work | SMART Program Estimate |
|---|---|---|---|
| **Mains, Miles** | 705 | ~103 | 602 |
| **Service Renewal** | 76,808 | ~10,000 | 66,808 |
| **Meter Set Relocates** | 94,296 | ~10,000 | 84,296 |
| **Regulator Station Retirement** | 208 | ~0 | 208 |

Where it is practical and economical, portions of the low-pressure PE system may be upgraded, rather than replaced; however, no specific areas have been identified at this time. Upgrading is the process of systematically increasing a portion of the system from low-pressure to elevated pressure. This option may be only considered where the design, construction, operation, and maintenance records are complete, accurate and verified; the material is post-1983 vintage PE; and the upgrading can be completed safely. New HP/EP pressure reducing stations are not expected to be required, nor is it expected that conversions of the pressure reducing stations from EP/LP to HP/EP will be necessary. Replacement of EP mains, services, and meter set

relocates or the installation of new assets are outside the scope of the SMART Program cost estimate and will continue to be completed from the Company's traditional annual capital budgets.

**Q. What are the most significant cost drivers?**

**A.** The most significant cost drivers the SMART Program faces are the availability of contractor resources, changes in regulations or municipal requirements and unseasonable or extreme weather. Pipeline and utility contractors are in high demand. Furthermore the pool of experienced, skilled field personnel is decreasing. Exacerbating the problem is the difficulty in recruiting people to the construction labor market when infrastructure replacement is likely to increase regionally, as well as nationally. Another impact on contractor cost is fuel prices. New Jersey also has prevailing wage laws that drive cost, and gas utilities are required only to use construction resources that have operator qualifications ("OQ"), unlike most of the rest of infrastructure construction resources.

Changes in regulations and municipal requirements can have a significant impact on program costs. At the Federal level, the Pipeline Safety Act is up for reauthorization, Construction inspection regulations are promulgated and requirements to verify more robust material traceability are anticipated. Local regulations and municipal requirements are also unpredictable and uncertain, such as permitting costs and street restoration requirements.

Colder than normal winters and wetter than normal summers also have adverse impacts on contractor productivity, increasing project costs

**Q. Did you attempt to address cost uncertainty in preparing the program cost estimate?**

**A.** Yes. In order to do so, ETG's approach to main replacement was reviewed, the nature of work to be performed was assessed, including the current status of the project definition, and the cost drivers associated with the SMART Program were considered. Interviews were

conducted with ETG management personnel to gain insight into the basis of estimates, assumptions and the overall program/project definition considered in the estimate's development.

**Q. What were the results of this analysis?**

**A.** The basis of the estimate for the SMART Program, the assumptions, and the exclusions were used to establish a basis for contingency requirements. While ETG has historic data on project costs and units replaced, relocated or abandoned, SMART Program projects are likely to be different in size, scope, and complexity.

Additional allowances are necessary for unknown scope, and unforeseeable events, which allowances require an understanding of the underlying assumptions upon which the estimate is based. The purpose of including a contingency in a project estimate is to provide an allowance for known and unknown factors that could adversely affect the estimated cost of a defined project work scope. According to the U.S. Department of Energy

("DOE"),[1] contingency is a response to the uncertainty inherent in many highly complex projects. This uncertainty is the risk that an event will transpire within the scope of a project that cannot be planned for, estimated or controlled with any certainty.

For the reasons set out above, a contingency equivalent to approximately 14.1% of the Total Program Cost (in real 2014 dollars) has been included in the estimate.

**Q. What costs are reflected in your model?**

**A.** A comprehensive bottom-up budget estimate model comprised of construction costs and other support services costs has been developed.

- The construction component is broken into four asset groups: Mains, Services, Meters and Regulator Stations. A unit cost was developed for each of these asset groups, comprised of materials, installation, restoration and other costs. These costs were developed from ETG's construction

[1] Cost Estimating Guide For Program and Project Management, U.S. Department of Energy, Office of Management, Budget and Evaluation, April 2004.

contracts and engineering cost estimates. The resulting unit costs were vetted with ETG, and the estimate assumptions and exclusions documented. The construction costs are allocated across the program duration based on a percentage of the program completed each year.

- The support services component is broken into Permitting, Engineering, Program Management and Construction Management. These costs are estimated based upon a percentage of construction cost. The resulting cost is presented on a total program and cost per mile basis. The ETG figures were vetted with the Company's Engineering and other areas, comparing the costs with current budgets and expenditures. These costs are allocated across the program duration based on the miles of main installed.
- The cost escalation was estimated on the assumption it would be consistent with the current contractor and company labor escalations of 3%. The cost

escalation factor was applied to the construction and support services cost.

- A 14.1% contingency was included in the SMART Program cost estimate
- Finally, overhead of 10% was included. This percentage was applied to all construction and support services costs.
- The SMART Program costs are presented in real and nominal dollars on a cost per mile, program, and annual basis. The costs are also divided into both renewal and removals.

Schedules SDM-2 and SDM-3 provide a Detailed SMART Program Summary and Annual SMART Program Summary, respectively. The mains, services, meter set relocation and regulator station construction unit cost summaries are provided in Schedules SDM-4, SDM-5, SDM-6 and SDM-7, respectively.

## V. PROGRAM BENEFITS

**Q. What potential qualitative benefits can Customers and ETG expect from the SMART Program?**

**A.** ETG, its customers and the communities served by ETG can expect benefits similar to those of other gas infrastructure replacement programs where vintage, at-risk materials and low-pressure systems were eliminated. There are qualitative benefits, including:

- Customers benefits
  - Improved system safety and service reliability;
  - Increased consumer appliance choice and use of higher-efficiency and other gas utilization equipment;
  - The convenience and safety enhancements of outside meters;
  - Greater application of residential service line excess flow valves; and
  - Reduced greenhouse gas emissions.
- Community benefits
  - Economic benefit from increased permits and street restoration;
  - First Responder access to above ground outside service shut-off valves at meter sets;
  - Less disruption from maintenance activities;
  - Reduced greenhouse gas emission; and
  - Potential job growth and stimulation of the economy;
- ETG benefits

- Improved system safety, reliability, resilience, and efficiency;
- Fewer emergency responses to insufficient delivery pressure and odor of gas reports; and
- Simplification of operation and maintenance.

Many of these benefits are derived from the conversion of ETG's low-pressure system to elevated pressure. The system conversion is intended to enable ETG to relocate about 84,000 meters from inside to the outside of buildings; to retire approximately 210 EP/LP pressure reducing stations; and to use much smaller diameter pipe. There are broad economic benefits as well. The 10-year SMART Program will maintain and create jobs, increase spending locally, and generate additional tax revenues. A program specific economic impact assessment was not prepared; however, the American Gas Association, in a 1999 Economic Analysis entitled "The Economic Impact of Gas Utilities on the U.S. and State Economies," demonstrated that the economic benefit for states from a $1 million increase in the spending of a gas utility is in the range of 1.2 to 2.4, with New Jersey having a 1.4 multiplier. The report also indicates that a $1 million

increase in capital spending by a gas utility in New Jersey would create 5.2 jobs in New Jersey.

**Q. What potential safety benefits are derived from the SMART Program?**

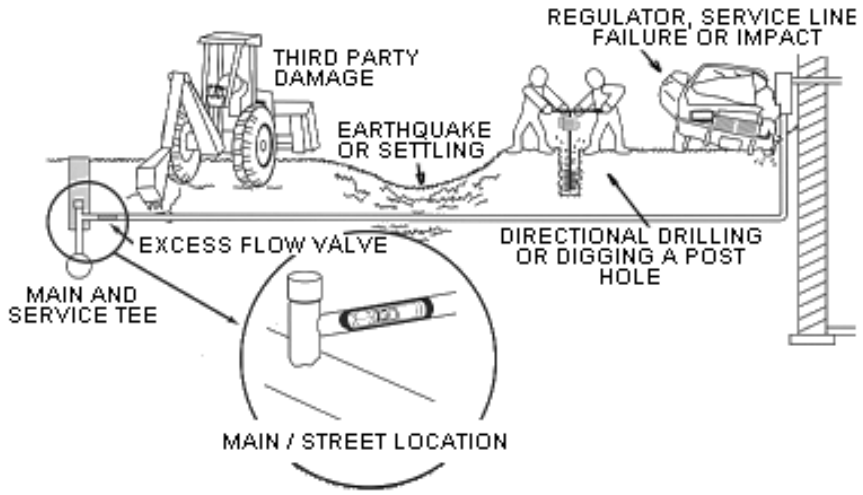
**A.** In addition to the elimination of the threat of failure and leaks associated with vintage, at-risk materials, there are other safety benefits that can be realized from the replacement of aging infrastructure.

- **Excess Flow Valves** (EFVs) - Replacing the low-pressure system will enable ETG to install approximately 67,000 excess flow valves on residential and commercial customer service lines, increasing the number of EFVs to over 115,600, more than doubling the current number of EFVs. An EFV is a device installed on the service line at the point where the service line is connected to the main (See Table SDM-1.10). In the event that the service is cut, the sudden pressure drop and increased flow rate causes the device to be activated, stopping further escape of gas. EFVs cannot be installed on low-pressure systems because the

difference between the pressure in the gas main and atmospheric pressure is insufficient for the devices to function. ETG installs EFVs, where operationally permissible, on new single-family services, and when older services are replaced.

**Table SDM-1.10**

**Excess Flow Valve Mitigate Losses**




- **District Regulator Stations** - The elimination of the cast-iron/unprotected steel (CI/US) low-pressure system will enable ETG to simplify its operating and maintenance plan. For example, the entire elevated-to-

low-pressure district pressure regulators asset class will be retired, reducing the potential for the overpressure of the low-pressure system due to equipment failure or operator error.

- **Outside Meters** - Unlike the low-pressure system, an elevated pressure meter set will have a pressure regulator with overpressure relief and a service riser shutoff valve installed before the meter. Outside meters also enable fire departments and other first responders to shut gas off quickly to the property from the outside. Moving meters to the outside of buildings reduces the potential for gas leaks within buildings, improves access for meter reading, and reduces potential theft of gas due to the visibility of the meter location. The service regulator also functions as an additional overpressure protection device in the event of a district regulator equipment failure or operator. Service regulators are typically not available on a low-pressure system.
- **Outage Restoration** - Eliminating the CI/US low-pressure system will reduce the number of customers

impacted and duration of unplanned gas outages. Outages caused by water infiltration will be virtually eliminated. The use of PE pipe enables ETG crews to isolate gas leaks quickly for repair either by closing an existing valve, or squeezing the pipe off upstream and downstream of the leak.

- **Service Stubs** - Another safety improvement associated with the SMART Program is the opportunity to eliminate hard-to-locate service stubs, thus reducing the potential of leakage or damage from future construction activity.
- **Damage Prevention –** As replacement facilities are installed, the Company has the opportunity for improved main and service records, with precise as-built drawings resulting in more accurate mark-outs and reduced third-party damage.

**Q. How will the new infrastructure system synergies and efficiencies translate into potential benefits for the customers?**

**A.** Customers on a modernized, elevated-pressure system are unlikely to experience service outages due to water ingress or inadequate pressures. In addition to those public safety and system reliability benefits, a significant benefit to the customer is greater choice in the type and brands of appliances and gas utilization equipment. The benefits of the elevated pressure system would include incremental services made possible by the elevated pressure system's ability to accommodate technologies and appliances not available through the current low-pressure system, including access to many high-efficiency appliances. The inability to provide an elevated pressure system to all customers in ETG's network discriminates against those not currently on EP causing them to have to forego consumer appliance choice, and/or have to suffer inadequate pressures, or water ingress outages. In addition, an elevated pressure system will allow customers to install higher efficiency appliances. The following higher efficiency appliances require inlet pressures that in many cases would require

either a costly customer-installed booster, or the provision of an elevated-pressure system:

- Tankless water heaters;
- Fan assisted heaters;
- Natural gas whole-house generators; and
- Commercial-grade cooking appliances.

Table SDM-1.11 shows the savings customers enjoy from natural gas. However, the potential savings are less where gas pressure from the low-pressure system is insufficient to permit customers to purchase or to ensure proper operation of high efficiency appliances, such as tankless water heaters. As shown in the table below, a natural gas standard water heater costs $266 per year to operate, and a natural gas high efficiency tankless water heater costs $167 per year to operate. Thus, customers who are served from an elevated pressure system can reduce their cost of water heating by $99 per year.

**Table SDM-1.11**

**Consumer Benefits from High-Efficiency Appliances**

| HOME HEATING | NATURAL GAS | ELECTRICITY | HEATING OIL | PROPANE |
|---|---|---|---|---|
| STANDARD APPLIANCE | $644 | $1,301 | $2,126 | $2,438 |
| HIGH EFFICIENCY APPLIANCE | $583 | $1,252 | $1,815 | $2,078 |

| WATER HEATERS | NATURAL GAS | ELECTRICITY | HEATING OIL | PROPANE |
|---|---|---|---|---|
| STANDARD EFFICIENCY TANK STYLE | $266 | $757 | ** | $1,096 |
| HIGH PERFORMANCE TANK STYLE | $235 | $712 | ** | $965 |
| HIGH EFFICIENCY TANKLESS | $167 | $688 | ** | $688 |

** New Jersey energy operating costs only, does not include equipment, installation or maintenance cost.*
*** Heating oil is seldom used in water heating applications.*
**Average residential retail price Winter 2014. Source: EIA.*

Table SDM-1.12 illustrates the additional potential savings, from both the State of New Jersey's Clean Energy Program and the ETG's Energy Smart Program that consumers can receive if they can purchase high-efficiency appliances.

**Table SDM-1.12**

**Consumer Savings from State and ETG Programs**

| | | energySMART An Elizabethtown Gas program Rebates† | New Jersey's Clean Energy Rebates† | Your Total Cash Back |
|---|---|---|---|---|
| HEATING | **Furnace - Tier 1**<br>AFUE* 95% or greater | $250 | $250 | Up to $500 |
| | **Furnace - Tier 2**<br>AFUE 95% or greater ENERGY STAR® | $250 | $500 | Up to $750 |
| | **Boiler - Hydronic**<br>AFUE 85% or greater ENERGY STAR® | $300 | $300 | Up to $600 |
| | **Boiler - Steam**<br>AFUE 82% or greater | $300 | $300 | Up to $600 |
| WATER HEATING | **Gas Water Heater**<br>EF* .82 or greater ENERGY STAR® | $200 | $500 | Up to $700 |
| | **Gas Water Heater**<br>TE* 90% or greater with sealed combustion | $200 | $500 | Up to $700 |
| COMBINATIONS | **Furnace and Water Heater Combination****<br>Qualifying gas furnace (see minimum efficiency above); and either:<br>• A qualifying standalone water heater (see min. efficiency)<br>• OR an indirect-fired water heater attached to the qualifying furnace | $450 | $1,000 | Up to $1,450 |
| | **Boiler and Water Heater Combination**<br>Qualifying boiler (see minimum efficiency for boilers above) and water heating as noted below:<br>• Integrated water heating and boiler unit (CombiBoilers)<br>• OR a qualifying stand alone water heater (see minimum efficiency for water heaters)<br>• OR an indirect water heater attached to the qualifying boiler | $500 | $900 | Up to $1,400 |

Best Values

* AFUE (Annual Fuel Utilization Efficiency), EF (Energy Factor), TE (Thermal Efficiency).

** Tier 2 Qualifying gas furnaces as noted above and either attached to a qualifying standalone water heater OR an indirect-fired water heater are eligible for a $1,000 rebate.

† **Effective November 1, 2014.** Restrictions apply. See **elizabethtowngas.com/energysmart** for terms and conditions.

Commercial customers will also benefit from an increase in system pressure. Current commercial kitchen equipment requires a minimum of about 6 inches of water column as do current rooftop heating systems, which are standard for commercial use. For example, to install a backup electric generator fueled by natural gas, customers on a low pressure system must install costly electric-driven gas boosters to raise the gas pressure, and back-up systems for the pressure boosters as a safeguard against electrical power outages. The cost of these booster systems and back-ups, based on our experience elsewhere in the US, is between $20,000 and $50,000 to the customer, depending on commercial building size and back-up configuration. These costs would not need to be incurred by commercial customers on an elevated pressure system.

The State of New Jersey does not currently require critical facilities such as schools, hospitals, and emergency services providers to have back-up generation installed. However, I understand there is pending

legislation before the State Legislature that might lead to such a requirement. While I understand the State practice is not to specify the fuel to be used, the main alternatives to natural gas fired generation are more dangerous and less environmentally-friendly gasoline or diesel-powered versions. The use of gasoline or diesel-powered emergency generators is less safe than a permanently connected natural gas-fueled generator, primarily due to the risks involved in gasoline or diesel fuel storage and transfer, especially in residential situations.

**Q. Are there potential quantitative and qualitative operational benefits inherent in an elevated pressure gas distribution system such as the one that would be installed under the proposed SMART Program?**

**A.** Yes there are both potential qualitative and quantitative operational benefits. Some of these qualitative benefits have been mentioned above in my testimony, but they are worth mentioning again.

- Simplification of the Company's O&M plan, reducing the cost of maintaining the plan and associated employee training;
- Elimination of inspection and maintenance of elevated- to low-pressure regulator stations and associated employee training;
- Reduction in the cost associated with leak surveys;
- Reduction in the number of emergency calls;
- Elimination of the freeze-up of low-pressure risers; and
- Reduction in equipment, and emergency materials.

There are quantitative benefits from the SMART Program approach, which I have estimated, based on the assumptions in my analysis, and the estimates of certain key parameters provided by ETG. For example, the O&M costs associated with cast iron and unprotected steel are significantly higher than the O&M costs associated with the replacement material, PE pipe. Such benefits are described as "avoided O&M costs." The results of my analysis of the SMART Program show that it will have

quantifiable avoided cost benefits to ETG and its customers. These results are summarized in Table SDM-1.13.

**Table SDM-1.13**

**Ten Year Estimated Quantifiable Benefits**

| Cumulative Avoided cost by Activity | Capital | O&M |
|---|---|---|
| Leak Repair | $ 1,409,897 | $ 7,403,863 |
| Leak Rechecks | | 2,574,617 |
| Inside Leak Survey | | 4,204,875 |
| Meter Inspections for Corrosion | | (1,404,051) |
| Emergency Response (Below Ground Leak) | | 37,678 |
| Regulator Station I&M | | 590,490 |
| Valve Inspection | | (41,989) |
| Drips Drained | | 436,903 |
| **Total** | **$ 1,409,897** | **$ 13,802,385** |
| **Avoided O&M Cost per Mile Retired** | **$ 2,224** | **$ 21,770** |

| Cumulative Avoided Cost by Year | Capital | O&M |
|---|---|---|
| 2016 | $ - | $ - |
| 2017 | 16,299 | 108,708 |
| 2018 | 40,748 | 325,621 |
| 2019 | 69,272 | 624,181 |
| 2020 | 97,796 | 923,108 |
| 2021 | 126,320 | 1,222,035 |
| 2022 | 154,844 | 1,520,962 |
| 2023 | 183,368 | 1,819,889 |
| 2024 | 211,892 | 2,118,816 |
| 2025 | 240,416 | 2,417,743 |
| 2026 | 268,940 | 2,721,321 |
| **Total** | **$ 1,409,897** | **$ 13,802,385** |

Schedule SDM-8 provides an itemized indicative estimate of avoided capital and O&M costs. However, changes in operating policies, processes, and procedures, as well as regulatory changes make quantifying the actual avoided costs very difficult.

**Q. Are there any potential environmental benefits?**

**A.** Yes. There is potential for a significant reduction in greenhouse gas emissions (GHG). We estimated the GHG reduction based on the Title 40 CFR 98 – Mandatory Greenhouse Gas Reporting, Subpart W – Petroleum and Natural Gas System. Our estimate considered the sources of methane emissions for the gas distribution system described below. The emission factors used were the default factors from Table W-7, effective 12/18/11.

- Below Ground measurement and regulatory Stations (operating pressure < 100 psia);
- Gas Distribution Mains – bare and unprotected steel, protected steel, plastic, ductile iron, copper, and cast iron; and

- Gas Service Lines – bare and unprotected steel, protected steel, plastic, and copper.

The emission reduction was estimated using the construction schedule presented in the cost estimate. Emission reductions were credited in the year following completion of the work. For the proposed ten-year Program, the methane emission reduction would amount to approximately 58,100 metric tons of CO2 equivalent per year once the program is completed. Another way of looking at this reduction is to consider that the average vehicle over a year of driving has tailpipe CO2 emissions of about 4.7 metric tons. Elimination of 58,100 metric tons of $CO_2$ equivalent emissions would equate to removing approximately 12,360 vehicles from the roads.

**Q. Does this conclude your testimony?**

**A.** Yes, it does.

# AACE ESTIMATING CLASSIFICATIONS

| | *Primary Characteristic* | *Secondary Characteristic* | | | |
|---|---|---|---|---|---|
| **ESTIMATE CLASS** | **LEVEL OF PROJECT DEFINITION** Expressed as % of complete definition | **END USAGE** Typical purpose of estimate | **METHODOLOGY** Typical estimating method | **EXPECTED ACCURACY RANGE** Typical variation in low and high ranges [a] | **PREPARATION EFFORT** Typical degree of effort relative to least cost index of 1 [b] |
| **Class 5** | 0% to 2% | Concept Screening | Capacity Factored, Parametric Models, Judgment, or Analogy | L: -20% to -50%<br>H: +30% to +100% | 1 |
| **Class 4** | 1% to 15% | Study or Feasibility | Equipment Factored or Parametric Models | L: -15% to -30%<br>H: +20% to +50% | 2 to 4 |
| **Class 3** | 10% to 40% | Budget, Authorization, or Control | Semi-Detailed Unit Costs with Assembly Level Line Items | L: -10% to -20%<br>H: +10% to +30% | 3 to 10 |
| **Class 2** | 30% to 70% | Control or Bid/ Tender | Detailed Unit Cost with Forced Detailed Take-Off | L: -5% to -15%<br>H: +5% to +20% | 4 to 20 |
| **Class 1** | 50% to 100% | Check Estimate or Bid/Tender | Detailed Unit Cost with Detailed Take-Off | L: -3% to -10%<br>H: +3% to +15% | 5 to 100 |

Notes: [a] The state of process technology and availability of applicable reference cost data affect the range markedly. The +/- value represents typical percentage variation of actual costs from the cost estimate after application of contingency (typically at a 50% level of confidence) for given scope.

[b] If the range index value of "1" represents 0.005% of project costs, then an index value of 100 represents 0.5%. Estimate preparation effort is highly dependent upon the size of the project and the quality of estimating data and tools.

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

## Detailed SMART Program Summary

| Description | Units | $/unit | SMART Program Cost | Percent of Total |
|---|---|---|---|---|
| **Construction (Direct Costs)** | | **$/mile (Installed)** | | |
| Materials | | $ 130,090 | $ 78,353,110 | 7.1% |
| Installation | | 802,414 | 483,294,129.5 | 43.9% |
| Restoration | | 294,987 | 177,670,664.8 | 16.1% |
| Other - Traffic control | | 80,925 | 48,741,066.4 | 4.4% |
| ***Subtotal*** | | ***$ 1,308,416*** | ***$ 788,058,970*** | 71.5% |
| **Program Support (Indirect Costs)** | | | | |
| Permitting | 0.48% | $ 6,280 | $ 3,782,684 | 0.3% |
| Engineering | 5.00% | 64,767 | 39,008,919 | 3.5% |
| Program Management | 2.00% | 25,907 | 15,603,568 | 1.4% |
| Construction Management | 1.75% | 22,668 | 13,653,122 | 1.2% |
| ***Subtotal*** | | $ 119,622 | $ 72,048,292 | 6.5% |
| **Other Costs** | | | | |
| Contingency, includes Constr, Permits, | 20.00% | 258,035 | 155,414,575 | 14.1% |
| Overhead, excl. escalation and contingency | 10.00% | 142,804 | 86,010,726 | 7.8% |
| ***Subtotal*** | | ***$ 400,839*** | ***$ 241,425,301*** | 21.9% |
| **SMART Program Cost, with OH (Real 2014 $)** | | | | |
| **Construction** | | | | |
| Renewals | 91.4% | $ 1,694,506 | $ 1,020,601,176 | |
| Removals | 8.6% | 134,371 | 80,931,387 | |
| **Total Construction (Real 2014 $)** | | **$ 1,828,877** | **$ 1,101,532,563** | 100.0% |
| Cost Escalation | 3.00% | 332,556 | 200,298,709 | |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

**Annual SMART Program Summary**

| Description | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| **Construction (Direct Costs)** | | | | |
| Materials | $ 3,134,124 | $ 6,268,249 | $ 8,618,842 | $ 8,618,842 |
| Installation | 19,331,765 | 38,663,530 | 53,162,354 | 53,162,354 |
| Restoration | 4,970,720 | 11,146,547 | 16,983,525 | 18,640,547 |
| Other - Traffic control | 1,949,643 | 3,899,285 | 5,361,517 | 5,361,517 |
| ***Subtotal*** | **$ 29,386,252** | **$ 59,977,612** | **$ 84,126,238** | **$ 85,783,261** |
| **Program Support (Indirect Costs)** | | | | |
| Permitting | $ 151,307 | $ 302,615 | $ 416,095 | $ 416,095 |
| Engineering | 1,182,088 | 3,152,236 | 4,334,324 | 4,334,324 |
| Program Management | 472,835 | 1,260,894 | 1,733,730 | 1,733,730 |
| Construction Management | 413,731 | 1,103,283 | 1,517,014 | 1,517,014 |
| ***Subtotal*** | $ 2,219,962 | $ 5,819,028 | $ 8,001,163 | $ 8,001,163 |
| **Other Costs** | | | | |
| Contingency, includes Constr, Permits, | 2,953,756 | 12,056,045 | 16,908,467 | 17,239,871 |
| Overhead, excl. escalation and contingency | 3,160,621 | 6,579,664 | 9,212,740 | 9,378,442 |
| ***Subtotal*** | $ 6,114,377 | $ 18,635,709 | $ 26,121,207 | $ 26,618,314 |
| **SMART Program Cost, with OH (Real 2014 $)** | | | | |
| **Construction** | | | | |
| Renewals | $ 34,946,458 | $ 78,253,284 | $ 109,581,827 | $ 111,565,388 |
| Removals | 2,774,134 | 6,179,064 | 8,666,781 | 8,837,349 |
| **Total Construction (Real 2014 $)** | **$ 37,720,592** | **$ 84,432,348** | **$ 118,248,608** | **$ 120,402,737** |
| Cost Escalation | 1,924,818 | 6,101,125 | 11,562,800 | 14,937,427 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

**Annual SMART Program Summary**

| Description | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| **Construction (Direct Costs)** | | | | |
| Materials | $ 8,618,842 | $ 8,618,842 | $ 8,618,842 | $ 8,618,842 |
| Installation | 53,162,354 | 53,162,354 | 53,162,354 | 53,162,354 |
| Restoration | 20,297,570 | 21,126,081 | 21,126,081 | 21,126,081 |
| Other - Traffic control | 5,361,517 | 5,361,517 | 5,361,517 | 5,361,517 |
| ***Subtotal*** | **$ 87,440,283** | **$ 88,268,794** | **$ 88,268,794** | **$ 88,268,794** |
| **Program Support (Indirect Costs)** | | | | |
| Permitting | $ 416,095 | $ 416,095 | $ 416,095 | $ 416,095 |
| Engineering | 4,334,324 | 4,334,324 | 4,334,324 | 4,334,324 |
| Program Management | 1,733,730 | 1,733,730 | 1,733,730 | 1,733,730 |
| Construction Management | 1,517,014 | 1,517,014 | 1,517,014 | 1,517,014 |
| ***Subtotal*** | $ 8,001,163 | $ 8,001,163 | $ 8,001,163 | $ 8,001,163 |
| **Other Costs** | | | | |
| Contingency, includes Constr, Permits, | 17,571,276 | 17,736,978 | 17,736,978 | 17,736,978 |
| Overhead, excl. escalation and contingency | 9,544,145 | 9,626,996 | 9,626,996 | 9,626,996 |
| ***Subtotal*** | $ 27,115,420 | $ 27,363,974 | $ 27,363,974 | $ 27,363,974 |
| **SMART Program Cost, with OH (Real 2014 $)** | | | | |
| **Construction** | | | | |
| Renewals | $ 113,548,950 | $ 114,540,730 | $ 114,540,730 | $ 114,540,730 |
| Removals | 9,007,917 | 9,093,201 | 9,093,201 | 9,093,201 |
| **Total Construction (Real 2014 $)** | **$ 122,556,866** | **$ 123,633,931** | **$ 123,633,931** | **$ 123,633,931** |
| Cost Escalation | 18,520,632 | 22,129,947 | 25,681,944 | 29,340,501 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

## Annual SMART Program Summary

| Description | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|
| **Construction (Direct Costs)** | | | | |
| Materials | $ 8,618,842 | $ 8,618,842 | $ - | $ - |
| Installation | 53,162,354 | 53,162,354 | - | - |
| Restoration | 21,126,081 | 21,127,433 | - | - |
| Other - Traffic control | 5,361,517 | 5,361,517 | - | - |
| ***Subtotal*** | **$ 88,268,794** | **$ 88,270,146** | **$ -** | **$ -** |
| **Program Support (Indirect Costs)** | | | | |
| Permitting | $ 416,095 | $ 416,095 | $ - | $ - |
| Engineering | 4,334,324 | 4,334,324 | - | - |
| Program Management | 1,733,730 | 1,733,730 | - | - |
| Construction Management | 1,517,014 | 1,517,014 | - | - |
| ***Subtotal*** | $ 8,001,163 | $ 8,001,163 | $ - | |
| **Other Costs** | | | | |
| Contingency, includes Constr, Permits, | 17,736,978 | 17,737,248 | - | - |
| Overhead, excl. escalation and contingency | 9,626,996 | 9,627,131 | - | - |
| ***Subtotal*** | $ 27,363,974 | $ 27,364,379 | $ - | $ - |
| **SMART Program Cost, with OH (Real 2014 $)** | | | | |
| **Construction** | | | | |
| Renewals | $ 114,540,730 | $ 114,542,349 | $ - | $ - |
| Removals | 9,093,201 | 9,093,340 | - | - |
| **Total Construction (Real 2014 $)** | **$ 123,633,931** | **$ 123,635,688** | **$ -** | **$ -** |
| Cost Escalation | 33,108,815 | 36,990,698 | - | - |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

## Mains - Construction Unit Cost Summary

| Quantity | Inventory 2014 | Adjustment 2015/16 | SMART Program |
|---|---|---|---|
| Renewal, miles | 705 | | 602 |
| Removal, miles | 705 | 71 | 634 |
| Total | 705 | 71 | 634 |

| | 2014 $ / mile | | Cost |
|---|---|---|---|
| **Renewal** | | | |
| Materials | $ 89,743 | | $ 54,052,359 |
| Installation | $ 420,321 | | $ 253,159,424 |
| Restoration | $ 262,429 | | $ 166,380,113 |
| Other | $ 80,925 | | $ 48,741,066 |
| | $ 867,231 | | $ 522,332,962 |
| **Removal** | | | |
| Materials | $ - | | $ - |
| Installation | $ 17,160 | | $ 10,879,440 |
| Restoration | $ - | | $ - |
| Other | $ - | | $ - |
| | $ 17,160 | | $ 10,879,440 |
| **Total** | | | |
| Materials | $ 85,256 | | $ 54,052,359 |
| Installation | $ 416,465 | | $ 264,038,864 |
| Restoration | $ 262,429 | | $ 166,380,113 |
| Other | $ 76,879 | | $ 48,741,066 |
| Total | $ 841,029 | | $ 533,212,402 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

## Services - Construction Unit Cost Summary

| Quantity | Inventory 2014 | Adjustment 2015/16 | SMART Program |
|---|---|---|---|
| Renewal | 76,808 | 10,000 | 66,808 |
| Removal | 76,808 | 10,000 | 66,808 |
| Total | 76,808 | 10,000 | 66,808 |

| | 2014 $/unit | | Cost |
|---|---|---|---|
| **Renewal** | | | |
| Materials | $ 109 | $ | 7,311,551 |
| Installation | $ 1,814 | $ | 121,207,028 |
| Restoration | $ 169 | $ | 11,290,552 |
| Other | $ - | $ | - |
| | $ 2,093 | $ | 139,809,131 |
| **Removal** | | | |
| Materials | $ - | $ | - |
| Installation | $ 780 | $ | 52,134,048 |
| Restoration | $ - | $ | - |
| Other | $ - | $ | - |
| | $ 780 | $ | 52,134,048 |
| **Total** | | | |
| Materials | $ 109 | $ | 7,311,551 |
| Installation | $ 2,595 | $ | 173,341,076 |
| Restoration | $ 169 | $ | 11,290,552 |
| Other | $ - | $ | - |
| Total | $ 2,873 | $ | 191,943,179 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

## Meter Relocation - Construction Unit Cost Summary

### Units of Work

| Quantity | Inventory 2014 | Adjustment 2015/16 | SMART Program |
|---|---|---|---|
| Residential Set | 93,646 | 10,000 | 83,646 |
| Commercial Set | 650 | | 650 |
| Industrial Set | - | | - |
| | 94,296 | 10,000 | 84,296 |

### Construction Unit Cost Summary

| | $/Relocate | Cost |
|---|---|---|
| **Residential Set** | | |
| Materials | $ 200 | $ 16,729,200 |
| Installation | $ 490 | $ 40,986,540 |
| Restoration | $ - | $ - |
| Other | $ - | $ - |
| **Total** | $ 690 | $ 57,715,740 |
| **Renewal** | $ 690 | $ 57,715,740 |
| **Removal** | $ - | $ - |
| **Commercial Set** | | |
| Materials | $ 400 | $ 260,000 |
| Installation | $ 525 | $ 341,250 |
| Restoration | $ - | $ - |
| Other | $ - | $ - |
| **Total** | $ 925 | $ 601,250 |
| **Renewal** | $ 925 | $ 601,250 |
| **Removal** | $ - | $ - |
| **Industrial Set** | | |
| Materials | $ - | $ - |
| Installation | $ - | $ - |
| Restoration | $ - | $ - |
| Other | $ - | $ - |
| **Total** | $ - | $ - |
| **Renewal** | $ - | $ - |
| **Removal** | $ - | $ - |
| **Average** | | |
| Materials | $ 202 | $ 16,989,200 |
| Installation | $ 490 | $ 41,327,790 |
| Restoration | $ - | $ - |
| Other | $ - | $ - |
| **Total** | $ 692 | $ 58,316,990 |
| **Renewal** | $ 692 | $ - |
| **Removal** | $ - | $ - |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

## Regulator Station - Construction Unit Cost Summary

| Quantity | Inventory 2014 | Adjustment 2015/16 | SMART Program |
|---|---|---|---|
| New | 0 | 0 | 0 |
| Renewal | 0 | 0 | 0 |
| Removal | 208 | 0 | 208 |
| | 208 | 0 | 208 |

| | 2014 $ per Station | | Cost |
|---|---|---|---|
| **New** | | | |
| Materials | $ 28,000 | $ | - |
| Installation | $ 35,000 | $ | - |
| Restoration | $ 12,600 | $ | - |
| Other | $ - | $ | - |
| | $ 75,600 | $ | - |
| **Renewal** | | | |
| Materials | $ - | $ | - |
| Installation | $ - | $ | - |
| Restoration | $ - | $ | - |
| Other | $ - | $ | - |
| | $ - | $ | - |
| **Removal** | | | |
| Materials | $ - | $ | - |
| Installation | $ 22,050 | $ | 4,586,400 |
| Restoration | 0 | $ | - |
| Other | $ - | $ | - |
| | $ 22,050 | $ | 4,586,400 |
| **Total** | | | |
| Materials | $ - | $ | - |
| Installation | $ 22,050 | $ | 4,586,400 |
| Restoration | $ - | $ | - |
| Other | $ - | $ | - |
| Total | $ 22,050 | $ | 4,586,400 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

Estimate of Avoided Costs
Real, 2014$

**Avoided Costs**

| | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| **Avoided Capital Spending** | | | | |
| Leak Repair ST & CU Services | | $ 16,299 | $ 40,748 | $ 69,272 |
| **Avoided O&M Spending** | | $ 108,708 | $ 325,621 | $ 624,181 |
| Leak Repairs-Unprotected ST Mains | | $ - | - | - |
| Leak Repairs- Protected ST Mains | | $ 392 | 1,160 | 2,218 |
| Leak Repairs-Plastic Mains | | $ (491) | $ (978) | $ (1,345) |
| Leak Repairs-Copper Mains | | $ - | - | - |
| Leak Repairs-DI Mains | | $ 3,218 | 9,653 | 18,500 |
| Leak Repairs-CI Mains | | $ 55,303 | 165,908 | 317,991 |
| Leak Repairs-Plastic Services | | $ (55) | (1,154) | (2,666) |
| Leak Rechecks | | $ 20,274 | $ 60,819 | $ 116,568 |
| Inside Leak Survey | | $ 33,103 | 99,319 | 190,371 |
| Meter Inspections for Corrosion | | $ (11,054) | (33,164) | (63,567) |
| Emergency Response (Below Ground Leak) | | $ 297 | 890 | 1,706 |
| Pressure Regulator Stations | | $ 4,613 | 13,840 | 26,526 |
| Valve Inspection | | $ (331) | (992) | (1,902) |
| Drips Drained | | $ 3,440 | 10,320 | 19,781 |
| **Cumulative** | | | | |
| Total Avoided Capital Spending | | $ 16,299 | $ 57,048 | $ 126,320 |
| Total Avoided O&M Spending | | $ 108,708 | 434,330 | 1,058,511 |

| **GHG Emission Reduction** | **2016** | **2017** | **2018** | **2019** |
|---|---|---|---|---|
| CO2 Reduction (Metric Tons) | 2,325 | 4,650 | 6,394 | 6,394 |
| Cumulative Reduction (Metric Tons) | 2,325 | 6,975 | 13,369 | 19,762 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

Estimate of Avoided Costs
Real, 2014$

**Avoided Costs**

| | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| **Avoided Capital Spending** | | | | |
| Leak Repair ST & CU Services | $ 97,796 | $ 126,320 | $ 154,844 | $ 183,368 |
| **Avoided O&M Spending** | $ 923,108 | $ 1,222,035 | $ 1,520,962 | $ 1,819,889 |
| Leak Repairs-Unprotected ST Mains | - | - | - | - |
| Leak Repairs- Protected ST Mains | 3,276 | 4,334 | 5,392 | 6,450 |
| Leak Repairs-Plastic Mains | $ (1,345) | $ (1,345) | $ (1,345) | $ (1,345) |
| Leak Repairs-Copper Mains | - | - | - | - |
| Leak Repairs-DI Mains | 27,347 | 36,194 | 45,041 | 53,888 |
| Leak Repairs-CI Mains | 470,073 | 622,156 | 774,238 | 926,321 |
| Leak Repairs-Plastic Services | (4,177) | (5,689) | (7,200) | (8,712) |
| Leak Rechecks | $ 172,318 | $ 228,067 | $ 283,816 | $ 339,565 |
| Inside Leak Survey | 281,422 | 372,473 | 463,524 | 554,575 |
| Meter Inspections for Corrosion | (93,970) | (124,372) | (154,775) | (185,178) |
| Emergency Response (Below Ground Leak) | 2,522 | 3,338 | 4,153 | 4,969 |
| Pressure Regulator Stations | 39,212 | 51,899 | 64,585 | 77,271 |
| Valve Inspection | (2,811) | (3,720) | (4,629) | (5,538) |
| Drips Drained | 29,241 | 38,702 | 48,163 | 57,623 |
| **Cumulative** | | | | |
| Total Avoided Capital Spending | $ 224,117 | $ 350,437 | $ 505,281 | $ 688,649 |
| Total Avoided O&M Spending | 1,981,619 | 3,203,654 | 4,724,616 | 6,544,505 |

| **GHG Emission Reduction** | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|
| CO2 Reduction (Metric Tons) | 6,394 | 6,394 | 6,394 | 6,394 |
| Cumulative Reduction (Metric Tons) | 26,156 | 32,550 | 38,943 | 45,337 |

Pivotal Utility Holdings, Inc d/b/a Elizabethtown Gas SMART Program

Estimate of Avoided Costs
Real, 2014$

**Avoided Costs**

| | 2024 | 2025 | 2026 |
|---|---|---|---|
| **Avoided Capital Spending** | | | |
| Leak Repair ST & CU Services | $ 211,892 | $ 240,416 | $ 268,940 |
| **Avoided O&M Spending** | $ 2,118,816 | $ 2,417,743 | $ 2,721,321 |
| Leak Repairs-Unprotected ST Mains | - | - | - |
| Leak Repairs- Protected ST Mains | 7,508 | 8,566 | 9,624 |
| Leak Repairs-Plastic Mains | $ (1,345) | $ (1,345) | $ (1,345) |
| Leak Repairs-Copper Mains | - | - | - |
| Leak Repairs-DI Mains | 62,735 | 71,582 | 80,429 |
| Leak Repairs-CI Mains | 1,078,403 | 1,230,486 | 1,382,568 |
| Leak Repairs-Plastic Services | (10,223) | (11,735) | (13,248) |
| Leak Rechecks | $ 395,314 | $ 451,063 | $ 506,812 |
| Inside Leak Survey | 645,626 | 736,677 | 827,787 |
| Meter Inspections for Corrosion | (215,581) | (245,984) | (276,407) |
| Emergency Response (Below Ground Leak) | 5,785 | 6,601 | 7,417 |
| Pressure Regulator Stations | 89,957 | 102,644 | 119,943 |
| Valve Inspection | (6,447) | (7,356) | (8,265) |
| Drips Drained | 67,084 | 76,544 | 86,005 |
| **Cumulative** | | | |
| Total Avoided Capital Spending | $ 900,541 | $ 1,140,957 | $ 1,409,897 |
| Total Avoided O&M Spending | 8,663,322 | 11,081,065 | 13,802,385 |

| **GHG Emission Reduction** | **2024** | **2025** | |
|---|---|---|---|
| CO2 Reduction (Metric Tons) | 6,394 | 6,397 | |
| Cumulative Reduction (Metric Tons) | 51,730 | 58,128 | 58,128 |

**EXHIBIT P-4**

**PIVOTAL UTILITY HOLDINGS, INC.**
**D/B/A ELIZABETHTOWN GAS**
**PREPARED DIRECT TESTIMONY OF**
**DANIEL P. YARDLEY**

## I. INTRODUCTION

**Q. Please state your name, affiliation and business address.**

**A.** My name is Daniel P. Yardley. I am Principal, Yardley Associates and my business address is 2409 Providence Hills Drive, Matthews, North Carolina 28105.

**Q. On whose behalf are you testifying?**

**A.** I am testifying on behalf of Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("Elizabethtown" or the "Company").

**Q. Please summarize your professional and educational background.**

**A.** I have been employed as a consultant to the natural gas industry for over 25 years. During this period, I have directed or participated in numerous consulting assignments on behalf of local distribution companies ("LDCs"). A number of these assignments involved the development of gas distribution company cost allocation,

pricing, service unbundling, revenue decoupling and other tariff analyses. In addition to this work, I have performed interstate pipeline cost of service and rate design analyses, gas supply planning analyses, and financial evaluation analyses. I received a Bachelor of Science Degree in Electrical Engineering from the Massachusetts Institute of Technology in 1988.

**Q. Have you previously testified before the New Jersey Board of Public Utilities and other regulatory bodies?**

**A.** Yes. Over the last 15 years, I have testified before the New Jersey Board of Public Utilities (the "BPU") on various ratemaking and regulatory matters including rate unbundling, cost allocation, service design, rate design, revenue decoupling, cost recovery mechanisms and tariff design. My testimony in various proceedings has been presented on behalf of Elizabethtown, New Jersey Natural Gas Company and South Jersey Gas Company, including testimony on behalf of the Company in its last two base rate proceedings. I have also testified in proceedings before the Florida Public Service Commission, the Massachusetts Department of Public Utilities, the New Hampshire Public Utilities Commission, the North Carolina Utilities Commission, the Rhode Island Public Utilities

Commission, the Tennessee Regulatory Authority, the Wisconsin Public Service Commission, the Federal Energy Regulatory Commission and the National Energy Board of Canada on a variety of rate and regulatory topics. A summary of my previous expert testimony is provided as Attachment A to my direct testimony.

**Q. What is the purpose of your testimony in this proceeding?**

**A.** I have been asked by Elizabethtown to evaluate the need for a cost recovery mechanism as a core element of its proposed system modernization and replacement program. My testimony reviews industry and regulatory developments contributing to the need for appropriate cost recovery mechanisms to manage the challenges associated with aging infrastructure. I also comment on important elements of Elizabethtown's specific cost recovery mechanism, the Safety, Modernization and Reliability Tariff ("SMART"). The SMART mechanism is described in detail by Company Witness Thomas Kaufmann.

**Q. Please summarize your recommendations.**

**A.** The principal recommendation of my testimony is that Elizabethtown's SMART cost recovery mechanism is an appropriate and necessary element of its proposed ten-

year infrastructure replacement and modernization plan. This recommendation is supported by the following:

(1) **Planned and aggressive efforts to replace vintage, at-risk infrastructure are essential to maintaining safe and reliable natural gas distribution systems.** Facilities that are most likely to require replacement include pipe constructed using cast iron, bare and unprotected steel and copper, as well as certain early vintage plastic materials, pipe fittings and other infrastructure. In addition to eliminating breakage-related risks, replacement efforts further enhance safety and reliability through the deployment of facilities that employ state-of-the-art design, monitoring, control and maintenance techniques.

(2) **Safety regulators are calling for a more aggressive approach to replacing aging infrastructure in order to maintain safety.** Former U.S. Secretary of Transportation, Ray LaHood, in 2011 issued a Call to Action to pipeline operators and industry stakeholders to achieve the benefits of replacing, on an

accelerated basis, older infrastructure that is susceptible to safety hazards.

(3) **Relying on traditional base rate case recovery for accelerated replacement efforts that comprise Elizabethtown's replacement and modernization program is inefficient and hinders progress.** Infrastructure replacement entails substantial capital investments in non-revenue producing plant. Traditional base rate case recovery represents an impediment to achieving in a timely manner the safety enhancements associated with replacing the Company's vintage, at-risk facilities.

(4) **The proposed SMART cost recovery mechanism is a necessary component of the proposed program.** The proposed cost recovery mechanism is essential to achieving the cost efficiencies of accelerated replacement efforts by allowing the Company to recover the associated costs in a timely manner. Utility regulators in many jurisdictions, including New Jersey, have approved similar infrastructure replacement cost recovery mechanisms in order to facilitate these important investments.

(5) **The Company's SMART cost recovery mechanism provides for appropriate oversight and safeguards related to the program investments.** Elizabethtown's cost recovery proposal will enhance the BPU's review of infrastructure replacement investments through more regular reporting and opportunity to review the Company's program plans and performance.

**Q. Do you sponsor any schedules as part of your testimony?**

**A.** Yes. I sponsor the following schedules, which I discuss in greater detail later in my testimony:

(1) Schedule DPY-1 sets forth information concerning leak prone distribution mains by state;

(2) Schedule DPY-2 sets forth information concerning leak prone distribution service lines by state;

(3) Schedule DPY-3 is a 2013 resolution by the National Association of Regulatory Utility Commissioners ("NARUC") concerning the replacement of aging utility infrastructure.

**Q. How is the remainder of your testimony organized?**

**A.** My testimony is organized into three sections following this Introduction. In Section II, I briefly discuss the context for LDC initiatives to accelerate replacement of vintage, at-risk facilities including the historical development of existing distribution systems and operator and safety regulator efforts to address issues brought about by vintage, at-risk infrastructure. Section III outlines cost recovery alternatives related to accelerated replacement activities and presents information on emerging approaches and trends. Lastly, in Section IV, I review elements of Elizabethtown's SMART cost recovery mechanism and describe the benefits of its approval.

## II. AGING NATURAL GAS INFRASTRUCTURE CHALLENGES AND SOLUTIONS

**Q. Can you provide an overview of the historical development of natural gas distribution systems in the United States?**

**A.** The natural gas industry transformed from reliance on localized supply into a major North American energy source over the course of the 20th century. This progression occurred as advances in metallurgical technologies and welding techniques made it possible to construct transmission lines traversing hundreds of

miles. Nearly half of the major natural gas transmission facilities in service today in the United States were constructed during the 1950s and 1960s as public policy supported the extension of natural gas to new markets to replace manufactured gas, distributing natural gas through low pressure mains.

Prior to the middle of the twentieth century, the primary materials used for distribution pipe were wrought and cast iron. Subsequently, the industry transitioned to steel materials, with ongoing improvements in material strength and ductility and the use of methods to reduce corrosion. The 1970s brought a transition from steel to plastic facilities except for large diameter installations that continue to rely on steel.

**Q. What critical issues arise out of this historical development of natural gas infrastructure in the U.S.?**

**A.** Considerable portions of the existing natural gas infrastructure are aging and susceptible to leaks or other failures. Of primary concern are facilities constructed of cast iron, bare and unprotected steel, copper and certain limited categories of older plastic materials, all of which have distinct concerns as they age.

One of the present challenges facing LDCs, regulators and other industry stakeholders is the impact of vintage, at-risk infrastructure installed using materials that are susceptible to corrosion or other material failure. While these facilities continue to provide adequate service, they require more extensive integrity management efforts. Issues associated with this infrastructure are discussed in greater detail in the testimony of Company witnesses Salvatore D. Marano, Brian MacLean and Michael P. Scacifero. LDCs are working closely with federal and state regulators to enhance the safety and efficiency of distribution networks by upgrading distribution facilities, including the replacement of vintage, at-risk mains and service lines with plastic pipe materials that represent the current industry standard for most distribution pipe sizes.

**Q. Are there pipeline safety regulations that are relevant to these challenges?**

**A.** Yes. Pipeline safety is an important oversight function of both federal and state agencies. The U.S. Department of Transportation ("USDOT") is responsible for pipeline safety at the Federal level. The Pipeline and Hazardous Materials Safety Administration ("PHMSA"), an agency

within the USDOT, mandates many requirements related to the safe operation of both natural gas transmission and distribution facilities and networks. Within New Jersey, the BPU is responsible for administering pipeline safety requirements. Federal and state pipeline safety agencies are jointly responsible for inspecting facilities, promulgating pipeline safety rules and requirements, and administering legislative pipeline safety requirements.

**Q. Have you examined the extent of vintage, at-risk facilities that remain in service across the nation?**

**A.** Yes. I analyzed data reported by all natural gas distribution system operators in the U.S. to PHMSA to determine the proportion of distribution mains and services that are considered at-risk and candidates for replacement. As of the end of 2014, 101,000 miles or 8.0% of in-service distribution mains are constructed of cast or ductile iron, bare or unprotected coated steel or copper. The proportion of vintage, at-risk distribution mains varies considerably by state as indicated by the data presented in Schedule DPY-1, which is sorted from highest to lowest proportion of vintage, at-risk facilities. States in the U.S. Northeast, including New Jersey, have relatively larger proportions of vintage,

at-risk distribution mains than do other states. This results from the earlier development of gas distribution systems in these states contributing to older inventories of pipe. Approximately 12,500 miles or 36% of New Jersey's current distribution main was constructed prior to 1970. This compares to the national average of 30% of distribution miles of pipe installed prior to 1970.

An analysis of operator data reported to PHMSA pertaining to natural gas service lines indicates similar results. Approximately 4.7 million or 7.0% of natural gas service lines are constructed of vintage, at-risk materials, with the greatest proportions located in the states that comprise the U.S. Northeast. A state-by-state breakdown of service line data is provided in Schedule DPY-2.

**Q. What are some of the ways that the natural gas distribution industry has sought to address the challenges of aging infrastructure?**

**A.** As discussed by Company witnesses MacLean, Marano and Scacifero, the safe and reliable operation of natural gas distribution facilities always remains the top priority of LDCs. The dedication of LDCs to advancing safety affects all aspects of utility operations including challenges associated with aging pipe and other

facilities. LDCs have achieved important safety improvements through the development and promotion of industry standards and best practices that leverage the collective experience and knowledge of industry professionals. The industry also supports important data collection and analysis that provides the basis for research regarding improvements to operator practices, materials and technologies. Many of these collective efforts relate to effectively managing the inventory of aging distribution infrastructure.

**Q. Please describe the heightened focus on issues related to aging natural gas pipe by the USDOT and PHMSA.**

**A.** In response to recent pipeline safety incidents, the former U.S. Secretary of Transportation, Ray LaHood, announced a Pipeline Safety Action Plan encompassing many safety initiatives including the need to accelerate the replacement of aging pipeline facilities. Secretary LaHood issued a “Call to Action” to pipeline operators and their stakeholders to conduct a comprehensive review of their pipelines, identify areas representing higher risk and accelerate repair and replacement efforts. The Call to Action explicitly recognized that current investments enhance public safety immediately and lead to

reliable pipeline infrastructure well into the future. However, without more aggressive steps, some facilities in need of replacement will remain in service for many more decades.

The Call to Action and other regulatory pronouncements discussed more fully by Company witnesses Marano, MacLean and Scacifero have succeeded in focusing industry stakeholders on developing practical approaches to overcoming the challenges associated with aging natural gas facilities. PHMSA organized stakeholder discussions and facilitated the review of ways to overcome impediments to more rapid replacement of aging natural gas infrastructure including the costs involved. While the USDOT does not have jurisdiction over cost recovery for LDC activities that are subject to state regulation, it continues to encourage LDCs and state regulators to consider alternatives and more flexible rate mechanisms in order to support its pipeline safety mandate.

**Q. What evidence have you seen indicating that the industry is making progress in replacing at-risk infrastructure?**

**A.** Since 2000, the miles of distribution main composed of cast iron, bare steel, unprotected coated steel and copper remaining in service have declined by 30% from

144,000 miles to 101,000 miles. Similarly, the number of distribution services composed of these materials remaining in service has declined by 47% from 8.9 million in 2000 to 4.7 million in 2014. Even so, considerable quantities of at-risk facilities remain, leading to an increase in the scope of LDC-specific plans to accelerate replacement.

**Q. What are the core elements of plans to accelerate the replacement of aging natural gas infrastructure?**

**A.** Based on my experience, there are three attributes of effective replacement plans. The first attribute is a set of clearly-defined goals that enable the LDC, regulators and other stakeholders to understand the plan's objectives, and to manage and monitor progress. The infrastructure challenges associated with replacing aging infrastructure are widespread, but reflect many aspects that are utility-specific. For instance, some LDCs that serve urban areas in the Northeast exhibit greater proportions of cast iron mains, while others have little cast iron main in service. The distinctive characteristics of each LDC's existing infrastructure affect its operational risks and should be reflected in the replacement plan. The distinctive characteristics of

Elizabethtown's system are discussed more fully in the testimony of Company witnesses Marano, MacLean and Scacifero. The second attribute is that the plan be long-term. A ten-year program achieves greater benefits than a one-to two-year program through enhanced resource management and cost efficiencies as well as through greater certainty. The third attribute is ensuring that an appropriate cost recovery approach is in place. Cost recovery directly impacts an LDC's ability to achieve replacement goals and should be explicitly considered as an element of effective planning.

## III. COST RECOVERY FOR ACCELERATED INFRASTRUCTURE REPLACEMENT

**Q. What cost recovery approaches are being utilized to facilitate accelerated replacement of aging gas distribution infrastructure?**

**A.** The heightened focus on pipeline safety and the need to accelerate capital investments in non-revenue producing replacement facilities has led many jurisdictions, including New Jersey, to implement various forms of targeted cost recovery mechanisms for replacement programs.

**Q. LDCs may change base rates by filing rate cases with their regulators. Why do you believe that base rate cases are not the most appropriate means of providing cost recovery for investments to replace vintage, at-risk infrastructure?**

**A.** The public policy imperative underlying the need to replace vintage, at-risk infrastructure leads to considerable upward pressure on rate base associated with accelerated investments that do not generate incremental revenues when they are placed in service. Relying on traditional base rate cases does not provide for timely recovery of needed investments and raises the likelihood of earnings attrition. In many cases, the resulting incentives are contrary to the desired outcome of the replacement plan.

A primary concern is that a traditional base rate approach does not provide for timely recovery of costs incurred by the LDC. Although approaches to establishing test year cost levels vary by jurisdiction, the time required for the LDC to prepare its rate case and the commission to issue its decision affect the length of time between when costs are incurred and when cost recovery begins. This timeframe, frequently referred to as “regulatory lag”, becomes a material concern for

investments, such as replacement pipeline, that do not generate incremental revenue at the time they are placed in service.

In addition, LDCs would likely need to file frequent, potentially annual, rate cases in order to avoid undesirable earnings attrition. Frequent rate case filings associated with a distinct, known and reviewable cost are an inefficient use of the base rate case process, require analysis of all aspects of a utility's service, and add to customer costs. Moreover, to the extent that other utilities face similar non-revenue producing capital requirements, frequent base rate cases for multiple utilities would most certainly place a severe strain on existing regulatory resources.

Regulatory lag and earnings attrition impede achievement of public and regulatory policy objectives favoring the accelerated replacement of leak-prone infrastructure. Moreover, the opportunity to achieve incremental benefits associated with longer-term replacement programs is foregone as a greater proportion of the replacement activity in any given year is more likely to be reactive rather than proactive. A reactive approach does not achieve the necessary safety enhancements as quickly and leads to higher costs over the long term.

**Q. Have pipeline safety regulators weighed in on the importance of cost recovery to infrastructure replacement efforts?**

**A.** Yes. A significant focus of the USDOT's Call to Action is the recognition that cost recovery mechanisms are necessary to facilitate needed accelerated investments in replacement infrastructure. PHMSA reiterated and expounded on the role of cost recovery mechanisms in meeting the nation's pipeline replacement needs in a white paper summarizing cost recovery approaches[1]. Specifically, PHMSA provided information to state utility regulators regarding replacement programs and cost recovery approaches implemented throughout the U.S. as an important component of the Call to Action. The transmittal letter accompanying the PHMSA white paper highlighted the nexus between the imperative to improve safety and providing appropriate cost recovery, encouraging regulators to exercise "continued diligence in promoting rate mechanisms that will encourage and will enable pipeline operators to take reasonable measures to repair, rehabilitate or replace high-risk gas pipeline infrastructure."

[1] *White Paper on State Pipeline Infrastructure Replacement Programs.* Released by PHMSA on December 19, 2011.

PHMSA placed greater focus on the replacement of cast iron facilities through a number of actions undertaken during 2012. PHMSA issued a cast iron pipe advisory bulletin to pipe operators and state pipeline safety regulators that encompassed a number of recommendations related to concerns associated specifically with cast iron pipe. In addition to a number of operational recommendations, the PHMSA bulletin encouraged the development of "rate adjustments and flexible rate recovery mechanisms to incentivize pipeline rehabilitation, repair and replacement programs." Subsequent to this bulletin, PHMSA collected information from each state concerning the remaining inventory of cast iron infrastructure and any existing state efforts to address cast iron infrastructure concerns.

**Q. Has NARUC considered the need to replace natural gas infrastructure?**

**A.** Yes. NARUC places significant importance on addressing the challenges associated with aging infrastructure and works closely with state safety inspectors and with PHMSA on these issues. As interest in accelerating the replacement of aging infrastructure has grown, NARUC adopted a resolution in 2013 encouraging its member

regulators to adopt programs that encourage the development of programs to replace aging facilities as quickly as possible, along with alternative rate mechanisms reflecting the financial realities of the specific utility. The NARUC resolution noted that concerns over timely cost recovery and regulatory lag represent potential impediments to accelerated replacement of at-risk facilities. A copy of the NARUC resolution, which also addressed investments for expansion of the delivery system, is provided as Schedule DPY-3.

**Q. Has the Board previously approved recovery mechanisms for natural gas infrastructure investments?**

**A.** Yes. In 2006, the Board approved an infrastructure cost recovery mechanism for Elizabethtown promoting the replacement of a portion of its aging cast iron mains[2]. Additionally, the Board approved infrastructure cost recovery mechanisms for all four gas utilities in New Jersey in 2009 that provided for investment in specified infrastructure projects that enhanced safety[3]. Subsequently, the Board approved additional utility-

[2] BPU Docket No. GR05040371.

[3] BPU Docket No. EO09010049.

specific infrastructure cost recovery mechanisms that addressed ongoing utility-specific infrastructure needs, including the need to replace aging facilities, including the Company's Accelerated Infrastructure Replacement ("AIR")[4] and Elizabethtown Natural gas Distribution Utility Reinforcement Effort ("ENDURE")[5] programs.

**Q. Are state utility regulators across the United States implementing alternative cost recovery mechanisms applicable to the replacement of aging infrastructure?**

**A.** Yes. According to information compiled by the American Gas Association, state regulators in a total of 38 states have approved cost recovery mechanisms that provide for alternative cost recovery approaches to replacement of aging utility infrastructure. This is a substantial increase compared with the 26 states with approved mechanisms just three years ago. The types of mechanisms approved include infrastructure cost trackers, infrastructure base rate surcharges, deferred regulatory assets and broad rate stabilization mechanisms. The majority of states without these types of cost recovery mechanisms have little or no vintage, at-risk mains and

[4] BPU Docket No. GO12070693.

[5] BPU Docket No. GO13090826.

services remaining in service[6]. The trend toward use of non-base rate approaches to cost recovery for aging infrastructure demonstrates broad support for these approaches throughout the gas distribution industry in the United States.

**Q. Please provide an overview of the general benefits of alternative cost recovery approaches for recovery of accelerated infrastructure replacement programs.**

**A.** Alternative cost recovery mechanisms address the regulatory lag and earnings attrition concerns associated with base rate approaches by explicitly recognizing the heightened focus on pipeline safety, the contribution of pipeline replacement efforts to improved safety and reliability, and the challenges to timely cost recovery attributable to large-scale investments in non-revenue producing facilities. Alternative approaches support the increased capital requirements of replacing and modernizing vintage, at-risk infrastructure, while preserving the fundamental elements of the traditional regulatory compact.

[6] West Virginia, one of the remaining states with a considerable proportion of leak-prone infrastructure, recently passed legislation providing for cost recovery for infrastructure replacement plans.

Each cost recovery mechanism reflects the unique operational circumstances of the LDC and the specific underlying approach to rate regulation of the jurisdiction. These various recovery mechanisms share many desirable outcomes related to efforts to address safety and reliability concerns associated with leak-prone elements of distribution systems including:

- eliminating disincentives to the efficient deployment of capital for safety and reliability through timely cost recovery;
- enabling accelerated investment in infrastructure replacement and enhancement to achieve benefits more rapidly;
- providing appropriate, timely and effective regulatory oversight of LDC initiatives to replace and upgrade important infrastructure; and
- allowing LDCs to reduce investment costs through broad scale, multi-year commitments that lead to maximum efficiency in managing workflow, reduced outside contractor costs, and better coordination with municipalities.

## IV. ELIZABETHTOWN SMART COST RECOVERY MECHANISM

**Q. Please briefly describe the mechanics of the proposed SMART cost recovery mechanism.**

**A.** Elizabethtown proposes to recover revenue requirements associated with actual investments in eligible facilities through a tariff adjustment rider to be effective after the Company's next rate case[7]. The revenue requirements include a return based upon net investment and an allowance for depreciation expense adjusted by a revenue factor reflecting income taxes, bad debt recovery and revenue-based assessments. The SMART tariff rider would apply as an equal per-therm rider to the rates for all firm customers.

The Company proposes to file with the BPU on or before January 1 of each year for approval to adjust the rider rate effective the subsequent April 1. The proposed rate will reflect projected SMART program revenue requirements and recoveries for the annual period beginning April 1 and any over or under-recovery of SMART program costs for the prior recovery period ended March 31. The SMART

[7] Elizabethtown is required to file a base rate case no later than September 1, 2016. The SMART tariff rider would apply to investments placed into service after the test year of the Company's 2016 rate case.

mechanism is described in greater detail in the testimony of Company witness Kaufmann.

**Q. How does the Company's proposal provide appropriate regulatory oversight of the infrastructure investments eligible for recovery through the SMART cost recovery mechanism?**

**A.** In my opinion, the implementation of the SMART cost recovery mechanism actually provides more enhanced regulatory oversight of accelerated program investments when compared with traditional base rate case review. The enhanced oversight results from separating infrastructure replacement investment from all other issues that would be reviewed in a comprehensive base rate case proceeding. This provides for more focused periodic evaluation of the Company's approach to addressing the infrastructure needs of its system. In conjunction with each annual filing, Elizabethtown will provide an update regarding its construction plans prior to the commencement of the next construction cycle. Subsequently, the Company will include actual construction cost information in a later annual filing. These steps facilitate closer ongoing communication and

review of infrastructure plans and expenditures than would be the case if relying on base rate cases alone. Additionally, allowing recovery of the costs of SMART-eligible investments through the infrastructure tariff rider cost recovery mechanism does not limit the prudence review that would occur in the Company's periodic rate cases. Therefore, the rights of all parties to challenge the prudence of investments made since the prior rate case are appropriately preserved.

**Q. What safeguards prevent the Company from spending more than is necessary on the infrastructure replacements?**

**A.** In the past, opponents of alternative cost recovery mechanisms suggested that the ability to utilize an infrastructure cost recovery mechanism provides an incentive to "gold-plate" the necessary infrastructure. Continued provision of competitively-priced service benefits the Company as well as customers and is a natural incentive to avoid over-spending on infrastructure, even with the implementation of a separate cost recovery mechanism. Moreover, the annual filing procedures that accompany the SMART cost recovery mechanism provide the BPU with more frequent opportunities to evaluate the Company's construction

practices and plans to ensure that over-spending is not occurring.

**Q. What are the benefits of the SMART cost recovery mechanism?**

**A.** In my opinion, the benefits of the proposed SMART cost recovery mechanism applicable to Elizabethtown's accelerated replacement program are compelling. The most significant benefit of the cost recovery mechanism is that it provides a means to implement the infrastructure replacements the Company requires by providing the Company with an essential revenue base to raise necessary capital for the operational component of the program. Appropriate cost recovery supports a proactive, longer-term plan that is essential to maximizing safety and reliability enhancements quickly, while realizing cost efficiencies associated with greater economies of scale in engineering, construction planning and completion. A longer-term plan also allows the Company to minimize disruptions to the communities where replacement work is needed. Methane emissions associated with newer facilities are lower than the old facilities being replaced, offering important environmental benefits as well.

The SMART cost recovery mechanism is essential to the overall approach to the infrastructure challenges faced by Elizabethtown, which is a comprehensive multi-year plan. The cost recovery mechanism appropriately emulates traditional base rate treatment of the investment costs, while ensuring timely recovery of investment costs. I believe that the SMART cost recovery proposal is fully consistent with public policy objectives promoting the consideration of alternative cost recovery mechanisms to facilitate accelerated replacement of aging infrastructure, including as recommended by the USDOT and by NARUC.

**Q. Does this conclude your prepared direct testimony?**

**A.** Yes, it does.

# Prior Testimony of
# Daniel P. Yardley

| Jurisdiction | Sponsor | Year | Topics | Docket |
|---|---|---|---|---|
| **Florida** | Peoples Gas System | 2008 | Cost Allocation and Rate Design | Docket No. 080318-GU |
| **Federal Energy Regulatory Commission** | Northern Distributor Group | 1992 | Cost of Service and Cost Allocation | RP92-1 |
| | Northern Distributor Group | 1995 | Cost of Service and Rate Design | RP95-185 |
| | Atlanta Gas Light, et al. | 2001 | Storage Cost Allocation | RP01-245 |
| | Bay State Gas and Northern Utilities | 2002 | Rate Design | RP02-13 |
| **New Hampshire** | Northern Utilities | 2005 | Jurisdictional Gas Cost Allocation | DG05-080 |
| **Massachusetts** | Bay State Gas | 1998 | Capacity Assignment | D.T.E. 98-32 |
| | Bay State Gas | 2001 | Contract Approval | D.T.E. 00-99 |
| | Bay State Gas | 2006 | Declining Use Rate Adjustment | D.T.E. 06-77 |
| | Bay State Gas | 2007 | Declining Use Rate Adjustment | D.P.U. 07-89 |
| | Bay State Gas | 2009 | Revenue Decoupling | D.P.U. 09-30 |
| **National Energy Board of Canada** | Alberta Northeast Gas, Ltd. | 2012 | TransCanada Pipeline Service Restructuring and Tolls | RH-3-2011 |
| | Alberta Northeast Gas, Ltd. | 2013 | TransCanada Pipeline Shipper Renewal Rights | RH-1-2013 |
| | Alberta Northeast Gas, Ltd. | 2014 | TransCanada Pipeline Service Service and Toll Design | RH-1-2014 |
| **New Jersey** | New Jersey Natural Gas | 1999 | Rate Unbundling | Docket No. GO99030123 |
| | Elizabethtown Gas, *et al.* | 1999 | Customer Account Services | Docket No. EX99090676 |
| | Elizabethtown Gas | 2002 | Cost Allocation and Rate Design | Docket No. GR02040245 |
| | South Jersey Gas Company | 2003 | Cost Allocation and Rate Design | Docket No. GR03080683 |
| | South Jersey Gas Company | 2004 | Capacity Charge | Docket No. GR04060400 |
| | New Jersey Natural Gas | 2005 | Revenue Decoupling | Docket No. GR0512020 |
| | South Jersey Gas Company | 2005 | Revenue Decoupling | Docket No. GR0512019 |
| | South Jersey Gas Company | 2007 | Annual Decoupling Adjustment | Docket No. GR07060354 |

# Prior Testimony of
# Daniel P. Yardley

| Jurisdiction | Sponsor | Year | Topics | Docket |
|---|---|---|---|---|
| **New Jersey** ***cont.*** | New Jersey Natural Gas | 2007 | Cost Allocation and Rate Design | Docket No. GR07110889 |
| | South Jersey Gas Company | 2008 | Annual Decoupling Adjustment | Docket No. GR08050367 |
| | Elizabethtown Gas | 2009 | Revenue Decoupling, Cost Allocation and Rate Design | Docket No. GR09030195 |
| | South Jersey Gas Company | 2009 | Annual Decoupling Adjustment | Docket No. GR09060340 |
| | South Jersey Gas Company | 2009 | Cost Allocation and Rate Design | Docket No. GR10010035 |
| | New Jersey Natural Gas | 2010 | Energy Efficiency Cost Recovery | Docket No. GR10030225 |
| | South Jersey Gas Company | 2011 | Annual Decoupling Adjustment | Docket No. GR11060337 |
| | New Jersey Natural Gas | 2011 | Energy Efficiency Cost Recovery | Docket No. GR11070425 |
| | South Jersey Gas Company | 2012 | Annual Decoupling Adjustment | Docket No. GR12060475 |
| | New Jersey Natural Gas | 2012 | Energy Efficiency Cost Recovery | Docket No. GR12070640 |
| | New Jersey Natural Gas and South Jersey Gas Company | 2013 | Revenue Decoupling | Docket No. GR13030185 |
| | South Jersey Gas Company | 2013 | Annual Decoupling Adjustment | Docket No. GR13050434 |
| | South Jersey Gas Company | 2013 | Cost Allocation and Rate Design | Docket No. GR13111137 |
| | South Jersey Gas Company | 2014 | Annual Decoupling Adjustment | Docket No. GR15050510 |
| | New Jersey Natural Gas | 2014 | Energy Efficiency Cost Recovery | Docket No. GO14121412 |
| | South Jersey Gas Company | 2015 | Annual Decoupling Adjustment | Docket No. GR1506____ |
| **North Carolina** | Piedmont Natural Gas Company | 2011 | Cost Allocation and Rate Design | Cocket No. G-9, Sub. 631 |
| **Rhode Island** | Providence Gas Company | 1996 | Cost Allocation and Rate Design | Docket No. 2076 |
| **Tennessee** | Chattanooga Gas Company | 2009 | Revenue Decoupling, Cost Allocation and Rate Design | Docket No. 09-00183 |
| | Piedmont Natural Gas Company | 2011 | Cost Allocation and Rate Design | Docket No. 11-00144 |
| **Wisconsin** | Wisconsin Power and Light | 2001 | Cost Allocation and Rate Design | Docket No. 6680-UR-111 |

| Miles of Distribution Main | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| State | Bare Steel | Coated Unprotected Steel | Iron | Copper | Subtotal Replacement Candidates | Percent of Total | Protected Steel | Plastic | Other | Total |
| **DC** | 27 | 61 | 415 | - | **503** | **41.5%** | 329 | 380 | - | **1,212** |
| **RI** | 296 | 187 | 822 | - | **1,305** | **40.9%** | 595 | 1,287 | 0 | **3,188** |
| **MA** | 1,638 | 1,117 | 3,435 | 0 | **6,190** | **28.8%** | 5,845 | 9,490 | 1 | **21,526** |
| **WV** | 2,842 | 200 | 14 | - | **3,055** | **28.5%** | 1,815 | 5,858 | 4 | **10,732** |
| **PA** | 7,427 | 1,486 | 3,195 | 2 | **12,111** | **25.5%** | 12,534 | 22,879 | 50 | **47,574** |
| **NY** | 6,353 | 1,346 | 4,086 | - | **11,785** | **24.3%** | 14,127 | 22,496 | 14 | **48,422** |
| **NJ** | 1,444 | 772 | 4,819 | 2 | **7,037** | **20.4%** | 10,558 | 16,834 | 6 | **34,436** |
| **CT** | 165 | 54 | 1,393 | 0 | **1,611** | **20.4%** | 3,264 | 3,014 | 0 | **7,889** |
| **HI** | 105 | - | - | - | **105** | **17.3%** | 164 | 339 | - | **609** |
| **OH** | 7,999 | 1,346 | 447 | 1 | **9,794** | **17.1%** | 20,801 | 26,334 | 452 | **57,381** |
| **KS** | 3,361 | 1 | 75 | - | **3,437** | **15.4%** | 7,328 | 11,619 | - | **22,384** |
| **MD** | 283 | 85 | 1,352 | - | **1,720** | **11.7%** | 5,308 | 7,706 | - | **14,734** |
| **MI** | 1,296 | 1,640 | 2,909 | 1 | **5,846** | **10.2%** | 20,938 | 30,569 | 14 | **57,367** |
| **NH** | 22 | 18 | 119 | - | **159** | **8.3%** | 726 | 1,023 | - | **1,908** |
| **MO** | 1,169 | - | 1,028 | 1 | **2,198** | **8.0%** | 11,631 | 13,486 | - | **27,315** |
| **CA** | 3,559 | 4,870 | - | - | **8,430** | **8.0%** | 43,901 | 53,127 | 1 | **105,458** |
| **NE** | 534 | 2 | 427 | - | **964** | **7.6%** | 6,676 | 5,094 | 11 | **12,746** |
| **AL** | 580 | 428 | 1,196 | - | **2,204** | **7.6%** | 11,666 | 15,242 | 30 | **29,142** |
| **AR** | 1,265 | 23 | 78 | 0 | **1,365** | **6.7%** | 7,441 | 11,658 | - | **20,464** |
| **TX** | 5,961 | 228 | 749 | - | **6,938** | **6.6%** | 40,280 | 57,991 | 47 | **105,255** |
| **OK** | 1,623 | 88 | - | - | **1,711** | **6.5%** | 9,320 | 15,157 | 0 | **26,188** |
| **VA** | 535 | 419 | 380 | 13 | **1,346** | **6.4%** | 5,571 | 14,221 | 5 | **21,143** |
| **FL** | 946 | 460 | 203 | - | **1,609** | **5.8%** | 10,552 | 15,423 | 8 | **27,591** |
| **ME** | 1 | 14 | 48 | - | **64** | **5.7%** | 214 | 840 | 1 | **1,118** |
| **LA** | 999 | 82 | 385 | 0 | **1,467** | **5.4%** | 14,203 | 11,347 | 2 | **27,019** |
| **KY** | 810 | 80 | 71 | - | **961** | **5.4%** | 7,767 | 9,138 | 17 | **17,884** |
| **DE** | 17 | 24 | 83 | - | **123** | **4.1%** | 610 | 2,300 | - | **3,034** |

| Miles of Distribution Main | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| State | Bare Steel | Coated Unprotected Steel | Iron | Copper | Subtotal Replacement Candidates | Percent of Total | Protected Steel | Plastic | Other | Total |
| **IN** | 686 | 573 | 239 | - | **1,497** | **3.7%** | 16,615 | 22,062 | - | **40,174** |
| **MS** | 504 | 6 | 74 | - | **584** | **3.5%** | 8,079 | 7,917 | - | **16,580** |
| **IL** | 279 | 3 | 1,804 | - | **2,086** | **3.4%** | 39,014 | 20,253 | - | **61,353** |
| **CO** | 208 | 864 | - | - | **1,072** | **3.0%** | 11,763 | 22,689 | 60 | **35,583** |
| **AZ** | 542 | - | - | - | **542** | **2.2%** | 6,999 | 16,790 | - | **24,331** |
| **IA** | 202 | 112 | 2 | - | **316** | **1.8%** | 7,480 | 10,202 | - | **17,998** |
| **MN** | 400 | 53 | 16 | - | **469** | **1.5%** | 7,032 | 23,529 | 5 | **31,034** |
| **NM** | 95 | 15 | - | - | **110** | **0.8%** | 5,543 | 7,961 | - | **13,614** |
| **SD** | 28 | 0 | 3 | - | **31** | **0.7%** | 1,805 | 2,899 | - | **4,736** |
| **WY** | 32 | - | - | - | **32** | **0.6%** | 2,054 | 3,381 | 5 | **5,473** |
| **TN** | 64 | - | 112 | - | **176** | **0.5%** | 14,838 | 23,433 | - | **38,447** |
| **AK** | 8 | - | - | - | **8** | **0.3%** | 466 | 2,673 | - | **3,147** |
| **ND** | 8 | - | - | - | **8** | **0.2%** | 1,186 | 2,240 | 0 | **3,434** |
| **GA** | 87 | - | 4 | - | **91** | **0.2%** | 17,153 | 26,681 | - | **43,926** |
| **MT** | 8 | 0 | - | - | **8** | **0.1%** | 2,250 | 4,847 | - | **7,105** |
| **SC** | 9 | - | - | - | **9** | **0.0%** | 8,341 | 12,875 | - | **21,225** |
| **OR** | 4 | - | - | - | **4** | **0.0%** | 7,855 | 7,634 | 29 | **15,522** |
| **WA** | 4 | - | - | - | **4** | **0.0%** | 8,574 | 13,567 | 131 | **22,276** |
| **ID** | 1 | - | - | - | **1** | **0.0%** | 2,894 | 5,282 | - | **8,178** |
| **NV** | - | 0 | - | - | **0** | **0.0%** | 1,401 | 8,432 | - | **9,833** |
| **UT** | 0 | - | - | - | **0** | **0.0%** | 3,926 | 13,309 | - | **17,235** |
| **NC** | - | - | - | - | **-** | **0.0%** | 10,769 | 19,214 | - | **29,983** |
| **PR** | - | - | - | - | **-** | **0.0%** | - | 31 | - | **31** |
| **VT** | - | - | - | - | **-** | **0.0%** | 187 | 570 | - | **757** |
| **WI** | - | - | - | - | **-** | **0.0%** | 12,796 | 25,587 | 36 | **38,419** |
| **Total** | 54,427 | 16,657 | 29,983 | 20 | **101,087** | **8.0%** | 473,187 | 688,908 | 930 | **1,264,112** |

| Number of Distribution Services | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| State | Bare Steel | Coated Unprotected Steel | Iron | Copper | Subtotal Replacement Candidates | Percent of Total | Protected Steel | Plastic | Other | Total |
| **RI** | 39,907 | 9,358 | 190 | 205 | **49,660** | **25.6%** | 9,989 | 133,024 | 942 | **193,615** |
| **DC** | 6,711 | 12,288 | - | 11,073 | **30,072** | **24.3%** | 4,674 | 89,179 | - | **123,925** |
| **HI** | 6,991 | - | - | 30 | **7,021** | **20.2%** | 5,037 | 19,781 | 2,853 | **34,692** |
| **NY** | 312,674 | 131,342 | 7,636 | 179,461 | **631,113** | **20.0%** | 307,217 | 2,203,011 | 8,560 | **3,149,901** |
| **WV** | 80,141 | 1,699 | 40 | 31 | **81,911** | **19.3%** | 67,177 | 271,728 | 4,304 | **425,120** |
| **MA** | 180,669 | 54,117 | 1,539 | 10,735 | **247,060** | **19.1%** | 155,703 | 796,643 | 95,690 | **1,295,096** |
| **MI** | 47,320 | 182,403 | 16 | 297,535 | **527,274** | **16.2%** | 502,313 | 2,182,175 | 36,042 | **3,247,804** |
| **AL** | 143,417 | 3,024 | 220 | 1,106 | **147,767** | **14.3%** | 236,232 | 650,653 | 1,132 | **1,035,784** |
| **CT** | 52,827 | 8,102 | 40 | 1,221 | **62,190** | **14.2%** | 68,223 | 301,139 | 5,431 | **436,983** |
| **MD** | 87,632 | 9,037 | 32 | 47,918 | **144,619** | **14.1%** | 140,417 | 738,740 | - | **1,023,776** |
| **NJ** | 251,701 | 4,496 | - | 66,569 | **322,766** | **13.8%** | 396,709 | 1,623,788 | - | **2,343,263** |
| **PA** | 285,402 | 63,919 | 73 | 19,717 | **369,111** | **13.0%** | 289,819 | 2,127,208 | 47,477 | **2,833,615** |
| **KS** | 106,207 | 6,137 | - | 339 | **112,683** | **11.8%** | 97,078 | 744,607 | 4 | **954,372** |
| **DE** | 836 | 12,648 | - | 4,790 | **18,274** | **10.4%** | 16,445 | 139,850 | 1,493 | **176,062** |
| **CA** | 17,427 | 870,990 | - | 5,043 | **893,460** | **10.3%** | 2,237,044 | 5,552,805 | 1,290 | **8,684,599** |
| **NH** | 6,625 | 1,928 | 31 | 273 | **8,857** | **9.8%** | 14,576 | 66,682 | 82 | **90,197** |
| **OH** | 132,137 | 29,899 | 61 | 95,111 | **257,208** | **7.3%** | 517,703 | 2,268,743 | 499,285 | **3,542,939** |
| **AR** | 22,316 | 26,531 | 4 | 6 | **48,857** | **7.2%** | 224,842 | 405,409 | 4 | **679,112** |
| **LA** | 27,013 | 29,840 | 994 | 3,534 | **61,381** | **5.4%** | 576,225 | 492,774 | 2,028 | **1,132,408** |
| **VA** | 13,694 | 26,205 | 88 | 26,219 | **66,206** | **5.3%** | 133,545 | 1,037,738 | 5,697 | **1,243,186** |
| **MO** | 12,302 | 1,291 | - | 67,233 | **80,826** | **5.3%** | 223,449 | 1,221,342 | 72 | **1,525,689** |
| **FL** | 33,276 | 10,230 | - | 305 | **43,811** | **5.1%** | 188,805 | 631,136 | 2,268 | **866,020** |
| **OK** | 50,220 | 3,533 | - | - | **53,753** | **4.1%** | 444,319 | 817,917 | 32 | **1,316,021** |
| **KY** | 24,451 | 1,114 | 561 | 7,458 | **33,584** | **4.0%** | 240,795 | 566,432 | 836 | **841,647** |
| **TX** | 131,520 | 18,828 | - | 2,333 | **152,681** | **3.2%** | 1,460,834 | 3,214,074 | 3,962 | **4,831,551** |
| **NE** | 4,518 | 919 | - | 9,281 | **14,718** | **2.6%** | 202,050 | 319,031 | 41,116 | **576,915** |
| **CO** | 16,595 | 23,421 | - | - | **40,016** | **2.4%** | 484,598 | 1,085,199 | 43,590 | **1,653,403** |

| Number of Distribution Services | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| State | Bare Steel | Coated Unprotected Steel | Iron | Copper | Subtotal Replacement Candidates | Percent of Total | Protected Steel | Plastic | Other | Total |
| **IA** | 7,743 | 10,212 | 7 | 377 | **18,339** | **1.9%** | 276,563 | 629,368 | 18,266 | **942,536** |
| **IL** | 24,165 | 617 | 347 | 46,585 | **71,714** | **1.9%** | 800,571 | 2,124,596 | 714,199 | **3,711,080** |
| **NM** | 10,401 | 42 | - | - | **10,443** | **1.7%** | 230,330 | 391,334 | - | **632,107** |
| **WY** | 3,029 | - | - | - | **3,029** | **1.6%** | 73,402 | 107,918 | 9 | **184,358** |
| **MN** | 2,914 | 6,785 | - | 11,940 | **21,639** | **1.4%** | 122,913 | 1,345,394 | 9,132 | **1,499,078** |
| **SD** | 1,957 | 597 | - | 44 | **2,598** | **1.3%** | 46,017 | 150,827 | 1,360 | **200,802** |
| **ME** | 156 | 201 | 39 | - | **396** | **1.2%** | 252 | 31,182 | 32 | **31,862** |
| **AK** | - | 9 | - | 1,554 | **1,563** | **1.2%** | 14,492 | 110,393 | - | **126,448** |
| **AZ** | 11,046 | - | - | - | **11,046** | **0.9%** | 186,639 | 1,076,104 | - | **1,273,789** |
| **WI** | - | 30 | - | 14,018 | **14,048** | **0.9%** | 267,064 | 1,357,850 | 1,599 | **1,640,561** |
| **IN** | 3,119 | 13,305 | - | 278 | **16,702** | **0.8%** | 465,450 | 1,505,215 | 280 | **1,987,647** |
| **GA** | 10,934 | 87 | - | 10 | **11,031** | **0.5%** | 430,994 | 1,591,606 | - | **2,033,631** |
| **TN** | 2,284 | 1,337 | - | 2,206 | **5,827** | **0.4%** | 401,980 | 928,271 | - | **1,336,078** |
| **MS** | 1,484 | 281 | 1 | 185 | **1,951** | **0.3%** | 268,069 | 330,084 | - | **600,104** |
| **MT** | 570 | 5 | - | - | **575** | **0.2%** | 105,997 | 189,614 | - | **296,186** |
| **ND** | 68 | - | - | 27 | **95** | **0.1%** | 41,110 | 111,938 | 1,558 | **154,701** |
| **SC** | 390 | - | - | - | **390** | **0.0%** | 176,774 | 606,917 | - | **784,081** |
| **WA** | 87 | - | - | - | **87** | **0.0%** | 299,018 | 934,112 | 2,050 | **1,235,267** |
| **OR** | 55 | - | - | - | **55** | **0.0%** | 234,116 | 545,933 | 2,132 | **782,236** |
| **ID** | - | - | - | - | **-** | **0.0%** | 93,515 | 327,849 | 106 | **421,470** |
| **NC** | - | - | - | - | **-** | **0.0%** | 275,990 | 1,139,005 | - | **1,414,995** |
| **NV** | - | - | - | - | **-** | **0.0%** | 38,068 | 710,085 | 180 | **748,333** |
| **PR** | - | - | - | - | **-** | **0.0%** | - | 497 | - | **497** |
| **UT** | - | - | - | - | **-** | **0.0%** | 141,577 | 722,617 | 4,833 | **869,027** |
| **VT** | - | - | - | - | **-** | **0.0%** | 4,628 | 32,806 | - | **37,434** |
| **Total** | 2,174,931 | 1,576,807 | 11,919 | 934,750 | **4,698,407** | **7.0%** | 14,241,347 | 46,702,323 | 1,559,926 | **67,202,003** |

***Resolution Encouraging Natural Gas Line Investment and the Expedited Replacement of High-Risk Distribution Mains and Service Lines***

**WHEREAS**, NARUC and its members have long focused on pipeline safety, led by the Committee on Gas, established in 1964, the Staff Subcommittee on Pipeline Safety, the Task Force on Pipeline Safety, and the newly created Subcommittee on Pipeline Safety; *and*

**WHEREAS**, NARUC enjoys a close working relationship with the National Association of Pipeline Safety Representatives (NAPSR), a national organization representing the State pipeline inspection workforce throughout the country; *and*

**WHEREAS**, NAPSR in November 2011 released an exhaustive compendium of State pipeline safety programs which exceed the minimum federal standards States must meet in order to receive funding from the U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA); *and*

**WHEREAS**, NARUC and the Committee on Gas maintain a strong cooperative partnership with PHMSA, which is essential to ensure State and federal safety regulators work closely on pipeline safety; *and*

**WHEREAS**, More than two million miles of natural gas distribution pipelines crisscross the United States, connecting homes and businesses with one of America's most important energy resources. These pipelines are the safest, most reliable and cost-effective way to transport this essential fuel across the country; *and*

**WHEREAS**, The safe and reliable delivery of natural gas to homes and businesses and its use in providing new products and services is vital to the U.S. and of paramount importance to members of NARUC; *and*

**WHEREAS**, By law, the utilities are charged with knowing the location, material, age and condition of their systems. Developing essential data to evaluate the integrity of the systems is the foundation for any determination over what regulators need to fund in rates, as well as what rate recovery methodology best suits a particular case; *and*

**WHEREAS**, Many States and distribution utilities are undergoing significant pipeline replacement programs to replace aging pipe; *and*

**WHEREAS**, Many distribution companies are being proactive about replacing their aging pipelines through a risk-based approach focusing on prioritizing safety, asset replacement, and rate impact; *and*

**WHEREAS**, Alternative rate-recovery mechanisms may help expedite the replacement and expansion of the pipeline systems by promoting more timely rate recovery for investments in infrastructure, safety and reliability; *and*

**WHEREAS**, Alternative rate recovery mechanisms may help eliminate near-term financial barriers of traditional ratemaking policies such as "regulatory lag" and promote access to lower-cost capital; *and*

**WHEREAS**, The adoption of alternative rate policies may be very effective for advancing critical safety and reliability infrastructure upgrades, *and*

**WHEREAS,** Notwithstanding the positive advances in innovative ratemaking and proactive remediation by many distribution companies, utility management bears ultimate responsibility for their respective systems and should seek to work, in ways permissible under their respective State rules and law, collaboratively with Commissioners and/or Commission staff to prioritize asset replacement based upon asset risk, available technology, public safety risk, rate impact, *and*

**WHEREAS**, Ensuring pipeline safety is about more than just replacement and cost recovery. It is also about effective communication, enforcement, risk sharing, and establishing a long range strategic plan that ensures a safe and reliable gas pipeline system; *and*

**WHEREAS**, As evidenced in the NAPSR 2011 Compendium, State commissions and inspectors are best suited to determine how best to finance system improvements because each State is different and the needs and financial circumstances of each utility system are unique; *now, therefore be it*

**RESOLVED**, That the Board of Directors of the National Association of Regulatory Utility Commissioners, convened at the 2013 Summer Committee Meetings, in Denver, Colorado, encourages regulators and industry to consider sensible programs aimed at replacing the most vulnerable pipelines as quickly as possible along with the adoption of rate recovery mechanisms that reflect the financial realities of the particular utility in question; *and be it further*

**RESOLVED**, That State commissions should explore, examine, and consider adopting alternative rate recovery mechanisms as necessary to accelerate the modernization, replacement and expansion of the nation's natural gas pipeline systems, *and be it further*

**RESOLVED**, That NARUC encourages its members to reach out to PHMSA, NAPSR, industry, State and local officials, and the general public about pipeline safety and replacement programs.

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*Sponsored by the Committee on Gas and the Committee on Critical Infrastructure*
*Adopted by the NARUC Board of Directors July24, 2013*

**EXHIBIT P-5**

**PIVOTAL UTILITY HOLDINGS, INC.**
**d/b/a ELIZABETHTOWN GAS**
**DIRECT TESTIMONY OF**
**THOMAS KAUFMANN**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

**A.** My name is Thomas Kaufmann. My business address is 520 Green Lane, New Jersey 07083.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

**A.** I am employed by Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("Elizabethtown" or "Company") as Manager of Rates and Tariffs.

**Q. WHAT IS THE SCOPE OF YOUR DUTIES AT ELIZABETHTOWN?**

**A.** I am responsible for designing and developing rates and rate schedules for regulatory filings with the New Jersey Board of Public Utilities ("Board" or "BPU") and internal management purposes. I also oversee daily rate department functions, including tariff administration, monthly parity pricing, competitive analyses and preparation of management reports.

**Q. PLEASE DESCRIBE YOUR PROFESSIONAL QUALIFICATIONS AND BUSINESS EXPERIENCE.**

**A.** In June 1977, I graduated from Rutgers University, Newark, N.J. with a Bachelor of Arts degree in Business Administration, majoring in accounting and economics. In July 1979, I graduated from Fairleigh Dickinson University, Madison, N.J. with a Master's of Business Administration, majoring in finance.

My professional responsibilities have encompassed financial analysis, accounting, planning, and pricing in manufacturing and energy services companies in both regulated and unregulated industries. In 1977, I was employed by Allied Chemical Corp. as a staff accountant. In 1980, I was employed by Celanese Corp. as a financial analyst. In 1981, I was employed by Suburban Propane as a Strategic Planning Analyst, promoted to Manager of Rates and Pricing in 1986 and to Director of Acquisitions and Business Analysis in 1990. In 1993, I was employed by Concurrent Computer as a Manager, Pricing Administration. In 1996, I joined NUI Corporation ("NUI") as a Rate Analyst, was promoted to Manager of Regulatory Support in August 1997 and Manager of Regulatory Affairs in February 1998, and named Manager of Rates and Tariffs in July 1998. NUI Corporation was acquired by AGL Resources Inc. ("AGLR") in November 2004. AGLR is now the parent company of Elizabethtown.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

**A.** The purpose of my testimony is to support Elizabethtown's petition in this proceeding to establish a Safety, Modernization and Reliability Tariff ("SMART") Program to permit the Company to undertake a ten-year program to modernize and enhance the reliability and safety of its gas distribution system and obtain timely recovery of the costs associated with the Program. More specifically, I support Elizabethtown's proposal to establish a rider to its Tariff – the SMART Rider – to enable the Company to recover SMART Program costs to be incurred beyond the test year of its next base rate case which will be filed no later than September 1, 2016 ("2016 base rate case"). As part of my testimony, I will provide illustrative calculations of the SMART Rider rate that would be assessed to all firm customers served under Service Classifications RDS, SGS, GDS, LVD, EGF, GLS, NGV and FTS.

**Q. PLEASE DESCRIBE HOW ELIZABETHTOWN PROPOSES TO RECOVER THE COSTS OF THE PROPOSED SMART PROGRAM?**

**A.** Elizabethtown assumes that the SMART Program will commence during the test period of its 2016 base rate case. Elizabethtown proposes to recover the proposed

SMART Program costs incurred during the test year of the 2016 base rate case through the base rates that will be established in that proceeding. For SMART Program costs that are incurred beyond the end of the test year, the Company proposes to recover such costs through the SMART Rider. Elizabethtown proposes that the initial SMART Rider rate would take effect on the effective date of the revised base rates that would be established in the 2016 base rate case. Any SMART Program costs incurred after the end of the test year of the 2016 base rate case would be eligible for deferral and recovery through the SMART Rider.

**Q. HOW DOES THE COMPANY PROPOSE TO DETERMINE THE SMART RIDER RATE?**

**A.** The Company proposes to determine the SMART Rider rate using the same methodology approved by the Board for Elizabethtown's Utility Infrastructure Enhancement ("UIE") program in the Board's April 28, 2009 Order in Docket Nos. EO09010049 and GO09010053 et al. ("April 28 Order"). The Company proposes to establish an initial SMART Rider rate designed to recover Elizabethtown's projected SMART Program costs from the end of the test year of its 2016 base rate case (currently anticipated to

be April 1, 2017) through March 31, 2018, subject to reconciliation in an annual SMART Rider filing to be filed by the Company on or before January 1, 2018. The January 1 filing would propose a revised SMART Rider rate to be effective April 1, 2018 and would reflect (i) the reconciliation of actual and projected SMART Program costs and cost recoveries through March 31 of the year in which the filing was made ("the Base Year"), and (ii) projected SMART Program costs through the next succeeding April 1 through March 31 SMART Recovery Year ("Recovery Year").

**Q. HOW LONG WOULD THE SMART RIDER REMAIN IN EFFECT?**

**A.** The SMART Rider would remain in effect until the conclusion of Elizabethtown's first base rate case after the SMART Program is completed. The reconciliation filing that I described above would be made every year on or before January 1 and would reconcile SMART Program costs and cost recoveries for the year beginning on the previous April 1 and ending on March 31 of the Base Year and would also provide for recovery of the projected SMART Program costs for the next succeeding Recovery Year.

**Q. PLEASE EXPLAIN HOW THE COMPANY PROPOSES TO CALCULATE THE ANNUAL SMART RIDER RATE.**

**A.** The proposed SMART Rider rate would be calculated by summing (i) the actual and projected Base Year (over)/under recovery balance as of March 31 of the Base Year, (ii) the projected revenue requirement for SMART Program projects for the upcoming Recovery Year; and (iii) the sum of the monthly carrying costs on the monthly Base Year over or under recovery balances. This sum would then be divided by the projected volumes for the service classifications subject to the SMART Rider for the upcoming Recovery Year, with the resulting quotient adjusted for applicable taxes and assessments to arrive at a SMART Rider rate per therm, inclusive of applicable sales and use taxes. The January 1 filing would include Plant In-Service actual and projected balances based on project spending completed and/or projected to be completed in the Base Year and the prospective Recovery Year.

**Q. PLEASE EXPLAIN HOW THE COMPANY PROPOSES TO CALCULATE THE PROJECTED MONTHLY REVENUE REQUIREMENT FOR THE SMART PROGRAM PROJECTS.**

**A.** The monthly revenue requirement would be developed by determining the gross plant in service associated with the SMART Projects placed in service less accumulated depreciation, calculated using an approved composite percentage, and accumulated deferred income tax credits to derive a rate base. An average rate base, the average of the beginning and end of month balances, would be multiplied by the Company's after-tax Weighted Average Cost of Capital ("WACC"), grossed up for the Company's revenue expansion factor and divided by twelve (12) to derive a monthly return on investment. The sum of this amount and the monthly depreciation expense calculated at the then-effective composite depreciation rate would equal the monthly revenue requirement. The Company's WACC, revenue expansion factor and depreciation rates would be updated for prospective application to those approved for the Company by the Board in any future base rate case.

**Q. WHAT COSTS ARE PROPOSED TO BE RECOVERED THROUGH THE SMART RIDER RATE?**

**A.** The costs to be recovered through the SMART Rider rate would be the return on and return of the Company's investment in the SMART Projects. Specifically, the

Company is proposing to recover the monthly revenue requirements as described above and carrying costs on any SMART Rider rate-related under and/or over recovery balances. The Company is not proposing to separately recover cost of removal expense associated with plant that is retired in connection with SMART Projects through the SMART Rider.

**Q. PLEASE EXPLAIN WHAT THE REVENUE EXPANSION FACTOR DOES.**

**A.** The revenue expansion factor adjusts the after-tax weighted average cost of capital for state and federal income taxes and the costs associated with BPU and Rate Counsel assessments and uncollectibles. For illustrative rate calculation purposes, the revenue expansion factor used to estimate rate impacts is that which was approved by the Board in the Company's 2009 base rate case adjusted for the change in the Corporate Business Tax rate adopted in 2010.

**Q. WHAT WOULD BE THE SOURCE OF THE WEIGHTED AVERAGE COST OF CAPITAL AND REVENUE EXPANSION FACTOR USED IN DETERMINING THE SMART RIDER RATE?**

**A.** The applicable weighted average cost of capital and revenue expansion factor applicable to the SMART Rider

would be determined initially by the Board in Elizabethtown's 2016 base rate case and would be subject to prospective adjustment in any future Elizabethtown base rate cases during the term of the SMART Program. For illustrative purposes the WACC that underlies the Company's current base rates is being used.

**Q. HOW WOULD THE BOOK DEPRECIATION EXPENSES BE DETERMINED?**

**A.** The Company proposes to calculate book depreciation expenses using a composite depreciation rate as it has in current and past infrastructure programs. The composite rate would be developed using depreciation percentage rates determined in the Company's 2016 base rate case applied to the percentage of various plant categories (*i.e.* mains and services) associated with the low pressure replacement projects that were placed in service as part of the Company's Accelerated Infrastructure Replacement program ("AIR LP projects"), which are similar to the projects that will be undertaken as part of the SMART Program. For illustrative purposes, the composite percentage rate calculated using the depreciation rates that underlie the Company's current base rates as applied to the Company's in-service AIR LP projects through June 2015 results in a composite

depreciation rate of 1.94%, calculated as shown on Book Depreciation Rate Schedule TK-1, which is attached to my testimony.

**Q. HOW WOULD THE CARRYING COSTS ON ANY SMART RIDER RATE-RELATED UNDER AND OVERRECOVERY BALANCES BE DETERMINED?**

**A.** The monthly interest on net over and under recoveries would be based on the Company's actual interest rate on its commercial paper and/or bank credit lines, or if such commercial paper and/or bank credit lines have been fully utilized, the interest rate would be equal to the Company's pre-tax return as established in the most recent base rate case. The interest on monthly balances would not be compounded monthly but would be rolled into the next Recovery Year's opening over/under recovery balance.

**Q. WHAT EXPENDITURES WOULD BE INCLUDED IN SMART PROGRAM-RELATED PLANT-IN-SERVICE BALANCE?**

**A.** The SMART Program-related Plant In-Service balance would include all capital expenditures associated with SMART Projects placed in service, including actual costs of engineering, design and construction and property acquisitions, including actual labor, materials, overhead

and a capitalized Allowance for Funds Used During Construction ("AFUDC") associated with SMART Program projects. SMART Project costs would be recorded in Construction Work In Progress ("CWIP")and then in Plant In-Service when gas is introduced into the new main associated with a particular project. The AFUDC rate on CWIP balances would be determined using the modified Federal Energy Regulatory Commission methodology.

**Q. HOW WOULD DEFERRED INCOME TAXES BE CALCULATED?**

**A.** Deferred income taxes would be calculated by multiplying the difference in the Company's tax depreciation expense and book depreciation expense for the plant subject to the Rider by the effective income tax rate. The Company's tax depreciation expense would be adjusted for any bonus depreciation in accordance with federal tax laws. The current tax rate used in the calculation of deferred taxes for Elizabethtown is 40.85%.

**Q. WHAT METHODOLOGY DOES THE COMPANY PROPOSE TO USE TO PROJECT FIRM SALES AND SERVICES FOR THE SMART RECOVERY YEAR IN ORDER TO DERIVE THE COMPANY'S PROPOSED SMART RIDER RATE?**

**A.** The methodology used would be the same as that used in developing the demand forecast that supports Elizabethtown's annual Basic Gas Supply Service and Societal Benefits Charge filings.

**Q. WHY IS IT APPROPRIATE FOR THE BOARD TO AUTHORIZE THE COMPANY TO IMPLEMENT THE PROPOSED SMART RIDER?**

**A.** Approval of the SMART Rider is consistent with the ratemaking approach approved by the Board in its April 28 Order in the Company's UIE proceeding. Until such time as the costs of the SMART Program are included in base rates, the Company should be permitted to adjust the SMART Rider rate on a provisional basis to ensure current recovery of SMART related costs. As discussed by Company witnesses Daniel P. Yardley and Brian MacLean, regulators in New Jersey and numerous other states have approved rate mechanisms that permit gas utilities to recover the cost of infrastructure replacement programs. The cost recovery mechanism that we are proposing will ensure timely recovery of no more and no less than Elizabethtown's actual SMART Program costs.

**Q. DOES YOUR TESTIMONY INCLUDE ANY SCHEDULES THAT ILLUSTRATE HOW THE SMART RIDER RATE AND REVENUE REQUIREMENT WILL BE DETERMINED?**

**A.** Yes. My testimony includes illustrative schedules and a proposed tariff sheet that were prepared under my direction and supervision. These schedules include an illustrative calculation of the first two years of the SMART Rider rate, the first year being set for the period April 1, 2017 through March 31, 2018 in the 2016 base rate case using a projected revenue requirement divided by projected firm sales. The second year rate reconciles the Base year and establishes a rate for the SMART Recovery Year beginning April 1, 2018 and ending March 31, 2019 using the WACC and depreciation rates that underlie Elizabethtown's current base rates. The schedules are as follows:

(a) Tariff Schedule TK-1 consists of revised tariff sheet in redlined and clean form that set forth the SMART Rider;

(b) SMART Schedule TK-1 sets forth an illustrative annual calculation of the proposed SMART Rider rates which are assumed to be effective during the period April 1, 2017 through March 31, 2019, inclusive of a

reconciliation of the results of the first year;

(c) SMART Schedule TK-2 sets forth an illustrative calculation of the carrying costs and reconciliation of the SMART Rider rate; and

(d) SMART Schedule TK-3, consisting of four (4) pages, sets forth an illustrative calculation of the monthly SMART revenue requirement; and

(e) SMART Schedule TK-4 sets forth illustrative SMART Rider rates, inclusive of taxes and assessments, for the SMART Recovery Years assumed to begin on April 1, 2017, as well as illustrative bill impacts for a residential heating customer with annual usage of 1,000 therms during the Program's proposed ten-year period; and

(f) Book Depreciation Rate Schedule TK-1 sets forth the proposed methodology to calculate a composite book depreciation rate.

**Q. HAS THE COMPANY PREPARED AN ESTIMATE OF THE IMPACT THAT THE OPERATION OF THE SMART RIDER RATE WILL HAVE ON CUSTOMER BILLS OVER THE LIFE OF THE SMART PROGRAM?**

**A.** Yes. Such an estimate has been prepared using the rate assumptions that I have described previously. SMART Schedule TK-3 sets forth the estimated monthly SMART Rider revenue requirement over the period April 1, 2016 through March 31, 2026. SMART Schedule TK-4 sets forth the projected annual revenue requirement and projected impact on a residential heating customer using 1,000 therms annually. As set forth on SMART Schedule TK-4, the projected annual increases associated with the SMART Program range between 1.4% and 3.2% annually over the life of the program. It should be kept in mind that this estimate uses inputs for the WACC, depreciation rates and revenue expansion factor that are likely to change in the Company's 2016 base rate case.

**Q. UNDER THE COMPANY'S PROPOSAL, WHAT OPPORTUNITY WILL THE BPU AND OTHER PARTIES HAVE TO REVIEW THE SMART PROGRAM COSTS?**

**A.** As discussed above, Elizabethtown proposes to make annual SMART Program reconciliation filings. The BPU and other parties will have the opportunity to review these filings to ensure that the proposed rates are being calculated in accordance with the Company's tariff and the BPU order approving the SMART Program and any other relevant BPU

orders. The SMART Program Rider rates will be recovered on a provisional basis and will be deemed final when the SMART Program project costs are rolled into base rates. However, the issue to be determined with respect to the SMART Program costs in the Company's base rate cases would be limited to whether those costs were prudently incurred. If no base rate case were filed within two years of the completion of the SMART Program in 2026, then we propose that the record of Elizabethtown's then-most recent base rate case would be reopened to permit review of the prudence of all SMART Program expenditures not previously reviewed for prudence and the roll-in of all remaining SMART Program costs into final base rates.

**Q. DOES THE COMPANY PROPOSE TO SUBMIT ANY OTHER INFORMATION CONCERNING THE SMART PROGRAM TO THE BOARD IN ADDITION TO ITS ANNUAL SMART RIDER RECONCILIATION FILING?**

**A.** Yes. As discussed by Company witness Michael P. Scacifero, Elizabethtown proposes to provide the Board and all parties reports consistent with those provided in connection with the UIE programs.

**Q. IF THE COMPANY FILES BASE RATE CASES BETWEEN THE 2016 BASE RATE CASE AND THE END OF THE SMART PROGRAM, HOW WILL SUCH PROCEEDINGS AFFECT THE SMART RIDER?**

**A.** If the Company files such cases, it will propose to roll-in the balance of its then-existing SMART Program costs as of the end of the test year. In such cases, the prudence of SMART Program costs incurred through the end of the test year will also be subject to review. In addition, the WACC, revenue expansion factor and depreciation rates used in determining the SMART Rider rates will be subject to prospective review in future Company base rate cases.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

**A.** Yes it does.

ELIZABETHTOWN GAS
B. P. U. NO. 14 – GAS
CANCELLING
B. P. U. NO. 13 – GAS

SECOND REVISED SHEET NO. 118

RIDER "F"

## SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")

Applicable to all RDS, SGS, GDS, NGV, LVD, EGF, GLS and FTS customers receiving service through the Company's distribution system. The SMART rate shall be collected on a per therm basis and shall remain in effect until changed by order of the NJBPU.

$0.0144 per therm

In accordance with P.L. 1997, c. 162, the charges applicable under this Rider include provision for the New Jersey Sales and Use Tax, and when billed to customers exempt from this tax shall be reduced by the amount of such tax included therein.

The SMART Program is a ten-year program to modernize and enhance the reliability and safety of the Company's gas distribution system by replacing its vintage, at-risk facilities which include aging cast iron mains, unprotected and bare steel mains and services, ductile iron and vintage plastic mains and vintage plastic and copper services. As part of the SMART Program, Elizabethtown is also relocating inside meter sets outside, upgrading its legacy low pressure system to an elevated pressure system, and installing excess flow valves and retiring district regulators that are presently required to operate the existing low pressure system. The costs recovered through the SMART Program Rider rate include the Company's after-tax weighted average cost of capital as adjusted upward for the revenue expansion factor, depreciation expense, interest on monthly over and under recovery balances and applicable taxes and assessments.

Date of Issue:

Effective: Service Rendered on and after

Issued by: Brian MacLean, President
520Green Lane
Union, New Jersey 07083

Filed Pursuant to Order of the Board of Public Utilities
Dated in Docket No.

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SAMPLE CALCULATION OF ANNUAL RIDER RATE**

| | | | First Year 04/01/17 | Second Year 04/01/18 | |
|---|---|---|---|---|---|
| 1 | Prior Year (Over)/ Under Balance (Sch. TK-2) | | | $0 | |
| 2 | Current Year Ending: | Mar-18 | | | |
| | a. Current Year Revenue Requirement ( Sch. TK-2) | | | $5,462,665 | |
| | b. Current Year Recoveries (Sch. TK-2) | | | ($5,467,703) | |
| | c. Current Year Carry Costs (Sch.TK-2) | | | ($611) | |
| | d. Current Year Ending Balance (Sum L1-L2) | | | ($5,648) | |
| 3 | Estimated Revenue Requirement 12 Mos Ending: (Sch. TK-3) | | Mar-18 $5,462,665 | Mar-19 $17,292,518 | |
| 4 | Total Proposed Recoveries (Sum L1+L2) | | $5,462,665 | $17,286,870 | |
| 5 | Projected Firm Sales and Transportation Therms: | | | | |
| | Residential & Gas Lights | 222,831,600 | | | |
| | Commercial | 136,734,563 | | | |
| | Industrial | 48,057,940 | 407,624,103 | 407,624,103 | therms |
| 6 | SMART Rate, before taxes (L4/L5), per therm | | $0.0134 | $0.0424 | /therm |
| 7 | BPU & RC Assessment Factor | | $1.0027 | $1.0027 | |
| 8 | SMART Rate, before taxes (L6*L7) | | $0.0134 | $0.0425 | |
| 9 | Sales & Use Tax @ | 7.00% | $0.0009 | $0.0030 | |
| 10 | SMART Rate (L8+L9), per therm | | **$0.0144** | **$0.0455** | /therm |

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SMART Schedule**
**TK-2**

**Actual / Projected Carrying Costs and True-up**
Example of an Annual Calculation

| | Beginning Balance | Revenue Requirement TK-3 | Recoveries | Ending Balance | Average Balance | Short Term Debt Rate | Carrying Cost Inc / (Exp) | Ending Balance plus Cumulative Interest |
|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e=b+c-d | f=(b+e)2 | g | h=f*g/12 | i=e+ cum of h |
| Apr-17 | $0 | $16,432 | $549,451 | ($533,019) | ($266,509) | 0.30% | ($66) | ($533,084) |
| May-17 | ($533,019) | $63,382 | $308,228 | ($777,865) | ($655,442) | 0.30% | ($162) | ($778,092) |
| Jun-17 | ($777,865) | $141,859 | $201,018 | ($837,025) | ($807,445) | 0.30% | ($199) | ($837,451) |
| Jul-17 | ($837,025) | $244,415 | $160,815 | ($753,425) | ($795,225) | 0.30% | ($196) | ($754,047) |
| Aug-17 | ($753,425) | $356,533 | $147,414 | ($544,305) | ($648,865) | 0.30% | ($160) | ($545,087) |
| Sep-17 | ($544,305) | $473,052 | $160,815 | ($232,068) | ($388,186) | 0.30% | ($96) | ($232,946) |
| Oct-17 | ($232,068) | $574,547 | $201,018 | $141,461 | ($45,303) | 0.30% | ($11) | $140,572 |
| Nov-17 | $141,461 | $646,514 | $402,037 | $385,938 | $263,700 | 0.30% | $65 | $385,114 |
| Dec-17 | $385,938 | $725,219 | $670,062 | $441,096 | $413,517 | 0.30% | $102 | $440,374 |
| Jan-18 | $441,096 | $699,837 | $911,284 | $229,649 | $335,372 | 0.30% | $83 | $229,009 |
| Feb-18 | $229,649 | $740,142 | $964,889 | $4,902 | $117,275 | 0.30% | $29 | $4,291 |
| Mar-18 | $4,902 | $780,733 | $790,673 | ($5,037) | ($68) | 0.30% | ($0) | ($5,648) |
| Total 2010 | | $5,462,665 | $5,467,703 | | | | ($611) | |

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SMART Schedule**
**TK-3**

**ESTIMATED REVENUE REQUIREMENT**

| Fiscal Year End | Plant In Service | Cum Plant In Service | Average Gross Plant In Service | Monthly Deprec. | Accum. Deprec. | Accum. Deferred Tax Benefit | Rate Base | Average Rate Base | 2009 RC adj for CBT in 2010 Wtd. Avg. Cost Capital After-tax | Revenue Expansiion Factor | Monthly Return on Investment | Monthly Revenue Requirement |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e (note 1) | f= cum of e | g (note 2) | i=c-f-g | j | k | m=i*j*k/12 | n=e+l | |
| Pre Mar-17 | $34,770,553 | | | | | | | | | | | Sum = 12 mos |
| Mar-17 | $0 | | | $0 | $0 | $0 | $0 | $0 | | | $0 | $0 |
| Mar-18 | $75,176,467 | | | $934,746 | $934,746 | $1,076,405 | $73,165,315 | $71,218,090 | | | $4,527,919 | $5,462,665 |
| Mar-19 | $104,258,425 | | | $2,722,773 | $3,657,520 | $4,128,129 | $171,649,243 | $169,716,467 | | | $14,569,744 | $17,292,518 |
| Mar-20 | $111,406,703 | | | $4,840,150 | $8,497,670 | $9,345,464 | $272,998,462 | $271,201,174 | | | $25,910,354 | $30,750,504 |
| Mar-21 | $113,295,054 | | | $7,025,519 | $15,523,189 | $16,582,310 | $372,031,151 | $370,379,319 | | | $37,209,173 | $44,234,692 |
| Mar-22 | $114,366,177 | | | $9,237,784 | $24,760,973 | $25,651,137 | $468,090,716 | $466,597,513 | | | $48,204,987 | $57,442,771 |
| Mar-23 | $114,540,730 | | | $11,458,872 | $36,219,845 | $36,358,260 | $560,465,451 | $559,127,081 | | | $58,814,141 | $70,273,013 |
| Mar-24 | $114,540,730 | | | $13,680,962 | $49,900,807 | $48,513,952 | $649,169,528 | $647,978,437 | | | $69,006,734 | $82,687,695 |
| Mar-25 | $114,540,886 | | | $15,903,052 | $65,803,859 | $61,958,360 | $734,362,953 | $733,315,133 | | | $78,795,925 | $94,698,977 |
| Mar-26 | $123,705,452 | | | $18,140,746 | $83,944,605 | $76,631,200 | $825,254,819 | $822,754,393 | | | $88,321,508 | $106,462,254 |
| insert rows to expand | | | | | | | | | | | | |
| Total | $985,830,624 | | | | | | | | | | $425,360,485 | $509,305,090 |
| Rider Year: | | $0 | | | | | $0 | | | | | |
| Jan-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Feb-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Mar-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Apr-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| May-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Jun-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Jul-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Aug-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Sep-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Oct-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Nov-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Dec-16 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Jan-17 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Feb-17 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Mar-17 | $0 | $0 | $0 | $0 | $0 | - | $0 | $0 | 6.53% | 1.72431 | $0 | $0 |
| Apr-17 | $2,853,570 | $2,853,570 | $1,426,785 | $3,076 | $3,076 | 3,601 | $2,846,893 | $1,423,447 | 6.53% | 1.72431 | $13,356 | $16,432 |
| May-17 | $5,707,139 | $8,560,709 | $5,707,139 | $9,995 | $13,071 | 15,303 | $8,532,335 | $5,689,614 | 6.53% | 1.72431 | $53,386 | $63,382 |
| Jun-17 | $8,560,709 | $17,121,418 | $12,841,064 | $21,858 | $34,929 | 40,893 | $17,045,596 | $12,788,965 | 6.53% | 1.72431 | $120,000 | $141,859 |
| Jul-17 | $9,987,494 | $27,108,912 | $22,115,165 | $38,005 | $72,934 | 85,387 | $26,950,591 | $21,998,093 | 6.53% | 1.72431 | $206,411 | $244,415 |
| Aug-17 | $9,987,494 | $37,096,406 | $32,102,659 | $57,380 | $130,314 | 152,565 | $36,813,526 | $31,882,059 | 6.53% | 1.72431 | $299,153 | $356,533 |
| Sep-17 | $9,987,494 | $47,083,900 | $42,090,153 | $81,600 | $211,914 | 248,099 | $46,623,887 | $41,718,707 | 6.53% | 1.72431 | $391,452 | $473,052 |
| Oct-17 | $7,133,924 | $54,217,824 | $50,650,862 | $104,666 | $316,580 | 370,637 | $53,530,606 | $50,077,247 | 6.53% | 1.72431 | $469,881 | $574,547 |
| Nov-17 | $4,280,355 | $58,498,178 | $56,358,001 | $125,426 | $442,006 | 517,480 | $57,538,692 | $55,534,649 | 6.53% | 1.72431 | $521,088 | $646,514 |
| Dec-17 | $4,280,355 | $62,778,533 | $60,638,355 | $166,945 | $608,952 | 712,932 | $61,456,649 | $59,497,670 | 6.53% | 1.72431 | $558,274 | $725,219 |
| Jan-18 | $4,132,645 | $66,911,177 | $64,844,855 | $104,833 | $713,784 | 829,681 | $65,367,712 | $63,412,181 | 6.53% | 1.72431 | $595,004 | $699,837 |
| Feb-18 | $4,132,645 | $71,043,822 | $68,977,500 | $108,477 | $822,261 | 950,697 | $69,270,865 | $67,319,288 | 6.53% | 1.72431 | $631,665 | $740,142 |
| Mar-18 | $4,132,645 | $75,176,467 | $73,110,145 | $112,485 | $934,746 | 1,076,405 | $73,165,315 | $71,218,090 | 6.53% | 1.72431 | $668,248 | $780,733 |
| Apr-18 | $4,132,645 | $79,309,112 | $77,242,789 | $116,939 | $1,051,686 | 1,207,329 | $77,050,097 | $75,107,706 | 6.53% | 1.72431 | $704,745 | $821,684 |
| May-18 | $8,265,289 | $87,574,401 | $83,441,756 | $126,961 | $1,178,647 | 1,349,985 | $85,045,769 | $81,047,933 | 6.53% | 1.72431 | $760,483 | $887,444 |
| Jun-18 | $12,397,934 | $99,972,335 | $93,773,368 | $144,141 | $1,322,788 | 1,512,755 | $97,136,792 | $91,091,281 | 6.53% | 1.72431 | $854,720 | $998,862 |

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SMART Schedule**
**TK-3**

**ESTIMATED REVENUE REQUIREMENT**

| Fiscal Year End | Plant In Service | Cum Plant In Service | Average Gross Plant In Service | Monthly Deprec. | Accum. Deprec. | Accum. Deferred Tax Benefit | Rate Base | Average Rate Base | 2009 RC adj for CBT in 2010 Wtd. Avg. Cost Capital After-tax | Revenue Expansiion Factor | Monthly Return on Investment | Monthly Revenue Requirement |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e (note 1) | f= cum of e | g (note 2) | i=c-f-g | j | j | k | m=i*j*k/12 | n=e+l |
| Pre Mar-17 | $34,770,553 | | | | | | | | | | | Sum = 12 mos |
| Jul-18 | $14,464,257 | $114,436,592 | $107,204,464 | $167,525 | $1,490,313 | 1,702,901 | $111,243,377 | $104,190,085 | 6.53% | 1.72431 | $977,628 | $1,145,153 |
| Aug-18 | $14,464,257 | $128,900,848 | $121,668,720 | $195,586 | $1,685,899 | 1,925,900 | $125,289,049 | $118,266,213 | 6.53% | 1.72431 | $1,109,706 | $1,305,292 |
| Sep-18 | $14,464,257 | $143,365,105 | $136,132,977 | $230,662 | $1,916,561 | 2,189,964 | $139,258,581 | $132,273,815 | 6.53% | 1.72431 | $1,241,141 | $1,471,803 |
| Oct-18 | $10,331,612 | $153,696,717 | $148,530,911 | $264,067 | $2,180,628 | 2,493,137 | $149,022,952 | $144,140,767 | 6.53% | 1.72431 | $1,352,490 | $1,616,557 |
| Nov-18 | $6,198,967 | $159,895,684 | $156,796,200 | $294,132 | $2,474,760 | 2,831,509 | $154,589,415 | $151,806,184 | 6.53% | 1.72431 | $1,424,416 | $1,718,548 |
| Dec-18 | $6,198,967 | $166,094,651 | $162,995,167 | $354,262 | $2,829,022 | 3,240,278 | $160,025,351 | $157,307,383 | 6.53% | 1.72431 | $1,476,034 | $1,830,296 |
| Jan-19 | $4,446,747 | $170,541,398 | $168,318,024 | $272,114 | $3,101,136 | 3,531,485 | $163,908,777 | $161,967,064 | 6.53% | 1.72431 | $1,519,756 | $1,791,871 |
| Feb-19 | $4,446,747 | $174,988,145 | $172,764,771 | $276,035 | $3,377,171 | 3,827,282 | $167,783,692 | $165,846,235 | 6.53% | 1.72431 | $1,556,155 | $1,832,191 |
| Mar-19 | $4,446,747 | $179,434,892 | $177,211,519 | $280,349 | $3,657,520 | 4,128,129 | $171,649,243 | $169,716,467 | 6.53% | 1.72431 | $1,592,470 | $1,872,819 |
| Apr-19 | $4,446,747 | $183,881,639 | $181,658,266 | $285,141 | $3,942,661 | 4,434,587 | $175,504,391 | $173,576,817 | 6.53% | 1.72431 | $1,628,692 | $1,913,833 |
| May-19 | $8,893,494 | $192,775,133 | $188,328,386 | $295,925 | $4,238,586 | 4,753,670 | $183,782,877 | $179,643,634 | 6.53% | 1.72431 | $1,685,618 | $1,981,542 |
| Jun-19 | $13,340,241 | $206,115,374 | $199,445,254 | $314,410 | $4,552,996 | 5,094,395 | $196,467,983 | $190,125,430 | 6.53% | 1.72431 | $1,783,970 | $2,098,380 |
| Jul-19 | $15,563,615 | $221,678,989 | $213,897,182 | $339,572 | $4,892,568 | 5,464,577 | $211,321,844 | $203,894,913 | 6.53% | 1.72431 | $1,913,170 | $2,252,742 |
| Aug-19 | $15,563,615 | $237,242,604 | $229,460,796 | $369,765 | $5,262,333 | 5,870,109 | $226,110,162 | $218,716,003 | 6.53% | 1.72431 | $2,052,239 | $2,422,004 |
| Sep-19 | $15,563,615 | $252,806,218 | $245,024,411 | $407,507 | $5,669,840 | 6,319,827 | $240,816,552 | $233,463,357 | 6.53% | 1.72431 | $2,190,615 | $2,598,122 |
| Oct-19 | $11,116,868 | $263,923,086 | $258,364,652 | $443,451 | $6,113,291 | 6,811,627 | $250,998,168 | $245,907,360 | 6.53% | 1.72431 | $2,307,378 | $2,750,830 |
| Nov-19 | $6,670,121 | $270,593,206 | $267,258,146 | $475,801 | $6,589,092 | 7,341,301 | $256,662,813 | $253,830,491 | 6.53% | 1.72431 | $2,381,722 | $2,857,523 |
| Dec-19 | $6,670,121 | $277,263,327 | $273,928,267 | $540,502 | $7,129,594 | 7,946,722 | $262,187,011 | $259,424,912 | 6.53% | 1.72431 | $2,434,215 | $2,974,717 |
| Jan-20 | $4,526,089 | $281,789,416 | $279,526,372 | $451,901 | $7,581,495 | 8,408,141 | $265,799,780 | $263,993,395 | 6.53% | 1.72431 | $2,477,082 | $2,928,983 |
| Feb-20 | $4,526,089 | $286,315,506 | $284,052,461 | $455,892 | $8,037,387 | 8,874,232 | $269,403,886 | $267,601,833 | 6.53% | 1.72431 | $2,510,940 | $2,966,832 |
| Mar-20 | $4,526,089 | $290,841,595 | $288,578,551 | $460,282 | $8,497,670 | 9,345,464 | $272,998,462 | $271,201,174 | 6.53% | 1.72431 | $2,544,713 | $3,004,996 |
| Apr-20 | $4,526,089 | $295,367,685 | $293,104,640 | $465,161 | $8,962,830 | 9,822,406 | $276,582,449 | $274,790,455 | 6.53% | 1.72431 | $2,578,392 | $3,043,552 |
| May-20 | $9,052,179 | $304,419,864 | $299,893,774 | $476,136 | $9,438,967 | 10,312,198 | $284,668,699 | $280,625,574 | 6.53% | 1.72431 | $2,633,144 | $3,109,280 |
| Jun-20 | $13,578,268 | $317,998,132 | $311,208,998 | $494,952 | $9,933,918 | 10,824,019 | $297,240,195 | $290,954,447 | 6.53% | 1.72431 | $2,730,061 | $3,225,013 |
| Jul-20 | $15,841,313 | $333,839,445 | $325,918,789 | $520,562 | $10,454,481 | 11,365,823 | $312,019,142 | $304,629,669 | 6.53% | 1.72431 | $2,858,377 | $3,378,939 |
| Aug-20 | $15,841,313 | $349,680,759 | $341,760,102 | $551,294 | $11,005,775 | 11,943,606 | $326,731,378 | $319,375,260 | 6.53% | 1.72431 | $2,996,736 | $3,548,031 |
| Sep-20 | $15,841,313 | $365,522,072 | $357,601,415 | $589,709 | $11,595,484 | 12,566,364 | $341,360,223 | $334,045,801 | 6.53% | 1.72431 | $3,134,392 | $3,724,101 |
| Oct-20 | $11,315,224 | $376,837,296 | $371,179,684 | $626,295 | $12,221,779 | 13,231,956 | $351,383,561 | $346,371,892 | 6.53% | 1.72431 | $3,250,049 | $3,876,344 |
| Nov-20 | $6,789,134 | $383,626,430 | $380,231,863 | $659,223 | $12,881,002 | 13,936,097 | $356,809,331 | $354,096,446 | 6.53% | 1.72431 | $3,322,530 | $3,981,752 |
| Dec-20 | $6,789,134 | $390,415,564 | $387,020,997 | $725,077 | $13,606,079 | 14,717,337 | $362,092,148 | $359,450,740 | 6.53% | 1.72431 | $3,372,770 | $4,097,847 |
| Jan-21 | $4,573,695 | $394,989,259 | $392,702,412 | $634,869 | $14,240,948 | 15,334,115 | $365,414,196 | $363,753,172 | 6.53% | 1.72431 | $3,413,140 | $4,048,009 |
| Feb-21 | $4,573,695 | $399,562,954 | $397,276,107 | $638,902 | $14,879,850 | 15,955,615 | $368,727,488 | $367,070,842 | 6.53% | 1.72431 | $3,444,270 | $4,083,172 |
| Mar-21 | $4,573,695 | $404,136,649 | $401,849,802 | $643,339 | $15,523,189 | 16,582,310 | $372,031,151 | $370,379,319 | 6.53% | 1.72431 | $3,475,314 | $4,118,652 |
| Apr-21 | $4,573,695 | $408,710,344 | $406,423,497 | $648,268 | $16,171,457 | 17,214,775 | $375,324,112 | $373,677,631 | 6.53% | 1.72431 | $3,506,262 | $4,154,530 |
| May-21 | $9,147,390 | $417,857,734 | $413,284,039 | $659,359 | $16,830,816 | 17,860,226 | $383,166,692 | $379,245,402 | 6.53% | 1.72431 | $3,558,505 | $4,217,864 |
| Jun-21 | $13,721,085 | $431,578,819 | $424,718,276 | $678,373 | $17,509,189 | 18,527,936 | $395,541,694 | $389,354,193 | 6.53% | 1.72431 | $3,653,357 | $4,331,730 |
| Jul-21 | $16,007,932 | $447,586,751 | $439,582,785 | $704,252 | $18,213,441 | 19,225,945 | $410,147,365 | $402,844,530 | 6.53% | 1.72431 | $3,779,939 | $4,484,191 |
| Aug-21 | $16,007,932 | $463,594,684 | $455,590,717 | $735,308 | $18,948,748 | 19,960,312 | $424,685,623 | $417,416,494 | 6.53% | 1.72431 | $3,916,669 | $4,651,977 |
| Sep-21 | $16,007,932 | $479,602,616 | $471,598,650 | $774,127 | $19,722,875 | 20,740,127 | $439,139,614 | $431,912,618 | 6.53% | 1.72431 | $4,052,688 | $4,826,815 |
| Oct-21 | $11,434,237 | $491,036,853 | $485,319,735 | $811,098 | $20,533,973 | 21,563,226 | $448,939,655 | $444,039,634 | 6.53% | 1.72431 | $4,166,477 | $4,977,575 |
| Nov-21 | $6,860,542 | $497,897,396 | $494,467,125 | $844,371 | $21,378,344 | 22,425,279 | $454,093,773 | $451,516,714 | 6.53% | 1.72431 | $4,236,636 | $5,081,007 |
| Dec-21 | $6,860,542 | $504,757,938 | $501,327,667 | $910,918 | $22,289,262 | 23,365,243 | $459,103,433 | $456,598,603 | 6.53% | 1.72431 | $4,284,320 | $5,195,238 |
| Jan-22 | $4,581,629 | $509,339,567 | $507,048,753 | $819,729 | $23,108,991 | 24,122,320 | $462,108,256 | $460,605,844 | 6.53% | 1.72431 | $4,321,920 | $5,141,649 |
| Feb-22 | $4,581,629 | $513,921,197 | $511,630,382 | $823,769 | $23,932,760 | 24,884,127 | $465,104,310 | $463,606,283 | 6.53% | 1.72431 | $4,350,074 | $5,173,842 |

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SMART Schedule TK-3**

**ESTIMATED REVENUE REQUIREMENT**

| Fiscal Year End | Plant In Service | Cum Plant In Service | Average Gross Plant In Service | Monthly Deprec. | Accum. Deprec. | Accum. Deferred Tax Benefit | Rate Base | Average Rate Base | 2009 RC adj for CBT in 2010 Wtd. Avg. Cost Capital After-tax | Revenue Expansiion Factor | Monthly Return on Investment | Monthly Revenue Requirement |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e (note 1) | f= cum of e | g (note 2) | i=c-f-g | j | l | k | m=i*j*k/12 | n=e+l |
| Pre Mar-17 | $34,770,553 | | | | | | | | | | | Sum = 12 mos |
| Mar-22 | $4,581,629 | $518,502,826 | $516,212,011 | $828,213 | $24,760,973 | 25,651,137 | $468,090,716 | $466,597,513 | 6.53% | 1.72431 | $4,378,141 | $5,206,354 |
| Apr-22 | $4,581,629 | $523,084,455 | $520,793,641 | $833,151 | $25,594,124 | 26,423,928 | $471,066,403 | $469,578,559 | 6.53% | 1.72431 | $4,406,112 | $5,239,263 |
| May-22 | $9,163,258 | $532,247,714 | $527,666,084 | $844,262 | $26,438,386 | 27,209,727 | $478,599,601 | $474,833,002 | 6.53% | 1.72431 | $4,455,415 | $5,299,677 |
| Jun-22 | $13,744,888 | $545,992,601 | $539,120,157 | $863,308 | $27,301,694 | 28,017,824 | $490,673,083 | $484,636,342 | 6.53% | 1.72431 | $4,547,401 | $5,410,709 |
| Jul-22 | $16,035,702 | $562,028,303 | $554,010,452 | $889,232 | $28,190,926 | 28,856,273 | $504,981,104 | $497,827,093 | 6.53% | 1.72431 | $4,671,171 | $5,560,404 |
| Aug-22 | $16,035,702 | $578,064,006 | $570,046,155 | $920,342 | $29,111,268 | 29,731,143 | $519,221,595 | $512,101,350 | 6.53% | 1.72431 | $4,805,109 | $5,725,450 |
| Sep-22 | $16,035,702 | $594,099,708 | $586,081,857 | $959,228 | $30,070,497 | 30,651,539 | $533,377,673 | $526,299,634 | 6.53% | 1.72431 | $4,938,333 | $5,897,561 |
| Oct-22 | $11,454,073 | $605,553,781 | $599,826,744 | $996,263 | $31,066,760 | 31,615,294 | $542,871,728 | $538,124,700 | 6.53% | 1.72431 | $5,049,289 | $6,045,552 |
| Nov-22 | $6,872,444 | $612,426,225 | $608,990,003 | $1,029,594 | $32,096,354 | 32,618,071 | $547,711,799 | $545,291,763 | 6.53% | 1.72431 | $5,116,538 | $6,146,133 |
| Dec-22 | $6,872,444 | $619,298,669 | $615,862,447 | $1,096,257 | $33,192,611 | 33,698,895 | $552,407,163 | $550,059,481 | 6.53% | 1.72431 | $5,161,274 | $6,257,531 |
| Jan-23 | $4,581,629 | $623,880,298 | $621,589,483 | $1,004,903 | $34,197,514 | 34,580,462 | $555,102,321 | $553,754,742 | 6.53% | 1.72431 | $5,195,947 | $6,200,850 |
| Feb-23 | $4,581,629 | $628,461,927 | $626,171,112 | $1,008,943 | $35,206,457 | 35,466,760 | $557,788,710 | $556,445,516 | 6.53% | 1.72431 | $5,221,195 | $6,230,138 |
| Mar-23 | $4,581,629 | $633,043,556 | $630,752,742 | $1,013,387 | $36,219,845 | 36,358,260 | $560,465,451 | $559,127,081 | 6.53% | 1.72431 | $5,246,357 | $6,259,744 |
| Apr-23 | $4,581,629 | $637,625,185 | $635,334,371 | $1,018,325 | $37,238,170 | 37,255,542 | $563,131,473 | $561,798,462 | 6.53% | 1.72431 | $5,271,423 | $6,289,748 |
| May-23 | $9,163,258 | $646,788,444 | $642,206,815 | $1,029,436 | $38,267,606 | 38,165,831 | $570,355,007 | $566,743,240 | 6.53% | 1.72431 | $5,317,820 | $6,347,256 |
| Jun-23 | $13,744,888 | $660,533,331 | $653,660,888 | $1,048,482 | $39,316,088 | 39,098,419 | $582,118,824 | $576,236,915 | 6.53% | 1.72431 | $5,406,900 | $6,455,383 |
| Jul-23 | $16,035,702 | $676,569,034 | $668,551,183 | $1,074,407 | $40,390,495 | 40,061,358 | $596,117,181 | $589,118,002 | 6.53% | 1.72431 | $5,527,765 | $6,602,172 |
| Aug-23 | $16,035,702 | $692,604,736 | $684,586,885 | $1,105,516 | $41,496,011 | 41,060,718 | $610,048,007 | $603,082,594 | 6.53% | 1.72431 | $5,658,796 | $6,764,312 |
| Sep-23 | $16,035,702 | $708,640,438 | $700,622,587 | $1,144,402 | $42,640,413 | 42,105,605 | $623,894,420 | $616,971,213 | 6.53% | 1.72431 | $5,789,115 | $6,933,518 |
| Oct-23 | $11,454,073 | $720,094,511 | $714,367,475 | $1,181,437 | $43,821,851 | 43,193,851 | $633,078,810 | $628,486,615 | 6.53% | 1.72431 | $5,897,165 | $7,078,603 |
| Nov-23 | $6,872,444 | $726,966,955 | $723,530,733 | $1,214,769 | $45,036,619 | 44,321,119 | $637,609,217 | $635,344,013 | 6.53% | 1.72431 | $5,961,509 | $7,176,278 |
| Dec-23 | $6,872,444 | $733,839,399 | $730,403,177 | $1,281,431 | $46,318,051 | 45,526,433 | $641,994,915 | $639,802,066 | 6.53% | 1.72431 | $6,003,340 | $7,284,771 |
| Jan-24 | $4,581,629 | $738,421,028 | $736,130,213 | $1,190,077 | $47,508,128 | 46,517,385 | $644,395,516 | $643,195,215 | 6.53% | 1.72431 | $6,035,178 | $7,225,255 |
| Feb-24 | $4,581,629 | $743,002,657 | $740,711,843 | $1,194,117 | $48,702,245 | 47,513,067 | $646,787,346 | $645,591,431 | 6.53% | 1.72431 | $6,057,662 | $7,251,779 |
| Mar-24 | $4,581,629 | $747,584,286 | $745,293,472 | $1,198,562 | $49,900,807 | 48,513,952 | $649,169,528 | $647,978,437 | 6.53% | 1.72431 | $6,080,060 | $7,278,621 |
| Apr-24 | $4,581,629 | $752,165,916 | $749,875,101 | $1,203,500 | $51,104,306 | 49,520,618 | $651,540,992 | $650,355,260 | 6.53% | 1.72431 | $6,102,362 | $7,305,861 |
| May-24 | $9,163,258 | $761,329,174 | $756,747,545 | $1,214,610 | $52,318,916 | 50,540,291 | $658,469,967 | $655,005,479 | 6.53% | 1.72431 | $6,145,995 | $7,360,605 |
| Jun-24 | $13,744,888 | $775,074,062 | $768,201,618 | $1,233,656 | $53,552,573 | 51,582,264 | $669,939,226 | $664,204,596 | 6.53% | 1.72431 | $6,232,312 | $7,465,968 |
| Jul-24 | $16,035,702 | $791,109,764 | $783,091,913 | $1,259,581 | $54,812,153 | 52,654,587 | $683,643,024 | $676,791,125 | 6.53% | 1.72431 | $6,350,413 | $7,609,993 |
| Aug-24 | $16,035,702 | $807,145,466 | $799,127,615 | $1,290,690 | $56,102,843 | 53,763,332 | $697,279,291 | $690,461,157 | 6.53% | 1.72431 | $6,478,680 | $7,769,370 |
| Sep-24 | $16,035,702 | $823,181,168 | $815,163,317 | $1,329,577 | $57,432,420 | 54,917,603 | $710,831,145 | $704,055,218 | 6.53% | 1.72431 | $6,606,235 | $7,935,811 |
| Oct-24 | $11,454,073 | $834,635,241 | $828,908,205 | $1,366,612 | $58,799,032 | 56,115,233 | $719,720,977 | $715,276,061 | 6.53% | 1.72431 | $6,711,521 | $8,078,133 |
| Nov-24 | $6,872,444 | $841,507,685 | $838,071,463 | $1,399,943 | $60,198,974 | 57,351,885 | $723,956,825 | $721,838,901 | 6.53% | 1.72431 | $6,773,101 | $8,173,044 |
| Dec-24 | $6,872,444 | $848,380,129 | $844,943,907 | $1,466,606 | $61,665,580 | 58,666,584 | $728,047,965 | $726,002,395 | 6.53% | 1.72431 | $6,812,168 | $8,278,773 |
| Jan-25 | $4,581,681 | $852,961,810 | $850,670,970 | $1,375,251 | $63,040,831 | 59,758,955 | $730,162,024 | $729,104,995 | 6.53% | 1.72431 | $6,841,280 | $8,216,531 |
| Feb-25 | $4,581,681 | $857,543,491 | $855,252,651 | $1,379,292 | $64,420,123 | 60,856,056 | $732,267,312 | $731,214,668 | 6.53% | 1.72431 | $6,861,075 | $8,240,367 |
| Mar-25 | $4,581,681 | $862,125,172 | $859,834,332 | $1,383,736 | $65,803,859 | 61,958,360 | $734,362,953 | $733,315,133 | 6.53% | 1.72431 | $6,880,784 | $8,264,520 |
| Apr-25 | $4,581,681 | $866,706,853 | $864,416,013 | $1,388,674 | $67,192,533 | 63,066,446 | $736,447,875 | $735,405,414 | 6.53% | 1.72431 | $6,900,397 | $8,289,071 |
| May-25 | $9,163,362 | $875,870,215 | $871,288,534 | $1,399,784 | $68,592,317 | 64,187,539 | $743,090,359 | $739,769,117 | 6.53% | 1.72431 | $6,941,343 | $8,341,127 |
| Jun-25 | $13,745,043 | $889,615,258 | $882,742,737 | $1,418,831 | $70,011,148 | 65,330,931 | $754,273,179 | $748,681,769 | 6.53% | 1.72431 | $7,024,971 | $8,443,802 |
| Jul-25 | $16,035,884 | $905,651,142 | $897,633,200 | $1,444,756 | $71,455,904 | 66,504,675 | $767,690,563 | $760,981,871 | 6.53% | 1.72431 | $7,140,384 | $8,585,140 |
| Aug-25 | $16,035,884 | $921,687,025 | $913,669,083 | $1,475,865 | $72,931,770 | 67,714,840 | $781,040,415 | $774,365,489 | 6.53% | 1.72431 | $7,265,965 | $8,741,830 |
| Sep-25 | $16,035,884 | $937,722,909 | $929,704,967 | $1,514,752 | $74,446,522 | 68,970,532 | $794,305,854 | $787,673,135 | 6.53% | 1.72431 | $7,390,832 | $8,905,584 |
| Oct-25 | $11,454,203 | $949,177,111 | $943,450,010 | $1,551,788 | $75,998,310 | 70,269,584 | $802,909,217 | $798,607,536 | 6.53% | 1.72431 | $7,493,431 | $9,045,218 |

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SMART Schedule TK-3**

**ESTIMATED REVENUE REQUIREMENT**

| Fiscal Year End | Plant In Service | Cum Plant In Service | Average Gross Plant In Service | Monthly Deprec. | Accum. Deprec. | Accum. Deferred Tax Benefit | Rate Base | Average Rate Base | 2009 RC adj for CBT in 2010 Wtd. Avg. Cost Capital After-tax | Revenue Expansiion Factor | Monthly Return on Investment | Monthly Revenue Requirement |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | d | e (note 1) | f= cum of e | g (note 2) | i=c-f-g | j | k | m=i*j*k/12 | n=e+l | Sum = 12 mos |
| Pre Mar-17 | $34,770,553 | | | | | | | | | | | |
| Nov-25 | $6,872,522 | $956,049,633 | $952,613,372 | $1,585,119 | $77,583,429 | 71,607,659 | $806,858,545 | $804,883,881 | 6.53% | 1.72431 | $7,552,322 | $9,137,442 |
| Dec-25 | $6,872,522 | $962,922,154 | $959,485,893 | $1,651,783 | $79,235,212 | 73,023,780 | $810,663,162 | $808,760,854 | 6.53% | 1.72431 | $7,588,700 | $9,240,483 |
| Jan-26 | $7,559,795 | $970,481,949 | $966,702,052 | $1,562,835 | $80,798,047 | 74,218,102 | $815,465,800 | $813,064,481 | 6.53% | 1.72431 | $7,629,082 | $9,191,917 |
| Feb-26 | $7,559,795 | $978,041,744 | $974,261,847 | $1,569,501 | $82,367,548 | 75,420,228 | $820,253,967 | $817,859,884 | 6.53% | 1.72431 | $7,674,078 | $9,243,579 |
| Mar-26 | $7,788,880 | $985,830,624 | $981,936,184 | $1,577,057 | $83,944,605 | 76,631,200 | $825,254,819 | $822,754,393 | 6.53% | 1.72431 | $7,720,003 | $9,297,060 |

Note:The revenue calculations exclude Plant In-Service included in the Company's 2016 Rate Case

(1) Book Depreciation is calculated based on each month's Capitalized Expenditures using current Board-approved depreciation rate and the half year methodology, for the first year when placed in service. The first year's capital depreciation is booked January through December per the numbers of months remaining in the year.

(2) Tax Depreciation is based on Depreciable property times the applicable Modified Accelerated Cost Recovery System (MACRS) rate and Bonus Depreciation when applicable.

**PIVOTAL UTILITY HOLDINGS, INC. d/b/a ELIZABETHTOWN GAS**
**SAFETY, MODERNIZATION AND RELIABILITY TARIFF ("SMART")**

**SMART Schedule**
**TK-4**

## Estimated Rider Rates and Residential Bill Impact
### Implemented on a Projected Basis on April 1st

| Fiscal Year End | Yr | Projected Revenue Requirement | Per Therm Rates ** | Proposed Effective Date | Annual Charge per Therms of 1,000 | Estimated * 1,000 therm Bill $1,048.83 | % Chg from Prior Yr. |
|---|---|---|---|---|---|---|---|
| Mar-17 | 1 | $0 | $0.0000 | | | $1,048.83 | |
| Mar-18 | 2 | $5,462,665 | $0.0144 | 4/1/17 | $14.38 | $1,063.21 | 1.4% |
| Mar-19 | 3 | $17,292,518 | $0.0455 | 4/1/18 | $45.51 | $1,094.34 | 2.9% |
| Mar-20 | 4 | $30,750,504 | $0.0809 | 4/1/19 | $80.92 | $1,129.75 | 3.2% |
| Mar-21 | 5 | $44,234,692 | $0.1164 | 4/1/20 | $116.41 | $1,165.24 | 3.1% |
| Mar-22 | 6 | $57,442,771 | $0.1512 | 4/1/21 | $151.17 | $1,200.00 | 3.0% |
| Mar-23 | 7 | $70,273,013 | $0.1849 | 4/1/22 | $184.93 | $1,233.76 | 2.8% |
| Mar-24 | 8 | $82,687,695 | $0.2176 | 4/1/23 | $217.60 | $1,266.43 | 2.6% |
| Mar-25 | 9 | $94,698,977 | $0.2492 | 4/1/24 | $249.21 | $1,298.04 | 2.5% |
| Mar-26 | 10 | $106,462,254 | $0.2802 | 4/1/25 | $280.17 | $1,329.00 | 2.4% |

Notes:
The revenue calculations exclude Plant In-Service included in the Company's 2016 Rate Case
Rates are proposed to be effective on April 1st of each year based on projected revenue requirements ending March 31st.

*Starting Bill Estimate:

| | |
|---|---|
| 07/01/15 | $983.70 |
| ENDURE | 4.40 |
| AIR | 48.20 |
| SMART Base Rate | 12.53 |
| | $1,048.83 |

** Rate Determinants:

| | |
|---|---|
| Therms | 407,624,103 |
| Taxes and Assessments | 107.27% |

**PIVOTAL UTILITY HOLDINGS, INC.**
**d/b/a ELIZABETHTOWN GAS**
**Depreciation & Amortization of Gas Plant**
**LP Composite Depreciation Rate**
**AIR LP Projects**

Book Depreciation Rate
Schedule TK-1

| | Acct | DESCRIPTION | RATE | LP Projects | Full Yr. Depr. |
|---|---|---|---|---|---|
| 304 | 304.0 | Land | 1.54% | $0 | $0 |
| 305 | 305.0 | Structures & Improvements | 0.00% | $0 | $0 |
| 311 | 311.1 | Liquefied Petro Gas Equip | 0.00% | $0 | $0 |
| 311 | 311.2 | Synthetic Nat. Gas Equip | 0.00% | $0 | $0 |
| 320 | 320.0 | Other Equipment - Yard Pipe | 6.67% | $0 | $0 |
| 320 | 320.0 | Other Equipment - Miscellaneous | 6.67% | $0 | $0 |
| 360 | 360.0 | Land | 0.00% | $0 | $0 |
| 361 | 361.0 | Structures & Improvements | 2.22% | $0 | $0 |
| | 362.0 | Gas Holders - Natural | 2.32% | $0 | $0 |
| 362 | 362.1 | Gas Holders - LNG | 2.30% | $0 | $0 |
| 363 | 363.2 | Vaporizing Equipment | 2.90% | $0 | $0 |
| 363 | 363.4 | Compressor Equipment | 2.91% | $0 | $0 |
| 365 | 365.0 | Rights of Way | 1.54% | $0 | $0 |
| 367 | 367.0 | Transmission Mains | 1.84% | $0 | $0 |
| 369 | 369.0 | Measuring & Regulating Equipment | 4.00% | $0 | $0 |
| | 374.0 | Land | 0.00% | $0 | $0 |
| 374 | 374.1 | Land Rights | 1.54% | $0 | $0 |
| 375 | 375.0 | Structures & Improvements | 4.00% | $0 | $0 |
| 376 | 376.0 | Distribution Mains | 1.50% | $23,814,114 | $357,212 |
| 378 | 378.0 | Measuring & Reg Equip - General | 3.12% | $0 | $0 |
| 379 | 379.0 | Measuring & Reg Equip - Gate St | 3.03% | $0 | $0 |
| 380 | 380.0 | Services | 2.23% | $13,766,834 | $307,000 |
| 381 | 381.0 | Meters | 3.31% | $3,896,898 | $128,987 |
| 382 | 382.0 | Meter Installations | 2.22% | $0 | $0 |
| 383 | 383.0 | House Regulators | 2.70% | $1,458,741 | $39,386 |
| 384 | 384.0 | House Regulators Installations | 2.70% | $0 | $0 |
| 385 | 385.0 | Industrial Meas & Reg Equipment | 3.33% | $0 | $0 |
| | 385.2 | Meter Installations | 0.00% | $0 | $0 |
| 387 | 387.0 | Other Distribution Equipment | 4.00% | $0 | $0 |
| 390 | 390.0 | Structures & Improvements | 2.50% | $0 | $0 |
| 391 | 391.1 | Computer Equip & Software | 20.00% | $0 | $0 |
| | 391.2 | Enterprise Systems | 10.00% | $0 | $0 |
| | 391.4 | Office Furniture & Equipment | 5.00% | $0 | $0 |
| 392 | 392.1 | Vehicles - Owned | 13.73% | $0 | $0 |
| | 392.2 | Light Trucks - Owned (to 3/4 Tons) | 10.74% | $0 | $0 |
| | 392.3 | Heavy Trucks - Owned (over 3/4 Tons) | 8.82% | $0 | $0 |
| 393 | 393.0 | Stores Equipment | 5.00% | $0 | $0 |
| 394 | 394.0 | Tools, Shop & Garage Equip | 5.00% | $0 | $0 |
| 395 | 395.0 | Laboratory Equipment | 5.00% | $0 | $0 |
| | 396.1 | Power Equipment - Tractors | 4.00% | $0 | $0 |
| 396 | 396.2 | Power Equipment - Compressors | 7.69% | $0 | $0 |
| 397 | 397.0 | Communication Equipment | 5.00% | $0 | $0 |
| 398 | 398.0 | Miscellaneous Equipment | 5.00% | $0 | $0 |
| | | | | $42,936,586 | $832,585 |
| | | Composite Depreciation Rate >>> | | | 1.94% |

**Exhibit P-6**

**Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas**
**Notice of Public Hearings**

To Our Customers

On _____, 2015, Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas ("the Company" or Elizabethtown") filed a Petition with the New Jersey Board of Public Utilities ("Board" or "BPU") seeking approval of a safety, modernization and reliability program and a related rider to the Company's Tariff – the Safety, Modernization and Reliability Tariff – to permit Elizabethtown to recover the costs of the proposed program (collectively the program and proposed Tariff rider will be referred to as "the SMART Program").

Elizabethtown has facilities on its system that were installed prior to calendar year 1900. Elizabethtown seeks Board approval to implement the SMART Program over a ten-year period to modernize and enhance the reliability and safety of its gas distribution system by replacing its vintage, at-risk facilities which include aging cast iron mains, unprotected and bare steel mains and services, ductile iron, copper and vintage plastic mains and vintage plastic and copper services. Elizabethtown also proposes to relocate inside meter sets outside, to upgrade its legacy low pressure system to an elevated pressure system, and, as a consequence, to install excess flow valves and retire district regulators that are presently required to operate the low pressure system.

The total expenditures associated with the SMART Program are projected to approximate $1,102 million in 2014 dollars. Elizabethtown projects that these expenditures will enable the Company to replace approximately 630 miles of main and approximately 67,000 services.

In conjunction with the implementation of the SMART Program, Elizabethtown is seeking Board approval to implement a Tariff rider that will enable it to recover, on a provisional basis, certain costs incurred in connection with the SMART Program beyond the test period of the Company's next base rate case, which is required to be filed no later than September 1, 2016. Specifically, Elizabethtown anticipates that the proposed Tariff rider would first take effect on or about April 1, 2017 and would recover projected SMART Program costs for the twelve months ending March 31, 2018. The Company proposes that once the SMART Program rider takes effect, the Company would submit an annual petition to the Board no later than January 1 of each year that would propose a revised SMART Program rate to be effective April 1 of the same year. The Company's annual SMART Program rider filing would reconcile actual SMART Program costs and cost recoveries for the then-current April 1 through March 31 SMART Program year and seek recovery of projected SMART Program costs for the next succeeding April 1 through March 31 SMART Program year. The SMART Program rider rate would be assessed to all of the Company's firm customers under Service Classifications RDS, SGS, GDS, LVD, EGF, GLS, NGV and FTS.

Elizabethtown is not seeking to increase rates to recover SMART Program costs at this time. Nonetheless, Elizabethtown forecasts that the initial SMART Program rider rate anticipated to take effect April 1, 2017 would be designed to recovery $5,462,665 of SMART Program costs through a proposed rider rate of $0.0144 per therm. This rate would increase the

annual bill of a residential heating customer using 1,000 therms by $14.38 or 1.4% as compared to an estimated total annual bill of $1,048.83.

Based on current projections and assuming implementation of the SMART Program as proposed by the Company, the subsequent estimated SMART Program rider rates and their impact on a residential customer using 1,000 therms annually are estimated as follows:

| Effective Date | SMART rate per them | Annual Increase | % Change |
|---|---|---|---|
| 4/1/18 | $0.0455 | $31.13 | 2.9% |
| 4/1/19 | $0.0809 | $35.41 | 3.2% |
| 4/1/20 | $0.1164 | $35.49 | 3.1% |
| 4/1/21 | $0.1512 | $34.76 | 3.0% |
| 4/1/22 | $0.1849 | $33.76 | 2.8% |
| 4/1/23 | $0.2176 | $32.67 | 2.6% |
| 4/1/24 | $0.2492 | $31.61 | 2.5% |
| 4/1/25 | $0.2802 | $30.96 | 2.4% |

These rates are only estimates. The actual proposed rates would be subject to BPU approval and could be higher or lower depending on the Board's final determination and the date on which such rates are made effective.

The Board has the statutory authority to establish Elizabethtown's rates at levels it finds just and reasonable as well as to establish the effective date of such rates. Therefore, the BPU may establish the rates at levels and/or an effective date other than those proposed by Elizabethtown.

Copies of the Petition are available for inspection at the Company offices located at 520 Green Lane, Union, New Jersey, online at Elizabethtown's website: www.elizabethtowngas.com, and at the Board of Public Utilities, 44 South Clinton Avenue, 9th Floor Trenton, New Jersey.

**PLEASE TAKE NOTICE** that Public Hearings have been scheduled on the above mentioned Petition at the following times and places:

_____, 2015
Hunterdon County Complex, Route 12, Building #1, Flemington, New Jersey 08822

_____, 2015
Rahway Municipal Council, Court Chambers, City Hall Plaza, Rahway, New Jersey 07065

The public is invited to attend and interested persons will be permitted to testify and/or make a statement of their views on the proposed rates. Information provided at the public hearings will become part of the record of this case and will be considered by the Board in making its decision. In order to encourage full participation in this opportunity for public comment, please submit requests for needed accommodations, including an interpreter, listening

devices and/or mobility assistance, 48 hours prior to this Hearing. In addition, members of the public may submit written comments concerning the Petition to the BPU regardless of whether they attend the hearing by addressing them to: Irene Asbury, Secretary, Board of Public Utilities, 44 South Clinton Avenue, 9th Floor, P.O. Box 350, Trenton, New Jersey, 08625-0350. Hearings will continue, if necessary, on such additional dates and at such locations as the Board may designate in order to ensure that all interested persons may be heard.

**Pivotal Utility Holdings, Inc. d/b/a Elizabethtown Gas**
**Brian MacLean – President**