

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Letter of Notification of PPL Electric :
Utilities Corporation, Filed Pursuant to :
52 Pa. Code Chapter 57 Subchapter G, : Docket No. A-2016-_____
for Approval to Relocate and Replace :
Approximately 800 Feet of a 230 kV :
Transmission Line in Freemansburg :
Borough, Northampton County, :
Pennsylvania :

LETTER OF NOTIFICATION

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

PPL Electric Utilities Corporation (“PPL Electric”) hereby files, pursuant to 52 Pa. Code § 57.72(d), this Letter of Notification to request approval from the Pennsylvania Public Utility Commission (“Commission”) to relocate and replace approximately 800 feet of the Martins Creek-Quarry #2 230 kV Transmission Line in order to allow for retermination of this line into a new 230 kV bay within the existing, upgraded Quarry 230-69 kV Substation (the “Quarry Substation Project” or the “Project”). The proposed Project is required to upgrade and expand the existing Quarry Substation to a more reliable electrical configuration, comply with PJM Interconnection, LLC (“PJM”) Protection Standards and maintain reliable electric service to at least 33,688 customers in parts of Northampton County, Pennsylvania. The proposed Project is located in Freemansburg Borough and the City of Bethlehem, Northampton County, Pennsylvania. PPL Electric has provided information regarding this Project to these political subdivisions.

Subject to the Commission's approval, construction is scheduled to begin in September 2016, to support the scheduled in-service date of June 2017. In support thereof, PPL Electric states as follows:

I. INTRODUCTION

1. This Letter of Notification is filed by PPL Electric, a public utility that provides electric distribution, transmission, and provider of last resort services in Pennsylvania subject to the regulatory jurisdiction of the Commission.

2. PPL Electric's address is PPL Electric Utilities Corporation, Two North Ninth Street, Allentown, Pennsylvania 18101.

3. PPL Electric's attorneys are:

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PPL Electric's attorneys are authorized to receive all notices and communications regarding this Letter of Notification.

4. PPL Electric furnishes electric service to approximately 1.4 million customers throughout its certificated service territory, which includes all or portions of twenty-nine counties and encompasses approximately 10,000 square miles in eastern and central Pennsylvania. PPL Electric is a "public utility" and an "electric distribution company" as defined in Sections 102 and 2803 of the Pennsylvania Public Utility Code, 66 Pa.C.S. §§ 102, 2803.

5. PPL Electric owns approximately 5,000 miles of transmission lines operating at 69 kV (kilovolts) or higher, approximately 375 substations with a capacity of 10 MVA (megavolt amperes) or more, and approximately 43,000 miles of distribution lines operating at less than 69 kV.

6. This Letter of Notification includes the following accompanying attachments:

- Attachment 1 Necessity Statement.
- Attachment 2 Engineering Description.
- Attachment 3 Description of the Project Area.
- Attachment 4 PPL Electric Design Criteria and Safety Practices.

7. This Letter of Notification and accompanying Attachments, which are incorporated herein by reference, contain all the information required by 52 Pa. Code § 57.72(d)(4).

II. THE PROJECT

A. NEED FOR THE PROJECT

1. Existing System

8. The Quarry 230-69 kV Substation currently serves more than 200 MW of load and at least 33,688 customers in parts of Northampton County, Pennsylvania.

9. The Quarry 230-69 kV Substation is interconnected with four existing 230 kV transmission lines: the Martins Creek-Quarry #2 230 kV Transmission Line; the Quarry-Northwood 230 kV Transmission Line; and the Steel-City Quarry #1 and #2 230 kV Transmission Lines. For fourteen miles extending from the Quarry 230-69 kV Substation, the Quarry-Northwood 230 kV Transmission Line (owned by FirstEnergy) is located on the same set of structures as the Martins Creek-Quarry #2 230 kV Transmission Line (owned by PPL

Electric).¹ The Quarry 230-69 kV Substation also is interconnected with the existing Hosensack-Quarry #1 and #2 138/69 kV Transmission Lines, as well as seven existing 69 kV lines.

10. The Quarry 230-69 kV Substation currently utilizes four 230-69 kV transformers (three 75 MVA rated and one 85 MVA rated).² The Quarry 230-69 kV #1 transformer (85 MVA) taps directly into the Quarry West 230 kV bus, and the Quarry 230-69 kV #2 transformer (75 MVA) taps directly into the Quarry East 230 kV bus. The Quarry 230-69 kV #3 transformer (75 MVA) taps directly into the Martins Creek-Quarry #2 230 kV Transmission Line, and the Quarry 230-69 kV #4 transformer (75 MVA) taps directly into the Steel City-Quarry #2 230 kV Transmission Line. The 230-69 kV transformers located within the Quarry 230-69 kV Substation “step down” the voltage from 230 kV to 69 kV for delivery into the distribution system.

11. A description, project location map, and one-line diagram of the existing system is provided in the Necessity Statement included as Attachment 1 to this Letter of Notification.

2. Need for the Project

12. The Quarry 230-69 kV Substation is vital to both the bulk electric system (“BES”) and non-BES transmission systems.³

¹ One 230 kV circuit occupies one side of the structures while the other 230 kV circuit occupies the other side of the structures.

² The nation’s electric system is comprised of three basic components: generation, transmission, and distribution. Generating plants typically produce electricity at a relatively low voltage. Transformers located adjacent to the generating plants increase or “step up” the voltage to transmission-level voltages such as 230 kV or 500 kV, depending on the size of the generating facility and the distance the electricity must travel for delivery to customers. After the voltage is “stepped up,” the power is transmitted to substations, where the voltage level is sequentially “stepped down” for ultimate delivery into the distribution system. Distribution transformers then further reduce the voltage from primary to secondary distribution levels for ultimate delivery to customers.

³ The BES transmission facilities include transmission facilities operated at voltages of 100 kV or higher and are under the functional control of PJM. Non-BES transmission facilities are operated at a voltage of less than 100 kV.

13. PPL Electric has determined that aging equipment within the existing Quarry 230-69 kV Substation has exceeded its useful life and cannot be relied upon to continue to provide reliable service into the future. Specifically, PPL Electric's Engineering Group has determined that three of the four 230-69 kV transformers at the Quarry 230-69 kV Substation rated at 75 MVA have reached the end of their useful life and are at risk of failure. PPL Electric's Engineering Group has also identified certain circuit breakers, protected systems and battery systems at the Quarry 230-69 kV Substation that have reached the end of their useful life and must be replaced.

14. In addition to the aging condition of many of the components of the Quarry 230-69 kV Substation, the current configurations of two transformers do not meet the PJM Protection Standards.

15. Section 8.2 of the PJM Manual 07: PJM Protection Standards, (February 27, 2014) ("PJM Manual 07"), requires that there must be a protective device (fault-interrupting device) between a BES transmission line and the high side of a transformer.⁴ As previously stated, the Quarry 230-69 kV #3 transformer taps directly to the Martins Creek-Quarry #2 230 kV Transmission Line, and the Quarry 230-60 kV #4 transformer taps directly to the Steel City-Quarry #2 230 kV Transmission Line. Thus, the current configurations of these 230-69 kV transformers do not meet the requirements of Section 8.2 of the PJM Manual 07.

16. The need for this Project is further explained in Attachment 1 to this Letter of Notification.

⁴ The PJM Manual 07 establishes minimum design standards and requirements for bulk power facility protection systems within PJM. Transmission owners within the PJM service territory, such as PPL Electric, are required to operate and design their transmission systems in compliance with the limits set forth in the PJM Manual 07 for protection standards.

B. THE PROPOSED PROJECT

17. To improve the reliability of the aging equipment within the Quarry 230-69 kV Substation and to address the Quarry 230-69 kV Substation's nonconformance with the PJM Protection Standards described above, PPL Electric proposes to upgrade and replace the aging electrical equipment and reconfigure the Quarry 230-69 kV Substation into a more reliable electrical configuration. Specifically, PPL Electric proposes to expand the Quarry 230-69 kV Substation to add one additional 230 kV bay position and additional circuit breakers to reconfigure the Substation into a more reliable double bus, double breaker configuration.

18. The existing circuit breakers, protection systems, and battery systems within the Quarry 230-69 kV Substation that have reached the end of their useful lives will be replaced with modern equivalents. Three of the existing 230-69 kV transforms will also be upgraded from 75 MVA units to 230-69 kV 170 MVA rated transformer units. The 85 MVA transformer will remain onsite, but will not be connected to the Quarry 230-69 kV Substation. Instead, the transformer will serve as a backup transformer for PPL Electric to deploy if needed. This upgrade will increase the transformer capacity of the 69 kV system at the Quarry 230-69 kV Substation by 200 MVA compared to the existing transformer capacity.

19. In addition, to meet the requirements of Section 8.2 of PJM Manual 07, the Quarry 230-69 kV #3 and #4 transformers will be rearranged to not directly tap a BES transmission line. Specially, the Quarry 230-69 kV # 4 transformer will be rearranged into its own 230 kV bay position and will no longer be directly tapped to the Steel City-Quarry #2 230 kV Transmission Line. The Steel City-Quarry #2 230 kV Transmission Line will remain in place and continue to terminate into the current 230 kV bay. Similarly, the Quarry 230-69 kV # 3 transformer will be rearranged into the 230 kV west bus and will no longer be directly tapped to the Martins Creek-Quarry #2 230 kV Transmission Line. The Martins Creek 230 kV

Transmission Line will then be relocated and terminated into a newly installed 230 kV bay position. This proposed double breaker, double bus configuration will eliminate non-BES line tapped transformers and meet the requirements of Section 8.2 of the PJM Manual 07.

20. As explained above, the existing Martins Creek-Quarry 230 kV Transmission Line and the Quarry-Northwood 230 kV Transmission Line are located on the same set of transmission structures. To interconnect the Martins Creek-Quarry #2 230 kV Transmission Line with the new 230 kV bay position, PPL Electric must relocate and replace approximately 800 feet of the existing Martin Creek-Quarry #2 230 kV Transmission Line. The Quarry-Northwood 230 kV Transmission Line will remain on the existing structures.

21. A description and one-line diagram of the proposed Project is provided in the Necessity Statement included as Attachment 1 to this Letter of Notification.

22. The relocation and replacement of the Martins Creek-Quarry #2 230 kV Transmission Line will require the installation of two new steel monopole structures located at the Quarry 230-69 kV Substation site. Each new monopole structures will have an average height of approximately 110 feet. All new poles for the proposed Project will be self-supporting structures on drilled shaft, reinforced concrete foundations. A typical 230 kV steel monopole is provided in Figure 2-1 of Attachment 2 to this Letter of Notification.

23. The relocated segment of the Martins Creek-Quarry #2 230 kV Transmission will replace the existing conductors with three new power conductors and one overhead ground wire. The power conductors will each be 1590 kcmil⁵, 45/7 stranding, ACSR conductors.⁶ The overhead ground wire will be 0.5-inch diameter overhead ground wire. The minimum

⁵ A kcmil or circular mil is the cross-sectional area of a wire one mil in diameter, where 1 kcmil = 0.5067 mm².

⁶ ACSR stands for aluminum conductor steel reinforced.

conductor-to-ground clearance will be 32 feet, which occurs at a maximum conductor temperature of 125° C. An engineering description of the Project is provided in Attachment 2 to this Letter of Notification.

24. The total estimated cost of the proposed Project is \$945,000.⁷

25. Upon Commission approval, the Project has a scheduled construction start date of September 2016 to support the scheduled in-service date of June 2017.

III. HEALTH AND SAFETY

26. The proposed Project will not create any unreasonable risk of danger to the public health or safety.

27. The Project will be designed, constructed, operated, and maintained in a manner that meets or surpasses all applicable National Electrical Safety Code (“NESC”) minimum standards and all applicable legal requirements. Descriptions of PPL Electric’s design criteria and safety practices are provided in Attachment 4 to this Letter of Notification.

28. Consistent with its Magnetic Field Management Program, PPL Electric will construct the Project for ground clearances that are a minimum of five feet higher than the required NESC minimum ground clearance for 230 kV lines in order to reduce the magnetic field exposure. A description of PPL Electric’s Magnetic Field Management Program is provided in Attachment 2 to this Letter of Notification.

⁷ The estimated cost for the proposed Project is an order-of-magnitude estimate developed using averages of recent costs for similar projects and without an in-depth analysis of field investigation. The estimated cost is subject to change as the constructability of the Project, sequence of construction, and other factors that may affect cost are identified and analyzed as the Project progresses.

IV. DESCRIPTION OF RIGHT-OF-WAY

29. The new, relocated segment of the Martins Creek-Quarry #2 230 kV Transmission Line will be located entirely within an existing PPL Electric transmission line right-of-way and on the Quarry 230-69 kV Substation property owned by PPL Electric. An aerial plot plan is provided at the end of Attachment 3 to this Letter of Notification. As described in Attachment 3, no additional rights-of-way or easements are required for the construction and operation of the new, relocated transmission line segment.

30. Impacts on land use are anticipated to be minimal because the majority of the proposed Project will be constructed within the PPL Electric-owned Quarry Substation property and in close proximity to the existing Substation structures. Where practical, PPL Electric will use previously established access roads for construction to further reduce interference with existing land uses.

31. The Project area previously has been cleared of vegetation. As a result, limited vegetation management will be required for this project. In areas where vegetation management is required to complete the project, PPL Electric will apply its “Specifications for Initial Clearing and Control of Vegetation On or Adjacent to Electric Line Right-of-Way Through Use of Herbicides, Mechanical and Hand Clearing Techniques” to mitigate any impacts.

32. No communication towers, pipelines, or other utilities will be affected by the proposed Project.

33. PPL Electric does not anticipate any interference with airport operations because of the presence of existing electrical facilities in the Project area, and the similar height of the new facilities and the existing facilities located in the Project area. However, PPL Electric will file all required documentation with both the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

34. The Project will not affect any unique geological, scenic, or natural areas. Although the proposed Project is located in proximity to two National Area Inventory (“NAI”) areas, no impacts on the NAI areas are expected due to the location of the NAI areas, the presence of the existing facilities, and the distance between the proposed Project and the NAI areas.

35. The Project will not affect any recreational areas or natural landmarks.

36. PPL Electric previously submitted a review letter to the Pennsylvania Historical and Museum Commission (“PHMC”) to determine what, if any, impacts the Project may have on cultural and archaeological resources. PPL Electric received a response from PHMC indicating that the proposed Project will have no adverse effect on historic properties.

37. A 100-year floodplain borders the Quarry 230-69 kV Substation property and slightly encroaches within the Substation property. The portion of the Martins Creek-Quarry #2 230 kV Transmission Line being relocated and replaced will not cross the floodplain. The existing Substation, as well as the proposed upgraded Substation, is designed to be three feet above the floodplain; therefore, no additional flood protection measures are required.

38. Although one small emergent wetland is located within the Quarry 230-69 kV Substation property, PPL Electric does not anticipate that the proposed Project, which is being performed entirely within the existing Substation property and existing right-of-way, will impact the wetland. Based on preliminary design, the Project will not require any permits from the United States Army Corps of Engineers (“USACE”) or the Pennsylvania Department of Environmental Protection (“PADEP”). However, if during detailed design, permits from the USACE or PADEP become necessary, PPL Electric will obtain all needed permits and will comply with all of the terms and conditions placed on those permits.

39. PPL Electric will acquire any required soil erosion and sedimentation control permits, as needed, and will comply with any conditions placed on those permits.

40. PPL Electric has consulted with state and federal agencies to obtain information regarding endangered and threatened species in close proximity to the Project. PPL Electric has reviewed the Pennsylvania Natural Diversity Inventory records under the jurisdiction of the Pennsylvania Department of Conservation and Natural Resources, the Pennsylvania Fish and Boat Commission, the Pennsylvania Game Commission, and the U.S. Fish and Wildlife Service. Based on this review, these agencies have reported that the Project will not impact any threatened and endangered species and/or special concern species and resources located within the Project area.

V. NOTICE

41. PPL Electric has provided information regarding the Project to Freemansburg Borough, the City of Bethlehem and Northampton County.

42. Copies of this Letter of Notification will be served on the governmental agencies, municipalities, and other public entities in accordance with 52 Pa. Code § 57.72(d)(3).

43. Copies of this Letter of Notification will be served on the owners of land subject to the right-of-way and easement in accordance with 52 Pa. Code § 57.72(d)(3).

VI. LETTER OF NOTIFICATION

44. PPL Electric is proceeding by means of a Letter of Notification, instead of a full Application, pursuant to the Commission's regulations at 52 Pa. Code § 57.72(d)(1)(vi).

45. The proposed Project qualifies for use of a Letter of Notification because the segment of the Martins Creek-Quarry #2 230 kV Transmission Line being relocated and replaced

in order to interconnect the Martins Creek-Quarry #2 230 kV Transmission Line with the new, upgraded Quarry 230-69 kV Substation is less than two miles, *i.e.*, approximately 800 feet.

46. This Letter of Notification is filed on the date set forth below. As provided in 52 Pa. Code § 57.72(d)(5), the Commission will review and, by order, approve or disapprove this Letter of Notification. If the Commission approves this Letter of Notification, the proposed Project will be constructed as proposed herein without the formal application process set forth at 52 Pa. Code §§ 57.71, *et seq.*

VII. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission approve the relocation and replacement of approximately 800 feet of the Martins Creek-Quarry #2 230 kV Transmission Line to interconnect the Transmission Line with the upgraded Quarry 230-69 kV Substation in Freemansburg Borough and the City of Bethlehem, Northampton County, Pennsylvania, as explained above and in the Attachments hereto.

Respectfully submitted,



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Date: April 15, 2016

Attorneys for PPL Electric Utilities Corporation

VERIFICATION

I, SETPHANIE R. RAYMOND, being the VICE PRESIDENT – TRANSMISSION AND SUBSTATIONS at PPL Electric Utilities Corporation, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect PPL Electric Utilities Corporation to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: _____

4/11/14

Stephanie R. Raymond