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January 18, 2019

**VIA FEDEX OVERNIGHT**

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

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JAN 18 2019

PA PUBLIC UTILITY COMMISSION  
SECRETARY'S BUREAU

**Re: Petition of Metropolitan Edison Company for Approval of Modification of its  
Long-Term Infrastructure Improvement Plan;  
Docket No. M-2018-3000943**

Dear Secretary Chiavetta:

Enclosed for filing is the *Petition of Metropolitan Edison Company for Approval of Modification of its Long-Term Infrastructure Improvement Plan* ("Petition"). A copy of Metropolitan Edison Company's Long-Term Infrastructure Improvement Plan as modified accompanies its Petition as Met-Ed Exhibit No. 1.

Met-Ed's Long-Term Infrastructure Improvement Plan was approved by the Commission by Order entered February 11, 2016, at Commission Docket No. P-2015-2508942, and a Petition for Modification of the Plan was approved by Commission Order entered June 14, 2017 at the same docket.

Copies of the enclosed Petition and Met-Ed 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). This filing is made by express delivery and is deemed filed today.

Respectfully submitted,

  
John L. Munsch

Enclosures

cc: Per Certificate of Service  
Daniel Searfoorce, Office of Technical Utility Services (w/encl.)  
Paul T. Diskin, Director, Office of Technical Utility Services (w/encl.)

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JAN 18 2019

BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PA PUBLIC UTILITY COMMISSION  
SECRETARY'S BUREAU

**Petition of Metropolitan Edison Company** :  
**Petition for Approval of Modification of** :  
**its Long-Term Infrastructure** :  
**Improvement Plan** :

**Docket No. M-2018-3000943**

7-2015-2508942

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**Metropolitan Edison Company Petition for Approval of Modification of its  
Long-Term Infrastructure Improvement Plan**

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Metropolitan Edison Company (“Met-Ed” or the “Company”) files this Petition for Modification of its Long-Term Infrastructure Improvement Plan (“LTIIP”) in response to the Opinion and Order of the Pennsylvania Public Utility Commission (“PUC” or “Commission”) entered September 20, 2018 (“LTIIP Review Order”) at the above docket. The LTIIP Review Order directed Met-Ed to file a modified or new LTIIP addressing issues outlined in the LTIIP Review Order. This Petition is filed pursuant to Section 1352 of the Pennsylvania Public Utility Code (“Code”),<sup>1</sup> pursuant to Commission regulations relating to LTIIPs,<sup>2</sup> and pursuant to the Commission’s Final Implementation Order<sup>3</sup> and Supplemental Implementation Order<sup>4</sup> concerning LTIIPs. The proposed LTIIP modifications accompany this Petition as Met-Ed Exhibit No. 1 (“Second Revised LTIIP ”). As set forth in its Second Revised LTIIP, Met-Ed proposes a substantial change to its current Commission-approved LTIIP which constitutes a “major

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<sup>1</sup> 66 Pa.C.S. § 1352.

<sup>2</sup> 52 Pa. Code § 121.1 *et seq.*

<sup>3</sup> *Implementation of Act 11 of 2012*, Docket No. M-2012-2293611, entered August 2, 2012.

<sup>4</sup> *Supplemental Implementation Order*, Docket No M-2012-2293611, entered September 15, 2016.

*modification*” as defined in Commission regulations concerning LTIIPs and requires that “the utility shall file a separate petition for modification.”<sup>5</sup>

In its LTIIP Review Order the Commission determined that the Company is substantially adhering to the schedule and expenditures outlined in its LTIIP and meeting or exceeding plan goals, in terms of projects completed, in a reasonable and effective manner. The Commission further determined, however, that the Company’s LTIIP is not designed to adequately maintain and improve the efficiency, safety, adequacy and reliability of the Company’s distribution system, and should be modified to improve storm hardening, system resiliency, and reliability. The Commission further proposed actions that the Company may consider in modifying the LTIIP. Consistent with these directives, the Second Revised LTIIP will allow Met-Ed to continue to strengthen, upgrade and modernize its distribution system through various infrastructure improvement initiatives described in detail in Appendix A of the Second Revised LTIIP.

As explained below, Met-Ed’s Second Revised 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, Met-Ed respectfully requests that the Commission approve the Second Revised LTIIP submitted as Met-Ed Exhibit No. 1 to this Petition.

## **I. INTRODUCTION AND BACKGROUND**

1. Met-Ed provides electric distribution service to approximately 570,000 customers in a certificated service territory encompassing all or portions of thirteen counties in eastern

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<sup>5</sup> 52 Pa. Code § 121.5(a)

Pennsylvania. Met-Ed is a “public utility” and an “electric distribution company” (“EDC”) as those terms are defined in the Code.<sup>6</sup> Met-Ed, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company (collectively, “the Companies”) are the four subsidiaries of FirstEnergy Corp. that furnish electric distribution service as public utilities and EDCs in Pennsylvania.

2. The name and address of the Company’s attorney authorized to receive all notices and communications regarding this filing are as follows:

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FirstEnergy Service Company  
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3. On February 14, 2012, former Governor Corbett signed into law Act 11 of 2012 (“Act 11”), which amended the Public Utility Code in several respects, including the addition of Subchapter B to Chapter 13 (66 Pa.C.S. §§1350-1360), which authorizes the Commission to approve petitions to implement a distribution system improvement charge (“DSIC”) filed by EDCs and other types of utilities. 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.

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<sup>6</sup> See 66 Pa.C.S. §§ 102 and 2803.

- (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 Public Utility Code requires that a utility submit an LTIP “in order to be eligible to recover costs under section 1353 (relating to distribution system improvement charge).” In addition, Section 1352 provides that an LTIP 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 LTIP 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 LTIP approval and discusses the procedures the Commission would follow in

reviewing petitions seeking approval of proposed LTIIPs. In that regard, the Commission: (a) stated that an LTIIP would be assigned to the Bureau of Technical Utility Services (“TUS”) for analysis and a recommendation to the Commission;<sup>7</sup> (b) provided that interested parties may file comments within 20 days of the filing of an LTIIP;<sup>8</sup> and (c) established a period of 120 days for review of each proposed LTIIP.<sup>9</sup>

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.<sup>10</sup> 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

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<sup>7</sup> Final Implementation Order, p. 20.

<sup>8</sup> *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).

<sup>9</sup> *Id.*

<sup>10</sup> *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.

planned maintenance/construction projects and roadways that may be impacted by the LTIIIP.

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

- (e) The Commission will review the filed LTIIIP and determine if the LTIIIP:
  - (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 LTIIIP).

8. Section 121.5 of the LTIIIP regulation covers modifications of an LTIIIP. It provides that if a utility elects to modify a Commission-approved LTIIIP during its term to incorporate a major modification of any of the elements in Section 121.3(a) (relating to LTIIIP), the utility shall file a separate petition for modification. Section 121.5(a) provides that parties shall have 30 days to file comments to the petition. A “major modification” is defined at 52 Pa. Code §121.2 as a change to a utility’s previously approved LTIIIP which meets at least one of the following criteria:

- (i) Eliminates a category of eligible property from the LTIIIP.
- (ii) Extends the schedule for repair, improvement or replacement of a category of eligible property by more than 2 years.
- (iii) Increases the total estimated cost of the LTIIIP by more than 20%.
- (iv) Otherwise reflects a substantial change to the current Commission-approved LTIIIP.

The Company’s Second Revised LTIIIP is a substantial change to the current Commission-approved LTIIIP and constitutes a “major modification” for the purposes of filing an LTIIIP modification.

## **II. MET-ED'S LONG-TERM INFRASTRUCTURE IMPROVEMENT PLAN AND DISTRIBUTION SYSTEM IMPROVEMENT CHARGE**

9. On October 19, 2015, at Docket No. P-2015-2508942, Met-Ed petitioned the Commission for approval of its original LTIIIP. Met-Ed's LTIIIP was approved by the Commission on February 11, 2016. The Commission determined that the Company's LTIIIP met the requirements of Section 1352 of the Code and contained the eight major elements set forth in Section 121.3(a) of the Commission's LTIIIP regulations. The Company requested approval of a modification of its LTIIIP by Petition dated March 1, 2017, to reflect changes in the calculation of taxes for ratemaking purposes resulting from Pennsylvania's Act 40, 66 Pa.C.S. § 1301.1, which terminated the practice of making a "consolidated tax adjustment" in Federal taxes for ratemaking purposes and allows any differential accruing to the public utility to be applied "fifty (50) percent to support reliability or infrastructure." The modification was approved by Commission Order entered June 14, 2017, at Docket No. P-2015-2508942 ("First Revised LTIIIP").

10. On February 16, 2016, Met-Ed filed its Petition to establish and implement a DSIC Rider into the Company's tariff with an effective date of July 1, 2016. The filing was made pursuant to 66 Pa. C.S. § 1353 and was docketed at the continuing docket of the LTIIIP filing, P-2015-2508942. The DSIC tariff was approved by Order entered June 9, 2016, and the DSIC tariff was implemented effective July 1, 2016.

## **III. LTIIIP REVIEW ORDER DIRECTING NEW OR MODIFIED LTIIIP**

11. In its LTIIIP Review Order the Commission determined that the Company has substantially adhered to the schedule and expenditures outlined in its Commission-approved LTIIIP. The Commission further determined, however, that the Company's LTIIIP is not designed

adequately to maintain and improve the efficiency, safety, adequacy and reliability of the Company's distribution system.

12. Pursuant to 52 Pa. Code § 121.7(d), the Commission directed the Company to file a modified or new LTIP including expenditures and programs designed to adequately maintain and improve the efficiency, safety, adequacy and reliability of the distribution system. Further, the Order included a list of proposed methods and actions that the Commission suggested the Company consider when developing its modified or new LTIP. The Commission also suggested extending the term of the modified LTIP beyond its current term, which concludes with year-end 2020.

#### **IV. DESCRIPTION OF THE COMPANY'S SECOND REVISED LTIP**

13. The Company's Second Revised LTIP, prepared by the Company to address the Commission's concerns expressed in the LTIP Review Order, is contained in Met-Ed Exhibit 1 hereto. As described in the Second Revised LTIP, the Companies assembled a team of reliability engineers to consider and formulate LTIP modifications. Augmenting the existing, ongoing internal review of the Company's LTIP projects, expenditures, and reliability performance, the Companies developed strategies for long-term reliability maintenance and improvement. The Companies also engaged an independent consultant, PA Consulting Group, Inc., to help ascertain the most meaningful adjustments to each of the Companies' plans in order to accomplish the result envisioned in the Commission's proposed methods and actions outlined in its LTIP Review Order.

14. For 2019 and beyond, Met-Ed proposes to take a two-fold approach to address the Commission's concerns, proposed methods and actions of the LTIP Review Order. First, the Company is proposing modifications to its First Revised LTIP for the year 2019. The LTIP modifications will increase overall spending in 2019 by transferring the capital expenditures currently planned for 2020 into 2019 and supplementing those amounts with additional capital in

2019. Second, as anticipated by Section 121.5(c) of the Commission’s regulations,<sup>11</sup> the Company currently plans to formulate and submit for Commission approval no later than 120 days prior to the expiration of the Second Revised LTIP a new LTIP spanning the five-year period of 2020 through 2024 which will include programs and expenditures designed to maximize sustained reliability over the long-term.

15. In the short-term, this strategy will allow Met-Ed to accelerate the realization of reliability improvements from the additional capital spend in 2019, and establish a foundation for long-term, sustainable infrastructure improvements. With this strategy, Met-Ed will continue to provide reliability advancements, customer service improvements, and meet the needs and demands of its customers into the future.

16. A comparison of annual expenditures of the First Revised LTIP as compared to the proposed Second Revised LTIP is shown in Figures 3 and 4 of Section V of the Second Revised LTIP. As shown in Figures 3 and 4, which are illustrated below, the modification of the LTIP will result in an increase in 2019 expenditures in the approximate amount of \$25.6 million.

Figure 3. Met-Ed’s First Revised LTIP

Annual Expenditures (in millions of dollars)						
Approved LTIP	2016	2017	2018	2019	2020	Total
	\$9.68	\$16.97	\$13.05	\$18.90	\$19.34	\$77.94

Figure 4. Met-Ed’s Second Revised LTIP

Annual Expenditures (in millions of dollars)						
Actual/Modified LTIP	2016 <sup>12</sup>	2017 <sup>13</sup>	2018 <sup>14</sup>	2019	2020	Total
	\$9.68	\$14.89	\$24.44	\$44.52	TBD <sup>15</sup>	\$93.53

<sup>11</sup> 52 Pa. Code § 121.5(c).

<sup>12</sup> Actuals

<sup>13</sup> Actuals

<sup>14</sup> Preliminary actuals to be finalized with Met-Ed’s Annual Asset Optimization Plan to be filed by March 1, 2019.

<sup>15</sup> The Company currently plans to formulate and submit for Commission approval no later than 120 days prior to the expiration of the Second Revised LTIP, a new LTIP for the five-year period spanning 2020 through 2024 with programs and expenditures designed to maximize sustained reliability over the long-term. 2020 capital expenditures and units will be determined as part of the 2020 to 2024 plan.

17. Programs targeted for accelerated capital investment are those designed to have the greatest impact on reliability per dollar spent. The projected reliability benefit of the Second Revised LTIP is illustrated in Figure 5 of Section V of the Second Revised LTIP. Figure 5 projects anticipated benefits of improvements in SAIDI and SAIFI for each of the Company's LTIP programs. Programs will be prioritized to maximize the reliability and operating benefits to the Company's customers. The effectiveness of the projects and programs that compose the LTIP will be reviewed periodically to ensure 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 future investments. The Company may re-prioritize, alter completion dates, and add or remove projects based on 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.

18. In Section V of the Second Revised LTIP, the Company responds sequentially to the Commission's concerns and proposed actions contained in the Commission's 2018 Order.

19. The Company's Second Revised LTIP covers 20 categories of infrastructure improvements. The categories of distribution-related equipment and facilities and costs are shown in Appendix A of the Second Revised LTIP. The program categories are as follow:

- Convert/Refurbish 4.8 kilovolt substations
- Create Circuit Ties and Loops
- Fuse Installation
- Gang operated air brake switch replacement
- Install SCADA devices
- Line rehabilitation
- Network vault rehabilitation

- Porcelain cutout replacement
- Recloser installation
- Recloser replacement
- Replace Network Cable
- Replace spacer cable
- Split large circuits
- Substation breaker replacement
- Substation relay replacement
- Underground network infrastructure replacement
- URD cable replacement
- Unreimbursed highway relocation
- Wood pole reinforcement
- Wood pole replacement

20. For each of the asset categories Met-Ed provides estimates of the number of replacements, reinforcements, conversions or other improvements that will be made over the modified LTIP's final year. Met-Ed also 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 remaining life of the LTIP.

21. Individual elements of the proposed initiatives that will be implemented in each asset category will be subject to some degree of change as contemporaneous 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 Second Revised LTIP 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. These factors may affect the allocation of investment funds within or between the stated asset categories and may affect the timing or prioritization of investments within the remaining term of the Second Revised LTIP.

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

22. Section 121.3(a)(1) of the LTIP 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 to the extent that age is a relevant or identifiable factor. For example, the largest category by cost in Met-Ed's Second Revised LTIP is the category of "Install SCADA Devices." Appendix A indicates that the infrastructure targeted for enhancement in this program is not based on age or condition, but on reliability performance. However, the average age of the circuits that will be upgraded is 82 years.

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

23. In accordance with Section 121.3(a)(2) of the LTIP regulations, Met-Ed's Second Revised LTIP includes schedules of the timing of planned repairs and replacements of eligible property. The schedules are described on an individual program basis in Appendix A

**C. General Description of the Location of Eligible Property**

24. 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. Met-Ed's program to create circuit ties and loops, for example, shows a total of eight to ten projects among seven specific Operations Centers.

**D. Estimate of Quantity of Eligible Property**

25. 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**

26. Appendix A to Met-Ed's Second Revised LTIP contains a table of "Cost Summary by Year" showing the projected annual expenditures over the remaining term of the Second Revised LTIP. The table 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**

27. Section 121.3(6) of the LTIP regulations provides that an LTIP 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." Met-Ed's Second Revised LTIP reflects the Company's advancement and acceleration of its infrastructure repair and replacement programs designed to address the LTIP Review Order. The Second Revised LTIP explains why projects are being undertaken in terms

of possible improvements in customer service and reliability. For example, the line rehabilitation category is designed to help the Company improve reliability on circuits with high SAIFI performance where outages could impact significant numbers of customers. Met-Ed will prioritize the circuits to be rehabilitated based on reliability improvement benefits and their status as worst performing circuits.

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

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

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

29. In accordance with Section 121.3(a)(8) of the regulations, the Second Revised LTIP describes how the Company 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 LTIP that might affect or implicate those entities' roadways or other property and their construction and maintenance schedules.

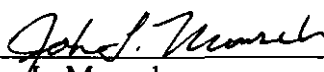
**I. Implementation of Company's DSIC**

30. Upon approval of its Second Revised LTIP, Met-Ed will recover the fixed costs of eligible property placed in-service pursuant to its Second Revised LTIP through the DSIC. Met-Ed's current DSIC was approved by the Commission in an Opinion and Order entered June 9, 2016 at Docket No. P-2015-2508942.

#### IV. CONCLUSION

WHEREFORE, for the reasons set forth above, Metropolitan Edison Company requests that the Commission enter an order by the end of the 120-day review period finding and determining that its Second Revised 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, therefore (3) should be approved without revision and without the need to refer this matter to the Office of Administrative Law Judge. Additionally, if the Commission were to determine that comments, if any, submitted with respect to Met-Ed's Second Revised LTIIP present material factual issues that merit assigning this case to the Office of Administrative Law Judge pursuant to the procedure outlined in the Final Implementation Order, the Company further requests that the Commission, at the time of such assignment, authorize Met-Ed to file written direct testimony to address such issues and other matters deemed relevant.

Respectfully submitted,

  
\_\_\_\_\_  
John L. Munsch  
(PA Attorney I.D. No. 31489)  
FirstEnergy Service Company  
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Greensburg, PA 15601  
(724) 838-6210

*Attorney for  
Metropolitan Edison Company*

Dated: January 18, 2019

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

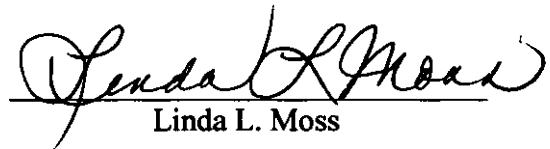
**Re: Petition of Metropolitan Edison Company for Approval of Modification of its Long-Term Infrastructure Improvement Plan; Docket No. M-2018-3000943**

P-2015-2508942

**VERIFICATION**

Linda L. Moss, President, Pennsylvania Operations, FirstEnergy Service Company, hereby states that the facts set forth above-referenced Petition are true and correct to the best of her knowledge, information and belief and that she expects the Company to be able to prove the same at a hearing held in this matter. The statements herein are made subject to the penalties of 18 Pa. C.S. § 4904.

Date: January 18, 2019

  
Linda L. Moss

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PA PUBLIC UTILITY COMMISSION  
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# **Metropolitan Edison Company**

## **Exhibit No. 1**

### **Second Revised Long-Term Infrastructure Improvement Plan**

**Docket No. ~~M-2018-3000943~~**

P-2015-2508942

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PA PUBLIC UTILITY COMMISSION  
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**Table of Contents**

I. Introduction ..... 3

II. Distribution Reliability..... 4

III. Requirements of the LTIP ..... 8

IV. LTIP Periodic Review Recommendations ..... 9

V. Implementation of the LTIP ..... 11

VI. Outreach and Coordination with Other Entities ..... 13

VII. Access to a Qualified Workforce ..... 13

    A. Met-Ed Workforce ..... 13

    B. Contractor Workforce ..... 14

VIII. Summary ..... 15

Appendix A..... 16

    Cost Summary by Year ..... 17

    Convert/Refurbish 4.8kV Substations ..... 18

    Create Circuit Ties and Loops ..... 20

    Fuse Installation ..... 22

    GOAB Switch Replacement ..... 23

    Install SCADA Devices ..... 24

    Line Rehabilitation..... 26

    Network Vault Rehabilitation ..... 28

    Porcelain Cutout Replacement..... 29

    Recloser Installation..... 30

    Recloser Replacement..... 31

    Replace Network Equipment ..... 32

    Replace Spacer Cable ..... 33

    Split Large Circuits ..... 35

    Substation Breaker Replacement ..... 36

    Substation Relay Replacement ..... 37

    Underground Network Infrastructure Replacement..... 39

    URD Cable Replacement/Rejuvenation ..... 40

    Unreimbursed Highway Relocation..... 42

    Wood Pole Reinforcement..... 43

    Wood Pole Replacement..... 44

## **I. Introduction**

Metropolitan Edison Company (“Met-Ed” or the “Company”) submitted a petition for approval of its Long-Term Infrastructure Improvement Plan (“LTIIP”) on October 19, 2015.<sup>1</sup> The Pennsylvania Public Utility Commission (“PUC” or “Commission”) found that Met-Ed’s LTIIP, and the manner in which it was filed, conformed to the requirements of the 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. Met-Ed’s LTIIP was therefore approved in a Final Order entered February 11, 2016.

In 2016, Met-Ed commenced the first year of its approved five-year LTIIP. On June 12, 2016, Act 40<sup>2</sup> was passed into law. In summary, Section 1301.1(a) of Act 40 terminated the practice of making a “consolidated tax adjustment” when calculating a utility’s Federal income taxes for ratemaking purposes in Pennsylvania. Section 1301.1(b) of Act 40 provides that fifty percent of the differential that is accrued as a result of applying the revised ratemaking method shall be applied to support reliability or infrastructure related to the rate base-eligible capital investment as determined by the Commission. As a result, Met-Ed submitted a petition for approval of a modification to its approved LTIIP for the remaining four years (2017-2020) of the approved plan on March 1, 2017<sup>3</sup> to increase its LTIIP spending amount by approximately \$8.19 million<sup>4</sup> for each of the remaining years (the “First Revised LTIIP”). Met-Ed’s First Revised LTIIP was approved by the Commission by Opinion and Order entered June 14, 2017 at Docket No. P-2015-2508942.

The Commission initiated its periodic review of Met-Ed’s LTIIP, as modified, consistent with the Commission’s regulations at 52 Pa. Code § 121.7(a)<sup>5</sup> via a Secretarial Letter issued on April 10, 2018. On September 20, 2018, the Commission entered an Opinion and Order following this review (“LTIIP Review Order”)<sup>6</sup> in which it determined that the Company has substantially adhered to the schedule and expenditures outlined in its LTIIP; however, the Commission further determined that the Company’s current LTIIP is not designed adequately to ensure and maintain safe, adequate and reliable service. As such, the Commission directed the Company to file a modified or new LTIIP, to include expenditures and programs designed to adequately maintain and improve the efficiency, safety, adequacy and reliability of the distribution system. Further, the Order included proposed methods and actions the Company is encouraged to consider when developing its modified or new LTIIP. The Commission also suggested extending the term of

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<sup>1</sup> *Petition of Metropolitan Edison Company for Approval of their Long-Term Infrastructure Improvement Plan*, Docket No. P-2015-2508942.

<sup>2</sup> 66 Pa.C.S. §1301.1

<sup>3</sup> *Petition of Metropolitan Edison Company for Approval of Modification of its Long-Term Infrastructure Improvement Plan*, at Docket No. P-2015-2508942.

<sup>4</sup> See Met-Ed/Penelec/Penn Power/West Penn Statement No. 2-S, the Supplemental Testimony of Richard D’Angelo, page 6 lines 24 and 25, Docket No. R-2016-2537349.

<sup>5</sup> Commission Secretarial Letter issued April 10, 2018 at Docket No. M-2018-3000943.

<sup>6</sup> Opinion and Order entered September 20, 2018 at Docket Nos. M-2018-3000943, M-2018-3000947, M-2018-2018-3000948 and M-2018-3000949.

the modified LTIIIP beyond the current term, which concludes at year-end 2020. The Company was specifically directed to file a new or modified LTIIIP within sixty days of the entry of the Order, or November 19, 2018.

A reliability team comprised of reliability engineers from Met-Ed, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company (collectively, “the Companies”) was formed to augment the ongoing internal review of the Companies’ LTIIIP projects, expenditures, and reliability performance, and to develop an overarching strategy for long-term reliability maintenance and improvement for all the Companies. Additionally, an independent consultant, PA Consulting Group, Inc., was retained to help ascertain the most meaningful alterations to the Companies’ plans and to drive end results that also addressed the Commission’s proposed methods and actions. To support the timeline for a detailed analysis of its proposed projects, proposed expenditures, and the resulting effect on reliability, and to develop comprehensive and coordinated plans, the Company requested, and was granted by Secretarial Letter issued on November 1, 2018, a sixty-day extension for filing a new or modified LTIIIP.

For 2019 and beyond, Met-Ed proposes to take a two-fold approach to address the Commission’s concerns, proposed methods and actions of the LTIIIP Review Order. First, the Company is proposing modifications to its First Revised LTIIIP for the year 2019. The LTIIIP modifications will increase overall spending in 2019 by transferring the capital expenditures currently planned for 2020 into 2019, and supplementing those amounts with additional capital in 2019. This will allow Met-Ed to accelerate selected existing planned projects into 2019, while adding new projects that are expected to sustain and improve reliability. Second, pursuant to the timeframe anticipated by 52 Pa. Code §121.5(c), the Company currently plans to formulate and submit for Commission approval no later than 120 days prior to the expiration of the Second Revised LTIIIP, a new LTIIIP for the five-year period spanning 2020 through 2024, which will include programs and expenditures designed to maximize sustained reliability over the long-term.

In the short-term, this strategy will provide for Met-Ed an acceleration of the realization of reliability improvements from its LTIIIP programs, and establish a foundation for long-term, sustainable infrastructure improvements. With this strategy, Met-Ed will continue to provide reliability advancements, customer service improvements, and meet the needs and demands of its customers into the future.

## **II. Distribution Reliability**

Met-Ed remains actively engaged and diligently committed to continuing to perform in a manner that results in satisfactory and cost-effective reliability performance for its customers as measured by Commission-established reliability indices such as System Average Interruption Duration Index (“SAIDI”), System Average Interruption Frequency Index (“SAIFI”), and Customer Average Interruption Duration Index (“CAIDI”).

The Company utilizes a multi-faceted and comprehensive approach to maintain and improve reliability of its distribution system and to minimize customer impact due to outages. This strategy is accomplished by following the FirstEnergy Distribution Inspection & Maintenance Practices<sup>7</sup> designed to assist in determining the need for, and prioritization of, the repair or replacement of system components and facilities; following FirstEnergy Substation Practices and Methods to ensure the reliability and integrity of substation equipment; employing other routine programs such as the ongoing initiative to sectionalize the Company's system to reduce the number of customers impacted by local system events, and the Customers Experiencing Multiple Interruptions program to reduce frequent or repeated outages for affected clusters of customers; and employing vegetation management practices to reduce the frequency of tree-related outages. Reliability improvement is also achieved through upgrading and modernizing the distribution system as outlined in and promoted through the Company's Second Revised LTIP.

In 2016, Met-Ed achieved its twelve-month SAIDI and CAIDI reliability performance standards, as well as its three-year standard in all three reliability indices. The Company continued to work toward achieving benchmark performance with key focus areas targeted to improve SAIDI and SAIFI, including: fuse installations; circuit tie and loop creation; selective circuit rehabilitation; supervisory control and data acquisition ("SCADA") device installations; protective device installations; porcelain cutout replacement; underground residential distribution ("URD") cable replacement; and wood pole replacements and refurbishments.

In 2017, Met-Ed continued to experience the benefits of circuit rehabilitation with seven of the original sixteen circuits targeted in Met-Ed's worst performing circuit ("WPC") plan showing improved performance and no longer meeting the Commission's WPC criteria.<sup>8</sup> However, 2017 was a challenging year for reliability performance, and Met-Ed did not achieve its twelve-month SAIDI, SAIFI or CAIDI standards, with severe weather and tree-related outages as major contributing factors. To address these factors, Met-Ed targeted an increase in the combined capital and maintenance expenditures for its vegetation management program of approximately \$6.8 million in 2018. The Company also committed an approximate \$9 million increase over originally planned expenditures for LTIP-qualified reliability projects in 2018. This accelerated funding was targeted at programs to reduce equipment and line failures and modernize systems and components.

In 2018, Met-Ed again continued to experience the benefits of circuit rehabilitation, with three additional circuits of the original sixteen targeted in Met-Ed's WPC plan showing improved performance and no longer meeting the Commission's WPC criteria. Overall reliability

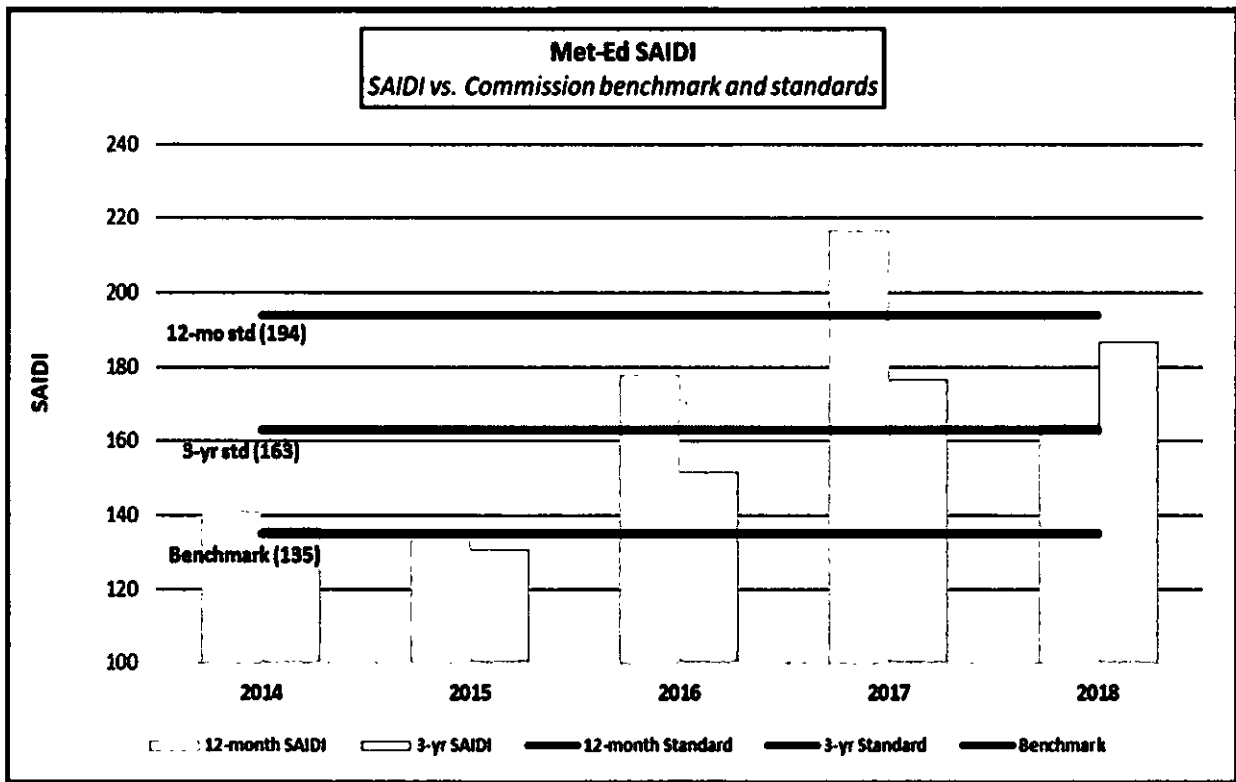
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<sup>7</sup> Pursuant to 52 Pa. Code § 57.198(a), every two years an electric distribution company shall file with the Commission a biennial plan for the periodic inspection, maintenance, repair and replacement of its facilities. Met-Ed submitted its Biennial Inspection, Maintenance, Repair and Replacement Plan for the period January 1, 2019 through December 31, 2020 on September 29, 2017, which was deemed approved pursuant to 52 Pa. Code § 57.198(i).

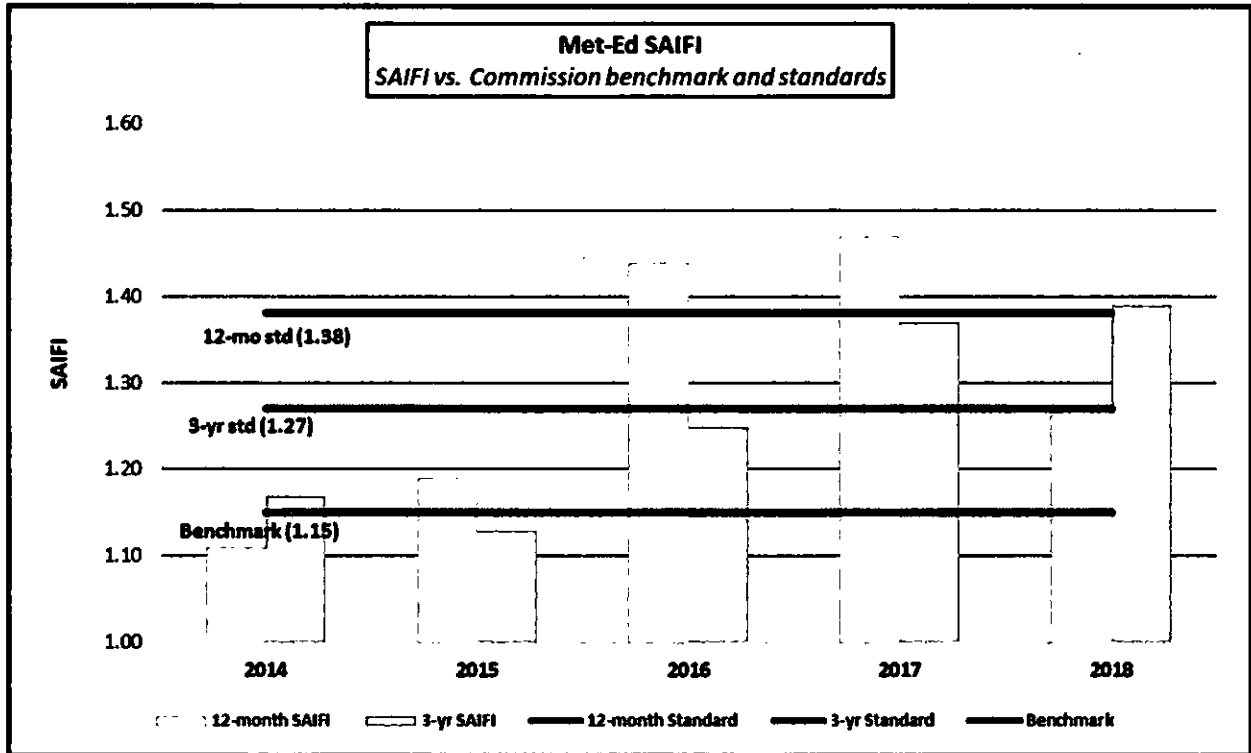
<sup>8</sup> Order entered March 30, 2015, *Implementation Plan for the Focused Management Audit of Metropolitan Edison Company, Pennsylvania Electric Company, Pennsylvania Power Company and West Penn Power Company*, Docket Nos. D-2013-2365991, D-2013-2365992, D-2013-2365993, D-2013-2365994.

performance improved in 2018. The Company achieved the twelve-month SAIDI and SAIFI standards, with the rolling twelve-month CAIDI standard achieved in the third and fourth quarters. However, equipment failures and off right-of-way trees, compounded by saturated soil conditions due to record wet weather, continued as the top outage causes, and severe weather in the second and third quarters of 2018 affected the Company’s progress in achieving SAIDI and SAIFI benchmark levels. Figures 1 and 2 show Met-Ed’s twelve-month and three-year SAIDI and SAIFI performance from 2014 through 2018, respectively.

**Figure 1: Historical SAIDI performance**



**Figure 2: Historical SAIFI performance**



As part of the independent consultant’s review of the Company’s historical results and forward-looking plans, the methodology used to calculate the SAIFI, SAIDI, and CAIDI benefits was evaluated and determined to be appropriate and reasonable. However, the time periods historically selected to establish baseline performance and to evaluate the reliability impacts of LTIIIP projects were considered insufficient to overcome the typical randomness of outages and equipment failures, thereby leading to reliability performance results which appeared to vary from the originally projected benefits. On the basis that reliability results are not always apparent immediately upon completion of LTIIIP projects, and that sufficient time is required to observe the true impact of the projects, two key opportunities were identified that have the potential to improve the Company’s methodology and execution going forward. The first opportunity is to increase the period used to establish the historical performance baseline. The second is to increase the post-implementation observation period used to evaluate benefits. These factors have been considered in the benefit calculation review process and in the development of the short-term and long-term LTIIIP strategies.

If the Second Revised LTIIIP is approved, it is expected to yield continued reliability improvement through the accelerated expenditure for projects having the highest probability to maintain and improve SAIDI and SAIFI performance.

### **III. Requirements of the LTIIIP**

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 LTIIIP. The LTIIIP must include the eight elements listed in that regulation. The required elements and the locations within Met-Ed’s Second Revised LTIIIP where they are addressed are set forth below:

**52 Pa. Code § 121.3(a)(1):** The descriptions of the twenty 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.”

**52 Pa. Code § 121.3(a)(2):** The table at the front of Appendix A, captioned “Cost Summary by Year,” shows the planned expenditures for 2019, as well as the total for the period of 2016-2019, 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 Met-Ed 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 Section V, below.

**52 Pa. Code § 121.3(a)(7):** The workforce management and training programs in place for Met-Ed that are designed to ensure that it will have access to a qualified workforce to perform work under its LTIIIP 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 Met-Ed expects to reach out to, and coordinate with, other utilities, the Pennsylvania Department of Transportation (“PennDOT”) and local governments regarding their planned maintenance/construction projects and roadways that may be impacted by the LTIIIP is provided in Section VI, below.

#### **IV. LTIIIP Periodic Review Recommendations**

The Commission's LTIIIP Review Order included the following proposed methods and actions recommendation for consideration by the Company in the development of its new or modified LTIIIP:<sup>9</sup>

*Review the LTIIIP SAIFI and SAIDI benefit results to determine why goals were not met.*

In response, Met-Ed's SAIFI and SAIDI benefit results were reviewed and the challenges to reliability performance are described in Section II.

*Review the methodology used to calculate the SAIFI and SAIDI benefit projections to ensure more accurate predictions.*

The methodology Met-Ed uses to calculate the SAIFI and SAIDI benefit projections was reviewed by its independent consultant. The Company's approach was found to be sound, and the methodology reasonable. Benefit projections calculated using this methodology are provided in Section V.

*Following the reviews in 1 and 2, above, increase expenditures on the projects that should result in the highest SAIFI and SAIDI benefits.*

LTIIIP projects were reviewed internally by Met-Ed, the reliability team and the Company's independent consultant to identify those projects expected to offer the highest SAIFI and SAIDI benefits to both reliability sustainability and improvement, and to accelerate expenditures for these projects. The acceleration of LTIIIP expenditure is summarized in Section V.

*Increase overall spending on infrastructure improvement initiatives and accelerate existing planned projects for infrastructure repair and replacement.*

The acceleration of LTIIIP expenditure is summarized in Section V.

*Maximization of the 5% DSIC cap. Assuming no overearning or base rate cases, the FirstEnergy Companies should strive to efficiently and effectively utilize the full capacity of the DSIC mechanism, as capped at 5% by statute or otherwise capped by the Commission via waiver.*

The Company's proposed modified LTIIIP includes an increase in planned capital investment.

*Consider tree and storm hardening methods, such as more resilient aerial cable.*

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<sup>9</sup> LTIIIP Review Order, p. 19.

The Companies employ a variety of mitigating strategies to reduce tree and storm-related outages, including: cycle-based and enhanced tree trimming; removal of incompatible trees, defective overhanging limbs, and off right-of-way hazard trees; wood pole reinforcements and replacements; and line rehabilitation and relocation projects. Aerial cable is an available option that may be incorporated where it provides a net benefit to reliability and operational flexibility. As an example, aerial cable may be considered where it is impractical to maintain reasonable overhead clearance. Met-Ed's LTIIP infrastructure improvement initiatives are described in Appendix A.

*Consider selective undergrounding for areas with continuing storm-related reliability issues.*

In residential zones, undergrounding is seldom used as an option due to the potential for objectionably high costs to customers if upgrades to internal and external structures and facilities are necessary to meet code requirements. Rocky and mountainous terrain may also pose as barriers for undergrounding. Undergrounding inherently reduces operational flexibility with failures resulting in longer outages due to longer troubleshooting and repair times. However, selective undergrounding is an available option where it supports effective implementation of infrastructure improvement initiatives and will be used in conjunction with those infrastructure improvement initiatives, as appropriate.

*Consider usage of additional smart field devices and SCADA (supervisory control and data acquisition) technologies to reduce customer density per circuit section.*

Met-Ed accelerated expenditures for its SCADA device installation program in 2018 and in the Second Revised LTIIP. Infrastructure improvement initiatives and expenditures for 2019 are provided in Appendix A.

*Consider additional investment in enhanced technology and sacrificial components.*

Enhanced technology is considered during the development and implementation of infrastructure improvement initiatives. SCADA devices, microprocessor-driven reclosers, and enhanced sectionalizing devices, such as TripSavers, are a few examples of enhanced technology that is being installed on the Company's network. Also, the Company employs a robust fusing strategy under which every transformer is fused and the number of customers affected is kept relatively small. Sacrificial components such as metal anodes that provide cathodic protection to metal piping and conduit are not typically applicable or used in the protection of electric distribution facilities. Enhanced technology and fusing will be incorporated into the LTIIP infrastructure improvement initiatives, where appropriate.

*Consider extending the timeline of the modified LTIIP, if necessary and if not filing a new LTIIP.*

With the Second Revised LTIIP, the Company is proposing modifications to its LTIIP for the year 2019 in order to increase overall spending in 2019 by transferring the capital

expenditures currently planned for 2020 into 2019, and supplementing those amounts with additional capital in 2019. This will allow Met-Ed to accelerate selected existing planned projects into 2019, while adding new projects that are expected to improve reliability. Second, the Company currently plans to formulate and submit for Commission approval, no later than 120 days prior to the expiration of the Second Revised LTIIIP,<sup>10</sup> a new LTIIIP for the five-year period spanning 2020 through 2024, which will include programs and expenditures designed to maximize sustained reliability over the long-term.

**V. Implementation of the LTIIIP**

Aggressive vegetation management, distribution automation, infrastructure improvement, and operational flexibility have been identified as keys to Met-Ed’s sustained reliability improvement. Met-Ed’s primary LTIIIP programs include SCADA device installation, targeted line rehabilitation, and circuit tie and loop creation. Details of all Met-Ed LTIIIP programs are provided in Appendix A.

The proposed modifications to the First Revised LTIIIP for 2019 include increasing overall spending in 2019, accelerating selected existing planned projects into 2019, and adding new projects that yield reliability benefit. The comparison of the First Revised versus the Second Revised LTIIIP is shown in Figures 3 and 4, below.

**Figure 3. Met-Ed’s First Revised LTIIIP**

Annual Expenditures (in millions of dollars)						
Approved LTIIIP	2016	2017	2018	2019	2020	Total
	\$9.68	\$16.97	\$13.05	\$18.90	\$19.34	\$77.94

**Figure 4. Met-Ed’s Second Revised LTIIIP**

Annual Expenditures (in millions of dollars)						
Actual/Modified LTIIIP	2016 <sup>11</sup>	2017 <sup>12</sup>	2018 <sup>13</sup>	2019	2020	Total
	\$9.68	\$14.89	\$24.44	\$44.52	TBD <sup>14</sup>	\$93.53

The table at the front of Appendix A, captioned “Cost Summary by Year,” shows the planned expenditures for 2019, as well as the total for the period of 2016-2019, itemized for each of the infrastructure improvement initiatives discussed in Appendix A.

<sup>10</sup> As provided for under Section 121.5(c) of the Commission’s regulations, 52 Pa. Code § 121.5(c).

<sup>11</sup> Actuals

<sup>12</sup> Actuals

<sup>13</sup> Preliminary actuals to be finalized with Met-Ed’s Annual Asset Optimization Plan to be filed by March 1, 2019.

<sup>14</sup> The Company currently plans to formulate and submit for Commission approval no later than 120 days prior to the expiration of the Second Revised LTIIIP, a new LTIIIP for the five-year period spanning 2020 through 2024 with programs and expenditures designed to maximize sustained reliability over the long-term. 2020 capital expenditures and units will be determined as part of the 2020 to 2024 plan.

Priority has been given to programs having the potential to have the highest positive impact on SAIDI and SAIFI, including reliability sustainability and improvement, per dollar spent. The projected reliability benefit of the modified LTIP is illustrated in Figure 5.

**Figure 5. Met-Ed's Second Revised LTIP Reliability Benefits<sup>15</sup>**

<b>Program</b>	<b>2019 PROJECTED SAIDI BENEFIT</b>	<b>2019 PROJECTED SAIFI BENEFIT</b>
Convert/Refurbish 4.8kV Substations	0.16	0.0003
Create Circuit Ties and Loops	3.29	0.0243
Fuse Installation	----	----
Gang operated air brake ("GOAB") Switch Replacement <sup>16</sup>	0.00	0.0000
Install SCADA Devices	8.93	0.0189
Line Rehabilitation	5.55	0.0312
Network Vault Rehabilitation	----	----
Porcelain Cutout Replacement	----	----
Recloser Installation	----	----
Recloser Replacement	0.03	0.0002
Replace Network Equipment	----	----
Replace Spacer Cable	0.47	0.0040
Split Large Circuits	0.29	0.0050
Substation Breaker Replacement	0.09	0.0029
Substation Relay Replacement	0.50	0.0166
Underground Network Infrastructure Replacement <sup>17</sup>	0.00	0.0000
URD Cable Replacement	0.25	0.0009
Unreimbursed Highway Relocation <sup>18</sup>		
Wood Pole Reinforcement	0.13	0.0007
Wood Pole Replacement	0.16	0.0009
<b>Total</b>	<b>19.85</b>	<b>0.1059</b>

The Company may re-prioritize, alter completion dates, and add or remove projects based on engineering analyses to maximize the reliability and operating benefits to the affected circuits,

<sup>15</sup> The SAIDI and SAIFI impacts cannot be used to calculate overall system reliability as the LTIP investment initiatives are a sub-set of the Company's overall portfolio. Blank entries indicate no units planned for completion in 2019.

<sup>16</sup> Program exists to offset system degradation and continue the long-term sustainability of reliable electric service to customers.

<sup>17</sup> Program exists to offset system degradation and continue the long-term sustainability of reliable electric service to customers.

<sup>18</sup> The infrastructure targeted for relocation is not chosen based on age or condition but merely by its location and may or may not provide reliability benefits.

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**

Met-Ed communicates and coordinates with 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 in their service area. However, most of the work that will be performed under Met-Ed's modified 2019 LTIP is expected to have minimal impact on these entities' work schedules, and project-specific outreach plans are not expected to be required.

## **VII. Access to a Qualified Workforce**

### ***A. Met-Ed 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 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<sup>19</sup> that may be 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.

With 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; American National Standards Institute; American Society for Testing Materials; and Institute of Electrical and Electronics

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<sup>19</sup> FirstEnergy Corp.'s ("FirstEnergy") affiliated operating companies include not only those four distribution operating companies 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 distribution operating companies enables streamlined resource sharing in a way that promotes both safety and cost efficiency for those companies under this umbrella.

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, web-based 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; and
- 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.

**VIII. Summary**

This Second Revised LTIP was designed to meet the recommendations and requirements of the Commission's LTIP Review Order by providing for accelerated capital investment in projects and programs designed to adequately maintain and improve the efficiency, safety, adequacy and reliability of the Company's distribution system and projected to result in the highest SAIFI and SAIDI benefits. Met-Ed's Second Revised LTIP also contains all of the elements required by 52 Pa. Code § 121.3(a).

**Appendix A**

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**Cost Summary by Year**

Infrastructure Improvement Initiative	Actual/Planned Annual Expenditures (in millions of dollars)					
	2016 <sup>20</sup>	2017 <sup>21</sup>	2018 <sup>22</sup>	2019	2020 <sup>23</sup>	Total
<b>Total</b>	<b>\$9.68</b>	<b>\$14.89</b>	<b>\$24.44</b>	<b>\$44.52</b>	<b>TBD</b>	<b>\$93.53</b>
Convert/Refurbish 4.8kV Substations	\$-	\$-	\$0.22	\$0.73	TBD	\$0.95
Create Circuit Ties and Loops	\$0.40	\$3.46	\$4.11	\$9.01	TBD	\$16.98
Fuse Installation	\$1.48	\$0.58	\$1.23	\$-	TBD	\$3.29
GOAB Switch Replacement	\$-	\$0.14	\$0.11	\$0.28	TBD	\$0.53
Install SCADA Devices	\$3.63	\$1.10	\$5.79	\$14.20	TBD	\$24.72
Line Rehabilitation	\$0.21	\$3.13	\$3.67	\$8.04	TBD	\$15.05
Network Vault Rehabilitation	\$-	\$0.25	\$0.60	\$-	TBD	\$0.85
Porcelain Cutout Replacement	\$0.99	\$0.53	\$1.67	\$-	TBD	\$3.19
Recloser Installation	\$0.51	\$-	\$-	\$-	TBD	\$0.51
Recloser Replacement	\$0.75	\$0.11	\$0.14	\$0.17	TBD	\$1.17
Replace Network Equipment	\$-	\$0.90	\$0.66	\$-	TBD	\$1.56
Replace Spacer Cable	\$0.62	\$-	\$-	\$2.53	TBD	\$3.15
Split Large Circuits	\$-	\$-	\$-	\$1.00	TBD	\$1.00
Substation Breaker Replacement	\$-	\$-	\$-	\$1.01	TBD	\$1.01
Substation Relay Replacement	\$-	\$-	\$-	\$0.81	TBD	\$0.81
Underground Network Infrastructure Replacement	\$-	\$-	\$-	\$0.39	TBD	\$0.39
URD Cable Replacement	\$0.26	\$0.77	\$0.78	\$1.84	TBD	\$3.65
Unreimbursed Highway Relocation	\$0.83	\$1.58	\$1.57	\$1.01	TBD	\$4.99
Wood Pole Reinforcement	\$-	\$-	\$0.35	\$0.29	TBD	\$0.64
Wood Pole Replacement	\$-	\$2.34	\$3.54	\$3.21	TBD	\$9.09

<sup>20</sup> Actuals

<sup>21</sup> Actuals

<sup>22</sup> Preliminary actuals to be finalized with Met-Ed's Annual Asset Optimization Plan to be filed by March 1, 2019.

<sup>23</sup> The Company currently plans to formulate and submit for Commission approval no later than 120 days prior to the expiration of the Second Revised LTIIIP, a new LTIIIP for the five-year period spanning 2020 through 2024 with programs and expenditures designed to maximize sustained reliability over the long-term. 2020 capital expenditures and units will be determined as part of the 2020 to 2024 plan.

**Convert/Refurbish 4.8kV Substations**

**Description**

Convert or refurbish 13.2 - 4.8 kilovolt (“kV”) substations and/or 34.5 - 4.8kV substations. Convert sections of 4.8kV circuits to operate at 13.2kV or 34.5kV, and upgrade and replace 4.8kV substation equipment.

**Identification and Justification**

Met-Ed’s 13.2 – 4.8kV and 34.5 – 4.8kV substations are impacted by equipment condition and load growth. 13.2 – 4.8kV and 34.5 – 4.8kV replacement transformer options are limited by size or may require special order. Options for relief include upgrading and replacing 4.8kV substation equipment and/or converting sections of 4.8kV circuits.

Those upgrades and conversions are designed to increase capacity and increase operational flexibility. Work will be prioritized using the following criteria:

- Age and condition of the equipment
- Reliability benefits realized upon conversion
- Loading and voltage constraints
- Reliability history of the circuits

**Age of Infrastructure**

The equipment targeted for replacement in this program was installed in the 1960s or earlier.

**Schedule**

<b>Actual/Planned Substations</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	-	-	2	-	<b>2</b>
<b>Actual/Modified</b>	-	-	1	1	TBD	<b>2</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$-	\$-	\$1.40	\$-	<b>\$1.40</b>
<b>Actual/Modified</b>	\$-	\$-	\$0.22	\$0.73	TBD	<b>\$0.95</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Boyertown	1
<b>Total</b>	<b>1</b>

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

***Create Circuit Ties and Loops***

**Description**

Create tie points and loops between radial circuits. The focus will be on 13.2kV and 34.5kV distribution circuits.

**Identification and Justification**

Although some 13.2 and 34.5kV 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 program 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 customers 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.

**Schedule**

<b>Actual/Planned Circuit Ties or Loops</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	1	4	2	3	3	<b>13</b>
<b>Actual/Modified</b>	1	4	3	8-10	TBD	<b>16-18</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.40	\$2.85	\$3.22	\$3.17	\$3.17	<b>\$12.81</b>
<b>Actual/Modified</b>	\$0.40	\$3.46	\$4.11	\$9.01	TBD	<b>\$16.98</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Boyertown	1
Easton	2-3
Hanover	1
Lebanon	1
Reading	1-2
Stroudsburg	1
York	1
<b>Total</b>	<b>8-10</b>

**Comments**

Met-Ed has refined its reliability strategy after reviewing actual reliability benefits from previously completed work. Future work will focus on projects with the greatest reliability benefits given the updated strategy.

**Fuse Installation**

**Description**

Install new fused cutouts on unprotected circuits.

**Identification and Justification**

Unfused line taps can cause circuit and recloser lockouts when the fault is located on a tap that is unfused. Installing these fuses aims to reduce SAIFI and CAIDI by reducing the scope of a large outage. This program will target any unprotected distribution circuits and nearly complete fuse protection on the entirety of the Company's distribution system.

**Age of Infrastructure**

Fuse installations are 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 78 years.

**Schedule**

<b>Actual/Planned Fuse Installations</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	1,181	432	-	-	-	<b>1,613</b>
<b>Actual/Modified</b>	1,181	433	584	-	TBD	<b>2,198</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$1.48	\$0.43	\$-	\$-	\$-	<b>\$1.91</b>
<b>Actual/Modified</b>	\$1.48	\$0.58	\$1.23	\$-	TBD	<b>\$3.29</b>

**Anticipated Locations (2019)**

No locations anticipated.

**Comments**

There are no changes to this program.

**GOAB Switch Replacement**

**Description**

Replace aging, manually-operated distribution GOABs with new switches. Utilize GOABs and solid blade disconnects where applicable.

**Identification and Justification**

Replace the aging GOABs with new disconnects where operating conditions allow, and with new GOABs where necessary. Factors like accessibility, location, and loading conditions will determine when a GOAB will be used and when disconnects will be used. Switches are critical when isolating faults and restoring customers during outage scenarios.

**Age of Infrastructure**

The equipment targeted for replacement in this program is at least 40 years old.

**Schedule**

<b>Actual/Planned GOAB Switch Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	8	8	8	8	<b>32</b>
<b>Actual/Modified</b>	-	8	8	8	TBD	<b>24</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$0.28	\$0.28	\$0.28	\$0.28	<b>\$1.12</b>
<b>Actual/Modified</b>	\$-	\$0.14	\$0.11	\$0.28	TBD	<b>\$0.53</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Easton	2
Hanover	1
Lebanon	1
Reading	2
York	2
<b>Total</b>	<b>8</b>

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

***Install SCADA Devices***

**Description**

Replace existing GOAB, disconnect switches, and oil circuit reclosers with SCADA-controlled switches and reclosers. Install additional distribution SCADA devices at new locations where circuit conditions and system performance warrant. Install SCADA controls on existing line devices and substation equipment.

**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 with more than 1,000 customers
- Circuits that are operated at 34.5kV or 13.2kV
- Circuits that are considered worst performing
- 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 82 years.

**Schedule**

<b>Actual/Planned SCADA Controlled Devices</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	70	28	-	12	6	<b>116</b>
<b>Actual/Modified</b>	70	28	106	202	TBD	<b>406</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$3.63	\$1.76	\$-	\$0.76	\$0.38	<b>\$6.53</b>
<b>Actual/Modified</b>	\$3.63	\$1.10	\$5.79	\$14.20	TBD	<b>\$24.72</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Boyertown	10
Easton	28
Hanover	30
Lebanon	30
Reading	46
Stroudsburg	12
York	46
<b>Total</b>	<b>202</b>

**Comments**

Met-Ed has refined its reliability strategy after reviewing actual reliability benefits from previously completed work. Future work will focus on projects with the greatest reliability benefits given the updated strategy.

**Line Rehabilitation**

**Description**

Refurbish targeted distribution circuits that have high SAIFI performance. Focus will be on circuits that have high rates of equipment and line failures and animal-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 based on reliability improvement benefits and WPC status.

**Age of Infrastructure**

The components of these circuits have an average age of 40 to 50 years, though some components may have been installed in the late 1930s. 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**

<b>Actual/Planned Circuits for Rehabilitation</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	1	11	5	-	-	<b>17</b>
<b>Actual/Modified</b>	1	11	14	23	TBD	<b>49</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.21	\$3.93	\$1.63	\$-	\$-	<b>\$5.77</b>
<b>Actual/Modified</b>	\$0.21	\$3.13	\$3.67	\$8.04	TBD	<b>\$15.05</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Easton	4
Hanover	4
Lebanon	3
Reading	4
Stroudsburg	1
York	7
<b>Total</b>	<b>23</b>

**Comments**

Met-Ed has refined its reliability strategy after reviewing actual reliability benefits from previously completed work. Future work will focus on projects with the greatest reliability benefits given the updated strategy.

**Network Vault Rehabilitation**

**Description**

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

**Identification and Justification**

Met-Ed operates and maintains four low voltage 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 enhance safety, operational flexibility, reliability, and customer service. Work will be prioritized based on overall condition of the network vaults.

**Age of Infrastructure**

The equipment targeted for replacement under this program was installed in the 1960s and 1970s.

**Schedule**

<b>Actual/Planned Vault Rehabilitations</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	1	1	1	1	<b>4</b>
<b>Actual/Modified</b>	-	1	1	-	TBD	<b>2</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$0.18	\$0.18	\$0.18	\$0.18	<b>\$0.72</b>
<b>Actual/Modified</b>	\$-	\$0.25	\$0.60	-	TBD	<b>\$0.85</b>

**Anticipated Locations (2019)**

No locations anticipated.

**Comments**

The key elements of this program have been incorporated into the Underground Network Infrastructure Replacement program and the Network Vault Rehabilitation Program has been discontinued.

**Porcelain Cutout Replacement**

**Description**

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

**Identification and Justification**

Porcelain cutouts have been failing at Met-Ed 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 based on worst performing circuit status and field inspections.

**Age of Infrastructure**

Cutouts are a relatively small piece of equipment, the age of which is not tracked. The Company fully transitioned to installing only polymer cutouts in late 2006. The average age of the poles on which the cutouts are located is 42 years, which provides some indication of the age of existing cutouts.

**Schedule**

<b>Actual/Planned Number of Circuits</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	6	5	5	-	-	<b>16</b>
<b>Actual/Modified</b>	6	5	22	-	TBD	<b>33</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.99	\$0.66	\$1.31	\$-	\$-	<b>\$2.96</b>
<b>Actual/Modified</b>	\$0.99	\$0.53	\$1.67	\$-	TBD	<b>\$3.19</b>

**Anticipated Locations (2019)**

No locations anticipated.

**Comments**

There are no changes to this program.

**Recloser Installation**

**Description**

Install new reclosers on Met-Ed distribution circuits that can benefit from increased protection. This program of improvements was completed in 2016 under the Original LTIP and does not continue in the Second Revised LTIP.

**Identification and Justification**

Met-Ed will utilize both single phase and three-phase reclosers as a part of this program. Reclosers effectively reduce the circuit exposure preventing faults from taking the entire circuit out of service. Installing these reclosers is designed to reduce SAIFI and CAIDI by reducing the scope of a large outage. Projects will be prioritized based on worst performing circuit status and field inspections.

**Age of Infrastructure**

Recloser installations are 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.

**Schedule**

<b>Actual/Planned Recloser Installations</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	10	-	-	-	-	<b>10</b>
<b>Actual/Modified</b>	10	-	-	-	TBD	<b>10</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.51	\$-	\$-	\$-	\$-	<b>\$0.51</b>
<b>Actual/Modified</b>	\$0.51	\$-	\$-	\$-	TBD	<b>\$0.51</b>

**Anticipated Locations (2019)**

No locations anticipated.

**Comments**

There are no changes to this program.

**Recloser Replacement**

**Description**

Replace aging single and three-phase oil circuit reclosers that are nearing the end of their useful life. The majority of these replacements will be with three-phase electronic reclosers capable of one phase tripping, to reduce the number of customers impacted by an outage.

**Identification and Justification**

Oil circuit reclosers have a life that is determined by the number of operations and the level of fault current that it interrupts. Met-Ed will identify those reclosers that are nearing the end of their useful life and replace them to ensure continued circuit protection and reliability through minimized outage frequency and duration.

**Age of Infrastructure**

The average age of the reclosers that are targeted for replacement is 30 years.

**Schedule**

<b>Actual/Planned Recloser Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	19	3	-	4	-	<b>26</b>
<b>Actual/Modified</b>	19	3	3	4	TBD	<b>29</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.75	\$0.07	\$-	\$0.17	\$-	<b>\$0.99</b>
<b>Actual/Modified</b>	\$0.75	\$0.11	\$0.14	\$0.17	TBD	<b>\$1.17</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Easton	1
Hanover	1
Reading	1
York	1
<b>Total</b>	<b>4</b>

**Comments**

There are no changes to this program.

***Replace Network Equipment***

**Description**

Upgrade underground network equipment such as protectors, switches or transformers by replacing them with new standard network equipment to improve safety, operational flexibility, reliability, and customer service.

**Identification and Justification**

Met-Ed operates and maintains four low voltage 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 equipment to help ensure the integrity of the networks and are aimed to enhance safety, operational flexibility, reliability, and customer service. Work will be prioritized based on overall condition of the network equipment.

**Age of Infrastructure**

The equipment targeted for replacement in this program was installed in the 1960s and 1970s.

**Schedule**

<b>Actual/Planned Network Equipment Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	6-8	6-8	6-8	6-8	<b>24-32</b>
<b>Actual/Modified</b>	-	8	6	-	TBD	<b>14</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$0.88	\$0.88	\$0.88	\$0.88	<b>\$3.52</b>
<b>Actual/Modified</b>	\$-	\$0.90	\$0.66	-	TBD	<b>\$1.56</b>

**Anticipated Locations (2019)**

No locations anticipated.

**Comments**

The key elements of this program have been incorporated into the Underground Network Infrastructure Replacement program and the Network Vault Rehabilitation Program has been discontinued.

**Replace Spacer Cable**

**Description**

Upgrade aging spacer cable.

**Identification and Justification**

Spacer cable installed prior to 1985 was manufactured with first generation technology that did not include ultraviolet light protection. Failing spacer cable is known to cause high levels of radio interference along with the associated customer complaints. Additionally, due to the compromised insulation on the spacer cable, it cannot be replaced while the circuit is energized, which leads to a longer repair time be the circuit must be de-energized.

**Age of Infrastructure**

The spacer cable which will be targeted for replacement under this program was installed prior to 1985.

**Schedule**

<b>Actual/Planned Spacer Cable Replacement Projects</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	1	-	-	2	2	<b>5</b>
<b>Actual/Modified</b>	1	-	-	5	TBD	<b>6</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.62	\$-	\$-	\$0.88	\$0.88	<b>\$2.38</b>
<b>Actual/Modified</b>	\$0.62	\$-	\$-	\$2.53	TBD	<b>\$3.15</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Easton	1
Lebanon	1
Reading	2
Stroudsburg	1
<b>Total</b>	<b>5</b>

**Comments**

Met-Ed has refined its reliability strategy after reviewing actual reliability benefits from previously completed work. Future work will focus on projects with the greatest reliability benefits given the updated strategy.

***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 more than 2,000 customers
- Circuits that are operated at 34.5kV or 13.2kV
- 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.

**Schedule**

<b>Actual/Planned Number of Circuits</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	-	-	1	2	<b>3</b>
<b>Actual/Modified</b>	-	-	-	2	TBD	<b>2</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$-	\$-	\$1.00	\$1.99	<b>\$2.99</b>
<b>Actual/Modified</b>	\$-	\$-	\$-	\$1.00	TBD	<b>\$1.00</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Reading	1
Stroudsburg	1
<b>Total</b>	<b>2</b>

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

**Substation Breaker Replacement**

**Description**

Replace distribution 4.8kV – 34.5kV substation reclosers/oil circuit breakers and associated relaying that are unreliable or obsolete.

**Identification and Justification**

Reclosers/oil circuit breakers that were installed prior to 1975 are approaching the end of their useful life. Repairs are difficult or impossible due to the lack of spare parts. Maintenance costs are higher due to the extended time to repair the equipment. New standard distribution circuit breakers with associated relaying will be installed to correct chronic corrective maintenance and operational issues, improve protection, reduce maintenance, and provide valuable data in the form of post-fault event logs.

**Age of Infrastructure**

Reclosers/circuit breakers targeted for replacement in this program were installed prior to 1975.

**Schedule**

<b>Actual/Planned Breaker Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	-	-	14	14	<b>28</b>
<b>Actual/Modified</b>	-	-	-	10	TBD	<b>10</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$-	\$-	\$1.62	\$1.62	<b>\$3.24</b>
<b>Actual/Modified</b>	\$-	\$-	\$-	\$1.01	TBD	<b>\$1.01</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Easton	2
York	8
<b>Total</b>	<b>10</b>

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

**Substation Relay Replacement**

**Description**

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

**Identification and Justification**

This program will replace aging or antiquated substation relays that are less reliable than newer technology, or are at the end of the usable life. This includes the replacement of electromechanical line current, directional, and transformer differential relays with new microprocessor-based platforms that employ 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**

<b>Actual/Planned Relay Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	-	-	24	25	<b>49</b>
<b>Actual/Modified</b>	-	-	-	20	TBD	<b>20</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$-	\$-	\$0.83	\$0.86	<b>\$1.69</b>
<b>Actual/Modified</b>	\$-	\$-	\$-	\$0.81	TBD	<b>\$0.81</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Easton	5
Lebanon	5
Reading	5
York	5
<b>Total</b>	<b>20</b>

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

***Underground Network Infrastructure Replacement***

**Description**

Upgrade underground network equipment/infrastructure such as vaults, manholes, protectors, switches, transformers or cable, by replacing them with new standard network equipment to improve safety, operational flexibility, reliability, and customer service.

**Identification and Justification**

Met-Ed operates and maintains four low voltage 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 equipment to help ensure the integrity of the networks and are aimed to enhance safety, operational flexibility, reliability, and customer service. Work will be prioritized based on overall condition of the network equipment.

**Age of Infrastructure**

The equipment targeted for replacement in this program was installed in the 1960s or earlier.

**Schedule**

<b>Actual/Planned Network Equipment Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	-	-	-	-	-
<b>Actual/Modified</b>	-	-	-	2	TBD	<b>2</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$-	\$-	\$-	\$-	\$-
<b>Actual/Modified</b>	\$-	\$-	\$-	\$0.39	TBD	<b>\$0.39</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Lebanon	1
York	1
<b>Total</b>	<b>2</b>

**Comments**

This is a new program that incorporates and replaces the former Replace Network Equipment and Network Vault Rehabilitation programs, thereby integrating the interdependent programs.

**URD Cable Replacement/Rejuvenation**

**Description**

Replace/rejuvenate bare concentric neutral primary voltage cable that was manufactured prior to 1986.

**Identification and Justification**

The targeted type of cable was manufactured without an insulating jacket around the concentric neutral wires that are on the outside perimeter of the cable. The neutral conductors corrode and fail prematurely. Corrosion results in poor voltage quality and underground primary faults caused by unevenly stressed cable insulation. Replacement of this cable is expected to reduce the length of customer outages because the Company will no longer have to spend the extra time to locate a fault and make repairs to the degraded neutral conductors. Cable rejuvenation through injection is possible where adequate neutral remains.

**Age of Infrastructure**

The URD cable targeted for this program was installed prior to 1986.

**Schedule**

<b>Actual/Planned Feet of Cable Replacement</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	3,919	12,476	15,812	15,079	15,079	<b>62,365</b>
<b>Actual/Modified</b>	3,919	20,022	17,803	25,259	TBD	<b>67,003</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.26	\$0.79	\$1.00	\$0.95	\$0.95	<b>\$3.95</b>
<b>Actual/Modified</b>	\$0.26	\$0.77	\$0.78	\$1.84	TBD	<b>\$3.65</b>

**Anticipated Locations (2019)**

<b>Operations Center</b>	<b>Total</b>
Boyertown	2,157
Easton	2,165
Hanover	2,917
Lebanon	7,317
Reading	10,703
<b>Total</b>	<b>25,259</b>

**Comments**

Met-Ed has refined its reliability strategy after reviewing actual reliability benefits from previously completed work. Future work will focus on projects with the greatest reliability benefits given the updated strategy.

***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 Met-Ed 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 Met-Ed collects 55% 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**

<b>Actual/Average Number of Projects</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	12	60-70	60-70	60-70	60-70	<b>252-292</b>
<b>Actual/Modified</b>	12	48	28	60-70	TBD	<b>148-158</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$0.83	\$1.01	\$1.01	\$1.01	\$1.01	<b>\$4.87</b>
<b>Actual/Modified</b>	\$0.83	\$1.58	\$1.57	\$1.01	TBD	<b>\$4.99</b>

**Anticipated Locations (2019)**

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

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

**Wood Pole Reinforcement**

**Description**

Reinforcement of distribution poles to maintain the poles' strength characteristics.

**Identification and Justification**

The program bolsters the longevity and reliable service of the distribution wood pole fleet and ultimately contributes to storm hardening efforts and aims to improve public and employee safety as well as contributes to service reliability. Met-Ed inspects approximately 28,000 poles per year, from which a historical trend suggests that 2% of inspected poles will qualify for reinforcement (C-truss or fiber wrap).

**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 all poles across Met-Ed is 42 years.

**Schedule**

<b>Actual/Planned Pole Reinforcements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	-	434	850	370	<b>1,654</b>
<b>Actual/Modified</b>	-	-	446	267	TBD	<b>713</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$-	\$0.44	\$0.87	\$0.38	<b>\$1.69</b>
<b>Actual/Modified</b>	\$-	\$-	\$0.35	\$0.29	TBD	<b>\$0.64</b>

**Anticipated Locations (2019)**

No locations anticipated.

**Comments**

Met-Ed has refined its reliability strategy after reviewing actual reliability benefits from previously completed work. Future work will focus on projects with the greatest reliability benefits given the updated strategy.

**Wood Pole Replacement**

**Description**

Replacement of poles identified as non-restorable during the annual Met-Ed 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. Met-Ed inspects approximately 28,000 poles per year, from which a historical trend indicated a 0.9% 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 all poles across Met-Ed is 42 years.

**Schedule**

<b>Actual/Planned Pole Replacements</b>						
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	-	368	277	437	604	<b>1,686</b>
<b>Actual/Modified</b>	-	368	424	336	TBD	<b>1,128</b>

**Actual/Planned Annual Expenditures (in millions)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total</b>
<b>Approved</b>	\$-	\$4.13	\$3.10	\$4.90	\$6.76	<b>\$18.89</b>
<b>Actual/Modified</b>	\$-	\$2.34	\$3.54	\$3.21	TBD	<b>\$9.09</b>

**Anticipated Locations (2019)**

Project locations are directly linked to the distribution pole inspection plan and are identified yearly. Met-Ed 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.

**Comments**

Updated for revised quantities and budget based on expected reliability benefits to be gained.

**RE: Periodic Review of Metropolitan Edison Company's Long-Term Infrastructure Improvement Plan; PaPUC Docket No. M-2018-3000943 P-2015-2508942**

**CERTIFICATE OF SERVICE**

I hereby certify and affirm that I have this day served copies of Metropolitan Edison Company's Petition for Approval of Modification of its Long-Term Infrastructure Improvement Plan on the following persons in the manner specified below, in accordance with the requirements of 52 Pa. Code § 1.54:

**VIA FIRST CLASS MAIL**

**RECEIVED**

JAN 18 2019

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Date: January 18, 2019

  
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John L. Munsch

