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PA PUC
SECRETARY'S BUREAU
1700 N. MARKET ST.

17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
717-731-1970 Main
717-731-1985 Main Fax
www.postschell.com

Jessica R. Rogers

jrogers@postschell.com
202-661-6964 Direct
202-661-6944 Direct Fax
File #: 140066

March 14, 2019

VIA HAND DELIVERY

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

**Re: Letter of Notification of PPL Electric Utilities Corporation, Filed Pursuant to 52 Pa. Code Chapter 57 Subchapter G, for Approval of the Face Rock - Five Forks 115 kV Line Project in York County and Lancaster County, PA
Docket No. A-2019-**

Dear Secretary Chiavetta:

Enclosed for filing is the Letter of Notification of PPL Electric Utilities Corporation in the above-referenced proceeding. A CD containing a copy of the Letter of Notification and Attachments in Support of the Letter of Notification is also enclosed.

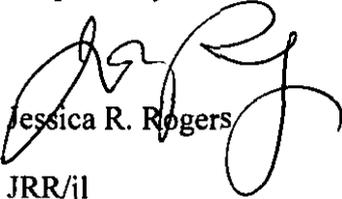
As indicated on the Certificate of Service, copies of the Letter of Notification are being served by certified mail, return receipt requested upon the involved governmental agencies, municipalities and property owners.

Construction is scheduled to begin upon receipt of Commission approval to support an in-service date before the end of 2020.

If you have any questions concerning this matter, please contact me at the address or telephone numbers provided above.

Rosemary Chiavetta, Secretary
March 14, 2019
Page 2

Respectfully submitted,



Jessica R. Rogers

JRR/jl
Enclosures

cc: Certificate of Service
Robert F. Young
Paul T. Diskin
Yasmin Snowberger
Kimberly Hafner

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FRONT DESK

**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-2019-_____
for Approval of the Face Rock – Five :
Forks 115 kV Line Project in York :
County and Lancaster County, PA. :

LETTER OF NOTIFICATION

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PPL/UC
SECRETARY'S OFFICE
GENERAL COUNSEL

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 rebuild the existing Face Rock – Five Forks 115 kV Transmission Line in York County and Lancaster County, Pennsylvania (“Face Rock – Five Forks Project,” the “Line,” or the “Project”). PPL Electric has provided information regarding this Project to representatives of Lower Chanceford Township, Peach Bottom Township, Martic Township, York County, and Lancaster County, and is made aware of any objection to the Project.

The proposed Face Rock – Five Forks Project will provide necessary system reliability and safety improvements. The Project will be constructed entirely within existing transmission line right-of-way. Subject to the Commission’s approval, construction of this Project is scheduled to begin after Commission approval is received, to support an in-service date of winter 2020. 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:

Michael J. Shafer (I.D. # 205681)
PPL Services Corporation
Two North Ninth Street
Allentown, PA 18101
Voice: 610-774-2599
Fax: 610-774-4102
E-mail: mjshafer@pplweb.com

David B. MacGregor (I.D. # 28804)
Jessica R. Rogers (I.D. # 309842)
Post & Schell, P.C.
17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
Voice: 202-661-6964
Fax: 717-731-1985
E-mail: dmacgregor@postschell.com
E-mail: jrogers@postschell.com

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 Right of Way.
 - Attachment 4 PPL Electric Design Criteria and Safety Practices.
 - Attachment 5 List of Involved Governmental Agencies, Municipalities and Other Public Entities Receiving Letter of Notification.

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 Face Rock-Five Forks 115 kV transmission line extends 10.5 miles between PPL Electric's Face Rock 115 kV substation in Holtwood, Lancaster County, Pennsylvania and Baltimore Gas & Electric's ("BG&E") Five Forks 115 kV substation near Pylesville, Harford County, Maryland. PPL Electric owns the section of the Line located in Pennsylvania (approx. 8.5 miles). BG&E owns the remainder of the transmission line, located in Maryland. PPL Electric and BG&E are coordinating replacement of the entire transmission line from the Face Rock Substation to the Five Forks Substation. Each utility will be responsible for all costs associated with rebuilding their portion of the Line. BG&E is starting construction on its portion of the line in the Fall of 2019.

9. The Face Rock – Five Forks 115 kV transmission line is a network transmission line between PPL Electric and BG&E, originally constructed in 1912 as two separate parallel 66

kV transmission lines. In the 1950's the line was upgraded to 115 kV operation, and the two circuits were tied together electrically to operate as a single circuit. This unique configuration was utilized due to the condition of the line at that time, and the cost-effectiveness of reusing the assets in lieu of rebuilding. Currently, the Face Rock – Five Forks line is physically made of two separate circuits which are located on separate structures, however the circuits are electrically tied together and operate as one circuit.

10. The Face Rock – Five Forks transmission line is a network tie-line that supports power flow on the regional transmission grid and provides a primary outlet for electricity generated at the Holtwood Hydroelectric Generating Plant (“Holtwood”).

11. In 2012, PPL Electric undertook a formal assessment of the line's condition, as part of a system-wide review of aging infrastructure. At that time, the Face Rock – Five Forks transmission line was determined to be in operable condition, but in need of immediate rehabilitation, with a recommendation of full rehabilitation or rebuild within 10 years.

2. Need for the Project

12. The Face Rock – Five Forks transmission line is more than 100 years old and has over 300 splices. There have been 32 unplanned outages between January 1, 2013 and July 2018 (12 permanent outages and 20 momentary outages) on the line, stemming from age-related degradation and design inefficiencies. The Face Rock – Five Forks transmission line had the most outages of any PPL Electric transmission line during that same timeframe. This outage experience is also approximately six times higher than the industry norm for 115 kV transmission lines. Due to this line's age and condition, the Face Rock – Five Forks has resulted in 79 maintenance activities and maintenance cost in excess of \$800,000 since 2013, making it the costliest line on PPL Electric's system to maintain.

13. Frequent outages on the Face Rock – Five Forks transmission line cause generation curtailment at Holtwood, impacting grid reliability and stability.

14. In 2015, and again in 2016, the Face Rock – Five Forks transmission line experienced a conductor failure. These failures each resulted in 17-hour permanent outages. In response to safety concerns raised by these failures, in 2016 PPL Electric initiated a course of emergent corrective action. These emergent corrective actions included installing shunts (mechanical connection around the splices) on all splices to prevent further failures.

15. In response to the reliability issues experienced on the Face Rock – Five Forks transmission line, PPL Electric commenced an updated condition assessment to evaluate the health of the Face Rock – Five Forks line. PPL Electric used two methods for assessing the condition of the Line. The two methods are detailed in Attachment 1. The conclusion of both studies identified widespread and significant structural deficiencies, and concluded that follow-up corrective action and subsequent long-term repairs are necessary in order to restore the structural integrity of the Line.

16. Due to its age, the Face Rock – Five Forks transmission line does not reflect modern construction practices considered to be Good Utility Practices. There are two inherent design deficiencies associated with the vintage steel lattice structures on the Face Rock-Five Forks line. The first deficiency is a lack of adequate avian clearances between the tower arms and energized conductor, making the line susceptible to avian contacts. The existing clearances between the energized and grounded components of the structures are not large enough to accommodate large birds that frequently perch in this area. The second deficiency is that the existing single overhead shield wires on the transmission line do not provide adequate protection

from direct lightning strikes. There is a history of outages caused by these deficiencies, and an increased risk of future outages until the deficiencies are corrected.

17. Without undertaking this Project, the transmission line will continue to degrade as it ages and will create serious reliability and safety threats that will impede the Company's ability to meet its obligations under the Public Utility Code. Specifically, without this Project, obsolete structures will remain in place and continue to have an unacceptable risk of failure. In addition, there would be no improvements associated with avian clearances or lightning performance. It is similarly reasonable to conclude that without this Project, maintenance expenses and outage experiences on this transmission line will continue to greatly exceed average maintenance costs on the rest of PPL Electric's system.

18. The proposed Project was reviewed at the PJM Transmission Expansion Advisory Committee meeting in July 2016 and is identified in the Regional Transmission Expansion Plan as Supplemental project s1154.

19. The Necessity Statement for the Face Rock – Five Forks Project, Attachment 1 to this Letter of Notification, provides a full discussion of the existing safety and reliability concerns associated with this transmission line.

B. THE PROPOSED PROJECT

20. To resolve the issues described above, PPL Electric proposes to rebuild the Face Rock – Five Forks transmission line in the existing right-of-way. PPL Electric considered two alternatives to the proposed Project, but after a thorough analysis of the benefits of each option, concluded that a rebuild of the existing Face Rock – Five Forks transmission line would produce the best long-term reliability results. This analysis is fully described in Attachment 1 to this Letter of Notification.

21. Currently, the single-circuit Face Rock – Five Forks 115 kV transmission line is comprised of two 3-conductor lattice tower lines, operating in parallel as a single 6-conductor 115 kV line. The existing alignment from the Face Rock 115 kV Substation to the west bank of the Susquehanna River is built with 266 ACSR¹, 336 ACSR, and 397.5 ACSR conductors strung on parallel steel lattice towers. The existing alignment that extends from the west bank of the Susquehanna River southwest across York County to the Pennsylvania/Maryland border is built with 300 Aluminum conductors strung on parallel steel lattice towers.

22. The existing transmission line consists of two parallel single-circuit 115 kV transmission lines located on twin sister lattice towers along the entire length of the Face Rock – Five Forks transmission line. The Project will be built as a single-circuit 115 kV transmission line on new self-weathering steel monopoles with high capacity conductors and two fiber optic overhead ground wires (“OPGW”). The Project will also provide the capacity to add a second circuit in the future.

23. PPL Electric has designed the proposed Face Rock – Five Forks Project to fit within the existing transmission right-of-way corridor. Several new structures have been adjusted off the centerline based on engineering requirements and landowner requests. Where the transmission line is to be shifted off the corridor centerline, it was designed with shorter span lengths between structures or with increased wire tensions to maintain required clearances from the edge of the transmission corridor during blowout conditions.

24. Structure locations were optimized to reduce Project costs and environmental and social impacts. This includes reducing the total number of existing transmission structures along the transmission corridor by approximately 107 structures. PPL Electric will remove 171 existing tower structures that have reached the end of their useful life, but will only need to

¹ ACSR stands for aluminum conductor steel reinforced.

install approximately 64 new monopole structures to rebuild the transmission line. The Project will decrease the footprint of the existing structures by over 95%.

25. The proposed new structures will consist of self-weathering steel monopoles equipped with steel upswept arms and glass insulator assemblies. All new structures will be self-supported, either directly embedded or placed on concrete caisson foundations.²

26. The existing lattice tower structures range in height from approximately 65 to 105 feet. The proposed transmission structures for the Project range in height from approximately 90 to 150 feet, with an average structure height of 115 feet. Due to the topography adjacent to the Susquehanna River and span lengths necessary to cross the river, the proposed transmission structures for the river crossing will range in height from 90 to 195 feet, with an average height of 145 feet.

27. The Face Rock-Five Forks 115 kV transmission line will utilize three power conductors and two OPGWs. The new power conductors will be 795 kcmil³, 30/19 stranding, ACSR conductors. The OPGWs will each be 0.752-inch-diameter. The minimum conductor-to-ground clearance will be 31 feet which occurs at a maximum thermal conductor temperature of 125°C (257°F).

28. The conductors, OHGWs and OPGWs will be strung in a manner that will comply with the NESC and maintain safe operating conditions.

29. This Project has significant public benefits. These include improving the safety and reliability of the transmission line, removing a very old and outdated line from the transmission system, and decreasing unplanned outages and ongoing maintenance costs. Further,

² Temporary guyed poles may be required on the transition structure at the Pennsylvania/Maryland border, and will be removed once BG&E completes construction on the rebuild of the portion of its transmission line located in Maryland.

³ kcmil stands for thousand circular mils. Kcmil wire size is the equivalent cross sectional area in thousands of circular mils. A circular mil is the area of a circle with a diameter of one thousandth (0.001) of an inch.

as proposed, the rebuilt line will have significantly less environmental, property, and social impacts by reducing the number of poles and shrinking the footprint of the transmission line. Rebuilding the line will bring it into compliance with PPL Electric's current engineering standards, which provide additional reliability and environmental benefits, such as greater ground clearance, improved performance during weather producing lightning, and a reduction in avian contacts with the transmission line. Finally, rebuilding the transmission line will produce a significant long-term reduction in future operation and maintenance costs and provide the best prospect for providing safe and reliable service into the future.

30. The total estimated cost of the proposed Face Rock – Five Forks Project is \$15.9 million.⁴

31. Upon Commission approval, the Face Rock – Five Forks Project is scheduled to commence construction after approval is received to meet an in-service date before the end of 2020.

32. The Engineering Description of the proposed Face Rock – Five Forks Project is provided in Attachment 2 accompanying this Letter of Notification.

III. HEALTH AND SAFETY

33. The proposed Face Rock – Five Forks Project will not create any unreasonable risk of danger to the public health or safety. The Project will be designed, constructed, operated, and maintained in a manner that meets or surpasses all applicable NESC minimum standards and all applicable legal requirements. Descriptions of the NESC standards, PPL Electric's design

⁴ 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 or filed 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.

criteria, and PPL Electric's safety practices are provided in Attachment 4 to this Letter of Notification.

34. Attachment 4 accompanying this Letter of Notification also explains PPL Electric's standards for Magnetic Field Management. PPL Electric will construct the Face Rock – Five Forks Project consistent with its Magnetic Field Management Program.

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

36. The closest active airport to the Project area is the Baublitz Commercial Airport, located approximately 7.6 miles northwest of the existing transmission line. Two other nearby airports that appear to be inactive were also identified; Ruff Field is located 1.5 miles to the east and Delta Airport is located 2.5 miles to the east of the existing transmission line. Impacts to the airports are not expected, because the facilities are a substantial distance from the airport and in a similar location to the existing facilities they are replacing. Nevertheless, PPL Electric will file any required documentation with both the Pennsylvania Department of Transportation, Bureau of Aviation, and the Federal Aviation Administration.

IV. RIGHT-OF-WAY STATUS

37. The existing Face Rock – Five Forks transmission line is located within a corridor consisting of right-of-way that varies in width from 200 feet to 600 feet in Lancaster County, allowing for other PPL Electric transmission lines to cross the same section of the Susquehanna River. In York County, PPL Electric owns the 100-foot wide transmission corridor for the Face Rock – Five Forks transmission line in fee. The Face Rock – Five Forks Project will be constructed entirely within PPL Electric's existing transmission right-of-way and corridor. PPL Electric does not require any additional right-of-way for the construction of the Project. An

aerial map is provided at the end of Attachment 3 to this Letter of Notification, which depicts the proposed line and associated structures.

38. The size, character, design and configuration of the proposed Line will not substantially alter the existing transmission corridor. The Project will be within the same variable width right-of-way (Lancaster County) or the PPL Electric owned transmission corridor (York County), and will generally be on the same alignment as the existing transmission line. The configuration of several new structures has been adjusted off the centerline based on engineering requirements and landowner requests to reduce impacts. However, where these shifts occur the Line was designed with shorter span lengths between structures or with increased wire tensions to maintain required clearances from the edge of the transmission corridor during blowout conditions.

39. The rebuilt transmission line will use significantly fewer structures than the existing Face Rock – Five Forks transmission line, due to span optimization and the fact that single monopole structures will be replacing the twin lattice tower lines. PPL Electric will remove all 171 existing lattice structures and replace them with 64 new steel monopoles. The proposed Project will reduce the visual effect on the surrounding community, and the smaller footprint of the monopoles will lessen impacts on the agricultural practices caused by the existing transmission line. PPL Electric will not place new structures on properties that do not presently contain lattice towers. As a result, the new line will have substantially less impact on the landscape and land use practices relative to the existing Face Rock – Five Forks transmission line.

40. The existing right-of-way areas and PPL Electric owned transmission corridor for the Face Rock-Five Forks 115 kV transmission lines has previously been cleared of vegetation

and no extensive tree clearing is anticipated. If vegetation management is required in specific locations, PPL Electric will apply its “*Specifications for Transmission Vegetation Management LA-79827*” to minimize potential impacts.

V. LAND USE AND ENVIRONMENTAL EVALUATION

41. As explained above, construction of the proposed Face Rock – Five Forks Project will take place entirely within PPL Electric’s existing right-of-way. It is anticipated that the proposed Project will have minimal incremental impacts on the area.

42. PPL Electric will use and update previously established access roads for construction to the extent practical to further reduce interference with existing uses and minimize land use impacts.

43. PPL Electric is in the initial stage of coordination with the Pennsylvania Historical and Museum Commission (“PHMC”) on this Project. This coordination will be required to receive permitting to construct the Project and will be conducted in the near future. PPL Electric will perform any reviews and field survey/sampling work required by the PHMC to avoid, minimize, and mitigate impacts to archaeological or historic architectural resources that may be located within the Project area.

44. The Project spans three Pennsylvania Natural Heritage Program identified natural areas. The first is the Conowingo Islands, which encompasses the numerous rocky islands, including Holly and Piney Islands, below the Holtwood Dam. Due to the fluctuating water levels in this area, the rocky outcrops have been exposed to variable soil deposits that provide distinctive habitat for at least 16 plant species of concern. Additionally, several uncommon animal species, including bald eagles and ospreys, nest and forage in the area. The second and third areas are the North Branch Muddy Creek and Fishing Creek natural areas in York County.

Both areas are based on the wetland complexes located in the stream valleys that support plant species of concern.

45. Rebuilding along the same alignment as the existing line is not anticipated to have any impact on these species or their general habitat. PPL Electric will coordinate with, and obtain applicable approvals from federal and state agencies having jurisdiction over the protection of these species as part of the Project.

46. In addition, the Project is located within a unique scenic geologic feature area known as the Susquehanna River Hills, which extends south along the Susquehanna River from Safe Harbor, Pennsylvania to the Pennsylvania/Maryland border. The Susquehanna River Hills are distinct rolling and dissected upland areas located adjacent to the river. The Project crosses portions of this area and is not anticipated to have any new impacts on this unique geologic feature.

47. Erosion and Sedimentation (“E&S”) control plans will be developed and implemented for the Project to minimize the displacement of soils. These plans will require prior approval from the local county conservation districts. Applicable National Pollutant Discharge Elimination System (“NPDES”) permits will also be obtained from the Pennsylvania Department of Environmental Protection (“PADEP”). During construction, PPL Electric will adhere to all conditions specified in its NPDES permit. Impacts to local soil resources are anticipated to be minimal.

48. The Project will span 11 National Hydrography Dataset (“NHD”) identified waterways. A full list of these waterways are identified in Attachment 3. None of these waterways are considered an anti-degradation special protection classification water. The Project will cross waterways that are designated by the Pennsylvania Fish and Boat Commission

("PFBC") as Wild Trout (Natural Reproduction) Streams. An E&S control plan will be developed to address stormwater control in these watersheds. Impacts to any waterway are anticipated to be minimal. PPL Electric will obtain all approvals and permits necessary for the construction of the Project, and will comply with any conditions placed on the Project by those permits.

49. Based on review of the U.S. Fish and Wildlife Service's ("USFWS") National Wetlands Inventory ("NWI"), the existing 115 kV transmission line does not cross any wetland systems. The Project does span the Susquehanna River, which is classified by the NWI as a riverine, intermittent, streambed, seasonally flooded (R4SBC) system. Construction activities in the river to replace the existing structures will require permits from state and federal agencies. The NWI only provides a general overview of the potential wetlands that may be located within an area. The wetlands and waterways within the Project area will be delineated, surveyed, and illustrated according to regulatory standards for federal and state permitting purposes. This information will be used to minimize wetland impacts where feasible. Additionally, PPL Electric will avoid impacts to wetlands where possible by aerially spanning these features.

50. The National Flood Hazard Layer ("NFHL") for York County Pennsylvania was obtained through the Pennsylvania Spatial Data Access ("PASDA") database and analyzed for 100-year floodplains within the Project and surrounding areas. The NFHL data incorporates all Flood Insurance Rate Map ("FIRM") databases published by the Federal Emergency Management Agency ("FEMA"), and any Letters of Map Revision ("LOMRs") that have been issued against those databases since their publication date. Based on review of this data, the existing and rebuilt Line will span over the FEMA 100-year floodplains associated with the Muddy Creek, Neill Run, and Fishing Creek. No impacts to these floodplain areas are

anticipated. Review of the Lancaster County data indicates that structures associated with the existing line are located in the floodplain of the Susquehanna River, but construction of the replacement structures are anticipated to be conducted in locations outside of the floodplain area.

51. The proposed Project will not affect any state lands, national parks, state parks, local parks, recreational areas or natural landmarks. None of these features are located within the Project area. Holly Island is a rocky, barren parcel of land in the Susquehanna River owned by the Pennsylvania Game Commission (“PGC”) and spanned by the Project. No direct impact is anticipated to this parcel. State Game Lands #181 is located 1.2 miles to the northwest of the Project and Susquehannock State Park is located 3.2 miles to the southeast, on the east side of the Susquehanna River. Neither of these properties will be affected by the Project

52. An on-line Pennsylvania Natural Diversity Inventory (“PNDI”) Project Environmental Review was performed for the York County portion of the Project (PNDI-636551).⁵ The PNDI was completed on November 8, 2017 for the portion of the Project located in Lower Chanceford and Peach Bottom Townships, York County, Pennsylvania.

53. The PGC issued a letter of no impact for the Project on November 21, 2017. The determination is valid for two (2) years.

54. The PFBC issued a review letter dated December 19, 2017 which identified the protected fish species that are located in the vicinity of the Project. Additional information, including a detailed narrative describing any in-stream activities, stream crossings, sequence of activities, basic site plans, wetlands/waterways mapping and acreage to be impacted, general habitat descriptions and color photographs with a key location map, were provided to the PFBC

⁵ The PNDI review evaluates the databases of the USFWS, PFBC, PGC, and the Pennsylvania Department of Conservation and Natural Resources (“DCNR”).

on February 20, 2018 to complete their review. PFBC completed their review and issued a letter of no impact on March 12, 2018.

55. Letters of determination from the DCNR were issued on November 10, 2017 and on February 28, 2018. DCNR requested that additional field studies be completed for the Lobelia puberula- Downy Lobelia (Endangered). Field surveys were conducted in September 2018 and no plants of special concern were found in the Project area. PPL Electric submitted a report of these findings to DCNR in late September 2018. The report was approved by DCNR.

56. The USFWS requested additional information on the Project relating to bog turtles. The results of the Phase 2 Bog Turtle study were submitted to USFWS on June 28, 2018. A letter of no impact was received on August 15, 2018.

57. A PNDI has not been conducted for the Susquehanna River crossing portion of the Project and will be addressed as part of the permitting process for that portion of the Project. PPL Electric anticipates coordinating with the PGC regarding timing restrictions for work around bald eagle nests and blue heron roosting sites. Review for DCNR protected plants along the river valley is also expected.

58. PPL Electric will continue to consult with the jurisdictional agencies regarding potential impacts to protected species, will obtain all approvals and permits necessary for the construction of the Project, and comply with all conditions placed on those permits.

VI. NOTICE

59. PPL Electric has provided information regarding the Face Rock – Five Forks Project to representatives of Lower Chanceford Township, Peach Bottom Township, Martic Township, York County, and Lancaster County. These entities have not objected to the proposed Project.

60. Copies of this Letter of Notification will be served on the governmental agencies, municipalities, and other public entities and organizations in accordance with 52 Pa. Code § 57.72(d)(3). A list of these entities and organizations is provided as Attachment 5.

61. PPL Electric has reached out to residents located immediately adjacent to PPL Electric's fee owned parcels and owners of properties that are crossed by the Line.

62. Copies of this Letter of Notification will be served upon landowners in accordance with 52 Pa. Code § 57.72(d)(3). A list of the landowners impacted by this project is provided as Attachment 5.

VII. LETTER OF NOTIFICATION

63. 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)(i).

64. The proposed Face Rock – Five Forks Project qualifies for use of a Letter of Notification because it will be located entirely on an existing transmission line right-of-way, and the size, character design or configuration of the proposed transmission line will not substantially alter the right-of-way.

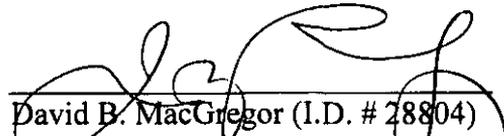
65. This Letter of Notification is filed on the date set forth below. As provided in 52 Pa. Code § 57.72(d)(5), the Commission will review and, by order, approve or disapprove this Letter of Notification. If the Commission approves this Letter of Notification, the proposed Face Rock – Five Forks Project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

VIII. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission approve the proposed Face Rock – Five Forks Project in York County and Lancaster County, Pennsylvania.

Respectfully submitted,

Michael J. Shafer (I.D. # 205681)
PPL Services Corporation
Two North Ninth Street
Allentown, PA 18101
Voice: 610-774-2599
Fax: 610-774-4102
E-mail: mjshafer@pplweb.com


David B. MacGregor (I.D. # 28804)
Jessica R. Rogers (I.D. # 309842)
Post & Schell, P.C.
17 North Second Street
12th Floor
Harrisburg, PA 17101-1601
Voice: 717-731-1970
Fax: 717-731-1985
E-mail: dmacgregor@postschell.com
E-mail: jrogers@postschell.com

Date: March 14, 2019

Attorneys for PPL Electric Utilities Corporation

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P. U. C. BUREAU
SECRETARY'S OFFICE
100 N. MARKET ST.
HARRISBURG, PA 17101

VERIFICATION

I, DAVID A. QUIER, being the Director of Asset Management 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: 3/14/19



David A. Quier

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PPL Electric Utilities
SECRETARY OF STATE

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Figure 1-2: Existing System Map

Figure 1-3: Proposed 115 kV One Line Diagram

Figure 1-4: Proposed System Map

1.0 APPLICATION SUMMARY

The Face Rock-Five Forks 115 kV transmission line (“Line”) extends 10.5 miles between PPL Electric Utilities Corporation’s (“PPL Electric”) Face Rock 115 kV substation in Holtwood, Lancaster County, Pennsylvania and Baltimore Gas & Electric’s (“BG&E”) Five Forks 115 kV substation near Pylesville, Harford County, Maryland. PPL Electric owns the section of the Line located in Pennsylvania (approx. 8.5-miles). BG&E owns the remainder of the Line, located in Maryland.

PPL Electric is requesting Pennsylvania Public Utility Commission (“PUC” or “the Commission”) approval to rebuild its 8.5-mile section of the Line located in Pennsylvania (the “Project”).

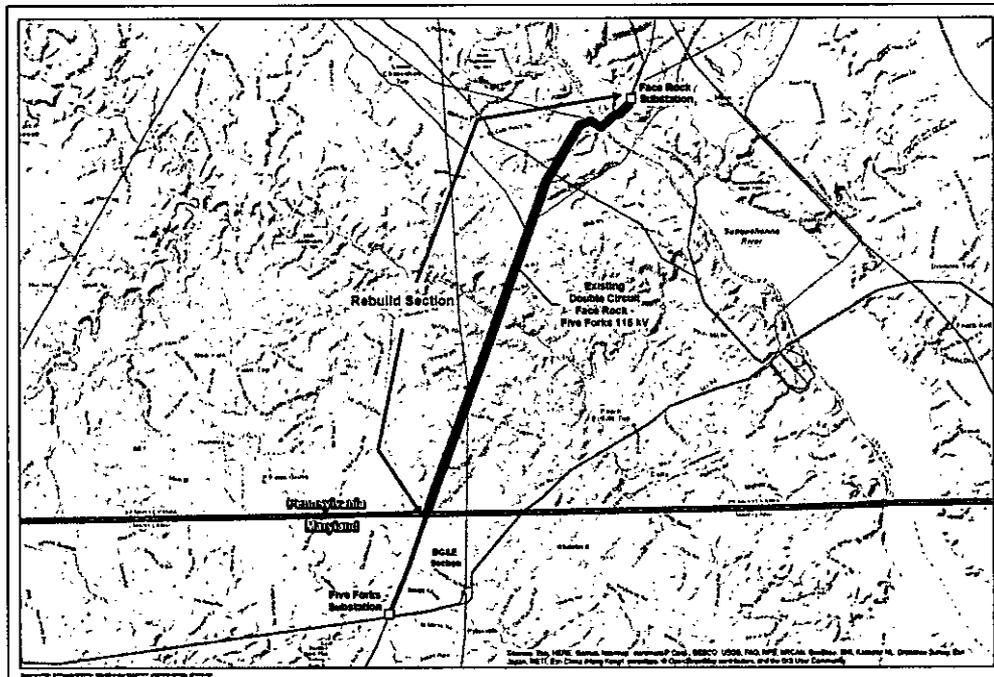


Figure 1-1: Current System Configuration

The Project is required to comply with:

1. The Consolidated Transmission Owners Agreement (“TOA”) Rate Schedule - FERC No. 42
2. PPL Electric’s transmission asset management planning procedure

PPL Electric and BG&E are coordinating replacement of the entire Line from the Face Rock Substation to the Five Forks Substation. Each utility will be responsible for all costs associated with rebuilding their portion of the Line. BG&E is starting construction on its portion of the line in the Fall of 2019.

Once the Project is complete, the new single-circuit 115kV line will be designated the Face Rock-Five Forks 115 kV transmission line.

Failure to construct the Project will negatively impact the reliability of the system in Pennsylvania and Maryland and will prevent PPL Electric from complying with its obligations under the TOA to maintain its portion of interconnected transmission facilities in good operating condition. In order for the transmission facilities to be considered in good operating condition they must be maintained in a manner consistent with the standards of the Regional Reliability Council, Reliability First Corporation, and Good Utility Practice as defined by the TOA. Additionally, failure to complete the project is contrary to PPL Electric’s responsibility to provide transmission assets that are safe, reliable and resilient.

Pending the Commission’s approval, construction of the new Face Rock-Five Forks 115 kV line will begin with an estimated in-service date of Q4 2020. The total estimated cost of this Project is \$15.9 million.

2.0 BACKGROUND

PPL Electric has a responsibility to provide transmission assets and maintain them in a manner that is safe, reliable, and resilient to meet the needs of the electric system and expectations of its customers. To meet this duty, PPL Electric applies its transmission asset management planning procedure which includes system performance and condition assessments.

These performance and conditions assessments identify system needs and prioritize projects based on several variables such as equipment age, condition, maintenance schedule, and impact on system reliability and performance to ensure a reliable electric grid and service to our customers.

The transmission system is the backbone of the electric grid. Failure to maintain the system in accordance with Good Utility Practice and reliability practices and standards can decrease overall transmission system reliability and increase the risk of customer outages.

3.0 TRANSMISSION SYSTEM PLANNING PROCESS

PPL Electric’s transmission asset management planning procedure involves identifying system needs and determining the best available solution to address those needs. This process includes: Asset Evaluation, Asset Condition and System Risk Assessments, Analysis of Alternative Solutions and Project Initiation and Scheduling. System needs are identified based on the overarching goals of reducing outage frequency and duration, improving system reliability, decreasing system maintenance cost, and maintaining operational flexibility to ensure safe and reliable electric service of the transmission system and to our customers.

3.1 Consolidated Transmission Owner’s Agreement – Rate Schedule FERC No. 42

The TOA (FERC ER10-2713-000) is an agreement between (1) individual Transmission Owner’s operating within the PJM Region and (2) the Transmission Owner’s and PJM. The TOA facilitates the planning and operation of the transmission grid within the PJM region and establishes the rights and responsibilities of each party to the TOA. Section 4.6 of the TOA requires that interconnections between transmission systems “[b]e kept in place and maintained in good operating condition in accordance with Good Utility Practice and principles, guidelines and standards of the applicable Regional Reliability Council and NERC.” This Project is required to fulfill PPL Electric’s obligations under the TOA.

4.0 THE NEED FOR THE PROJECT

4.1 Project Background

The Face Rock-Five Forks 115 kV transmission line is a network transmission line between PPL Electric and BG&E, originally constructed in 1912 as two separate parallel 66 kV transmission lines. In the 1950's the line was upgraded to 115kV operation, and the two circuits were tied together electrically to operate as a single circuit. This unique configuration was utilized due to the condition of the line at that time, and the cost-effectiveness of reusing the assets in lieu of rebuilding.

The Line's condition was formally assessed by PPL Electric in 2012 as part of a system-wide review of aging infrastructure. The Line was determined to be in operable condition but in need of immediate ground line rehabilitation, with a recommendation of full rehabilitation or rebuild within 10 years.

The Line has experienced major equipment failures with each involving failed splices which caused the conductor to drop. The conductor has dropped in 2015 followed by a second drop in 2016. Each failure resulted in 17-hour permanent outages. In response to the 2015 and 2016 failures, PPL Electric initiated a course of emergent corrective action in 2016. These emergent corrective actions included installing shunts (mechanical connection around the splices) on all splices to prevent further failures. At the same time PPL Electric commenced an updated condition assessment to evaluate the health of the Line.

The condition assessments confirmed that the Line is in a failing health condition, as detailed in Sections 4.3 – 4.5, and that immediate remedial action is required. Potential solutions were evaluated, and PPL Electric commenced internal processes to rebuild the Line was initiated in 2016 with a projected in-service date in 2017. The Project was reviewed at the PJM Transmission Expansion Advisory Committee (TEAC) meeting in July 2016 and is identified in the Regional Transmission Expansion Plan as Supplemental project s1154.

4.2 Existing System Configuration

As a network tie-line, the Face Rock-Five Forks 115 kV transmission line supports power-flow on the regional transmission grid and provides a primary outlet for electricity generated at the Holtwood Hydroelectric Generating Plant¹ (“Holtwood”). The Face Rock-Five Forks 115 kV transmission line is a primary outlet of Holtwood, and outages to the Line cause generation curtailment at Holtwood impacting grid reliability and stability.

The Line is physically made of two separate circuits which are located on separate structures. The circuits are electrically tied together and operate as one circuit. The Line also crosses the Susquehanna River where access for repair is difficult and time consuming. The maintenance constraints caused by the Susquehanna River create the risk of extended outage durations if failures occur. A one-line diagram of the existing 115 kV system is provided as Figure 1-2.

4.3 Aging Infrastructure: Structure Condition Assessment

The PPL Electric owned portion of the Face Rock-Five Forks 115 kV line is comprised of 171 structures, of which 166 are steel lattice towers originally installed in 1912. The remaining structures consist of four wood multi-pole structures installed in 1956 and one steel monopole. The expected useful life of lattice towers and wood poles are 80 and 50 years respectively. 170 of the 171 structures on the Line have exceeded their expected useful life.

PPL Electric conducted evaluations to assess the overall condition of the Line due to the Line’s age, poor operational performance, and an increasing frequency of needed repairs. Two evaluations were completed, one by Georgia Tech National Electric Energy Testing and Research and Application Center (NEETRAC) and the second by Osmose Utilities Services, Inc. (“Osmose”). These evaluations aided in determining viable alternatives of remedial actions necessary to bring the Line up to current design standards.

¹ The FERC license for Holtwood Hydroelectric Generating Plant expires August 2030 (based on the FERC website <https://www.ferc.gov/industries/hydropower/gen-info/licensing/active-licenses.xls>)

The NEETRAC evaluation inspected 36 towers using a combination of air and ground based inspection methods. The inspection focused on the structural condition of the towers above groundline. The Osmose inspection included an assessment of 100% of the steel structures and conductor. The Osmose assessment included a detailed structural assessment of each tower and an identification of key predictive environmental conditions which influence the rate of corrosion activity. The Osmose structural assessment also included an evaluation of all subsurface foundations.

The results of both inspections identified significant structural deficiencies in the towers, including broken/bent members, pervasive corrosion, pack rust, steel section loss, poor paint adhesion, and damaged/deteriorated concrete foundations. Pack rust and section loss are both precursors to potential structure failure. The structural conditions identified by the inspections require follow-up corrective action and subsequent long-term repairs to restore the structural integrity of the Line. Specifically, the inspections identified 105 severe defects in which prompt corrective action is recommended. A chart summarizing the inspection findings is shown below in Table 1.

Table 1: Face Rock-Five Forks Condition Inspection Summary

Reported Item	Percentage of Inspected Structures/Tower Legs
Structure Damage, Decay, or Corrosion	38%
Poor Environmental Conditions	41%
Ground System (Foundation) Damage or Corrosion	53%
Remediation Unlikely	22%

Overall the inspections identified that 96% of the steel structures inspected at ground line have structural deficiencies affecting the strength of the structure. Of the 36 towers that had overhead inspections completed, all were identified to have some level of failed coatings and corrosion.

PPL Electric has classified the structures as being in “poor condition” due to the extensive structural deficiencies associated with the Line and its age. The impact of this Line’s condition has resulted in 79 maintenance activities and maintenance cost in excess of \$800,000 since 2013, making it the costliest line on the PPL Electric system to maintain.

In addition to the poor condition of the towers, there are two inherent design deficiencies associated with the vintage steel lattice structures on the Face Rock-Five Forks line. The first deficiency is a lack of adequate avian clearances between the tower arms and energized conductor, making the line susceptible to avian contacts. The existing clearances between the energized and grounded components of the structures are not large enough to accommodate the birds of prey that frequently perch in this area. There is a history of avian interference on the Line due to its proximity to the Kelly's Run and Holtwood Nature Preserves and the Susquehanna River.

The second deficiency is that the existing single overhead shield wires on the Line do not provide adequate protection from direct lightning strikes. There is a history of outages caused by lightning and an increased risk of future outages until the deficiency is corrected. Updating the Line to PPL Electric’s current transmission structure design standards will resolve both deficiencies.

4.4 Aging Infrastructure: Conductor Assessment

The PPL Electric owned portion of the Face Rock-Five Forks 115 kV transmission line is comprised of four different types of more than 100-year-old non-standard aluminum conductors with over 300 splices. Conductor failure repairs throughout the life of the Line have contributed to this exceptionally high number of splices. PPL Electric has experienced serious conductor failures over the life of the Face Rock-Five Forks line where an energized conductor has fallen to the ground creating a safety hazard. Failures of this type produce long duration permanent line outages while repairs are being made.

4.5 Line Performance

Poor condition and inherent design deficiencies have resulted in 32 unplanned outages

between January 1, 2013 and July 2018 (12 permanent outages and 20 momentary outages). This represents the most number of outages for any PPL Electric transmission line during that same timeframe. This is also approximately 6-times higher than the industry norm for 115 kV transmission lines. Outages on this Line have a direct impact on the regional transmission system operated by PJM and operations at the Holtwood generation facility.

5.0 FUNCTIONAL ALTERNATIVES

PPL Electric evaluated several alternatives to address the degrading health of the Face Rock-Five Forks 115 kV transmission line and determined that the best solution to address reliability and asset health is to rebuild the entire Line consistent with PPL Electric transmission design standards. The alternatives considered included:

- 1) Rebuilding the Face Rock-Five Forks 115 kV line;
- 2) Restoring the towers and replacing the conductor on the Face Rock-Five Forks 115 kV line; and
- 3) Maintaining the current Face Rock-Five Forks 115 kV line.

An analysis of each option is provided below.

5.1 Rebuild the Face Rock-Five Forks 115 kV line

The Face Rock-Five Forks 115 kV transmission line is presently two transmission circuits electrically tied together to operate in parallel. The PPL Electric owned portion runs approximately 8.5 miles south from PPL Electric's Face Rock substation to the interconnection point with BG&E at the Pennsylvania-Maryland border. The estimated cost to rebuild in place as a single-circuit is \$15.9 million.

The estimated total cost of ownership of this option, including the project and maintenance costs over the next 45 years, is the original project cost of \$15.9 million. It can be reasonably assumed that PPL Electric will incur minimal operation and maintenance costs over

the next 45 years². The asset is anticipated to perform longer than the FERC depreciated time period. The total long-term cost of ownership over 45 years is close to the original installation cost resulting in the lowest long-term ownership cost of any option considered.

Rebuilding the Line resolves all previously discussed issues with the Line, including the advanced age and poor condition of the towers, the poor condition of the non-standard conductor, the extensive history of operational failures, high maintenance costs, poor lightning protection design, and lack of avian clearances. Rebuilding the Line is the best and most reliable option that is consistent with PPL's transmission asset management planning procedure and in accordance with its obligations under the TOA.

5.2 Restore and Replace Conductor on Existing Face Rock-Five Forks 115 kV line

PPL Electric evaluated the option of restoring the existing structures and reconductoring the Face Rock-Five Forks 115 kV line. Restoration would include replacing all of the conductor and the associated hardware, repairing the steel lattice towers, performing ground line repairs on towers and foundations, installing the required fiber optic ground wire, and stripping and repainting the steel structures. This option would cost approximately \$12.3 million initially, with anticipated additional maintenance cost and capital improvements required to address future asset performance and reliability. The total cost of ownership, including the project and maintenance costs over the next 45 years, is estimated to be \$23.2 million. This includes \$10.9 million in expected maintenance, such as inspections, re-coating, and replacements of failing structures. Although this option improves the asset health in the short-term, it does not resolve reliability concerns relating to avian contact or lightning performance.

PPL Electric determined that restoration and conductor replacement is not the preferred option for the following reasons:

² 45 years is the depreciation term allowed by FERC for transmission lines.

- The existing obsolete structures will remain in place and continue to have an unacceptable risk of failure;
- No improvement in avian clearances;
- Continued maintenance at an ever-increasing cost will be required;
- No improvement to lighting performance; and
- Higher long-term cost of ownership compared to rebuilding the Line.

5.3 Maintain Existing Face Rock-Five Forks 115 kV line

PPL Electric evaluated the option of taking no remedial action on the Face Rock-Five Forks 115 kV transmission line in favor of continued maintenance. Maintaining this Line will require asset replacement and increased maintenance cost. Given the current age and condition of this Line, PPL Electric anticipates that the maintenance and asset replacements costs would increase to a point that the total cost of ownership to our customers would be at a level well beyond rebuilding the existing Line. The estimated total cost of ownership over a 45-year period if the assets are simply maintained is \$39.4 million.

PPL Electric determined that continued maintenance without remedial action is not an acceptable solution for the following reasons:

- Existing obsolete structures will remain in place and continue to have an unacceptable risk of failure;
- No improvement in avian clearances;
- Continued maintenance at an ever-increasing cost would be required;
- No improvement in lighting performance;

- Higher cost of long term ownership compared to rebuilding the Line; and
- Inconsistent with Good Utility Practices.

6.0 PROPOSED SOLUTION

PPL Electric has determined that rebuilding the existing Face Rock-Five Forks 115 kV transmission line is the best solution to resolve the issues of aging assets and poor reliability on the circuit. A one-line diagram and map of the Project are included as Figures 1-3 and 1-4.

The Project will involve rebuilding approximately 8.5 miles of the Face Rock-Five Forks 115 kV transmission line from the Face Rock substation to the point of interconnection with BG&E at the Maryland border. The rebuilt Line will be on the same right-of-way as the existing facilities and will not require the purchase of any additional right-of-way. The Project will decrease the footprint of the existing structures by over 95%. Detailed descriptions of the new structure types and locations are provided in Attachments 2 and 3.

The proposed Project will produce the following benefits:

- Improve safety and reliability of the Line by replacing the existing 100+ year old failing structures and conductor;
- Improve environmental impacts by significantly reducing the number of structures. 171 large lattice towers will be replaced by approximately 64 lower profile steel monopoles;
- Decrease unplanned Line outages due to failures;
- Improve Line performance during lightning producing weather by utilizing framing that provides dual shield wires;
- Decrease avian contacts by increasing clearances consistent with current construction

standards for 115 kV lines;

- Improve conductor to ground clearances by bringing clearances up to current standards;
- Reduce future operation and maintenance costs; and
- Minimize long-term total cost of ownership over the next 45 years.

A description of the engineering is included in Attachment 2, a description of the right of way is included in Attachment 3, and a description of design criteria and safety information is included in Attachment 4.

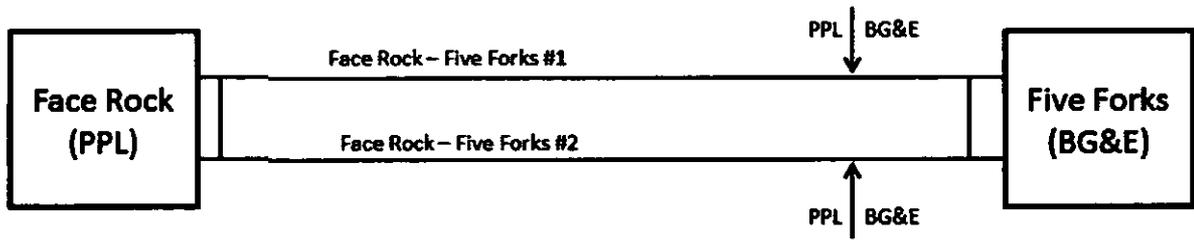


Figure 1-2: Existing 115 kV One Line Diagram

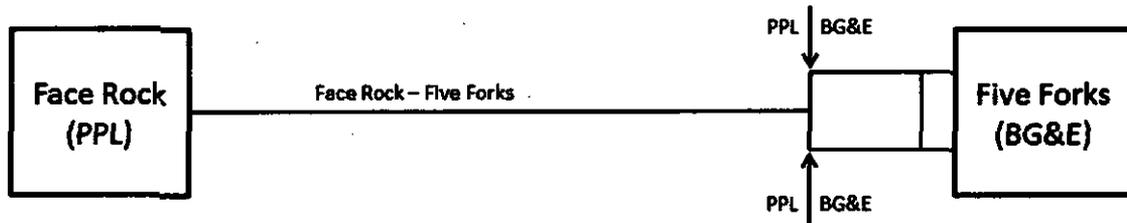


Figure 1-3: Proposed 115 kV One Line Diagram



Figure 1-4: Proposed System Map

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Figure 2-3: Typical Double-Circuit 115 kV Long Span Angle Suspension Structure

Figure 2-4: Typical Double-Circuit 115 kV Long Span Angle Tension Structure

1.0 EXISTING LINE AND STRUCTURES

Currently, the single-circuit Face Rock-Five Forks 115 kV transmission line (“Line”) is comprised of two 3-conductor lattice tower lines, operating in parallel as a single 6-conductor 115 kV line. The existing alignment from the Face Rock 115 kV Substation to the west bank of the Susquehanna River is built with 266 ACSR¹, 336 ACSR, and 397.5 ACSR conductors strung on parallel steel lattice towers. The existing alignment that extends from the west bank of the Susquehanna River southwest across York County to the Pennsylvania/Maryland border is built with 300 Aluminum (“AL”) conductors strung on parallel steel lattice towers.

PPL Electric is requesting Pennsylvania Public Utility Commission (“PUC” or “the Commission”) approval to rebuild its 8.5-mile section of the Line located in Pennsylvania (the “Project”). The Project will be designed to operate at 115 kV. PPL Electric will own, operate and maintain the rebuilt Face Rock-Five Forks 115 kV transmission line from the Face Rock 115 kV Substation to the Pennsylvania/Maryland border. PPL Electric will be responsible for all costs of the Project. A detailed map of the proposed Pennsylvania section of the Face Rock-Five Forks 115 kV Transmission Line is provided in Figure 3-1 to Attachment 3.

2.0 DESCRIPTION OF THE PROPOSED LINE AND STRUCTURES

The existing Line consists of two parallel single-circuit 115 kV transmission lines located on twin sister lattice towers along the entire length of the Face Rock-Five Forks line. The entire Line will be rebuilt as a single-circuit initial 115 kV transmission line on new self-weathering steel monopoles with high capacity conductors and two fiber optic overhead ground wires (“OPGW”). The rebuilt Line will have the capacity to add a second circuit in the future.

The proposed Face Rock-Five Forks 115 kV transmission line will be designed according to, and generally exceed, all National Electrical Safety Code (“NESC”) standards. Design specifications and safety rules adhered to by PPL Electric are included in Attachment 4.

PPL Electric has designed the proposed Face Rock-Five Forks 115 kV transmission line rebuild to fit within the existing transmission right-of-way corridor. Several new structures have

¹ ACSR stands for aluminum conductor steel reinforced.

been adjusted off the centerline based on engineering requirements and landowner requests. Where the transmission line is to be shifted off the corridor centerline, it was designed with shorter span lengths between structures or with increased wire tensions to maintain required clearances from the edge of the transmission corridor during blowout conditions. No additional rights-of-way are needed for the Line. However, some additional access rights may be required and PPL will acquire these rights from the property owner, as needed.

Structure locations were optimized to reduce Project costs and environmental and social impacts. Optimization will reduce the total number of existing transmission structures along the transmission corridor by approximately 107 structures. PPL Electric will accomplish this by removing 171 existing tower structures that have reached the end of their useful life (as explained in Attachment 1) and replace them with approximately 64 new monopole structures.

The proposed new structures will consist of self-weathering steel monopoles equipped with steel upswept arms and glass insulator assemblies. All new structures will be self-supported by either being directly embedded or placed on concrete caisson foundations. Temporary guyed poles may be required on the transition structure at the Pennsylvania/Maryland border (Structure 60 in Figure 3-1 to Attachment 3). The guyed poles will be removed once BG&E completes construction on the rebuild of the portion of its transmission line located in Maryland.

The existing lattice tower structures range in height from approximately 65 to 105 feet. The proposed transmission structures for the Project range in height from approximately 90 to 150 feet, with an average structure height of 115 feet. Due to the topography adjacent to the Susquehanna River and span lengths necessary to cross the river, the proposed transmission structures for the river crossing range in height from 90 to 195 feet, with an average height of 145 feet. Figures 2-1 through 2-4 depict the typical structure types that will be used for the Project.

The Face Rock-Five Forks 115 kV transmission line will utilize three power conductors and two OPGW's. The new power conductors will be 795 kcmil², 30/19 stranding, ACSR conductors. The OPGW's will each be 0.752-inch-diameter. The minimum conductor-to-ground

² kcmil stands for thousand circular mils. Kcmil wire size is the equivalent cross sectional area in thousands of circular mils. A circular mil is the area of a circle with a diameter of one thousandth (0.001) of an inch.

clearance will be 31 feet which occurs at a maximum thermal conductor temperature of 125°C (257°F). The design minimum conductor clearances and conductor thermal ratings for the reconstructed lines are shown in Tables 2-1 and 2-2.

**TABLE 2-1: DESIGN FOR MINIMUM CONDUCTOR CLEARANCES FOR
 795 KCMIL 30/19 STRAND ACSR³**

Condition	Transmission Double-Circuit Design Clearance-to-Ground
Heavy Ice (1" ice at 0°C ambient temperature)	31 feet
Predicted extreme thermal load (125°C conductor temperature)	31 feet
Predicted blowout (6 lbs., 16°C, ambient temperature)	31 feet

**TABLE 2-2: CONDUCTOR THERMAL RATING 795 KCMIL 30/19 STRANDING
 ACSR 125°C MAXIMUM CONDUCTOR**

Condition	Ambient Temperature (°C)	Wind Speed (Ft./sec)	Ampacity (Amps)
Summer Normal	35	0	1058
Winter Normal	10	0	1220
Summer Emergency	35	2.533	1350
Winter Emergency	10	2.533	1521

³ Clearances based on an initial maximum tension of 6,000-10,000 pounds at ½ inch ice, 0°F, 4# wind and maximum ruling span of 200-1250 feet.

Figure 2-1: Typical Double-Circuit 115 kV Suspension Structure

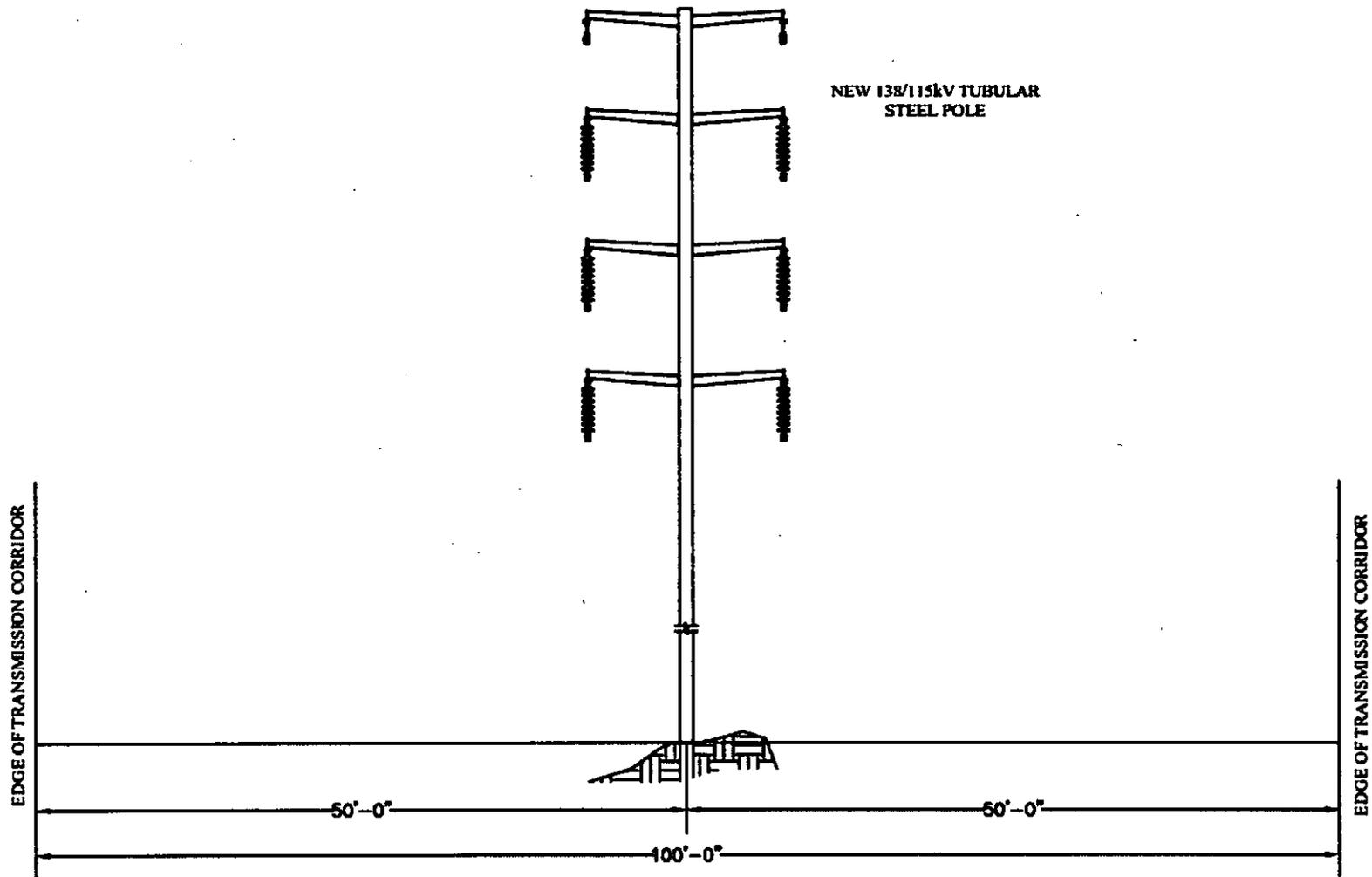


Figure 2-2: Typical Double-Circuit 115 kV Long Span Suspension Structure

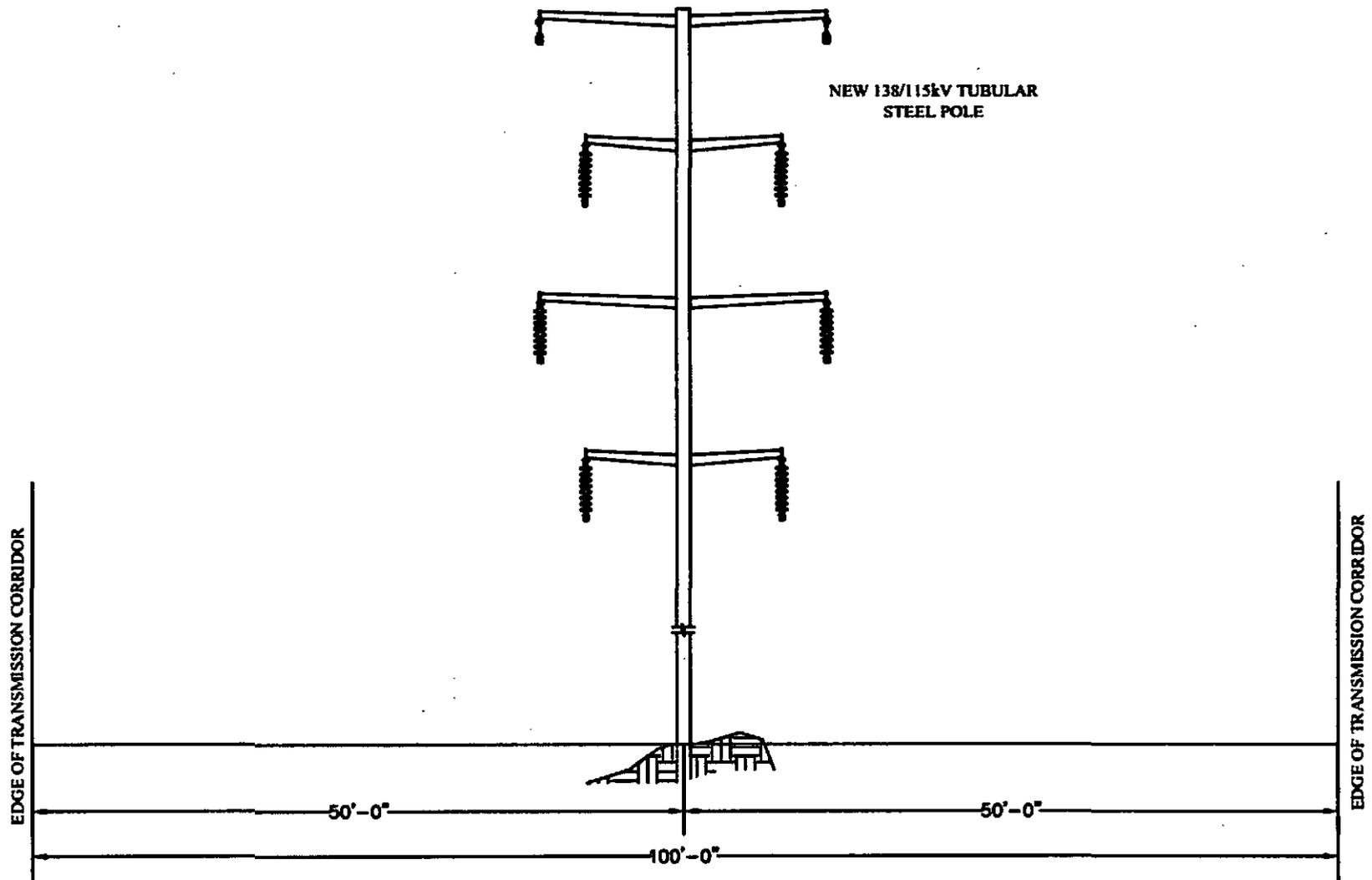


Figure 2-3: Typical Double-Circuit 115 kV Long Span Angle Suspension Structure

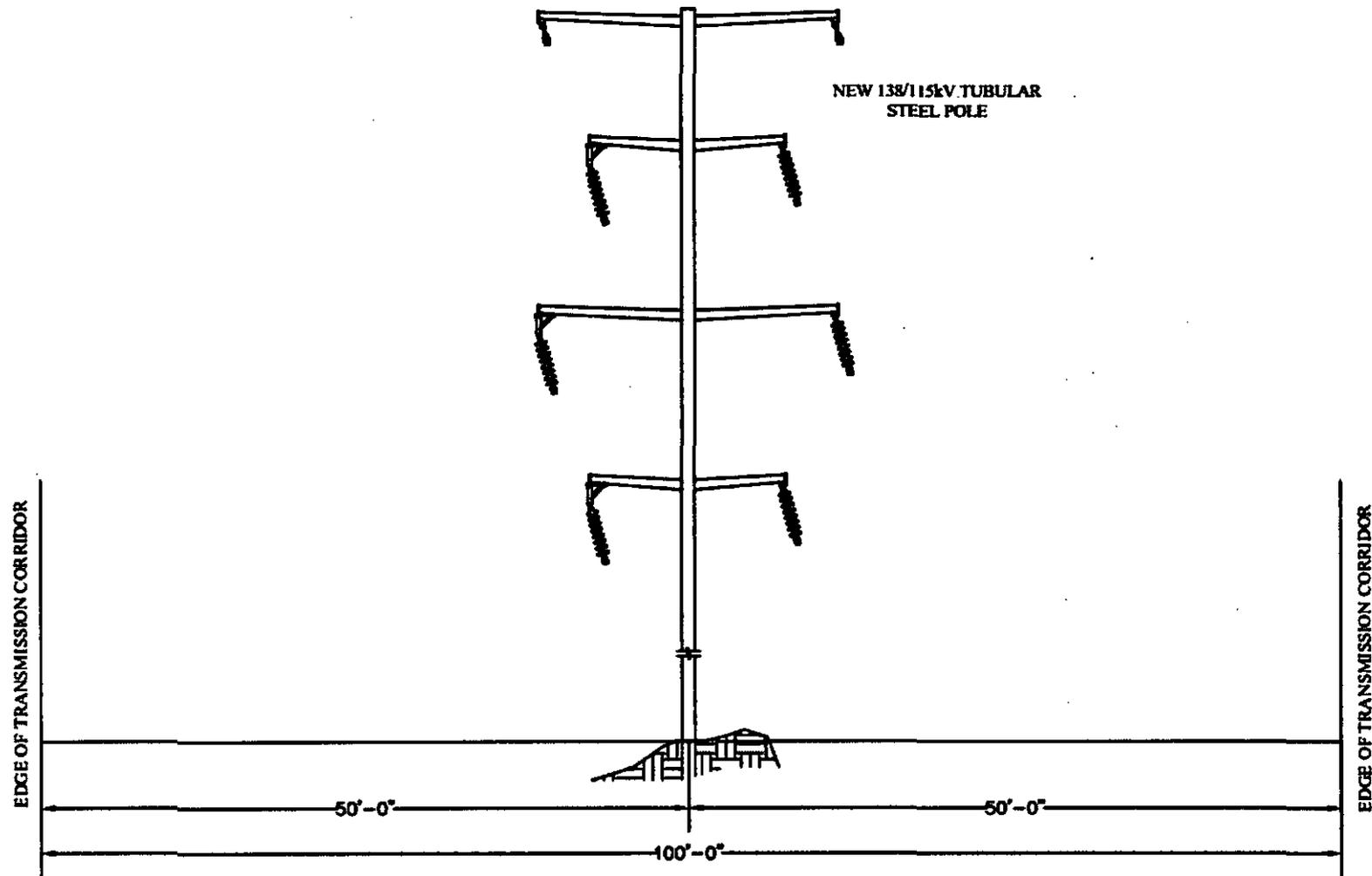


Figure 2-4: Typical Double-Circuit 115 kV Long Span Angle Tension Structure

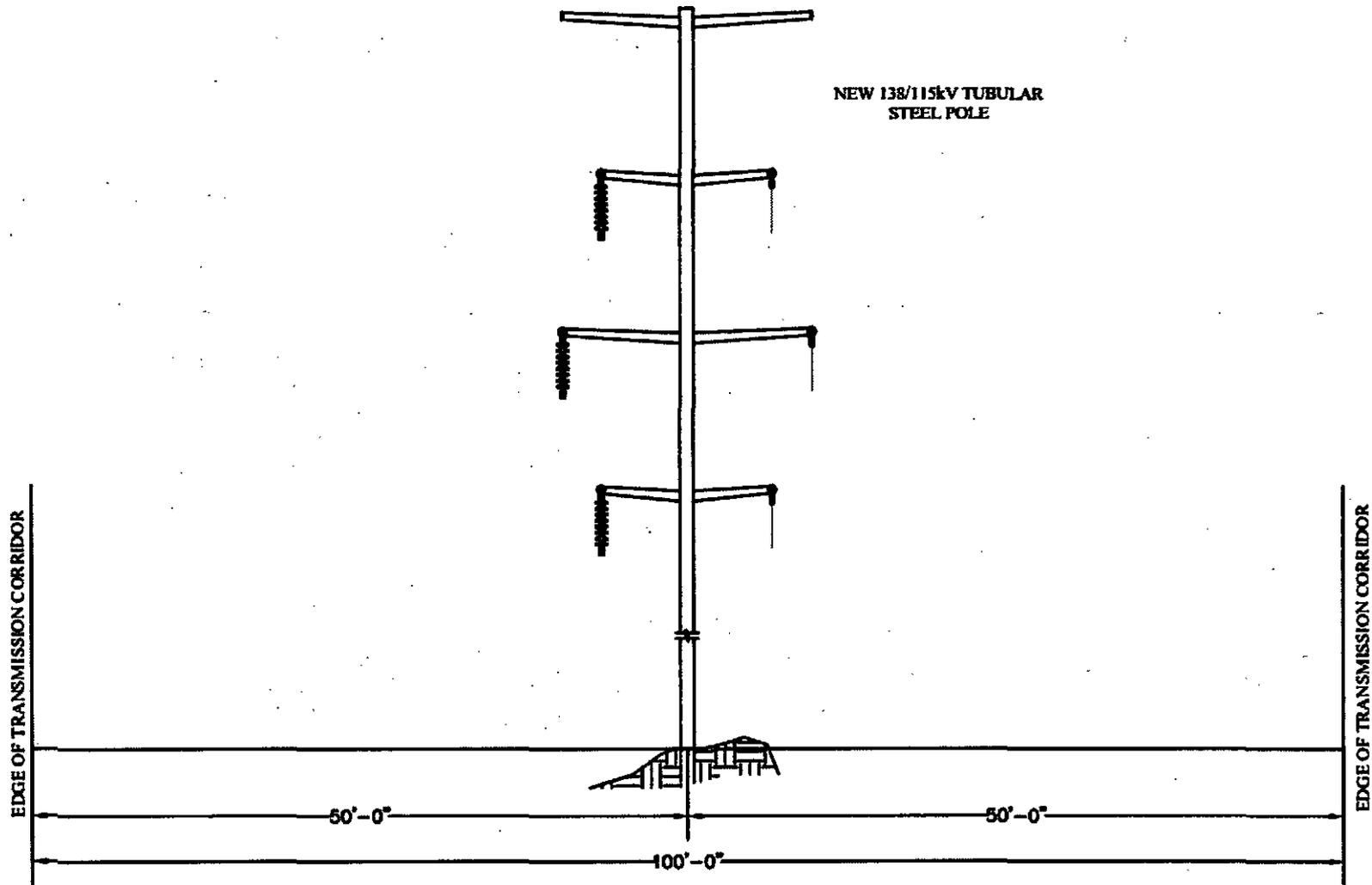


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Figure 3-1: Aerial Map of the Project

1.0 GENERAL DESCRIPTION OF THE PROPOSED ROUTE

The focus of the Face Rock-Five Forks 115 kV transmission line (“Line”) rebuild project is on the approximately 8.5-mile PPL Electric-owned portion located in Lancaster and York Counties, Pennsylvania that extends from the Face Rock 115 kV Substation on the east bank of the Susquehanna River south to the Pennsylvania/Maryland border (the “Project”). A detailed map of the proposed line and associated structures is provided in Figure 3-1. The proposed route of the rebuilt transmission line is described in detail below:

- From the Face Rock 115 kV Substation, the rebuilt 115 kV line will extend approximately 5,200 feet across the Susquehanna River. This section of Line is located within a 400 to 600 foot wide corridor comprised of right-of-way, license and permits.
- From the top of the western bank of the Susquehanna River (Structure 5) the Line will traverse approximately 7.5 miles to the Pennsylvania/Maryland border. This section of the Line is located within a 100-foot wide PPL Electric fee owned transmission corridor.

2.0 DESCRIPTION OF THE RIGHT OF WAY

a. Existing Right of Way

In Lancaster County the existing Face Rock-Five Forks 115 kV transmission line is located within a 400 to 600 foot wide corridor comprised of right-of-way, license and permit allowing for other PPL Electric transmission lines to cross the same section of the Susquehanna River. In York County, PPL Electric owns the 100-foot wide transmission corridor in fee simple. PPL Electric evaluated and reviewed the land uses within a quarter mile (1,320 feet) of the Project area to provide a sense of the broader landscape in which the Project is located. Land uses were based on the 2011 National Land Cover Data (“NLCD”).

Assessment of the data shows that agricultural land is the dominant land use in the Project area accounting for over 70% of the review area. The remaining 30% is split between the Susquehanna River valley, scattered forested areas that border stream valleys, and a dense residentially developed area associated with the Susquehanna Trails neighborhood. The existing right-of-way easement areas and PPL Electric owned transmission corridor have previously been cleared of woody vegetation and further impacts to forested land use are not anticipated.

b. Impact to Right of Way

The size, character, design and configuration of the proposed rebuilt Line will not substantially alter the existing transmission corridor. The rebuilt Line will generally be on the same alignment as the existing transmission line and within the same variable width right-of-way (Lancaster County) or the PPL Electric fee owned transmission corridor (York County). The configuration of several new structures has been adjusted off the centerline based on engineering requirements and landowner requests to reduce impacts. However, where these shifts occur the Line was designed with shorter span lengths between structures or with increased wire tensions to maintain required clearances from the edge of the transmission corridor during blowout conditions.

There will be significantly fewer structures along the Line route at the completion of the Project than exist today due to span optimization and the fact that single monopole structures will be replacing the twin lattice tower lines. Specifically, PPL Electric will remove all 171 existing lattice structures and replace them with 64 new steel monopoles. Each of the existing lattice towers currently occupy approximately 400 square feet of ground with each parallel set occupying approximately 800 square feet of ground. These parallel structures will be replaced by a single steel monopole that will occupy approximately 20 square feet of ground. The proposed Project will reduce the visual effect on the surrounding community and the smaller footprint of the monopoles will lessen impacts to the agricultural practices prevalent in the Project area. PPL will not place new structures on properties that do not presently contain lattice towers. As a result, the rebuilt Line will have substantially less impact on the landscape and land use practices relative to the existing structures.

Where possible during construction, PPL Electric will use and upgrade established access roads associated with the existing right-of-way areas or the PPL Electric owned transmission corridor to further reduce interference with existing land uses.

3.0 PUBLIC OUTREACH

PPL Electric has provided information regarding the Project to representatives of Lower Chanceford Township and Peach Bottom Township in York County, and to representatives of Martic Township in Lancaster County. These entities have not objected to the proposed Project. Additionally, PPL Electric has reached out to residents located immediately adjacent to PPL Electric's fee owned parcels and owners of properties that are crossed by the Line.

4.0 ENVIRONMENTAL CONSIDERATIONS

Environmental factors reviewed by PPL Electric for the Project include unique natural features, soils, waterways, wetlands, 100-year floodplains, vegetation, and threatened and endangered species.

Unique Natural Features

The Project is located within the Conowingo Islands identified natural area under the Pennsylvania Natural Heritage Program, which encompasses numerous rocky islands in the Susquehanna River, including Holly and Piney Islands, below the Holtwood Dam. Due to the fluctuating water levels in this area, the rocky outcrops have been exposed to variable soil deposits that provide distinctive habitat for at least 16 plant species of concern. Additionally, several uncommon animal species, including bald eagles and ospreys, make nests and forage in the area. PPL Electric will coordinate with, and obtain applicable approvals from federal and state agencies having jurisdiction over the protection of these species as part of the Project. No impact to any plant or animal species or their general habitat is anticipated.

The section of the Project in York County also spans portions of the North Branch Muddy Creek and Fishing Creek identified natural areas under the Pennsylvania Natural Heritage Program. Both areas are based on the wetland complexes located in the stream valleys that support plant species of concern. The Project crosses segments of these areas and rebuilding the Line along the same alignment is not anticipated to have any impact on protected species or their general habitat. PPL Electric will coordinate with, and obtain approvals from federal and state agencies having jurisdiction over the protection of these species as part of the Project.

Finally, the Project is located within a unique scenic geologic feature area known as the Susquehanna River Hills, which extends south along the Susquehanna River from Safe Harbor, Pennsylvania to the Pennsylvania/Maryland border. The Susquehanna River Hills consist of distinct rolling and dissected upland areas located adjacent to the river. The Project crosses portions of this area and is not anticipated to have any new impacts on this unique geologic feature.

Soils

Erosion and Sedimentation (“E&S”) control plans will be developed and implemented for the Project to minimize the displacement of soils. These plans will require prior approval from the local county conservation districts. Applicable National Pollutant Discharge Elimination System (“NPDES”) permits will also be obtained from the Pennsylvania Department of Environmental Protection (“PADEP”). During construction, PPL Electric will adhere to all conditions specified in its NPDES permit. Impacts to local soil resources are anticipated to be minimal.

Waterways

The existing Line spans 11 National Hydrography Dataset (“NHD”) identified waterways that will continue to be spanned by the rebuilt Line. Waterways crossed in the northern portion of the Project include several unnamed tributaries to the Susquehanna River and Anderson Run, which have a PADEP Chapter 93 Designated Stream Classification of Warm Water Fishery (“WWF”) – Migratory Fishes (“MF”). Most of the central and southern portions of the Project span unnamed tributaries associated with Muddy Creek, which has a PADEP Chapter 93 Designated Stream Classification of Trout Stocked Fishery (“TSF”) – Migratory Fishes (“MF”). Two named tributaries to Muddy Creek located south of this stream (Neill Run and Fishing Creek) have a PADEP Chapter 93 Existing Stream Classification of Cold Water Fishery (“CWF”) – Migratory Fishes (“MF”). None of these waterways are considered to be an anti-degradation special protection classification water.

The unnamed tributaries to the Susquehanna River, Anderson Run, Neill Run, and Fishing Creek are also designated by the Pennsylvania Fish and Boat Commission (“PFBC”) as Wild Trout (Natural Reproduction) Streams. An E&S control plan will be developed to address stormwater control in these watersheds. Impacts to any waterway are anticipated to be minimal.

PPL Electric will obtain all approvals and permits necessary for the construction of the Project, and will comply with any conditions placed on the Project by those permits.

Wetlands

Based on PPL Electric's review of the U.S. Fish and Wildlife Service's ("USFWS") National Wetlands Inventory ("NWI"), the existing 115 kV transmission line does not cross any wetland systems. The Project does span the Susquehanna River, which is classified by the NWI as a riverine, intermittent, streambed, seasonally flooded (R4SBC) system. Construction activities in the river to replace the existing structures will require permits from state and federal agencies.

The NWI only provides a general overview of the potential wetlands that may be located within an area. The wetlands and waterways within the Project area will be delineated, surveyed, and illustrated according to regulatory standards for federal and state permitting purposes. This information will be used to minimize wetland impacts where feasible. Additionally, PPL Electric will avoid impacts to wetlands where possible by aerially spanning these features.

100-year Floodplains

The National Flood Hazard Layer ("NFHL") for York and Lancaster Counties, Pennsylvania were obtained through the Pennsylvania Spatial Data Access ("PASDA") database and analyzed for 100-year floodplains within the Project and surrounding areas. The NFHL data incorporates all Flood Insurance Rate Map ("FIRM") databases published by the Federal Emergency Management Agency ("FEMA"), and any Letters of Map Revision (LOMRs) that have been issued against those databases since their publication date. Based on review of the York County data, the existing and rebuilt line will span over the FEMA 100-year floodplains associated with the Muddy Creek, Neill Run, and Fishing Creek. No impacts to these floodplain areas are anticipated. Review of the Lancaster County data indicates that structures associated with the existing line are located in the floodplain of the Susquehanna River, but construction of the replacement structures are anticipated to be conducted in locations outside of the floodplain area.

Vegetation

Vegetative cover in the Project area consists primarily of row crops and meadows associated with fallow fields. Narrow fingers of deciduous trees border the Susquehanna River and most stream valleys. There is planted vegetation associated with the dense residential development of the Susquehanna Trails community located in the south-central portion of the Project area.

The existing right-of-way areas and PPL Electric owned transmission corridor for the Face Rock-Five Forks 115 kV transmission lines have previously been cleared of vegetation and no extensive tree clearing is anticipated. If vegetation management is required in specific locations, PPL Electric will apply its "*Specifications for Transmission Vegetation Management LA-79827*" to minimize potential impacts.

Threatened and Endangered Species

PPL Electric reviewed the threatened and endangered species that may be encountered within the Project area. This review included an evaluation of the Project related responses provided by federal and state agencies which have protective jurisdiction over the surrounding animals, plants, and ecological communities.

An on-line Pennsylvania Natural Diversity Inventory ("PNDI") Project Environmental Review was performed for the York County portion of the Project (PNDI-636551). The PNDI review evaluates the databases of the USFWS, PFBC, PGC, and the Pennsylvania Department of Conservation and Natural Resources ("DCNR"). The PNDI was completed on November 8, 2017 for the portion of the Project located in Lower Chanceford and Peach Bottom Townships, York County, Pennsylvania. The following is a summary of the reviewing agencies' determinations:

Pennsylvania Game Commission

A letter of no impact was received on November 21, 2017. The determination is valid for two (2) years.

Pennsylvania Fish and Boat Commission

The PFBC issued a review letter dated December 19, 2017 which identified the protected fish species that are located in the vicinity of the Project. Additional information, including a detailed narrative describing any in-stream activities, stream crossings, sequence of activities,

basic site plans, wetlands/waterways mapping and acreage to be impacted, general habitat descriptions and color photographs with a key location map were provided to the PFBC on February 20, 2018 to complete their review. PFBC completed their review and issued a letter of no impact on March 12, 2018, which is valid for two (2) years.

Pennsylvania Department of Conservation and Natural Resources

Letters of determination from the DCNR were issued on November 10, 2017 and on February 28, 2018. DCNR requested that additional field studies be completed for the *Lobelia puberula*- Downy Lobelia (Endangered). Field surveys were conducted in September 2018 and no plants of special concern were found in the Project area. PPL Electric submitted a report of these findings to DCNR in in late September 2018. The report was approved by DCNR, who have provided a concurrence letter.

United States Fish and Wildlife Service

The USFWS requested additional information on the Project. York County is a known bog turtle county in Pennsylvania. The results of the Phase 2 Bog Turtle study was submitted to USFWS on June 28, 2018. A letter of no impact was received on August 15, 2018.

A PNDI has not been conducted for the Lancaster County, Susquehanna River crossing portion of the Project and will be addressed as part of the permitting process for that piece of the Project. PPL Electric anticipates coordinating with the PGC regarding timing restrictions for work around bald eagle nests and blue heron roosting sites. Review for DCNR protected plants along the river valley is also expected.

PPL Electric will continue to consult with the jurisdictional agencies regarding potential impacts to protected species, will obtain all approvals and permits necessary for the construction of the Project, and comply with all conditions placed on those permits.

Airports

The closest active airport to the Project area is the Baublitz Commercial Airport, located approximately 7.6 miles northwest of the existing Face Rock-Five Forks 115 kV transmission line corridor. Review of the Project area also observed two other identified airports that do not appear to be active. Ruff Field located 1.5 miles to the east and Delta Airport located 2.5 miles to the east. PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are existing electrical facilities. However, PPL Electric will comply with any applicable requirements of the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

Conserved Lands

The proposed Project will not affect any state lands, national parks, state parks, local parks, recreational areas or natural landmarks. None of these features are located within the Project area. Holly Island is a rocky, barren parcel of land in the Susquehanna River owned by the Pennsylvania Game Commission ("PGC") and spanned by the Project. No direct impact is anticipated to this parcel. State Game Lands #181 is located 1.2 miles to the northwest of the Project and Susquehannock State Park is located 3.2 miles to the southeast, on the east side of the Susquehanna River. Neither of these properties will be affected by the Project.

Cultural Resources

PPL Electric is in the initial stage of coordination with the Pennsylvania Historical and Museum Commission ("PHMC") for the re-construction of the Line. This coordination will be conducted in the near future and is required to receive permitting to construct the Project. PPL Electric will perform any reviews and field survey/sampling work required by the PHMC to avoid, minimize, and mitigate impacts to archaeological or historic architectural resources that may be located within the Project area.

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Proposed Pole Locations
- ⊠ Existing Pole Locations
- - - PPL Electric - Owned Transmission Line Corridor
- ▬ PPL Electric - Right-Of-Way
- ▬ Proposed Centerline
- ▬ Existing Centerlines
- ▬ County Boundary
- ▬ Parcel Boundary

Notes:

- Existing Structures, Proposed Structures, Existing Centerlines and Existing Transmission Corridor Width were provided by PPL 9/27/2018.



NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI provided NAIP2015)
 York County Parcel Boundaries (2016)
 Lancaster County Pastrol Boundaries (PPL provided CAD, 2016)

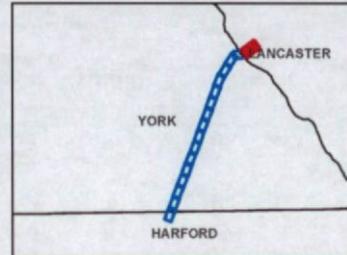
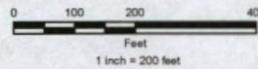


FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 1 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared By: MJD	Checked By: MJD
JOB: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI) provided NAIP(2015),
 York County Parcel Boundaries (2016),
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2018)

0 100 200 400
 Feet
 1 inch = 200 feet

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 YORK
 HARFORD

AECOM

FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 2 of 17
 York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: MJD	Checked by: SMD
Job: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar (Earthstar), CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Proposed Pole Locations
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- - - PPL Electric - Owned Transmission Line Corridor
- PPL Electric - Right-Of-Way
- Proposed Centerline
- Existing Centerlines
- County Boundary
- Parcel Boundary

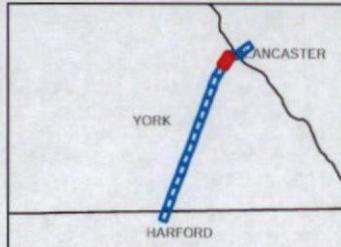
Notes:

- Existing Structures, Proposed Structures, Existing Centerlines and Existing Transmission Corridor Width were provided by PPL 9/27/2018.

NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI) provided 8/17/2018
 York County Parcel Boundaries (2016)
 Lancaster County Parcel Boundaries (PPL provided CAD, 2016)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 3 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: [redacted]	Checked by: [redacted]
Job: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNR/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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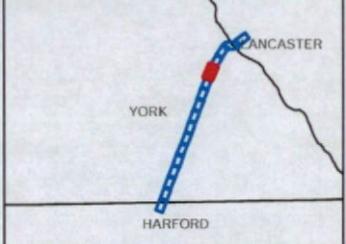
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- - - PPL Electric - Owned Transmission Line Corridor
- ▭ PPL Electric - Right-Of-Way
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Notes:
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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI provided N/A/P/2015),
 York County Parcel Boundaries (2015),
 Lancaster County Parcel Boundaries (PPL provided CAD, 2018)

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 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 5 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: NAG	Checked by: SMO
Job: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



Legend

- Proposed Pole Locations
- ⊠ Existing Pole Locations
- - - PPL Electric - Owned Transmission Line Corridor
- ▭ PPL Electric - Right-Of-Way
- Proposed Centerline
- Existing Centerlines
- ▭ County Boundary
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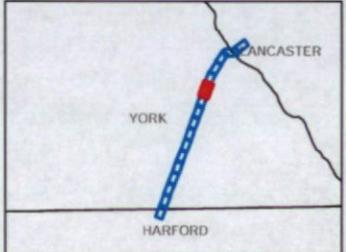
Notes:

- Existing Structures, Proposed Structures, Existing Centerlines and Existing Transmission Corridor Width were provided by PPL 9/27/2018.

NAD 1983 State Plane
 Pennsylvania South FIPS 3101
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI) provided 8/17/2018,
 York County Parcel Boundaries (2018)
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2018)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 6 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: MSL	Checked by: MSL
Job: Face Rock - Five Forks	Date: 10/27/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar (Earthstar), CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

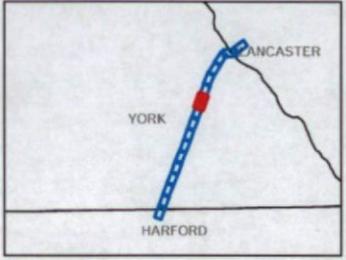
- Proposed Pole Locations
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- - - PPL Electric - Owned Transmission Line Corridor
- - - PPL Electric - Right-Of-Way
- Proposed Centerline
- Existing Centerlines
- County Boundary
- ▭ Parcel Boundary

Notes:
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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Feet

References:
 World Imagery Basemap (ESRI provided NA/P2015)
 York County Parcel Boundaries (2015)
 Lancaster County Parcel Boundaries (PPL provided CAD, 2014)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 7 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: SMO	Checked by: SMO
Job: Face Rock - Five Forks	Date: 10/20/19

Figure 3.1



Source: Red, DigitalGlobe, GeoEye, Earthstar, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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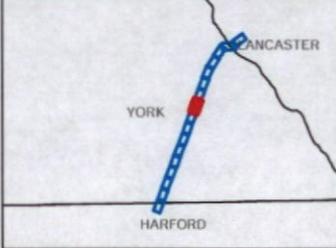
- Proposed Pole Locations
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Notes:
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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

Reference:
 World Imagery Basemap (ESRI provided NAIP/2018,
 York County Parcel Boundaries (2018),
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2018)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 8 of 17
 York County, Pennsylvania
 PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: MJD	Checked by: GSK
Job: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



© Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Proposed Pole Locations
- ⊠ Existing Pole Locations
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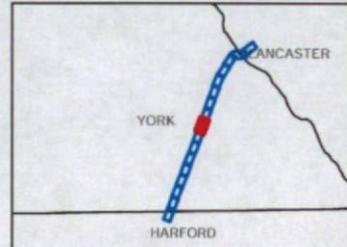
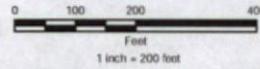
Notes:

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NAD 1983 State Plane
 Pennsylvania South FIPS 3201
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery BaseMap (ESRI provided NAIP2010,
 York County Parcel Boundaries (2018)
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2018)



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 9 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: SMJ

Checked by: SMJ

File: Face Rock - Five Forks

Date: 10/20/18

Figure 3.1

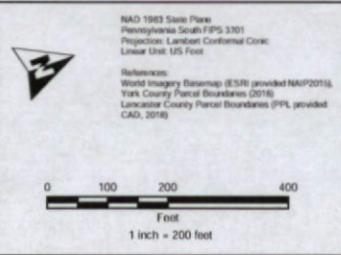


Legend

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- ▭ County Boundary
- ▭ Parcel Boundary

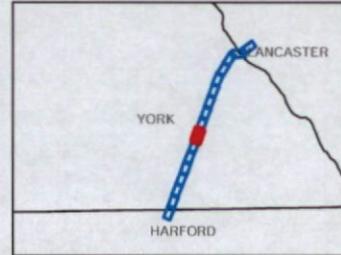
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- Existing Structures, Proposed Structures, Existing Centerlines and Existing Transmission Corridor Width were provided by PPL 9/27/2018.



NAD 1983 State Plane
 Pennsylvania South FIPS 3301
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI provided NAD2011),
 York County Parcel Boundaries (2018),
 Lancaster County Parcel Boundaries (PPL provided CAD, 2018)



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 10 of 17

York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: NAD	Checked by: NAD
Job: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



Source: Aerial, Digital Data, Geomatics, Interceptor Geographics, CITESS/Blue DE, USCA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Proposed Pole Locations
- ⊠ Existing Pole Locations
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- Parcel Boundary

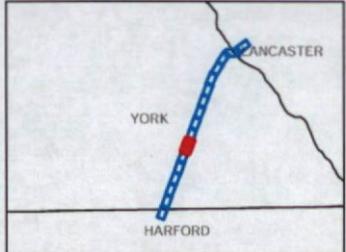
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NAD 1983 State Plane
 Pennsylvania South FIPS 3301
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI provided NAIP2015)
 York County Parcel Boundaries (2015)
 Lancaster County Parcel Boundaries (PPL provided CAD, 2018)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 11 of 17
 York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared By: NAD	Checked By: SMD
Job: Face Rock - Five Forks	Date: 10/20/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar (Earthstar), CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

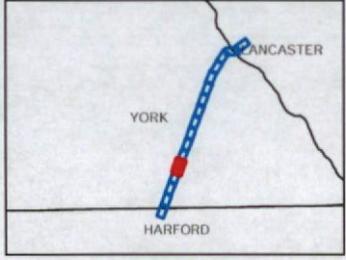
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- ▭ PPL Electric - Right-Of-Way
- Proposed Centerline
- Existing Centerlines
- ▭ County Boundary
- ▭ Parcel Boundary

Notes:
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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI) provided N/A/P/2015,
 York County Parcel Boundaries (2016),
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2016)

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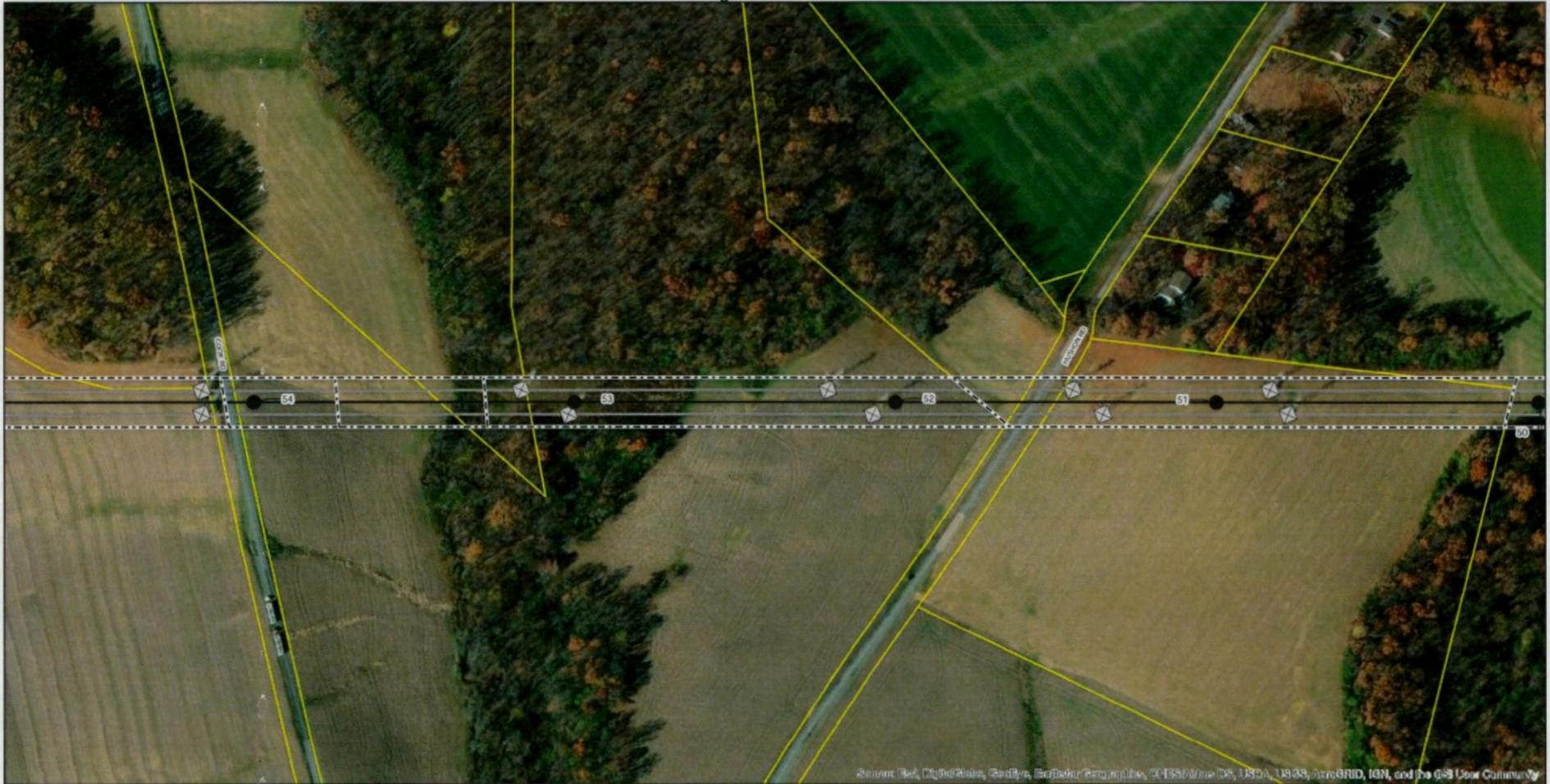
AECOM

FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 13 of 17
 York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared By: MJD	Checked By: MJD
Date: 10/20/16	Date: 10/20/16

Figure 3.1



Source: Red, DigitalGlobe, GeoEye, Earthstar (Google), CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

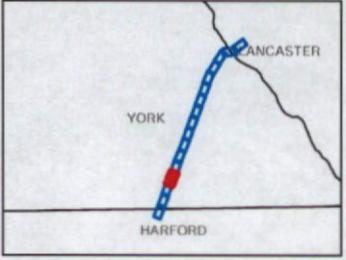
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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Feet

References:
 World Imagery Basemap (ESRI provided NAIP/2015,
 York County Parcel Boundaries (2016),
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2016)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 14 of 17
 York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared by: [redacted]	Checked by: [redacted]
Site: Face Rock - Five Forks	Date: 10/30/19

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

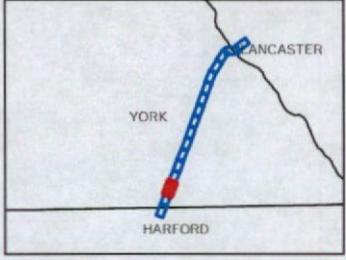
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NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI provided NAIP2015),
 York County Parcel Boundaries (2015),
 Lancaster County Parcel Boundaries (PPL provided CAD, 2018)

0 100 200 400
 Feet
 1 inch = 200 feet



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FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 15 of 17
 York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared By: MLL	Checked By: SBB
Job: Face Rock - Five Forks	Date: 09/22/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

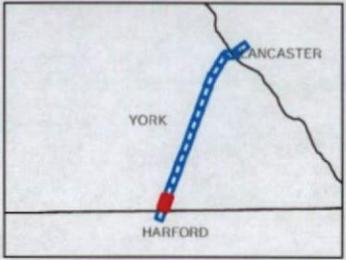
- Proposed Pole Locations
- ⊠ Existing Pole Locations
- - - PPL Electric - Owned Transmission Line Corridor
- ▬ PPL Electric - Right-Of-Way
- ▬ Proposed Centerline
- ▬ Existing Centerlines
- ▬ County Boundary
- ▬ Parcel Boundary

Notes:
 - Existing Structures, Proposed Structures, Existing Centerlines and Existing Transmission Corridor Width were provided by PPL 9/27/2018.

NAO 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Feet

References:
 World Imagery BaseMap (ESRI provided NAIP2015)
 York County Parcel Boundaries (2016)
 Lancaster County Parcel Boundaries (PPL provided CAD, 2016)

0 100 200 400
 Feet
 1 inch = 200 feet



AECOM

FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 16 of 17
 York County, Pennsylvania

PPL Electric Utilities
 Allentown, Pennsylvania

Prepared By: MAB	Checked By: MAB
App: Face Rock - Five Forks	Date: 10/30/18

Figure 3.1



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

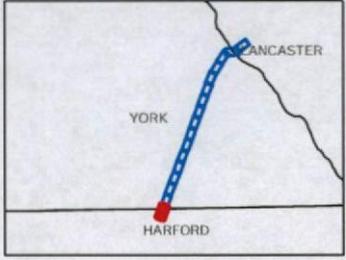
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 - Existing Structures, Proposed Structures, Existing Centerlines and Existing Transmission Corridor Width were provided by PPL 9/27/2018.

NAD 1983 State Plane
 Pennsylvania South FIPS 3701
 Projection: Lambert Conformal Conic
 Linear Unit: US Foot

References:
 World Imagery Basemap (ESRI) provided N/A/2018,
 York County Parcel Boundaries (2018),
 Lancaster County Parcel Boundaries (PPL provided
 CAD, 2018)

1 inch = 200 feet



AECOM

FIGURE 3-1
 Face Rock - Five Forks
 115 kV Rebuild
 Page 17 of 17

York County, Pennsylvania
 PPL Electric Utilities
 Allentown, Pennsylvania

Prepared By: MAB	Checked By: MAB
Job: Face Rock - Five Forks	Date: 10/30/18

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1.0 DESIGN CONSIDERATIONS

PPL Electric's new and rebuilt transmission lines are designed according to, and generally exceed, all National Electric Safety Code ("NESC") standards. The NESC is a set of rules to safeguard the public and utility workers during the installation, operation, and maintenance of electric power lines. The NESC contains the basic provisions considered necessary for the safety of employees and the public. Although it is not intended as a design specification, its provisions establish minimum design requirements. PPL Electric has developed design specifications and safety rules which meet or surpass all requirements specified by the NESC.

The NESC includes loading requirements and clearances for the design, construction, and operation of power lines. The "loads" on conductors and supporting structures are the mechanical forces that develop from the weight of the conductors, the weight of ice on the conductors, plus wind pressure on the conductors and supporting structures. Loading requirements take into consideration the loads on the conductors and structures that are anticipated assuming certain ice and wind conditions. Loading requirements always contain "safety factors" to allow for unknown or unanticipated contingencies. The clearances and loading requirements contained in the NESC are designed to maintain public safety.

PPL Electric's transmission line design standards meet or surpass the NESC clearance and loading requirements. For example, the NESC specifies strength and loading rules based on three different "grades of construction" for conductors and supporting structures:

- Grade B – This grade of construction provides the highest margin of safety and is required when the pole supports spans that cross limited access highways, railroads, and waterways.
- Grade C – This grade of construction is most common and provides a basic margin of safety. It is often utilized for the typical power and joint-use distribution pole.
- Grade N – This is the lowest grade of construction and is most often used for emergency and temporary construction.

PPL Electric designs all of its transmission lines for Grade B construction. The use of Grade B design and construction translates to higher levels of structural reliability and safety to withstand the environmental conditions of ice and/or wind loading, which provides a higher margin of safety.

Another example of PPL Electric’s rigorous design standards are the parameters utilized to account for ice and wind loadings on the wires and structure. Structure loading and line designs must accommodate a variety of operating conditions as different ice and wind combinations can impact the conductor sags and tensions of the line. PPL Electric’s transmission lines are designed to exceed NESC requirements by accounting for additional load cases due to various ice and wind loading conditions not required by NESC. This means that PPL Electric lines are designed to operate safely and reliably during extreme inclement weather. In addition, PPL Electric design standards include a clearance to ground buffer in excess of NESC required clearances to account for construction and design tolerances and the filling or grading of land within the right of way by property owners. This buffer also significantly reduces the risk of a property owner inadvertently contacting a transmission line. This has occurred on PPL Electric’s system in the past and higher clearances minimize the likelihood of future occurrences.

TABLE 4-1: 69 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	19.2 Ft.	30 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	19.2 Ft.	30 Ft.
Spaces accessible to pedestrians only	15.2 Ft.	30 Ft.
Railroad tracks	27.2 Ft.	31.5 Ft.

TABLE 4-2: 115 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	20.1 Ft.	31 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	20.1 Ft.	31 Ft.
Spaces accessible to pedestrians only	16.1 Ft.	31 Ft.
Railroad tracks	28.1 Ft.	35 Ft.

TABLE 4-3: 138 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	20.6 Ft.	31 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	20.6 Ft.	31 Ft.
Spaces accessible to pedestrians only	16.6 Ft.	31 Ft.
Railroad tracks	28.6 Ft.	35 Ft.

TABLE 4-4: 230 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	22.4 Ft.	33 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	22.4 Ft.	33 Ft.
Spaces accessible to pedestrians only	18.4 Ft.	33 Ft.
Railroad tracks	30.4 Ft.	35 Ft.

TABLE 4-5: 500 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	28.4 Ft.	40 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	28.4 Ft.	40 Ft.
Spaces accessible to pedestrians only	24.4 Ft.	40 Ft.
Railroad tracks	36.4 Ft.	53 Ft.

A relay protection system is also used on PPL Electric's transmission lines to protect the public safety, as well as the equipment on the transmission system. Relay protection is installed for all

transmission lines to automatically de-energize the line in the unlikely event that the line or supporting structure fails and the line contacts the ground.

2.0 PERIODIC MAINTENANCE PROGRAM ON ALL TRANSMISSION LINES

To ensure continued public safety and integrity of service, a periodic maintenance and inspection program is implemented for every transmission line. The program is administered through the use of helicopter patrols, with supplemental foot patrols as needed. Helicopter patrols are performed on all lines on a predetermined frequency dictated by voltage level. The two-man helicopter crew flies parallel and above the line so that the observer can look for signs of line damage or deterioration and observe clearances between vegetation and conductors. The observations are included in a report that is forwarded to the appropriate department for corrective action.

3.0 PERSONNEL SAFETY RULES

Overall, PPL Electric designs and constructs projects that meet or exceed all codes and requirements, with high regard for both public and employee safety. The following is a non-exhaustive list of the PPL Electric safety rules that demonstrate dedication to public, employee and contractor safety:

- Work procedures have been developed to allow work to be performed on energized facilities in a safe manner. Prior to working on lines and apparatus PPL Electric personnel apply the Energy Control Process to remove the lines and apparatus from service. This system provides that a red tag must be physically placed on the control handle of the de-energized equipment.
- The red tag may be removed only after proper authorization to energize the equipment is received.
- Various other tags are used for limited operations and informational purposes.
- Employees or contractors will not apply or remove a tag or change the status of tagged equipment unless authorized.

- Temporary safety grounds are used on de-energized facilities for employee lineman safety during maintenance, construction, or reconstruction work. Safety grounds are wires connecting the de-energized facility to an electrical ground. If the facility should be energized, the safety grounds will divert the current directly to ground and reduce the likelihood of personal injury.
- Before applying grounds, a test is done to confirm that the line is de-energized. The voltage test device is checked before and after use to assure reliability.
- Poles or structures are inspected and examined for structural integrity before climbing. If there is any reason to believe that a pole is unsafe, it is stabilized before work is performed. Appropriate safety gear including, but not limited to, body belts, safety straps, hard hats, and gloves is worn by linemen during line work activity.

4.0 MAGNETIC FIELD MANAGEMENT PLAN

PPL Electric's Magnetic Field Management Program is applied to new and reconstructed transmission line projects. In order to lower magnetic field exposures, the program generally prescribes the use of a line design that provides ground clearances higher than the required minimum NESC ground clearance and reverses phasing of new double circuit lines. The program is implemented where feasible and can be accomplished at minimal cost. PPL Electric will consider the implementation of additional modifications to reduce magnetic field levels provided that those modifications can be made at minimal cost and will not interfere with the operation of the line.

Face Rock-Five Forks 115 kV Rebuild Project Agency List

LANDOWNERS

Brookfield Renewable
126 Lamberton Lane
Hawley, Pennsylvania 18428

Pennsylvania Lines LLC
110 Franklin Road SE
Roanoke, Virginia 24042-0002

Commonwealth of Holly Island (PGC)
2001 Elmerton Ave
Harrisburg, Pennsylvania 17110-9762

FEDERAL AGENCIES

U.S. Army Corps of Engineers
Baltimore District Corporate Communication Office
2 Hopkins Plaza
Baltimore, Maryland 21201
Attn: Planning Division

U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Rd, Suite 101
State College, Pennsylvania 16801
Attn: Lesa Lindsay

STATE AGENCIES

Bureau of Investigation and Enforcement
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor West
Harrisburg, Pennsylvania 17120
Attn: Francis Peirce

Pennsylvania Department of Environmental Protection
P.O. Box 2063
Market Street State Office Building
Harrisburg, Pennsylvania 17105-2063
Attn: Office of Field Operations

Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, 8th Floor
Harrisburg, Pennsylvania 17120
Attn: Jason D. Sharp, Chief Counsel

Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, Pennsylvania 17120-0053
Attn: Mr. Douglas C. McLearn, Chief

Pennsylvania Department of Conservation and Natural Resources
Rachel Carson State Office Building
P.O. Box 8767
400 Market Street
Harrisburg, Pennsylvania 17105-8767
Attn: Rebecca Bowen

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797
Attn: Olivia Mowery

Pennsylvania Fish and Boat Commission
595 E. Rolling Ridge Drive
Bellefonte, Pennsylvania 16823
Attn: Christopher A. Urban

Office of Consumer Advocate
555 Walnut Street
Forum Place, 5th Floor
Harrisburg, Pennsylvania 17101-1923
Attn: Tanya McCloskey

Office of Small Business Advocate
300 North Second Street - Suite 202
Harrisburg, Pennsylvania 17101
Attn: John R. Evans

COUNTY AGENCIES

Lancaster County Conservation District
1383 Arcadia Road, Room 200
Lancaster, Pennsylvania 17601
Attn: Dan Heller (Chairman)

Lancaster County Planning Commission
150 North Queen Street, Suite #320
Lancaster, Pennsylvania 17603
Attn: Scott Haverstick (Chairman)

York County Conservation District
118 Pleasant Acres Road, Suite E
York, Pennsylvania 17402
Attn: Mark Kimmel (Manager)

York County Planning Commission
28 East Market Street, Room #216
York, Pennsylvania 17401
Attn: Felicia Dell (Director)

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PA PUBLIC AFFAIRS BUREAU
PLANNING DESIGN

MUNICIPALITIES

Martic Township
Board of Supervisors
370 Steinman Farm Road,
Pequea, Pennsylvania 17565
Attn: Duane A. Sellers (Chairman)

Peach Bottom Township
Township Supervisors
6880 Delta Road, Suite 3
Delta, Pennsylvania 17314
Attn: David E. Gemmill

Martic Township
Planning Department
370 Steinman Farm Road,
Pequea, Pennsylvania 17565
Attn: Jon Kloppmann

Peach Bottom Township
Planning Commission
6880 Delta Road, Suite 3
Delta, Pennsylvania 17314
Attn: Frank Diamond

Lower Chanceford Township
4120 Delta Road
Airville, Pennsylvania 17302
Attn: Sue Wiley

CERTIFICATE OF SERVICE

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

**VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

U.S. Army Corps of Engineers
Baltimore District Corporate
Communication Office
2 Hopkins Plaza
Baltimore, MD 21201
Attn: Planning Division

PA Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120-0053
Attn: Mr. Douglas C. McLearn, Chief

U.S. Fish and Wildlife Service
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State College, PA 16801
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PO Box 8767
400 Market Street
Harrisburg, PA 17105-8767
Attn: Rebecca Bowen

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PO Box 2063
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Attn: Jason D. Sharp, Chief Counsel

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Harrisburg, PA 17101-1923
Attn: Tanya McCloskey

Office of Small Business Advocate
300 North Second Street, Suite 202
Harrisburg, PA 17101
Attn: John R. Evans

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Lancaster County Conservation District
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Commonwealth of Holly Island (PGC)
2001 Elmerton Ave
Harrisburg, PA 17110-9762

Date: March 14, 2019



Jessica R. Rogers

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PLANNING DISTRICT

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