BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

APPLICATION FOR AUTHORIZATION OF PENNSYLVANIA ELECTRIC COMPANY TO SITE AND CONSTRUCT THE BEDFORD NORTH-CENTRAL CITY WEST 115 KV HV NEW TRANSMISSION LINE CONSTRUCTION PROJECT SITUATED IN CENTRAL CITY BOROUGH AND SHADE TOWNSHIP, SOMERSET COUNTY, AND NAPIER, EAST ST CLAIR, AND BEDFORD TOWNSHIPS, BEDFORD COUNTY, PENNSYLVANIA	**Docket No.: _____**

APPLICATION FOR APPROVAL
TO LOCATE AND CONSTRUCT THE BEDFORD NORTH-CENTRAL CITY WEST 115 kV HV TRANSMISSION LINE PROJECT
SITUATED IN CENTRAL CITY BOROUGH AND SHADE TOWNSHIP, SOMERSET COUNTY, AND NAPIER, EAST ST. CLAIR, AND BEDFORD TOWNSHIPS, BEDFORD COUNTY PENNSYLVANIA

Pennsylvania Electric Company ("Penelec" or "Company"), pursuant to the Pennsylvania Public Utility Commission's ("Commission") regulations at 52 Pa. Code §57.72 *et seq*. and its Interim Guidelines for the Filing of Electric Transmission Line Siting Applications at 52 Pa. Code §69.3101 *et seq*., requests the Commission's approval to locate, construct, operate and maintain a high-voltage ("HV") transmission line referred to as the "Bedford North-Central City West 115 kV HV Transmission Line Project" (hereinafter, the "Project"). In support of this Application, Penelec submits the following information.

I. INTRODUCTION

1. The name of the Applicant and the address of its principal business offices are:

Pennsylvania Electric Company
5404 Evans Rd.
Erie, PA 16509

2. Penelec's attorneys in this matter authorized to receive notices and communications on its behalf are:

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FirstEnergy Service Company
800 Cabin Hill Drive
Greensburg, PA 15601
(724) 838-6210
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3. Penelec also requests that a copy of all notices and communications regarding this matter be sent to:

David Parks
Engineer, Transmission Siting
FirstEnergy Service Company
901 Wilson Street
Martinsburg, WV 25402
304-901-7829
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4. Penelec is a subsidiary of FirstEnergy Corp. ("FirstEnergy") and is a Pennsylvania public utility and an electric distribution company, as those terms are defined in Sections 102 and 2803 of the Public Utility Code. Penelec delivers electric power to approximately 586,600 retail

customers in a service territory that encompasses about 17,600 square miles within 31 Pennsylvania counties, including Bedford and Somerset County.

5. The Project involves constructing a new 115 kV transmission line from the existing Penelec-owned Bedford North substation, located in Bedford Township, Bedford County, Pennsylvania, to the existing Penelec-owned Central City West substation, located in Central City Borough, Somerset County, Pennsylvania. A portion of the Project will involve rebuilding a section of the existing Penelec-owned Bedford North – New Baltimore 115 kV Transmission Line which is located in Napier, East St. Clair, and Bedford Townships, Bedford County, Pennsylvania. Penelec requests that the Commission approve the Project as a double-circuit, 115 kV transmission line.[1]

II. GENERAL DESCRIPTION OF THE PROPOSED PROJECT

6. Penelec is providing several maps with this Application that either depict or aid in understanding the location and description of the Project. **Exhibit 1** is a cross-reference document that lists provisions of the Commission's regulations and notes where they are located in this submission. **Exhibit 2** is a Project Location Map of the Project vicinity, which shows the proposed

[1] On June 19, 2015, Penelec filed an Application with the Commission for approval to transfer its transmission assets to an affiliate company, Mid-Atlantic Interstate Transmission, LLC (MAIT), also a FirstEnergy company. As requested in the Application, the transmission assets of Penelec and another FirstEnergy operating company, Metropolitan Edison Company (Met-Ed), will be transferred to their affiliate, MAIT. The Application was a Joint Application on behalf of Penelec, MAIT, and Met-Ed. The Application was approved by the Commission's Final Order entered August 24, 2016, at Commission Docket No. A-2015-2488903. MAIT is a newly-formed limited liability company to be jointly owned by Penelec, Met-Ed, and two other FirstEnergy company affiliates, Jersey Central Power & Light Company and FirstEnergy Transmission, LLC. MAIT will provide interstate electric transmission service subject to the jurisdiction of the Federal Energy Regulatory Commission. The transfer of transmission assets was also approved, with respect to their jurisdictional facilities, by the New Jersey Board of Public Utilities at its Docket No. EM15060733 and by the Federal Energy Regulatory Commission at its Docket No. EC15-157-000. The Company anticipates that the future transmission assets of Penelec's Project, which are the subject of Penelec's present Siting Application, will be included in the transfer of assets of Penelec to MAIT.

line route in relation to major features and populated areas. **Exhibit 3** contains aerial maps of the Project. **Exhibit 4** is a system map showing the locations and voltages of Penelec's transmission lines and substations within its authorized service territory in Pennsylvania. Because **Exhibit 4** contains sensitive information about critical infrastructure, Penelec is submitting maps from which such information has been redacted. Notwithstanding the redactions, Penelec believes that **Exhibit 4** may contain information about critical infrastructure that should not be publically accessible and, therefore, requests that the exhibit be placed in a non-public folder in the Commission's files. **Exhibit 5A** is a system map showing the locations and voltages of Penelec's transmission lines and substations within the Project area. **Exhibit 5B** is a system map showing the location of the new proposed transmission line and the existing transmission lines. **Exhibit 6A** and **6B** show a proposed line swap at the Central City West Substation needed to avoid a line crossing concerning the proposed Bedford North-Central City West 115 kV transmission line, and the existing Penelec-owned Central City West-Statler Hill 115 kV transmission line.

7. The Project will involve the construction of a 17.6 mile 115 kV transmission line from the Bedford North substation to the Central City West Substation. Approximately 10.4 miles will require new right-of-way (ROW), while the remaining 7.2 miles involve rebuilding a section of the existing Bedford North – New Baltimore 115kv transmission line within the existing Penelec-owned ROW. Accordingly, as shown in **Exhibits 2** and **3**, the Project will exit from the Bedford North Substation to the west, crossing U.S. Route 220 and I-99, and extending west for 7.2 miles on the existing Bedford North-New Baltimore 115 kV line that is to be rebuilt as a double circuit transmission line. Land use along this portion of the existing, maintained ROW is predominantly agricultural, or undeveloped forest area. Residential lots are spanned where the ROW crosses Country Ridge Road and SR 56 toward the east. West of SR 56 the route climbs the

steep, forested slopes of the Pigeon Hills and passes over several roads bordered by low density residential development such as Sloan Hollow Road, Point Road, and Harrison Road. Beyond Harrison Road, the route passes over a short (0.1 mile) section of Shawnee State Park, extends through a mix of forested and agricultural lands, then crosses SR 96 just north of the town of Schellsburg. West of SR 96, the existing Bedford North-New Baltimore 115 kV line angles to the southwest, while the proposed route continues west as new construction in new ROW for the remainder of the project. From this point, the route traverses across forested and agricultural lands over a distance of 4.4 miles, spanning Shawnee Branch, and crossing several low density residential-lined roads such as Hoover Road, Anderson Road, Malamphy Road, Miller Road, and Helixville Road before reaching Lambert Mountain Road located at the base of the Allegheny Front. The slope of the land in this section steadily climbs from an elevation of 1,400 feet above sea level near Hoover Road to 2,200 feet at the intersection of Helixville Road and Lambert Mountain Road. At Lambert Mountain Road, the route traverses up the 500-foot forested face of the Allegheny Front, extends west into Somerset County, and then crosses an isolated section of Fleegle Road. Turning to the northwest, the route crosses Beaverdam Run and traverses through a mix of forested and agricultural lands before crossing into State Game Lands #228. The route then generally follows Lambert Mountain Road following an alignment that has been coordinated with the Pennsylvania Game Commission, and is designed to reduce the number of angles and limit the length of new ROW across these protected lands. From the western edge of State Game Lands #228, the route extends 1.5 miles through forested lands to the eastern limits of Central City, then continues west for 1.7 miles through Central City Borough following an active Norfolk Southern rail line before heading west along a private access road into the Central City West Substation.

8. The existing 7.2-mile portion of the Bedford North-New Baltimore 115 kV transmission has two widths along its corridor, 100 feet and 120 feet, which have been cleared of tall vegetation. Given the extent to which the ROW has already been cleared of tall vegetation, only minimal additional clearing of vegetation will be needed. The clearing is significantly less than the amount of vegetation clearing that would be required if an entirely new ROW were to be employed for the Project. As explained herein, the limited extent of additional clearing is one of the factors that strongly favors the selection of the proposed route. No new ROW is needed to construct the Project along the existing 7.2-mile portion of the existing Bedford North-New Baltimore 115 kV transmission line.

9. Approximately 10.1 miles of the proposed transmission line will require new 100 foot ROW. Approximately 0.3 miles of the proposed transmission line will require new 130 foot ROW where the transmission line will traverse the Allegheny Ridge. Penelec will also obtain additional priority tree clearing rights from 8 parcels listed in **Exhibit 7** located adjacent to the 10.4 miles of new ROW to ensure safe operation of the new 115 kV line. Priority tree clearing rights enable Penelec to remove trees located adjacent to transmission corridors that are dead, dying, diseased, structurally defective, leaning or significantly encroaching where the transmission conductor would be a target should the trees fail, or where the failing trees could potentially flash-over, strike or grow into the conductor.

10. Of the approximately 17.6 linear miles that will be traversed by the Project, approximately 0.6 mile will be located in Central City Borough, and approximately 5.1 mile will be located in Shade Township. Both of these municipalities are in Somerset County, Pennsylvania. An approximately 9.3 mile portion of the Project is located in Napier Township, an approximately

0.7 mile portion is in East St. Clair Township, and an approximately 1.9 mile portion is in Bedford Township. These three municipalities are in Bedford County, Pennsylvania.

11. In order to construct the Project, Penelec will remove and rebuild approximately 7.2 miles of the existing Bedford North-New Baltimore 115 kV Transmission Line, including its forty-nine (49) existing wooden structures. This portion of the Project will be constructed primarily with 2-pole, wooden structures within the existing ROW.

III. PROPERTY OWNER INFORMATION

12. The names and addresses of known persons, corporations and other entities of record owning property within the proposed ROW for the Project are shown in **Exhibit 7** along with the status of the ROW acquisition. Exhibit 7 also lists the property owners and the status of the Company's acquisition of needed priority tree clearing rights outside of the proposed ROW.

IV. STATEMENT OF NEED

13. FirstEnergy and PJM Interconnection, L.L.C. ("PJM"), the Regional Transmission Organization ("RTO") that coordinates the movement of electricity in the Mid-Atlantic region, have identified the risk of thermal overloads and low-voltage conditions on the existing transmission system under certain conditions that could impact service reliability. The proposed project will address these issues and help to safely meet the electrical needs of the region.

14. The Project is also needed to ensure reliable service under established industry reliability standards that are employed for transmission planning purposes by FirstEnergy in conjunction with, and on behalf of, operating subsidiaries of FirstEnergy Corp., and are explained in the following paragraphs.

15. Pursuant to Section 215 of the Federal Power Act, the Federal Energy Regulatory Commission ("FERC") has certified the North American Electric Reliability Corporation ("NERC") as the electric reliability organization to develop and enforce mandatory reliability standards, subject to FERC review and approval. The FERC-approved NERC reliability standards are mandatory. PJM, a FERC-approved RTO, is charged with ensuring the reliability of the electric transmission system under its functional control and coordinating the movement of wholesale electricity in all or parts of 13 states and the District of Columbia, including most of Pennsylvania.

16. PJM is responsible for assuring compliance with NERC standards for the bulk electric system (i.e., above 100 kV) within its control area. NERC reliability standards require that the bulk electric system be designed to operate under approved thermal and voltage criteria limits, defined in FirstEnergy and PJM Planning Criteria, under various system loading conditions and in consideration of credible outages of elements on the bulk electric system.

17. PJM plans and operates the transmission system to ensure reliable transmission service for the entire PJM region. PJM and its members, including Penelec, prepare an annual Regional Transmission Expansion Plan ("RTEP") to identify system reinforcements that are required to meet NERC reliability standards and each individual transmission owner's planning reliability criteria. Using the RTEP process, PJM develops specific regional transmission projects and designates the appropriate transmission owner to construct those projects.

18. The Project is needed to mitigate violations of FirstEnergy and PJM planning criteria that were identified as part of PJM's RTEP analysis. Specifically, the Project will address

thermal and voltage planning criteria violations that would occur NERC Category C conditions (in this instance, a faulted/stuck breaker, bus fault, or an N-1-1[2] outage).

19. PJM has conducted studies of the expected future transmission system conditions. The results of the PJM studies were shared with PJM Members[3] and made available for access by the general public. The Project was presented to the PJM Transmission Expansion Advisory Committee ("TEAC") on January 9, 2014. An excerpt from the PJM TEAC's January 9, 2014 presentation that discusses the Project is provided as **Exhibit 21** and can also be found on the PJM website.[4]

20. FirstEnergy uses General Electric Positive Sequence Load Flow ("PSLF") software application to model the details of its transmission and distribution systems and to simulate power flows and electrical bus voltages under various system conditions and configurations. Regional load flow models are tested against a large series of system contingencies to identify possible violations of thermal and/or voltage criteria.

21. FirstEnergy and PJM identified thermal violations of their transmission planning criteria, as explained in more detail below, and determined that the Project is the optimal solution to mitigate the identified issues, as also explained in more detail below. Accordingly, PJM determined that the Project is a RTEP "baseline" project and, therefore, has assigned PJM baseline RTEP upgrade number "b2450" to the project.

22. As part of the PJM 2013 RTEP, PJM identified thermal loading Planning Criteria violations on Penelec's Allegheny – Somerset 115 kV transmission line. PJM modeled a N-1-1

[2] NERC Category C3 constitutes a condition known as N-1-1, where N is the total number of transmission elements in the network being studied. The term "-1-1" represents the loss of any single generating unit, transmission line, transformer, or single pole of a bi-polar DC line, followed by system readjustment and the loss of a second single generating unit, transmission line, transformer, or single pole of a bi-polar DC line.
[3] http://www.pjm.com/en/Glossary#index_M
[4] http://www.pjm.com/committees-and-groups/committees/teac.aspx

contingency that involves the loss of the Hilltop – Krayn – Rachel Hill and Cambria Slope – Summit 115 kV transmission lines, which shows that, if that contingency were to occur, the loading on the Allegheny – Somerset 115 kV transmission line would increase to 102% of its emergency rating and voltages on the 115 kV buses at Bedford North and Snake Springs substations would be less than the Planning Criteria emergency limit of 0.92 per unit. These violations were identified in a model of expected system conditions for summer 2018. Additionally, PJM identified similar overloads on the Allegheny – Somerset 115 kV transmission line for the N-1-1 contingency loss of the Cambria Slope – Summit and Claysburg – Krayn 115 kV transmission lines, and voltage below Planning Criteria emergency limits on the 115 kV buses at Bedford North, Claysburg, Curryville, Osterburg East, Saxton, and Snake Springs substations.

23. As part of the PJM 2012 RTEP, PJM modeled a contingency consisting of a fault on the Hilltop – Krayn – Rachel Hill 115 kV transmission line in conjunction with a stuck 115 kV circuit breaker at Krayn substation (which also causes an outage of the Claysburg – Krayn 115 kV transmission line and the wind generation facilities connected to Krayn substation), which shows that, if that contingency were to occur, the loading on Penelec's Bedford North – New Baltimore 115 kV transmission line would increase to 107% of its summer emergency rating. PJM also modeled contingencies consisting of a fault on the Cambria Slope – Jackson Road 115 kV transmission line with a stuck 115 kV circuit breaker at Cambria Slope substation (which also outages the Cambria Slope – Johnstown and Cambria Slope – Summit 115 kV line, the Cambria Slope 115/46 kV transformer, and the generation connected to the Cambria Slope 115 kV bus), a faulted 115 kV bus-tie circuit breaker at Rachel Hill substation (which results in an outage of all elements connected to the Rachel Hill 115 kV bus), and a fault on the Cambria Slope 115 kV bus (which results in an outage of all elements connected to that bus) and determined that, if any of

these contingencies were to occur, the loading on the Bedford North – New Baltimore 115 kV line would exceed its summer emergency rating. The violations on the Bedford North – New Baltimore 115 kV line were identified in PJM's generation deliverability test.[5]

24. As previously stated, FirstEnergy and PJM determined that the Project is the best solution for addressing the various Planning Criteria violations identified above. Before reaching that conclusion, FirstEnergy considered replacing the existing Bedford North – New Baltimore and Allegheny – Somerset 115 kV transmission line with higher-capacity conductor. Replacing the conductor on these transmission lines would allow the lines to carry more load without exceeding their design capacity and would mitigate the thermal planning criteria violations. However, upgrading the lines would not mitigate the voltage violations. Constructing the Project will create a fourth source into the Bedford North region and will mitigate both the thermal and voltage criteria violations. The Project will allow the Penelec system to avoid violations of applicable NERC standards, enhance the reliability of the bulk electric system, and provide capacity to serve existing and future load.

25. The Project will replace PJM baseline RTEP project b1607 which would have reconductored/rebuilt the Bedford North – New Baltimore 115 kV transmission line using higher capacity conductor.

V. SAFETY CONSIDERATIONS

26. The design, construction, and operation of the Project will meet or exceed (i.e., be better than) the requirements specified in the latest version of the National Electric Safety Code

[5] As per PJM Manual 14B, Attachment C, section C.6, this test "is applied to ensure that capacity is not 'bottled' from a reliability perspective. This would require that each electrical area be able to export its capacity, at a minimum, during periods of peak load." PJM Manual 14B, Attachment C, section C.6 details the PJM Generation Deliverability test procedure:
http://www.pjm.com/~/media/documents/manuals/m14b.ashx

("NESC"), and all applicable safety standards established by the Occupational Safety and Health Administration ("OSHA"). All work will be done in accordance with NESC, OSHA, and any applicable state or federal requirements.

VI. SITING AND ROUTE SELECTION

A. Route Analysis

27. Penelec retained AECOM, an international engineering and environmental consulting firm, to prepare a comprehensive study of the projected environmental impacts of the Project and alternative routes. The results of the study are set forth in AECOM's report titled "Transmission Line Route Selection Study" ("AECOM Report") which is provided as **Exhibit 8**. The line route proposed for the Project is identified as "Route 2" in the AECOM report. The basis for the final route selection is set forth in Section 6 of the AECOM Report and is summarized below.

28. The AECOM Report consists of a multi-stage suitability analysis that identified areas of opportunity and constraint, and then directly compares the resultant feasible candidate routes. The analysis was performed by defining a Project Study Area, reviewing the environmental setting, identifying alternative routes, and performing a quantitative and qualitative analysis of the alternative routes. A full description of the methodology overview is included in Section 2.0 of the AECOM Report.

29. AECOM established a study area encompassing the existing Bedford North and Central City West Substations and the intervening areas. Project Study Area comprises approximately 172 square miles and covers portions of Bedford, Napier, Juniata, East St. Clair, and West St. Clair Townships in Bedford County; Allegheny, Stonycreek, Shade, and Ogle

Townships in Somerset County; and the Borough of New Paris in Bedford County and the Borough of Central City in Somerset County, as depicted in Figure 3-1 of the AECOM Report.

30. The study area boundaries were developed based on a review of United States Geological Survey (USGS) maps, state and county road maps, and aerial photographs. Constraints such as major water bodies, urban/developed areas, transportation routes, existing utility corridors, and the locations of the end points played key roles in determining the boundaries of the study area and route candidate selection. With these criteria in mind, the principal constraints observed for the Project were the existing Bedford North-New Baltimore 115 kV line to the south and Gallitzin State Forest to the north. Crossing to the south side of the existing 115 kV line would be impractical and developing a new line through sections of the state forest would require extensive coordination with the Department of Conservation and Natural Resources (PADCNR) and may involve PADCNR-mandated mitigation. As such, the existing Bedford North-New Baltimore 115 kV line defines the southern boundary and a straight line across the southern edge of Gallitzin State Forest defines the northern boundary of the Project Study Area.

31. As explained in Section 5.0 of the AECOM Report, identifying viable alternative routes were based on reasonable physical placement of the proposed transmission line that avoided or limited impacts to sensitive land uses and ecological, social, and cultural features in the Project Study Area. In evaluating the routing criteria, it is generally considered desirable to maximize certain criteria along a given route, for instance, paralleling existing railroad or utility corridors. These more favorable criteria are known as opportunities. Undesirable criteria for routing, such as residences, wetlands, and historic properties, are generally referred to as constraints and the Study seeks to avoid or minimize their proximity to the Project.

32. When siting transmission lines, three main routing opportunities are generally focused on where viable. These opportunities are discussed below.

- The first is to replace or upgrade existing lines which typically minimizes natural and social impacts by keeping the same ROW, thus eliminating or reducing additional ROW clearing. For the Bedford North-Central City West 115 kV Project, upgrading the existing Bedford North-New Baltimore 115 kV or the Bedford North-Osterburg East 115 kV transmission lines to double-circuit are viable options, but these are limited to specific portions of the Project Study Area.
- The second potential opportunity is through corridor sharing. Corridor sharing pairs the transmission line with an existing linear feature, which can include roads, highways, railroad, gas pipelines, or other existing transmission lines. These corridors are considered opportunity areas because locating a new transmission line parallel to them may require less ROW, concentrates linear land uses thus reducing fragmentation of the landscape, and creates an incremental impact rather than a new impact. Opportunity areas within the Project Study Area for the development of the new 115 kV transmission line were generally limited to paralleling the existing transmission line ROWs, paralleling I-99, and paralleling sections of the active Norfolk Southern Railroad in Central City.
- The third opportunity is to use undeveloped area such as forests, fields, and agricultural areas to identify routes that cross open lands. Identifying these routes involves assessment of parcel boundaries and land use practices to define routes that minimize potential impacts to private properties and any agricultural or other farming activities (e.g., orchards or center pivot agriculture).

33. After the study area was established, AECOM used information obtained during the environmental siting review and field reviews to develop an opportunity and constraint map of the Project Study Area using GIS software. Georeferenced data layers of the identified opportunities and constraints obtained from published State and Federal materials and local planning documents were superimposed on available current aerial photography. This process resulted in the identification of a series of candidate segments within the Project Study Area. Each segment varies in length based on the opportunities and constraints of the alignment. Nodes were identified where segments diverged or converged.

34. A total of six alternative routes were developed for further study based on the evaluation criteria. Each of the six alternative line routes is described in Section 5.1 of the AECOM Report (pp. 27-32). Maps showing all six alternative line routes are provided as Figure 5-1 of the AECOM Report.

35. Evaluation metrics were used to factor detailed information on relative lengths, areas, and Project-specific conditions into the selection process. For example, specific evaluation metrics included the number of homes within 300 feet of the route, acres of forest crossed, and miles within existing utility ROW. The metrics used for this evaluation process are shown in Table 5-1 of the AECOM Report. This data uses a variety of scales/units, including acres, miles, and number of units. For instance, one Alternative Route may cross 100 linear feet of wetland, while another might cross 100 acres of forest and be in close proximity to 100 houses.

36. The resulting constraint data were then normalized. Data normalization is required to allow meaningful comparison of the Alternative Routes using the quantitative values. Normalizing the data allows the underlying characteristic of the data to be compared by removing the units (e.g., miles and acres) associated with the various measurements. Data normalization

was achieved by first comparing a single constraint value for a given Alternative Route against the same constraint values for the other Alternative Routes. For example, the Alternative Routes with the lowest and highest potential FEMA floodplain impacts were determined by comparing the range of floodplain constraint values between the Alternative Routes.

37. Table 5-2 of the AECOM Report provides a tabular summary of the raw metrics and corresponding normalized values for the six Alternative Routes identified. The normalized metric values derived from Table 5-2 were further adjusted through a two-tiered weighting process shown in Table 5-3 of the AECOM Report. Table 5-3 shows the total of the weighted metrics within each of the three perspectives and an overall total for each Alternative Route within this segment. Each of the perspectives was assigned a weighted percentage and the results were normalized to that percentage. The rationale and process for determining the assigned percentages for each perspective are described below. Lower scores are preferred as they indicate potentially less impact along that route.

38. The Weighted Total values for the entire process are summed at the bottom of Table 5-3 on the line entitled "Sum of Weighted Total." The Sum of Weighted Total result effectively compares the cumulative impact of the Alternative Routes on the built and natural environment and shows which has the lowest cumulative impact while being technically feasible to construct from an engineering perspective.

39. The final step in the Route Selection Study involved a qualitative assessment of the six Alternative Routes based on visual concerns, community concerns, special permit issues, construction, maintenance, and accessibility, along with the risk of schedule delay. Each of these qualitative criteria was assigned a weight based on its significance within the scope of the Project as illustrated in Table 5-4 of the AECOM Report.

B. Environmental Assessment

40. AECOM conducted a comprehensive review of the environmental constraints located within the study area that included the physiographic region and topography, bedrock geology, soil characteristics, surface water, wetlands, vegetation communities, wildlife, threatened and endangered species, and special use areas. In addition, three public open houses were conducted in the Project area in January 2015 to gather comments and opinions of affected land owners. These comments were considered in the selection of the Preferred Route. The environmental constraints and assessment is set forth in Section 4.0 of the AECOM Study. Additional data developed in the environmental assessment are set forth in Figures 4-1 through 4-5, and Table 4-1 through 4-7of the AECOM Report.

41. Adverse environmental impacts from the Project will be avoided or minimized by the rigorous site-selection process employed to determine the preferred line route. Penelec will also implement appropriate measures during construction and through the subsequent operation of the Project to avoid or minimize impacts to environmental resources. Penelec will obtain the relevant state and federal permits needed to construct the Project and will adhere to the conditions set forth in those permits. As part of the permitting process, Penelec will conduct a detailed ecological survey of the line route, which will include a wetland delineation and stream identification study. Penelec will implement an erosion and sedimentation control plan, a spill prevention plan and a contingency plan to be in place during the construction of the Project. Penelec will continue to coordinate with state and federal agencies to minimize the potential for impacts to rare species as it proceeds with the Project.

C. Built Environment Assessment

42. AECOM conducted a comprehensive inventory of the built environment within the study area that included land use/land cover, conservation lands, agricultural security areas, comprehensive plans, cultural resources, and hazardous material sites. These resources were identified based upon literature review, agency coordination, field views, and the public coordination process. Previously recorded archaeological and historic resources were identified by reviewing the Pennsylvania Historical and Museum Commission's ("PHMC") Cultural Resource Geographic Information System. That review was supplemented by field views to identify additional potentially significant resources within the view-shed of the Project.

43. No geologic or National Register of Historic Places-listed resources were identified within two miles of the proposed ROW. There are no state-listed scenic rivers, or national landmarks, present within the Project Area. The proposed route will cross approximately 100 miles of lands owned by the Pennsylvania State Game Commission, and approximately 0.1 mile of the Shawnee State Park. Information on previously recorded historic and archaeological resources is contained in Section 4.2.5 of the AECOM Report. No substantial impacts to these resources are anticipated as a result of constructing the Project.

D. Airports and Aircraft Facilities

44. The Bedford County Airport (Federal Aviation Administration ("FAA") Identifier: HMZ) is located in Bedford Township, near the community of Cessna, and is within the study area. It is the only public airport in Bedford County. The Bedford County Airport is open 24 hours a day, seven days a week and serves twin-engine or tri-engine jets up to 100,000-pound

wheel load on the airport's two 5,005-foot runways. The airport is located within two miles of all six alternatives. There are no other airports or heliports within two miles of the Project.

E. Governmental Agency Requirements

45. A list of local, State and Federal governmental agencies that have requirements that will be met in connection with the construction or maintenance of the Project and a list of documents that have been, or are required to be, filed with those agencies in connection with the siting and construction for the Project are set forth in **Exhibit 9**.

VII. ESTIMATED COST AND PROJECT COMPLETION DATE

46. The estimated cost of construction of the Project is approximately $48,000,000.00. Pending Commission approval, the proposed construction start date is fall of 2017, and the proposed in-service date for the Project is summer of 2018.

VIII. DESCRIPTION OF THE PROPOSED HV LINE

47. As previously explained, the Project is being designed as a double-circuit 115 kV transmission line. The Project will use 795 kcmil 26/7 Aluminum Conductor Steel Reinforced ("ACSR") conductors for each phase. One shield wire will be 7#8 Alumoweld in addition to AFL Optical Ground Wire (OPGW) which is used for fiber optics. The summer normal rating of the conductors is approximately 232 MVA at 115 kV.

48. Penelec will remove 7.2-miles of the existing Bedford North – New Baltimore 115 kV Transmission Line, which consists of 336.4 kcmil 26/7 ACSR conductor, and will replace it with 795 kcmil 26/7 ACRS. Additionally, Penelec will remove all of the existing forty-nine (49)

structures of the existing transmission line. The majority of the structures will range from 79 feet to 103' above the ground, and the tallest structure will be approximately 145 feet. In order to traverse the Allegheny Front, an approximate 140-foot steel pole structure will be utilized at the top of the ridge, and an approximate 100-foot steel pole structure at the bottom of the ridge to create an approximately 1,600-foot span.

49. Penelec will install approximately one hundred thirty-seven (137) new structures within the 18.2-mile ROW. The majority of the structures are expected to be 2-pole, wooden poles. Steel pole structures will be used in specific areas of the proposed route where deemed necessary. The majority of the streel structures are expected to be directly emended; however, concrete foundations may be used when necessary. The various kind of structures that will be installed on the Bedford North – Central City West 115 kV transmission line are shown in **Exhibit 10A** through **Exhibit 10G**. The new structures will consist of a Double Circuit, 2-Pole Tangent Wooden Structure as shown in **Exhibit 10A**; Double Circuit, 2-Pole Light Angle Wooden Structure as shown in **Exhibit 10B**; Double Circuit, 2-Pole Angle Dead-End Wooden Structure as shown in **Exhibit 10C**; Double Circuit, Tangent Steel Structure as shown in **Exhibit 10D**; Double Circuit, Tangent Dead-End Steel Structure as shown in **Exhibit 10E**; Double Circuit, Dead-End Steel Structure as shown in **Exhibit 10F**; and Steel Substation Termination Structure as shown in **Exhibit 10G**. Four additional structure types will be utilized for the relocation of the Central City West – Statler Hill 115 kV transmission line. Those structures are shown in **Exhibit 10H** through **Exhibit 10K**. The new structures will consist of a Single Circuit, Angle Dead-End Steel Structure as shown in **Exhibit 10H**; Single Circuit, Angle Dead-End Steel Structure with a concrete foundation as shown in **Exhibit 10I**; Single Circuit, Light Angle Wooden Structure as shown in **Exhibit 10J**; and Steel Substation Termination Structure as shown in **Exhibit 10K**.

50. The average span distance for the Project within the 100-foot-wide ROW ranges from 600 to 700-feet between structures. **Exhibit 11A** shows the geometry of the line for the majority of the line within that portion of the ROW. The average span distance within the 120-foot-wide ROW is approximately 1,600-feet between structures. **Exhibit 11B** shows the geometry of the line within that portion of the ROW. The average span distance within the 130-foot-wide ROW is approximately 1,600-feet between structures. **Exhibit 11C** shows the line geometry for the majority of the line within that portion of the ROW.

51. These structures provide the necessary clearances for a transmission line to be designed in accordance with all applicable NESC clearances for a 115 kV transmission line. The proposed transmission line will be designed to ensure all applicable NESC clearances will be met or exceeded.

52. In general, it is good utility practice to avoid transmission line crossings of other transmission lines. Rearranging the existing Statler Hill and proposed Bedford North line exits at Central City West substation is necessary to avoid a line crossing of the Bedford North – Central City West and Central City West – Statler Hill 115 kV lines. If the line exits were not switched, the proposed Bedford North – Central City West 115 kV line would need to cross the existing Central City West – Statler Hill line. This arrangement could create a situation where both transmission lines into Central City West substation are out of service. This will require three additional structures for the new transmission line exit. Structures that will be used for the relocation of the Bedford North – Statler Hill 115 kV line are depicted in **Exhibit 10H** through **Exhibit 10J**. Because this work is part of the Project, Penelec, by this Application, seeks the necessary approval from the Commission for these modifications to the Central City West – Statler

Hill 115 kV Transmission Line. Both the current and proposed layouts of the Central City West Substation are shown in **Exhibits 6A** and **6B**.

IX. ADDITIONAL INFORMATION

53. Section 69.3102 of the Interim Guidelines for the Filing of Electric Transmission Line Siting Applications ("Interim Guidelines") contains guidelines for public notice of line siting Applications. **Exhibit 12** contains a representative letter and notices sent to property owners on the proposed route. Representative additional correspondence sent to property owners notifying them of a delay in the overall project schedule followed by a notice of continuation of the Project is included as **Exhibits 13** and **14**. **Exhibit 15** contains a notification of entry upon the Fritz Landholdings property to complete survey work A list of property owners that received the letter and notices in **Exhibit 12** is included as **Exhibit 16**. A list of property owners that received the additional correspondence noted in **Exhibit 13** is included as **Exhibit 17**. A list of property owners that received the additional correspondence noted in **Exhibit 14** is included as **Exhibit 18**. A copy of the FirstEnergy Code of Conduct pertaining to access to private property is included as **Exhibit 19**.

54. Section 69.3103 of the Interim Guidelines provides that applications for eminent domain authority should be filed separately, but simultaneously with the associated transmission siting application, or as soon as reasonably known. Currently, Penelec is negotiating for all required property rights to complete the proposed Project. Penelec will file applications for eminent domain approval as soon as practical after it has reasonable knowledge of the need to use its eminent domain power.

55. Section 69.3104 the Interim Guidelines lists information required for exemption from municipal zoning standards. The proposed Project does not require exemptions from municipal zoning standards since the proposed use is consistent with existing zoning.

56. Section 69.3105 Part 1 of the Interim Guidelines provides that applications for siting electric transmission lines should utilize a combination of transmission route evaluation procedures including high-level GIS data, traditional mapping (including U.S. Geological Survey data and compilation), aerial maps and analysis of physical site- specific constraints raised by affected landowners. This information is included in the AECOM Report (**Exhibit 8**).

57. Section 69.3105 Part 2 of the Interim Guidelines provides that transmission siting applicants should summarize the status of property acquisitions and provide the current status of property acquisition litigation or settlements. This information is included as part of **Exhibit 7**.

58. Section 69.3105 Part 3 of the Interim Guidelines states transmission siting applications should provide information regarding the reasonable alternative routes the utility actively considered in its final phase of the route selection process, and the relative merits of each, including:

(i) The environmental, historical, cultural and aesthetic considerations of each route.

(ii) The proximity of these alternative routes to residential and non-residential structures.

(iii) The applicant's consideration of relevant existing rights of way.

(iv) The comparative constructions costs associated with each route.

Items (i) through (iii) are included as part of **Exhibit 8**. The comparative estimated construction cost (item (iv)), for the six alternative routes is as follows:

Route	Distance	Cost
1	21.3 miles	$59,516,369
2	17.6 miles	$48,756,368
3	19.7 miles	$54,636,369
4	19.2 miles	$53,236,369
5	20.6 miles	$57,556,369
6	19.0 miles	$52,676,369

59. Section 69.3106 of the Interim Guidelines provides that siting applications should include a matrix or list showing all expected federal, state and local government regulatory permitting or licensing approvals that may be required for the project at the time the application is filed, the issuing agency, the approximate timeline for approval and current status. **Exhibit 9** contains a list of all local, state and federal agencies with requirements for permitting or licensing approvals. Penelec will inform the Commission in a timely manner of all changes in the status for all permits and licenses required for the Project.

60. Section 69.3107 (a) of the Interim Guidelines provides that Applications should contain a vegetation management plan. **Exhibit 20** is a copy of the FirstEnergy Transmission Vegetation Management Brochure. The Transmission Vegetation Management Brochure contains a general description of the FirstEnergy transmission vegetation plan, management practices, and landowner notification procedures.

61. Section 69.3107(b) of the Interim Guidelines provides that siting applications should contain a description of electromagnetic field ("EMF") mitigation procedures that the utility proposes to utilize along the transmission line. The Company's typical transmission line route selection process, which was employed on this Project, evaluates a number of factors to identify the appropriate location for the proposed Project. This evaluation process includes identification and consideration of residences and locations where large groups of people typically gather, such as schools and places of worship. Although locating the transmission line in close

proximity to these types of land uses is not precluded by state or federal rules or guidelines, providing the largest practical distance from residences, schools, places of worship and similar facilities is generally more acceptable to the local community and is an effective way to mitigate EMF. The location of the line provides an appropriate and practical method to address EMF concerns because the Project was sited to avoid residences and gathering places.

62. As part of the Company's approach to efficiently construct a transmission line project, the design of all or portions of a transmission line project will typically utilize a compact conductor arrangement. This has the added benefit of reducing electric and magnetic field strengths.

63. As a point of reference, the Company is providing estimates of the electric and magnetic field strengths for the Project. These estimates have been prepared utilizing the Electric Power Research Institute's EMF Workstation 2015 program software. The electric and magnetic field strengths directly beneath the centerline at mid-span and at the edges of the right-of-way of the transmission line have been estimated for the normal maximum load of the transmission line at 115 kV, and are provided in the tables below. Typical conductor arrangements for each ROW cross section as shown in **Exhibits 11A** through **11C** have been modeled and are reported in this estimate.

Table 1: EMF Calculations for Proposed Bedford North-Central City West 115 kV and Existing Bedford North-New Baltimore 115 kV 100' Wide Corridor

EMF CALCULATIONS		Electric Field kV/meter	Magnet Field mGauss	Load (Amps) Bedford North-Central City West 115 kV	Load (Amps) Bedford North-New Baltimore 115 kV
100 ft. Existing ROW Normal Loading	Under Lowest Conductors	1.77	47.18	345.9	175
	At Right-of-Way Edges	0.22	19.97/25.33		

Table 2: EMF Calculations for Proposed Bedford North-Central City West 115 kV 100' Corridor

EMF CALCULATIONS		Electric Field kV/meter	Magnet Field mGauss	Load (Amps) Bedford North-Central City West 115 kV
100 ft. New ROW Normal Loading	Under Lowest Conductors	1.25	41.14	345.9
	At Right-of-Way Edges	0.02/0.21	10.10/21.2	

X. LITIGATION

64. There is no litigation concluded or in progress concerning construction of the Project.

XI. LIST OF EXHIBITS

65. The following exhibits are attached to this Application:

Exhibit 1 – PUC Cross-Reference Document

Exhibit 2 – Project Location Map depicting the location of the line

Exhibit 3 – Aerial Maps depicting the location of the line

Exhibit 4 - Penelec Bulk Transmission System Map, redacted

Exhibit 5A – Existing Transmission System Project Area Map

Exhibit 5B – Proposed Transmission System Project Area Map

Exhibit 6A – Current Layout of the Central City West Substation

Exhibit 6B – Proposed Layout of the Central City West Substation

Exhibit 7 - Names and Addresses of Property Owners

Exhibit 8 – AECOM Route Selection Study Report

Exhibit 9 - List of Governmental Agencies Contacted for Approvals to Construct and Maintain the Line

Exhibit 10A – Double Circuit, 2-Pole Tangent Wooden Structure

Exhibit 10B – Double Circuit, 2-Pole Light Angle Wooden Structure

Exhibit 10C – Double Circuit, 2-Pole Angle Dead-End Wooden Structure

Exhibit 10D – Double Circuit, Tangent Steel Structure

Exhibit 10E – Double Circuit, Tangent Dead-End Steel Structure

Exhibit 10F – Double Circuit, Dead-End Steel Structure

Exhibit 10G – Steel Substation Termination Structure

Exhibit 10H – Single Circuit, Angle Dead-End Steel Structure, Direct Bury

Exhibit 10I – Single Circuit, Angle Dead-End Steel Structure, Concrete Foundation

Exhibit 10J – Single Circuit, Light Angle Wooden Structure

Exhibit 10K – Steel Substation Termination Structure

Exhibit 11A – Typical Right-of Way Cross Section Drawing 11.7 mile, 100 foot wide right-of-way

Exhibit 11B – Typical Right-of Way Cross Section Drawing 5.6 mile, 120 foot wide right-of-way

Exhibit 11C – Typical Right-of Way Cross Section Drawing 0.3 mile, 130 foot wide right-of-way

Exhibit 12 –Representative Property Owner Letter Concerning Initial Notice

Exhibit 13 – Representative Property Owner Letters Concerning Project Status

Exhibit 14 – Representative Property Owner Letters Concerning Project Continuation

Exhibit 15 – Property Owner Letter Concerning Right-of-Entry

Exhibit 16 – List of Property Owners Receiving the Correspondence Provided in Exhibit 12

Exhibit 17 – List of Property Owners Receiving the Correspondence Provided in Exhibit 13

Exhibit 18 – List of Property Owners Receiving the Correspondence Provided in Exhibit 14

Exhibit 19 – Code of Conduct

Exhibit 20 – Transmission Vegetation Management Specifications

Exhibit 21 – Excerpt of PJM Transmission Expansion Advisory Committee's (TEAC) Presentation on March 6, 2014

XII. SERVICE OF APPLICATION

66. Copies of this Application and accompanying exhibits, or Notice of its filing, have been served upon all interested parties by certified mail, return receipt requested, as required by Commission regulation at 52 Pa. Code § 57.74.

XIII. CONCLUSION

67. WHEREFORE, for the reasons set forth above and in the Exhibits accompanying this Application, Pennsylvania Electric Company requests that the Commission grant its approval under 52 Pa. Code § 57.71 et seq. to locate and construct the Bedford North-Central City West 115 kV Transmission Line Project as generally described herein.

Respectfully submitted,

Dated: September 1, 2016

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