Penelec®
A FirstEnergy Company

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October 19, 2015

VIA eFILING

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

Re: Petition of Pennsylvania Electric Company for Approval of its Long-Term Infrastructure Improvement Plan
Docket No. P-2015-

Dear Secretary Chiavetta:

Enclosed for filing is the *Petition of Pennsylvania Electric Company for Approval of its Long-Term Infrastructure Improvement Plan* ("Petition"). A copy of Pennsylvania Electric Company's ("Penelec") Long-Term Infrastructure Improvement Plan accompanies its Petition as Penelec Exhibit No. 1.

Copies of the enclosed Petition and Penelec Exhibit No. 1 have been served on the persons and in the manner shown on the enclosed Certificate of Service, as required by 52 Pa. Code §121.4(b).

Respectfully submitted,

John L. Munsch

Enclosures

cc: Per Certificate of Service
Honorable Gladys M. Brown (w/encl.)
Honorable John F. Coleman, Jr. (w/encl.)
Honorable Robert F. Powelson (w/encl.)
Honorable Pamela A. Witmer (w/encl.)
Honorable Andrew Place (w/encl.)
Bohdan Pankiw, Chief Counsel (w/encl.)
Paul T. Diskin, Director, Office of Technical Utility Services (w/encl.)

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of Pennsylvania Electric Company	:	
For Approval of its Long-Term	:	**Docket No. P-2015-_____**
Infrastructure Improvement Plan	:	

CERTIFICATE OF SERVICE

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

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Date: October 19, 2015

John L. Munsch

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of Pennsylvania Electric Company	:	
For Approval of its Long-Term	:	**Docket No. P-2015-_____**
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Petition of Pennsylvania Electric Company for Approval of its Long-Term Infrastructure Improvement Plan

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Pursuant to Section 1352 of the Pennsylvania Public Utility Code ("Code"),[1] 52 Pa. Code §§ 121.1 *et seq.*, and the Pennsylvania Public Utility Commission's ("PUC" or the "Commission") final order in *Implementation of Act 11 of 2012* ("Final Implementation Order"),[2] Pennsylvania Electric Company ("Penelec" or the "Company") files this Petition for approval of its Long-Term Infrastructure Improvement Plan ("LTIIP" or "Plan"), which accompanies this Petition as Penelec Exhibit No. 1. As set forth in its LTIIP, the Company proposes to accelerate its investment in repairing, improving, replacing and reinforcing facilities and equipment in its distribution system that constitute "eligible property" as defined in Section 1351 of the Code and 52 Pa. Code § 121.2. Upon approval of its LTIIP, Penelec will file a Petition to establish a distribution system improvement charge ("DSIC") under Section 1353 of the Code to recover the fixed costs of property to be constructed and installed pursuant to its LTIIP. Penelec will not begin to implement its LTIIP until the Commission has approved a DSIC that will permit the Company to recover the fixed costs of the property to be added pursuant to that Plan.

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[1] 66 Pa.C.S. § 1352.
[2] *Implementation of Act 11 of 2012*, Docket No. M-2012-2293611 (Final Order entered August 2, 2012).

As more fully explained below and in Penelec Exhibit No. 1, Penelec proposes to increase its projected capital investment by $56.74 million over a five-year period (2016-2020) to strengthen, upgrade and modernize its distribution system through various infrastructure improvement initiatives described in detail in Appendix A to its LTIIP. As also explained below, Penelec's LTIIP contains all of the elements required by Section 1352(a)(1)-(6) of the Code and 52 Pa. Code § 121.3 and, therefore, satisfies all of the requirements for Commission approval set forth in Section 1352(a)(7) of the Code and 52 Pa. Code § 121.4(e)(1)-(4). Accordingly, Penelec respectfully requests that the Commission approve its LTIIP submitted as Penelec Exhibit No. 1 to this Petition.

I. INTRODUCTION AND BACKGROUND

1. Penelec provides electric distribution service to approximately 584,000 customers in a certificated service territory encompassing all or portions of thirty-one counties in Pennsylvania. Penelec is a "public utility" and an "electric distribution company" ("EDC") as those terms are defined in the Code.[3] Penelec, together with Metropolitan Edison Company, Pennsylvania Power Company and West Penn Power Company, is one of four subsidiaries of FirstEnergy Corp. that furnish electric distribution service as public utilities and EDCs in Pennsylvania.

2. The names and addresses of Penelec's attorneys authorized to receive all notices and communications regarding this filing are as follows:

[3] *See* 66 Pa.C.S. §§ 102 and 2803.

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3. On February 14, 2012, former Governor Corbett signed into law Act 11 of 2012 ("Act 11"), which amended the Code in several respects, including the addition of Subchapter B to Chapter 13 (Sections 1350-1360), which authorizes the Commission to approve DSIC petitions filed by EDCs and other types of utilities. In addition, Subchapter B sets forth various requirements that must be satisfied by a qualifying utility in order to establish a DSIC and recover the fixed costs of DSIC-eligible property. Section 1351 defines "eligible property" in general as "[p]roperty that is part of a distribution system and eligible for repair, improvement and replacement of infrastructure under this subchapter" and provides further:

> (1) For electric distribution companies, eligible property shall include:
>
> (i) Poles and towers.
> (ii) Overhead and underground conductors.
> (iii) Transformers and substation equipment.
> (iv) Any fixture or device related to eligible property under subparagraphs (i), (ii) and (iii), including insulators, circuit breakers, fuses, reclosers, grounding wires, crossarms and brackets, relays, capacitors, converters and condensers.
> (v) Unreimbursed costs related to highway relocation projects where an electric distribution company must relocate its facilities.
> (vi) Other related capitalized costs.

4. Section 1352 of the Code requires that a utility submit an LTIIP "in order to be eligible to recover costs under section 1353 (relating to distribution system improvement charge)." In addition, Section 1352 provides that an LTIIP should include the following information:

> (1) Identification of the types and age of eligible property owned or operated by the utility for which the utility would seek recovery under this subchapter.
>
> (2) An initial schedule for the planned repair and replacement of eligible property.
>
> (3) A general description of the location of the eligible property.
>
> (4) A reasonable estimate of the quantity of eligible property to be improved.
>
> (5) Projected annual expenditures to implement the plan and measures taken to ensure that the plan is cost effective.
>
> (6) The manner in which the replacement of aging infrastructure will be accelerated and how the repair, improvement or replacement will ensure and maintain adequate, efficient, safe, reliable and reasonable service.

5. On August 2, 2012, the Commission entered the Final Implementation Order to explain how it intended to implement the provisions of Subchapter B. In particular, the Final Implementation Order sets forth the Commission's expectation with regard to the contents of an LTIIP by reference to the six elements specifically identified in Section 1352(a) of the Code. The Final Implementation Order also provides guidance to utilities for meeting the Commission's standards for LTIIP approval and discusses the procedures the Commission would follow in reviewing petitions seeking approval of proposed LTIIPs. In that regard, the Commission: (a) recommended that utilities file their LTIIPs in advance of filing DSIC petitions in order to "reduce the scope of issues in the DSIC petition and expedite the process of getting this new rate mechanism in place;"[4] (b) stated that an LTIIP would be assigned to the Bureau of Technical

[4] Final Implementation Order, p. 21.

Utility Services ("TUS") for analysis and a recommendation to the Commission;[5] (c) provided that interested parties may file comments within 20 days of the filing of an LTIIP;[6] and (d) established a period of 120 days for review of each proposed LTIIP.[7]

6. On May 27, 2014, the Commission entered a Final Order adopting the LTIIP regulations that are set forth at 52 Pa. Code §§ 121.1-121.8.[8] The LTIIP regulations adopt and expand upon the requirements set forth in the Final Implementation Order by providing that an LTIIP should include the following eight major elements, as stated in Section 121.3(a):

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

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

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

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

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

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

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

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

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[5] Final Implementation Order, p. 20.
[6] *Id.* The review period of 20 days stated in the Final Rulemaking Order was subsequently expanded to 30 days in the LTIIP regulations. *See* 52 Pa. Code § 121.4(c).
[7] *Id.*
[8] *Review of Long-Term Infrastructure Improvement Plan – Final Rulemaking Order*, Docket No. L-2012-2317274, (May 23, 2014). The LTIIP regulations became effective upon publication in the *Pennsylvania Bulletin* on December 20, 2014. *See* 44 Pa.B. 7856.

7. In Section 121.4(e) of the LTIIP regulations, the Commission provided the criteria it would use to review LTIIPs submitted for its approval, as follows:

> (e) The Commission will review the filed LTIIP and determine if the LTIIP:
>
> (1) Contains measures to ensure that the projected annual expenditures are cost-effective.
> (2) Specifies the manner in which it accelerates or maintains an accelerated rate of infrastructure repair, improvement or replacement.
> (3) Is sufficient to ensure and maintain adequate, efficient, safe, reliable and reasonable service.
> (4) Meets the requirements of § 121.3 (relating to LTIIP).

8. Additionally, Section 121.4(f) provides that, if the Commission determines that an LTIIP does not satisfy the requirements of Section 121.3(a) of the LTIIP regulations, the Commission will order the filing of a new or revised LTIIP. Section 121.4(g) explains that, if ordered to file a new or revised LTIIP, a utility may elect to withdraw its LTIIP but, in that event, would not be eligible to implement a DSIC (or to continue its then-existing DSIC, if any).

II. PENELEC'S LONG-TERM INFRASTRUCTURE IMPROVEMENT PLAN

9. The Company's LTIIP meets the requirements of Section 1352 of the Code and contains the eight major elements set forth in Section 121.3(a) of the Commission's LTIIP regulations, as explained in Subsections A-H, below. The LTIIP covers a broad spectrum of distribution-related equipment and facilities, as discussed in Appendix A of the LTIIP, which are grouped into seventeen categories of DSIC-eligible property, as follows:

- Install Protective Devices
- Create Circuit Ties and Loops
- Porcelain Cutout Replacement

- Line Rehabilitation
- Install Supervisory Control and Data Acquisition (SCADA) Devices
- Install Advanced Distribution Protection Devices
- Wood Pole Replacement
- Wood Pole Reinforcement (C-Trussing)
- Unreimbursed Highway Relocation
- Split Large Circuits
- Switch and Gang Operated Air Brakes (GOAB) Replacement
- Wood Pole Substation Retirement
- Substation Breaker Replacement
- Substation Relay Replacement
- Cap and Pin Insulator Replacement
- Network Vault Rehabilitation
- Customer Service Improvement (CSI)

10. Within the description of each asset category discussed in Appendix A, Penelec provides estimates of the number of replacements, reinforcements, conversions or other improvements that will be made, by year, over the LTIIP's five-year planning period. Additionally, for the programs designed to accelerate repair or replacement within each asset category, Penelec provides the following:

- A description of the program and its purpose;
- A description of how the Company identifies equipment for replacement within each asset category and the appropriate course of action for implementing the replacements;

- The scope of the program, including a reasonable estimate of the amount of property to be improved, where such a quantification is applicable;

- The location of planned replacements, where improvements are to be achieved by replacing existing property; and

- The total amount projected to be spent by the Company annually and over the life of the LTIIP.

11. Because the LTIIP is a blueprint for investments that will be made over the course of five years in the future, individual elements of the proposed initiatives that will be implemented in each asset category will be subject to some degree of change as more detailed analysis and planning takes place and better estimates of the cost and time to complete each project are developed. Additionally, some projects included in the LTIIP depend upon third-party actions or decisions, such as permitting, access to public rights-of-way, contractor or equipment availability or, in the case of highway relocations, construction plans by state, county and municipal governments that may not yet be developed or are subject to change. While these factors may affect the allocation of investment funds within or between the stated asset categories and may also affect the timing or prioritization of investments within the 2016-2010 term of the LTIIP, current expectations are that none of these factors will eliminate from the LTIIP an entire category of eligible property; extend the schedule for repair, improvement or replacement of a category of eligible property by more than two years; increase the total estimated cost of the LTIIP by more than 20%; or otherwise reflect a substantial change to the LTIIP as finally approved by the Commission. Accordingly, the possible changes to the LTIIP that might be required in the future should not constitute a "major modification" requiring Penelec to petition for approval of a modified Plan under Section 121.5 of the LTIIP regulations.

A. Identification of Types and Age of Property to be Improved, Repaired and Replaced

12. Section 121.3(a)(1) of the LTIIP regulations calls for the identification of the types and ages of the eligible property covered by the Plan. The descriptions in each asset category in Appendix A identify the type and age of the eligible property in that category. For example, the largest component by cost of Penelec's LTIIP is the replacement of porcelain cutouts, which will replace aging infrastructure that has experienced an accelerating failure rate.

B. Initial Schedule for Planned Repair and Replacement of Eligible Property

13. In accordance with Section 121.3(a)(2) of the LTIIP regulations, Penelec's LTIIP includes schedules reflecting estimates, based on current information, of the expected years when planned repairs and replacements of eligible property will be completed. The schedules are described on an individual program basis in Appendix A. Using Penelec's porcelain cutouts replacement program as an example, sixty-eight projects are planned for 2016, seventy-eight projects are planned for 2017, fifty-seven projects are planned for 2018, and no projects are planned for 2019 or 2020, for a total of two hundred and three planned projects during the entire period from 2016 through 2020.

C. General Description of the Location of Eligible Property

14. The individual program or project descriptions identify the location of the affected eligible property by its location within an operating area demarcated by the applicable Company Operations Center. Penelec's porcelain cutouts replacement program, for example, shows a total of two hundred and three projects divided among operating areas covered by its Altoona Operations Center (1), Clearfield Operations Center (11), Dubois Operations Center (28), Erie Operations Center (32), Lewistown Operations Center (1), Oil City Operations Center (42), Towanda Operations Center (59) and Warren Operations Center (29).

D. Estimate of Quantity of Eligible Property

15. The individual program or project descriptions also identify the quantity of the affected eligible property, with the degree of specificity that is possible and practical for the nature of the work involved, by each Company operating area, demarcated by its respective Operations Center.

E. Projected Annual Expenditures

16. Appendix A to Penelec's LTIIP contains a table showing the projected annual expenditures over the five-year term of the LTIIP. The table shows the total quantity of affected eligible property, the average cost per unit of affected eligible property, the projected expenditures on a yearly basis for each of the individual programs for the five-year period, and the total projected expenditures for each program at the conclusion of the five-year period. The table also shows cumulative projected annual and total expenditures for all eligible distribution property. Information about expenditures for individual programs is also included in the sections describing those programs.

F. Acceleration of Infrastructure Improvement and Maintenance of Customer Service

17. Section 121.3(6) of the LTIIP regulations provides that an LTIIP should describe "the manner in which infrastructure replacement will be accelerated and how repair, improvement or replacement will ensure and maintain adequate, efficient, safe, reliable, and reasonable service to customers." Penelec's LTIIP reflects the Company's advancement and acceleration of its infrastructure repair and replacement programs designed to address aging infrastructure, and the Company expects to continue its investment in infrastructure at that accelerated pace over the five years of the LTIIP's term. The LTIIP explains why projects are being undertaken in terms of possible improvements that they are designed to make in customer service and reliability. For

example, line rehabilitation is designed to help the Company improve reliability on circuits where outages could impact significant numbers of customers. Penelec will employ data-driven processes to prioritize the circuits that will be rehabilitated by, for example, analyzing a circuit's historical reliability performance and its ranking within the category of worst performing circuits, and will augment those analyses with information based on field inspections and other objectively determined factors that drive the need for rehabilitation.

18. In order to analyze the cost-effectiveness of individual programs, Penelec expects to routinely review the effectiveness of its programs based on their expected impact on System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI") and their potential to reduce outage response costs, and will compare the value of those expected benefits to the costs of the program and/or individual projects within a program. The repair, reinforcement and replacement of aging distribution equipment and facilities covered by Penelec's LTIIP are designed to help the Company to reduce the frequency and duration of customer outages resulting from equipment failure, which otherwise would increase as the age of its infrastructure increases.

G. Workforce Management and Training Plan for Performance of Work in Cost Effective, Safe and Reliable Manner

19. Section 121.3(a)(7) of the LTIIP regulations requires utilities to include a workforce management and training plan as a part of an LTIIP. A comprehensive description of Penelec's programs for ensuring a qualified workforce is set forth in its LTIIP. For purposes of providing the information required for its LTIIP, Penelec's workforce is considered to include employees of Penelec and employees of various contractors that will be retained to work on LTIIP projects.

H. Description of the Utility's Outreach and Coordination Activities with Third Parties

20. In accordance with Section 121.3(a)(8) of the regulations, the LTIIP describes how the Company's plans to reach out to, and coordinate with, other utilities, the Pennsylvania Department of Transportation and local governments with respect to work to be performed pursuant to the LTIIP that might affect or implicate those entities' roadways or other property and their construction and maintenance schedules.

I. Estimated Implementation of Penelec's DSIC

21. The Company anticipates that, following Commission approval of its LTIIP, it will file a petition and proposed tariff to establish a DSIC to recover the fixed costs of the property placed in service pursuant to its LTIIP, all of which constitutes "eligible property" as defined in Section 1351 of the Code. Based upon approval of its LTIIP within the 120-day review period established in the Final Implementation Order and a DSIC filing made shortly thereafter, the Company anticipates that, following Commission review and approval, its DSIC will become effective on or about September 1, 2016. Consistent with that schedule, the Company's initial DSIC rate will be calculated to recover the fixed costs of eligible property placed in service between May 1, 2016 and July 31, 2016. Thus, Penelec's initial DSIC rate will only include property placed in service after the last day of the fully projected future test year employed in the Company's most recent base rate case, which ends on April 30, 2016.[9]

III. CONCLUSION

WHEREFORE, for the reasons set forth above, Pennsylvania Electric Company requests that the Commission enter an order by the end of the 120-day review period finding and

[9] *See Pa. P.U.C. v. Pennsylvania Electric Company*, Docket No. R-2014-2428743 (Final Order entered April 9, 2015).

determining that its LTIIP: (1) satisfies all of the criteria set forth at 52 Pa. Code § 121.4(e)(1)-(4); (2) meets the legal standard set forth in Section 1352(a)(7) for approval of an LTIIP; and (3) therefore, should be approved without revision and without the need to refer this matter to the Office of Administrative Law Judge ("OALJ"). Additionally, if the Commission were to determine that comments, if any, submitted with respect to Penelec's LTIIP present material factual issues that merit assigning this case to the OALJ pursuant to the procedure outlined in the Final Implementation Order, the Company further requests that the Commission, at the time of such assignment, authorize Penelec to file written direct testimony to address such issues and other matters deemed relevant.

Respectfully submitted,

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Attorneys for
Pennsylvania Electric Company

Dated: October 19, 2015

DB1/ 84876038.1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of Pennsylvania Electric	:	
Company for Approval of its Long-Term	:	**Docket No.** _____
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VERIFICATION

I, Linda L. Moss, hereby state that I am President, Pennsylvania Operations, FirstEnergy Service Co., am authorized to submit this Verification on behalf of Pennsylvania Electric Company, that the facts set forth above in the Petition for Approval of its Long-Term Infrastructure Improvement Plan are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904, relating to unsworn falsifications to authorities.

Date: October 19, 2015

Linda L Moss

LINDA L. MOSS

Pennsylvania Electric Company

Exhibit No. 1

Long-Term Infrastructure Improvement Plan

Table of Contents

I. Introduction

Pursuant to the requirements of Subchapter B, Distribution Systems, of the Pennsylvania Public Utility Code, 66 Pa.C.S. §§ 1350-1360, and the Pennsylvania Public Utility Commission's ("PUC" or the "Commission") Final Implementation Order for Implementation of Act 11 of 2012, entered August 2, 2012, at Docket No. M-2012-2293611, and the Commission's regulations at 52 Pa. Code §§ 121.1-121.8, Pennsylvania Electric Company ("Penelec" or "Company") respectfully submits its Long-Term Infrastructure Improvement Plan ("LTIIP") for approval by the Commission.

Penelec is actively engaged and diligently committed to continuing to perform in a manner that results in satisfactory and cost effective reliability performance for its customers. Reliability indices such as System Average Interruption Duration Index ("SAIDI"), System Average Interruption Frequency Index ("SAIFI"), and Customer Average Interruption Duration Index ("CAIDI") indicate that Penelec has generally been successful in its efforts to maintain system reliability. Despite a decreasing trend in the number of equipment and line failures per year equipment and line failures remain the top cause for outages at Penelec due to an aging infrastructure. Penelec has undertaken traditional means of cost recovery to support the spending levels necessary to properly maintain the reliability of its distribution system and, to that end, filed an electric distribution base rate case in August 2014, which concluded with a complete settlement that was approved by the Commission in April 2015.[1]

However, further increased and accelerated spending beyond what has historically been required to combat routine system degradation is additionally required. Upgrading the distribution system more quickly through an LTIIP will enhance and modernize service to customers and maintain or improve overall system reliability and resiliency. The Penelec LTIIP will provide reliability advancements, customer service improvements, and will position the Company to meet the needs and demands of its customers into the future.

II. Requirements of the LTIIP

Pursuant to 52 Pa. Code § 121.3(a), a utility seeking to implement a distribution system improvement charge ("DSIC") mechanism or to continue a previously-approved DSIC mechanism must file an LTIIP. The LTIIP must include the eight elements listed in that regulation. The required elements and the locations within Penelec's LTIIP where they are addressed are set forth below:

52 Pa. Code § 121.3(a)(1). The descriptions of the seventeen infrastructure improvement initiatives set forth in Appendix A identify the types and ages of DSIC-eligible property in subsections captioned "Description" and "Age of Infrastructure."

[1] *Pa. Pub. Util. Comm'n v. Pennsylvania Electric Co.*, Docket No. R-2014-2428743 (Final Order entered April 9, 2015).

52 Pa. Code § 121.3(a)(2). The table at the front of Appendix A, captioned "Summary Cost by Year," shows the planned expenditures, by year, for the period 2016-2020, as well as the total for that period, for each of the infrastructure improvement initiatives discussed in Appendix A.

52 Pa. Code § 121.3(a)(3). The descriptions of each infrastructure improvement initiative in Appendix A set forth the general location of eligible property relating to each initiative in subsections titled "Anticipated Locations."

52 Pa. Code § 121.3(a)(4). Reasonable estimates of the quantity of eligible property to be improved or repaired are provided in the subsection titled "Schedule" in the description of each infrastructure improvement initiative in Appendix A.

52 Pa. Code § 121.3(a)(5). The projected annual expenditures and the manner in which Penelec expects to finance those expenditures are addressed in Section V, below. Additional detail concerning the expenditures by year is provided in Appendix A within the description of each infrastructure improvement initiative.

52 Pa. Code § 121.3(a)(6). A description of the manner in which the infrastructure repair, improvement, or replacement will be accelerated and how repair, improvement or replacement will ensure and maintain adequate, efficient, safe, reliable and reasonable service to customers is addressed in Sections III,V, and VIII, below.

52 Pa. Code § 121.3(a)(7). The workforce management and training programs in place for Penelec that are designed to ensure that it will have access to a qualified workforce to perform work under its LTIIP in a cost-effective, safe and reliable manner is described in Section VII, below.

52 Pa. Code § 121.3(a)(8). A description of how Penelec expects to reach out to, and coordinate with, other utilities, the Pennsylvania Department of Transportation and local governments regarding their planned maintenance/construction projects and roadways that may be impacted by the LTIIP is provided in Section VI, below.

III. Distribution Reliability

To reduce the likelihood of distribution line and equipment caused outages, Penelec follows the FirstEnergy Distribution Inspection & Maintenance Practices ("I&M").[2] These practices are intended to balance cost and benefit while preventing equipment and line failures. They also set forth schedules for regular inspection of distribution facilities. Specifically, distribution line capacitors and reclosers are inspected annually; radio controlled switches are inspected twice per year; overhead circuits and equipment; underground equipment are inspected on a five-year

[2] Pursuant to § 57.198, every two years an electric distribution company shall file, and receive approval from the Commission of, a biennial plan for the periodic inspection, maintenance, repair and replacement of its facilities. On December 30, 2013, Paul Diskin, Director, Technical Utility Services, issued a letter approving the Company's biennial inspection, maintenance, repair, and replacement plan effective January 1, 2015 through December 31, 2016.

cycle; and wood pole ground-line inspections are performed on a twelve-year cycle. These inspections are an important source of information in determining the need for, and prioritizing, the repair, improvement or replacement of Penelec's distribution facilities

In addition to I&M, the Company also employs other routine programs to ensure the reliability of its distribution system. First, the Company has an ongoing initiative to sectionalize Penelec's system in order to reduce the number of customers that lose power if an event occurs at a point on the system. Sectionalizing involves installing fuses on most mainline taps and installing additional line reclosers. Second, the Customers Experiencing Multiple Interruptions ("CEMI") program focuses on clusters of customers that experience frequent or repeated outages or other issues, such as low voltage or momentary outages. This program aims to enhance system performance and provide a means to reduce the frequency of outages at the customer level that might not otherwise be addressed when targeting overall system metrics. Third, FirstEnergy Substation Practices and Methods are employed to ensure the reliability and integrity of substation equipment, to safeguard employees and the public and to meet all state and federal regulatory requirements. FirstEnergy uses a combination of condition assessment and reliability evaluations to determine maintenance programs and intervals and to determine when substation equipment should be repaired or replaced. Condition assessment involves visual inspections, functional testing, diagnostic testing or any combination thereof. All major equipment is visually inspected periodically pursuant to Penelec's substation patrol inspection practice.

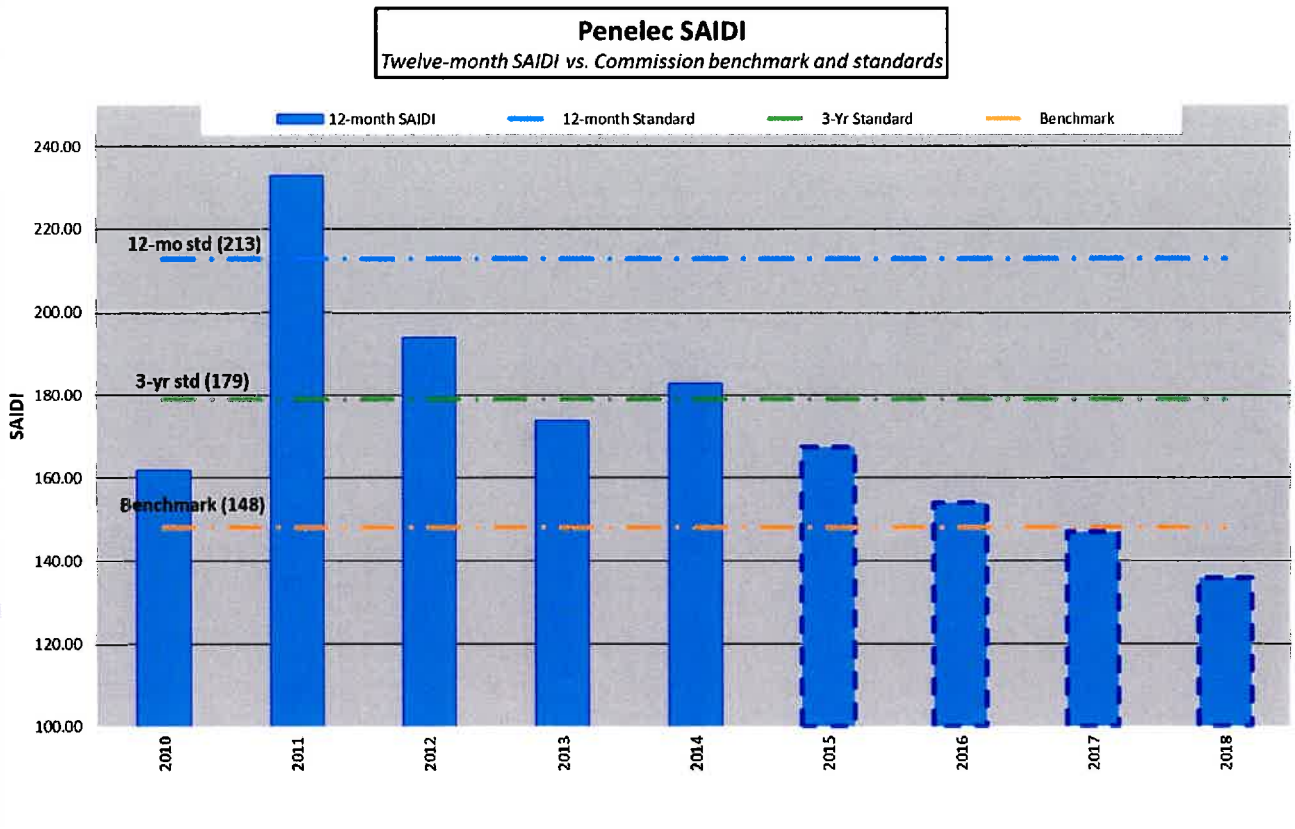
The work described above has been augmented by initiatives that respond to recommendations from the focused reliability assessment of Penelec conducted by an outside consultant in 2009.[3] Initiatives that were implemented following that assessment resulted in system reliability improvements for Penelec. Those initiatives included an enhanced tree trimming program; installing additional adaptive relays and directional fault indicators; implementing partial restoration procedures; and completing circuit protection and sectionalizing upgrades. All of these projects, coupled with the Company's routine inspection and maintenance of electrical equipment, have continued in an effort to improve reliability. Nonetheless, despite the Company's efforts, steady state reliability measured by SAIFI exhibited an increasing trend. In response to those data, Penelec's management determined that an even more aggressive approach was called for and, therefore, formed a Reliability Improvement Team in 2014. The Reliability Improvement Team identified projects and programs that were targeted to improve the increasing trend in the Company's SAIFI metric. Since the Reliability Improvement Team was implemented, the Company's performance measure by SAIFI has steadily improved.

If approved, the LTIIP is expected to promote additional reliability improvement by upgrading and modernizing the distribution system and, in that way, enhancing service to customers. However, forecasting future reliability performance can be challenging, and reliability performance is largely influenced by weather experienced in a given year. Therefore, Penelec presents only the projected reliability performance through 2018. These values represent improvements based on historical reliability experience and the expected benefit to be derived

[3] Focused Reliability Assessment (Penelec) conducted by UMS Group Inc. between November 2008 and January 2009 and issued March 2009.

from each project. These benefits can vary based on actual outages and the weather variability inherent in all reliability estimates. Figure 1 shows Penelec's SAIDI performance from 2010 through 2014 and also shows the estimated reliability improvement as a result of the LTIIP through 2018.

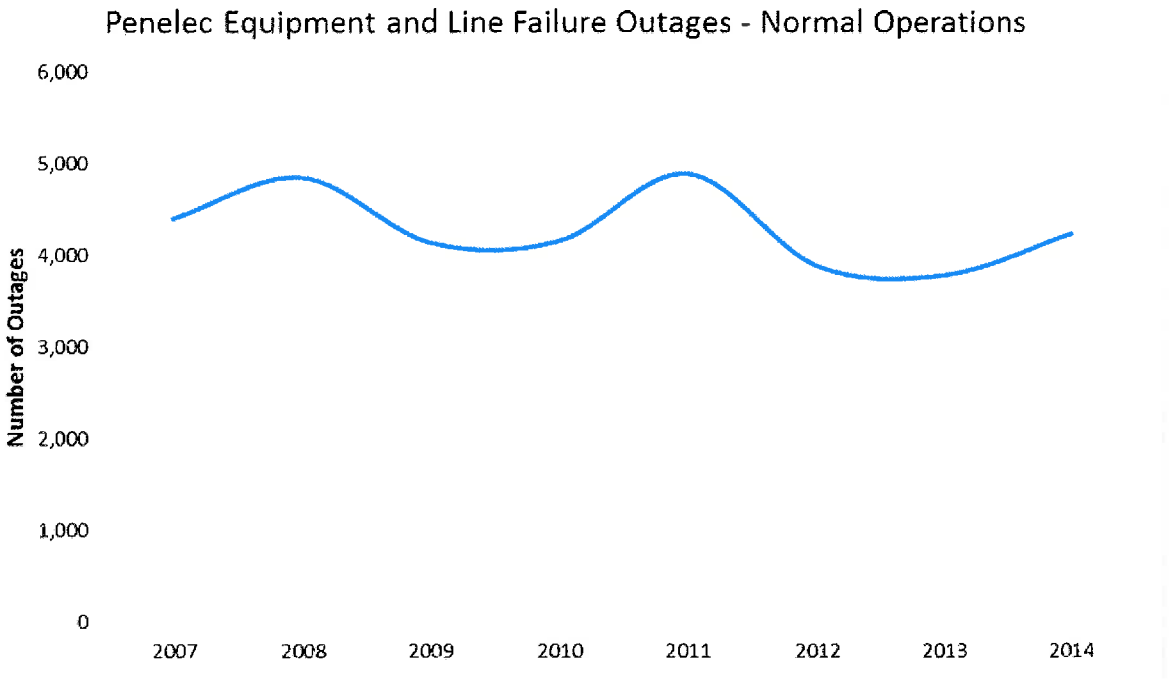
Figure 1. Historical and projected SAIDI performance



IV. The Need for the LTIIP

Despite routine inspection and maintenance and the improvements described above, equipment and line failures continue to place increased pressure on Penelec's ability to ensure adequate, efficient, and reliable service. Outages also increase unplanned work and operation and maintenance costs. Non-storm equipment and line failures combined continue to be the largest contributor to outages at Penelec. Penelec's non-storm related equipment and line failures are graphed by year in Figure 2 below.

Figure 2. Penelec Historical Equipment and Line Failures



In order to address equipment and line failures, Penelec continuously performs focused and detailed reliability studies on distribution circuits to identify the causes of outages and to look for outage trends. Components that significantly contribute to an increasing trend are cutouts[4] on the 34.5 kV system and pole top equipment condition items, such as insulators and cross arms. The results of these studies were used to develop plans designed to improve the performance of the system as measured by SAIFI, SAIDI, and CAIDI, as discussed in more detail hereafter.

V. Implementation of the LTIIP

Penelec's LTIIP encompasses the five-year period from 2016 through 2020 and includes projects that are incremental to its typical capital investment levels. Penelec plans to finance the necessary capital by utilizing the timely recovery of invested funds through the DSIC mechanism. During the term of the LTIIP, Penelec projects spending an additional $56.74 million on programs and projects intended to improve reliability. This accelerated capital investment is inclusive of the Company's DSIC-qualifying projects contained in the implementation plan ("PA Management Audit Plan") submitted in response to ordering paragraphs 3 and 4 of the March 30, 2015 Pennsylvania Management Audit Order.[5] The projects

[4] A cutout is a device that protects the distribution line or equipment from overloading. The device acts by melting an element during overloading or faults, and as the element melts, tension pulls the ends apart thus interrupting the circuit.

[5] On March 30, 2015, the Commission issued an order directing Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penelec Company to prepare and file a revised implementation plan relating to specific topics addressed in the report issued by the Commission's Bureau of Audits

and programs identified in the PA Management Audit Plan total approximately $29.19 million. The LTIIP also includes an additional investment in reliability ("Additional Reliability Plan") improvements of $20.74 million. If performed in accordance with an approved LTIIP, the projects and programs identified in the PA Management Audit Plan and Additional Reliability Plan will accelerate replacement of obsolete or aging infrastructure in order to strengthen Penelec's distribution system (i.e., help to reduce outages) and will accelerate the construction of new infrastructure designed to split large circuits and provide additional feeds to circuits during outage situations (i.e., reduce the number of customers affected if an outage occurs). Further, Penelec's PA Management Audit Plan facilitates the Company's goal of achieving benchmark-level performance for SAIFI, SAIDI, and CAIDI by year-end 2018. If performed in accordance with an approved LTIIP, the Additional Reliability Plan will work in conjunction with the PA Management Audit Plan to further support their common goal of achieving benchmark-level performance. Finally, the LTIIP includes approximately $6.81 million for unreimbursed costs related to government-required highway relocation projects.[6] As previously noted, the infrastructure improvement initiatives outlined above are described in more detail in Appendix A.

The acceleration of Penelec's reliability related capital investment that will occur by implementing its LTIIP is evidenced by comparing the data in Figures 3 and 4, below. Figure 3 shows Penelec's total capital investment related to maintaining and improving reliability for the period 2010-2014. Figure 4 shows Penelec's planned capital investment for the same categories of plant for the period 2016-2020.

Figure 3. Penelec's historic capital investment

Annual Expenditures (in millions of dollars)						
Category	**2010**	**2011**	**2012**	**2013**	**2014**	**Avg. Annual Spend**
Maintaining and Improving Reliability	$16.25	$20.93	$22.95	$16.27	$23.93	**$20.07**

Figure 4. Penelec's planned capital investment

Annual Expenditures (in millions of dollars)						
Category	**2016**	**2017**	**2018**	**2019**	**2020**	**Avg. Annual Spend**
Maintaining and Improving Reliability	$32.49	$36.18	$41.39	$33.71	$34.55	**$35.66**

*The entire budget for 2020 is not available, therefore, a 2.5% growth rate is assumed.

For the most part, the programs that were considered for inclusion in Penelec's LTIIP are those designed to have the greatest impact on reliability (in term of positive effect on customer service) per dollar spent. Additionally, in most cases, the programs included in the LTIIP were chosen to reduce the number of outages caused by aging equipment and lessen unplanned work and operation and maintenance costs. On an ongoing basis, projects will be prioritized to maximize

on February 12, 2015. Implementation Plan for the Focused Management Audit of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penelec Company, Docket Nos. D-2013-2365991, D-2013-2365992, D-2013-2365993, D-2013-2365994.

[6] 66 Pa.C.S. § 1351 designates as "eligible property" unreimbursed costs related to highway relocation projects where an electric distribution company must relocate its facilities.

the reliability and operating benefits to Penelec's customers. The effectiveness of the projects and programs that comprise the LTIIP will be reviewed periodically to determine that they remain prudent and cost-effective. Reliability and equipment failure trends will be analyzed on an ongoing basis as well to assess the impact of on-going investments. Thus, the Company will continuously review its plan and will assess the effectiveness of the identified projects and programs in relation to actual performance results. The Company may re-prioritize, alter completion dates, and add or remove projects based on ongoing engineering analyses to maximize the reliability and operating benefits to the affected circuits, while taking into consideration the overall impact to reliability and operational improvement and the costs and benefits to customers.

VI. Outreach and Coordination with Other Entities

Penelec communicates and coordinates with the Pennsylvania Department of Transportation ("PennDOT"), local governments, local municipalities, and other utilities and entities with regard to work that is scheduled to be performed that may affect the operations of those entities. Examples of communication and coordination efforts include press releases, public meetings, contact with local officials, and communication to customers who will experience a planned outage due to construction within the service area. However, most of the work that will be performed under Penelec's LTIIP will likely have minimal impact on these entities' work schedules. Because the possible impacts depend on the circumstances at the time work is actually being performed, specific project outreach plans are not currently available.

VII. Access to a Qualified Workforce

A. Penelec Workforce

The Company created Power Systems Institute ("PSI"), which is a unique, two-year program that combines classroom learning with the hands-on training needed to open the door to opportunities in the electric industry. The program was created as a way to help replace retiring line and substation employees. Upon completing the program, graduates will have a total of 1,280 hours of hands-on technical training as well as 60 hours of academic college credits. Graduates will earn an associate's degree and are classified as a mid-level line or substation worker. Qualified graduates are offered positions with the Company subject to the Company's standard hiring process.

It is the Company's practice to size its workforce to accommodate a steady state workload that includes day-to-day activity and a reasonable level of storm response as projected from historical averages. For those times when workload increases above steady-state levels, the Company is able to supplement its own resources by accessing a portfolio of affiliated resources[7] that may be

[7] FirstEnergy Corp.'s portfolio of operating companies includes not only those four located within the Commonwealth of Pennsylvania, but an additional six operating in other jurisdictions. The consistency in standards and work practices employed across all ten of these operating companies enables streamlined resource sharing in a way that promotes both safety and cost efficiency for those companies under this umbrella.

able to move into the area to assist on a temporary basis. The Company also employs contractors to supplement regular status employees, particularly during construction of large capital projects.

In regard to training for qualified electrical workers, the Company adheres to the Occupational Safety and Health Administration ("OSHA") Regulation 29 CFR 1910.269 Electrical Power Generation, Transmission, and Distribution standard, American National Standards Institute, American Society for Testing Materials, and Institute of Electrical and Electronics Engineers standards. Training material leverages FirstEnergy work practices, procedures, construction standards, and the Accident Prevention Handbook.

Formal training is provided by the Workforce Development ("WFD") team. This group consist of full time instructors supplemented by contracted instructors who are generally retired craft workers. WFD develops, conducts, and evaluates knowledge and skills training for apprentices and incumbents.

Training is provided through varying methods, which consist of hands-on, classroom and on-the-job training. The curriculum is designed to support the employee's progression and includes a formalized skills demonstration program that allows for practice to gain proficiency in critical tasks. Finally, employees are required to complete progressive testing in a controlled setting to demonstrate skill proficiency prior to advancing within the craft line.

Formal and annual regulatory training mandated by agencies such as OSHA, the Department of Transportation, and the Environmental Protection Agency is managed within WFD, which ensures that all employees complete the required training within the applicable timeframes. Interpretation of training revisions is managed with the assistance of FirstEnergy and FirstEnergy Utilities Safety Division. WFD maintains the integrity of all training materials and tracks completion to ensure compliance. All training adheres to FirstEnergy policies and procedures to ensure quality, consistency and accuracy.

B. Contractor Workforce

In the event that resources are necessary to supplement the Company's workforce, FirstEnergy's Utilities Sourcing Department employs its Contractor of Choice Program to ensure FirstEnergy secures a skilled labor force and specialized equipment in order to complete projects on schedule and at competitive market pricing. Under the Contractor of Choice Guidelines the FirstEnergy Utilities Sourcing Department will issue a Request for Proposal ("RFP") to a list of contractors who have a history of successfully completing projects safely, on schedule and at competitive market pricing. After a thorough bid clarification process with the contractors the responses to the RFP are evaluated by Engineering, Project Management and Supply Chain. A contractor is selected based on available manpower and equipment resources, understanding of project scope, constructability, management and safety oversight and pricing. A contractor is required to:

- Employ only persons known by the contractor to be experienced, qualified, reliable and trustworthy.

- Have in writing a series of safe work practices, procedures and programs pertinent to the work being done.

Upon completion of the work, a designated representative of the Company will evaluate the work performed by the contractor before final acceptance.

Supplier diversity is a core value inherent to all of the Company's business operations. Supporting diversity is an essential element to locating sources of materials and services, selecting suppliers and managing supplier and contractor relationships.

VIII. Summary

The proposed LTIIP is designed to allow Penelec to respond to equipment and line failures presently occurring across its system. Over the course of the last ten years, Penelec has made significant investments in its distribution system in the form of fuses, reclosers and switches to limit the scope of outages and improve response times. Despite these investments, Penelec continues to experience equipment and line failures as equipment continues to age and deteriorate. The proposed LTIIP will enable Penelec to address these conditions.

The reasonable, prudent and cost-effective investments set forth in Penelec's LTIIP accelerate the rate of infrastructure repair, improvement or replacement on its distribution system and are expected to enhance reliability by reducing the number and scope of outages and improving outage response times. These improvements should also better enable Penelec to achieve work efficiencies by focusing on planned work instead of reacting to unplanned work. Penelec's LTIIP contains all of the elements required by 52 Pa. Code § 121.3(a). Accordingly, Penelec's LTIIP satisfies the criteria for Commission approval set forth in 52 Pa. Code § 121.4(e).

Appendix A

Summary Cost by Year

Infrastructure Improvement Initiative	Planned Annual Expenditures (in millions of dollars)					
	2016	2017	2018	2019	2020	Total
Total	**$10.89**	**$11.23**	**$12.25**	**$11.20**	**$11.17**	**$56.74**
Cap and Pin Insulator Replacement	$-	$-	$-	$0.46	$0.47	**$0.93**
Create circuit Ties and Loops	$0.81	$-	$3.03	$-	$-	**$3.84**
Customer Service Improvement ("CSI")	$0.33	$0.33	$0.33	$0.33	$0.33	**$1.65**
Install Advanced Distribution Protection Devices	$-	$-	$2.15	$-	$-	**$2.15**
Install SCADA Devices	$0.74	$0.59	$0.59	$-	$-	**$1.92**
Line Rehabilitation	$0.78	$1.37	$1.79	$0.93	$0.81	**$5.68**
Network Vault Rehabilitation	$-	$-	$-	$0.88	$0.90	**$1.78**
Porcelain Cutout Replacement	$6.67	$3.44	$0.86	$-	$-	**$10.97**
Review Coordination - Install Protective Devices	$0.12	$0.15	$0.06	$-	$-	**$0.33**
Split Large Circuits	$-	$3.91	$2.13	$-	$-	**$6.04**
Substation Breaker Replacement	$-	$-	$-	$0.39	$0.39	**$0.78**
Substation Relay Replacement	$-	$-	$-	$1.24	$1.24	**$2.48**
Switch and GOAB Replacement	$-	$-	$-	$1.92	$1.97	**$3.89**
Unreimbursed Highway Relocation	$1.44	$1.44	$1.31	$1.31	$1.31	**$6.81**
Wood Pole Reinforcement (C-Trussing)	$-	$-	$-	$0.30	$0.30	**$0.60**
Wood Pole Replacement	$-	$-	$-	$2.97	$2.97	**$5.94**
Wood Pole Substation Retirement	$-	$-	$-	$0.47	$0.48	**$0.95**

Cap and Pin Insulator Replacement

Description
Replace aging substation cap and pin insulators.

Identification and Justification
The brown porcelain cap and pin style substation insulators are older units that are prone to failure. This program will identify substations in need of the reinsulating and replace units with new post style insulators. Candidates for replacement will be chosen by general condition of the substation insulation as well as by locations exhibiting poor historical performance and greatest potential customer impact and are prioritized based on customer impact (SAIFI) from an insulator failure which causes a loss of the bus. This program will reduce failed insulator caused outages and damage to adjacent equipment caused by the failed insulator.

Age of Infrastructure
The insulator equipment targeted for replacement in this program is over 40 years old.

Schedule

Planned Insulator Replacements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	15	15	**30**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$0.46	$0.47	**$0.93**

Anticipated Locations

Operations Center	Total
Altoona	10
Erie	10
Oil City	10
Total	**30**

Create Circuit Ties and Loops

Description
Create tie points and loops between radial circuits. Focus will be on 34.5 kV distribution circuits.

Identification and Justification
Although some of the distribution circuits have ties back to other circuits, there are circuits or portions of circuits that are radial in nature. During an outage, customers served by radial circuits, remain out of service until repairs are made. This project will build distribution ties between radial sections of the circuits to allow for circuit switching during outages and is designed to enable faster service restoration for customer served by radial circuits. Both manual and SCADA switches will be used to accomplish the switching. Projects will be prioritized using the following criteria:

- Reliability history of the circuit (SAIFI and CAIDI)
- Number of customers served radially without a tie

Age of Infrastructure
The work encompassed by this initiative involves the installation of new equipment designed to enhance or modernize service to customers. The infrastructure targeted for enhancement is not chosen based on age or condition but by reliability performance. However, the average age of the circuits that will be upgraded is 81 years old.

Schedule

Planned Circuit Ties or Loops					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
1	-	1	-	-	**2**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$0.81	$-	$3.03	$-	$-	**$3.84**

Anticipated Locations

Operations Center	Total
Oil City	1
Towanda	1
Total	**2**

Customer Service Improvement ("CSI")

Description
Reliability improvements that focus on clusters of customers that experience frequent or repeated outages as well as other issues such as low voltage or momentary outages.

Identification and Justification
This program not only aims to enhance system performance, but it also provides a means to reduce frequency of outages at the customer level that might not be otherwise addressed when targeting overall system metrics. Examples of projects that may be completed include replacing overhead conductor, reclosers, cutouts, or transformers, or installing fuses or animal guards. Items that have been historically addressed include sustained outages, momentary outages, over voltage, low voltage, stray voltage, and flickering lights.

Age of Infrastructure
In general, the age of the infrastructure will not be known until specific projects are identified.

Schedule

Planned Improvement Projects					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
64	64	64	64	64	**320**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$0.33	$0.33	$0.33	$0.33	$0.33	**$1.65**

Anticipated Locations
Locations for the program will be determined by specific clusters of customers that experience frequent or repeated outages.

Install Advanced Distribution Protective Devices

Description
Review subtransmission and distribution circuits for opportunities to upgrade and enhance circuit coordination and reliability.

Identification and Justification
This program will provide for the installation of an electronically controlled recloser which will allow for additional protection coordination with downstream devices and enhance the line protection. Circuits will be selected on past reliability performance and number of customers served. Reliability improvements should be realized by reducing customers affected per incident (SAIFI) and the reduction in the number of circuit lockouts.

Age of Infrastructure
The work encompassed by this initiative involves the installation of new equipment designed to enhance or modernize service to customers. The infrastructure targeted for enhancement is not chosen based on age or condition but by reliability performance. However, the average age of the circuits that will be upgraded is 79 years old.

Schedule

Planned Number of Circuits					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	4	-	-	**4**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$2.15	$-	$-	**$2.15**

Anticipated Locations

Operations Center	Total
Clearfield	1
Erie	1
Oil City	1
Warren	1
Total	**4**

Install SCADA Devices

Description
Install additional distribution supervisory control and data acquisition ("SCADA") devices at new locations where circuit conditions and system performance warrant.

Identification and Justification
This program is designed to reduce both SAIFI and CAIDI, while improving the reliability performance of the circuits. These devices better enable dispatchers to restore customers during outages, and will also allow dispatchers to pinpoint the location of faulted sections more quickly, saving crew time for actual repair. The following guidelines will be used to prioritize the installation of the new devices:

- Circuits that are operated at 34.5 kV or 23 kV that provide a source to another distribution substation
- Substations can be sectionalized and fed from other source remotely
- Circuits with significant SAIFI and CAIDI numbers

Age of Infrastructure
The work encompassed by this initiative involves the installation of new equipment designed to enhance or modernize service to customers. The infrastructure targeted for enhancement is not chosen based on age or condition but by reliability performance. However, the average age of the circuits that will be upgraded is 70 years old.

Schedule

Planned SCADA Controlled Devices					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
9	7	7	-	-	**23**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$0.74	$0.59	$0.59	$-	$-	**$1.92**

Anticipated Locations

Operations Center	Total
Altoona	1
Dubois	2
Erie	3
Johnstown	5
Lewistown	3
Oil City	2
Towanda	7
Total	**23**

Line Rehabilitation

Description
Refurbish zone one and zone two[8] of targeted distribution circuits that have high SAIFI performance. Focus will be on circuits that have high rates of equipment and line failures and weather caused outages.

Identification and Justification
Large impact distribution outages are caused when a fault occurs on a distribution circuit that has a significant number of customers. Faults can affect components including but not limited to cutouts, lightning arresters, crossarms, capacitors, reclosers, insulators, transformers, and connectors. To prevent these faults, circuit reviews will identify any equipment deficiencies and other opportunities to prevent outages. The number of items identified for replacement will vary based on circuit size and condition. Projects will be prioritized using the following criteria:

- Reliability history of the circuit (SAIDI, SAIFI, and CAIDI)
- Worst performing circuit status
- Field inspections

Age of Infrastructure
The components of these circuits have an average age of 45 to 55 years, though some components may have been installed in the late 1920s. In general, the age of the specific equipment that will be replaced will not be known until it is identified through the inspection process.

Schedule

Planned Circuits for Rehabilitation					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
2	3	5	2	2	**14**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$0.78	$1.37	$1.79	$0.93	$0.81	**$5.68**

[8] Zone one is defined as the portion of the circuit from the substation breaker to the first protective device. Zone two is defined as the three phase conductor and devices after the first protective device.

Anticipated Locations

Operations Center	Total
Erie	6
Philipsburg	3
DuBois	1
Johnstown	1
Towanda	2
Oil City	1
Total	**14**

Network Vault Rehabilitation

Description
Upgrade aging underground network vaults and manholes by replacing them with new standard network vaults and manholes.

Identification and Justification
Penelec operates and maintains three underground networks in its service territory. Some of the equipment is nearing the end of its effective life. Growth on the network is controlled by serving new customers from non-network circuits whenever possible. This program will accelerate the replacement of aging network vaults and manholes that house the network equipment and is designed to improve safety, operational flexibility, reliability, and customer service. Work will be prioritized based on overall condition of the network vault.

Age of Infrastructure
The equipment targeted for replacement in this program is more than 40 years old.

Schedule

Planned Vault Rehabilitations					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	23	23	**46**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$0.88	$0.90	**$1.78**

Anticipated Locations

Operations Center	Total
Altoona	15
Erie	15
Johnstown	16
Total	**46**

Porcelain Cutout Replacement

Description
Replace porcelain cutouts located in zone one or zone two on overhead distribution circuits.

Identification and Justification
Porcelain cutouts have been failing at Penelec at an accelerated rate, causing lockouts of reclosers and circuit breakers, pole fires and other damage. These failures lead to long duration outages and drive up SAIFI and SAIDI. Replacing porcelain cutouts with new, industry standard polymer cutouts should reduce the number of lockouts and unplanned outages. Projects will be prioritized using the following criteria:

- Reliability history of the circuit (SAIDI, SAIFI, and CAIDI)
- Worst performing circuit status

Age of Infrastructure
Cutouts are a relatively small piece of equipment the age of which is not typically tracked. From the records Penelec does have for these particular circuits, the cutouts were installed in the 1970s throughout the 1990s. The Company fully transitioned to installing only polymer cutouts in late 2006.

Schedule

Planned Number of Circuits					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
68	78	57	-	-	**203**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$6.67	$3.44	$0.86	$-	$-	**$10.97**

Anticipated Locations

Operations Center	Total
Altoona	1
Clearfield	11
Dubois	28
Erie	32
Lewistown	1
Oil City	42
Towanda	59
Warren	29
Total	**203**

Review Coordination - Install Protective Devices

Description
Construct and implement fuse protection and coordination recommendations from full circuit coordination studies completed by the planning and protection engineers.

Identification and Justification
The selected circuits are based on overall performance and by the protection needs. These circuits are on the 34.5 kV distribution system, which statistically benefit more from a coordination study. Circuits are programmatically reviewed by a protection engineer. By installing additional protective devices, fewer customers will be affected during an outage therefore reducing Penelec's SAIFI performance.

Age of Infrastructure
Various protective devices are a relatively small pieces of equipment of which age is not tracked. Many of the existing protective devices were replaced or installed in the 1970s through the 1990s.

Schedule

Planned Number of Circuits					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
6	6	2	-	-	**14**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$0.12	$0.15	$0.06	$-	$-	**$0.33**

Anticipated Locations

Operations Center	Total
Altoona	1
DuBois	2
Erie	5
Johnstown	2
Oil City	1
Towanda	3
Total	**14**

Split Large Circuits

Description
This program is designed to divide large distribution circuits into smaller circuits.

Identification and Justification
This program is designed to reduce both SAIFI and CAIDI on the circuits, while improving the reliability performance of the circuits. When an outage occurs, fewer customers should be impacted and the time to locate the problem will be reduced because the circuit is smaller. The following guidelines will be used to prioritize circuits for this program:

- Circuits with significant SAIFI and CAIDI numbers
- Considered worst performing circuits
- Other programs already implemented
- A reduction of exposure is warranted to correct worst performing circuit status

Age of Infrastructure
The work encompassed by this initiative involves the installation of new equipment designed to enhance or modernize service to customers. The infrastructure targeted for enhancement is not chosen based on age or condition but by reliability performance. However, the average age of the circuits that will be upgraded is 82 years old.

Schedule

Planned Number of Circuits					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	1	1	-	-	**2**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$3.91	$2.13	$-	$-	**$6.04**

Anticipated Locations

Operations Center	Total
Clearfield	1
Johnstown	1
Total	**2**

Substation Breaker Replacement

Description
Identify and replace aging, unreliable, or obsolete circuit breakers.

Identification and Justification
Replace distribution 34.5 kV SF6 Square-D breakers and associated relaying equipment. The breaker replacements are prioritized based on the SAIFI impact from a breaker failure or failure to operate. Also considered are breakers that are located at critical points within the system where a breaker failure would cause operational difficulties of the system. New circuit breakers with associated relaying will be installed to improve reliability, correct chronic corrective maintenance and operational issues, improve protection, reduce maintenance, and provide post-fault event logs.

Age of Infrastructure
The Square-D breakers targeted in this program were installed between 1985 and 1997.

Schedule

Planned Breaker Replacements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	10	10	**20**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$0.39	$0.39	**$0.78**

Anticipated Locations
Locations for the program will be determined using the methodology detailed above.

Substation Relay Replacement

Description
Upgrade aging electromechanical, static relays, microprocessor-based relays and other antiquated relay equipment.

Identification and Justification
This program will replace substation relays that are less reliable or are at the end of the usable life. This includes the replacement of electromechanical directional and transformer differential relays with new microprocessor based platforms that employ oscillography and fault recording capabilities. Replacements are prioritized based on customer impact (SAIFI) from a breaker failure or failure to trip and will improve circuit protection and fault clearing analysis capabilities.

Age of Infrastructure
The relays targeted for replacement are an obsolete style of overcurrent relays which were installed from the 1960s through the early 1990s.

Schedule

Planned Relay Replacements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	50	50	**100**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$1.24	$1.24	**$2.48**

Anticipated Locations
Locations for the program will be determined using the methodology detailed above.

Switch and GOAB Replacement

Description
This program will replace older switches and gang operated air brakes ("GOAB") on the distribution lines and at substations.

Identification and Justification
This program is designed to reduce both CAIDI and SAIDI, while improving the reliability performance of the circuits. The following guidelines will be used to prioritize the installation of the new devices:

- Accessibility of switch location and frequency of operations
- Reliability history of the circuit (SAIDI, SAIFI, and CAIDI)

Age of Infrastructure
Many of the switches scheduled to be replaced are more than 40 years old.

Schedule

Planned Switch or GOAB Replacements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	118	118	**236**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$1.92	$1.97	**$3.89**

Anticipated Locations
Locations for the program will be determined using the methodology detailed above.

Unreimbursed Highway Relocation

Description
Recover the unreimbursed costs of distribution facility relocations in support of highway and bridge construction projects.

Identification and Justification
Highway and bridge relocation and construction projects occur throughout the year and across the Penelec service territory. These projects are sponsored by PennDOT as well as individual counties and municipalities. Reimbursement amounts are calculated based on PennDOT DM-5 manual guidelines. Historically Penelec collects 22% of the overall relocation costs from the entity making the request for equipment relocation.

Age of Infrastructure
The infrastructure targeted for relocation is not chosen based on age or condition but merely by its location. Despite that fact, replacement of infrastructure with newer equipment may result in reliability improvement.

Schedule

Average Number of Projects					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
25-60	25-60	25-60	25-60	25-60	**125-300**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$1.44	$1.44	$1.31	$1.31	$1.31	$6.81

Anticipated Locations
The location of the work varies and is driven by the construction schedules of PennDOT and other government entities.

Wood Pole Reinforcement (C-Trussing)

Description
Steel reinforcement of distribution poles to maintain the poles' original strength characteristics.

Identification and Justification
This program bolsters the longevity and reliable service of the distribution wood pole fleet as well as contributes to maintaining public and employee safety. Reinforcements are performed by a qualified distribution wood pole inspection and repair contractor. Penelec inspects approximately 42,000 poles per year, from which a historical trend suggests that 2.4% of inspected poles will qualify for reinforcement.

Age of Infrastructure
In general, the age of the poles that will be reinforced will not be known until they are identified through the inspection process. The average age of the reinforced poles across Penelec is 58 years old.

Schedule

Planned Pole Reinforcements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	500	500	**1,000**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$0.30	$0.30	**$0.60**

Anticipated Locations
Project locations are directly linked to the distribution pole inspection plan and are identified yearly.

Wood Pole Replacement

Description
Replacement of poles identified as non-restorable during the annual Penelec distribution pole inspection process.

Identification and Justification
This program is the systematic replacement of wood poles that have been identified by a qualified inspector to have degraded beyond restorable condition (cannot be reinforced). These poles are identified during annual inspections of the distribution network. The program ultimately contributes to storm hardening efforts, and aims to improve public and employee safety as well as contribute to service reliability. Penelec inspects approximately 42,000 poles per year, from which a historical trend indicated a 1.6% rejection rate.

Age of Infrastructure
In general, the age of the poles that will be replaced will not be known until they are identified through the inspection process. The average age of the reinforced poles across Penelec is 58 years old.

Schedule

Planned Pole Replacements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	500	500	**1,000**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$2.97	$2.97	**$5.94**

Anticipated Locations
Project locations are directly linked to the distribution pole inspection plan and are identified yearly. Penelec will endeavor to combine construction activities with other programs identified elsewhere in this infrastructure improvement plan with wood pole replacements in order to maximize efficiencies and crew utilization.

Wood Pole Substation Replacement

Description
Replace aging substation wood pole structures which support distribution padmounted transformers.

Identification and Justification
Penelec owns, inspects, and operates distribution substations that are framed using wood poles. This program seeks to identify and mitigate, through total replacement, the structural concerns surrounding wood pole substations. This project evaluates wood pole constructed substations for condition items that warrant the rebuild of the station.

Age of Infrastructure
The substation wood pole structures that will be targeted are approximately 60 to 70 years old.

Schedule

Planned Wood Pole Substation Replacements					
2016	**2017**	**2018**	**2019**	**2020**	**Total**
-	-	-	1	1	**2**

Planned Annual Expenditures (in millions)

2016	2017	2018	2019	2020	Total
$-	$-	$-	$0.47	$0.48	**$0.95**

Anticipated Locations

Operations Center	Total
Clearfield	1
Erie	1
Total	**2**