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File #: 202493

November 3, 2023

VIA ELECTRONIC FILING

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

Re: Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania Docket No. A-2023-

Dear Secretary Chiavetta:

Enclosed, for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric" or the "Company"), are the following:

1. The Application and the Attachments in support of the Application;

2. Direct Testimony in support of the Application, which are contained in a separately-bound volume; and

3. The Notice of Filing.

The associated $350.00 filing fee has been paid by Post & Schell, P.C. as of the time of filing.

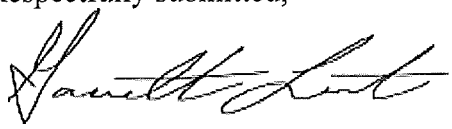
Copies of the Application and accompanying Attachments, and Direct Testimony are being served by certified mail, return receipt requested upon the parties indicated on the Certificate of Service associated with the Application.

Copies of the Notice of Filing are being served by certified mail, return receipt requested upon the parties indicated on the Certificate of Service associated with the Notice of Filing.

Subject to the Pennsylvania Public Utility Commission's approval, the Project has a scheduled construction start date of Fall 2025 for the proposed high-voltage transmission line to meet an in-service date of Spring 2026. Construction on the associated substations is scheduled to begin in Fall of 2024.

If there are any questions concerning this matter, please contact me at the addresses or telephone numbers provided above.

Respectfully submitted,



Garrett P. Lent

GPL/dmc
Enclosures

cc: Paul T. Diskin
Jordan Van Order
Certificate of Service

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 § 57.74(b).

VIA CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Pennsylvania Department of Environmental Protection
400 Market Street, 10th Floor
Rachel Carson State Office Building
Harrisburg, Pennsylvania 17101
Attn: Regional Permit Coordination Office

Bureau of Investigation and Enforcement
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor, Room-N201
Harrisburg, Pennsylvania 17120
Attn: Richard Kanaskie

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

Pennsylvania Office of Small Business Advocate
555 Walnut Street, 1st Floor Forum Place
Harrisburg, Pennsylvania 17101
Attn: NazAarah Sabree, Small Business Advocate

Cumberland County Board of Commissioners
1 Courthouse Square, 2nd Floor, Suite 200
Carlisle, Pennsylvania 17013
Attn: Gary Eichelberger, Chairman

Cumberland County Conservation District
310 Allen Road, Suite 301
Carlisle, Pennsylvania 17013
Attn: Carl Goshorn, District Manager

Cumberland County Agricultural Land Preservation Board
310 Allen Road, Suite 101
Carlisle, Pennsylvania 17013
Attn: Stephanie Williams, Program Administrator

Cumberland County Planning Department
310 Allen Road, Suite 101
Carlisle, Pennsylvania 17013
Attn: Heather Sweitzer, Chair

Monroe Township
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Attn: Karen Lowery, Secretary

Monroe Township Board of Supervisors
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Attn: Phil Kehoe, Chairman

Monroe Township Planning Commission
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Attn: Sharon Nelson, Chairman

Upper Allen Township
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Attn: Scott Fraser, Manager

Upper Allen Township Board of Supervisors
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Attn: Kenneth M. Martin, President

Upper Allen Township Planning Commission
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Attn: R. Wayne Willey, Chairperson

President of Metropolitan Edison Company
C/O Tori L. Giesler, Esq.
FirstEnergy Service Company
2800 Pottsville Pike
P.O. Box 16001
Reading, PA 19612-6001

President of Mid-Atlantic Interstate Transmission
C/O Tori L. Giesler, Esq.
FirstEnergy Service Company
2800 Pottsville Pike
P.O. Box 16001
Reading, PA 19612-6001

Date: November 3, 2023

Garrett P. Lent

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania	:	Docket No. A-2023-_____

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

PPL Electric Utilities Corporation ("PPL Electric" or the "Company") hereby files, pursuant to 52 Pa. Code § 57.72, this Application requesting Pennsylvania Public Utility Commission ("Commission") approval to site and construct a new 3.9 mile long, single-circuit 115 kilovolt ("kV") transmission line between the Williams Grove 230-69 kV Substation ("Williams Grove Substation") and the Allen 115-13 kV Substation ("Allen Substation"), located in Cumberland County, Pennsylvania (the "Williams Grove-Allen 115 kV Transmission Line Project" or "Project").[1] The Project was reviewed and approved as a Baseline project by PJM Interconnection, L.L.C. ("PJM"). It is required to resolve reliability issues—specifically, voltage magnitude and voltage drop violations for multiple N-1-1 contingencies—identified by PJM on the Mid-Atlantic Interstate Transmission ("MAIT") 115 kV transmission system in the Cumberland County area. The contemplated Williams Grove-Allen 115 kV Transmission Line is needed to ensure that customers in the Cumberland County Area continue to receive safe and

[1] The contemplated transmission line will be known as the "Williams Grove-Allen 115 kV Transmission Line."

reliable electric service in the event of N-1-1 contingencies around the Round Top, Allen, Dillsburg, PPGI and Gardners Substations.

Detailed analyses of feasible alternatives to resolve the reliability concerns driving the Project were undertaken by PJM and PPL Electric. These analyses revealed that the Project (a) solved the reliability issues, (b) provided greater operational flexibility compared to other alternatives, (c) was cost-competitive relative to other alternatives, and (d) utilized existing substations. Moreover, with respect to the Project as proposed, PPL Electric conducted a detailed siting and environmental analysis to determine the preferred route for the proposed Williams Grove-Allen 115 kV Transmission Line. Based on this analysis, PPL Electric determined that the preferred route for the Williams Grove-Allen 115 kV Transmission Line minimizes the effect of the transmission line on the natural and human environment, while avoiding unreasonable and circuitous routes, extreme costs, and non-standard design requirements.

Subject to the Commission's approval, the Project has a scheduled construction start date of Fall 2025 for the proposed high-voltage ("HV") transmission line to meet an in-service date of Spring 2026. Construction on the associated substations is scheduled to begin in Fall of 2024. In support of this Application, PPL Electric states as follows:

I. INTRODUCTION AND OVERVIEW

1. This Application 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 as follows:

PPL Electric Utilities Corporation
827 Hausman Road
Allentown, Pennsylvania 18104

3. PPL Electric's attorneys are:

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

David B. MacGregor (I.D. # 28804)
Garrett P. Lent (I.D. # 321566)
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E-mail : nstobbe@postschell.com

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

4. PPL Electric is a public utility that provides electric distribution, transmission, and provider of last resort services in Pennsylvania subject to the regulatory jurisdiction of the Commission. 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. PPL Electric is also a "public utility" as defined by the Federal Power Act, 16 U.S.C. § 824(e), a transmission owner, and a member of PJM.

5. PPL Electric is a Pennsylvania business corporation formed in 1920. PPL Electric is subject to the Pennsylvania Business Corporation Law of 1988, P.L. 1444, No. 177, Section 103, as amended, 15 Pa. C.S. §§ 1101 et seq. ("BCL"). As a Pennsylvania public utility, PPL Electric has the power of eminent domain pursuant to the Pennsylvania BCL.

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

7. The Project consists of siting and constructing a new single-circuit 115 kV transmission line, which will connect the Williams Grove and Allen Substations. As explained in this Application, the accompanying Attachments, and the accompanying Direct Testimony, the Williams Grove-Allen 115 kV Transmission Line Project is needed to resolve voltage magnitude and voltage drop violations for multiple N-1-1 contingencies, which violates MAIT's Transmission Owner Criteria ("TO Criteria") and North American Electric Reliability Corporation ("NERC") Standard TPL-001-4. PPL and PJM have determined that the new Williams Grove-Allen 115 kV Transmission Line is the optimal solution to address these reliability problems. Moreover, the preferred route for the Project is the most reasonable of the alternative routes considered and minimizes the effect of the transmission line on the natural and human environment, while avoiding unreasonable and circuitous routes, extreme costs, and non-standard design requirements.

8. Accompanying this Application are the following Attachments that provide additional detailed information regarding the proposed Project:

- Executive Summary
- Attachment 1 – PUC Regulation Cross Reference Matrix
- Attachment 2 – Necessity Statement
- Attachment 3 – Environmental Setting
- Attachment 4 – Alternatives and Siting Analysis
- Attachment 5 – Design and Engineering Description
- Attachment 6 – List of Owners of Property Within the Right-of-Way

- Attachment 7 – Agency Permit Requirements
- Attachment 8 – List of Involved Governmental Agencies, Municipalities and Other Public Entities Receiving the Application
- Attachment 9 – List of Government Agencies, Municipalities, and Other Public Entities Contacted
- Attachment 10 – List of Public Locations Where Application Can Be Examined
- Attachment 11 – PPL Electric Magnetic Field Management Program
- Attachment 12 – Vegetation Management
- Attachment 13 – PPL Design Criteria and Safety Practices
- Attachment 14 – Agency Coordination (PNDI/Wetlands)
- Attachment 15 – Cultural Resources Report
- Attachment 16 – Public Notice Requirements

9. Also accompanying this Application are the following written direct testimonies further explaining and supporting this Application:

> PPL Electric Statement No. 1, Direct Testimony of Joseph B. Lookup. Mr. Lookup's direct testimony will provide an overview of the Project, among other things.
>
> PPL Electric Statement No. 2, Direct Testimony of Christopher Szmodis. Mr. Szmodis's testimony will discuss the Company's planning processes, including PJM's analysis of alternatives, among other things.
>
> PPL Electric Statement No. 3, Direct Testimony of Peter Sparhawk. Mr. Sparhawk's direct testimony will provide information regarding the Company's siting evaluation for the Project, among other things.
>
> PPL Electric Statement No. 4, Direct Testimony of Austin Weseloh. Mr. Weseloh's direct testimony will provide background on the desired right-of-way ("ROW") for the Project and the Company's outreach to affected landowners, among other things.

10. This Application, including the accompanying Attachments and Statements, which are incorporated herein by reference, contains all of the information required by 52 Pa. Code §§ 57.72(c), 69.1101, 69.3102 – 69.3107.

II. NEED FOR THE PROJECT

A. EXISTING SYSTEM

11. MAIT serves portions of Adams, Cumberland, and York counties from a 115 kV transmission network system. This 115 kV network feeds multiple substations in the area, including the Round Top, Allen, Dillsburg, PPGI and Gardners substations. MAIT owns the existing 115 kV transmission lines, which are mainly supplied by the MAIT-owned Hunterstown 500 kV/230 kV/115 kV and Middletown Junction 230 kV/115 kV substations.

12. PPL Electric operates a 230 kV network system to supply 230 kV-69 kV substations in Cumberland County. The 230 kV transmission lines connect the PPL Electric-owned Cumberland, Williams Grove, West Shore, and Brunner Island substations. PPL Electric's 230 kV transmission lines also connect with MAIT transmission infrastructure at Middletown Junction Substation. PPL Electric's transmission lines and territory are located north of MAIT's 115 kV system. There are presently no existing 115 kV ties between PPL Electric's and MAIT's transmission systems.

13. A one-line diagram of the existing 230 kV and 115 kV transmission systems is provided as **Figure 2-1** to Attachment 2 – Necessity Statement. A map of the existing system alignment is provided as **Figure 2-2** to Attachment 2 – Necessity Statement.

B. NEED FOR THE PROJECT

14. The nation's interconnected transmission grid serves as the backbone for the safe and reliable delivery of large amounts of electricity from generating stations over substantial distances to customers served by transmission and local distribution systems. It is critically important that this interconnected transmission system (i.e., the "Transmission Grid") be planned and designed to ensure that reliable electric service can be provided under all loading conditions

and when certain elements of the Transmission Grid are out of service (system contingencies) due to planned or unplanned outages.

15. Robust Transmission Planning ensures that the transmission system can supply electricity to all customer loads in a manner that is reliable and economical.

16. PJM is a Federal Energy Regulatory Commission ("FERC")-approved Regional Transmission Organization ("RTO") charged with ensuring the reliability of the electric transmission system under its functional control (100 kV and above) and coordinating the movement of electricity in all or parts of thirteen states and the District of Columbia, including Pennsylvania.

17. To ensure reliable transmission service, PJM prepares an annual Regional Transmission Expansion Plan ("RTEP")[2] to identify system reinforcements that are required to, among other things, meet the NERC Reliability Standards, PJM reliability planning criteria, and TO Criteria.

18. When PJM's Reliability Analysis identifies a need to solve a reliability issue on electric transmission facilities, PJM opens a Proposal Window to solicit the submittal of potential solutions (i.e., reliability projects) to address those needs.

19. The reliability projects that are selected through PJM's Reliability Window are presented to stakeholders and recommended to the PJM Board of Managers ("PJM Board") for approval. If approved, such reliability projects are included in the RTEP as Baseline Projects.

[2] PJM's RTEP process is currently set forth in Schedule 6 of PJM's Amended and Restated Operating Agreement ("Schedule 6"). Schedule 6 governs the process by which PJM's members rely on PJM to prepare an annual regional plan for the enhancement and expansion of the transmission facilities to ensure long-term, reliable electric service consistent with established reliability criteria. In addition, Schedule 6 addresses the procedures used to develop the RTEP, the review and approval process for the RTEP, the obligation of transmission owners to build transmission upgrades included in the RTEP, and the process by which interregional transmission upgrades will be developed.

20. In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the MAIT 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations.

21. PJM received ten proposals specifically to address the reliability concerns on MAIT's 115kV system. Each of these proposals is addressed in detail in Attachment 2 – Necessity Statement.

22. PPL Electric submitted four potential solutions and six proposals were submitted by outside entities. The PPL potential solutions included:

- PPL Electric Proposal 99 – PPL Electric would install a 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation and extend a single circuit 115 kV transmission line to MAIT's Allen Substation. MAIT would modify Allen Substation to a four-breaker ring configuration (i.e., the Proposed Solution).

- PPL Electric Proposal 992 – PPL Electric would install a 230 kV/115 kV transformer at Williams Grove Substation and extend a single circuit 115 kV transmission line to MAIT's Allen Substation. PPL Electric would build, own, and operate a new 115 kV four-breaker ring configuration switchyard immediately north of Allen Substation.

- PPL Electric Proposal 457 – PPL Electric would install a 69 kV/115 kV transformer at Williams Grove Substation and extend a single circuit 115 kV transmission line to Allen Substation. MAIT would modify Allen Substation to a four-breaker ring configuration.

- PPL Electric Proposal 561 – PPL Electric would install a 69 kV/115 kV transformer at Williams Grove Substation and extend a single circuit 115 kV transmission line to MAIT's Allen Substation. PPL Electric would build, own, and operate a new 115 kV four-breaker ring configuration switchyard immediately north of Allen Substation.

The PPL Electric proposals solved the voltage reliability issues identified by PJM, increased operational flexibility, and utilized existing substations with just the new 115 kV line being greenfield work.

23. The need for this Project is further explained in Attachment 2 – Necessity Statement to this Application.

III. DESCRIPTION OF THE PROPOSED PROJECT

24. After evaluation and review with stakeholders, PJM selected PPL Electric Proposal 99 to resolve the identified need. This solution was selected because it (a) solved the reliability issues identified by PJM, (b) provided greater operational flexibility compared to other alternatives reviewed by PJM and stakeholders, (c) was cost-competitive compared to other alternatives, and (d) minimized greenfield construction by utilizing existing substations.

25. The overall PJM solution involves (1) installing a new 300 MVA 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation, (2) building a new 3.9-mile single circuit HV transmission line to connecting the PPL Electric-owned Williams Grove Substation to the MAIT-owned Allen Substation (i.e., the Project that is the subject of this Application), and (3) modifying the MAIT-owned Substation to a four-breaker ring bus arrangement.[3] Further details regarding each aspect of the PJM solution are set forth in Attachment 2 – Necessity Statement to this Application; however, the substation modifications that were approved as a part of the PJM solution are not a part of this Application.[4]

26. Relevant to the Commission's review of the Project, the proposed Williams Grove-Allen 115 kV Transmission Line Project involves the construction of approximately 3.9 miles of new single-circuit 115 kV transmission line between the PPL Electric-owned Williams Grove Substation in Upper Allen Township and the MAIT-owned Allen Substation in Monroe Township, all in Cumberland County, Pennsylvania.

[3] The work on the MAIT owned Allen Substation will be performed by MAIT and is not subject to this proceeding.

[4] The Commission's regulations at 52 Pa. Code Chapter 57, Subchapter G apply to the siting and construction of "HV transmission lines," the term "HV transmission line or HV line" is defined as "[a]n overhead electric supply line with a design voltage greater than 100,000 volts." 52 Pa. Code § 57.1 (emphasis added). A substation is not an overhead electric supply line. Therefore, the Commissions regulations at Chapter 57, Subchapter G do not apply to the contemplated substation modifications at the Williams Grove and Allen Substations.

27. The proposed HV transmission line will be installed primarily on new single-shaft steel poles. The proposed HV transmission line will require the installation of approximately 36 structures ranging in height from 40 to 95 feet, with an average height of approximately 77 feet. The spans between the structures will be approximately 600 feet.

28. The Williams Grove-Allen 115 kV Transmission Line will consist of approximately 19 self-weathering tubular steel tangent structures and two pole "H" Frames where the proposed line will cross under an existing 500 kV line.[5] These tangent structures will be equipped with steel arms and will be installed as direct embedded structures (i.e., without foundations). Three additional direct embedded single pole and two-pole angle tension steel structures will be guyed. There also will be approximately 14 angle and tension structures, which will consist of single pole steel structures on concrete foundations.[6] In agricultural areas, PPL Electric will avoid using guy wires to the greatest extent practical to minimize interference with existing and future farming and other agricultural operations.

29. A map of the proposed Project is provided in Figure 2-4 to Attachment 2 – Necessity Statement and Figure 4-13 to Attachment 4 – Alternatives and Siting Analysis.

30. The proposed double circuit HV line will consist of three power conductors and two overhead ground wires. Each conductor will be 1003.5 kcmil,[7] 54/7 stranding aluminum conductor steel reinforced ("ACSR"). The overhead ground wires ("OHGW") will be one 3/8-inch extra high strength ("EHS") steel OHGW and one a 48 fiber 0.567-inch diameter Optical Ground Wire ("OPGW"). An engineering description of the proposed Project is provided in Attachment 5 to this Application.

[5] A tangent structure is a pole with no line angle.]
[6] Some structures may be direct embedded in order to reduce costs and meet engineering requirements.
[7] A circular mil is the cross-sectional area of a wire one mil in diameter, where 1 kcmil = 0.5067 mm².

31. The total estimated cost of the proposed Project is $23.14 million.[8]

32. On August 31, 2022, PPL Electric accepted construction responsibility from PJM for PPL Electric to complete the work within Williams Grove Substation and the construction of the proposed 115 kV transmission line scope under PJM baseline numbers B3715.1 and B3715.2. Pursuant to Schedule 6 of PJM's Amended and Restated Operating Agreement, Section 4.2.2 of the PJM Consolidated Transmission Owners Agreement, and as stated in the Construction Responsibility Letter, PPL Electric is required to complete the Project by June 1, 2026.

33. Subject to the Commission's approval, the Project has a scheduled construction start date of Fall 2025 to meet an in-service date of Spring 2026. In order to facilitate PPL Electric's compliance with the requirement to complete the Project by June 1, 2026, PPL Electric requests that the Commission issue a final order in this matter by no later than the latest June 2024 public meeting date.

IV. ALTERNATIVES AND SITING ANALYSIS

A. SUMMARY OF THE ALTERNATIVES AND SITING ANALYSIS

34. The 3.9-mile Williams Grove-Allen 115 kV Transmission Line will require PPL Electric to site and construct a new transmission line in newly-acquired ROW. For this reason, PPL Electric initiated an Alternatives and Siting Analysis to facilitate the development of Alternative Routes, evaluate potential impacts associated with the Alternative Routes and, ultimately, identify a Preferred Route for the Project.

35. PPL Electric utilized the Alternatives and Siting Analysis to determine the most reasonable route for a new 115 kV transmission line to connect the existing Williams Grove

[8] PPL Electric notes that the HV transmission line component of the Project is estimated to cost $8.5 million. The estimated cost was developed based on preliminary engineering. The 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.

Substation and the existing Allen Substation, located in Cumberland County. The goal of this analysis was for the Company to gain a detailed understanding of the opportunities and constraints in the Project's "Study Area"[9] to facilitate the development of "Potential Routes,"[10] evaluate potential impacts associated with each route, and select a "Preferred Route"[11] from one or more "Alternative Routes."[12]

36. A multi-disciplinary performed the routing study ("Routing Team"). Team members were selected to bring wide experience to the routing study to achieve a thorough review of all aspects of developing the route. Members of the Routing Team have experience in transmission line routing, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, and construction management.

37. In accordance with the Commission's regulations at 52 Pa. Code § 57.72(c), PPL Electric conducted an extensive, multi-faceted analysis to determine the overall best route for the proposed Project. This analysis included the designation of a "Study Area," compilation of an environmental inventory, identification of Potential Routes, review and refinement of the Potential Routes and the Potential Route Network, development of two Alternative Routes, a qualitative and quantitative analysis of the two Alternative Routes, and a selection of the Preferred Route. This

[9] Defined in Attachment 4 – Alternatives and Siting Analysis as "that territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and Project costs."

[10] Defined in Attachment 4 – Alternatives and Siting Analysis as "an early iteration of the routing process that involves the development of conceptually based routes and general consideration of these routes with respect to constraints and opportunity features in the Study Area."

[11] "Alternative Routes" are "Potential Routes" that have been considered and refined as a part of the review and development of the "Potential Route Network," which "narrows down the network and focuses on refining the more preferable [route] links to establish Alternative Routes" discussed in Attachment 4 – Alternatives and Siting Analysis.

[12] The "Preferred Route" is also referred to as "Alternative Route B." The Preferred Route is the Alternative Route that was determined to be the most reasonable route based upon the siting evaluation criteria and in consideration of the cumulative environmental, engineering and constructability, social, and financial impacts discussed in Attachment 4 – Alternatives and Siting Analysis.

process enables PPL Electric to select a route for the proposed Project lines that appropriately balance functional requirements, environmental factors, social factors, and cost considerations.

38. The Study Area is the territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental and social impacts and project costs. The process used by PPL Electric to identify the Study Area is further explained in Attachment 4 – Alternatives and Siting Analysis of this Application.

39. PPL Electric identified a Study Area for the proposed Project that encompassed a 3,340-acre (5.2-square mile) area extending south from Mechanicsburg along Brindle Road and west from Shepherdstown along Stumpstown Road and Williams Grove Road. The Study Area encompassed the two final end points (i.e., the existing Williams Grove Substation to the northeast and the existing Allen Substation to the southwest) that the rebuilt line must serve. A detailed description and map of the Study Area for this Project are provided in Figure 4-1 to Attachment 4 to this Application.

40. In order to identify the preferred route for the proposed Project, PPL Electric identified general guidelines it would consider, to the extent practical, in selecting the preferred routes. These general guidelines included the following:

- Maximize the separation distance from or minimize impacts on residences.
- Maximize the separation distance from or minimize impacts on schools, hospitals, and other community facilities.
- Minimize the removal of existing barns, garages, commercial buildings, and other nonresidential structures.
- Minimize impacts on agricultural use, including the operation of irrigation infrastructure, where possible.
- Avoid crossing cemeteries or known burial places.
- Minimize crossing designated public resource lands, such as Williams Grove Park, and historic resources, such as the Cumberland Valley Railroad historic district and other

National Register of Historic Places ("NRHP") listed or eligible sites identified within the Study Area.

- Minimize crossing large lakes, major rivers, and large wetland complexes.
- Minimize impacts on critical habitat, protected species, and other identified sensitive natural resources.
- Minimize substantial visual impacts on residential areas and public resources.
- Minimize route length, circuity, cost, and special design requirements.

41. PPL Electric also considered technical guidelines, which imposed technical requirements or limitations related to the physical limitations, design, ROW, or reliability concerns regarding the Project's infrastructure. These technical guidelines included:

- Acquisition of 100 feet of ROW.
- Design of the transmission line for single-circuit 115 kV operation.
- Minimize turning angles in the transmission line greater than 20 degrees.
- Maintain safe electrical clearance from existing transmission lines in the Study Area.

42. Another step in the route selection process was the identification and mapping of the location of routing constraints. The constraints were defined as specific areas that should be avoided to the extent feasible during the route selection process. The constraints within the Study Area were divided into large and small area constraints. Possible routes were identified to avoid large area constraints to the extent possible. These routes were then adjusted, to the extent practical, to avoid small area constraints. Although complete avoidance of all constraints is not feasible, PPL Electric sought routes that would minimize intrusions into constrained areas.

43. In order to identify constraints, PPL Electric compiled a detailed environmental inventory of the Study Area. Many sources of information were employed to develop data for the environmental inventory. These sources of information are summarized in Table 4-2 of Attachment 4 to this Application.

44. Using the information summarized above, PPL Electric began identification of Potential Routes. The process for identifying potential transmission line routes produced a network of route links that could be considered to reach from the existing PPL Electric-owned Williams Gove Substation in Upper Allen Township and the MAIT-owned Allen Substation in Monroe Township, all in Cumberland County, Pennsylvania. Those links were combined into a number of initial Potential Routes for the proposed Project.

45. After the initial potential route links were identified, key members of the Routing Team conducted field inspections of the route links. These inspections involved the visual examination of the potential route links from road crossings and other points of public access. The field investigations resulted in changes to the potential route links to reduce impacts on constrained areas. As a result, some potential route links were eliminated from further consideration.

46. The remaining route links were assembled into the Potential Routes and were presented to the public for comment at an open house meeting held in November 2022.

47. Following the November 2022 public open house, the Routing Team reviewed public comments and revised, where feasible, the Potential Routes. These revisions, including eliminations of certain Potential Routes, resulted in the Refined Potential Route Network that is set forth in Figure 4-5 of Attachment 4 to this Application.

48. Once the Refined Potential Routes were developed, the Routing Team considered additional information provided by agency outreach, field review, data analysis, and public comment. A qualitative and quantitative screening process was employed to eliminate or modify route links from the Refined Potential Route Network that were not considered suitable for additional study; this process narrows down the network and focuses on refining the preferable links to establish Alternative Routes.

49. After carefully analyzing and evaluating the Refined Potential Route Network, PPL Electric selected two Alternative Routes, i.e., "Alternative Route A" and "Alternative Route B." A detailed description of the selection of the Alternative Routes is provided in Attachment 4 to this Application.

50. Each of the Alternative Routes is approximately 3.9 miles in length. Figure 4-6 to Attachment 4 depicts each of the Alternative Routes, and Attachment 4 contains detailed description of Alternative Routes A and B.

51. The Routing Team undertook a qualitative and quantitative review and comparison of each alternative. The alternatives were compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Routing Team. A detailed explanation of the qualitative and quantitative analysis and comparison of the alternatives is provided in Attachment 4 to this Application.

52. Based on these evaluation processes, the Routing Team selected Alternative Route B as the Preferred Route for the proposed Project. While both Alternative Routes are either identical or similar for most of the siting evaluation criteria, the Routing Team ultimately believes that the cumulative environmental, engineering and constructability, and social and financial impacts associated with constructing Alternative Route B are more favorable when compared to Alternative Route A. A detailed explanation of the selection of the Proposed is provided in Attachment 4 to this Application.

53. After the selection of the Preferred Route PPL Electric held a second public open house in January 2023 to announce the Preferred Route and present information on the Preferred Route to the Public. PPL Electric notes that, following the January 2023 open house, minor adjustments were made to the Alternative Routes based on parcel survey information, discussions

with landowners, and engineering refinements. The Alternative Routes described in Attachment 4 – Alternatives and Siting Analysis refer to the final route alignments and, therefore, differ slightly from the information presented at the January 2023 open house.

B. NATURAL ENVIRONMENTAL, BUILT ENVIRONMENT, AND CONSTRUCTABILITY

54. During the siting process, PPL Electric made efforts to minimize impacts the proposed Project may have on the natural and built environment, as well as to avoid engineering and constructability issues. Attachments 3, 4, 14 and 15 to this Application provide a detailed evaluation of the potential impacts of the Alternative Routes identified for the proposed Project.

1. Natural Environment

55. Natural environment impacts include potential impacts to vegetation and habitat, surface waters, and conservation and recreation lands. A comparison of the natural environment considerations for the two Alternative Routes is provided in Table 4-4 of Attachment 4 to this Application.

56. Farmland in the vicinity of the Alternative Routes includes croplands, and grasslands that could be used for grazing or hay production. Permanent impacts to farmlands are anticipated to be minimal due to the use of the monopole tower structures for this Project, which have smaller footprints compared with lattice or H-frame structures. In addition, access roads are normally temporary impacts so crop production and grazing can resume after construction is completed. Once transmission structure construction is completed, normal agricultural uses will continue to be permitted within the ROW.

57. Therefore, neither of the Alternative Routes is expected to significantly impact prime farmland or farmland of statewide importance.

58. Unvegetated soil surfaces are more susceptible to erosion and loss of soil productivity. Removing stumps during tree clearing increases the potential for soil erosion, and leaving topsoil exposed increases the potential of loss by wind and water. Best management practices ("BMPs") to minimize erosion impacts may include leaving stumps in the ground, covering exposed soil, and reseeding after construction. PPL Electric will obtain all necessary permits and employ specified BMPs to minimize soil erosion during construction activities. In agricultural areas, farming activities will continue to occur within the ROW following construction. In forested areas, the ROW will be revegetated with compatible species and maintained in accordance with PPL Electric's Vegetation Management Program, included as Attachment 12 to this Application.

59. Other indirect impacts to surface waters, such as sedimentation and erosion of surrounding soils can also result from ground-disturbing activities. Typically, sedimentation is easily controlled with proper perimeter controls around the transmission line construction area. BMPs may include the implementation of sediment control measures such as silt fencing, access road drainage management measures, and rapid reseeding of disturbed soil areas. PPL Electric will coordinate with the PADEP and obtain and comply with the necessary storm water permits for construction of the Project.

60. As a result of implementing mitigation measures similar to those discussed above and the limited footprint of permanent impacts on soil productivity created by the structures themselves, any impacts to soils are likely minor for all Alternative Routes.

61. PPL Electric also examined whether the Project would have any significant impacts to wetland areas. Where wetland impacts cannot be avoided, PPL Electric will coordinate with the U.S. Army Corps of Engineers ("USACE") concerning potential impacts on jurisdictional

wetlands and will attempt to minimize permanent impacts when feasible and practical. To this end, PPL Electric will implement a range of BMPs during the design, construction, and operational phases to avoid or minimize impacts on wetlands.

62. As a result of implementing mitigation measures similar to those discussed above and the limited footprint of permanent impacts on soil productivity created by the structures themselves, any impacts to soils are likely minor for all Alternative Routes.

63. From a combined soil and water resources perspective, the Alternative Routes are similar for most siting evaluation criteria. Neither Alternative Route crosses a notable percentage of hydric or partially hydric soils. This is consistent with the limited amount of NWI mapped wetlands crossed by each Alternative Route (0.2 to 0.5 acre). However, potential forested wetland impacts compared between the Alternative Routes indicate that Alternative Route A would impact 1 acre more Pennsylvania Spatial Data Access ("PASDA") modeled forested wetlands (1.4 acres) when compared to Alternative Route B (0.4 acre). No PASDA modeled emergent wetlands are crossed by the Alternative Routes. Each route avoids crossing the Yellow Breeches Creek – Leidigh to Williams Grove CNHI-Core Habitat, NHD waterbodies, and FEMA floodplain areas. Additionally, both routes require one crossing of an UNT of Yellow Breeches Creek and have minimal (1%) hydric soils within their proposed ROW. No NHD waterbodies or FEMA floodplains or regulatory floodways are crossed by either Alternative Route.

64. PPL Electric undertook an environmental inventory of the Project area, which is provided in Attachment 3 – Environmental Setting to this Application.

65. As stated in Attachments 3 and 4, PPL Electric conducted an on-line review for the Study Area. This review requested information from the four agencies responsible for the protection of endangered, threatened, or species of special concern within the Project area:

Pennsylvania Fish and Boat Commission ("PFBC"), Pennsylvania Game Commission ("PGC"), Pennsylvania Department of Conservation and Natural Resources ("DCNR"), and the U.S. Fish and Wildlife Service ("USFWS"). The correspondence from these agencies regarding the potential presence of these ecological resources within the Project area are provided in Attachment 14 to this Application.

66. The DCNR results indicated that a portion of the Project will traverse two natural heritage areas ("NHA") were identified within the Study Area, including core habitat, and supporting landscapes. The Yellow Breeches Creek – Leidighs to Williams Grove NHA extends along several miles of the Yellow Breeches Creek and supports populations of two rare aquatic plant species: the red-head pondweed (*potamogeton richarsonii*), a state threatened species, and the white-water crowfoot (*ranunculus aquatilis var. diffusus*), a state species of concern. While DCNR requests further review of this Project to resolve potential impacts to each of these species, PPL Electric believes that potential impacts to these species are not likely since no in-water work will be conducted as part of the Project.

67. PPL Electric will obtain all required permits from these state and federal agencies and will comply with the terms and conditions placed on any required permits.

68. After analyzing and comparing the two Alternative Routes against potential impacts to the natural environment, the Routing Team determined that Alternative Route A will have significantly less environmental impacts than Alternative Route B.

2. Built Environment

69. Built environment impacts include direct and indirect impacts to residential, commercial, and industrial development, institutional uses (*e.g.*, schools, places of worship, and cemeteries), cultural resources, and land use. A comparison of the built environment considerations for Alternative Routes A and B is provided in Table 4-5 of Attachment 4 to this

Application. Topographic maps identifying known built environment elements and constraints within established distances of the Alternative Routes as specified in the Commission's siting regulations are included in Figures 4-8A through Figure 4-8C of Attachment 4 to this Application.

70. Land use is similar along both Alternative Routes. Both routes traverse agricultural uses (cultivated crops) for approximately 90 percent of their entire proposed ROW. Based on current aerial imagery of Cumberland County, approximately 10 percent of land crossed by Route A consists of developed areas, forest cover, and grassland/pasture, while 10 percent of land crossed by Route B consists of either developed areas or forest cover.

71. No existing federal, state, or local recreation areas are crossed by the Alternative Routes. As of 2021, the Cumberland Valley Rails-to-Trails Council ("CVRTC") is proposing the South Mountain Trolley Greenway[13] along the abandoned Cumberland Valley Railroad corridor. Alternative Routes A and B parallel the abandoned Cumberland Valley Railroad corridor for 0.1 and 0.7 mile, respectively. Additionally, each Alternative Route requires one crossing of the abandoned Cumberland Valley Railroad corridor. PPL Electric plans to coordinate with CVRTC prior to Project construction and will attempt to accommodate the proposed South Mountain Trolley Greenway if needed.

72. Although Williams Grove Park is located within 500 feet of Alternative Route B, no substantial visual impacts are anticipated since the proposed alignment follows a parcel boundary behind the wooded portion of the park. Still, access to the areas of the park may be limited at times during construction. Following construction, regular use of the recreation area can continue.

[13] https://www.cvrtc.org/south-mountain-trolley-greenway/

73. Since it parallels the abandoned Cumberland Valley Railroad for a longer distance, Alternative Route B may have the potential to result in more impacts to existing and proposed recreational areas if the proposed South Mountain Trolley Greenway project commences. Still, paralleling the abandoned Cumberland Valley Railroad for a longer length may be more favorable from an access perspective since it is currently utilized for farm equipment transportation by adjacent landowners.

74. PPL Electric further analyzed and compared the Alternative Routes with respect to cultural (i.e., archaeological and historical) resources, as described in Attachment 4 to this Application. No known archaeological resources were identified within 0.25 mile of either Alternative Route. In addition, Alternative Routes A and B are identical in terms of the architectural resources located within 0.25 and 1 mile from the routes, while only Alternative Route B is located within 1 mile of the NRHP-eligible Christian Hoover, Jr. Farm. PPL Electric will continue to consult with the Pennsylvania SHPO throughout the planning, design, and construction process and conduct field work and surveys as necessary during the project permitting process to minimize potential impacts to cultural resources. Therefore, impacts on archaeological resources are expected to be minimal.

75. After analyzing and comparing the two Alternative Routes, neither of the routes stand out as being noticeably better or worse with respect to the built environment. However, PPL Electric notes that landowner feedback obtained during the Project's public open houses favored Alternative Route B over Alternative Route A.

3. Engineering and Constructability

76. Constructability refers to the evaluation of engineering and construction considerations in relation to feasibility of a proposed transmission line. Constructability evaluates the use of existing transmission corridors, engineering challenges, and accessibility issues of a

preferred route. Major factors that affect constructability include, but are not limited to, steep topography, condensed ROWs, high angles, proximity to major highways, and accessibility. A comparison of the engineering and construction considerations for the two Alternative Routes is provided in Table 4-7 of Attachment 4 to this Application.

77. As explained in Attachment 4 to this Application, no viable transmission line paralleling opportunities were identified for Alternative Route B.

78. Based on preliminary engineering, both routes require a similar amount of angle structures, with Alternative Route B requiring one less than Alternative Route A (10 and 11, respectively). Steep slopes were not identified as a primary constraint in siting the Project, as the overall landscape is gently undulating in topography.

79. Both Alternative Routes require one 500 kV crossing and one 230 kV crossing. Transmission line crossings may require specialized structures to maintain line clearances and support the conductors as one of the lines passes over the other. Specialized structures require additional engineering and reduce flexibility when attempting to site individual structures in a way that minimizes impact to farm fields and necessitates scheduled outages on both lines during construction and maintenance.

80. Each Alternative Route requires six road crossings total. Alternative Route A requires three state highway crossings and three county/local road crossings, while Alternative Route B requires four state highway crossings and two county/local road crossings. No interstate or US highways are located within the Project Study Area; therefore, no major highway crossings are required by either Alternative Route.

81. PPL Electric evaluated the Alternative Routes from a cost perspective based on preliminary estimates from siting, real estate, engineering, procurement, and construction. Since

both Alternative Routes are nearly identical in most factors used for cost analysis (i.e., length, total number of structures, acres of ROW, transmission line crossings), the Project cost was not a significant factor for selecting the Preferred Route.

82. From a combined engineering and constructability perspective, both Alternative Routes are similar for most evaluation criteria. First, Alternative Route A and B both measure 3.9 miles long, resulting in similar ROW acquisition needed for the proposed 100-foot-wide ROW (approximately 48 acres). Further, each Alternative Route crosses minimal steep slopes, requires 6 road crossings, requires approximately 2 acres of ROW tree clearing, and requires one 230 kV crossing and one 500 kV crossing.

83. Alternative Route B requires fewer angle structures greater than 20 degrees.

V. RIGHTS OF WAY

84. The required ROW width for the single-circuit 115 kV line is 100 feet, which would be primarily composed of easements across private land.

85. The ROW would be cleared to its full width of tall growing vegetation for the safe and reliable operation of the transmission line.

86. PPL Electric will design and construct the line to fit within the ROW while maintaining all necessary clearances. Farming and grazing land uses are typically compatible and can continue under the transmission line.

87. The names and addresses of all known persons, corporations and other entities of record owning property along the route selected for the proposed Williams Grove-Allen 115 kV Transmission Line are provided in Attachment 6 to this Application.

88. There are a total of 11 deeded properties along the Preferred Route, owned by a total of 7 property owners. The Company has obtained easements or possesses all necessary ROW

from 6 of the 7 of the property owners for all of the parcels traversed by this Project. The parcel where an easement has not been acquired is owned by MAIT. Based on discussions with MAIT, PPL Electric does not anticipate that condemnation will be required to obtain the required ROW. The Company is continuing to pursue negotiations with the owner of this remaining property.

VI. HEALTH AND SAFETY

89. The proposed Project will not create any unreasonable risk of danger to the public health or safety. PPL Electric will design, construct, and operate the new transmission line to PPL Electric's 115/138 kV design standards, but only operate the line at 115 kV. As such, the line will meet or surpass all applicable NESC minimum standards and all applicable legal requirements. Descriptions of the NESC standards, PPL Electric's design criteria, and PPL Electric's safety practices are provided in Attachment 13 to this Application.

90. Attachment 11 accompanying this Application explains PPL Electric's Magnetic Field Management Program. As explained therein, PPL Electric will construct the new single-circuit 115 kV transmission line for conductor-to-ground clearances that are higher than the required NESC minimum conductor-to-ground clearance for 115 kV transmission lines.

91. The new Williams Grove – Allen 115 kV Transmission Line will be designed and operated as a single circuit line. Reverse phasing requires a double circuit line. Therefore, reverse phasing will not be possible for the new 115 kV transmission line.

92. No communications towers were identified within the Study Area.

93. A natural gas pipeline owned by Columbia Gas Transmission crosses the western portion of the Study Area, roughly parallel to the north side of the Juniata – Three Mile Island 500 kV Transmission Line. It is not anticipated that the Project will impact this pipeline.

94. Other public utility facilities are located within the Study Area as described in Section 2.1.4 of Attachment 3 – Environmental Analysis. PPL Electric does not anticipate that the Project will impact any of these facilities.

95. Boiling Springs Road (State Route 224) defines the northwestern boundary of the Study Area. Otherwise, no state, interstate, or US highways are in the Study Area. If necessary, Pennsylvania Department of Transportation ("PennDOT") Highway Occupancy Permits, or equivalent type permits will be acquired by PPL Electric.

96. No airports are located within 2 miles of the proposed Project. The closest major airport, the Capital City Airport, is located approximately 7 miles northeast of the Study Area, and the Carlisle Barracks Army airport is located approximately 7 miles northwest of the Study Area. Therefore, PPL Electric does not anticipate any interference with airport operations because of the distance from the Project area. However, if necessary, PPL Electric will file all required documentation with the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

VII. NOTICE AND SERVICE

97. As part of the review and comparison of the alternative routes, PPL Electric conducted a public outreach program, which included: regulatory agency consultation, public notification and open house meetings, and meetings with property owners. Feedback provided by landowners was taken into consideration as the Routing Team analyzed the alternative routes.

98. In addition, PPL Electric conducted two public open houses within the Project Study Area: the first on November 16, 2022, and the second on January 18, 2023. The intent of the first public open house was to present the Potential Route Network and provide information about the Williams Grove – Allen 115 kV Transmission Line Project. The intent of each of the

open houses was to provide information and seek community input on the Project. The November open house provided detailed information about the project and gave attendees the opportunity to ask questions and provide input and information to PPL Electric. Following the November open house, the Routing Team used information obtained during the open house meeting along with public comments to refine the Potential Routes. The intent of the second public open house was to present the Preferred Route and receive additional feedback on the Preferred Route. Comments during the January open house primarily focused on routing adjustments and health and safety concerns. The Routing Team finalized the Preferred Route alignment based on this information and additional meetings with property owners.

99. Prior to and after the open houses, PPL Electric received and responded to additional comments from interested residents. The Company will continue responding to comments and inquiries and provide periodic written updates to residents and other interested parties. PPL Electric will continue its commitment of open communications and, where practical, will be responsive to input regarding the project from local residents and other interested parties.

100. A detailed explanation of PPL Electric's public outreach efforts is provided in Attachment 4 to this Application.

101. PPL Electric has provided public notices in accordance with Section 69.3102 of the Commission's Interim Siting Guidelines, 52 Pa. Code § 69.3102. The public notices for this project are provided in Attachment 16 to this Application.

102. Copies of this Application and the associated Notices of Filing are being served in accordance with the provisions of Section 57.74 of the Commission's regulations, 52 Pa. Code § 57.74.

103. PPL Electric made arrangements with Upper Allen Township, located at 1000 Gettysburg Pike, Mechanicsburg, PA 17055, and Monroe Township, located at 1220 Boiling Springs Road, Mechanicsburg, PA 17055 to make this Application available for public examination in-person, as set forth in Attachment 10 to the Application.

104. As soon as practicable after the filing of this Application, PPL Electric will publish notice of the filing in newspapers of general circulation in the area of the proposed Project. This notice will: (a) note the filing with the Commission; (b) provide a brief description of the Project and its location; (c) provide area locations where the complete application may be reviewed by the public; and (d) provide any additional information as directed by the Commission.

105. PPL Electric also requests that the Commission publish notice of this Application in the *Pennsylvania Bulletin*.

VIII. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission approve the proposed siting and construction of the new, 3.9 mile long, single-circuit Williams Grove-Allen 115 kV Transmission Line located in Cumberland County, Pennsylvania as explained above and in the Attachments and Testimony in support of this Application.

Respectfully submitted,

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Date: November 3, 2023

Attorneys for PPL Electric Utilities Corporation

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Executive Summary

EXECUTIVE SUMMARY

This Siting Application is submitted by PPL Electric Utilities Corporation ("PPL Electric") pursuant to the Pennsylvania Public Utility Commission's ("PUC" or the "Commission") regulations at 52 Pa. Code §§ 57.71 through 57.77 for PUC approval to construct the new Williams Grove – Allen 115 kV Transmission Line (the "Project" or "Williams Grove – Allen 115 kV Transmission Line Project"). The Project, as submitted in this filing, is part of PJM Interconnection LLC's ("PJM") approved solution to resolve the reliability problems on the Mid-Atlantic Interstate Transmission ("MAIT") 115 kV transmission system and Metropolitan Edison Company's ("Met-Ed") distribution system by (1) installing a new 300 MVA 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation, (2) building a new 3.9-mile single circuit transmission line to MAIT's Allen Substation, and (3) modifying Allen Substation to a four-breaker ring bus arrangement. PPL Electric herein seeks Commission approval for the construction of the 115 kV transmission line necessary to interconnect PPL Electric's Williams Grove Substation to the MAIT electric grid.

The Project involves the construction of approximately 3.9 miles of new single circuit 115 kV transmission line in Cumberland County, Pennsylvania between their existing Williams Grove Substation, located off Fisher Road in Upper Allen Township, and the MAIT-owned Allen Substation, located along Park Place in Monroe Township.

A comprehensive route selection study was conducted to establish a Proposed Route for the Williams Grove – Allen 115 kV Transmission Line. Using established siting guidelines, the Routing Team identified constraints and opportunity features within the Study Area that would minimize impacts to the natural and human environments. The Routing Team evaluated the advantages and disadvantages of the Potential Routes based on the established routing criteria and an inventory of land use, environmental, and cultural factors along each of the routes. Less favorable Potential Routes were eliminated, and two feasible Alternative Routes were retained for further consideration.

A quantitative and qualitative assessment was conducted to compare the alternative routes. A Proposed Route was selected based upon a detailed analysis and balance of public input, societal concerns, environmental impacts, engineering considerations, and costs. Based on an assessment of the advantages and disadvantages of the two alternative routes under consideration, the Routing Team selected Alternative Route B as the Proposed Route. Overall, the Proposed Route will have substantially less impact on the natural and built environments, land use, and citizens in Cumberland County.

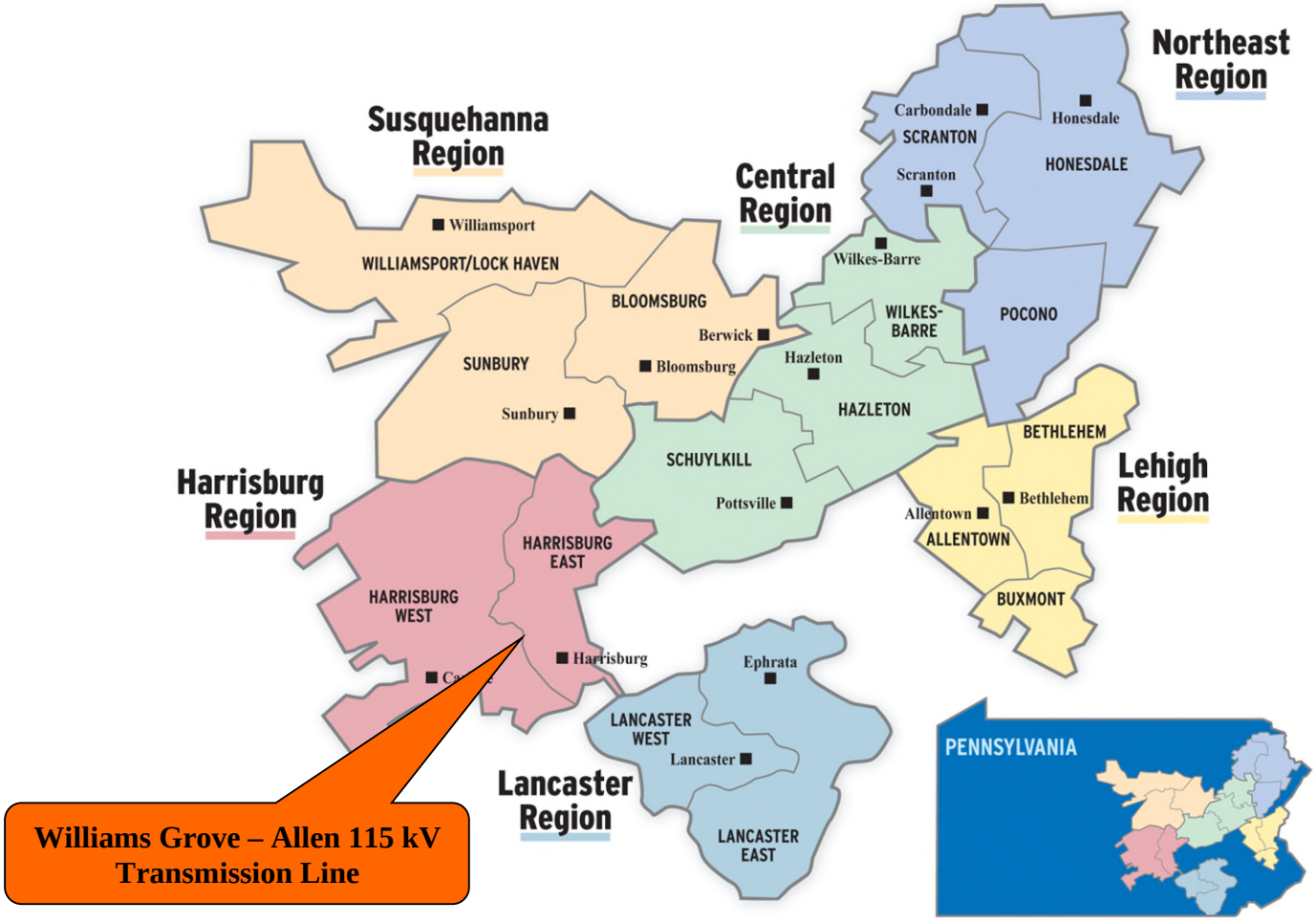
The estimated cost of the Project is approximately $23.14 million, and the cost for the Project will be allocated to MAIT customers.[1] Subject to Commission approval, construction is scheduled to begin in November 2025 to support an in-service date of May 2026.
Included with this Siting Application are the following Attachments:

Attachment 1	PUC Regulation Cross Reference Matrix
Attachment 2	Necessity Statement
Attachment 3	Environmental Setting
Attachment 4	Siting Analysis
Attachment 5	Design and Engineering Description
Attachment 6	List of Owners of Property Within the Right-of-Way
Attachment 7	Agency Permit Requirements
Attachment 8	List of Involved Governmental Agencies, Municipalities and Other Public Entities Receiving the Application
Attachment 9	List of Government Agencies, Municipalities, and Other Public Entities Contacted
Attachment 10	List of Public Locations Where Application Can Be Examined
Attachment 11	PPL Electric Magnetic Field Management Program
Attachment 12	Vegetation Management
Attachment 13	PPL Design Criteria and Safety Practices

[1] The estimated cost was developed using preliminary engineering and initial field investigations. The cost is subject to change as engineering, constructability analysis of the Project, sequence of construction, and other factors that may affect cost are identified and analyzed as the Project progresses.

Attachment 14	Agency Coordination (PNDI/Wetlands)
Attachment 15	Cultural Resources Report
Attachment 16	Public Notice Requirements

PPL ELECTRIC UTILITIES SERVICE TERRITORY



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PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 1

ATTACHMENT 1
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
PUC REGULATION CROSS-REFERENCE MATRIX

Administrative Code Section or Statute	PUC Regulation Requirement	Location
57.72	Form and content of application	
57.72(a)	Applications shall be in conformity with Section 1.31 (relating to form of documentary filings generally). Supporting exhibits such as maps, photographs and other engineering materials may be on paper not exceeding 28 inches by 40 inches.	Attachments 1 – 16 Attachment 3 – Environmental Maps Attachment 4 – Siting Analysis Maps Attachment 4 – Aerial Maps
57.72(b)	The application shall be signed by a person having authority with respect thereto and having knowledge of the matters herein set forth and shall be verified under oath.	Siting Application
57.72(c)	An application shall contain:	
57.72(c)(1)	The name of the applicant and the address of its principal business office	Siting Application
57.72(c)(2)	The name, title and business address of the attorney of the applicant and the person authorized to receive notice and communications with respect to the application if other than the attorney of the applicant.	Siting Application
57.72(c)(3)	A general description – not a legal or metes and bounds description – of the proposed route of the HV line, to include the number of route miles, the right-of-way width and the location of the proposed HV line within each city, borough, town and township traversed.	Siting Application Attachment 4 – Section 3.3 Attachment 4 – Tables 4-3 and 4-5
57.72(c)(4)	The names and addresses of known persons, corporations and other entities of record owning property within the proposed right-of-way, together with an indication of HV line rights-of-way acquired by the applicant.	Attachment 4 – Aerial Maps Attachment 6

Administrative Code Section or Statute	PUC Regulation Requirement	Location
57.72(c)(5)	A general statement of the need for the proposed HV line in meeting identified present and future demands for service, of how the proposed HV line will meet that need and of the engineering justifications for the proposed HV line.	Attachment 2
57.72(c)(6)	A statement of the safety considerations which will be incorporated into the design, construction and maintenance of the proposed HV line.	Attachment 5 – Section 3.0 Attachment 11 Attachment 12 Attachment 16
57.72(c)(7)	A description of studies which had been made as to the projected environmental impact of the HV line as proposed and of the efforts which have been and which will be made to minimize the impact of the HV line upon the environmental and upon scenic and historic areas, including but not limited to impacts, where applicable, upon land use, soil and sedimentation, plant and wildlife habitats, terrain, hydrology and landscape.	Attachment 3 Attachment 4 – Section 4.0 Attachment 8 Attachment 14 Attachment 15
52.72(c)(8)	A description of the efforts of the applicant to locate and identify archaeologic, geologic, historic, scenic or wilderness areas of significance within 2 miles of the proposed right-of-way and the location and identity of the areas discovered by the applicant.	Attachment 3 – Sections 2.0 through 3.0 Attachment 3 – Figures 3-2 through 3-7 Attachment 4 – Section 4.0 Attachment 4 – Figures 4-4 through 4-9 Attachment 15
57.72(c)(9)	The location and identity of airports within 2 miles of the nearest limit of the right-of-way of the proposed HV line.	Attachment 3 – Section 2.1.2 Attachment 4 – Section 4.2.1 Attachment 4 – Figure 4-5A through Figure 4-5C

Administrative Code Section or Statute	PUC Regulation Requirement	Location
		Attachment 4 – Aerial Maps
57.72(c)(10)	A general description of reasonable alternative routes to the proposed HV line, including a description of the corridor planning methodology, a comparison of the merit and detriments of each route, and a statement of the reasons for selecting the proposed HV line route.	Attachment 4
57.72(c)(11)	A list of the local, State and Federal governmental agencies which have requirements which shall be met in connection with the construction or maintenance of the proposed HV line and a list of documents which have been or are required to be filed with those agencies in connection with the siting and construction of the proposed HV line.	Attachment 7
57.72(c)(12)	The estimated cost of construction of the proposed HV line, and the projected date for completion.	Siting Application Attachment 2 – Section 1.0 Attachment 4 – Section 1.2
57.72(c)(13)	The following exhibits:	
57.72(c)(13)(i)	A depiction of the proposed route on aerial photographs and topographic maps of suitable detail.	Attachment 4 – Aerial Maps Attachment 4 – Figure 4-5A through Figure 4-5C
57.72(c)(13)(ii)	A description of the proposed HV line, including the length of the line, the design voltage, the size, number and materials of conductors, the design of the supporting structures and their height, configuration and materials of construction, the average distance between supporting structures, the number of supporting structures, the line to structure clearances and the minimum conductor to ground clearances at mid-span under normal load and average weather conditions and under predicted extreme load and weather conditions.	Siting Application Attachment 5
57.72(c)(13)(iii)	A simple drawing of a cross section of the proposed right-of-way of the HV line and any adjoining rights-of-way showing the placement of the supporting structures at typical locations, with the height and	Attachment 5 – Figure 5-1 through Figure 5-3

Administrative Code Section or Statute	PUC Regulation Requirement	Location
	width of the structures, the width of the right-of-way and the lateral distance between the conductors and the edge of the right-of-way indicated	
57.72(c)(13)(iv)	A system map which shows in suitable detail the location and voltage of existing transmission lines and substations of the applicant and the location and voltage of the proposed HV line and associated substations.	Attachment 2
57.72(c)(14)	A statement identifying litigation concluded or in progress which concerns property or matter relating to the proposed HV line, right-of-way route or environmental matters.	Siting Application
57.72(c)(15)	Additional information as the Commission may require.	N/A
57.74(a)	(a) *Filing.* The applicant shall file with the Commission the original and six copies of the application. An affidavit of service showing the identity of those served under subsections (b) and (c) shall accompany the original and the copies of the application filed with the Commission.	Siting Application Notice of Filing Certificate of Service
57.74(b)	(b) *Copies.* At the time of filing, the applicant shall serve a copy of the application by registered or certified mail, return receipt requested, upon the following: (1) The chief executive officer, the governing body and the body charged with the duty of planning land use in each city, borough, town, township and county in which any portion of the HV line is proposed to be located. (2) The president of the public utility, other than the applicant, in whose service territory any portion of the HV line is proposed to be located. (3) The Department of Environmental Resources, Attention: Bureau of Environmental Planning; Post Office Box 2357, 101 S. Second Street, Harrisburg, Pennsylvania, 17120. (NOTE: now Department of Environmental Protection at different Harrisburg office).	Siting Application Certificate of Service
57.74(c)	(c) *Notice.*	Siting Application

Administrative Code Section or Statute	PUC Regulation Requirement	Location
	(1) At the time of filing, the applicant shall serve a notice of filing and a map of suitable detail showing the proposed route of the proposed facility by registered or certified mail, return receipt requested, upon the following: (i) The Secretary of the Department of Transportation, Room 1200 Transportation and Safety Building, Harrisburg, Pennsylvania 17120. (ii) The Chairman of the Historical and Museum Commission, Post Office Box 1026, Harrisburg, Pennsylvania 17120. (iii) Other local, State or Federal agencies designated in § 57.72 (c)(11)(relating to form and content of application). (iv) The persons, corporations, and other entities designated in § 57.72(c)(4), unless they are served with a copy of the application under § 57.75(i) (relating to hearing and notice).	Notice of Filing Certificate of Service
57.74(c)	(2) The notice of filing shall contain a statement identifying the filing, the date on which the filing was or is to be made, a description of the proposed line, the design voltage, the number of route miles, the right-of-way width and the location of the proposed HV line within each township traversed and a statement that a copy of the application is available for public examination as provided in subsection (d).	Notice of Filing
57.74(d)	(d) *Examination.* On the day of filing of the application, the applicant shall make a copy of the application available for public examination during ordinary business hours at a convenient location within a county in which any part of the proposed HV will be located.	Attachment 10
57.74(e)	(e) *Additional notice.* The applicant shall provide an additional notice and shall serve such additional copies of the application without cost as the Commission may require.	N/A
69.3102(a)	(a) Applications for electric transmission siting authority should provide the following information with the initial application for siting approval demonstrating its efforts to fully notify landowners who are either owners of land that will be purchased for the transmission project or will be subject to right of way/easement requirements:	Attachment 16

Administrative Code Section or Statute	PUC Regulation Requirement	Location
	(1) A Code of Conduct/Internal Practices governing the manner in which public utility employees or their agents interact with landowners along proposed rights of way. (2) Copies of information provided to landowners by the public utility of any publicly disseminated notices advising landowners to contact the Commission or the Office of Consumer Advocate (OCA) in the event of improper land agent practices. (3) Copies of all notices sent under § 57.91 (relating to disclosure of eminent domain power of electric utilities).	
69.3102(b)	(b) Applicants for transmission siting authority should serve a copy of the Code of Conduct on all landowners along the proposed route whose property is to be purchased, subject to easement rights or borders the transmission corridor. The Code of Conduct should also be available on the applicant's website.	Attachment 16
69.3102(c)	(c) Applicants for transmission siting authority should provide prior notice to the Commission's Office of Communications of informational presentations to community groups by the public utility scheduled after the filing of the transmission siting application so that the Commission, OCA and other interested parties can attend meetings or obtain copies of information being disseminated at the presentations.	N/A
69.3103	Applicants for eminent domain authority should follow the following requirements and provide the following information as part of the application: (1) Applicants for transmission siting authority should file applications for all known eminent domain authority as separate filings, but simultaneously with the associated transmission siting applications. Testimonial evidence in support of an eminent domain application should be filed with the application. Subsequent eminent domain authority applications	N/A

Administrative Code Section or Statute	PUC Regulation Requirement	Location
	should be filed as soon as reasonably known during the course of the transmission siting application. (2) As part of an eminent domain application, the public utility applicant should present, for those properties subject to condemnation at the time the transmission siting application is filed or later in the siting proceeding, the reason for the exercise of condemnation power for each property and the precise location of the affected property. Supporting maps or legal descriptions of the property to be condemned should be supplied to the extent feasible. Submission of information pursuant to this guideline should be consistent with the filing requirements for the exercise of eminent domain powers under 26 Pa.C.S. § 302(b)(5) (relating to declaration of taking). (3) A public utility transmission siting application should include a summary status report for those properties along the proposed transmission route where negotiations for either property acquisition or rights of way/easements may be ongoing. This information should be supplemented as requested by the administrative law judge or the parties during the course of the transmission siting proceeding.	
69.3104	Applications for exemption from municipal zoning requirements should provide the following information with the application: (1) Copies of comprehensive land use plans, zoning ordinances and other documentation relevant to the buildings affected by the exemption request. This information may be filed in either hard copy or electronic format. (2) Provision of metes and bounds or site maps of building sites. (3) A procedure for providing notice to affected municipalities of the request for exemption.	N/A
69.3105(1)	Applications for the siting of electric transmission lines should provide the following information as part	Attachment 3 Attachment 4

Administrative Code Section or Statute	PUC Regulation Requirement	Location
	of the § 57.72(c) (relating to form and content of application) requirements: (1) Transmission applicants should utilize a combination of transmission route evaluation procedures including high-level GIS data, traditional mapping (including United States Geological Survey data and compilation), aerial maps and analysis of physical site specific constraints raised by affected landowners. (2)	
69.3105(2)	Applications for the siting of electric transmission lines should provide the following information as part of the § 57.72(c) (relating to form and content of application) requirements: (2) Transmission applicants should summarize the status of property acquisitions (including fee simple acquisitions and rights of way/easements) as part of the application. The applicant should provide the current status and continuing updates on property acquisition litigation or settlements during the course of the siting proceeding.	Attachment 5
69.3105(3)	Applications for the siting of electric transmission lines should provide the following information as part of the § 57.72(c) (relating to form and content of application) requirements: (3) In providing information regarding the reasonable alternative routes, the utility actively considered in its final phase of the route selection process, and the relative merits of each, in accordance with § 57.72(c)(10), the applicant should include the following information: (i) The environmental, historical, cultural and aesthetic considerations of each route. (ii) The proximity of these alternative routes to residential and nonresidential structures.	Attachment 3 Attachment 4

Administrative Code Section or Statute	PUC Regulation Requirement	Location
	(iii) The applicant's consideration of relevant existing rights of way. (iv) The comparative construction costs associated with each route.	
69.3106	Applications for siting of electric transmission lines should include as part of the filing requirement under § 57.72(e)(7) the following information: A matrix or list showing all expected Federal, state and local government regulatory permitting or licensing approvals that may be required for the project at the time the application is filed, the issuing agency, approximate timeline for approval and current status. The applicant should provide an update on the status of the regulatory permitting/licensing approvals as the case progresses.	Attachment 7
69.3107(a)	(a) *Interim guidelines for the use of herbicides and pesticides.* Applicants for transmission line siting authority should provide a detailed vegetation management plan that includes the following components: (1) A general description of the utility's vegetation management plan. (2) Factors that dictate when each method, including aerial spraying, is utilized. (3) Vegetation management practices near aquatic and other sensitive locations. (4) Notice procedures to affected landowners regarding vegetation management practices. (5) Provision of a copy of a landowner maintenance agreement that describes the duties and responsibilities of landowners and the utility for vegetation management to the extent utilized.	Attachment 12

Administrative Code Section or Statute	PUC Regulation Requirement	Location
69.3107(b)	(b) *Interim guidelines for Electromagnetic Field (EMF) impacts.* Transmission siting applications should include the following: A description of the EMF mitigation procedures that the utility proposes to utilize along the transmission line route. This description should include a statement of policy approach for evaluating design and siting alternatives and a description of the proposed measures for mitigating EMF impacts.	Attachment 5 Attachment 11 Attachment 13 Attachment 16

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 2

ATTACHMENT 2
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
NECESSITY STATEMENT

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1.0 INTRODUCTION

PPL Electric Utilities ("PPL Electric") is requesting Pennsylvania Public Utility Commission ("PUC" or "the Commission") approval to build a new single circuit 115 kV transmission line for approximately 3.9 miles between the Williams Grove 230-69 kV Substation ("Williams Grove Substation") in Cumberland County and Mid-Atlantic Interstate Tranmission's ("MAIT") Allen 115-13kV Substation ("Allen Substation") in Cumberland County, Pennsylvania (the "Project"). PPL Electric herein seeks Commission approval for the construction of the 115 kV transmission line necessary to interconnect MAIT's Allen Substation to PPL Electric's Williams Grove Substation. The Project is required to resolve reliability issues, as determined by PJM Interconnection LLC ("PJM") on MAIT's 115 kV system, as described herein.

In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues MAIT's 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations.[1] PJM received ten proposals specifically to address the reliability concerns on MAIT's 115 kV system. After evaluation and review with stakeholders, PJM selected PPL Electric's Proposal 99 (i.e., the Project), because the solution solved the reliability issues, provided greater operational flexibility, was cost competitive, and utilized existing substations. PPL Electric's Proposal 99 addressed PJM need by proposing to construct a new, single-circuit 115 kV transmission line in Cumberland County, Pennsylvania between PPL Electric's existing Williams Grove Substation, located off Fisher Road located in Upper Allen Township and the MAIT-owned Allen Substation, located along Park Place in Monroe Township. The Allen Substation will be modified to a four-breaker ring bus arrangement to accommodate the new 115 kV transmission line.

Subject to the Commission's approval, construction of the Project will begin in Fall 2025 to support an in-service date of Spring 2026. PPL Electric will own, operate, and maintain the new 115 kV transmission line. The total estimated cost of this Project (not including MAIT's work at Allen

[1] PPL Electric understands that are critical customers served downstream of these MAIT-owned substations: (1) Round Top serves 8 critical customers; (2) Allen serves 5 critical customers; (3) Dillsburg serves 13 critical customers; (4) PPGI serves 0 critical customers; and (5) Gardners serves 4 critical customers. However, PPL Electric notes that these critical customers are not PPL Electric distribution customers.

Substation), as described below, is approximately $23.14 million, and the cost for the Project will be allocated to MAIT customers.[2]

2.0 TRANSMISSION SYSTEM PLANNING PROCESS

The nation's interconnected transmission grid serves as the backbone for the safe and reliable delivery of large amounts of electricity from generating stations over substantial distances to customers served by transmission and local distribution systems. It is critically important that this interconnected transmission system (*i.e.*, the "Transmission Grid") be planned and designed to ensure that reliable electric service can be provided under all loading conditions and when certain elements of the Transmission Grid are out of service (system contingencies) due to planned or unplanned outages.

Robust Transmission Planning ensures that the transmission system can supply electricity to all customer loads in a manner that is reliable and economical. This System Planning process ensures that both the Bulk Electric System ("BES")[3] and non-Bulk Electric System ("non-BES")[4] are planned and constructed so that:

- They can accommodate forecasted system flows during summer and winter peak load;
- They can adequately serve each customer's need regarding capacity, voltage, and reliability for all load levels throughout the daily load cycle;
- They can sustain probable contingencies and disturbances with minimal customer service interruptions; and
- They are in conformance with North American Electric Reliability Corporation ("NERC"), PJM, and the Transmission Owner's reliability criteria for all normal and emergency operating conditions.

PJM is a Federal Energy Regulatory Commission ("FERC")-approved Regional Transmission Organization ("RTO") charged with ensuring the reliability of the electric transmission system under its functional control (100 kV and above) and coordinating the movement of electricity in all or parts of

[2] The estimated cost was developed using preliminary engineering and initial field investigations. The cost is subject to change as engineering, constructability analysis of the Project, sequence of construction, and other factors that may affect cost are identified and analyzed as the Project progresses.

[3] BES – Includes transmission facilities operated at voltages of 100 kV or higher.

[4] non-BES – Includes transmission facilities operated at voltages less than 100 kV.

thirteen states and the District of Columbia, including Pennsylvania. To ensure reliable transmission service, PJM prepares an annual Regional Transmission Expansion Plan ("RTEP")[5] to identify system reinforcements that are required to, among other things, meet the NERC Reliability Standards, PJM reliability planning criteria, and Transmission Owner reliability criteria.

When PJM's Reliability Analysis identifies a need to solve a reliability issue on electric transmission facilities, PJM opens a Proposal Window to solicit the submittal of potential solutions (i.e., reliability projects) to address those needs.

The reliability projects that are selected through PJM's Reliability Window are presented to stakeholders and recommended to the PJM Board of Managers ("PJM Board") for approval. If approved, such reliability projects are included in the RTEP as Baseline Projects.

Importantly, pursuant to Schedule 6 of PJM's Amended and Restated Operating Agreement, after the PJM Board approves a proposed reliability project, the successful project proponent is obligated to complete the project once PJM and the successful entity execute a Designated Entity Agreement or a Construction Responsibility Letter, which specifically designates the entity or entities having construction responsibility for the project.

3.0 THE NEED FOR THE PROJECT

3.1 Existing System

MAIT provides transmission service in portions of Adams, Cumberland, and York counties from a 115 kV network system. The 115 kV network feeds multiple MAIT substations in the area, including Round Top, Allen, Dillsburg, PPGI, and Gardners.[6] The 115 kV network lines are mainly supplied by the

[5] PJM's RTEP process is currently set forth in Schedule 6 of PJM's Amended and Restated Operating Agreement ("Schedule 6"). Schedule 6 governs the process by which PJM's members rely on PJM to prepare an annual regional plan for the enhancement and expansion of the transmission facilities to ensure long-term, reliable electric service consistent with established reliability criteria. In addition, Schedule 6 addresses the procedures used to develop the RTEP, the review and approval process for the RTEP, the obligation of transmission owners to build transmission upgrades included in the RTEP, and the process by which interregional transmission upgrades will be developed.

[6] PPL Electric understands from MAIT the following counts of downstream customers served by each of these substations. The Round Top Substation serves 2,538 downstream customers. The Allen Substation serves 4,939 downstream customers. The Dillsburg Substation serves 6,422 downstream customers. The PPGI Substation serves 1 downstream customer. The Gardners Substation serves 5,978 downstream customers.

MAIT-owned Hunterstown 500 kV/230 kV/115 kV and Middletown Junction 230 kV/115 kV substations.

PPL Electric operates a 230 kV network system to supply 230 kV-69 kV substations in Cumberland County. The 230 kV transmission lines connect the PPL Electric-owned Cumberland, Williams Grove, West Shore, and Brunner Island substations. The 230 kV lines also connect with MAIT at Middletown Junction Substation. PPL Electric's transmission lines and territory are located north of MAIT's 115 kV system. There are presently no existing 115 kV ties between PPL Electric and MAIT's systems.

A one-line diagram of the existing 230 kV and 115 kV system is provided as **Figure 2-1**. A map of the existing system alignment is provided as **Figure 2-2**.

3.2 Project Need

In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the MAIT 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations. PJM received ten proposals specifically to address the reliability concerns on MAIT's 115kV system.

4.0 ALTERNATIVES

A total of 10 potential solutions were submitted to address the voltage violations on the MAIT 115 kV system. PPL Electric submitted four potential solutions and six proposals were submitted by outside entities. PPL Electric's four solutions included the following:

(1) PPL Electric Proposal 99 – install a 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation and extend a single circuit 115 kV transmission line to MAIT's Allen Substation. MAIT to modify Allen Substation to a four-breaker ring configuration (i.e., the Proposed Solution).

(2) PPL Electric Proposal 992 – install a 230 kV/115 kV transformer at Williams Grove Substation and extend a single circuit 115 kV transmission line to Allen Substation. PPL Electric to build, own, and operate a new 115 kV four-breaker ring configuration switchyard immediately north of Allen Substation.

(3) PPL Electric Proposal 457 – install a 69 kV/115 kV transformer at Williams Grove Substation and extend a single circuit 115 kV transmission line to Allen Substation. MAIT to modify Allen Substation to a four-breaker ring configuration.

(4) PPL Electric Proposal 561 – install a 69 kV/115 kV transformer at Williams Grove Substation and extend a single circuit 115 kV transmission line to Allen Substation. PPL Electric to build, own, and operate a new 115 kV four-breaker ring configuration switchyard immediately north of Allen Substation.

The PPL Electric proposals solved the voltage reliability issues, increased operational flexibility, and utilized existing substations with just the new 115 kV line being greenfield work. **Table 2-1** provides the PJM summary of all the proposals received. **Table 2-2** provides a summary of PJM's constructability review. The constructability review is part of the PJM process for selecting a Preferred Route. PJM ranked Project 99 high because it was the best solution for minimizing overall new impacts to the existing landscape and had the highest cost/benefit ratio when evaluating the voltage reliability issues on MAIT's system.

Table 2-1: PJM RTEP 2021 Window 1 Cluster No 2 Alternative Analysis

2021 RTEP Window 1 Cluster No. 2

MetEd Transmission Zone: Baseline
Reliability & Operational Flexibility Performance

PJM Proposal ID	Project Description	Proposer Cost Estimate ($M) Current-Year	Reliability Assessment		Operational Flexibility	Market Efficiency	Detailed Constructability Performed	Comments
			Addressed Identified Flowgates	Did the solution cause harm	Operational Flexibility Impact	Provides ME Benefit		
292	Dogwood Run 115/230kV Transmission Project	$15.10	Yes	No	Medium	Negligible	Yes	Does not enhance operational flexibility, as the Allen 115 kV configuration remains the same - The Allen substation will be dropped for faults on terminating lines (Tapped Sub)
582	Dogwood Sprint 115/500kV Transmission Project	$21.58	Yes	No	Medium	N/A	Yes	Does not enhance operational flexibility, as the Allen 115 kV configuration remains the same - The Allen substation will be dropped for faults on terminating lines (Tapped Sub)
561	Williams Grove - Allen 115 kV line upgrade sourced from Williams Grove 69 kV bus (PPL-Allen Switchyard)	$15.62	Yes	No	Medium	N/A		This project is similar to ID 457, with the exception of the new 115 kV substation will be constructed by PPL. The additional feed to Allen 115 kV is from 69 kV PPL system.
992	Williams Grove - Allen 115 kV line upgrade sourced from Williams Grove 230 kV bus (PPL-Allen Switchyard)	$18.57	Yes	No	High	N/A		The project is similar to ID 99, with the exception of the new 115 kV substation will be constructed by PPL (additional greenfield)
386	Multi-Driver Project: Allen-Williams Grove Greenfield Line & Reconductor	$20.25	Yes	No	Low	N/A		This project is similar to ID 113 (lacks operational flexibility), with additional work to solve Market Efficiency need. The ME need is already addressed independently.
113	Allen-Williams Grove Greenfield Line	$12.03	Yes	No	Low	N/A		The project doesn't enhance operational flexibility due to the proposed configuration (single breaker connection) at Allen 115 kV
789	New Allen 115 kV Source	$28.54	Yes	Yes	High	N/A		The project causes a new violation.
477	Northern Loop STATCOM	$32.16	Yes	No	Low	N/A		The project doesn't enhance operational flexibility.
457	Williams Grove - Allen 115 kV line upgrade sourced from Williams Grove 69 kV bus (FE-Allen Switchyard)	$15.27	Yes	No	Medium	N/A		The additional feed to Allen 115 kV is from 69 kV PPL system
99	Williams Grove - Allen 115 kV line upgrade sourced from Williams Grove 230 kV bus (FE-Allen Switchyard)	$17.82	Yes	No	High	Negligible	Yes	Provides the most operational flexibility due to the Allen 115 kV proposed configuration

Table 2-2: PJM RTEP 2021 Window 1 Cluster No 2 Cost and Constructability Review

2021 RTEP Window 1 Cluster No. 2

MetEd Transmission Zone: Baseline Cost and Constructability Study Result

Independent Cost and Constructability review was performed for the following projects.

PJM Proposal ID	Project Description	Proposer Total * Project Cost ($M)	Proposer Project * Cost Cap ($M)	Cost Cap Exclusions	Independent Total* Project Cost ($M)	Independent Cost* Overrun Scenario ($M)	Quality of Proposal	Proposal Completeness	Environmental & Siting / Permitting Risks	Project Development Risk	Independent Constructability Findings
292	Dogwood Run 115/230kV Transmission Project	$17.08[1]	$19.00	1. Scope of Work change 2. Uncontrollable Force 3. O&M costs 4. Capital upgrades occurring after Project is initially placed in service	$18.80	$21.20	Low	No	Medium	Medium	> Line: Uses Greenfield > Substation: Greenfield > Didn't include remote end relay and interconnection metering consideration. > Proposal Deficiency: >No High side transformer protection (breaker)
582	Dogwood Sprint 115/500kV Transmission Project	$24.44[2]	$27.30	1. Scope of Work change 2. Uncontrollable Force 3. O&M costs 4. Capital upgrades occurring after Project is initially placed in service	$33.52	$33.40	Low	Yes	Medium	High	> Line: Uses Greenfield > Substation: Greenfield > Didn't include remote end relay and interconnection metering consideration. > Project utilizes First Energy ROW for substation siting. > Least detailed proposal
99	Williams Grove - Allen 115 kV line upgrade sourced from Williams Grove 230 kV bus (FE-Allen Switchyard)	$19.76[3]	$12.65	1. Change in law. 2. Change in ISO req'ts 3. Force Majeure 4. Legal Fees & Expenses 5. Charges associated with acceleration of work before commercial ops.	$21.81	$23.30	High	Yes	Low	Low	> Line: Uses Greenfield > Substation: Upgrade Construction > Most detailed proposal and accounts for existing substation design/expansion requirements

Notes: *All costs in In-Service Year $
1. Project 292 Capped Component Costs are $15.07M
2. Project 582 Capped Component Costs are $22.60M
3. Project 99 Capped Component Costs are $12.65M

Continue on next page …

5.0 PROPOSED SOLUTION

After evaluation and review with stakeholders, PJM selected Proposal 99 (i.e., the Project) because PPL Electric's proposal solved the reliability issues, provided greater operational flexibility, was cost competitive, and utilized existing substations. On July 13, 2022, the PJM Board approved the Project as a Baseline Upgrade with number B3715. The Project addressed the PJM need by proposing to construct a new, single-circuit 115 kV transmission line in Cumberland County, Pennsylvania between PPL Electric's existing Williams Grove Substation and the MAIT-owned Allen Substation. As part of the Project, PPL Electric will acquire new right-of-way ("ROW") and construct a single circuit 115 kV transmission line for approximately 3.9 miles from Williams Grove Substation to MAIT's Allen substation (PJM baseline number B3715.2). A one-line diagram of the proposed 230 kV system is provided as **Figure 2-3**. A map of the proposed 230 kV and 115 kV system alignment is provided as **Figure 2-4**.

The overall PJM solution, as approved by PJM to resolve the reliability problems on the MAIT 115 kV network system, involves (1) installing a new 300 MVA 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation, (2) building a new 3.9-mile single circuit transmission line to MAIT's Allen Substation, and (3) modifying Allen Substation to a four-breaker ring bus arrangement. As part of the PJM solution, the new 300 MVA 230/115 kV transformer will connect to Williams Grove 230 kV west bus by installing one 230 kV breaker, one 230 kV switch, and associated bus work. The transformer will occupy the third transformer position at Williams Grove Substation. The 115 kV terminal of the transformer will connect to a new 115 kV dead-end through one 115 kV breaker, 115 kV disconnect switch, and associated bus work (PJM baseline number B3715.1).

MAIT will modify the existing Allen Substation to a four-breaker ring bus arrangement and install the dead-end structure to terminate the new 115 kV transmission line (PJM baseline number B3715.3) and PPL Electric will modify the Williams Grove Substation. These substation modifications are not part of this application.

On August 31, 2022, PPL Electric accepted construction responsibility from PJM for PPL Electric to complete the work within Williams Grove Substation and the construction of the 115 kV transmission line scope under PJM baseline numbers B3715.1 and B3715.2. Pursuant to Schedule 6 of PJM's Amended and Restated Operating Agreement, Section 4.2.2 of the PJM Consolidated Transmission

Owners Agreement, and as stated in the Construction Responsibility Letter, PPL Electric is required to complete the Project by June 1, 2026. A Cost Responsibility Letter was executed with MAIT for the Allen Substation scope under PJM baseline number B3715.3.

Figure 2-1: Existing 230 kV and 115kV One Line Diagram

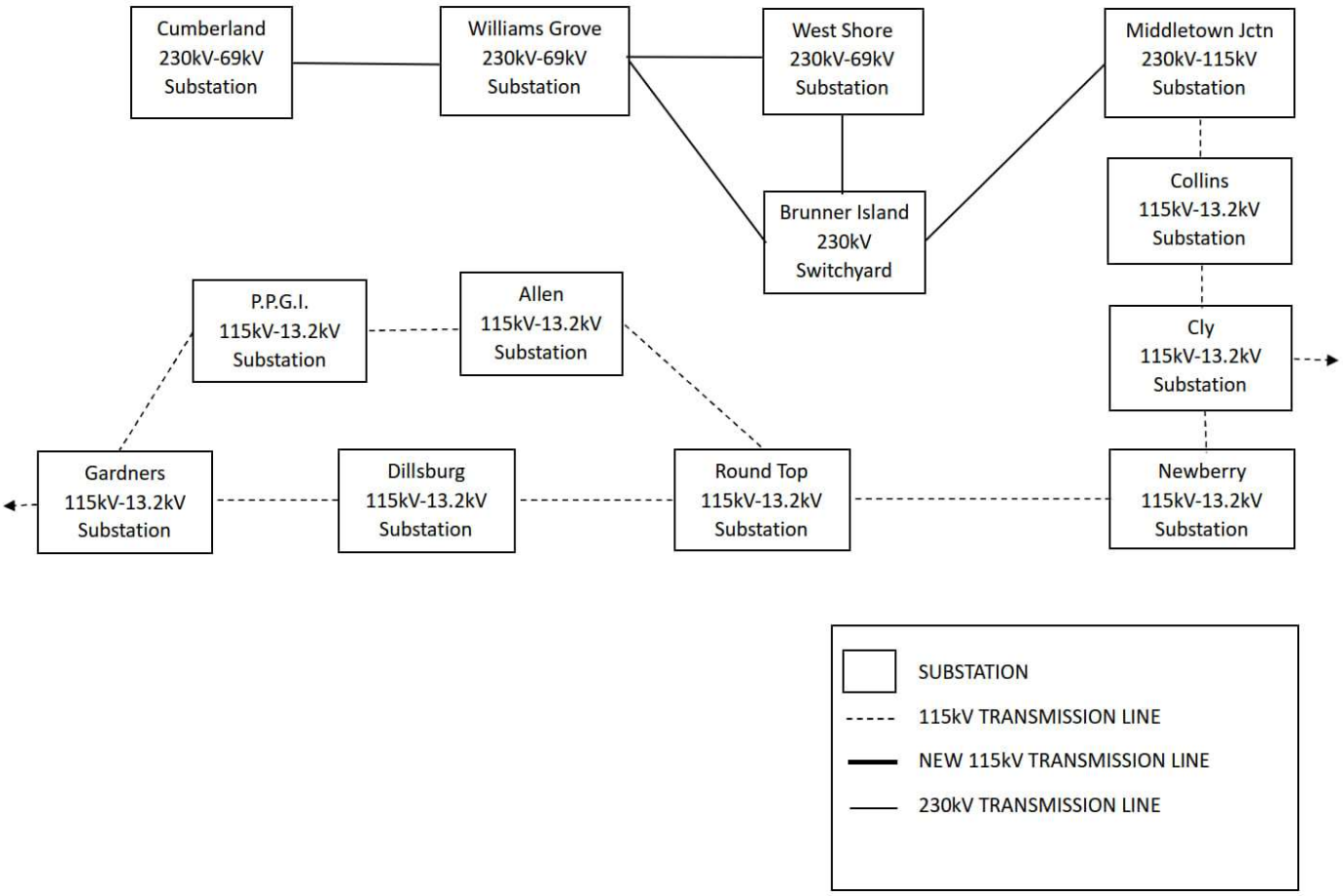
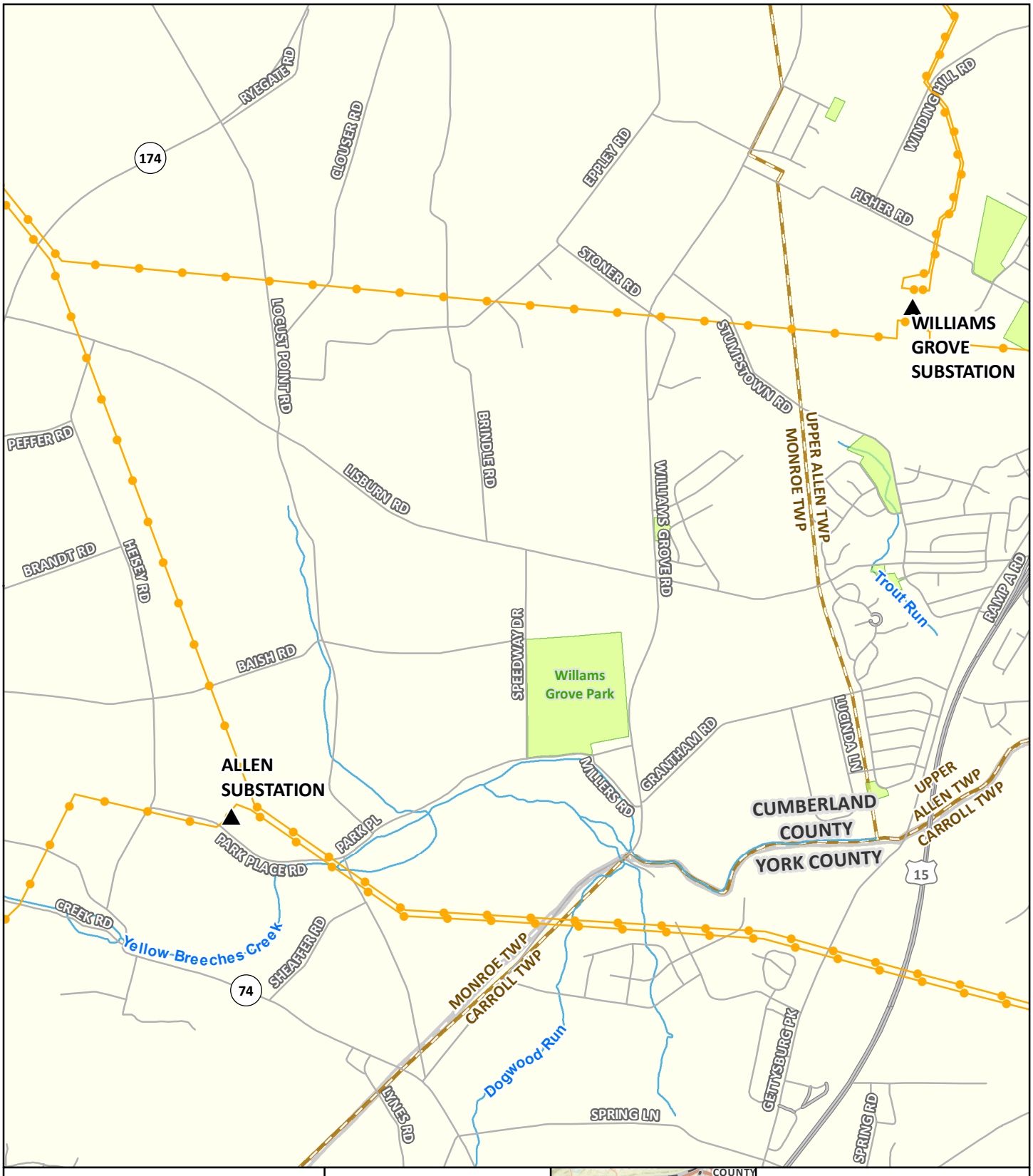


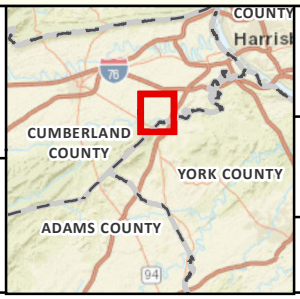
Figure 2-2: Existing System Map



Existing Substation
Existing Transmission Line
Local Park or Recreation Area
Stream
Municipal Boundary
Township Boundary
County Boundary

Sources:
PA DCNR (2015)
Streams (USGS 2022)
Roads, Townships (PASDA 2022)

Coordinate System:
State Plane Pennsylvania South
NAD 1983



Williams Grove - Allen 115 kV Transmission Line Project

Figure 2 - 2: Existing Facilities

0 0.25 0.5 Miles

N

Figure 2-3: Proposed 230 kV and 115 kV One Line Diagram

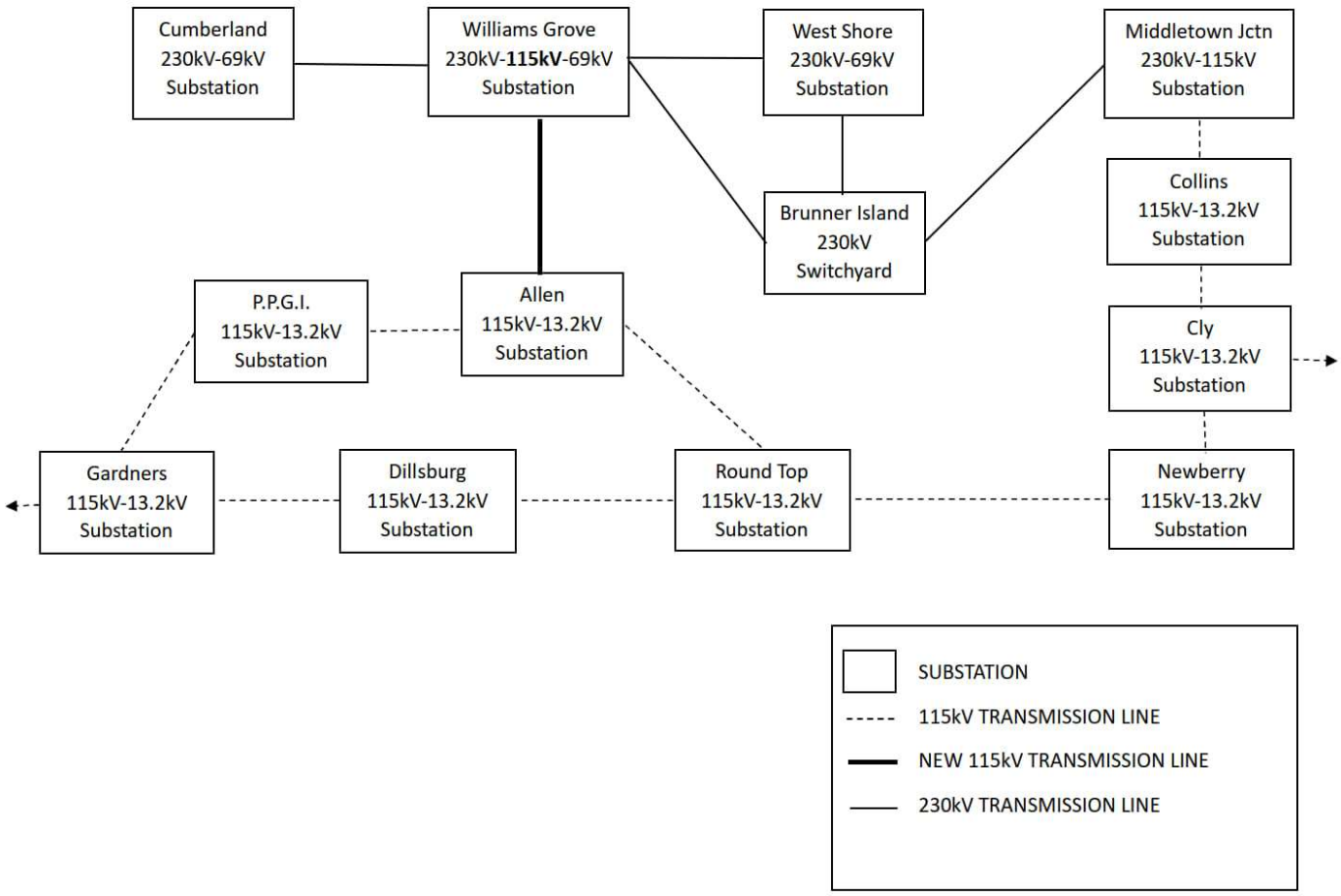
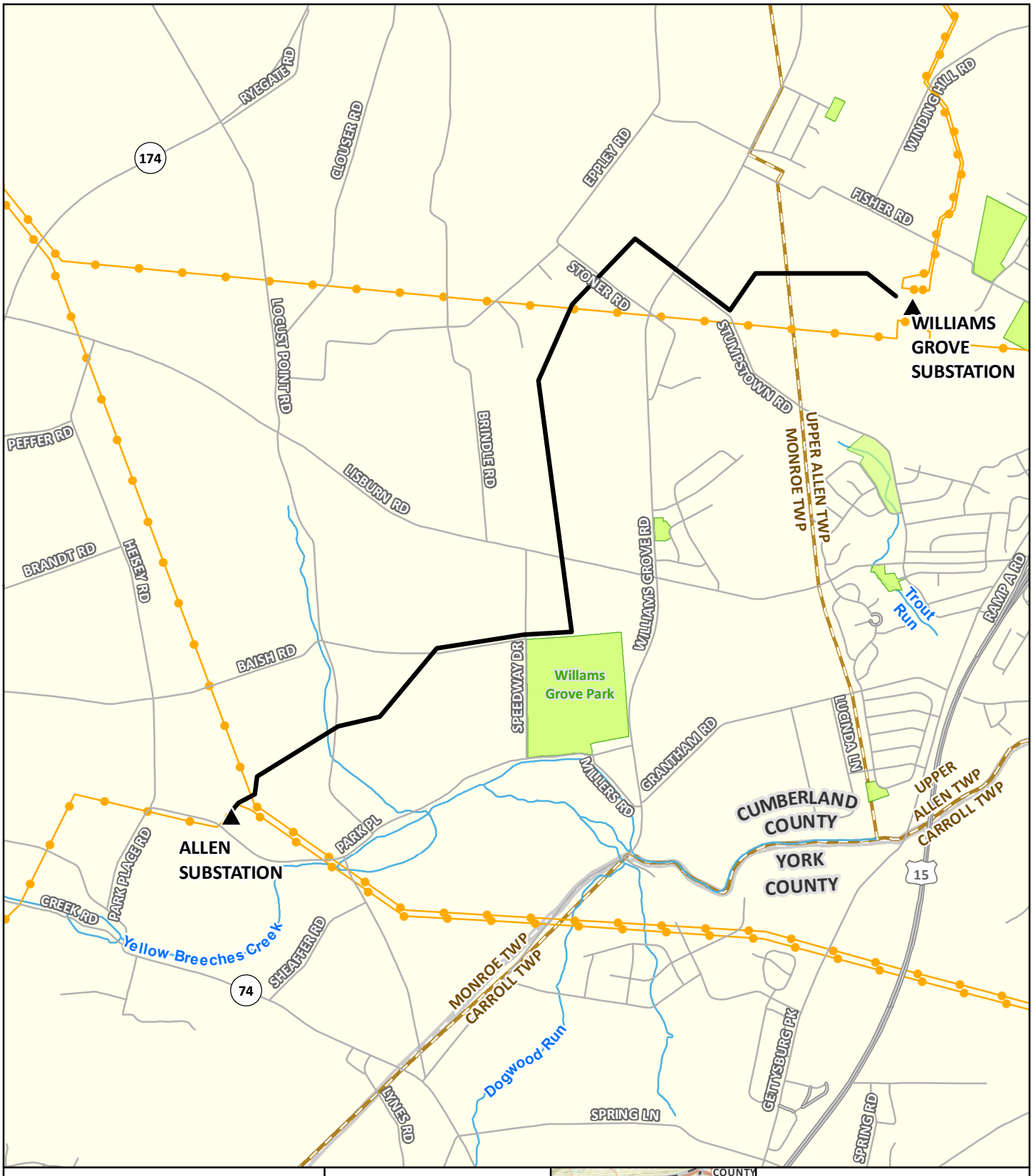


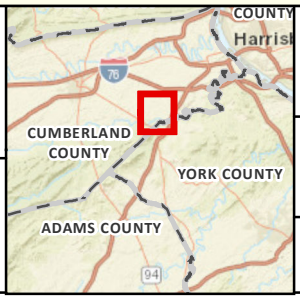
Figure 2-4: Proposed System Map



Existing Substation
Route
Existing Transmission Line
Stream
Local Park or Recreation Area
Township Boundary
County Boundary

Sources:
PA DCNR (2015)
Streams (USGS 2022)
Roads, Townships (PASDA 2022)

Coordinate System:
State Plane Pennsylvania South
NAD 1983



Williams Grove - Allen 115 kV Transmission Line Project

Figure 2 - 4: Proposed Facilities

0 0.25 0.5 Miles

N

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 3

ATTACHMENT 3
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
ENVIRONMENTAL ANALYSIS

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1.0 INTRODUCTION

In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the Mid-Atlantic Interstate Transmission ("MAIT") 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations.

PPL Electric Utilities Corporation ("PPL Electric") submitted four potential solutions to address the voltage violations on the MAIT 115 kV system and were compared by PJM against six proposals submitted by outside entities upon their ability to resolve voltage violations on the MAIT 115 kV system. PJM evaluated all the proposals submitted upon their ability to solve the reliability problems while not adversely affecting the reliability of the transmission system (i.e., "do no harm" evaluation), impact on operational flexibility, and market efficiency improvements. PJM completed a detailed constructability review of the top three proposals. After the evaluation and review with stakeholders PJM selected PPL Electric Proposal 99 as the preferred solution.

PPL Electric Proposal 99 proposed to address the need by constructing a new single-circuit 115 kV transmission line between their existing Williams Grove Substation, located off of Fisher Road, and the MAIT-owned Allen Substation, located along Park Place in Cumberland County, Pennsylvania (the "Williams Grove – Allen 115 kV Transmission Line Project" or "Project").

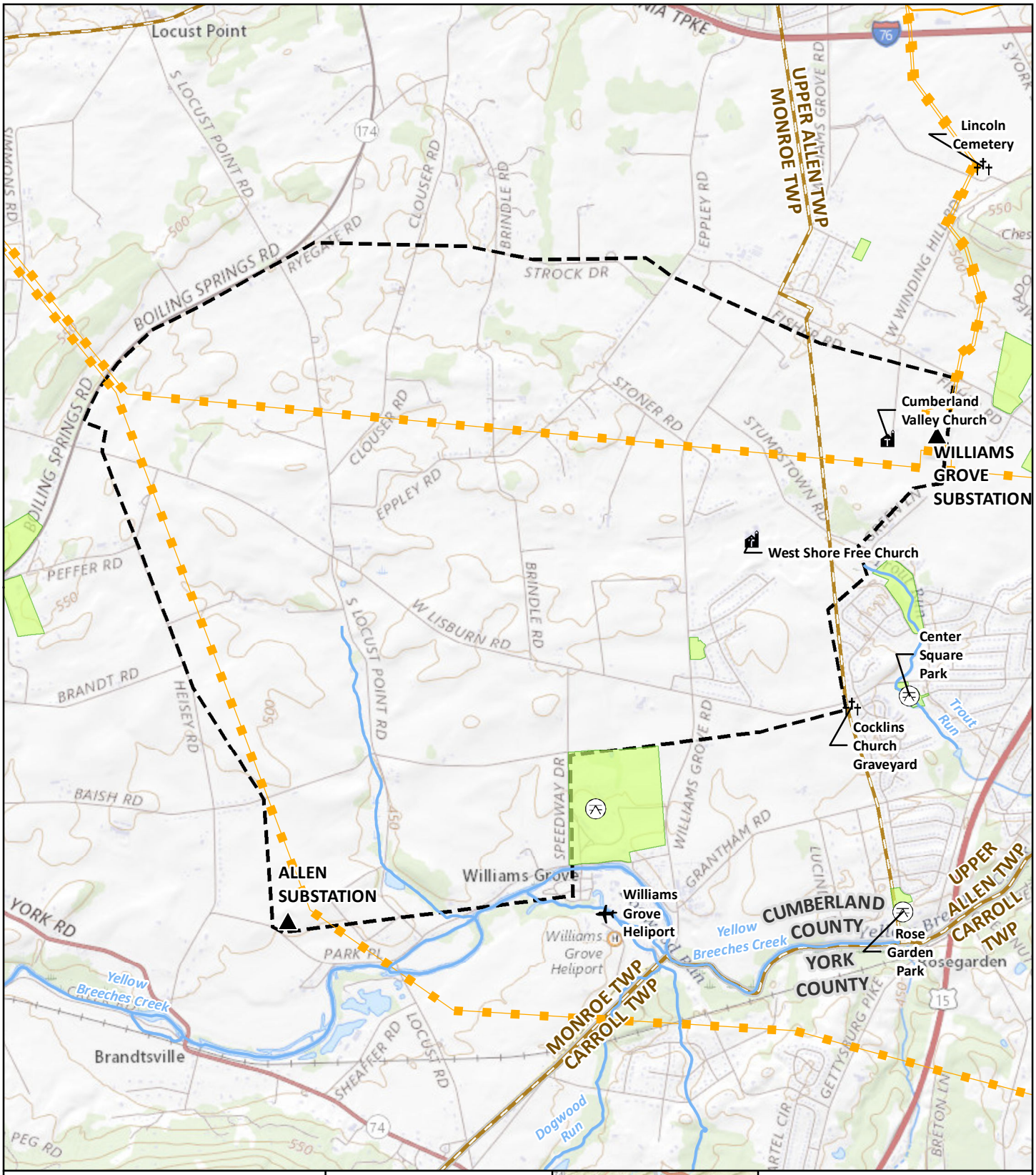
The purpose of this Attachment is to provide background information on the natural and built environment located within the Project Study Area ("Study Area"), which provides the basis for the comprehensive Route Selection Study discussed in **Attachment 4**. The routing process involved a series of steps, including identification of a suitable Study Area; Potential Route development, analysis, and refinement; Alternative Route development; public outreach activities; and identification of Preferred and Alternate routes.

The Routing Team identified a Study Area encompassing approximately 3,340 acres (5.2 square miles) within Monroe and Upper Allen townships in Cumberland County, Pennsylvania (**Figure 3-1**). The Project Study Area is generally bound to the north by the existing PPL Electric

Cumberland – West Shore 230 kV and West Shore – Carlisle #1 230/69 kV transmission lines; to the east by the existing Williams Grove Substation, Williams Grove Road, and Williams Grove Park; to the south by the existing MAIT-owned Allen Substation, Park Place Road, and Yellow Breeches Creek; and to the west by Heisey Road, Boiling Springs Road (State Route 174), and the existing PPL Electric Juniata – Three Mile Island 500 kV Transmission Line.

The Routing Team used many sources of information to evaluate the Study Area including aerial imagery, federal, state, and local Geographic Information System ("GIS") data, U.S. Geological Survey ("USGS") maps, county and municipal planning reports, and field reconnaissance. A detailed list of GIS data sources is provided in **Attachment 4**.

Figure 3-1. Study Area



Sources:
PA DCNR (2015)
USGS (2021)

Coordinate System:
State Plane Pennsylvania South
NAD 1983

Williams Grove - Allen 115 kV Transmission Line Project

Figure 3-1. Study Area

0 0.25 0.5 Miles

N

2.0 BUILT ENVIRONMENT

The built environment includes land use, residential, commercial, and industrial development, institutional uses (e.g., schools, places of worship, cemeteries, and hospitals) and cultural resources. The following sections describe the aspects of the built environment located within the Study Area.

2.1 Land Use

The Study Area predominantly consists of crop land interspersed with residential development. Other land uses in the Study Area include industrial (i.e., substations), forested tracts, streams, and wetlands. The use of such lands and the public's general desire to develop or protect areas are managed by federal, state, and especially local plans, policies, and zoning.

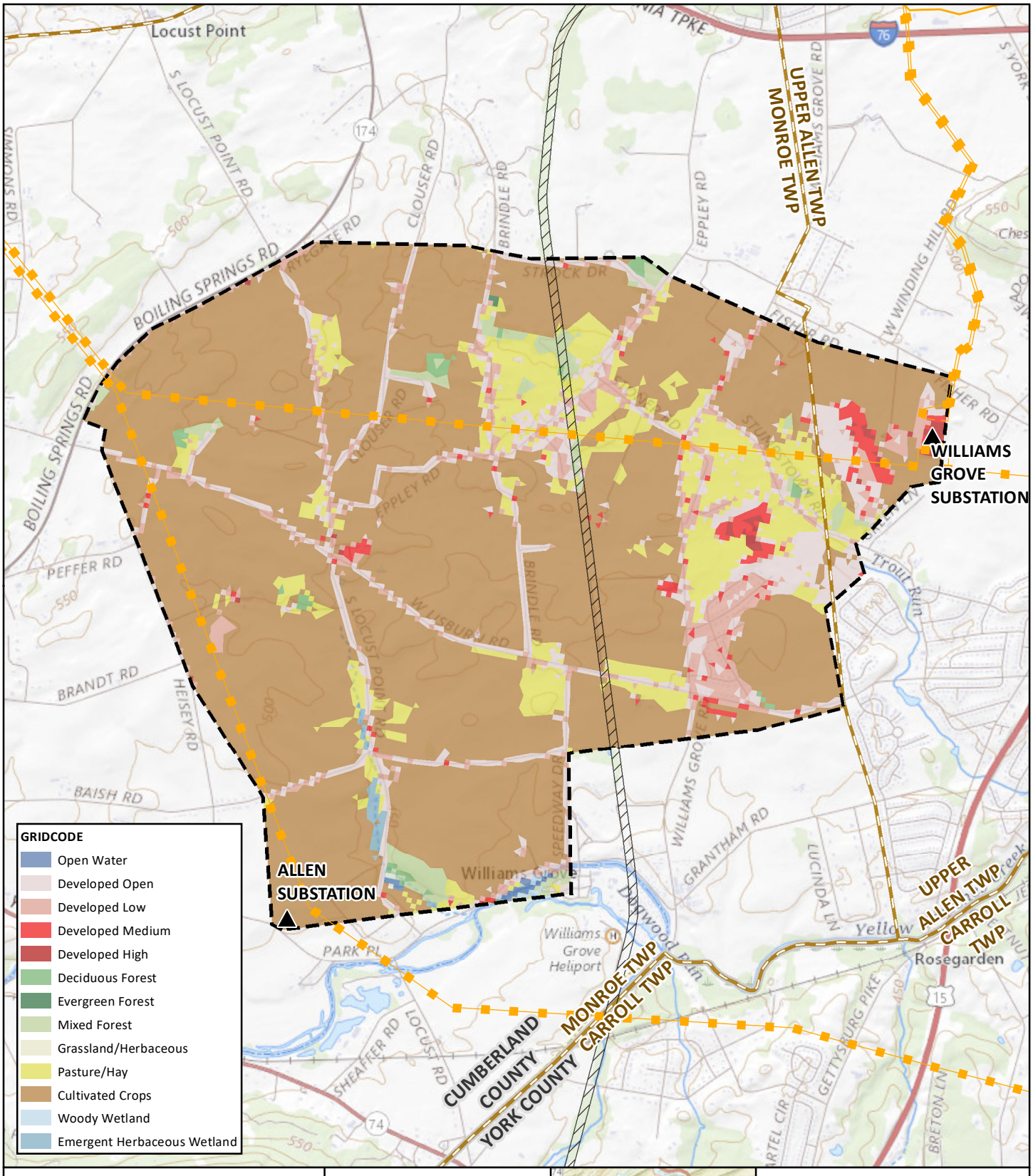
A breakdown of the general classifications of land use (i.e., water/wetlands, developed lands, forest cover, grassland/pasture, cultivated crops) within the Study Area are based on the National Land Cover Database ("NLCD")[1], as presented in **Table 3-1**. General land uses in the Study Area are depicted graphically in **Figure 3-2**.

Table 3-1. Summary of Land Use Types

Land Use Type	Percentage of Land Use within Study Area
Water/Wetlands	0.5%
Developed (Open Space, Low, Medium, and High Intensity)	15.9%
Forest Cover	2.1%
Grassland/Pasture	10.1%
Cultivated Crops	71.4%

[1] Land Use calculations are based on the 2019 NLCD. NLCD is a 16-class land cover classification that has been applied consistently across the conterminous United States at a spatial resolution of 30 meters. NLCD is an industry standard, but due to its large resolution it should be used as a rough approximation of land use.

Figure 3-2. Land Use


Locust Point
S LOCUST POINT RD
BOILING SPRINGS RD
CLOUSER RD
BRINDLE RD
EPPLEY RD
PEFFER RD
BRANDT RD
HEISEY RD
BAISH RD
WILLIAMS GROVE RD
GRANTHAM RD
LUCINDA LN
PARK PL
SHEAFFER RD
GETTYSBURG PIKE
BRETON LN
Trout Run
Yellow Breeches Creek
Williams Grove Heliport
Rosegarden
UPPER ALLEN TWP
MONROE TWP
CARROLL TWP
CUMBERLAND COUNTY
YORK COUNTY
WILLIAMS GROVE SUBSTATION
ALLEN SUBSTATION
GRIDCODE
Open Water
Developed Open
Developed Low
Developed Medium
Developed High
Deciduous Forest
Evergreen Forest
Mixed Forest
Grassland/Herbaceous
Pasture/Hay
Cultivated Crops
Woody Wetland
Emergent Herbaceous Wetland
Existing Substation
Existing Transmission Line
69 kV
230 or 500 kV
Abandoned Railroad Corridor
Study Area
Township Boundary
County Boundary
Sources:
NLCD (USGS 2019)
Coordinate System:
State Plane Pennsylvania South
NAD 1983
PERRY COUNTY
DAUPHIN COUNTY
CUMBERLAND COUNTY
YORK COUNTY
ADAMS COUNTY
Williams Grove - Allen 115 kV Transmission Line Project
Figure 3-2. Land Use
0
0.25
0.5
Miles
N

2.1.1 Forestry Uses

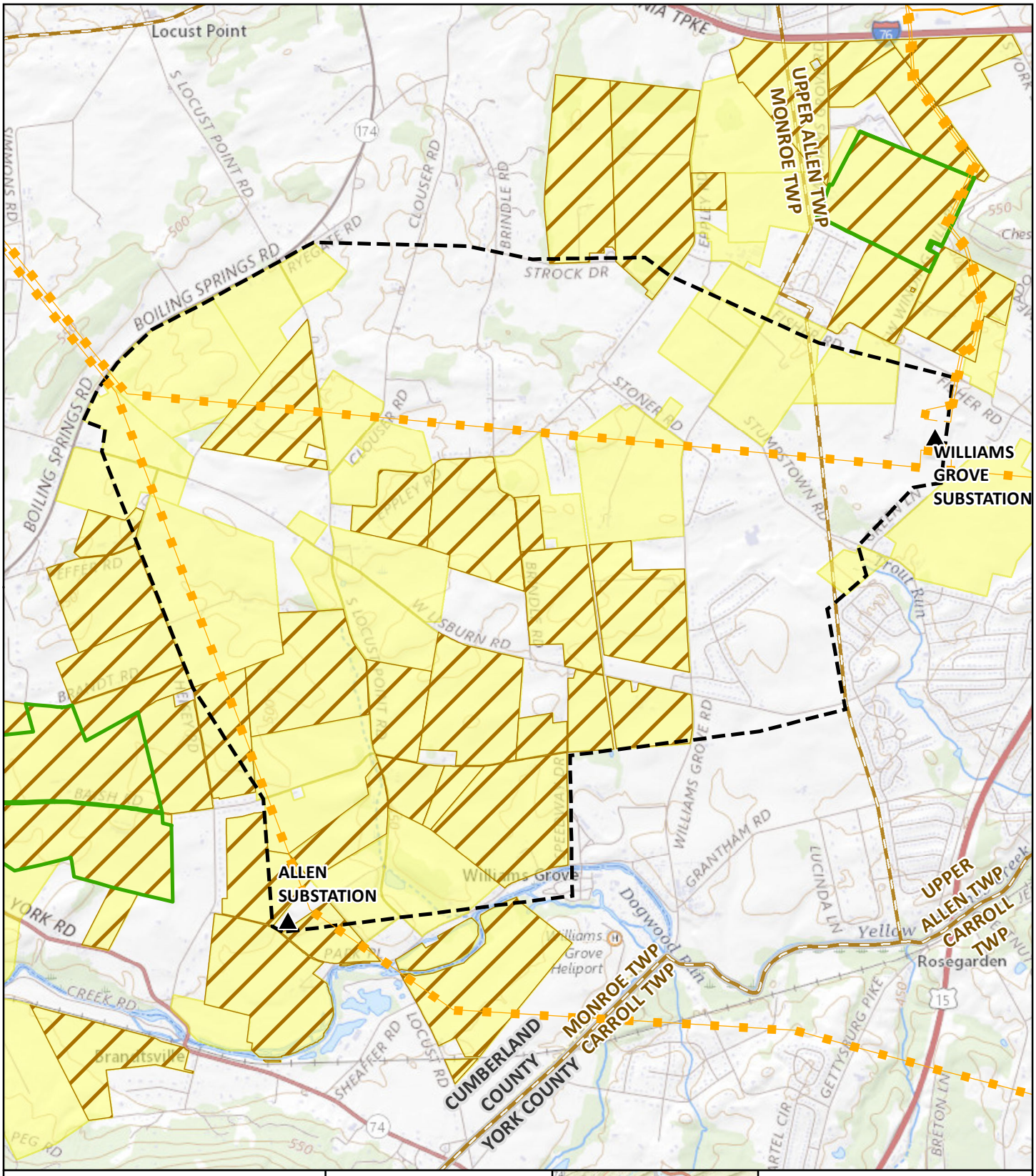
Forested lands also provide habitat for various types of flora and fauna, as well as watershed protection. In residentially developed areas, forest remnants and woodlots serve as landscaping and provide privacy screening. Minimal areas of existing forested cover were identified on private and public properties scattered throughout the Study Area, particularly along Baish Road, Lisburn Road, Locust Point Road, Park Place Road, and Speedway Road. An unnamed orchard is located northeast of Locust Point Road and Baish Road in the southern portion of the Study Area. No state or federal forest lands are located within the Study Area.

2.1.2 Agricultural Uses

Agricultural uses (i.e., crop production, farmland) constitute the predominant land use type throughout the Study Area and represent a significant portion of the local economy. According to 2017 United States Department of Agriculture ("USDA") Census of Agriculture data, farms within Cumberland County produce over $219 million worth of commodities annually (USDA, 2017). Between 1989 and 2020, 20,583 acres of farmland have been preserved in Cumberland County through 187 easements. A total investment of $55 million in federal, state, county, and local funding was utilized to purchase these easements with an additional $4 million pending settlement (Cumberland County, 2020a).

The Pennsylvania Agricultural Security Law of 1981, 3 Pa. C.S. §§ 901-915, provides certain protections for farmland voluntarily enrolled in Agricultural Security Areas ("ASAs") (Pennsylvania Department of Agriculture [PDA], no date). The Pennsylvania Agricultural Conservation Easement ("ACE") Purchase Program, created in 1989, enables state and local governments to pay farmers for agreeing to limit the use of their land to agricultural production or agriculture and related activities (PDA, 2021). The Pennsylvania Farmland and Forest Land Assessment (Clean and Green) Act of 1974, which assists in preserving farmland through setting property taxes by actual land use instead of at the prevailing market rate, has been implemented in Cumberland County since 1977 (Cumberland County, 2000). Designated ASAs and easements in the Study Area are shown on **Figure 3-3**.

Figure 3-3. Agricultural Security Areas and Easements


Locust Point
S LOCUST POINT RD
BOILING SPRINGS RD
CLOUSER RD
BRINDLE RD
STROCK DR
STONER RD
STUMPSTOWN RD
FISHER RD
WILLIAMS GROVE SUBSTATION
UPPER ALLEN TWP
MONROE TWP
WILSBURN RD
GRANTHAM RD
WILLIAMS GROVE RD
LUCINDA LN
Trout Run
Yellow Creek
Rosegarden
ALLEN SUBSTATION
YORK RD
CREEK RD
Williams Grove
Williams Grove Heliport
Dogwood Run
Brandtsville
SHEAFFER RD
LOCUST RD
PEG RD
GETTYSBURG PIKE
BRETON LN
CARTEL CIR
CUMBERLAND COUNTY
YORK COUNTY
MONROE TWP
CARROLL TWP
UPPER ALLEN TWP
CARROLL TWP
Existing Substation
Existing Transmission Line
69 kV
230 or 500 kV
Study Area
Agricultural Conservation Easement
Agricultural Security Area
Federal Agricultural Conservation Easement
Township Boundary
County Boundary
Sources:
PASDA/WeConservePA 2022
Cumberland County 2022
Coordinate System:
State Plane Pennsylvania South
NAD 1983
PERRY COUNTY
DAUPHIN COUNTY
CUMBERLAND COUNTY
YORK COUNTY
ADAMS COUNTY
Williams Grove - Allen 115 kV Transmission Line Project
Figure 3-3. Agricultural Conservation Easements and Security Areas
0
0.25
0.5
Miles
N

ASAs are created by local municipalities in cooperation with individual landowners who agree to collectively place at least 250 acres in an agricultural security area (PDA, 2016). Additionally, the Pennsylvania Agricultural Security Law requires that counties must appoint Agricultural Land Preservation Boards to administer County conservation easement programs (PDA, 2020). Therefore, Cumberland County operates an Agricultural Conservation Easement Purchase Program that works to preserve important agricultural lands through the purchase of agricultural conservation easements.

In accordance with Pennsylvania ASA regulations (7 Pa. Code § 138l.20(b)(4)), Public Utility facilities that have been reviewed and approved by the PUC are permitted within ASAs (PDA, 2008). Public utilities are also permitted in Agricultural Conservation Easements based on the granting of a right of way ("ROW") by the property owner, according to the Agricultural Conservation Easement Purchase Program regulations (7 Pa. Code § 138e.241(2) – Utilities). Cumberland County established its Conservation Easement Program in 1989. The USDA's Natural Resource Conservation Service ("NRCS") is responsible for providing financial and technical assistance to assist in the conservation of agricultural lands and wetlands throughout the United States under the Agriculture Conservation Easement Program ("ACEP") (USDA-NRCS, n.d.). Transmission lines are permitted within federal ACEP easements with approval from the landowner and the USDA. As part of their mission, the Cumberland County Board of Commissioners determined that "Cumberland County should participate in the Commonwealth's Agricultural Conservation Easement (ACE) Program as one means to slow the unacceptable high level of farmland loss." At the same time, the Commissioners established the County Agricultural Land Preservation Board to administer the Easement program (Cumberland County, 2019).

Agriculture is a dominant land use within the Project Study Area. As shown on Figure 3-3, many agricultural properties designated ASAs and Agricultural Easement Areas are located throughout the Study Area, with the heaviest concentration in the central and southern portions of the Study Area. Specifically, approximately 1,964 acres of ASAs and approximately 903 acres of Cumberland County ACEs are located within the Study Area. Combined, conserved agricultural areas cover approximately 60% of the Study Area.

No land enrolled in the federal "ACEP" is located within the Study Area. There are three federal agricultural conservation easements located outside of the Study Area, including two near the southwestern boundary, adjacent north and south of Baish Road, and one near the northern boundary, adjacent to and west of Winding Hill Road.

2.1.3 Urban and Developed Land Uses

Due to the predominately rural agricultural landscape, developed land is considered a secondary land use type within the Study Area. Developed areas include high, medium, and low-density areas of residential; commercial and industrial development; and developed open space (i.e., areas with a mixture of some constructed materials, including paved roads, but mostly vegetation in the form of lawn grasses).

Single-family residential neighborhoods are mostly concentrated in the north along Eppley and Brindle Road. Similarly, larger residential properties are scattered throughout the Study Area adjacent to located roads including Clouser Road, Lisburn Road, and Locust Point Road. No commercial buildings, schools, or cemeteries are located within the Study Area. The West Shore Free Church is located within the eastern portion of the Study Area, distanced approximately 0.5 mile south of Williams Grove Road and Stumpstown Road, and Cumberland Valley Church is located west of the existing Williams Grove Substation. No additional places of worship were identified within the Study Area. Industrial development within the Study Area is limited to the MAIT Allen and PPL Electric Williams Grove substations (i.e., the Project endpoints) as well as farming operations dispersed throughout.

Boiling Springs Road (State Route 224) defines the northwestern boundary of the Study Area. Otherwise, no state, interstate, or US highways are in the Study Area. A natural gas pipeline owned by Columbia Gas Transmission crosses the western portion of the Study Area, roughly parallel to the north side of the Juniata – Three Mile Island 500 kV Transmission Line. No communication towers were identified within the Study Area.

As shown below in **Table 3-2**, population growth trends within the Study Area increased by approximately 5 to 10 percent between 2010 and 2020 and is generally projected to decrease by another 0.2 to 1.2 percent between 2020 and 2030.

Table 3-2. Study Area Population Demographics

County/ Municipality	2010[1]	2020[1]	Percent Change	2030[2] (Projected)	Percent Change (Projected)
Cumberland County	235,406	259,469	+10.2%	275,462	+6%
Monroe Township	5,823	6,230	+7.0%	6,220	-0.2%
Upper Allen Township	18,059	23,183	+28.4%	22,905	-1.2%

Sources: [1]Pennsylvania State Data Center (PaSDC) (2022); [2]Pennsylvania Department of Environmental Protection (PADEP) (2012)

No airports are located within the Study Area. The closest major airport, the Capital City Airport, is located approximately 7 miles northeast of the Study Area. The Capital City Airport is classified as a general aviation airport for Harrisburg and all central Pennsylvania by the Pennsylvania Department of Transportation ("PennDOT") Bureau of Aviation. Additionally, the Carlisle Barracks Army airport is located approximately 7 miles northwest of the Study Area.

2.1.4 Linear Infrastructure

The Study Area is served by several county and local roads, such as Baish Road, Lisburn Road, Locust Point Road, Park Place Road, Speedway Drive, and Williams Grove Road. No interstate, U.S, or state highways intersect the Study Area. Additionally, no PennDOT designated scenic byways, railroad corridors, or bike paths were identified within the Study Area.

A network of existing PPL Electric-owned 69 kV and 230 kV transmission lines connect to the existing Williams Grove Substation within the northeastern portion of the Study Area, including the Williams Grove – Mechanicsburg #1 and #2 69 kV Transmission Line, the Williams Grove – West Shore 230 kV Transmission Line, the Brunner Island – Williams Grove 230 kV Transmission Line, and the Cumberland – Williams Grove 230 kV Transmission Line.

From the existing Williams Grove Substation, the Cumberland – Williams Grove 230 kV Transmission Line continues westward, bisecting the northern portion of the Study Area, until it joins the MAIT Juniata – Three Mile Island 500 kV Transmission Line ROW to continue northwestward in a shared corridor.

Where the 230 and 500 kV transmission lines split into two corridors in the western portion of the Study Area, the Juniata – Three Mile Island 500 kV Transmission Line continues southeastward to bisect the southwestern portion of the Study Area, crossing north of the existing Allen Substation. The existing MAIT Allen – Roundtop 115 kV transmission line also crosses the southern portion of the Study Area, interconnecting the existing Allen Substation.

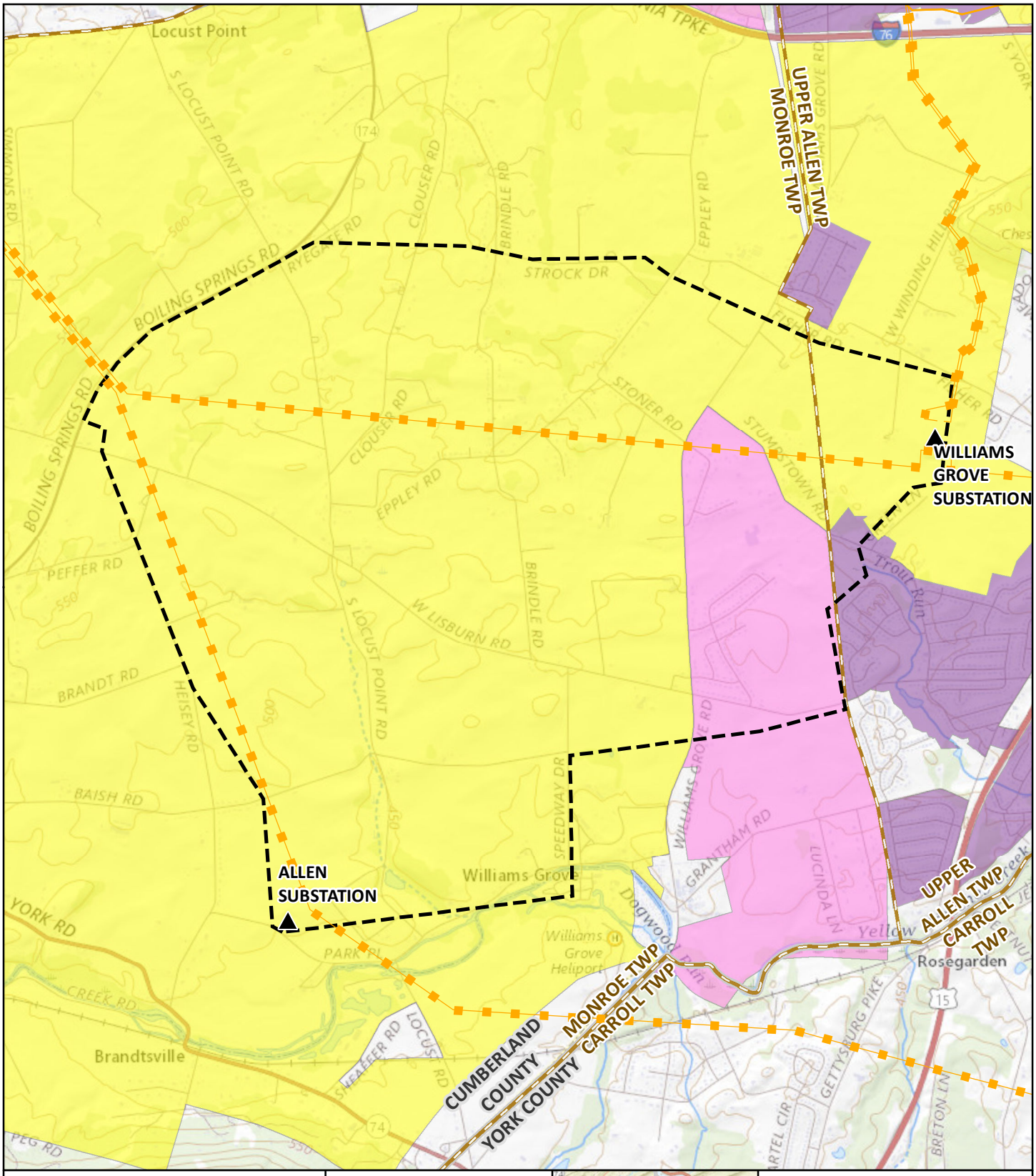
2.1.5 Municipal Zoning

Each municipality within the Study Area has enacted a zoning ordinance in conjunction with its Planning Department. The zoning districts established by these ordinances are generally designed to guide future land use in the municipality by encouraging the development of desirable residential, commercial, agricultural, and manufacturing areas within appropriate groups of compatible and related uses. PPL Electric has contacted the affected municipalities and counties and provided details pertaining to the Project. The counties and municipalities were receptive to the Project and did not communicate any objections to the Company.

Most of the Study Area is currently zoned for Agricultural (A) uses within Monroe and Upper Allen townships (Cumberland County 2013 and 2017a). A portion (approximately 350 acres) of the eastern half of the Study Area is zoned for Suburban Residential (R1) and Medium Density Residential (R-2) use.

Generally, public utility facilities are exempt from local zoning ordinances. Designated zoning districts in the Study Area are shown on **Figure 3-4**. PPL Electric has considered the impact of the Project on local zoning and applicable comprehensive or land use plans; the proposed transmission line is consistent with both the county and municipal comprehensive and land use plans.

Figure 3-4. Zoning



▲ Existing Substation

Existing Transmission Line
- 69 kV
- 230 or 500 kV
- Study Area
- Township Boundary

- County Boundary
- Agricultural (A)
- Suburban Residential (R1)
- Medium Density Residential

Sources:
Cumberland County
(2013 & 2017)

Coordinate System:
State Plane Pennsylvania South
NAD 1983

Williams Grove - Allen 115 kV Transmission Line Project
Figure 3-4. Zoning

0 0.25 0.5 Miles

N

2.1.6 Comprehensive and Land Use Plans

PPL Electric's independent siting contractor, WSP, collected and reviewed all county and township comprehensive or land use plans applicable to the municipalities located in the Study Area. Comprehensive plans serve as a means for local governments to assess existing development and guide future development within their boundaries.

Cumberland County has adopted a county-wide comprehensive plan to guide development within the county (Cumberland County 2017b). Within the Study Area, the Cumberland County Comprehensive Plan includes five future land use categories: agriculture/prime farmland, agricultural/rural, commercial, conservation, and residential (Cumberland County 2017c). The Cumberland County future land use map also identifies the future Trindle Spring Run/Trolley Line Greenway within the Study Area, which currently remains a proposed bike-hike trail for the abandoned Cumberland Valley Railroad corridor (see **Figure 3-2**).

Monroe and Upper Allen townships also have their own comprehensive plans. Common themes among these plans include a discussion of challenges associated with accommodating significant growth in the region and the importance of preserving farmland and open space. Within the Study Area, Monroe Township identifies five future land use categories: agricultural, agricultural/rural, commercial retail, conservation, and residential (Monroe Township 2007). In their comprehensive plan, Upper Allen Township identifies one future land use within the Study Area: agricultural (Upper Allen Township 2013). The proposed transmission line is consistent with both the county and municipal comprehensive and land use plans in the Study Area.

2.2 Recreation/Aesthetics

2.2.1 Federal, State, and Local Recreation Areas

Pennsylvania supports a wide array of both dispersed and developed recreational opportunities that occur on federal, state, local, and private lands. Dispersed recreational uses include recreation that occurs over a broad area and not at a specific developed site but may include developments or facilities that provide access to recreational opportunities. Examples of dispersed recreational activities include hiking, scenic driving, bicycling, backpacking, hunting, fishing, off-road vehicle

use, snowmobiling, bird watching, and cross-country skiing, among others. Developed recreation provides permanent facilities designed to accommodate uses such as camping, boat launching, sports and athletic activities, or day-use activities (e.g., picnicking, interpretive exhibits, and hiking/biking trails).

No federal recreational areas exist within the Study Area. Williams Grove Road is identified as Pennsylvania Bicycle Route J-2 and Yellow Breeches Creek is identified as a Pennsylvania water trail. Williams Grove Park, which includes the Williams Grove Speedway, is located adjacent to the southeastern corner of the Study Area. No other recreational features were identified within or adjacent to the Study Area.

The Appalachian National Scenic Trail passes approximately 2.5 miles west of the Study Area. Other nearby parks include Friendship Park, Monroe Acres Park, Monroe Community Park, Monroe Memorial Park, Rose Garden Park, and Upper Allen Township Community Park. Local recreation areas are identified on **Figure 3-1**.

2.2.2 Landscape and Aesthetics

For the purpose of this Application, aesthetics is defined as a mix of landscape character, the context in which the landscape is being viewed, and the scenic integrity of the landscape. The Routing Team considered the aesthetic impact of the Project by evaluating the existing landscape character, reviewing available GIS data, and reviewing the Study Area in the field from points of public access.

Landscape character encompasses the patterns of landform (topography), vegetation, land use, and aquatic resources (i.e., lakes, streams, and wetlands). The landscape character is influenced both by natural systems (e.g., soils, surface water, wetlands, and vegetation), as well as people's interactions with and use of land (e.g., land use, recreation, and cultural resources). In natural settings, the landscape character attributes are natural elements, whereas in pastoral or rural/agricultural settings they may include man-made elements such as fences, walls, barns, and occasional residences. In a more developed setting, the landscape character may include buildings, lawn areas and landscaping, pavement, and utility infrastructure.

The Study Area is part of the physiographic region known as the Great Valley within the Ridge and Valley Province. The Great Valley Section is composed of broad lowlands with gently rolling hills. One unnamed tributary ("UNT") to Yellow Breeches Creek runs through the northeastern portion of the Study Area. The entire Study Area is characterized by farmland and developed residential areas. Small pockets of forest are interspersed throughout the landscape, mainly existing as visual screening between agricultural and developed areas or immediately surrounding residential areas.

2.3 Cultural Resources

Resources of historic architectural and archaeological significance are located in the vicinity of the Study Area. Initial analysis of the Project's potential to affect cultural resources involved a review of the Pennsylvania Historical and Museum Commission ("PHMC")/Bureau of Historic Preservation ("BHP") Cultural Resource Geographic Information System ("CRGIS") on-line inventory of cultural resources. The review involved identifying all known prehistoric and historic period archaeological sites and all known historic architectural resources and historic districts within the Study Area in accordance with PUC regulations (52 Pa. Code § 57.72). A list of architectural and archaeological resources identified in the CRGIS within the Study Area is included in the tables in Attachment 15. Known architectural resources and sites (i.e., historic buildings, structures, districts, and roadways) in the Study Area are shown on **Figure 3-5**. Known archaeological resources are not shown on the figure to protect any such sites.

2.3.1 Historic Architectural Sites

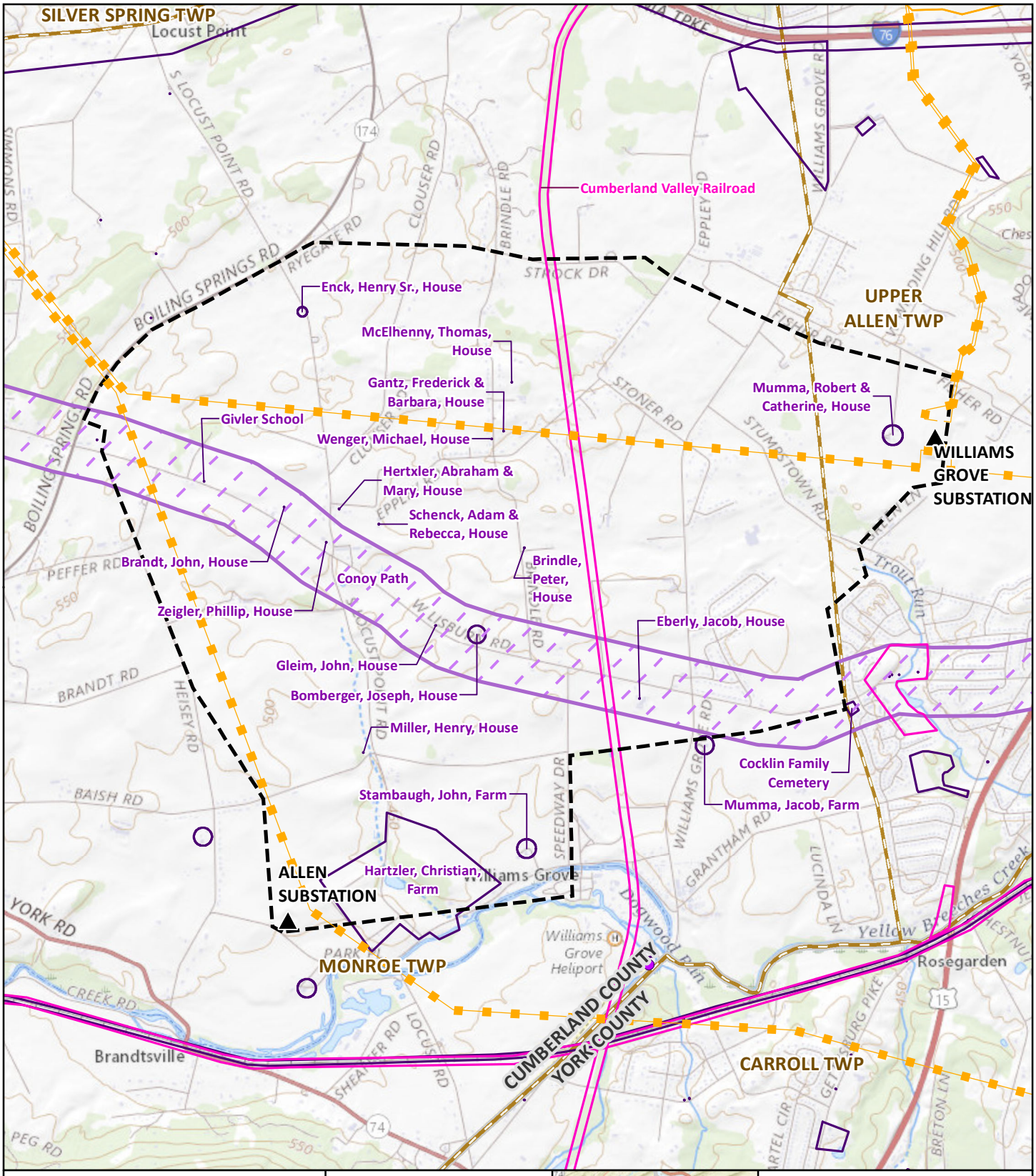
One previously recorded historic district and 20 previously recorded architectural sites were identified within the Study Area. The previously recorded architectural resources and their current National Register of Historic Places ("NRHP") status is shown in **Table 15-1** in **Attachment 15**.

2.3.2 Archeological Sites

Two previously recorded archaeological sites were identified within the Study Area. According to CRGIS, these sites have undetermined eligibility due to insufficient data available, as shown in **Table 15-2** in **Attachment 15**.

Precise locations of the archaeological resources are often uncertain due to mapping inaccuracies or intentionally vague because of concern for sensitivity of the resource and will need to be confirmed in the field and through further consultation with the PHMC/BHP. In addition, the number of resources identified in the CRGIS databases in and/or near the respective routes is not necessarily indicative of the relative potential of transmission line construction along each route to affect cultural resources. Differing survey intensities and methods have resulted in an inventory of cultural resources in the CRGIS that is not necessarily representative of the actual number and distribution of resources that would be identified were the routes to be thoroughly and comparably surveyed.

Figure 3-5. Cultural Resources


SILVER SPRING TWP
Locust Point
Cumberland Valley Railroad
Enck, Henry Sr., House
McElhenny, Thomas, House
Gantz, Frederick & Barbara, House
Givler School
Wenger, Michael, House
Hertxler, Abraham & Mary, House
Schenck, Adam & Rebecca, House
Brandt, John, House
Conoy Path
Brindle, Peter, House
Zeigler, Phillip, House
Eberly, Jacob, House
Gleim, John, House
Bomberger, Joseph, House
Miller, Henry, House
Cocklin Family Cemetery
Mumma, Jacob, Farm
Stambaugh, John, Farm
Hartzler, Christian, Farm
Mumma, Robert & Catherine, House
UPPER ALLEN TWP
WILLIAMS GROVE SUBSTATION
ALLEN SUBSTATION
MONROE TWP
CARROLL TWP
CUMBERLAND COUNTY
YORK COUNTY
Williams Grove
Williams Grove Heliport
Rosegarden
Brandtsville
BOILING SPRINGS RD
PEFFER RD
BRANDT RD
BAISH RD
YORK RD
PEG RD
CREEK RD
S LOCUST POINT RD
CLOUSER RD
BRINDLE RD
EPPLEY RD
STINOCK DR
STONER RD
STUMPTOWN RD
FISHER RD
WILLIAMS GROVE RD
GRANTHAM RD
SPEEDWAY DR
WILSBURG RD
HEISEY RD
LOCUST POINT RD
SHEARER RD
Trout Run
Yellow Breeches Creek
Dogwood Run
Existing Substation
Historical Marker
Existing Transmission Line
69 kV
230 or 500 kV
Study Area
Historical District
Architectural Resource
Conoy Path
Township Boundary
County Boundary
Sources:
PHMC 2022
Coordinate System:
State Plane Pennsylvania South
NAD 1983
PERRY COUNTY
DAUPHIN COUNTY
CUMBERLAND COUNTY
YORK COUNTY
ADAMS COUNTY
Williams Grove - Allen 115 kV Transmission Line Project
Figure 3-5. Cultural Resources
0
0.25
0.5
Miles
N

3.0 NATURAL ENVIRONMENT

Natural resources evaluated include geology and soils, water resources, vegetation, and wildlife. Each of these resources is discussed in the following sections.

3.1 Geology and Soil Resources

3.1.1 Geology

The Study Area is in the southeastern portion of the Commonwealth in the Ridge and Valley Province. A Province is a region having a pattern of relief features or landforms that differ significantly from that of adjacent regions. Within the Province, the Study Area crosses the Great Valley Section. A Section (i.e., a succession of rock units) is composed of several individual geologic units or formations. The Great Valley Section consists of a broad lowland with gently undulating hills eroded into shale and siltstone on the northern side of the valley and a flatter landscape consisting of limestone and dolomites on the southern side of the valley. Relief (difference in elevation between the highest and lowest points of a land surface) is generally less than 100 feet, particularly in the carbonate area, but may be up to 300 feet in the shale area. Elevation in the Section ranges from 140 to 1,100 feet (DCNR, 2018). Elevation in the Study Area generally ranges from 200 to 500 feet.

Cumberland County lies in an area of Pennsylvania where limestone, dolomite, or both are present near ground surface, thus making it more susceptible to natural sinkhole development. A band of known sinkholes and depressions span the central region of Cumberland County, which includes the municipalities of Monroe and Upper Allen townships (Cumberland County, 2020b). It is important to take potential impacts of subsidence hazards into the siting evaluation. PPL Electric is aware of the potential karst issues within the Study Area and will take them into account when locating and designing transmission structures and foundations.

Five existing sinkholes recorded by the Department of Conservation and Natural Resources ("DCNR") are identified within the northern portion of the Study Area (see **Figure 3-6**). Three sinkholes are located within the northwestern portion of the Study Area, each distanced approximately 0.4 mile south of Locust Point Road and Boiling Springs Road. Two sinkholes are

located within the northeastern portion of the Study Area, which are distanced 0.4 to 0.5 mile north of Stoner Road and Williams Grove Road, respectively. PPL Electric intends on utilizing specific engineering and construction techniques considering the karst geology and sink holes in the Study Area.

3.1.2 Soils

Soil groups in the vicinity of the Study Area were determined using the soil survey geographic ("SSURGO") database. SSURGO is the most detailed level of soil mapping done by the NRCS of the USDA. Calcareous shale, limestone, and shale are the primary lithology[2] located within the Study Area, as shown in Figure 3-5. The Hagerstown-Duffield soil association comprises almost the entire Study Area and consists of deep, well-drained, undulating soils formed in material weathered from limestone in limestone valleys. The southeastern portion of the Study Area consists of the Highfield-Arendtsville-Myersville soil association, which is characterized with deep, well-drained, and gravelly soils, with excellent air drainage and a high capacity in available moisture.

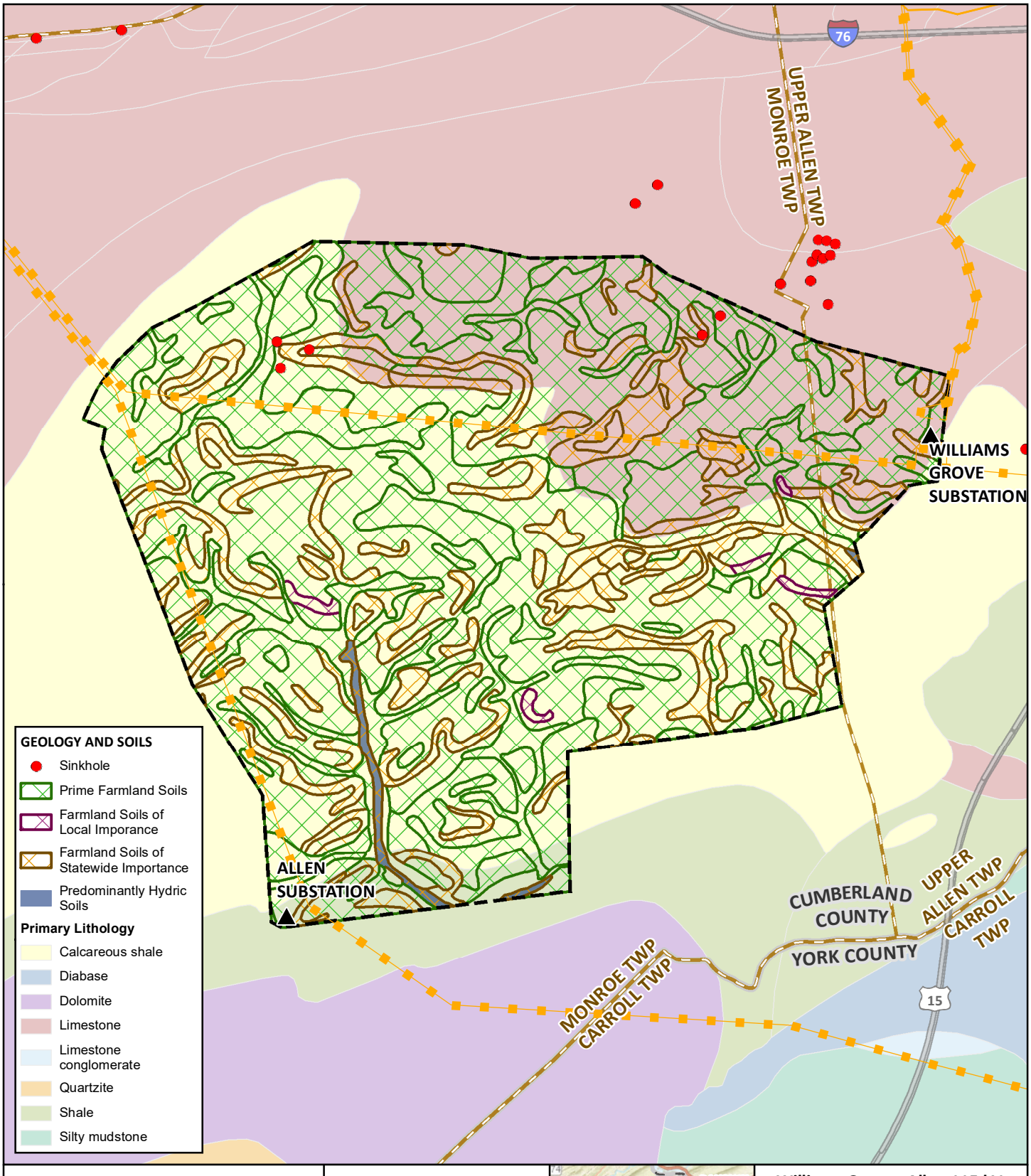
Approximately 1 percent of soils within the Study Area can generally be characterized as predominantly hydric, while approximately 19 percent are predominantly non-hydric, and 80 percent are non-hydric. The NRSC National Soil Survey Handbook ("NSSH"), Part 614, defines hydric soil as a soil that forms under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils can indicate the presence of wetlands, ponds, streams, and other hydro-related features.

Prime farmland and farmland of statewide importance are special categories of highly productive cropland that are recognized and described by the NRCS. Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops. Soils that do not meet the prime farmland category but are still recognized for their productivity may qualify as farmland of statewide importance. Approximately 80% of soils within the Study Area can generally be characterized as prime farmland, while approximately 19% is farmland of statewide importance, and

[2] The lithology of a rock unit is a description of its physical characteristics visible at outcrop, in hand or core samples or with low magnification microscopy, such as color, texture, grain size, or composition.

1% is not classified for farmland use. No soil conditions were found that would potentially limit construction of the proposed Project.

Figure 3-6. Geology and Soils



Existing Substation

Existing Transmission Line

- 69 kV
- 230 or 500 kV
- Study Area
- Township Boundary
- County Boundary

Sources:
PA DCNR (2001)
PASDA/PA DCNR (2007)

Coordinate System:
State Plane Pennsylvania South
NAD 1983

Williams Grove - Allen 115 kV Transmission Line Project

Figure 3-6. Geology and Soils

0 0.25 0.5 Miles

N

3.2 Water Resources

3.2.1 Streams

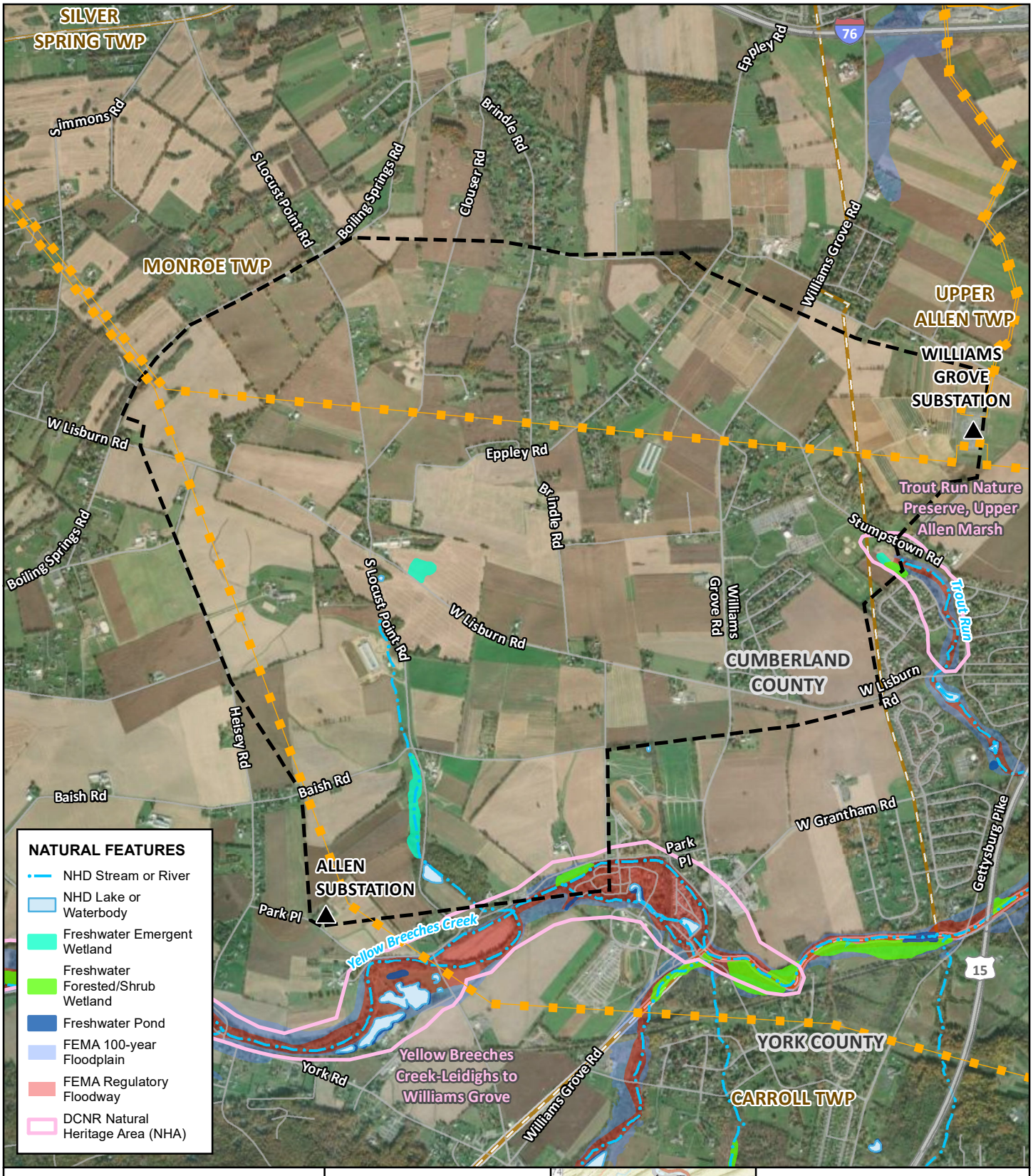
The Study Area is located within the Trindle Spring Run and Middle Yellow Breeches Creek watersheds of the Lower Susquehanna-Swatara basin (PADEP, 2022a). As illustrated on Figure 3-6, Yellow Breeches Creek crosses the southeastern-most portion of the Study Area. A UNT of Yellow Breeches Creek flows southward through the southwestern portion of the Study Area. Additionally, Trout Run begins at the far eastern edge of the Study Area and flows southeast, towards US-15 and away from the Study Area.

Pennsylvania Water Quality Standards (25 Pa. Code § 93.3) designate protected water uses which provide the basis for the development of water quality criteria. Special quality waters consist of exceptional value and high-quality waters. Those pertaining to biological uses include the maintenance and propagation of aquatic life, including cold water and warm water fisheries, and anadromous fish (i.e., those that live their lives in the sea and migrate to freshwater to spawn) and catadromous fish (i.e., those that live their lives in freshwater and travel to the sea to spawn), which ascend into flowing waters to complete their life cycle. The Pennsylvania Department of Environmental Protection ("PADEP") routinely re-evaluates its water quality designations. Waterbodies that have been granted a new designated use status that have not yet been incorporated into the Pennsylvania Code are still classified according to their existing use regarding permitting. According to this code, Yellow Breeches Creek, the UNT within the Study Area, and Trout Run are all designated as High-Quality Cold-Water Fishery ("HQ-CWF"), Migratory Fishes ("MF").

3.2.2 Wetlands and Lakes

The Routing Team used the U.S. Fish & Wildlife Service's ("USFWS") National Wetland Inventory ("NWI") shapefiles and maps to preliminarily identify potential wetlands within the Study Area. The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. The accuracy of NWI maps varies based upon age, wetland type and size, source photography, and survey methods. Therefore, actual wetland totals are expected to change based upon field surveys and formal delineations using the U.S. Army Corps of Engineers 1987

Figure 3-7. Natural Features



Sources:
FEMA (2022), USFWS (2022), USGS (2022), PA DCNR (2022)

Coordinate System:
State Plane Pennsylvania South NAD 1983

Williams Grove - Allen 115 kV Transmission Line Project

Figure 3-7. Natural Features

0 0.25 0.5 Miles

N

Methodology. Field surveys or delineations along the Alternative Routes are not practical during the routing process due to the large geographic area, as well as the lack of land access for portions of the Alternative Routes. PPL Electric has completed the process of delineating wetlands located along the Preferred Route (see Attachment 4) using the U.S. Army Corps of Engineers 1987 Methodology. In addition, the Routing Team used hydric soils mapped by the NRCS. A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. All wetlands contain hydric soils. Therefore, they are a good indicator of potential wetland locations. Wetlands and water resources are shown in **Figure 3-7**.

NWI wetlands are mapped using the Cowardin (1979) wetland classification system. Within the Study Area, there is one system represented: palustrine. The palustrine system includes all non-tidal freshwater wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, as well as un-vegetated shallow water wetlands such as ponds. Classes within the palustrine system are defined based upon the dominant vegetation type and include forested (PFO), scrub-shrub (PSS), emergent marsh (PEM), and unconsolidated bottom (freshwater ponds) (PUB).

Based on the NWI data, five wetlands and one freshwater pond are located within the Study Area (see Figure 3-7). Specifically, one PEM wetland and one freshwater pond are in the southwestern portion of the Study Area, adjacent to the UNT of Yellow Breeches Creek; one PFO/PSS wetland is located within the southeastern portion of the Study Area, adjacent to Yellow Breeches Creek; one PEM wetland is on an agricultural property, located adjacent northeast of Lisburn Road and Locust Point Road; and one PFO/PSS and one PEM wetland are located at the north end of Trout Run, south of Stumpstown Road.

3.2.3 100-year Floodplains

Federal Emergency Management Agency ("FEMA") designated 100-year floodplains and regulatory floodways, which are typically associated with perennial streams and wetland complexes. Based on a review of the FEMA Flood Map Service Center website (FEMA, 2021), 100-year floodplain and regulatory floodway are generally confined to the southeastern portion of the Study Area, along Yellow Breeches Creek (see Figure 3-6). One palustrine forested (PFO)/palustrine

scrub-shrub (PSS) wetland complex is located within the 100-year floodway and regulatory floodway of Yellow Breeches Creek. The Study Area crosses a small additional area of 100-year floodplain and floodway along Trout Creek; one palustrine forested (PFO)/palustrine scrub-shrub (PSS) wetland complex is located within this floodplain area.

3.3 Vegetation

The Study Area is located within one level III ecoregion: Ridge and Valley (Woods *et al*, 1999). Level III ecoregions are ecological areas or divisions small enough to enhance regional environmental monitoring, assessment, and reporting, as well as decision-making. Because level III ecoregions are smaller (i.e., compared to level I and II ecoregions), they allow locally defining characteristics to be identified, and more specific management strategies to be formulated. The natural vegetation of the Ridge and Valley historically consisted of Appalachian Oak Forest and Oak-Hickory-Pine Forest (Woods *et al*, 1999). Additionally, Cumberland County is in the original Oak-Chestnut Forest Region (Braun 1950). Today, much of the land within the Study Area has since been converted to farmland. Forested cover, mostly occurring in dry upland areas, remains dominated by species of oak (*Quercus* spp.), often mixed with tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), and/or beech (*Fagus grandifolia*) (Cumberland County NAI, 2005).

According to the National Land Cover Dataset (NLCD, 2001) and as shown above in **Table 3-1**, the Study Area's vegetation is dominated by cultivated crops, which represent approximately 71 and grassland/pasture (approximately 10 percent). Forest cover comprises approximately 2 percent of the Study Area's vegetation.

3.4 Special Natural Areas

The DCNR generated a conservation planning report for the Study Area, using the Natural Areas Inventory ("NAI"), which been prepared by The Nature Conservancy in association with the Pennsylvania Natural Heritage Program ("PNHP"). The NAI includes information on the locations of rare, threatened, and endangered species and the highest quality natural areas located within the County.

Two natural heritage areas ("NHA") were identified within the Study Area, including core habitat, and supporting landscapes (see **Figure 3-7**). The Yellow Breeches Creek – Leidighs to Williams

Grove NHA extends along several miles of the Yellow Breeches Creek and supports populations of two rare aquatic plant species: the red-head pondweed (*potamogeton richarsonii*), a state threatened species, and the white-water crowfoot (r*anunculus aquatilis var. diffusus*), a state species of concern. Streambed habitat varies considerably over this segment of the creek and includes both weak and strong riffles, deeper pools, and deeper water associated with dams.

Both the red-headed pondweed and white-water crowfoot prefer fast flowing clear water habitat and are threatened by impoundment or excessive sedimentation of Yellow Breeches Creek. For conservation efforts of the Yellow Breeches Creek – Leidighs to Williams Grove NHA, the PNHP recommends allowing wide buffers along the banks of the creek to mature and avoid further streamside development. Additionally, care should be taken in restoration efforts to use only native species of trees and shrubs, preferably of local sources.

The Trout Nature Preserve, Upper Allen Marsh consists of a streamside wetland formerly used as a cow pasture. The vegetation is a mixture of mostly cattails, sedges, and grasses in the wettest portions and a mixture of native and exotic field species in drier areas. The invasive species reed-canary grass is dominant in some areas. The site has been used by various bird species, including least bitterns and great egret, and in 1988 was noted to harbor a small population of a sensitive species of concern. The site is currently protected as part of Appalachian's Audubon's Trout Run Nature Preserve.

No federal or local designated wilderness areas are located within the Study Area.

3.5 Threatened, Endangered and Rare Species

On February 10, 2023, an online Pennsylvania Natural Diversity Inventory ("PNDI") was conducted. Based on this review, the USFWS, Pennsylvania Game Commission ("PGC"), and Pennsylvania Fish and Boat Commission ("PFBC") response indicated that no known impacts are anticipated to threatened and endangered species and/or special concern species and resources because of the Project.

The DCNR response requests further review of this Project to resolve potential impacts to the red-head pondweed, a state threatened species, and the white water-crowfoot, a state species of concern.

As previously described above in **Section 3.4**, these species are known to inhabit Yellow Breeches Creek within the Yellow Branches Creek – Leidighs to Williams Grove NHA. Potential impacts to these species are not likely since no in-water work will be conducted as part of the Project.

An agency consultation description for the Proposed Route is presented in **Attachment 4**. Copies of correspondence with federal and state agencies are provided in **Attachment 14**.

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PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 4

Table of Contents

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LIST OF FIGURES

Acronyms and Abbreviations

ESRI	Environmental Systems Research Institute
BDA	Biological diversity area
CNHI	County Natural Heritage Inventories
CWF	Coldwater fishery
DCNR	Pennsylvania Department of Conservation and Natural Resources
FAA	Federal Aviation Administration
GIS	Geographic information system
GNIS	Geographical Names Information System
GPS	Global positioning system
HQ-CWF	High-quality cold-water fishery
HUC	Hydrologic unit code
kV	Kilovolt
NAI	Natural Areas Inventory
NAIP	National Agricultural Imagery Program
NERC	North American Electric Reliability Corporation
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service of the U.S. Department of Agriculture
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PASDA	Pennsylvania Spatial Data Access
PEMA	Pennsylvania Emergency Management Agency
PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
PNDI	Pennsylvania Natural Diversity Inventory
PNHP	Pennsylvania Natural Heritage Program
PPL Electric	PPL Electric Utilities Corporation
PUC	Pennsylvania Public Utility Commission
ROW	Right-of-way
SHPO	State Historic Preservation Office
SSURGO	Soil Survey Geographic Database
T&E	Threatened and endangered (species)
UNT	Unnamed tributary
USACE	United States Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WWF	Warm water fishery

EXECUTIVE SUMMARY

In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the Mid-Atlantic Interstate Transmission ("MAIT") 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations.

PPL Electric Utilities Corporation ("PPL Electric") submitted four potential solutions to address the voltage violations on the MAIT 115 kV system and were compared by PJM against six proposals submitted by outside entities upon their ability to resolve voltage violations on the MAIT 115 kV system. PJM evaluated all the proposals submitted upon their ability to solve the reliability problems while not adversely affecting the reliability of the transmission system (i.e., "do no harm" evaluation), impact on operational flexibility, and market efficiency improvements. PJM completed a detailed constructability review of the top three proposals. After the evaluation and review with stakeholders PJM selected PPL Electric Proposal 99 as the preferred solution.

PPL Electric Proposal 99 proposed to address the need by constructing a new, single-circuit 115 kV transmission line in Cumberland County, Pennsylvania between their existing Williams Grove Substation, located off of Fisher Road in Upper Allen Township, and the MAIT-owned Allen Substation, located along Park Place in Monroe Township (the "Project" or "Williams Grove – Allen 115 kV Transmission Line Project").

The Project will be approximately 3.9 miles long and use PPL Electric's Williams Grove Substation as the source identified by PJM. WSP was retained by PPL Electric to support the route selection study process for the proposed Williams Grove – Allen 115 kV Transmission Line Project.

PPL Electric and WSP staff, along with other subject matter experts combined to form "the Routing Team" (see Section 2.1), conducted a comprehensive Route Selection Study to establish

a Preferred Route[1] for the Williams Grove – Allen 115 kV Transmission Line. Using established routing guidelines, the Routing Team identified constraints and opportunity features within the study area that would minimize impacts to the natural and human environment and take advantage of existing infrastructure corridors to the extent practicable. The Routing Team acquired environmental and engineering data from various sources and assembled the information into a geographic information system ("GIS") database superimposed on aerial photography. Potential Routes[2] were field checked from publicly accessible locations to validate the aerial imagery and assess the viability of the Potential Routes based on conditions observed in the field. Based on information gathered in the field, the Routing Team adjusted the Potential Routes as appropriate.

The Routing Team evaluated the advantages and disadvantages of the Potential Routes based on the established routing criteria, an inventory of environmental, land use, and cultural factors along each of the routes, and additional local knowledge and past experience. Less favorable Potential Routes were eliminated, and seven potentially viable Potential Routes were retained for further consideration. The Potential Routes were presented to landowners within the study area at a November 2022 public meeting for comment. The public meeting was held at Hidden Hillside Events, 3619 Simpson Ferry Road, Simpson Ferry Plaza, Camp Hill, PA. Following this public input process, the Routing Team conducted additional analysis to review comments collected at the public meeting. This iterative process resulted in the identification of two Alternative Routes[3] and the Preferred Route, which was presented to the public at an open house meeting held at the same location as the first public meeting in January 2023.

Based on an assessment of the advantages and disadvantages of the two Alternative Routes under consideration, the Routing Team selected Alternative Route B as the Preferred Route. The Routing Team believes that the cumulative environmental, social, engineering, and financial impacts associated with constructing Alternative Route B will be less than the Alternative Route A.

[1] The Preferred Route is the route that is most consistent with the routing guidelines (see **Section 2.3**):
[2] Potential Routes are preliminary routes that were developed based on publicly available information and field reconnaissance.
[3] Alternative Routes are Potential Routes that have been refined based on public input.

1.0 INTRODUCTION

1.1 Project Overview

In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the MAIT 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations. PJM received ten proposals specifically to address the reliability concerns on MAIT's 115 kV system. After evaluation and review with stakeholders, PJM selected PPL Electric's Proposal 99, because the solution solved the reliability issues, provided greater operational flexibility, was cost competitive, and utilized existing substations. PPL Electric's Proposal 99 addressed PJM need by proposing to construct a new, single-circuit 115 kV transmission line in Cumberland County, Pennsylvania between their existing Williams Grove Substation, located off Fisher Road located in Upper Allen Township and the MAIT-owned Allen Substation, located along Park Place in Monroe Township. The need for the Project is explained further in **Attachment 2**.

1.2 Project Timeline

PPL Electric initiated the transmission siting process for this Project in September 2022. Initial Potential Routes were developed and refined in October 2022 and presented to the public in November 2022 at a public open house meeting. Based on public feedback and discussions with individual property owners at the November open house, certain minor adjustments were made to the Potential Routes. In December 2022, PPL Electric announced the selection of the Preferred Route and held a second public open house meeting in January 2023. Certain minor adjustments were made to the Preferred Route based on discussions with individual property owners. Construction is expected to begin in Fall 2025 to meet a Spring 2026 in-service date.

1.3 Goal of the Alternative Analysis Study

The goal of the Alternative Analysis Study is to gain a detailed understanding of the opportunities and constraints in the Project Study Area to facilitate the development of Potential Routes, evaluate potential impacts associated with each route, and select a Preferred Route from one or more Alternative Routes. The Preferred Route is the route that is most consistent with the routing guidelines (see **Section 2.3**):

- Reasonably minimizes adverse effects on the natural and human environments.
- Minimizes special design requirements and unreasonable costs.
- Can be constructed and operated in a safe, timely, and reliable manner.

This document describes the Alternative Route identification, evaluation, and selection process for the proposed Williams Grove – Allen 115 kV Transmission Line Project.

1.4 Project Description

PPL Electric proposes to construct a new 115 kV transmission line between their existing Williams Grove Substation in Upper Allen Township and the MAIT-owned Allen Substation in Monroe Township, both in Cumberland County. The line will be constructed for and operated at single-circuit 115 kV operation.

Project Study Area

The Study Area is that territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and Project costs. The boundaries of the Study Area were determined by the geographic area encompassing the two final end points (the existing Williams Grove Substation to the northeast and the existing Allen Substation to the southwest that the rebuilt line must serve). The Study Area was intended to encompass all reasonable Potential Routes for a new transmission line located between the endpoints.

The 3,340-acre (5.2-square mile) Study Area (**Figure 4-1**) is predominantly agricultural, with pockets of denser residential development extending south from Mechanicsburg along Brindle Road and west from Shepherdstown along Stumpstown Road and Williams Grove Road. The northern edge of the Study Area roughly follows Fisher Road, Strock Drive, and Boiling Springs Road. Williams Grove Substation defines the furthest eastern extent of the Study Area; the remainder of the eastern boundary of the Study Area follows parcel and neighborhood boundaries and bypasses Williams Grove Park. The southern terminus of the Project, Allen Substation, delineates the southern boundary of the Study Area in a line roughly coincident with Park Place Road. To the west, the Study Area predominantly follows Heisey Road and an existing

infrastructure corridor containing the existing Juniata – Three Mile Island 500 kV Transmission Line and a natural gas pipeline.

Figure 4-1. Study Area

- Substation
- Existing Transmission Line
- Study Area
- Natural Gas Pipeline
- Local Park
- Parcel Boundary
- Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

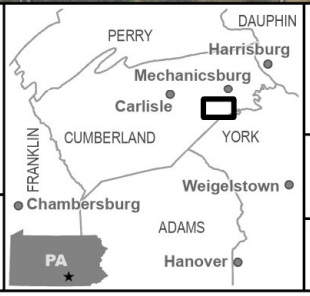


Figure 4-1
Study Area
Williams Grove - Allen 115 kV Transmission Line Project

0 0.25 0.5 Miles

Residential parcels, including a new subdivision south of Strock Drive, the West Shore Free Church and its associated recreational areas, and scattered farmsteads constitute the primary constraints within the Study Area. The Cumberland – Williams Grove 230 kV Transmission Line crosses the northern third of the Study Area, however residences and several new farm buildings limit routing alternatives parallel to the existing transmission line. Using this established Study Area, the Routing Team began its efforts to determine Potential Routes for the line.

Line Characteristics and Right-Of-Way Requirements

The required ROW width for the single-circuit 115 kV line is 100 feet, which would be primarily composed of easements across private land. The ROW would be cleared to its full width of tall growing vegetation for the safe and reliable operation of the transmission line. Farming and grazing land uses are typically compatible and can continue under the transmission line.

The proposed single-circuit design will consist of single-shaft steel poles equipped with steel conductor support arms. Angle structures, where required, will consist of foundation and/or guyed steel structures. Altogether, this Project requires the installation of approximately 36 structures with an average height of approximately 77 feet. The average span lengths will be approximately 600 feet. Additional detail on the engineering considerations for this Project are included in **Attachment 5**. The status of ROW acquisition for the Preferred Route is discussed in **Section 4.7**.

2.0 ROUTING PROCESS

The Routing Team conducted an Alternative Analysis Study to identify a Preferred Route for constructing a new single-circuit 115 kV transmission line between the PPL Electric Williams Grove Substation and MAIT's Allen Substation. This section describes the Alternative Route identification, evaluation, and selection process.

2.1 Routing Team Members

A multi-disciplinary Routing Team performed the routing study. Team members were selected to bring wide experience to the routing study to achieve a thorough review of all aspects of developing the route and included representatives from Environmental Permitting, Transmission Engineering, Construction, Project Management, Communications, Right of Way and Siting Groups. Members of the Routing Team have experience in transmission line routing, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, and construction management. The team's objective was to identify a route that provided a reasonable balance between impacts on local communities and the natural environment, as determined through application of appropriate siting criteria and subject to technical guidelines, as addressed in detail below.

The team worked together during the Alternative Analysis Study to define the Study Area, develop routing criteria, identify routing constraints and opportunities, collect and analyze environmental and design data, solicit public input and concerns, consult with natural resource and permitting agencies, develop and revise the siting alternatives, and analyze and report on the selection of a Preferred Route. **Table 4-1** identifies the Routing Team members and their areas of responsibility.

Table 4-1. Siting Team Members

Siting Team Member	Company	Role
Doug Grossman	PPL Electric	Siting Lead
Austin Weseloh	PPL Electric	Right-of-Way Specialist
Glenn Smith	PPL Electric	Engineering
Horst Lehmann	PPL Electric	Transmission Planning
Tom Eby	PPL Electric	Permitting/Environmental
Travis Moore	PPL Electric	Construction/Constructability
Project Management	PPL Electric	Michelle Lomago

Table 4-1. Siting Team Members		
Siting Team Member	**Company**	**Role**
Maggie Sheely	PPL Electric	Communications
Peter Sparhawk	WSP	Siting Advisor
Andrew Burke	WSP	Siting Project Manager
Miranda Bush	WSP	Siting Support
Stacey Mueller	WSP	Siting Support
Linda Green	WSP	Siting, GIS Analysis and Mapping

2.2 Process Steps and Terminology

The route development process is inherently iterative with frequent modifications made throughout the study because of the identification of new constraints, input from agencies, landowners, and other stakeholders, periodic re-assessment of routes with respect to the routing criteria, and adjustments to the overall route network. As a result of the evolving nature of the route development process, the Routing Team uses specific vocabulary to describe the routes at different stages of development. The general routing steps specific to this project are shown in **Figure 4-2**.

Initial route development efforts start with the identification of large area constraints and opportunity features within the **Study Area (Steps 1 and 2)**, which encompasses the endpoints of the Project and areas in between. These areas are typically identified using a combination of readily available public data sources. The Routing Team uses this information to develop **Potential Routes (Step 3)** adhering to a series of general routing and technical guidelines. Efforts are made to develop Potential Routes throughout the Study Area to ensure that all reasonable alignments are considered. As the Routing Team continues to collect and review information, Potential Routes are refined. Where two or more Potential Routes intersect, a **node** is created, and between two nodes, a **link** is formed. Together, the Potential Routes and their interconnected links are referred to as the **Potential Route Network**.

The Potential Routes are independently and collectively evaluated for refinement. As the Routing Team continues to gather information and review the links of the Potential Route Network, links are modified, removed, or added, resulting in a **Refined Potential Route Network (Step 4)**. The Potential Route Network is further refined and compared by the Routing Team, and a selection of

the most suitable links is assembled into **Alternative Routes (Step 5)**. Alternative Routes are routes that begin and end at similar locations for direct comparison.

Potential impacts are assessed and compared with land use, natural and cultural resources, and engineering and construction concerns. Ultimately, through a quantitative and qualitative analysis and comparison of the Alternative Routes, a **Preferred Route (Step 6)** is identified for the Project.

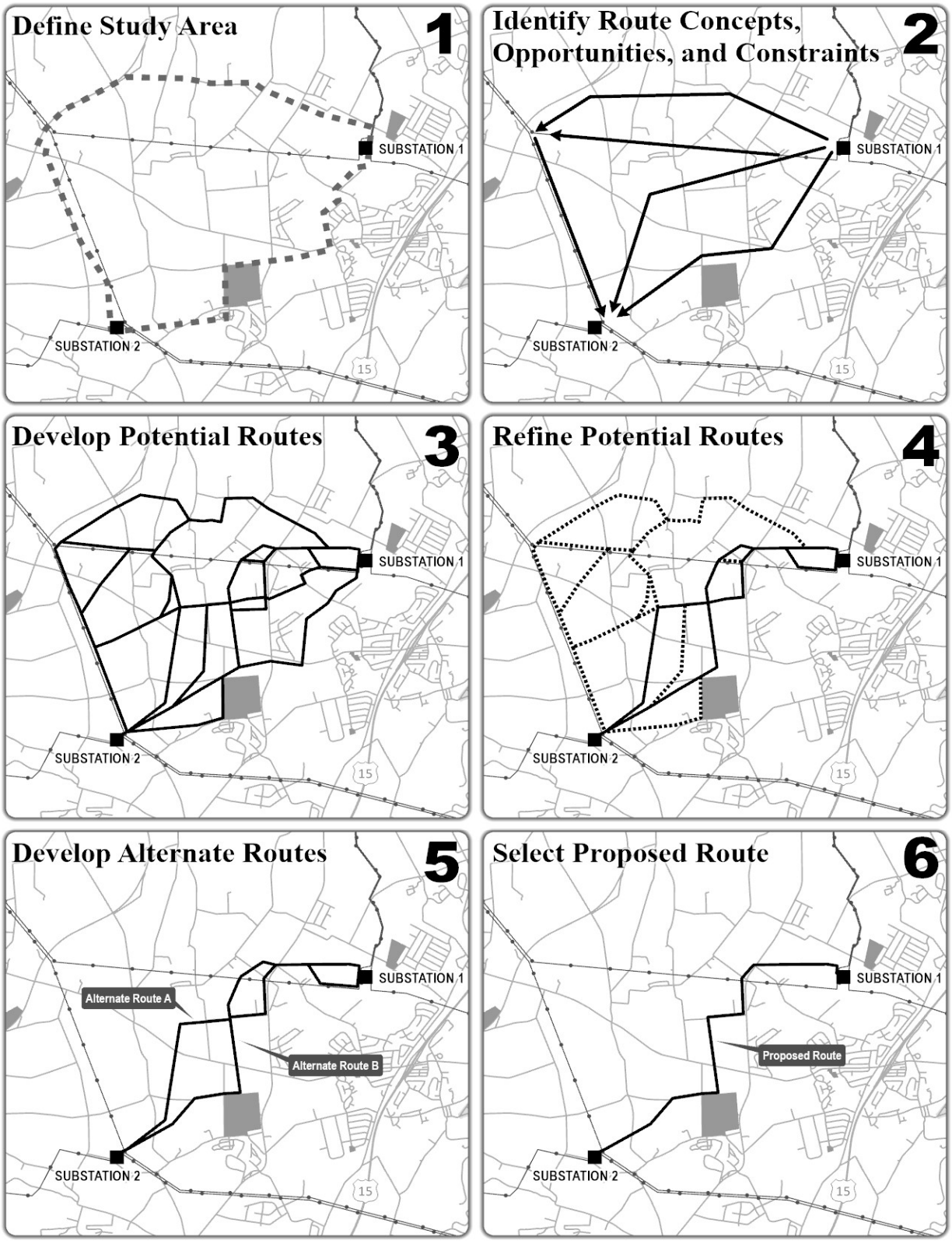


Figure 4-2. Routing Process Steps

2.3 Routing Guidelines

The primary objective in identifying a suitable route for the Project is to minimize effects of the line on natural resources, people and communities, land uses, cultural resources, and recreational resources, while providing safe and reliable service to the local region.

Identifying a route that optimizes all constraints and opportunities requires consideration of many factors and can therefore be challenging. For example, a route with minimal impacts on wildlife habitat may have increased impacts on residential resources, and vice versa. In addition, federal and state laws, and input from federal, state, and sometimes local regulatory agencies may have an impact on siting decisions. Rebuilding within an existing ROW usually results in fewer impacts compared to constructing within new ROW.

The use of routing guidelines helps to reach that goal by setting forth general principles that guide the development of alignments considered in the study. The Routing Team considered two types of Routing Guidelines: General Guidelines and Technical Guidelines. General Guidelines establish a set of principles that guide the development of alignments with respect to area land uses, sensitive features, and considerations of economic reasonableness. Technical Guidelines provide the Routing Team with technical limitations related to the physical limitations, design, ROW requirements, or reliability concerns of the Project infrastructure. Both types of guidelines are discussed in the following sections.

2.3.1 General Guidelines

Once the Study Area was identified, the Routing Team met in September 2022 to develop basic route selection criteria that would be used to select and analyze potential Alternative Routes. The recommendations for Project siting contained in this Application are based on the primary objective stated above and the following criteria and technical guidelines (the listed criteria are not in order of importance or weight). The following guidelines were considered for this effort.

- Maximize the separation distance from or minimize impacts on residences.
- Maximize the separation distance from or minimize impacts on schools, hospitals, and other community facilities.

  - The West Shore Free Church is located within the eastern portion of the Study Area, distanced approximately 0.5 mile south of Williams Grove Road and Stumpstown Road, and Cumberland Valley Church is located west of the existing Williams Grove Substation.
  - No schools, hospitals, or other community facilities were identified within the Study Area.
- Minimize the removal of existing barns, garages, commercial buildings, and other nonresidential structures.
  - Removing occupied or unoccupied structures within the ROW is not anticipated for the Project.
- Minimize impacts on agricultural use, including the operation of irrigation infrastructure, where possible.
- Avoid crossing cemeteries or known burial places.
  - None were identified within the Project Study Area.
- Minimize crossing designated public resource lands, such as Williams Grove Park, and historic resources, such as the Cumberland Valley Railroad historic district and other National Register of Historic Places ("NRHP") listed or eligible sites identified within the Study Area.
  - No federal or state lands, large campgrounds, or designated battlefields were identified within the Study Area.
- Minimize crossing large lakes, major rivers, and large wetland complexes.
  - None were identified within the Project Study Area.
- Minimize impacts on critical habitat, protected species, and other identified sensitive natural resources.
  - The DCNR Yellow Breeches Creek – Leidighs to Williams Grove CNHI-Core Habitat crosses the southern portion of the Study Area, which is known to support two rare aquatic plant species, including a state threatened species and state species of concern.
- Minimize substantial visual impacts on residential areas and public resources.
- Minimize route length, circuity, cost, and special design requirements.

2.3.2 Technical Guidelines

Technical Guidelines provide the Routing Team with technical requirements or limitations related to the physical limitations, design, ROW, or reliability concerns of the Project infrastructure. The proposed line generally requires a 100-foot ROW to meet North American Electric Reliability Corporation ("NERC") safety guidelines and PPL Electric's design criteria. However, non-standard design can be used in narrower ROWs (e.g., taller structures with differing conductor orientation). The technical guidelines were informed by: (1) the technical expertise of engineers and other industry professionals responsible for the reliable and economical construction, operation, and maintenance of electric system facilities, (2) NERC reliability standards as implemented by PJM, and (3) industry best practices. Technical guidelines for this Project include:

- Acquire 100 feet of ROW.
- Design the transmission line for single-circuit 115 kV operation.
- Minimize turning angles in the transmission line greater than 20 degrees.
- Maintain safe electrical clearance from existing transmission lines in the study area.

2.4 Routing Constraints

The Routing Team identified and mapped routing constraints in the Study Area. Constraints were defined as specific areas that should be avoided to the extent feasible during the alternative analysis process. Constraints are divided into two groups based on the size of the geographic area encompassed by the constraint: large area constraints and small area constraints. Large area constraints include large areas of land in the Study Area. Large area constraints are avoided to the extent practicable and are considered unfavorable by the Routing Team for developing Potential Routes.

The final list of large area constraints consisted of:

- Densely developed residential areas, including neighborhoods along Brindle Road, Eppley Road, Stumpstown Road, and Williams Grove Road
- NRHP resources, such as the Cumberland Valley Railroad district, and adjacent areas.

- Williams Grove Park
- The DCNR Yellow Breeches Creek – Ledighs to Williams Grove NHA, including Yellow Breeches Creek and its associated wetland complexes.

After the Potential Routes were initially developed to avoid large area constraints to the extent practicable, the alignments were adjusted where feasible to avoid and maximize distance from small area constraints. Small area constraints encompass other features that are found within smaller geographic areas or site-specific locations. Small area constraints identified within the Study Area include:

- Individual residences (including houses, anchored mobile homes, and multi-family buildings) and residential curtilage, which is interpreted in Pennsylvania as the area up to 100 meters (328 feet) immediately surrounding a residence, and used for domestic purposes. Curtilage does not extend beyond the individual's parcel boundaries and may also be "broken" by road or railroad ROW's or changes in land use.
- Commercial, industrial, and large farm buildings.
- Places of worship, such as the West Shore Free Church and Cumberland Valley Church.
- Recorded sites of designated historic buildings and sites, including any specified buffer zone around each site.
- Small wetlands, open water, and streams.
- Specific recreational sites, facilities, and trails, such as sports fields associated with the West Shore Free Church and the proposed South Mountain Trolley Greenway.

The Routing Team attempted to keep the routes and associated ROW from passing over these point-specific constraints. However, in some instances complete avoidance of small area constraints (e.g., an unnamed tributary of Yellow Breeches Creek) was not possible because of the location of these constraints in some areas of the Project. In addition, the ROW crosses some of these features, including historic corridors and a proposed greenway trail. The Routing Team also considers alignments parallel to parcel boundaries and tree lines where practical to avoid bisecting properties.

2.5 Routing Opportunities

The Routing Team defined routing opportunities as locations where the proposed transmission line might be located with the least or minimal impact. Routing opportunities were identified and evaluated by:

- Reviews of aerial photography and other available mapping data.
- Incorporation and consideration of available GIS data.
- Field investigation of the Project area.
- A public open house meeting, where landowners identified potential revisions to the routes and provided property specific information.
- Federal, state, and local agency consultation.
- Project input from PPL Electric staff.
- Routing Team experience with similar projects.

Practical routing opportunities considered in the Study Area included paralleling existing rights-of-way and linear features, including:

- Existing 230 kV and 500 kV transmission lines;
- Existing pipelines;
- Local roadways;
- Abandoned railroad ROW; and
- Parcel boundaries.

The Cumberland – Williams Grove 230 kV Transmission Line crosses through the middle portion of the Study Area and provides a potential paralleling opportunity. However, the existing transmission line crosses several areas with smaller parcels and denser residential development that inhibits constructing a new transmission line next to the existing line. The Juniata – Three Mile Island 500 kV Transmission Line forms the western edge of the Study Area and provides a second potential paralleling opportunity, although a gas pipeline on the east side of the transmission line would necessitate a wider offset between the two electric lines and potentially complicate construction and maintenance for both utility owners.

The abandoned Cumberland Valley Railroad corridor forms another potential paralleling opportunity, traversing the Study Area from north to south. Although most of the former ROW has been functionally reclaimed or merged into adjacent parcels, the corridor still represents an existing division of land that is potentially suitable for paralleling. Additionally, the abandoned railroad corridor provides suitable access for the Project, as its adjacent landowners have utilized the corridor for farming equipment transportation. Any Potential Routes paralleling this corridor would need to consider both the historic value of the railroad and planned future recreational uses (e.g., the South Mountain Trolley Greenway).

2.6 Routing Criteria and Data Sources

The Routing Team included quantitative and qualitative routing criteria as part of the Potential and Alternative Route analysis process. No ranking or weighting values are applied. Instead, the Routing Team uses the routing criteria along with the guidelines (described in **Section 2.3**) to compare the potential impacts of the routes on land use, natural and cultural resources and engineering and construction concerns to identify the route with the least overall impact. The quantitative and qualitative routing criteria used during the routing process are described in the following sections. The routing process is explained in more detail in **Section 2.2**.

2.6.1 Quantitative Routing Criteria

The Alternative Analysis Study made extensive use of information from existing GIS data. This information was obtained from many sources, including federal, state, and county governments. Much of this information was obtained through official agency GIS data access websites, some was provided directly by government agencies, and some was created by the Routing Team by either digitizing information or through aerial photo interpretation.

The use of GIS data allows for the consideration and efficient use of a wide variety of information that would otherwise be unavailable or impractical to consider for a planning effort of this scope. GIS information is a highly effective tool when utilized for broad level planning studies, identifying, and characterizing landscape level constraints and features, and developing

environmental inventory information useful for comparisons between planning alternatives. However, GIS data sources vary widely with respect to their accuracy and precision, and presentation, analysis, and calculations derived from these data sources require careful consideration when used for planning purposes. Therefore, GIS-based calculations and maps should be considered reasonable approximations of the resource or geographic feature they represent, and not absolute measures or counts. They are presented to allow for general comparisons between alternatives with the assumption that the level of any inherent errors or inaccuracies would be generally similar across all alternatives. A list of quantitative data used during the alternative analysis process is provided in **Table 4-2**.

Table 4-2. Quantitative Siting Criteria		
Siting Criteria	**Source**	**Description**
Built Environment		
Number of parcels crossed by the ROW	Cumberland County 2022	Count of the number of parcels crossed by the ROW
Number of residences and commercial buildings in close proximity to routes	Bing building footprints supplemented with and classified using 2021 Pennsylvania Emergency Management Agency (PEMA) aerial imagery, 2019 National Agriculture Imagery Program (NAIP); and 2020 ESRI World Imagery. Data was field verified from points of public access.	Count of the number of residences and commercial buildings within the ROW and within 100, 250 and 500 feet of route centerlines
Land use acreage and distance crossed by the ROW	Digitized from 2021 Pennsylvania Emergency Management Agency (PEMA) aerial imagery, 2019 National Agriculture Imagery Program (NAIP), and 2020 ESRI World Imagery.	Land cover was categorized as either developed (including buildings, roads, and mowed/maintained open space associated with structures and parks), cultivated cropland, forest cover, or grassland/pasture.
Acres of local parks crossed	Environmental Systems Research Institute (ESRI) Local Parks dataset, augmented by ownership in Cumberland County parcel data	Local parks and recreation areas crossed by the ROW
Length parallel to proposed South Mountain Trolley Greenway	Cumberland Valley Rails to Trails Council 2022	The proposed greenway follows an abandoned rail corridor through the Study Area.
Agricultural Security Areas (ASAs) crossed by routes	Cumberland County 2022 – Agricultural Security Area Interactive Map	Protected land that is devoted to limiting the use of land to agricultural production or agricultural related activities
Agricultural Conservation Easements crossed by routes	Pennsylvania Spatial Data Access (PASDA) PA Conserved Land – Farmland Preservation Easements 2022	Protected land that is devoted to limiting the use of land to agricultural production or agricultural related activities

Table 4-2. Quantitative Siting Criteria		
Siting Criteria	**Source**	**Description**
Township Agricultural Security Resolution areas crossed by routes	Cumberland County 2022 – parcel records	Protected land that is devoted to limiting the use of land to agricultural production or agricultural related activities
Institutional uses (schools, places of worship and cemeteries) within 1,000 feet of the route centerline	U.S. Geological Survey's GNIS (2020) augmented by aerial imagery interpretation and field verification from public points of access	This dataset includes the locations of cemeteries, churches, hospitals, parks, and schools. Features within 1,000 feet of potential routes were field verified.
Airfield and heliports within 2 miles of the route centerline	GNIS (2020) and the Federal Aviation Administration (FAA) database (2022)	Distance from airfields and heliports
Historic Resources		
Number of archeological resources within the ROW and within 0.25 mile	Previously identified archaeological resources database maintained by the Pennsylvania State Historic Preservation Office (2022)	Previously identified archeological resources listed on or eligible for the National Register of Historic Places (NRHP) acquired through the database maintained by SHPO and Pennsylvania Historical & Museum Commission (PHMC)
Number of historic architectural resources within the ROW, within 0.25 mile and within 1 mile	Previously identified historic architectural resources and historic districts, maintained by the Pennsylvania State Historic Preservation Office (2022)	Previously identified architectural resources listed on or eligible for on the National Register of Historic Places (NRHP) acquired through the database maintained by SHPO and Pennsylvania Historical & Museum Commission (PHMC)
Natural Environment		
Forest clearing within the ROW	Digitized from 2021 Pennsylvania Emergency Management Agency (PEMA) aerial imagery, 2019 National Agriculture Imagery Program (NAIP), and 2020 ESRI World Imagery.	Acres of forest within the ROW

Table 4-2. Quantitative Siting Criteria		
Siting Criteria	**Source**	**Description**
Number of National hydrography dataset (NHD) stream and waterbody crossings within the ROW	USGS (2022)	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells
Acres of National Wetland Inventory (NWI) wetland crossings within the ROW	U.S. Fish and Wildlife Service (USFWS) (2022)	The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats.
Acres of 100-year floodplain crossing within the ROW	U.S. Federal Emergency and Management Agency (FEMA) (effective 2022)	Acres of 100-year floodplain within the ROW
Acres of modeled primary wetlands within the ROW	PASDA, University of Vermont Spatial Analysis Laboratory (2013)	High-resolution wetland data based on predictive modeling of likely wetland locations
Miles of public lands crossed by the route	The Protected Areas Database of the United States (PAD-US) (2022) and ESRI (2021)	Miles of federal, state, and local lands crossed by the ROW. No public lands are crossed by the ROW.
Natural Heritage Areas and other sensitive habitat areas within the Project vicinity	Pennsylvania Natural Heritage Program (2022) County Natural Heritage Inventory (CNHI)	Mapped sensitive resource areas
Threatened, endangered, rare, or sensitive species occurrence within the Project vicinity	USFWS, Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Game Commission and Pennsylvania Fish and Boat Commission (2022)	Known occurrences; locations of potential habitat based on land use
Percent of hydric soils within the ROW	United States Department of Agriculture (USDA-NRCS), Natural Resources Conservation Service Soil Survey Geographic (SSURGO) Database (2022)	Percent of soil associations crossed by the ROW characterized as hydric, partially hydric, and non-hydric
Percent of prime farmland soils and soils of statewide importance within the ROW	USDA-NRCS SSURGO Database (2022)	Percent of soil associations crossed by the ROW characterized as prime farmland or farmland of statewide importance

Table 4-2. Quantitative Siting Criteria		
Siting Criteria	**Source**	**Description**
Engineering and Constructability		
Route length	Measured in GIS	Length of route in miles
Number and severity of angled structures	Measured in GIS	Anticipated number of angled structures < 4 degrees, 4 to 20 degrees, and over 20 degrees based on preliminary design
Number of road crossings	PASDA local and state road centerlines (2019)	Count of federal, state, and local roadway crossings
Number of pipeline crossings	U.S. Department of Transportation National Pipeline Mapping System (2022) and 2021 aerial imagery	Number of known pipelines crossed by the transmission ROW
Number of transmission line crossings	PPL Electric and Homeland Infrastructure Foundation-Level Data electric transmission lines	Number of high voltage (100 kV or greater) transmission lines crossed by the ROW
Distance of steep slopes crossed	Derived from seamless Digital Elevation Models (DEMs) obtained from the U.S. Geologic Survey (2022)	Miles of slope greater than 20 percent crossed by the routes
Length of transmission line parallel	PPL Electric, supplemented with Homeland Infrastructure Foundation-Level Data electric transmission lines for areas outside of PPL's service territory	Miles of the route parallel to existing high voltage transmission lines
Length of road parallel	PASDA local and state road centerlines (2019)	Miles of the route parallel to existing roadways
Length of parcel and abandoned railroad parallel	Cumberland County parcels (2022)	Miles of the route parallel to parcel boundaries or abandoned railroad parcels/corridor. Many routes parallel to roads also parallel parcel boundaries; when this occurs, routes are counted as parallel to roads to avoid double-counting.

Table 4-2. Quantitative Siting Criteria		
Siting Criteria	**Source**	**Description**
Sinkholes and caves within ROW	Department of Conservation and Natural Resources – mapped karst features (2007)	Inventory of mapped karst features (including sinkholes and caves) identified by the Pennsylvania Geological Survey. Data should not be assumed to be a complete accounting of all karst features.

2.6.2 Qualitative Routing Criteria

The Routing Team also considered qualitative routing criteria based on the team's expertise in siting, designing and constructing high voltage transmission lines. Qualitative criteria are identified in **Table 4-3**.

Table 4-3. Qualitative Siting Criteria		
Siting Criteria	**Source**	**Description**
Built Environment		
Aesthetic impacts	Expert opinion	Anticipated visual impacts based on topography, structure type and height, tree clearing, land use and presence of existing infrastructure
Land use impacts	Expert opinion, comprehensive plans, public open house	Anticipated or perceived impact on communities and their values, individual residences, commercial facilities, or institutional uses
Public comments	Public open house	Comments received during the November 16, 2022, and January 18, 2023, open house meetings
Engineering and construction feasibility	Expert opinion	Anticipated engineering and construction challenges based on experience on similar projects

2.6.3 Route Reconnaissance

Prior to field reconnaissance, some key features, such as residences, outbuildings, recognized places of worship, cemeteries, and commercial buildings were mapped based on publicly available building footprint data augmented by aerial imagery interpretation. In October 2022, Routing Team members conducted field inspections throughout the Study Area. The team members examined potential routes by automobile from points of public access and correlated observed features to information shown on aerial photography, USGS 7.5-minute topographic maps, road maps, locally available development sketch maps, and other information. Relevant features were viewed, verified, and recorded on laptop computers displaying aerial photography using GIS software supported by real-time Global Positioning System (GPS) tracking for positional information in the vehicle. Engineering conducted a further field review in December 2023.

3.0 ROUTE DEVELOPMENT

3.1 Potential Route Development

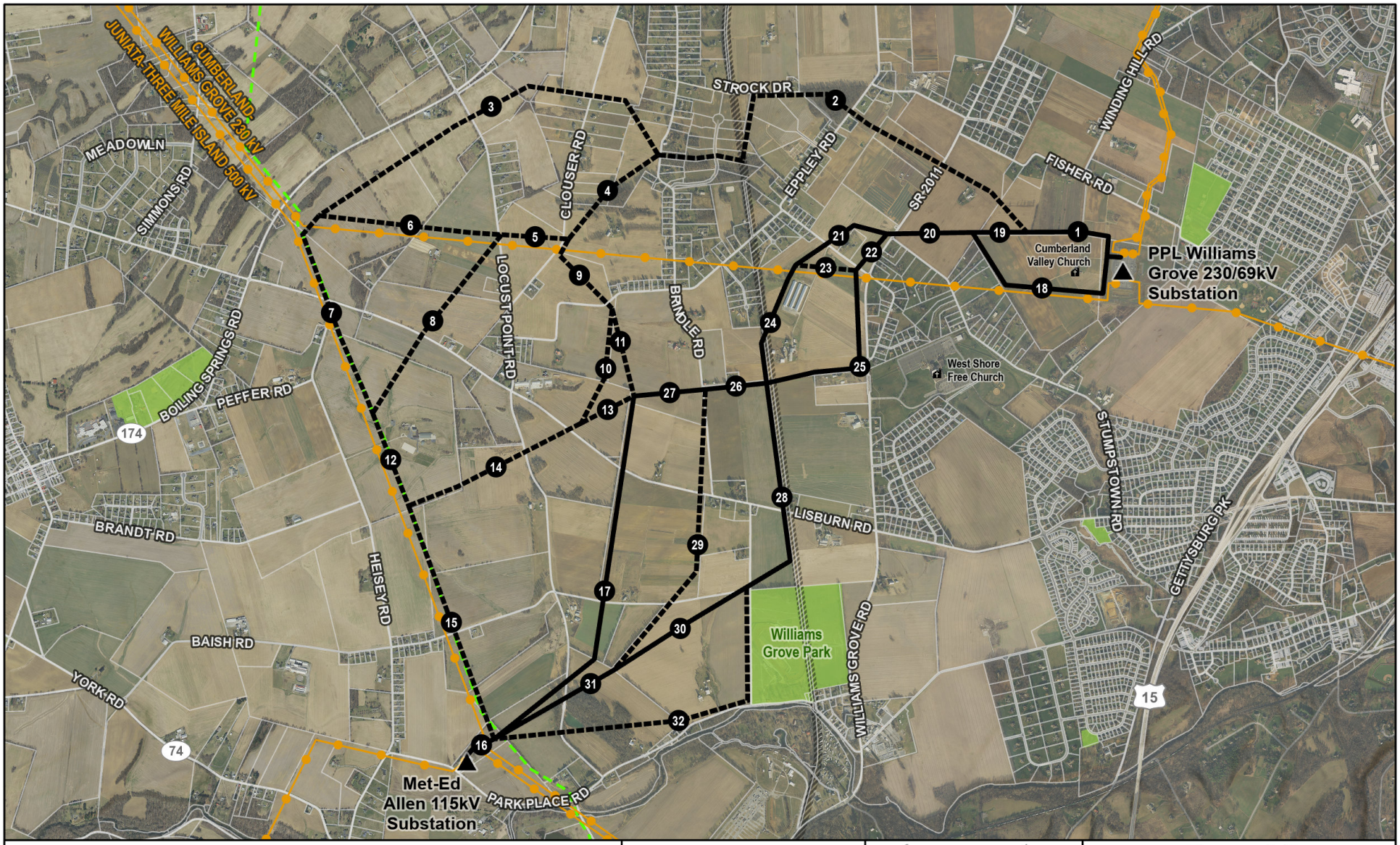
The Routing Team developed a series of Potential Routes based on the routing process, guidelines and criteria developed in **Section 2.0**. Potential Routes are an early iteration of the routing process that involves the development of conceptually based routes and general consideration of these routes with respect to constraints and opportunity features in the Study Area (see **Figure 4-1**).

The Routing Team developed initial Potential Routes to avoid large area constraints where feasible and maximize the distance between small area constraints while avoiding circuitous routes and minimizing sharp angles. Where feasible, Potential Routes were sited to parallel roads, property boundaries, and tree lines rather than bisect these areas. The Potential Route identification effort resulted in a network of approximately thirty-two links that could be considered to route the new line from existing Williams Grove Substation to the existing MAIT Allen Substation. **Figure 4-3** shows the resulting network of Potential Routes evaluated by the Project Team.

The existing Williams Grove Substation is located at the intersection of several existing transmission lines (the Williams Grove – Mechanicsburg 69 kV, Williams Grove – West Shore 230 kV, and Cumberland – Williams Grove 230 kV lines). When transmission lines cross, PPL Electric's general practice is to site the lower voltage line beneath the higher voltage line. From a reliability perspective, this allows PPL Electric to maintain the lower voltage line without interrupting service on the higher voltage line.

The existing Williams Grove Substation is also constrained by residential development along Fisher Road and Stumpstown Road. Based on the designed bay arrangement, only one feasible option was identified to exit the Williams Grove Substation to the west. Upon exiting the existing Williams Grove Substation, the Routing Team identified feasible "northwestern" and "southwestern" links (Potential Routes 1 and 18) as shown in **Figure 4-3**. From here, the Routing Team developed alternatives into the existing Allen Substation that minimized potential impacts to the natural and built environment. These conceptual routes had various links created to identify options in particularly challenging areas.

Figure 4-3. Potential Route Network



- Substation
- Potential Route
- Removed Potential Route
- Existing Transmission Line
- Natural Gas Pipeline
- Local Park
- Parcel Boundary
- Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

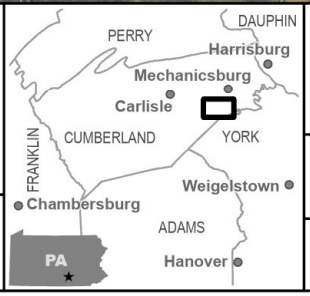


Figure 4-3
Potential Route Network
Williams Grove - Allen 115 kV Transmission Line Project

0 0.25 0.5 Miles

The Routing Team developed Potential Routes within the northern portion of the Study Area that would either parallel roads and property boundaries, or traverse cross-country. Upon further desktop review, the Routing Team noted a proposed residential development crossed by Potential Route 2 (shown on **Figure 4-3**) located south of Strock Drive and immediately west of the abandoned railroad corridor. To minimize residential impacts and reduce the overall line length, Potential Route 2 was dropped altogether as it did not conform to the route objectives or criteria. Subsequently, Potential Routes 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 were all eliminated for further consideration. The following paragraphs discuss the remaining Potential Routes in the central and southern portions of the Study Area.

The Routing Team developed routes within the central and southern portions of the Study Area (Potential Routes 13 through 32) that would traverse generally south to southwest. Potential Routes in the central and southern portions of the Study Area would generally avoid residential encroachments by paralleling property boundaries, existing transmission lines, and road ROWs to the greatest extent practical. All Potential Routes that enter the existing Allen Substation require crossing the Cumberland – Williams Grove 230 kV Transmission Line.

Entering the existing Allen Substation from the west and northeast would result in a circuitous route and/or require crossing additional existing transmission lines. Given these considerations combined with the engineering requirements established for the proposed Williams Grove – Allen 115 kV Transmission Line, one potential corridor was identified to enter the existing Allen Substation from the north (Potential Route 16). Within the southern portion of the Study Area, the Routing Team identified several potential route links connecting to Potential Route 16 to present to property owners for further discussion.

3.2 Potential Route Review and Evaluation

A field inspection was conducted in October 2022 to examine the Potential Routes within the Study Area. This review involved the visual examination of the Potential Routes from road crossings and other points of public access. The team utilized mapping software showing the Potential Routes to track precise locations and record the path of the field work. Residences (single

family, multi-family, modular homes, and mobile homes), outbuildings (garages, sheds, barns, etc.), commercial buildings, and other potentially sensitive receptors (e.g., cemeteries, churches, and schools) within 1,000 feet of each Potential Route center line were identified and recorded. Various routing challenges were also identified during the field inspection, such as locations where homes or structures are near the existing or proposed ROW and areas of environmental concern. Photographs were taken at selected or representative locations throughout the Potential Route Network.

The Routing Team subsequently discussed the Potential Route Network in late October 2022. During this meeting, comparative data, aerial photos, and notes taken during the field reconnaissance were reviewed. The major environmental and land use factors considered in this evaluation were: wetlands, ponds, and other stream crossings, tree clearing requirements, length of new ROW required, proximity of residences and other buildings, known or suspected historic sites, and incremental aesthetic impact. Engineering factors were also considered during the link evaluation, including extent of ROW overlapping opportunities and areas that presented engineering and construction challenges (e.g., the number of angle structures required and siting a lower voltage line beneath the higher voltage line).

As shown in **Figure 4-3**, Potential Routes 24 and 25 each require one crossing of the existing Cumberland – Williams Grove 230 kV Transmission Line. Potential Route 23 paralleled the existing 230 kV transmission line and was eliminated as non-standard angle structures were required to maintain 150 feet of centerline-to-centerline separation parallel to the existing transmission lines.

The Routing Team initially developed Potential Routes 15, 17, 28, 29, 30, 31, and 32 to predominately parallel property boundaries, existing transmission line, and tree rows. The Routing Team chose to parallel the east side of the existing Juniata – Three Mile Island 500 kV Transmission Line (Potential Route 15) primarily because of residences near the west. However, due to its added length and proximity to residential properties, Potential Route 15 was eliminated. For this reason, Potential Routes 13 and 14 were also dropped altogether. The Routing Team also eliminated Potential Route 29 due to its additional impact to farmland. Similarly, Potential Route

32 was removed as it required additional natural environment and built environment impacts, including proximity to a historic building.

The remaining links were assembled into Potential Routes and presented to the public for comment during an open house meeting held in November 2022. The Potential Routes presented at the November open house meeting are shown in **Figure 4-4** as Potential Routes A through G. The format and content of the open house meeting is described in **Section 3.4**.

3.3 Agency Consultation

As part of the route development process, the Routing Team contacted various federal, state, and local agencies to inform them of the Project and request data to be used during route analysis. The agencies contacted are identified in the following sections. Copies of correspondence with federal and state agencies are provided in **Attachment 14**.

3.3.1 Federal Agencies

As described in **Attachment 3**, an online preliminary PNDI was conducted for the Study Area on October 11, 2022. Following the selection of the Preferred Route and its subsequent adjustments (see **Section 4.4.1**), an updated online PNDI review was conducted for the Preferred Route on July 18, 2023. The USFWS response indicated that no known impacts are anticipated to threatened and endangered species and/or special concern species and resources because of the Project, with no further review required. Additional detail is included in **Section 4.1.2** and a copy of the USFWS response is presented in **Attachment 14**.

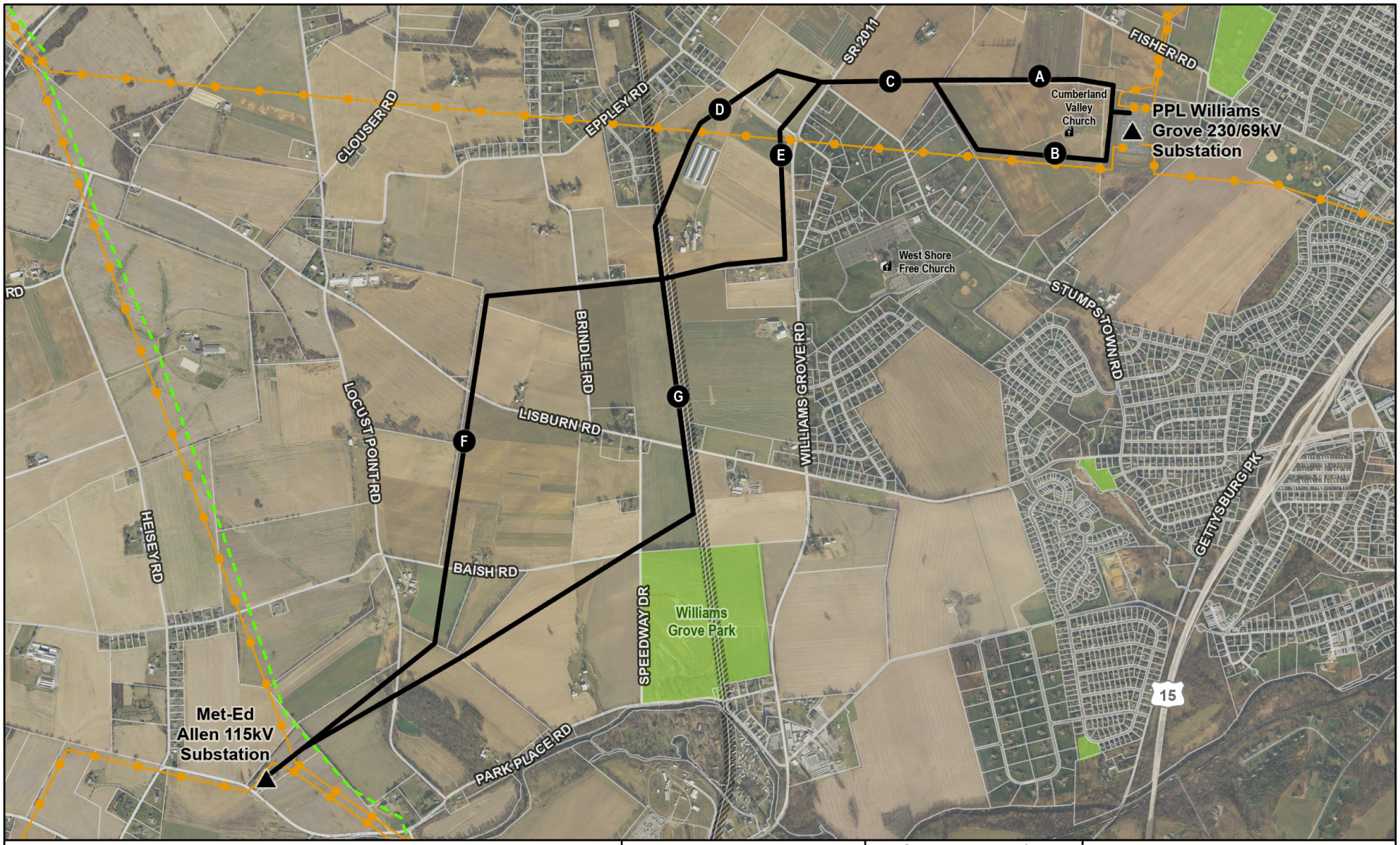
3.3.2 State Agencies

Following the selection of the Preferred Route and its subsequent adjustments (see **Section 4.4.1**), a final online PNDI review was conducted for the Preferred Route on July 18, 2023. The PGC and PFBC response indicated that no known impacts are anticipated to threatened and endangered species and/or special concern species and resources because of the Project, with no further review required. Additionally, PPL Electric coordinated with the DCNR to determine if the Project posed any potential impacts to two state-listed species known to inhabit the Yellow Breeches Creek-

Ledighs Williams Grove CNHI-Core Habitat. The DCNR response, dated July 20, 2023, indicated that no impacts to these species are likely because of the Project. Additional details of the PNDI results and agency consultation are discussed in **Section 4.1.2** and **Section 4.5**, **2** and a copy of the DCNR response is presented in **Attachment 14**.

PPL Electric conducted an on-line review through the SHPO PA_SHARE on July 18, 2023. SHPO's response indicated that no impacts to archeological resources or historic architectural resources are anticipated because of the Project. A copy of the SHPO response is available in **Attachment 14.**

Figure 4-4. Potential Routes from November 2022 Open House



- Substation
- Potential Route from November 2022 Open House
- Existing Transmission Line
- Natural Gas Pipeline
- Local Park
- Parcel Boundary
- Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

Figure 4-4
Potential Routes from November 2022 Open House
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

3.3.3 Local

PPL Electric met with representatives from Cumberland County on October 10, 2022, to introduce the Project. Prior to the open house meetings, PPL Electric notified the county and townships crossed by the Potential Routes (Cumberland County and Upper Allen and Monroe townships) of the potential and alternative routes. Cumberland County requested the route alignment parallel roads and property boundaries to the greatest extent practicable. The Routing Team adjusted the route alignments to comply with their request to the extent feasible. Additionally, PPL Electric will continue to coordinate with each municipality throughout the course of the Project.

3.4 Public Outreach

Public outreach is a significant component of the siting process. PPL Electric conducted extensive public outreach throughout the siting process, including regulatory agency consultation, public notification and open house meetings, and meetings with property owners. Following field reconnaissance, the Routing Team presented a Potential Route Network (see **Section 3.1**) to the public for comment at an open house meeting on November 16, 2022. A second public open house meeting was held on January 18, 2023, to announce the Preferred Route and answer additional questions from the public.

3.4.1 Outreach Media

Prior to conducting public open house meetings, PPL's Regional Affairs Director contacted local officials to discuss the Project, as described in **Section 3.3.3**. On November 4, 2023, PPL Electric mailed public notices to all property owners located within 500 feet of the Potential Route Network to notify them about the November 16, 2022, open house meeting. On November 10, 2023, PPL Electric placed an advertisement in the Patriot newspaper to notify the public of the scheduled open house. Similarly, PPL mailed public notices to all property owners located within 500 feet of the Potential Route Network to notify them about the January 18, 2022, open house meeting. On January 12, 2023, PPL Electric placed an advertisement in the Patriot newspaper to notify the public of the scheduled open house.

3.4.2 Public Open Houses

A public meeting was held on November 16, 2023, at Hidden Hillside and Events in Camp Hill to present the Potential Route Network and provide information about the Williams Grove – Allen 115 kV Transmission Line Project. At the meeting, attendees received a Project fact sheet, information on the PUC process, comment cards, a siting input survey, and Project Area map. The public information meetings provided an opportunity for residents and other interested parties to review project information displays and discuss the Project with PPL Electric and WSP representatives. The fact sheet contained a brief statement on Project need, a description of the siting process, and a preliminary Project timeline. The public meeting was organized in an open house format and consisted of several stations that identified the Project processes. These stations included the following:

1. Welcome station located at the entrance for attendees to sign-in;
2. Project Need station providing an overall summary and explaining the planning process;
3. Route Selection station detailing the siting process and including aerial maps showing the Potential Route Network or Preferred Route and parcel boundaries;
4. Right-of-Way station explaining the easement process;
5. Engineering station detailing the specifications for the new transmission line;
6. Environmental station explaining the permitting process;
7. Construction station detailing the specifics for constructing the new transmission line; and
8. Next Steps station explaining the project schedule and how to stay informed.

Nineteen people signed in and attended the November open house meeting. Eight comment cards were completed by the guests during this meeting. Comments at the meeting and on the comments cards varied, but generally fell into one of the following categories: Potential Routes (comments about or opposing specific routes, suggested new alignments, or comments about the routing process), natural resources (impacts to forested land, wildlife, habitat, and water resources), real estate (impacts to property value, operating business and property use), viewshed (visual impacts), farmland (impacts to farm operation), and health and safety. PPL Electric reviewed these comments and followed up with the commenters to answer any outstanding questions.

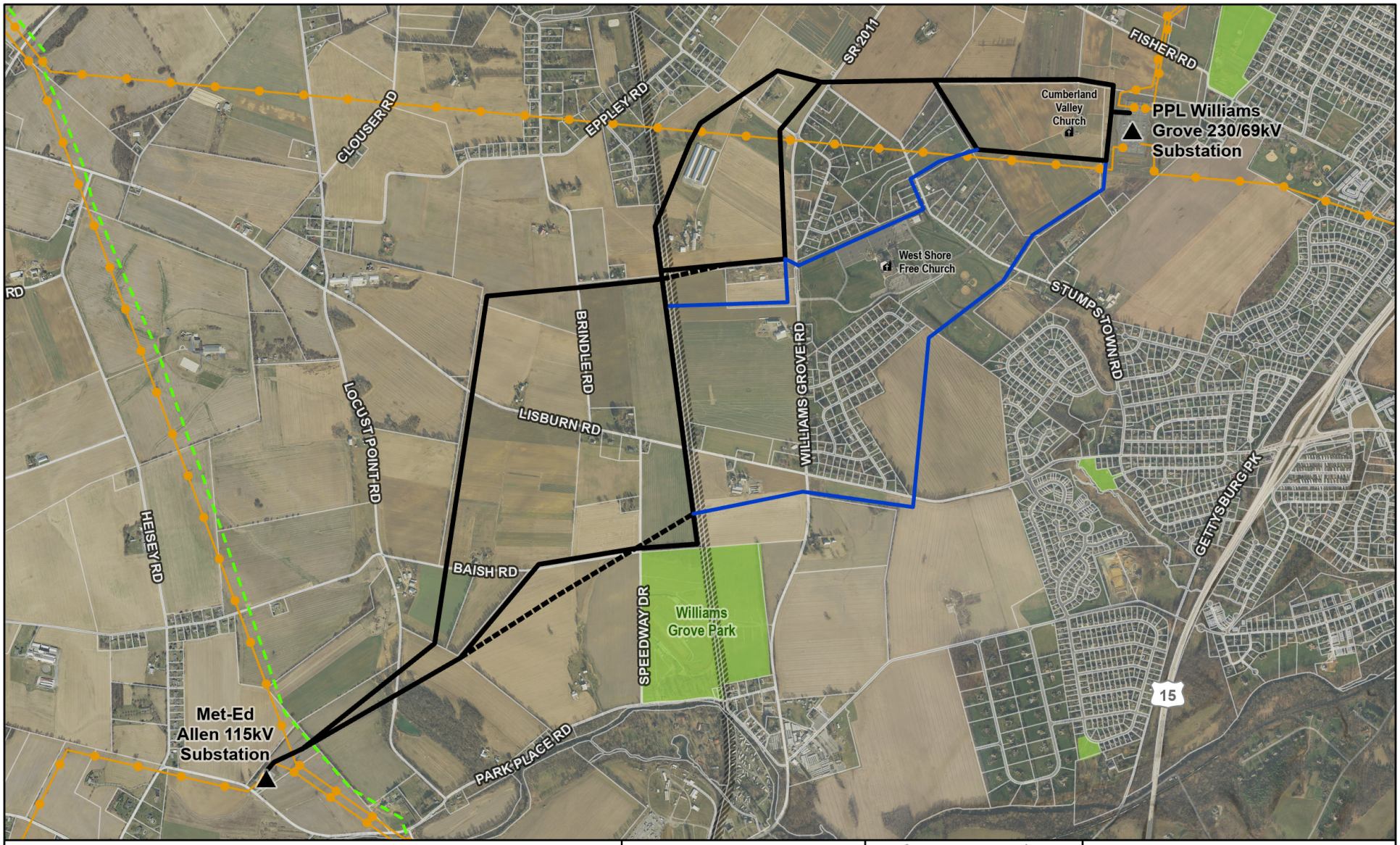
Following the November open house, the Routing Team used information obtained during the open house meeting along with public comments to refine the Potential Routes. The alignments suggested by the landowners would result in major changes through individual properties and were reviewed extensively by the Routing Team. Ultimately, the Routing Team eliminated these alignments from further consideration as they did not conform to the route objectives or criteria, as discussed in **Section 3.5**.

After the Routing Team identified the Proposed and Alternate routes, a second open house meeting was held on January 16, 2023, to announce the preferred route and present information on the Preferred Route. Fourteen people attended the January open house meeting, and two comment cards were completed by the guests. Comments during the January open house primarily focused on routing adjustments and health and safety concerns. The Routing Team finalized the Preferred Route alignment based on this information and additional meetings with property owners.

3.5 Potential Route Refinement

Immediately following the November public open house meeting, the Routing Team met to review comments that were written on comment cards or maps and shared in conversation with Project representative (see **Section 3.4.2**). In addition to making the Routing Team aware of general landowner concerns about the Project, these meetings provided an opportunity to revise the Potential Routes, where feasible, based on new information provided by landowners and technical guidance provided by the engineering team. Revisions to the Potential Route Network, including eliminated Potential Routes and landowner suggested alignments, are shown in the Refined Potential Route Network on **Figure 4-5**.

Figure 4-5. Refined Potential Route Network


CLOUSER RD
EPPLEY RD
SR 2011
FISHER RD
Cumberland Valley Church
PPL Williams Grove 230/69kV Substation
West Shore Free Church
STUMPSTOWN RD
BRINDLE RD
WILLIAMS GROVE RD
LISBURN RD
LOCUST POINT RD
HEISEY RD
BAISH RD
SPEEDWAY DR
Williams Grove Park
GETTYSBURG PK
15
Met-Ed Allen 115kV Substation
PARK PLACE RD
Substation
Refined Potential Route
Removed Potential Route
Landowner Suggested Alignment Removed
Existing Transmission Line
Natural Gas Pipeline
Local Park
Parcel Boundary
Abandoned Railroad Corridor
Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)
Coordinate System:
State Plane PA South
Datum: North American 1983
PERRY
DAUPHIN
Harrisburg
Mechanicsburg
Carlisle
CUMBERLAND
YORK
FRANKLIN
Chambersburg
Weigelstown
ADAMS
Hanover
PA
0
1,000
2,000
Feet
Figure 4-5
Refined Potential Route Network
Williams Grove - Allen 115 kV
Transmission Line Project

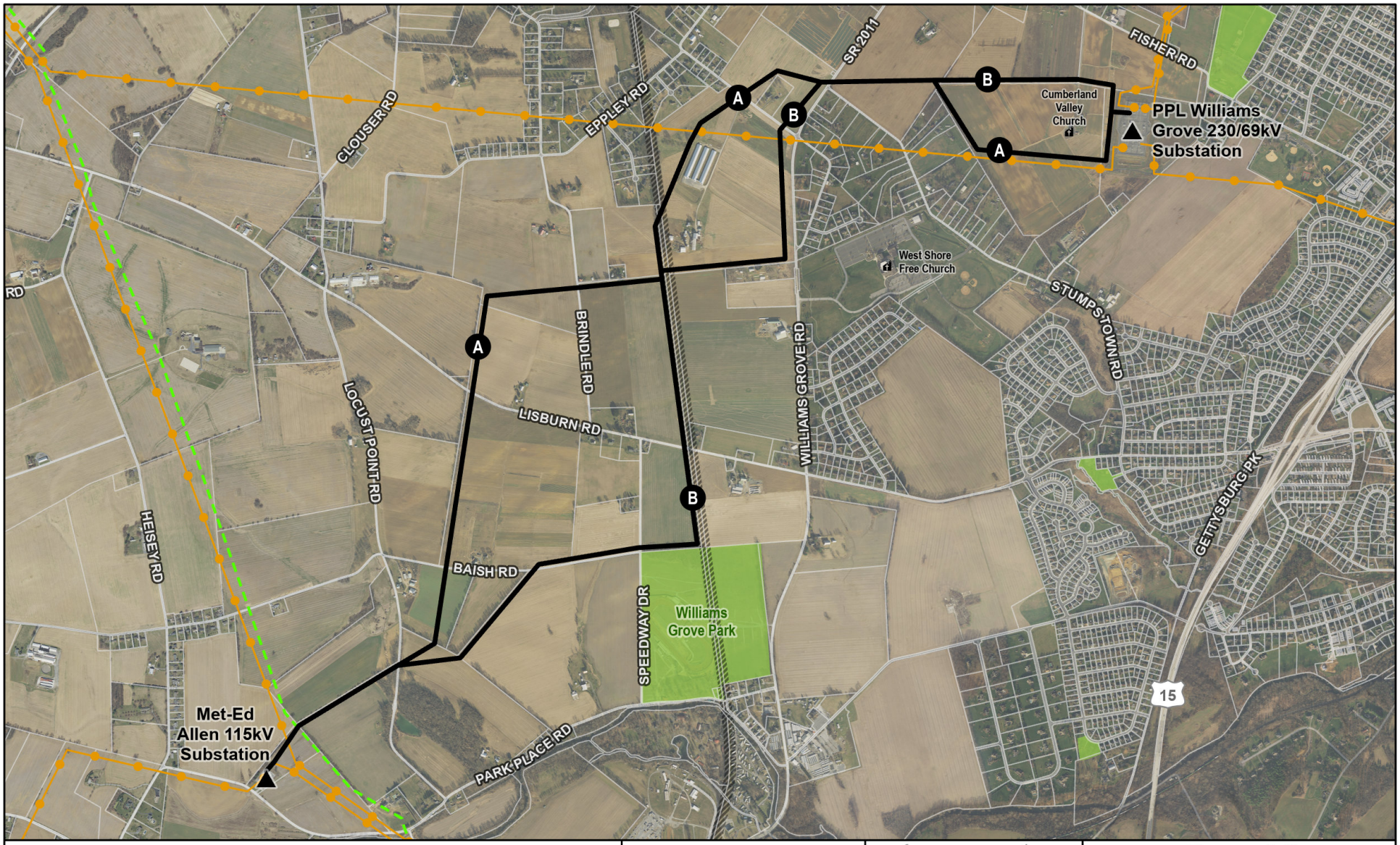
Once the Refined Potential Routes were developed, the Routing Team considered additional information provided by agency outreach, field review, data analysis, and public comment. A qualitative and quantitative screening process was employed to eliminate or modify route links from the Refined Potential Route Network that were not considered suitable for additional study; this process narrows down the network and focuses on refining the preferable links to establish Alternative Routes. In some cases, these eliminations or adjustments were based on the likelihood of impacts on residential developments, natural resources, or other developed infrastructure.

At the November open house meeting, some landowners shared concerns about the proximity of the Project to their homes and farm buildings. These landowners identified routing options that were later analyzed by the Routing Team. The landowner routing options would continue south of the existing Williams Grove Substation and continue west and southwest through the West Shore Free Church property and/or existing farmland. Further, two of the options create engineering challenges when crossing underneath the existing 230 kV transmission lines, requiring taller structures, increase visual impacts, and greater impacts from the longer line lengths. After extensive review, the Routing Team eliminated all three landowner routes for various reasons, namely, curtilage concerns, building constraints on the church property, multiple sharp angles, and added line length.

3.6 Alternative Route Development

The Routing Team developed two Alternative Routes from the remaining Potential Route Network and relabeled them as Routes A and B. The Alternative Routes were revised slightly based off landowner negotiations after the open house meetings. The Alternative Routes are summarized below and shown on **Figure 4-6**.

Figure 4-6. Alternative Routes



- Substation
- Alternative Route
- Existing Transmission Line
- Natural Gas Pipeline
- Parcel Boundary
- Local Park
- Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

Figure 4-6
Alternative Routes
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

Alternative Route A (Alternate Route)[4]

Route A is approximately 3.9 miles long and located within Upper Allen and Monroe townships, Cumberland County.

Route A exits the existing Williams Grove substation to the west and south, following the edge of the substation on PPL property for 0.1 miles, then turning west to parallel the north side of the existing Cumberland – Williams Grove 230 kV Transmission Line for 0.4 miles within existing PPL-owned ROW. The route turns northwest along the edge of a parcel, diverting from the existing transmission line to avoid crossing through denser residential development and non-condemnable properties. From here, the route heads generally west for 0.4 miles through agricultural properties adjacent to Williams Grove Road. At this point, Route A angles southwest for 0.6 miles, crossing the existing Cumberland – Williams Grove 230 kV Transmission Line and bypassing three newly constructed agricultural buildings.

Upon crossing the abandoned Cumberland Valley Railroad corridor, Route A parallels the west side of the abandoned corridor for a short distance before turning west along parcel boundaries and through an open field for 0.5 miles. North of Lisburn Road, Route A turns sharply southward, paralleling parcel boundaries for approximately 0.8 miles until crossing Baish Road. The route continues straight across Baish Road and through an agricultural field for an additional 0.2 miles before turning southwest towards the Allen Substation. Of the final 0.6 miles of Route A, 0.5 miles are sited either parallel to a parcel boundary or on the Allen Substation parcel owned by MAIT.

[4] Following the January 2023 open house meeting, minor adjustments were made to the Alternative Routes based on parcel survey information, discussions with landowners, and engineering refinements. The Alternative Routes described in this document refer to the final route alignments and, therefore, differ slightly from the information presented at the January open house.

Alternative Route B (Preferred Route)

Route B is approximately 3.9 miles long and located within Upper Allen and Monroe Townships, Cumberland County.

Route B exits the existing Williams Grove Substation to the west and north, following the edge of the substation on PPL property north for approximately 0.1 miles, then turning west to parallel parcel boundaries for 0.4 miles. The route continues straight west across an agricultural field for an additional 0.3 miles and crosses Williams Grove Road. Route B then turns generally south, paralleling the west side of Williams Grove Road for 0.5 miles, although the route is offset slightly farther from the road than required by its 100-foot ROW to maintain clearances from distribution lines also placed along the road.

To avoid crossing a residential parcel, Route B turns west along the edge of an agricultural parcel for 0.3 miles, where it crosses the abandoned Cumberland Valley Railroad ROW. Route B then turns southward to parallel the west side of the abandoned railroad ROW for 0.8 miles. Immediately north of Williams Grove Park, Route B diverts away from the railroad ROW, turning west along the northern edge of the park and following the north side of Baish Road for 0.3 miles. From here, Route B crosses Baish Road and turns southwest towards the Allen Substation. Of the final 1.0 mile of Route B, 0.8 miles are located either parallel to a parcel boundary or on the Allen Substation parcel owned by MAIT.

4.0 ALTERNATIVE ROUTE EVALUATION

This section further discusses the Alternative Routes and provides a quantitative and qualitative analysis of potential impacts to local communities, the environment, and cultural resources. The Alternative Routes were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Routing Team.

4.1 Natural Environment Impacts

Natural environment impacts include potential impacts to vegetation and habitat, surface waters, and conservation and recreation lands. Potential impacts discussed in this section are based on publicly available maps and data as well as consultation with federal and state agencies (see **Section 4.5**). A comparison of the natural environment considerations for the two Alternative Routes is presented in **Table 4-4**.

Table 4-4. Natural Environment[5]

Resource Criteria	Alternative Route	
	A	B
Wetlands/Streams		
NHD Stream Crossings (count)	1	1
UNT to Yellow Breeches Creek (CWF)	1	1
NHD Waterbody Crossings	0	0
NWI Wetland (acres within ROW)	0.5	0.2
PASDA Modeled Primary Forested Wetlands (acres within ROW)	1.4	0.4
FEMA Floodplain		
100 Year Floodplain (acres)	0	0
Forest Clearing		
Forest clearing based on imagery (acres within ROW)	2.2	2.3
Sensitive Species		
CNHI-Core Habitat acres crossed by ROW	0	0
CNHI-Core Habitat acres within ½ mile	167.5	189.8
Soils (percentage of area within ROW)		
Prime Farmland	78%	77%
Farmland of Statewide Importance	17%	23%

[5] All calculations were based on a standard 100-foot-wide ROW.

Table 4-4. Natural Environment[5]		
Resource Criteria	**Alternative Route**	
	A	**B**
Not Hydric Soils	79%	57%
Hydric Inclusion/Partially Hydric Soils	20%	42%
Hydric Soils	1%	1%
Topography/Slope		
Slopes >20% (miles crossed)	< 0.1	< 0.1

4.1.1 Soil and Water Resources

Prime farmland and farmland of statewide importance are special categories of highly productive cropland that is recognized and described by the NRCS. Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops. Soils that do not meet the prime farmland category but are still recognized for their productivity may qualify as farmland of statewide importance. As shown in **Table 4-4**, the Alternative Routes traverse similar areas identified as prime farmland. Farmland in the vicinity of the Alternative Routes includes croplands, and grasslands that could be used for grazing or hay production. Permanent impacts to farmlands are anticipated to be minimal due to the use of the monopole tower structures for this Project, which have smaller footprints compared with lattice or H-frame structures. Therefore, neither of the Alternative Routes is expected to significantly impact prime farmland or farmland of statewide importance.

Transmission construction activities such as vegetation clearing, access road construction, grading, and foundation construction can impact soils by disturbing the native structure of the soil and thereby creating areas of higher erosion potential, compaction, and lower soil permeability/fertility. The severity of soil impacts depends on several variables including vegetation cover, the slope of the land, soil particle size, thickness of the soil profile, depth to a restrictive layer, and soil moisture content. During construction of the Project's ROW and access roads, prime farmland and/or farmland of statewide importance may be removed temporarily from productivity; permanent structures such as transmission towers would remove only a small portion of the right-of-way for the transmission tower footprint (foundation diameter of 6 to 10 feet) from further productivity. Access roads are normally temporary impacts so crop production and grazing

can resume after construction is completed. Furthermore, once transmission structure construction is completed, normal agricultural uses will continue to be permitted within the right-of-way.

Unvegetated soil surfaces are more susceptible to erosion and loss of soil productivity. Removing stumps during tree clearing increases the potential for soil erosion, and leaving topsoil exposed increases the potential of loss by wind and water. Best management practices ("BMPs") to minimize erosion impacts may include leaving stumps in the ground, covering exposed soil, and reseeding after construction. PPL Electric will obtain all necessary permits and employ specified BMPs to minimize soil erosion during construction activities. In agricultural areas, farming activities will continue to occur within the ROW following construction. In forested areas, the ROW will be revegetated with compatible species and maintained in accordance with PPL Electric's Vegetation Management Program (see **Attachment 12**).

Other indirect impacts to surface waters, such as sedimentation and erosion of surrounding soils can also result from ground-disturbing activities. Typically, sedimentation is easily controlled with proper perimeter controls around the transmission line construction area. BMPs may include the implementation of sediment control measures such as silt fencing, access road drainage management measures, and rapid reseeding of disturbed soil areas. PPL Electric will coordinate with the PADEP and obtain and comply with the necessary storm water permits for construction of the Project. As a result of implementing mitigation measures similar to those discussed above and the limited footprint of permanent impacts on soil productivity created by the structures themselves, any impacts to soils are likely minor for all Alternative Routes.

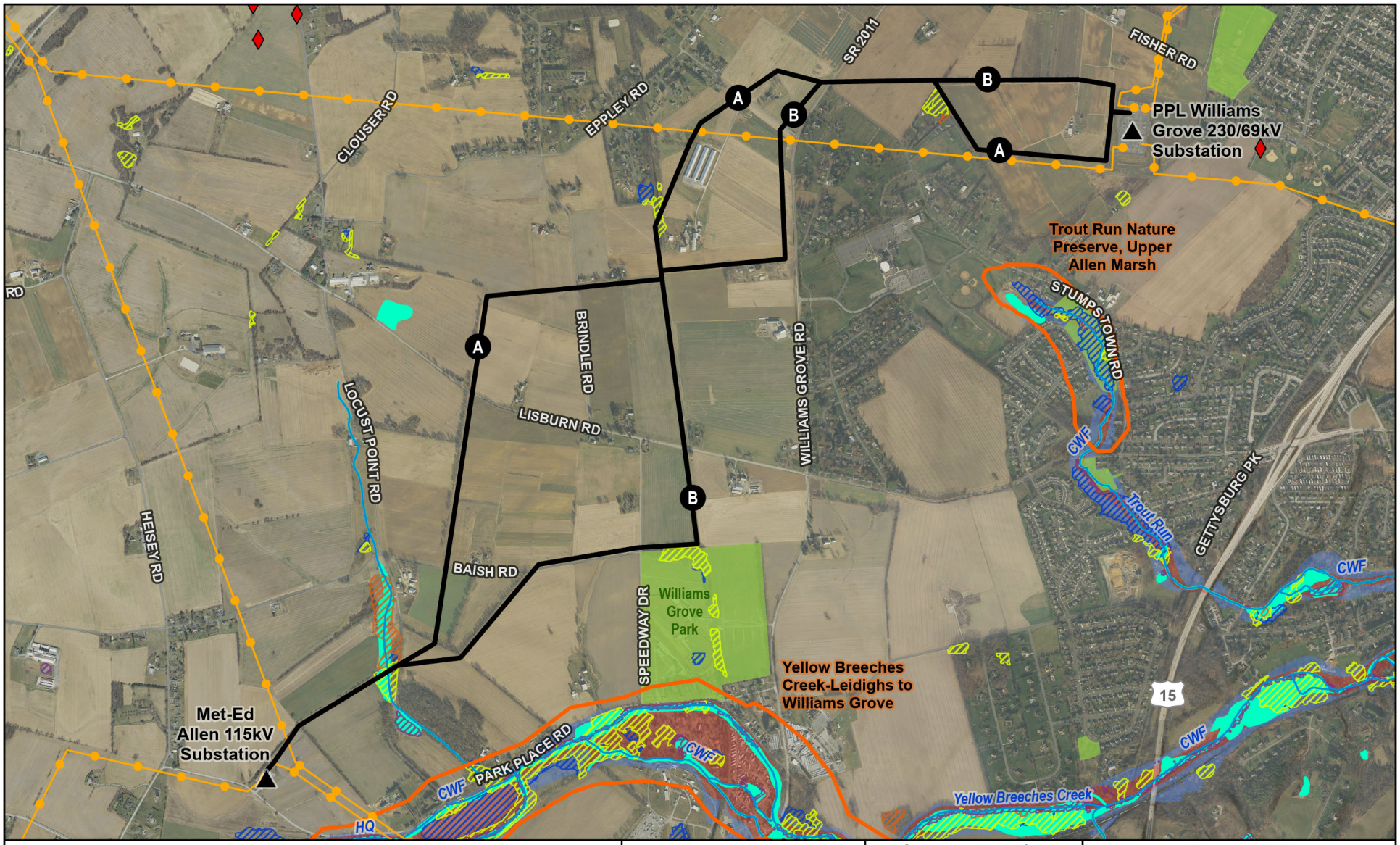
Soil surveys and digital soils data were used to locate areas with soils typically found in wetlands. NRCS soil surveys group areas into soil map units, which consist of one or more soil types. For this analysis, soils were grouped into three categories based on soil survey information: hydric soils, hydric inclusion soils (partially hydric soils), and non-hydric soils. Soil map units that consist of over 50 percent hydric soil types were classified as hydric soils, soil map units that consist of up to 50 percent hydric soil types were classified as partially hydric soils, and soil map units that consist only of non-hydric soil types were classified as non-hydric soils. Areas with hydric and

hydric inclusion soils have a greater probability of supporting wetlands than areas with non-hydric soils.

Direct impacts on hydrologic features are often minimized or avoided by spanning wetlands, rivers, or drainages, when feasible. In the absence of other constraints, engineers typically seek to place structures at high points in topography, inherently resulting in the avoidance of structure placement that impacts water or wetland features in low-lying areas. However, in a few rare instances, such as at crossings of large wetland areas or complexes, a structure may need to be placed within a wetland. In these instances, the area of wetland loss is limited to the area of the footprint of the structure foundation. Other impacts may include conversion of a forested wetland to a scrub/shrub or herbaceous wetland. Forested wetlands identified within the Project Study Area include PASDA modeled primary wetlands, as shown in **Figure 4-7**.

Where wetland impacts cannot be avoided, PPL Electric will coordinate with the U.S. Army Corps of Engineers ("USACE") concerning potential impacts on jurisdictional wetlands and will attempt to minimize permanent impacts when feasible and practical. To this end, PPL Electric will implement a range of BMPs during the design, construction, and operational phases to avoid or minimize impacts on wetlands. These practices may include the consideration of designs that limit clearing forests near drainages and in areas of steep topography, requiring the use of wetland mats to minimize impacts of construction traffic, and avoiding construction during seasonally wet periods in certain areas.

Figure 4-7. Natural Environment



- Substation
- Alternative Route
- Existing Transmission Line
- Local Park
- Stream or River
- FEMA 100-year Floodplain
- FEMA Regulatory Floodway
- NWI Wetland
- Natural Heritage Inventory Core Habitat
- Modeled Wetland
  - Emergent
  - Forested
  - Scrub\Shrub
  - Water
- Sinkhole

Sources:
PEMA Imagery (2021)
NWI Wetlands (USFWS 2022)
Modeled Wetlands (PASDA 2013)
Floodplains (FEMA 2022)
Streams (USGS 2022)
Natural Heritage (PNHP 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

Figure 4-7
Natural Environment
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

Alternative Route Comparison

As a result of implementing mitigation measures like those discussed above and the limited footprint of permanent impacts on soil productivity created by the structures themselves, any impacts to soils are likely minor for all Alternative Routes. As shown in **Table 4-4**, neither Alternative Route crosses a notable percentage of hydric or partially hydric soils. This is consistent with the limited amount of NWI mapped wetlands crossed by each Alternative Route (0.2 to 0.5 acre). However, potential forested wetland impacts compared between the Alternative Routes indicate that Alternative Route A would impact one acre more PASDA modeled forested wetlands (1.4 acres) when compared to Alternative Route B (0.4 acre). No PASDA modeled emergent wetlands are crossed by the Alternative Routes.

Alternative Routes were also analyzed for number of stream crossings, including streams, rivers, or drainages that can be perennial, seasonal, intermittent, or ephemeral, as well as 100-year floodplain crossings. As shown in **Table 4-4**, Routes A and B each require one NHD stream crossing. The NHD stream crossed by both routes is a UNT of Yellow Breeches Creek. No scenic, high quality or exceptional value NHD streams would be crossed by either of the Alternative Routes. Further, PPL Electric will minimize in-stream and wetland impacts, regardless of the route selected, by spanning or avoiding them to the extent practical. No NHD waterbodies or FEMA floodplains or regulatory floodways are crossed by either Alternative Route. Streams, wetlands, waterbodies, and floodplains in the vicinity of the two Alternative Routes are shown on **Figure 4-7**.

4.1.2 Wildlife and Habitat

During construction, trees and other tall-growing vegetation within the forested portions of the ROW would be removed to maintain appropriate clearances for the conductors. Upon completion of construction, compatible species would be permitted to regrow and would be maintained in accordance with PPL Electric's Vegetation Management Program (see **Attachment 12**) in these areas. In forested areas, a 100-foot-wide ROW will be cleared and maintained.

It should be noted that impacts on habitat need to be considered with respect to the current status of habitat and the nature of its current wildlife assemblage. For example, over 90 percent of the

land crossed by the Alternative Routes is used for agricultural purposes. In these areas, species are accustomed to living in converted habitats. Forest dwelling species located adjacent to agriculture or developed settings are either endemic to or tolerant of edge-type habitats. Therefore, for many of the species now present, additional permanent impacts will be unlikely or negligible because of project construction.

In agricultural areas, minimal vegetation clearing would be required, and permanent impacts would be limited to the structures and/or their foundations and any areas requiring permanent access roads. After construction, access roads can be re-vegetated with native grasses or agricultural crops. For areas where an access road was cut into the landscape, the access road can either be reclaimed back to the original grade or the roadbed left in place and re-vegetated for future access needs. Whether or not an access road is reclaimed would depend on several factors, including landowner negotiations and the need to access that particular section of the transmission line in the future.

Impacts to wildlife would vary depending on the type of impact and nature of the species impacted. Short-term impacts may include temporary displacement from an area due to construction-related noise or temporary modifications in habitat. Longer-term impacts occur if the habitat for the species is permanently removed, such as with the conversion of forested habitat to shrub-scrub or emergent vegetation, or less obviously, when the Project introduces a new feature that degrades the overall quality of the habitat for certain species.

Alternative Route Comparison

The potential for impacts to vegetation and wildlife habitats can be assessed by comparing each Alternative Route with respect to the type of vegetation crossed, the anticipated acreage of tree clearing, and potential impact to conservation areas.

As shown in **Table 4-5** (see **Section 4.2**), about 93 percent of land crossed by Route A and close to 92 percent of land crossed by Route B consists of grassland/pasture and cultivated crops. In these areas, any new construction requiring permanent vegetation loss will be limited to the transmission structure footprint and construction of the Project would not result in permanent

changes to habitat. Based on a review of aerial imagery, both routes would require a similar amount of tree clearing, with Route B slightly higher (by 0.1 acre) within a standard 100-foot ROW. Additionally, neither route crosses any County Natural Heritage Inventory (CNHI)-Core Habitat areas.

As stated in **Section 4.5** and **Attachment 3**, an online review was conducted for the Study Area on October 11, 2022. This review requested information from the four agencies responsible for the protection of endangered, threatened, or species of special concern within the Project area: PFBC, PGC, Pennsylvania DCNR, and the USFWS. Following the selection of the Preferred Route and its subsequent adjustments (see **Section 4.4.1**), a final online PNDI review was submitted on July 18, 2023. The correspondence from these agencies regarding the potential presence of these ecological resources within the project area are provided in **Attachment 14**.

DCNR indicated that the Project is in the vicinity of the red-head pondweed (*Potamogeton richardsonii*), a state threatened species, and the white water-crowfoot (*Ranunculus aquatilis var. diffusus*), a state species of concern. Suitable habitat for these species located within the Study Area, as the species are known to inhabit Yellow Breeches Creek within the Yellow Breeches Creek – Leidighs to Williams Grove CNHI-Core Habitat. Neither of the Alternative Routes cross Yellow Branches Creek – Leidigh to Williams Grove CNHI-Core Habitat and no in-water work is proposed for the Project; therefore, potential impacts to these species are not likely. Further coordination with the DCNR indicated that the Project was not likely to result in any threatened and endangered and/or special concern species.

The USFWS, PGC, and PFBC responses indicated that no known impacts are anticipated to threatened and endangered species and/or special concern species and resources because of the Project.

4.1.3 Natural Environment Summary

From a combined soil and water resources perspective, the Alternative Routes are similar for most siting evaluation criteria. Each route avoids crossing the Yellow Breeches Creek – Leidigh to Williams Grove CNHI-Core Habitat, NHD waterbodies, and FEMA floodplain areas.

Additionally, both routes require one crossing of an UNT of Yellow Breeches Creek and have minimal (1%) hydric soils within their proposed ROW.

Although Alternative Routes A and B are similar for ROW tree clearing requirements (2.2 and 2.3 acres, respectively), Alternative Route B significantly reduces potential permanent impacts to freshwater emergent and forested wetlands identified in the Project Study Area. Thus, Alternative Route B is slightly more favorable for the combined natural resources criteria.

Field wetland delineations were conducted for the Preferred Route and proposed access roads to determine the exact location of any wetlands or waterways. PPL Electric anticipates that project engineering can minimize wetland and stream impacts through spanning and avoidance. PPL Electric will obtain and adhere to all required state and federal permits, as well as any conditions imposed on those permits.

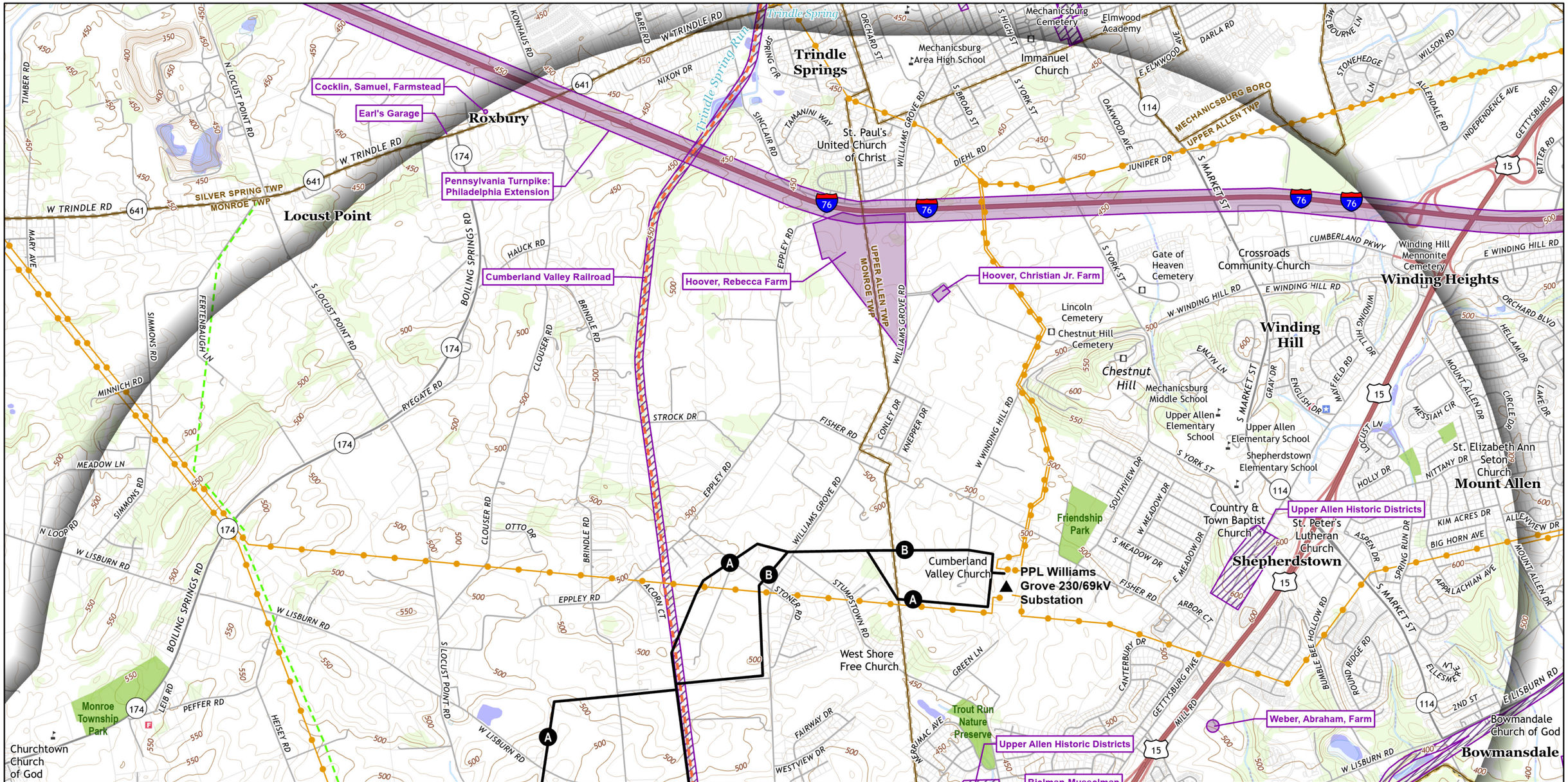
4.2 Built Environment Impacts

Built environment impacts include direct and indirect impacts to residential, commercial and industrial development, institutional uses (e.g., schools, places of worship, and cemeteries), cultural resources, and land use. Construction of a new transmission line can result in changes in land use and aesthetic impacts to residents, commuters and travelers, employees, and recreational users. A comparison of the built environment considerations for Alternative Routes A and B is presented in **Table 4-5**. Topographic maps identifying known built environment elements and constraints within established distances of the Alternative Routes are specified in the PA PUC siting regulations are included in **Figures 4-8A** through **Figure 4-8C**.

Table 4-5. Built Environment[6]		
Resource Criteria	**Alternative Route**	
	A	**B**
Municipalities Crossed (miles)		
Upper Allen Township	0.5	0.5
Monroe Township	3.4	3.4
Human Environment		
Residences within 100 feet of centerline	1	1
Residences within 250 feet of centerline	5	7
Residences within 500 feet of centerline	19	21
Schools within 1,000 feet of centerline	0	0
Churches within 1,000 feet of centerline	1	1
Cemeteries within 1,000 feet of centerline	0	0
Commercial Buildings within 500 feet of centerline	3	0
Parcels crossed by ROW	15	16
Landowners crossed by ROW	12	12
Existing recreational areas within 500 feet	0	1
Miles parallel to abandoned railroad ROW	0.1	0.7
Cultural Resources (NRHP-Listed, NRHP-Eligible, and Local Districts)		
Architectural Resources within ROW	2	2
Architectural Resources within 0.25 mile of centerline	2	2
Architectural Resources within 0.5 mile of centerline	2	2
Architectural Resources within 1 mile of centerline	8	9
Archaeological Sites within ROW	0	0
Archaeological Sites within 0.25 mile of centerline	1	1
Land Use (acres in ROW)		
Developed (Low, Medium, High)[7]	1.8	2.2
Forest Cover[8]	2.2	2.3
Cultivated Crops	41.6	43.1
Grassland/Pasture	1.8	0.0
Agricultural Easement and Security Areas		
Agricultural Security Area (ASA) (miles crossed)	2.4	3.3
Agricultural Conservation Easement (miles crossed)	1.1	1.5
Township Agricultural Security Resolution (miles crossed)	2.0	3.0

[6] All calculations were based on a standard 100-foot-wide ROW.
[7] Developed Areas include high, medium and low-density areas of residential, commercial and industrial development as well as developed open space (i.e., areas with a mixture of some constructed materials, including paved roads, but mostly vegetation in the form of lawn grasses).
[8] The forest cover calculation is based on a review of aerial imagery.

Figure 4-8A. Constraint/Topography Maps



- Substation
- Alternative Route
- Alternate Route 2-mile Buffer
- Existing Transmission Line
- Natural Gas Pipeline
- Municipality Boundary
- Parcel Boundary
- Proposed South Mountain Trolley Greenway
- Local Park
- Historic Building or Site
- Historic District
- NWI Wetland

Sources:
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)
USGS Topographic Basemap (2022)
Aviation Facilities (FAA 2022)
Historic Structures (PHMC 2022)
Wetlands (USFWS 2022)

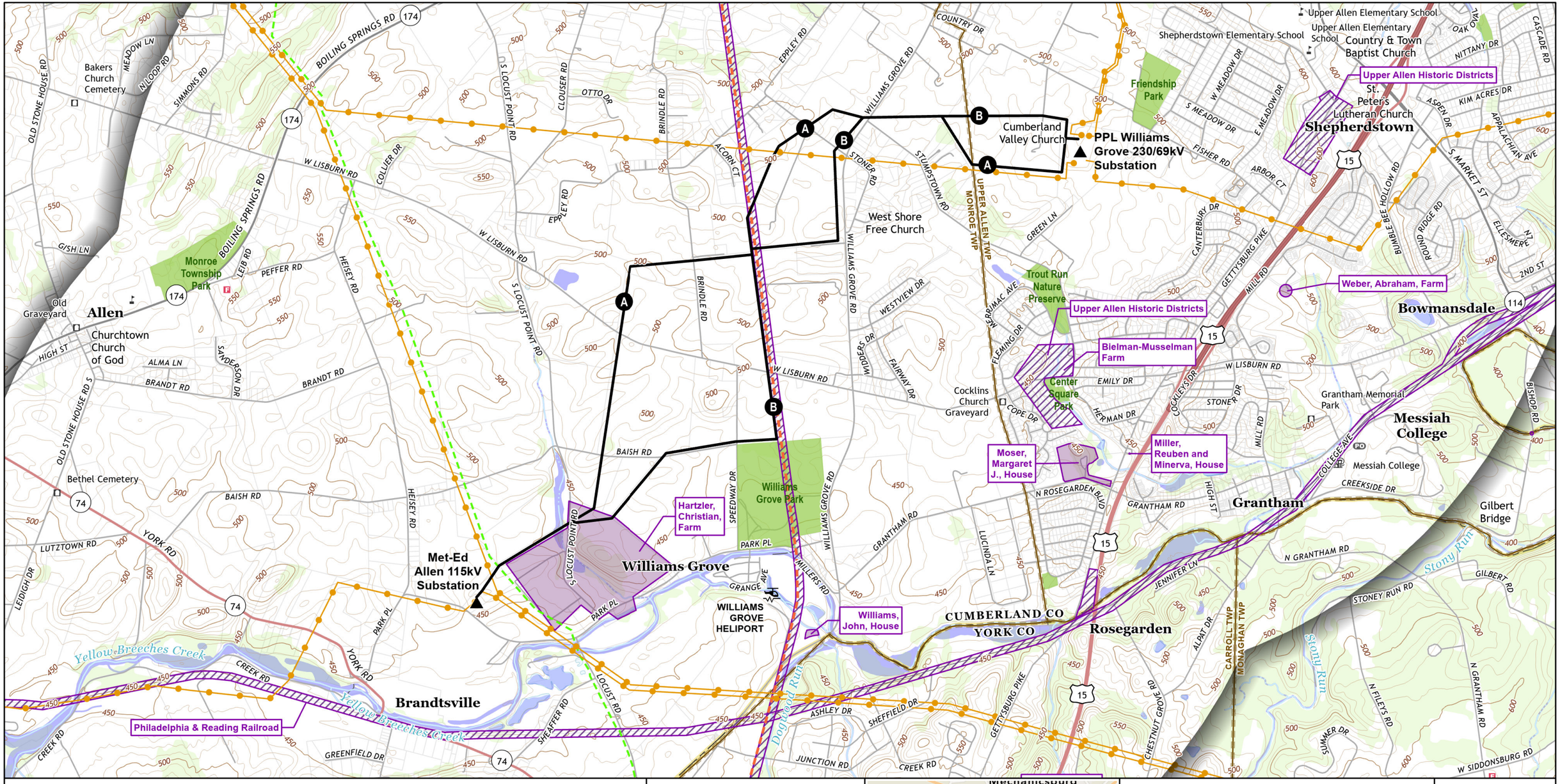
Coordinate System:
State Plane Pennsylvania South
Datum: North American 1983

Figure 4-8
Constraints/Topography

0 2,000 4,000 Feet

1:24,000

Figure 4-8B. Constraint/Topography Maps


Upper Allen Elementary School
Upper Allen Elementary School
Shepherdstown Elementary School
Country & Town Baptist Church
Upper Allen Historic Districts
St. Peter's Lutheran Church
Shepherdstown
Friendship Park
Cumberland Valley Church
PPL Williams Grove 230/69kV Substation
West Shore Free Church
Bakers Church Cemetery
Monroe Township Park
Old Graveyard
Allen
Churchtown Church of God
Trout Run Nature Preserve
Upper Allen Historic Districts
Weber, Abraham, Farm
Bowmansdale
Bielman-Musselman Farm
Center Square Park
Cocklins Church Graveyard
Grantham Memorial Park
Messiah College
Moser, Margaret J., House
Miller, Reuben and Minerva, House
Bethel Cemetery
Williams Grove Park
Hartzler, Christian, Farm
Met-Ed Allen 115kV Substation
Williams Grove
WILLIAMS GROVE HELIPORT
Williams, John, House
Grantham
Gilbert Bridge
Rosegarden
CUMBERLAND CO
YORK CO
Brandtsville
Yellow Breeches Creek
Philadelphia & Reading Railroad
Doubs Road Run
Stony Run
BOILING SPRINGS RD
W LISBURN RD
BRINDLE RD
WILLIAMS GROVE RD
S LOCUST POINT RD
STONER RD
STUMPSTOWN RD
UPPER ALLEN TWP
MONROE TWP
GETTYSBURG PIKE
MILL RD
CANTERBURY DR
BRANDT RD
BAISH RD
YORK RD
GRANTHAM RD
N GRANTHAM RD
CARROLL TWP
MONAGHAN TWP
Substation
Alternative Route
Alternate Route 2-mile Buffer
Existing Transmission Line
Natural Gas Pipeline
Municipality Boundary
Parcel Boundary
Heliport
Proposed South Mountain Trolley Greenway
Local Park
Historic Building or Site
Historic District
NWI Wetland
Sources:
Roads, Townships (PASDA 2019)
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USGS Topographic Basemap (2022)
Aviation Facilities (FAA 2022)
Historic Structures (PHMC 2022)
Wetlands (USFWS 2022)
Coordinate System:
State Plane Pennsylvania South
Datum: North American 1983
Mechanicsburg
Grantham
Figure 4-8
Constraints/Topography
Page 2 of 3
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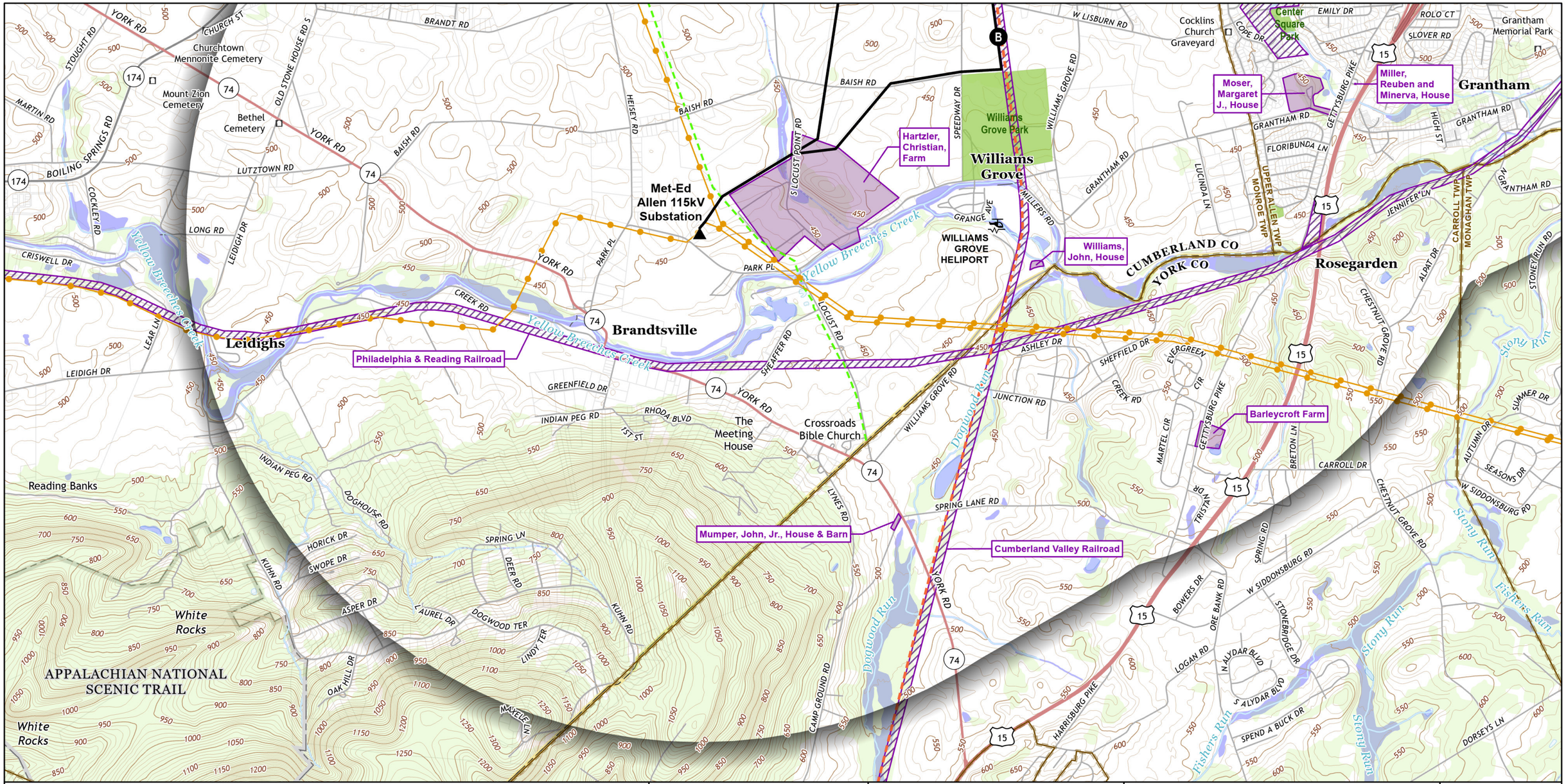
Figure 4-8C. Constraint/Topography Maps



▲ Substation
— Alternative Route
▭ Alternate Route 2-mile Buffer
● Existing Transmission Line
- - - Natural Gas Pipeline
— Municipality Boundary
▭ Parcel Boundary

Heliport
- - - Proposed South Mountain Trolley Greenway
Local Park
Historic Building or Site
Historic District
NWI Wetland

Sources:
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)
USGS Topographic Basemap (2022)
Aviation Facilities (FAA 2022)
Historic Structures (PHMC 2022)
Wetlands (USFWS 2022)

Coordinate System:
State Plane Pennsylvania South
Datum: North American 1983

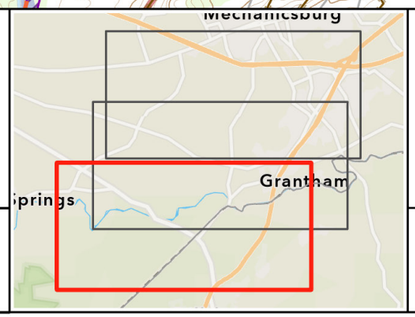


Figure 4-8
Constraints/Topography

ppl wsp

0 2,000 4,000 Feet

N

1:24,000

4.2.1 Land Use

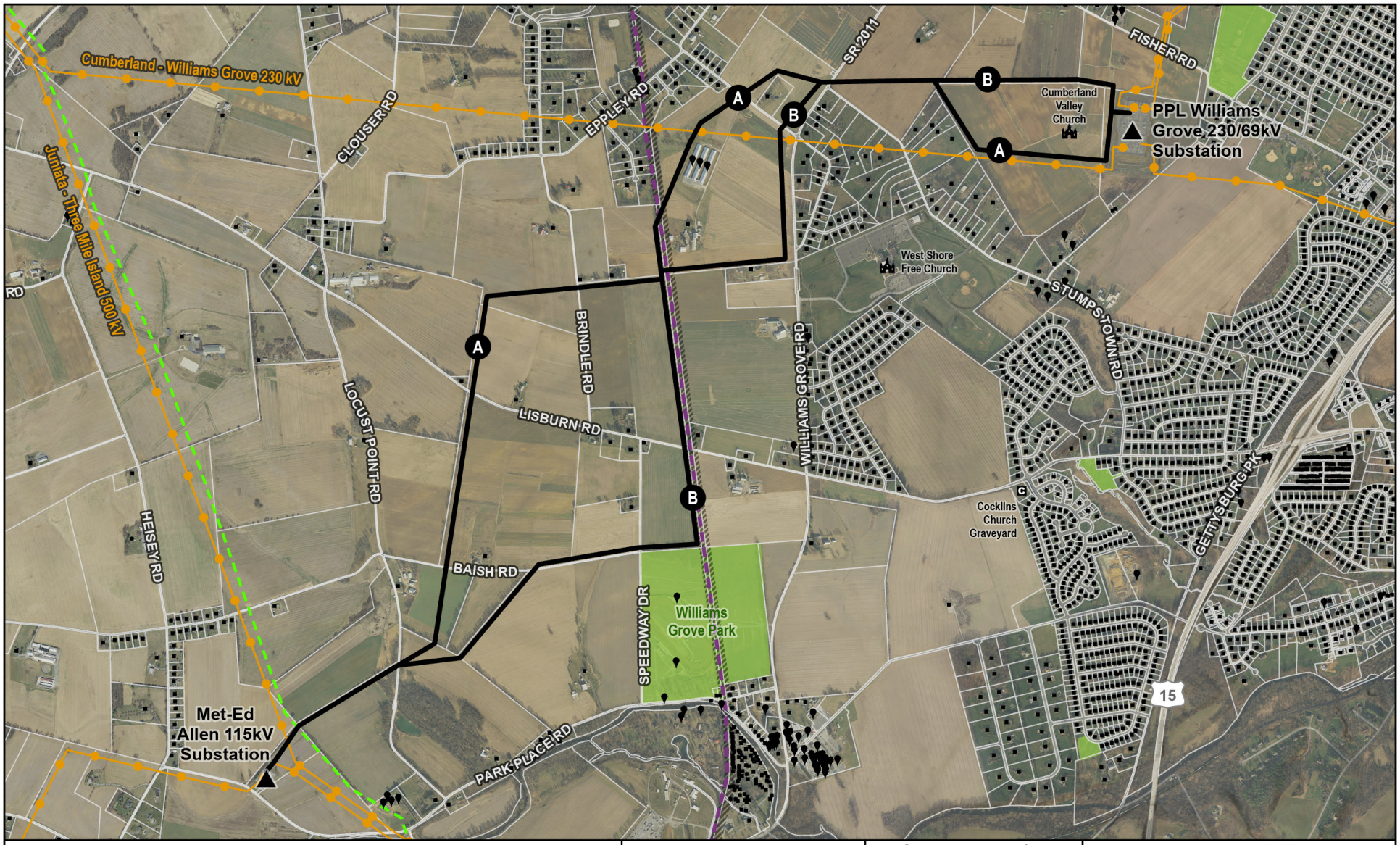
The Alternative Routes are located entirely within Cumberland County, Pennsylvania. Both routes traverse Monroe and Upper Allen townships. Existing land use is primarily composed of residential development and agriculture, such as pastures and crop fields. Industrial agricultural production (e.g., milling, concentrated animal feeding operations) are also present within the Study Area. Residential development is mostly concentrated east of Williams Grove Road and northwest of Eppley Road. The Williams Grove Park, including the Williams Grove Speedway, abuts the southeastern portion of the Study Area but was avoided by both Alternative Routes. No additional recreational areas were identified within or adjacent to the Study Area. Two churches (Cumberland Valley Church and West Shore Free Church) were identified within the northeastern portion of the Study Area. No cemeteries were identified within the Study Area.

In addition, there is substantial utility development within the Study Area, including a natural gas pipeline, transmission lines, and substations. General land use within the vicinity of the Alternative Routes is shown on **Figure 4-9**. The Routing Team worked to develop routes that minimized impacts to residential, industrial, and developed property to the extent possible. As a result, no residences are located within the ROW for either Alternative Route.

Alternative Route Comparison

Land use is similar along both Alternative Routes. Both routes traverse agricultural uses (cultivated crops) for approximately 90 percent of their entire proposed ROW. Based on current aerial imagery of Cumberland County, approximately 10 percent of land crossed by Route A consists of developed areas, forest cover, and grassland/pasture, while 10 percent of land crossed by Route B consists of either developed areas or forest cover. As described in **Attachment 3**, portions of Monroe and Upper Allen townships within the Study Area are part of the agricultural security program, with some properties registered as agricultural conservation easements and/or township agricultural security resolution easements in addition to agricultural security areas.

Figure 4-9. Land Use



- Substation
- Alternative Route
- Existing Transmission Line
- Natural Gas Pipeline
- Parcel Boundary
- Local Park
- Proposed South Mountain Trolley Greenway
- Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

Figure 4-9
Land Use
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

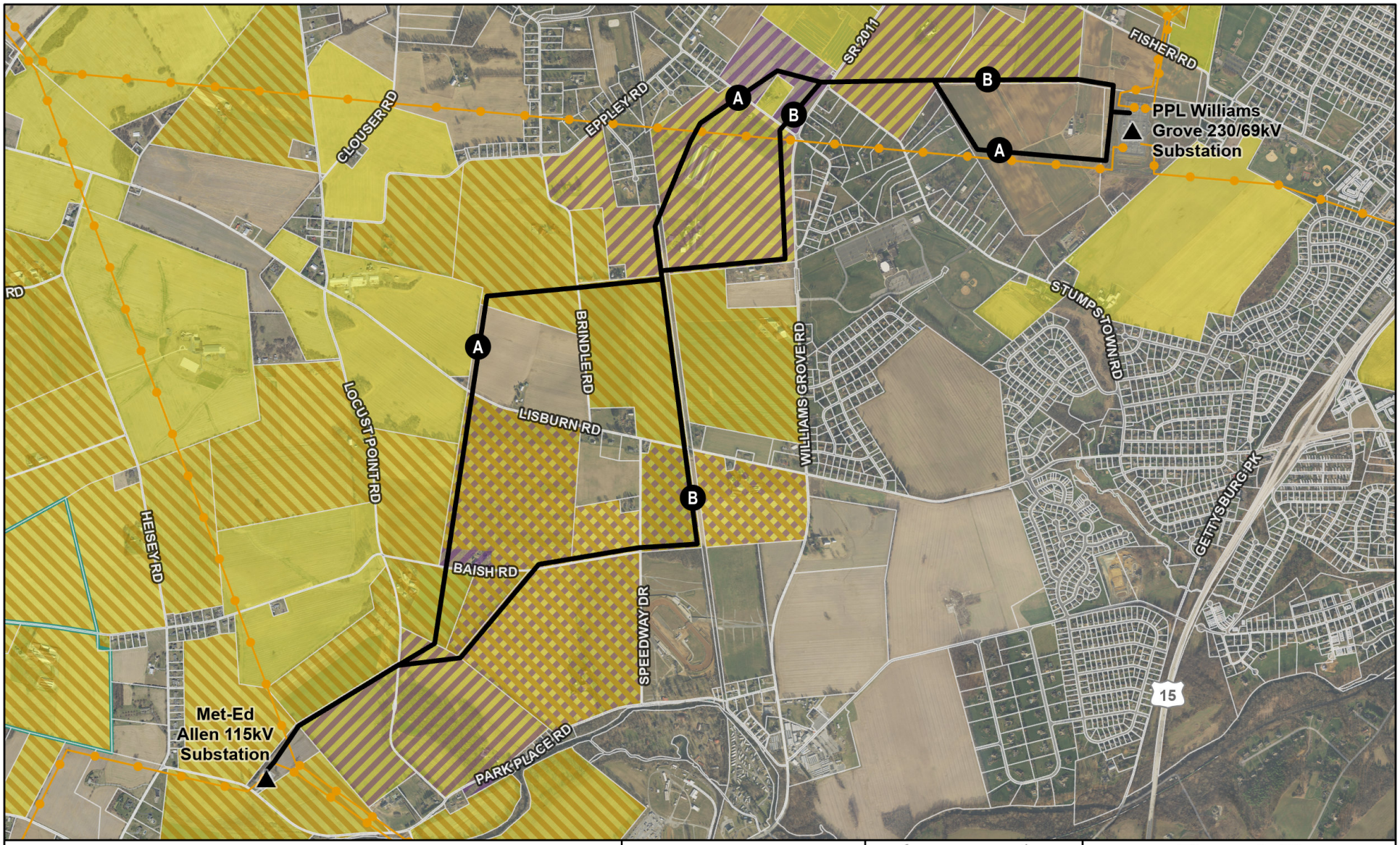
Although both Alternative Routes are similar in total alignment length and cross a similar amount of farmland, Alternative Route B crosses more agricultural security areas and easement areas, as shown in **Figure 4-10** and **Table 4-5**. No federal agricultural conservation easements are crossed by the Alternative Routes. Electric transmission lines are permitted in agricultural security and/or easement areas and do not have a significant impact on the use of the property for agricultural purposes. PPL Electric initially attempted to reduce agricultural impacts by paralleling property boundaries and roads, then worked with the landowners to further minimize the impact of the alternative route alignments on their farming practices.

As shown in **Table 4-5**, Alternative Route A crosses one less parcel than Alternative Route B (15 and 16) but each route crosses a total of twelve unique landowners. Neither Alternative Route crosses non-condemnable properties. Additionally, no residences are located within the ROW for either Routes A or B, and each Alternative Route has one residence within 100 feet of the centerline. Alternative Route B is located near more residences within 250 and 500 feet of the centerline when compared to Alternative Route A, primarily along the portion of its alignment located near the developed areas located east of Williams Grove Road and along Stumpstown Road.

No cemeteries or schools were identified within the Study Area or in proximity to the Alternative Routes. The Routing Team attempted to maximize the distance from places of worship while considering other constraints. The Cumberland Valley Church is located about 0.1 mile west of the Williams Grove Substation. Thus, each Alternative Route is located within 1,000 feet of the Cumberland Valley Church.

No airports are located within two miles of either of the Alternative Routes; therefore, construction and operation of either route is not expected to interfere with airport operations or flight plans. If necessary, however, PPL Electric will file the appropriate documentation with both the Federal Aviation Administration and the PennDOT Bureau of Aviation to ensure the proposed line will not be a hazard to the airport's flight operations.

Figure 4-10. Agricultural Resources



- Substation
- Alternative Route
- Existing Transmission Line
- Parcel Boundary
- Agricultural Security Area
- Agricultural Conservation Easement
- Township Agricultural Security Resolution
- Federal Agricultural Conservation Easement

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads (PASDA 2019)
ASAs (Cumberland Co. 2022)
Ag. Conservation Easements (PASDA 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

Figure 4-10
Agricultural Resources
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

4.2.2 Recreation

Transmission lines can impact recreation areas by limiting the amount of usable space and alter the aesthetics of the space. Construction could potentially negatively affect access to recreational areas by temporarily: (1) blocking access roads, trails, or other facility entrances; (2) closing roads during specific construction activities; (3) disrupting traffic; and (4) creating detours, possibly making access more difficult. Construction could also temporarily impact the rural setting and the scenic integrity of the area due to increased construction-related traffic, noise, dust, brightly colored signage, and number of people coming to the area. Large cranes and/or helicopters are typically used during the construction of the line, creating an increased temporary disturbance in both the visual, aesthetic, and peaceful nature of some areas. The Project would mitigate or reduce these impacts by entering into a road or transportation agreement with the local county government, which will take into consideration local traffic patterns and local scenic resources.

Alternative Routes Comparison

No existing federal, state, or local recreation areas are crossed by the Alternative Routes. As shown on **Figure 4-9**, the abandoned Cumberland Valley Railroad corridor bisects the Study Area north to south. As of 2021, the Cumberland Valley Rails-to-Trails Council (CVRTC) is proposing the South Mountain Trolley Greenway[9] along the abandoned Cumberland Valley Railroad corridor. Alternative Routes A and B parallel the abandoned Cumberland Valley Railroad corridor for 0.1 and 0.7 mile, respectively. Additionally, each Alternative Route requires one crossing of the abandoned Cumberland Valley Railroad corridor. PPL Electric plans to coordinate with CVRTC prior to Project construction and will attempt to accommodate the proposed South Mountain Trolley Greenway if needed.

Although Williams Grove Park is located within 500 feet of Alternative Route B, no substantial visual impacts are anticipated since the proposed alignment follows a parcel boundary behind the wooded portion of the park. Still, access to the areas of the park may be limited at times during construction. Following construction, regular use of the recreation area can continue.

[9] https://www.cvrtc.org/south-mountain-trolley-greenway/

Since it parallels the abandoned Cumberland Valley Railroad for a longer distance, Alternative Route B may have the potential to result in more impacts to existing and proposed recreational areas if the proposed South Mountain Trolley Greenway project commences. Still, paralleling the abandoned Cumberland Valley Railroad for a longer length may be more favorable from an access perspective since it is currently utilized for farm equipment transportation by adjacent landowners (see **Section 2.5**).

4.2.3 Cultural Resources

Transmission lines tend not to have significant indirect impacts on archaeological resources, which are usually located entirely below the ground surface. However, some sites have surface expression (*e.g.*, foundations, walls, and cemeteries). Where practical, adverse impacts on identified sites would be mitigated by strategically locating access roads, staging areas, and structures.

Impacts on architectural historic properties would be primarily visual, created by the construction of new structures where none exist, the addition of a second transmission line next to an existing transmission line corridor (generally a lesser impact), and clearing of forested land. Impacts would vary based on local relief[10], height of existing vegetation, and any intervening recent development. Physical impacts on architectural historic properties would be mitigated, where practical, by strategically locating access roads, staging areas, and structures.

Reasonable efforts will be made to avoid affecting archaeological resources. Where practical, archaeological resources identified in the transmission line corridor, in the direct path of any needed access roads, or at the locations of proposed work areas will be avoided by spanning any such resources or, if necessary, shifting tower positions, rerouting roads, and reconfiguring or relocating work areas as deemed necessary. PPL Electric will continue to consult with the Pennsylvania SHPO throughout the planning, design, and construction process and conduct field work and surveys as necessary during the project permitting process to minimize potential impacts to cultural resources. Therefore, impacts on archaeological resources are expected to be minimal.

[10] Local relief refers specifically to the quantitative measurement of vertical elevation change in a landscape. It is the difference between maximum and minimum elevations within a given area, usually of limited extent.

Alternative Routes Comparison

As stated in **Attachment 3**, initial analysis of the Project's potential to affect cultural resources involved a review of the Pennsylvania SHPO Cultural Resource Geographic Information System ("CRGIS") on-line inventory of cultural resources. The number of known historic architectural resources within 0.25 mile and one mile of the line and known archaeological sites within the ROW and 0.25 mile of the line, are identified in **Table 4-5** and shown in **Figure 4-11**. None of the previously identified historic archaeological resources have been determined to be NRHP-listed or eligible at this time. Previously identified historic architectural resources listed or eligible for inclusion in the NRHP are presented in **Table 4-6** below.

Table 4-5. NRHP Listed and Eligible Historic Architectural Resources within 1 mile of the Alternative Routes

Resource Key No.	Name	Type	Within 0.25 mile of Alternative Route(s)	Within 1 mile of Alternative Route(s)
NRHP-Listed Resources				
1977RE00044	Williams, John, House	Building	-	A, B
NRHP-Eligible Resources				
2010RE02630	Philadelphia & Reading Railroad	District	-	A, B
2010RE03283	Cumberland Valley Railroad	District	A, B	A, B
1977RE00121	Bielman-Musselman Farm	Building	-	A, B
2007RE00372	Hoover, Rebecca Farm	Building	-	A, B
2007RE01029	Hoover, Christian Jr. Farm	Building	-	B
2009RE00201	Hartzler, Christian, Farm	Building	A, B	A, B
1991RE00064	Weber, Abraham, Farm	Building	-	A, B
Local Historic Districts				
1976RE00124	Upper Allen Historic Districts - HDA	Local Historic District	-	A, B

Known architectural resources (i.e., historic buildings, structures, districts, and roads) in the vicinity of the Alternative Routes are shown below on **Figure 4-11**. Known archaeological

resources are not shown on the figures in this Application to protect any such sites; however, no known archaeological resources were identified within 0.25 mile of either Alternative Route.

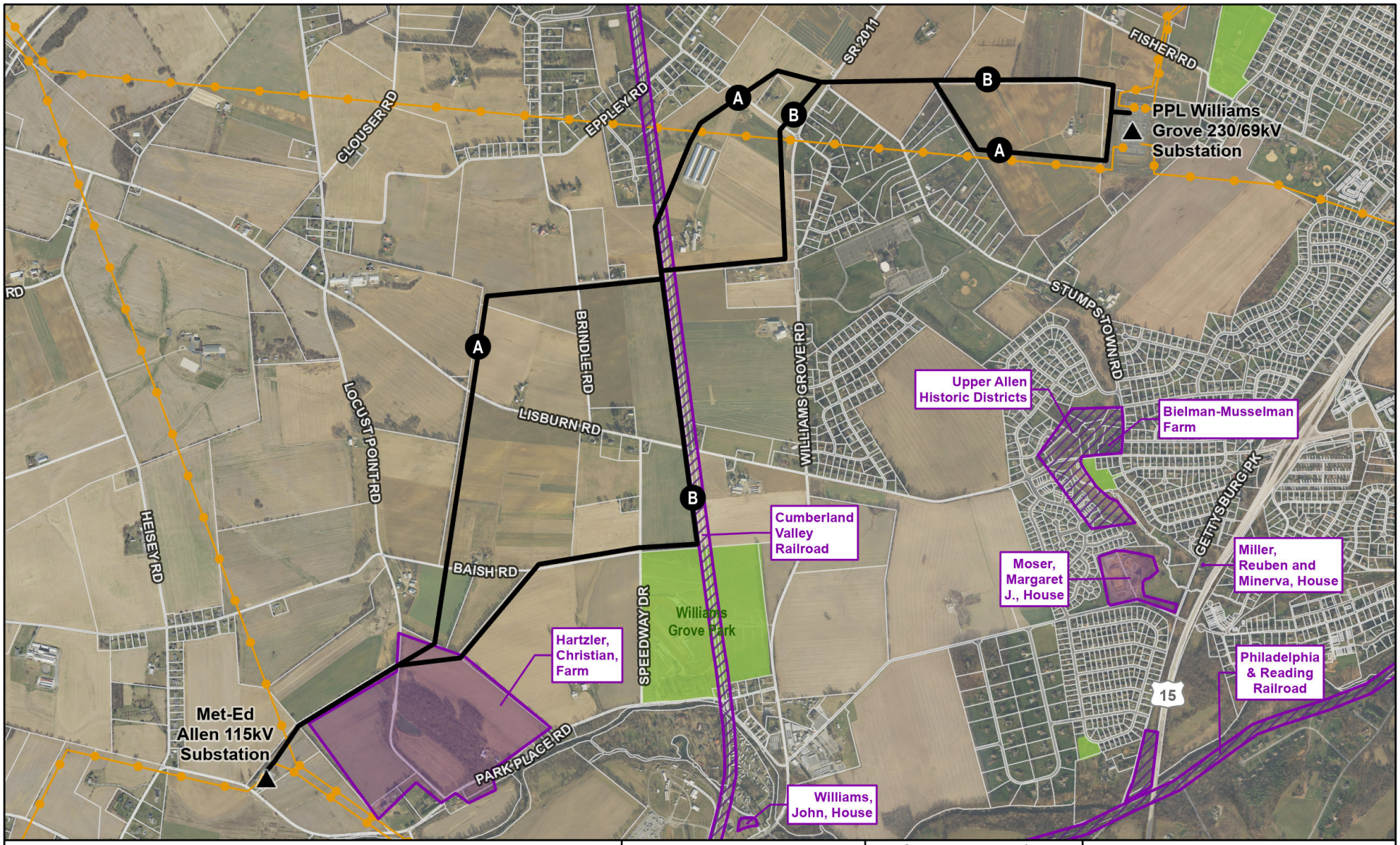
As shown above in **Table 4-6**, Alternative Routes A and B are identical in terms of the architectural resources located within 0.25 and 1 mile from the routes, while only Alternative Route B is located within one mile of the NRHP-eligible Christian Hoover, Jr. Farm. As illustrated in **Figure 4-11** and previously discussed in **Section 4.2.2,** both Alternative Routes parallel a portion of the Cumberland Valley Railroad, which is an NRHP-eligible historic district.

4.2.4 Built Environment Summary

In conclusion, after analyzing and comparing the two Alternative Routes, neither stands out as being noticeably better or worse with respect to the built environment. Routes A and B would each traverse within 500 feet of almost the same number of residences (19 and 21, respectively) and each cross twelve property owners. Additionally, neither route crosses non-condemnable properties, thereby reducing risks to the overall Project. While the transmission structure footprint would be permanently impacted and property owners would be restricted from constructing buildings within the ROW, in most cases construction of the transmission line will not result in changes in land use and property owners can continue to use land within the ROW for farming, residential, recreational, and other purposes.

Each route crosses agricultural land for approximately 90 percent of their alignment, avoiding developed land and forest cover to the best extent practicable. Both Alternative Routes require approximately two acres of ROW tree clearing, which accounts for 5% of their proposed 100-foot-wide ROW. Since a portion of its alignment parallels Williams Grove Road, Alternative Route B is likely to affect the viewshed of slightly more residences within 500 feet of the centerline when compared to Alternative Route A. Still, landowner feedback obtained during the Project's public open houses favored Alternative Route B over Alternative Route A.

Figure 4-11. Cultural Resources



Substation
Alternative Route
Existing Transmission Line
Parcel Boundary
Local Park
Historic Building or Site
Historic District

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Historic Resources (PHMC 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

Figure 4-11
Cultural Resources
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

Early in the siting process, the Routing Team identified paralleling the abandoned Cumberland Valley Railroad as an opportunity for the Project to avoid residences and provide suitable access, reducing overall impacts and project costs. Currently, the CVRTC is proposing the South Mountain Trolley Greenway along the abandoned Cumberland Valley Railroad. Alternative Route B parallels the abandoned railroad corridor more than Alternative Route B by 0.6 mile (0.7 and 0.1 mile, respectively). Electric transmission lines and rails-to-trails projects commonly run parallel with one another to share compatible linear ROWs; thus, the Project is not anticipated to restrict the possibility of the South Mountain Trolley Greenway. PPL Electric will coordinate with the CVRTC to synergize both projects and avoid interferences or schedule complications.

Existing recreational areas identified in proximity to the routes solely consist of Williams Grove Park. Alternative Route B is located within 500 feet of Williams Grove Park; however, no significant aesthetic impacts are anticipated for Williams Grove Park since Alternative Route B passes behind a forested tract of the property. Potential impacts to Williams Grove Park only involve temporary access limitations during construction.

4.3 Engineering and Constructability Impacts

Constructability refers to the evaluation of engineering and construction considerations in relation to feasibility of a proposed transmission line. Constructability evaluates the use of existing transmission corridors, engineering challenges, and accessibility issues of a proposed route. Major factors that affect constructability include, but are not limited to, steep topography, condensed ROWs, high angles, proximity to major highways, and accessibility. Additional issues to consider when evaluating constructability are: ease of moving equipment, materials, and workers to the construction sites; relative ease of ensuring public and worker safety; logistical difficulties associated with obtaining the required easements for the transmission line; and the actual amount of time and materials needed for construction, which can correlate to the total length of the corridor (i.e., longer lines require more materials and, often, a longer construction period). A comparison of the engineering and construction considerations for the two Alternative Routes is presented in **Table 4-7**.

Table 4-7. Engineering and Constructability		
Resource Criteria	**Alternative Route**	
	A	**B**
Length and ROW		
Length (miles)	3.9	3.9
Acres of ROW Required for 100' corridor	47.5	47.6
Number of Angle Structures (4-20°)	3	3
Number of Angle Structures (>= 20°)	11	10
% Unique (length not overlapping other route)	87%	87%
Parcels within ROW	15	16
Parallel Alignments		
230 kV Parallel (miles)	0.4	0.0
Parcel Boundary Parallel (miles)	1.3	1.2
Abandoned Railroad Corridor (miles)	0.1	0.7
Road (miles)	0.0	0.4
Parallel (% of route)	46%	63%
Parallel total (miles)	1.8	2.4
Infrastructure Crossings (count)		
500 kV Transmission Line	1	1
230 kV Transmission Line	1	1
Interstate	0	0
US Highway	0	0
State Highway	3	4
County/Local Road	3	2
Topography/Slope		
Slopes >20% (miles)	< 0.1	< 0.1
Sinkholes (Karst features) within ROW	0	0

4.3.1 Transmission Right-of-Way

Using existing ROW reduces the amount of vegetation clearing and grading within the ROW and enables use of existing access roads. This reduces project engineering, construction and permitting costs and visual impacts. Paralleling existing infrastructure can provide opportunities to reduce the ROW width by overlapping a portion of the existing ROW and may also provide opportunities to use existing access roads. PPL Electric attempted to minimize route length and ROW acquisition. Where possible, PPL Electric considers using existing transmission ROW, paralleling existing

transmission lines, or paralleling other infrastructure (i.e., existing transmission lines, roadways, railways, or gas lines).

Alternative Route Comparison

Due to its location and orientation relative to the Project endpoints, no suitable paralleling opportunities were identified for the existing Juniata – Three Mile Island 500 kV Transmission Line. Limited paralleling opportunities were identified for the existing Cumberland – Williams Grove 230 kV Transmission Line, due to potential residential encroachment concerns. As shown in **Table 4-7** above, Alternative Route A parallels the existing Cumberland – Williams Grove 230 kV Transmission Line for 0.4 miles. No viable transmission line paralleling opportunities were identified for Alternative Route B. Although ROW overlap is prohibited, paralleling the existing transmission lines reduces the incremental aesthetic impacts compared with routes that do not parallel existing infrastructure.

4.3.2 Engineering Considerations

Potential engineering challenges or difficulties are important to consider when routing a transmission line. Sharp angles, excessive road and stream crossings, narrow ROW alignments, steep topography, and unnecessary length are all elements that could require extensive engineering and can lead to increases in impacts and overall cost. For example, every turn in the line requires a different, and often more expensive and larger, type of structure. PPL Electric considered and attempted to minimize engineering challenges during the siting phase.

Alternative Routes Comparison

Based on preliminary engineering, both routes require a similar amount of angle structures, with Alternative Route B requiring one less than Alternative Route A (10 and 11, respectively). Steep slopes were not identified as a primary constraint in siting the Project, as the overall landscape is gently undulating in topography. As shown in **Table 4-7**, both routes would traverse a minimal amount (less than 0.1 mile) of slopes greater than 20 percent.

As discussed in **Attachment 3** and shown in **Figure 4-7**, five identified sinkholes are located within the northern portion of the Study Area. Neither of the Alternative Routes cross any known

sinkhole locations since their alignments are located within central and southeastern portions of the Study Area. PPL Electric is aware of the potential karst[11] issues within the Project Study Area and will take this information into account when locating and designing transmission structures and foundations and associated improvements.

Given the locations and orientations of the existing Juniata – Three Mile Island 500 kV and Cumberland – Williams Grove 230 kV transmission lines between the Project endpoints, both Alternative Routes require one 500 kV crossing and one 230 kV crossing. Transmission line crossings may require specialized structures to maintain line clearances and support the conductors as one of the lines passes over the other. Specialized structures require additional engineering and reduce flexibility when attempting to site individual structures in a way that minimizes impact to farm fields and necessitates scheduled outages on both lines during construction and maintenance.

Each Alternative Route requires six road crossings total. Alternative Route A requires three state highway crossings and three county/local road crossings, while Alternative Route B requires four state highway crossings and two county/local road crossings. No interstate or US highways are located within the Project Study Area; therefore, no major highway crossings are required by either Alternative Route.

4.3.3 Project Cost

PPL Electric evaluated the Alternative Routes from a cost perspective based on preliminary estimates from siting, real estate, engineering, procurement, and construction. It is important to note that estimated costs change throughout the process as the project moves from siting to the design, permitting and construction phases of the Project.[12] The costs discussed below represent reasonable preliminary estimates developed during the siting process to compare order of magnitude costs.

[11] "Karst" is landscape underlain by limestone that has been eroded by dissolution, producing ridges, towers, fissures, sinkholes, and other characteristic landforms.

[12] The estimated costs are order-of-magnitude estimates developed using averages of recent costs for similar projects and without an in-depth analysis of field investigation. The estimated cost is subject to change as the constructability of the Project, sequence of construction, and other factors that may affect cost are identified and analyzed as the Project progresses. As of the date of this filling, the updated cost estimate for the Preferred Route is $7.6 million.

Alternative Route Comparison

Since both Alternative Routes are nearly identical in most factors used for cost analysis (i.e., length, total number of structures, acres of ROW, transmission line crossings), the Project cost was not a significant factor for selecting the Preferred Route.

4.3.4 Engineering and Constructability Summary

From a combined engineering and constructability perspective, both Alternative Routes are similar for most evaluation criteria. First, Alternative Route A and B both measure 3.9 miles long, resulting in similar ROW acquisition needed for the proposed 100-foot-wide ROW (approximately 48 acres). Further, each Alternative Route crosses minimal steep slopes, requires six road crossings, requires approximately two acres of ROW tree clearing, and requires one 230 kV crossing and one 500 kV crossing. Alternative Route B requires fewer angle structures greater than 20 degrees.

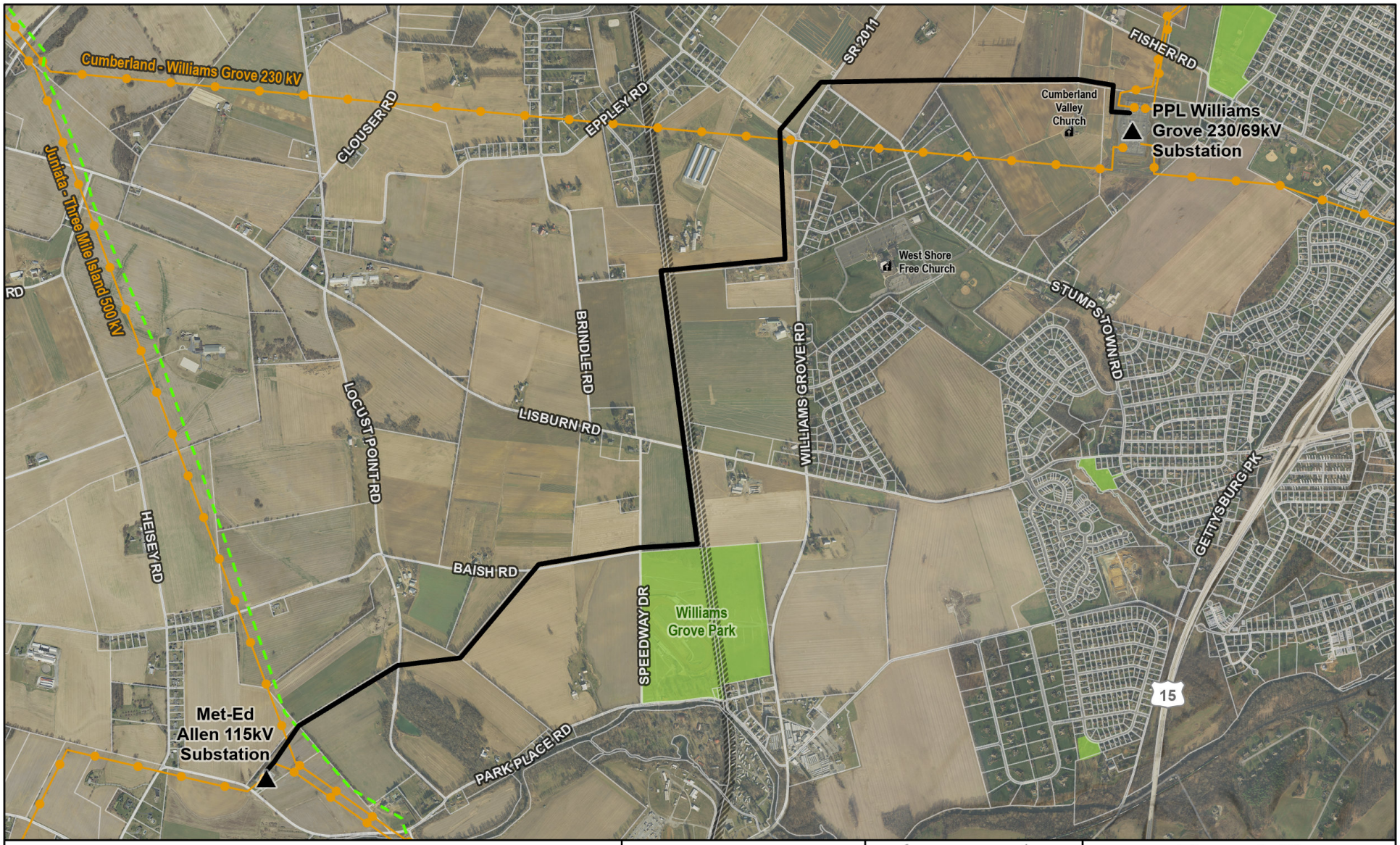
4.4 Selection of the Preferred Route

Based on a qualitative and quantitative review of information obtained from GIS data, existing easements, field reconnaissance, and extensive public outreach as well as engineering and financial estimates for this Project, the Routing Team selected **Alternative Route B as the Preferred Route** (see **Figure 4-12**). While both Alternative Routes are either identical or similar for most of the siting evaluation criteria, the Routing Team believes that the cumulative environmental, engineering and constructability, and social and financial impacts associated with constructing Alternative Route B are more favorable when compared to Alternative Route A.

First, Alternative Route B parallels existing compatible linear corridors for most of its total alignment. Specifically, Alternative Route B parallels local roads and the abandoned Cumberland Valley Railroad for a greater extent than Alternative Route A, making it more accessible during construction and operation of the transmission line. Additionally, the new 230 kV crossing required by Alternative Route B is in a more favorable location when compared to the new 230 kV crossing by Alternative Route A due to topography concerns noted by the Project engineers.

From a natural environment perspective, Alternative Route B effectively reduces permanent wetland impacts by crossing one acre less PASDA modeled forested wetlands (0.4 acre) compared to Alternative Route A (1.4 acres), in addition to crossing less NWI PEM wetlands. From a combined social and financial impact perspective, responses gathered during the public open houses indicated that Alternative Route B was preferred by the landowners impacted by the Project, thereby reducing potential risks and costs during ROW negotiations.

Figure 4-12. Preferred Route



- Substation
- Proposed Route
- Existing Transmission Line
- Natural Gas Pipeline
- Local Park
- Parcel Boundary
- Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

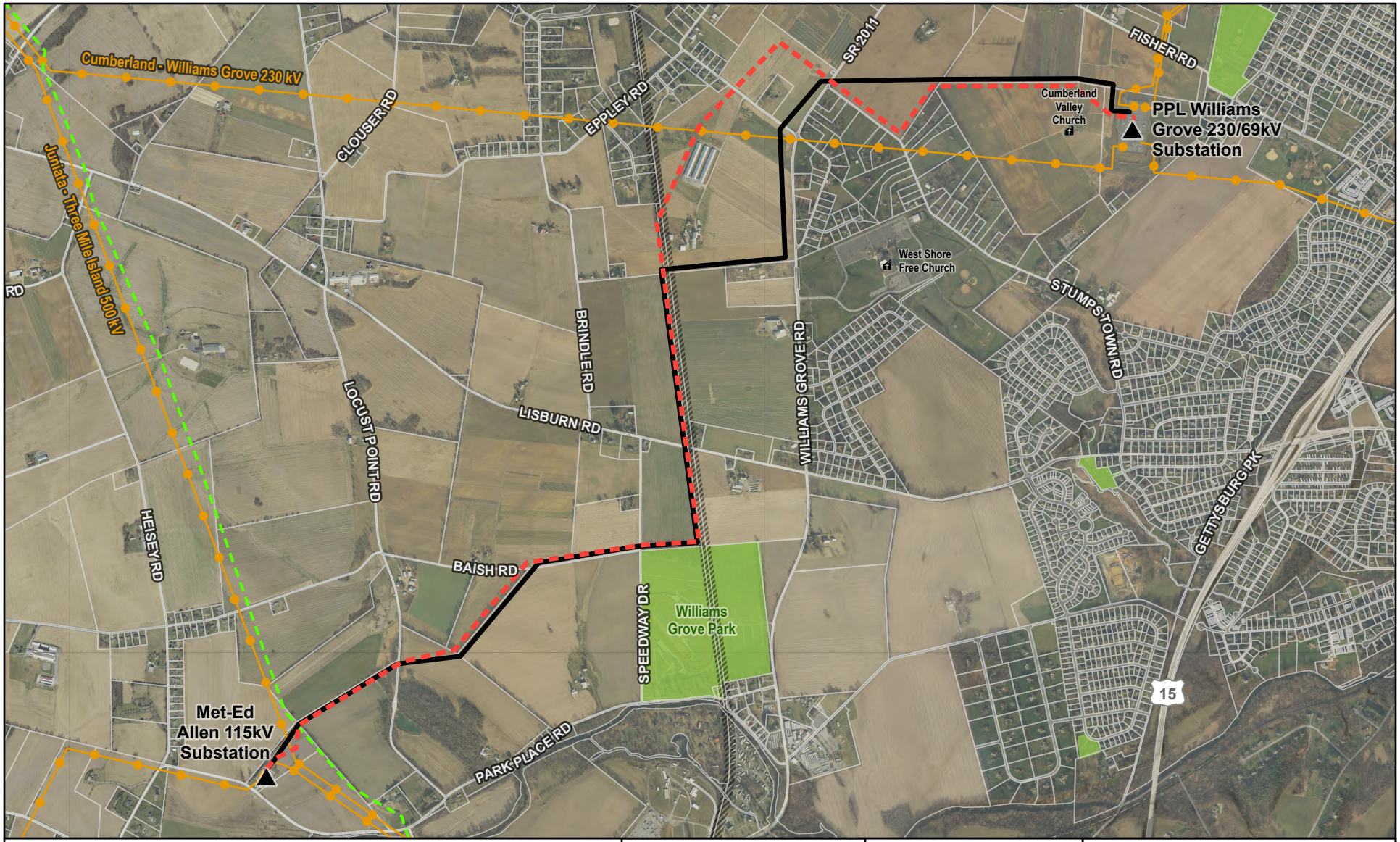
Figure 4-12
Proposed Route
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

After announcing the selection of the Preferred Route in January 2023, PPL Electric initiated real estate discussions with property owners. Based on these meetings, several property owners requested route alignment modifications through their property. PPL Electric accommodated individual property owners' re-alignment requests to the maximum extent practical. In cases where a re-alignment would affect adjacent property owners, PPL Electric considered accommodating the request if reasonable and mutually agreed upon by all affected parties. These discussions resulted in several minor changes to the final Preferred Route. Additional alignment changes were considered in consultation with property owners following wetland delineation of the Preferred Route to further minimize wetland and stream impacts. The minor changes did not increase the cumulative impacts of the Preferred Route. The resulting changes are reflected in **Figure 4-13**. Overall, the final Preferred Route resulted in reducing the number of parcels and landowners crossed without adding significant length (from 3.9 to 4.0 miles).

A set of four 8.5 x 11 aerial photographs detailing the final Preferred Route are included at the end of this Attachment. The aerial photographs show the final Preferred Route centerline, proposed edge of ROW, property boundaries, property owners along the ROW with property ID numbers corresponding to each owner, and other information required under 52 Pa. Code § 57.72(c)(13)(i).

Figure 4-13. Final Preferred Route



Substation
Final Proposed Route
Alternative Route B
Existing Transmission Line
Natural Gas Pipeline
Local Park
Parcel Boundary
Abandoned Railroad Corridor

Sources:
PEMA Imagery (2021)
Cumberland Co. Parcels (2022)
Roads, Townships (PASDA 2019)
Pipeline (NPMS 2022)

Coordinate System:
State Plane PA South
Datum: North American 1983

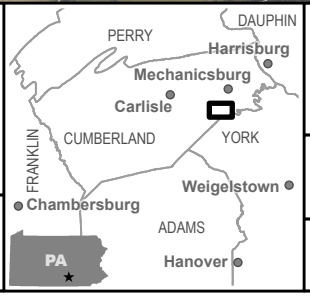


Figure 4-13
Final Proposed Route
Williams Grove - Allen 115 kV Transmission Line Project

0 1,000 2,000 Feet

4.5 Compliance with Potential Permit and Mitigation Requirements

This section describes the subsequent investigation and agency consultation activities that have been conducted for the Preferred Route. Additional information on the anticipated permits required for this Project are identified in **Attachment 7** and agency consultation letters are included in **Attachment 14**.

Wetlands and Waterways

Between March and April 2023, field wetland delineations were conducted along the Preferred Route and preliminary access roads using USACE-approved methodologies to determine the exact location of any wetlands or waterways. PPL Electric adjusted structure locations and access roads where feasible to minimize wetland and stream impacts through spanning and avoidance. Based on preliminary engineering, no proposed structures are located in any streams or wetlands.

An approximately 181-foot-long portion of the Preferred Route crosses a forested wetland, which is located adjacent to an UNT of Yellow Breeches Creek. No transmission structures are located within this wetland; however, the transmission line would need to aerially cross the wetland, resulting in 0.3 acre of wetland clearing. The aerial crossing and wetland clearing would qualify for Chapter 105 waiver, in accordance with 105.12.(a)(3). PPL Electric will clear this wetland using hand tools, without grubbing and no use of heavy machinery in the wetland. In addition, because this wetland is located adjacent to a high-quality cold-water fishery (HQ-CWF), riparian buffer requirements will need to be addressed. Tree clearing activities within the ROW will be included in the Erosion and Sedimentation ("E&S") plan and National Pollutant Discharge Elimination System ("NPDES") permit approvals from the Cumberland County Conservation District and PADEP. No other separate approvals are required for the removal of trees within the ROW.

It is possible that some access roads may require temporary crossings of wetlands and streams. PPL Electric will obtain and adhere to all State and Federal requirements if permanent or temporary impacts are unavoidable.

Federally Threatened and Endangered Species Consultation

As described in **Attachment 3** and previous sections of this report, an on-line preliminary PNDI was conducted for the Study Area on October 11, 2022. Following the selection of the Preferred Route, an updated online PNDI review was conducted for the Preferred Route on July 18, 2023. The USFWS response indicated that no known impacts are anticipated to threatened and endangered species and/or special concern species and resources because of the Project, with no further review required. Additional detail is included in **Section 4.1.2** and a copy of the USFWS response is presented in **Attachment 14**.

State Threatened and Endangered Species Consultation

As mentioned in **Section 3.3.2**, a final online PNDI review was conducted for the Preferred Route on July 18, 2023. The PGC and PFBC response indicated that no known impacts are anticipated to threatened and endangered species and/or special concern species and resources because of the Project, with no further review required.

Following the final online PNDI review, PPL Electric conducted further consultation with the DCNR, as requested, regarding the two state-listed species known to occur in proximity to the Project: the red-head pondweed, a state threatened species, and the white water-crowfoot, a state species of concern. In their response, the DCNR indicated that no impacts to these species are likely because of the Project. A copy of the DCNR response is included in **Attachment 14**.

Cultural Resource Consultation

PPL Electric conducted archeological and historic architecture surveys as requested by the SHPO. On July 18, 2023, the SHPO indicated that no impacts to archeological resources or historic architectural resources are anticipated.

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 5

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LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

In July 2021, PJM Interconnection L.L.C. ("PJM") opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the Mid-Atlantic Interstate Transmission LLC ("MAIT") 115 kV system. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations. PJM received ten proposals specifically to address the reliability concerns on MAIT's 115 kV system. After evaluation and review with stakeholders, PJM selected PPL Electric Utilities Corporation's ("PPL Electric") Proposal 99, because the solution solved the reliability issues, provided greater operational flexibility, was cost competitive, and utilized existing substations. PPL Electric's Proposal 99 addressed PJM need by proposing to construct a new, single-circuit 115 kV transmission line in Cumberland County, Pennsylvania between their existing Williams Grove Substation, located off Fisher Road in Upper Allen Township and the MAIT-owned Allen Substation, located along Park Place in Monroe Township. The need for the Project is explained further in **Attachment 2**.

2.0 PROPOSED LINE DESIGN

The proposed Williams Grove – Allen 115 kV Transmission Line Project involves the construction of approximately 3.9 miles of new single-circuit 115 kV transmission line between the Williams Grove Substation in Upper Allen Township and the MAIT-owned Allen Substation in Monroe Township. The selection of the preferred route for the Williams Grove – Allen 115 kV Transmission Line Project is further explained in **Attachment 4**.

The transmission line will be installed on new single-shaft steel poles. The proposed transmission line will require the installation of approximately 36 structures ranging in height from 40 to 95 feet, with an average height of approximately 77 feet. The spans between the structures will be approximately 600 feet.

The Williams Grove – Allen 115 kV Transmission Line will consist of approximately 19 self-weathering tubular steel tangent structures[1]. These tangent structures will be equipped with steel arms and will be installed as direct embedded structures (i.e., without foundations). Four (4) additional direct embedded two-pole angle tension steel structures will be guyed. There also will be approximately 13 angle and tension structures, which will consist of single pole steel structures on concrete foundations.[2] In agricultural areas, PPL Electric will avoid using guy wires to the greatest extent practical to minimize interference with existing and future farming and other agricultural operations.

The proposed structure types are shown in **Figures 5-1 through 5-7**.

[1] A tangent structure is a pole with no line angle.
[2] Some structures may be direct embedded in order to reduce costs and meet engineering requirements.

3.0 DESIGN CONSIDERATIONS

The proposed single circuit line described above will be designed and constructed to meet, and generally exceed, all National Electrical Safety Code ("NESC") minimum standards. Design specifications and safety rules practiced by PPL Electric are included in **Attachment 13**. The proposed Williams Grove – Allen 115 kV Transmission Line will consist of three power conductors and two overhead ground wires. Each conductor will be 1033.5 kcmil,[3] 54/7 stranding aluminum conductor steel reinforced ("ACSR"). The overhead ground wires ("OHGW") will be one 3/8-inch EHS steel OHGW and one a 48 fiber 0.567-inch diameter Optical Ground Wire ("OPGW"). The overhead ground wires will provide both lightning protection of the proposed line and also for telecommunication purposes.

The minimum conductor to ground clearance for the proposed 115 kV line will be 24 feet, which occurs at a maximum conductor temperature of 257°F (125°C). **Table 5-1** and **Table 5-2** identify the designed minimum conductor clearances and the conductor thermal ratings of the conductors, respectively.

Table 5-1. Design Minimum Conductor Clearances for 1033.5 kcmil 54/7 stranding acsr*

Condition	Single Circuit Design Clearance-to-Ground
Normal load average weather 60°F (16°C) ambient temperature.	32.0 feet
Predicted extreme thermal load @ 257°F (125°C) conductor temperature.	24.0 feet
NESC (Rule 250C) Extreme wind load, 60°F (16°C).	32.0 feet
Extreme weather condition NESC (Rule 250D) 1 inch ice, 4 lbs. wind, 15°F (-9°C)	29.0 feet

* Clearances based on a maximum tension of 10,000 pounds at 1 inch ice, 15°F, 4 lbs. wind and an average span of 600 feet.

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

Table 5-2. Conductor Thermal Rating 1033.5 kcmil 54/7 Stranding ACSR (257°F) 125°C Maximum Conductor Temperature			
Condition	**Ambient Temperature (°C)**	**Wind Speed (Knots)**	**Ampacity (Amps)**
Summer Normal	125	0	1,240
Winter Normal	125	0	1,429
Summer Emergency	125	2.533	1,567
Winter Emergency	125	2.533	1,764

4.0 MAGNETIC FIELD MANAGEMENT PLAN

PPL Electric's Magnetic Field Management Program is summarized in **Attachment 11** and is applied to new and reconstructed transmission line projects. The Company does not believe that the current scientific evidence demonstrates that magnetic fields cause any adverse health effects or pose a health or safety danger to the public. Nevertheless, PPL Electric has determined, as a matter of policy, to design its new and rebuilt transmission lines to reduce magnetic fields when that can be done at low or no cost and consistent with functional requirements. PPL Electric's Magnetic Field Management Program has been developed to implement that policy decision. To reduce the potential for exposure to magnetic fields, the program generally prescribes the use of a line design that provides five feet higher ground clearances and reverses phasing of new double circuit lines where it is feasible to do so at low or no cost. The implementation of additional modifications will be considered, provided those modifications can be made at low or no cost and are consistent with functional requirements.

Consistent with the program, the conductors for this Project will have ground clearances that are approximately three feet higher than the required NESC minimum ground clearance for 115 kV lines[4]. As explained above, the proposed transmission line will be constructed as a single-circuit transmission line. Since this proposed transmission line will operate as a single-circuit, reverse phasing is not feasible at this time. Where it is feasible to do so at low or no cost, PPL Electric will select a phasing arrangement for the proposed transmission line that lowers the magnetic field. PPL Electric will select the best circuit/phase arrangement to reduce the potential exposure to electric magnetic fields where it is feasible to do so at low or no cost.

[4] PPL Electric has designed the 115 kV transmission line to the latest 138 kV construction standards.

5.0 RIGHT OF WAY REQUIREMENTS

PPL Electric's current standard ROW width for a single-circuit 115 kV transmission line is 100 feet. The ROW width is determined by the structure type, design tensions, span length, and conductor "blowout" (the distance the wires are moved by a crosswind). The aerial maps provided at the end of **Attachment 4** identify the location of the proposed ROW.

Status of Right-of-Way Negotiations

Along the route selected for the proposed Williams Grove – Allen 115 kV Transmission Line, there are a total of 11 deed properties that are owned by a total of 7 property owners. At the time of this filing, formal easement and right of way ("ROW") agreements have been executed by 6 of the 7 property owners. The parcel where an easement has not been acquired is owned by MAIT. Based on discussions with MAIT, PPL Electric does not anticipate that condemnation will be required to obtain the required ROW. The Company is continuing to pursue negotiations with the owner of this remaining property.

6.0 CONSTRUCTION TECHNIQUES AND EXECUTION FOR TYPICAL SINGLE POLE 115/138 KV TRANSMISSION STRUCTURES

The following is a summary, non-technical explanation of the typical construction activity that is associated with new transmission line construction for single poles, which are either directly embedded into the ground or installed on a concrete foundation. This is not to be misconstrued as all-encompassing and may vary based on specific site/service conditions at each project. Actual construction steps may not necessarily occur in this order:

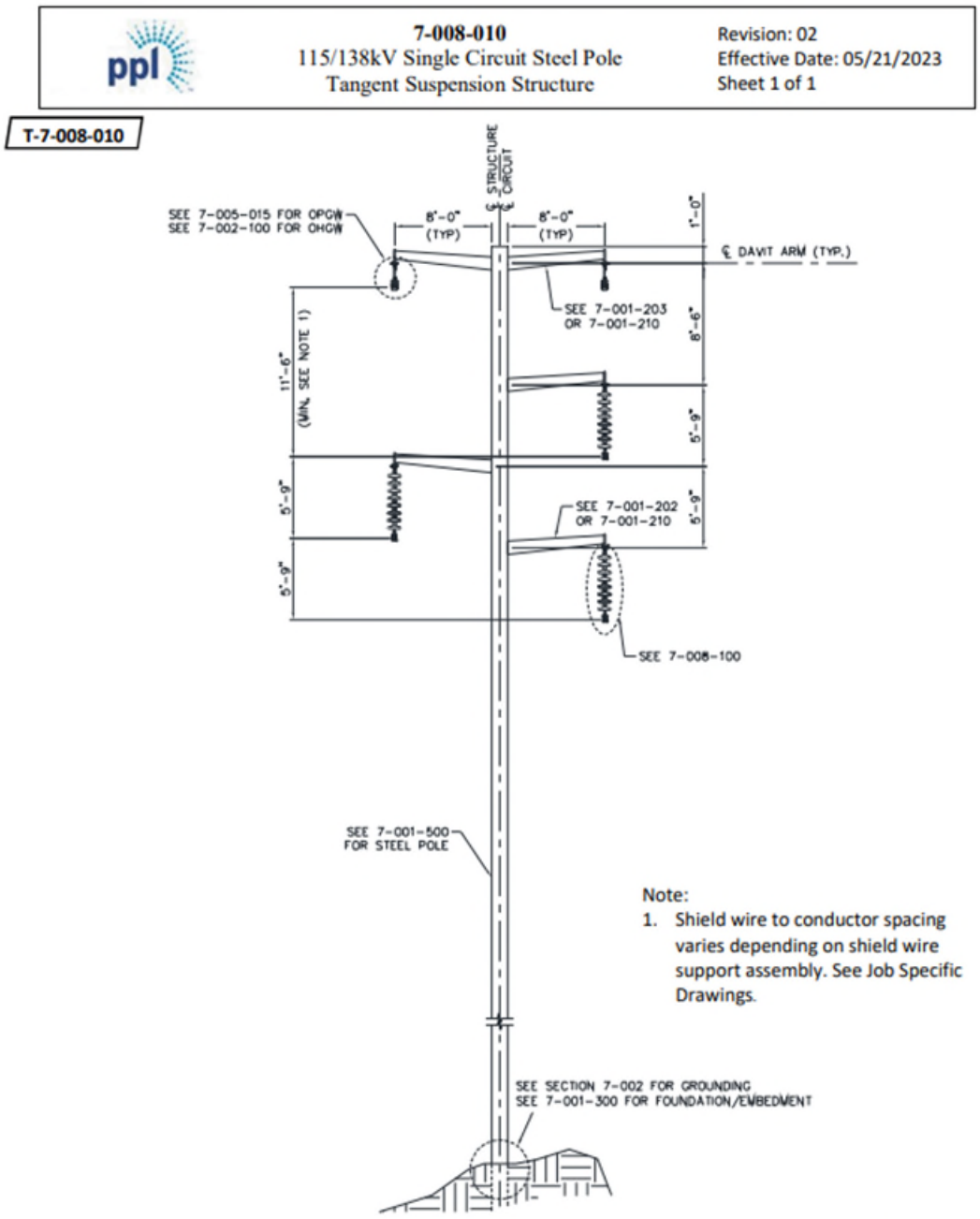
- The project manager will review the construction plans with PPL Electric personnel that will be constructing the line, including all permits and conditions that apply (such as erosion and sediment control, wetland encroachments, and storm water management), as well as any agreements made with specific property owners for work done on their lands.
- Professional land surveyors will stake the locations of all poles to be constructed, as well as the edge of ROWs and locate any wetland or streams previously sited during field work.
- All wetlands/waters are delineated in the field, located by land surveyors, and specifically shown to the construction manager prior to work commencing.
- During the installation of access roads, poles, and hanging of the wire, approved "best management practices" are implemented to assure that the soil will be stabilized and not erode during storm events while the Project is under construction. Any temporary wetland encroachments (usually roads) will be removed according to the permit conditions. Whenever practical, PPL Electric will utilize timber matting in wetland areas to minimize disturbance to the wetland vegetation and topography.
- Construction roads will be constructed, approximately 14 to 16 feet in width, with a stone surface to support the equipment that will be transporting materials to the pole sites. Those vehicles are usually cranes, concrete trucks (if foundations are involved), boom trucks, and pickups. The roads will be built as provided for in the construction drawings as per the erosion and sediment control plan, the NPDES permit plan, and/or the wetland encroachment permit plan. The plan may require these roads to be temporary in nature, returning to vegetative cover when the work is complete. Landowners may wish to have the roads remain intact for shared use between PPL Electric for line inspection and

maintenance and property owner use. Much of the routine maintenance to the line, once built, will be by helicopter or 4-wheel drive pickup truck.

- The direct embedded poles will be installed using auger and then a crane. After the hole is drilled, usually 4 to 6 feet in diameter, the bottom section of pole is placed directly into the hole and backfilled with a coarse aggregate or engineered material, and then the remaining sections are installed along with any cross arms. A pole that is at an angle in the line, or for another specialized reason, may be required to have a concrete foundation. These foundations are seldom more than 12 feet in diameter and are filled with reinforced concrete. The top of the foundation may extend an average of 1 foot above the ground.
- Once the poles are in place along the line route, the wires will be installed using utility trucks to attach the wires to each pole and equipment and manpower will be used to pull the wires along from pole to pole. Helicopter stringing/pulling may be utilized in restricted access or environmentally sensitive areas.
- The project manager will oversee the stabilization of the site including the successful establishment of vegetation on all previously disturbed areas during construction.

Typical examples of the proposed structures are depicted in **Figures 5-1** through **5-7**.

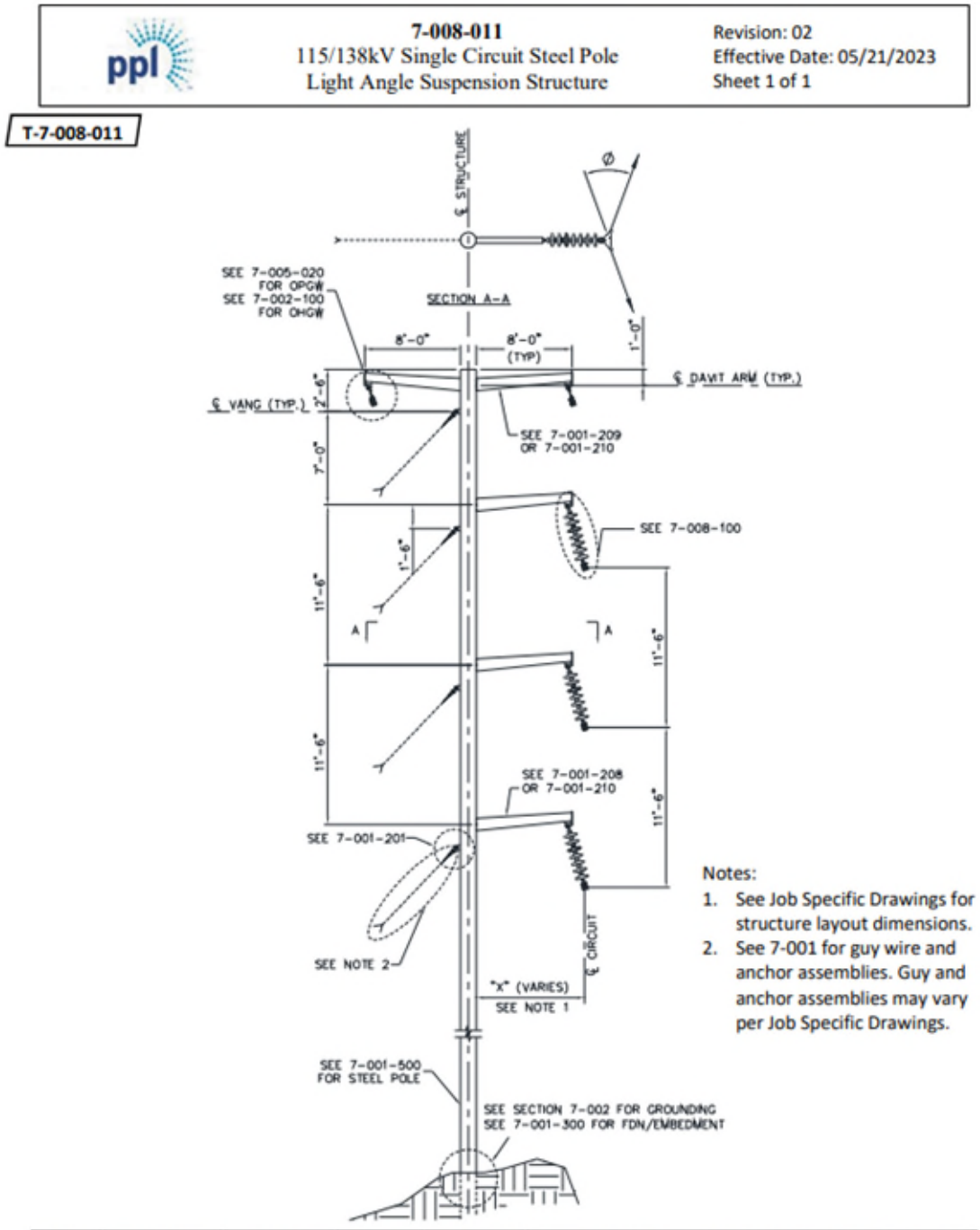
Figure 5-1. Typical Single Circuit 115/138 kV Steel Monopole Tangent Suspension Structure



Rev	Date	ECN	Sponsor	Reviewer	Transmission Construction Standards PPL Corporate
00	03/18/2016	ECN-6316	MSD	SDS	
01	02/14/2022	ECN-15222	JAF	KEL	Approved: Kyle Supinski
02	05/21/2023	ECN-16828	JMB	JFK	Manager T&S Standards

Approved: E171459 Pepper, Maxwell Huntington

Figure 5-2. Typical Single Circuit 115/138 kV Steel Monopole Light Angle Suspension Structure

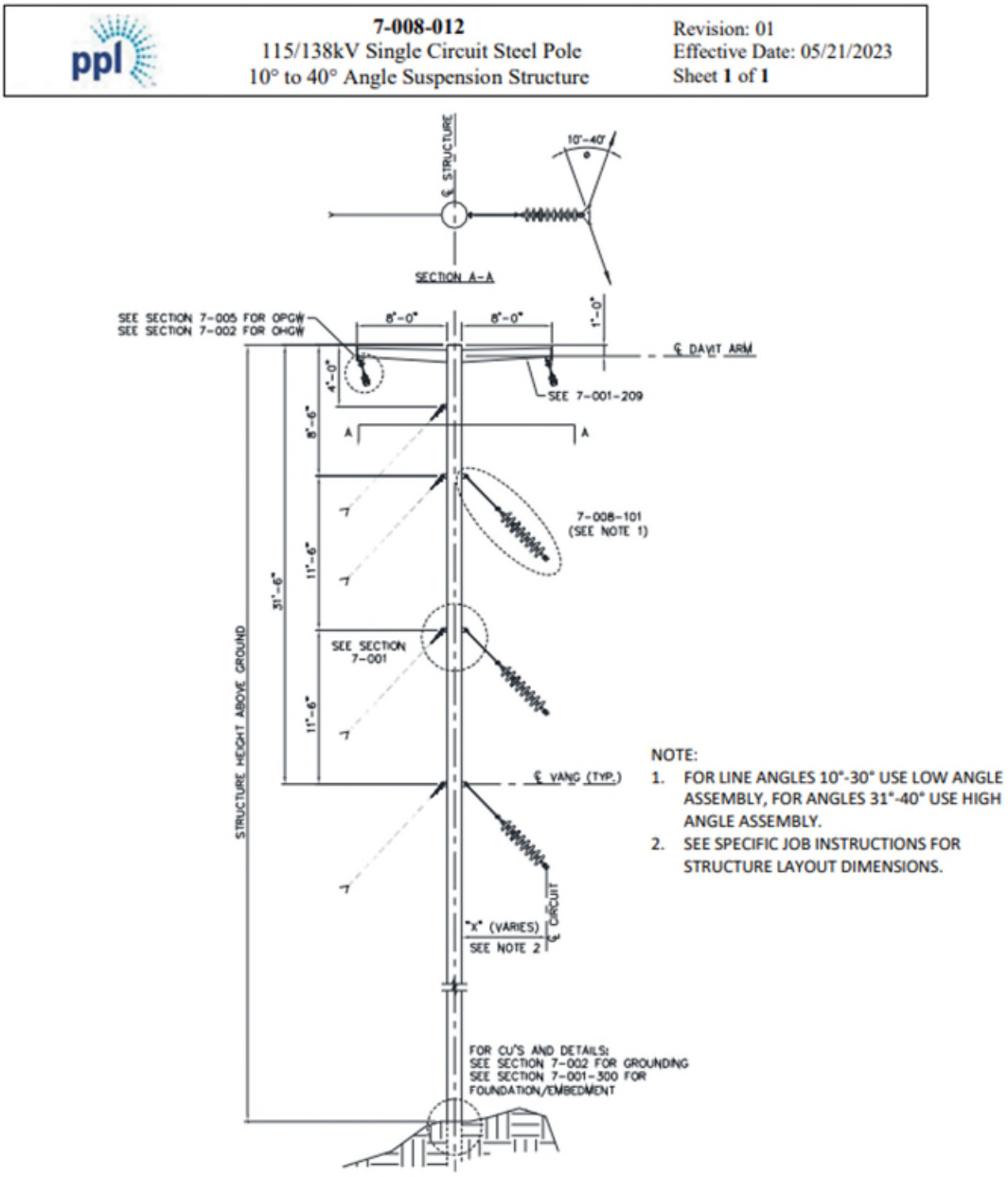


Rev	Date	ECN	Sponsor	Reviewer
00	03/18/2016	ECN-6316	MSD	SDS
01	02/14/2022	ECN-15222	JAK	KEL
02	05/21/2023	ECN-16828	JMB	JFK

Transmission Construction Standards
PPL Corporate
Approved: Kyle Supinski
Manager T&S Standards

Approved: E171459 Pepper, Maxwell Huntington

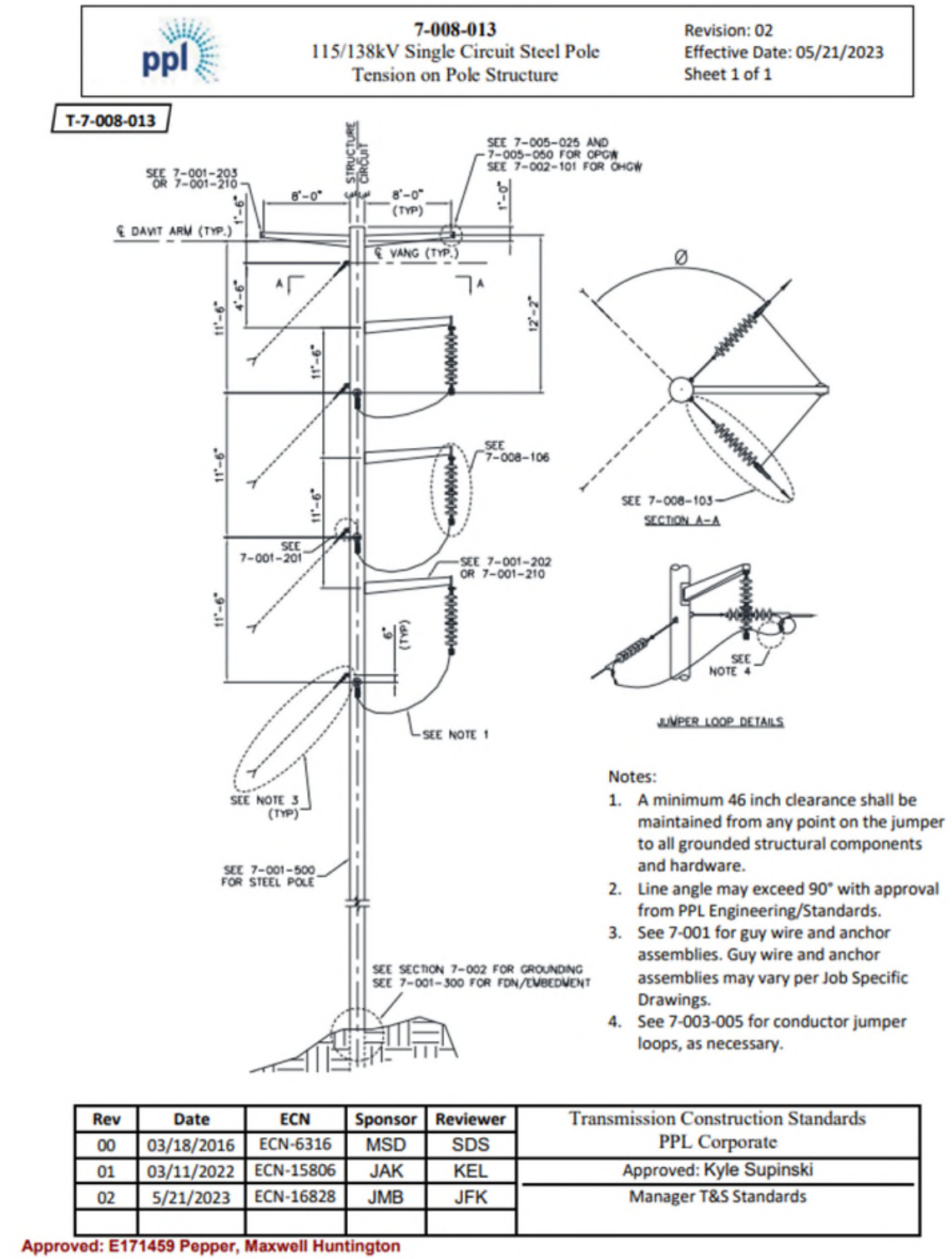
Figure 5-3. Typical Single Circuit 115/138 kV Steel Monopole Angle Suspension Structure



Rev	Date	ECN	Sponsor	Reviewer	Transmission Construction Standards PPL Corporate
00	03/18/2016	ECN-XXXX	MSD	SDS	
01	05/21/2023	ECN-16828	JMB	JFK	Approved: Kyle Supinski
					Manager T&S Standards

Approved: 1191459 Pepper, Maxwell Huntington

Figure 5-4. Typical Single Circuit 115/138 kV



kV

Steel Monopole Tension Structure

Figure 5-5. Typical Single Circuit 115/138 kV Steel Monopole Tension on Arm Structure

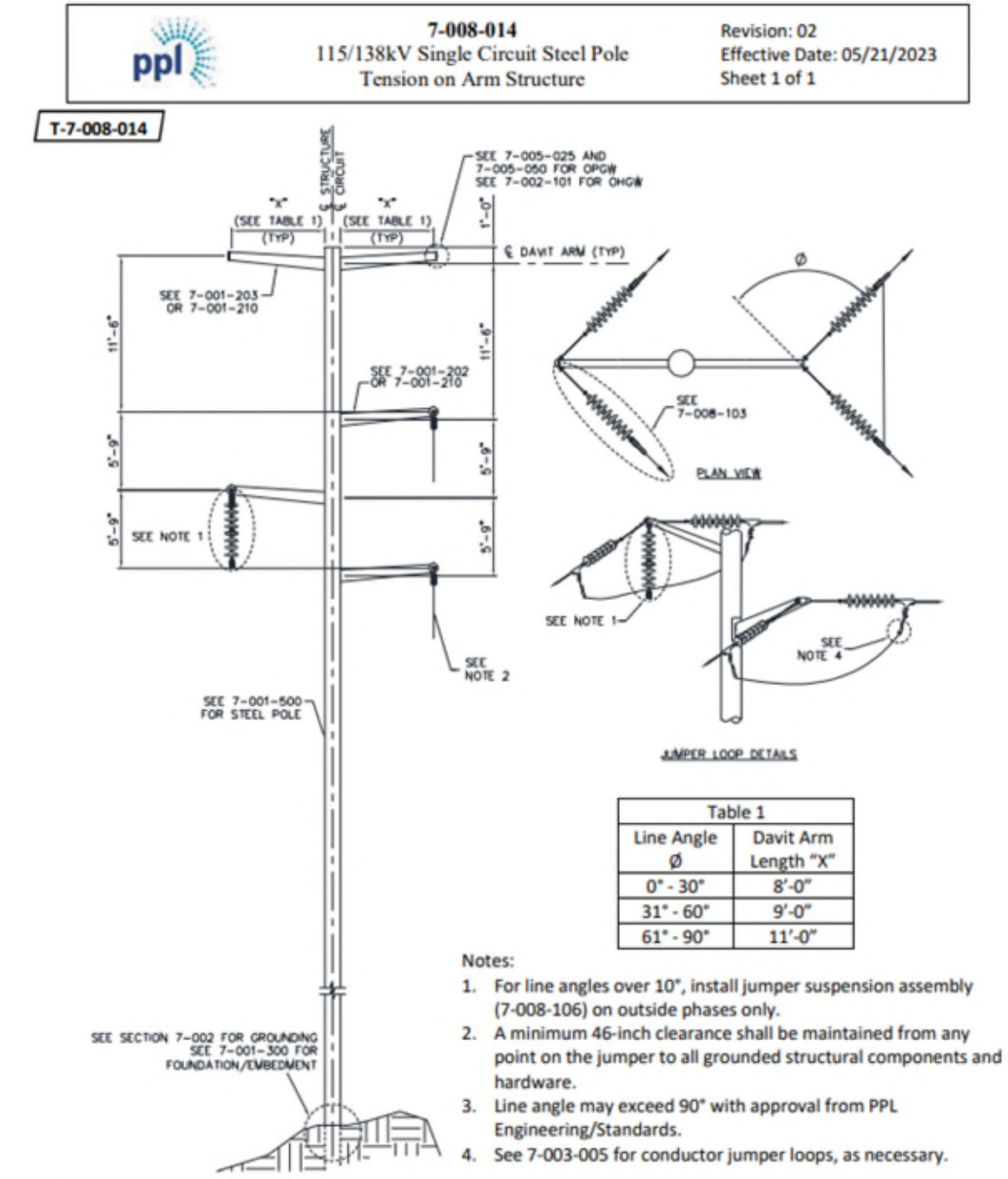


Table 1	
Line Angle Ø	Davit Arm Length "X"
0° - 30°	8'-0"
31° - 60°	9'-0"
61° - 90°	11'-0"

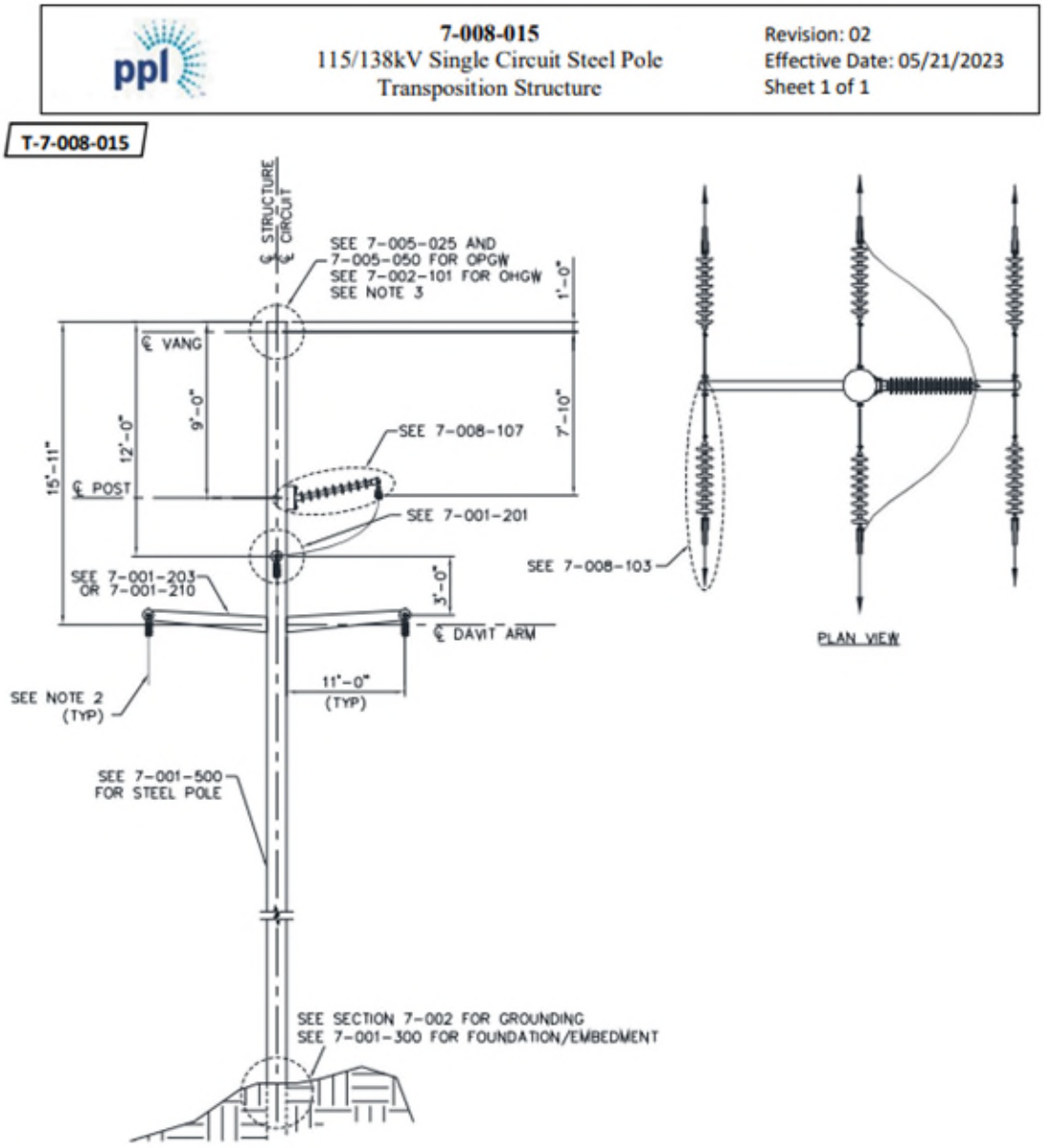
Notes:

1. For line angles over 10°, install jumper suspension assembly (7-008-106) on outside phases only.
2. A minimum 46-inch clearance shall be maintained from any point on the jumper to all grounded structural components and hardware.
3. Line angle may exceed 90° with approval from PPL Engineering/Standards.
4. See 7-003-005 for conductor jumper loops, as necessary.

Rev	Date	ECN	Sponsor	Reviewer	Transmission Construction Standards PPL Corporate
00	03/18/2016	ECN-6316	MSD	SDS	
01	02/14/2022	ECN-15222	JAK	KEL	Approved: Kyle Supinski
02	05/21/2023	ECN-16828	JMB	JFK	Manager T&S Standards

Approved: E171459 Pepper, Maxwell Huntington

Figure 5-6. Typical Single Circuit 115/138 kV Steel Monopole Transposition Structure



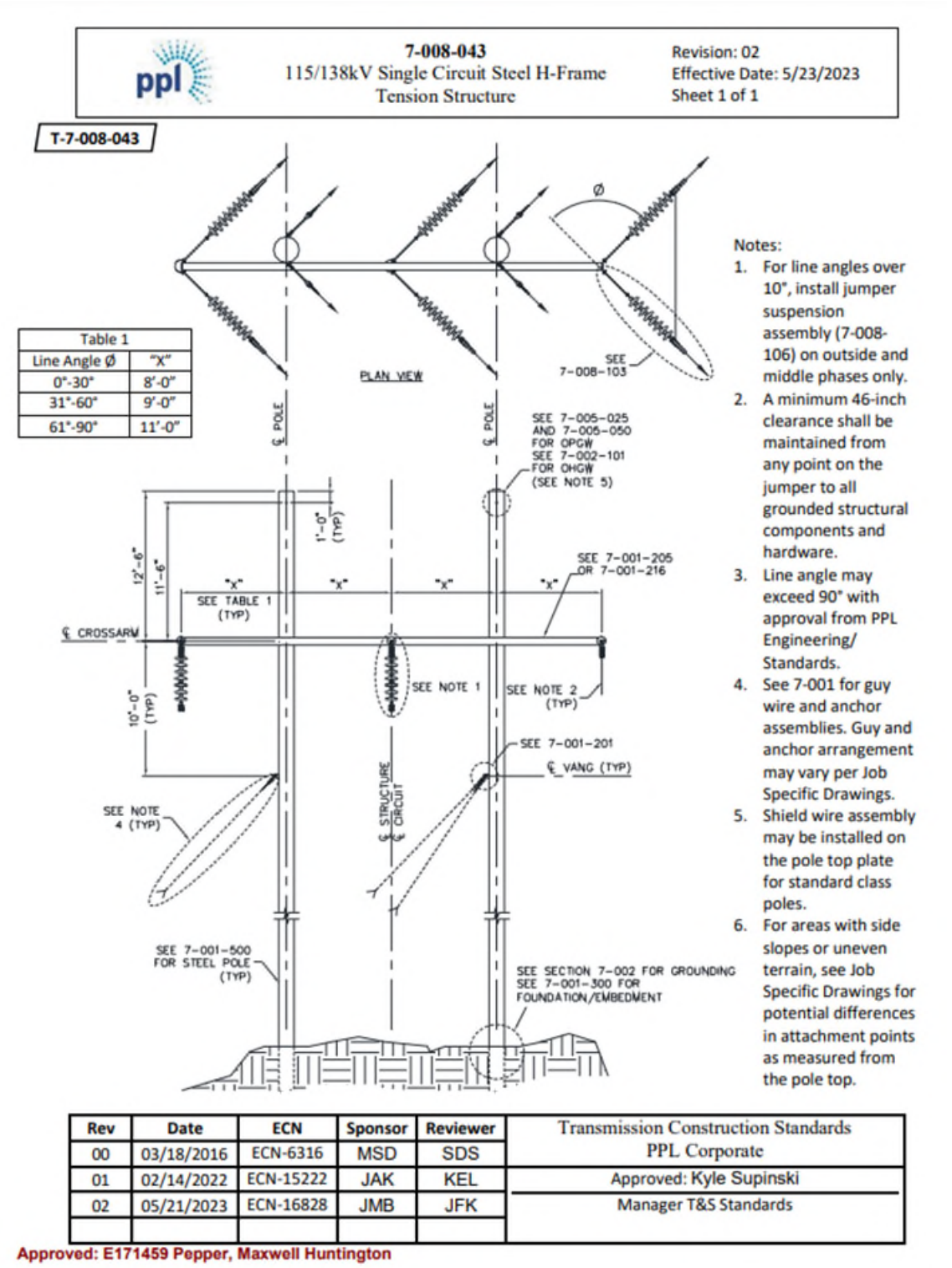
Notes:

1. Typical shield wire layout shown. See Job Specific Drawings for structure specific shield wire arrangement.
2. A minimum 46-inch clearance shall be maintained from any point on the jumper to all grounded structural components and hardware.
3. Shield wire assembly may be installed on the pole top plate for standard class poles.

Rev	Date	ECN	Sponsor	Reviewer	Transmission Construction Standards PPL Corporate
00	03/18/2016	ECN-6316	MSD	SDS	
01	03/11/2022	ECN-15806	JAK	KEL	Approved: Kyle Supinski
02	05/21/2023	ECN-16828	JMB	JFK	Manager T&S Standards

Approved: E171459 Pepper, Maxwell Huntington

Figure 5-7. Typical Single Circuit 115/138 kV Steel H-Frame Structure



PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 6

ATTACHMENT 6
WILLIAMS GROVE – ALLEN 115 KV TRANSMISSION LINES PROJECT
LIST OF OWNERS OF PROPERTY
WITHIN THE RIGHT-OF-WAY

Property Owner/Address	Parcel Number
PPL Electric Utilities C/O PPL Re Tax 2 N 9th Street (GENTW2) Allentown, PA 18101	1
Bryan S. and Dwayne C. Lebo 1714 Fisher Road Mechanicsburg, PA 17055-9601	2
Louise Mowery 2040 Fisher Road Mechanicsburg, PA 17055-8006	3
Lamar D. and Marlene Rose Ruppert 270 Stoner Road Mechanicsburg, PA 17055-9603	4
Lamar D. and Marlene Rose Ruppert 270 Stoner Road Mechanicsburg, PA 17055-9603	5
Lamar D. and Marlene Rose Ruppert 270 Stoner Road Mechanicsburg, PA 17055-9603	6
Michael E. and Loretta M. Berkheimer 1321 W Lisburn Road Mechanicsburg, PA 17055-9741	7
Michael E. and Loretta M. Berkheimer 1321 W Lisburn Road Mechanicsburg, PA 17055-9741	8
Michael E. and Loretta M. Berkheimer 1321 W Lisburn Road Mechanicsburg, PA 17055-9741	9

Creedin S. and Joann Paulus 41 Fisher Run Road Dillsburg, PA 17019-9555	10
Barbara H. Marbain Trust C/O Dana M. DeJarnett 938 Hillcrest Drive Martinsburg, WV 25401-9222	11
Mid-Atlantic Interstate Transmission LLC 76 S. Main Street Akron, OH 44308	12

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 7

ATTACHMENT 7
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
AGENCY PERMIT REQUIREMENTS

Agency	Permits, Approvals, or Documentation	Anticipated Approval Date	Status of Permit or Approval	Regulated Activity
Local Agencies				
Cumberland County Conservation District (CCD)	Erosion & Sedimentation Control Plan and Site Restoration or PCSM Plan	3/1/2025	Submit 6/1/2024	Construction activities the disturb greater than 5,000 square feet require an E&S plan
Commonwealth of Pennsylvania Agencies				
PA Department of Conservation & Natural Resources (DCNR) – Bureau of Forestry (plants)	State rare, threatened, and endangered species consultation and approval. Online PNDI review conducted on 7/18/2023; two potential impacts.	7/20/2023	Complete	Determination of potential impact to state listed and candidate threatened and endangered species and habitat.
PA Fish & Boat Commission (PFBC) (fish, reptiles, amphibians)	State rare, threatened, and endangered species consultation and approval. Online PNDI review conducted on 7/18/2023; no known impacts.	7/18/2023	Complete	Determination of potential impact to state listed and candidate threatened and endangered species and habitat.
PA Game Commission (PGC) (birds and mammals)	State rare, threatened, and endangered species consultation and approval. Online PNDI review conducted on 7/18/2023; no known impacts.	7/18/2023	Complete	Determination of potential impact to state listed and candidate threatened and endangered species and habitat.
U.S. Fish & Wildlife Service (USFWS)	State rare, threatened, and endangered species consultation and approval. Online PNDI review conducted on 7/18/2023; no known impacts,	7/18/2023	Complete	Determination of potential impact to state listed and candidate threatened and endangered species and habitat.
PA Department of Environmental Protection (PADEP)	NPDES Permit for Stormwater Discharges Associated with Construction Activities (Chapter 102) (Individual NPDES due to HQ watershed)	3/1/2025	Submit 6/1/2024	Discharge of storm water associated with construction activities (25 Pa. Codes § 92; § 93, Water Quality Standards; and §102, Erosion and Sediment Control).

Agency	Permits, Approvals, or Documentation	Anticipated Approval Date	Status of Permit or Approval	Regulated Activity
PA Department of Environmental Protection (PADEP)	Waters/wetland obstruction and encroachment permits or waivers (Chapter 105) • §105.12(a)(3) waivers for clear span aerial crossings of wetland and streams using monopole structures on either side. • §105.12(a)(3) waivers for monopole structure placement in wetlands.	N/A	Complete	• Activities in watercourses, floodways, bodies of water (incl. wetlands) (25 Pa. Code §105). • Floodplains obstructed by highways and public utilities (25 Pa. Code §106).
PA State Historic Preservation Office (SHPO)	Investigation and approval of cultural, archaeological, and historic resources associated with federal and state permits.	7/18/2023	Complete	Compliance with Section 106 of National Historic Preservation Act; Eligibility for listing on the State and/or Federal National Register of Historic Places.
PA Department of Transportation (PennDOT)	Three (3) Temporary access road driveway HOP permits	3/1/2025	Submit 1/1/2025	Work within or aerially crossing PennDOT rights of way.
PA Public Utility Commission (PUC)	Application for permission to site and construct transmission line.	3/1/2024	Submit 9/1/2023	Construction of new transmission line.
Federal Agencies				
U.S. Army Corps of Engineers (USACE) – Baltimore District	Clean Water Act Section 404/401 permits for regulated waters/wetlands encroachments	N/A	No permits required	Reporting activities associated with regulated waters/wetlands encroachments

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 8

ATTACHMENT 8
WILLIAMS GROVE - ALLEN
115 KV TRANSMISSION LINE PROJECT
LIST OF GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES RECEIVING THE APPLICATION

Copy Recipients

State Agencies

Pennsylvania Department of Environmental Protection
400 Market Street, 10th Floor
Rachel Carson State Office Building
Harrisburg, Pennsylvania 17101
Attn: Regional Permit Coordination Office

Bureau of Investigation and Enforcement
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor, Room-N201
Harrisburg, Pennsylvania 17120
Attn: Richard Kanaskie

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

Pennsylvania Office of Small Business Advocate
555 Walnut Street, 1st Floor Forum Place
Harrisburg, Pennsylvania 17101
Attn: NazAarah Sabree, Small Business Advocate

County/Municipality Agencies

Cumberland County Board of Commissioners
1 Courthouse Square, 2nd Floor, Suite 200
Carlisle, Pennsylvania 17013
Attn: Gary Eichelberger, Chairman

Cumberland County Conservation District
310 Allen Road, Suite 301
Carlisle, Pennsylvania 17013
Attn: Carl Goshorn, District Manager

Cumberland County Agricultural Land Preservation Board
310 Allen Road, Suite 101
Carlisle, Pennsylvania 17013
Attn: Stephanie Williams, Program Administrator

Cumberland County Planning Department
310 Allen Road, Suite 101
Carlisle, Pennsylvania 17013
Attn: Heather Sweitzer, Chair

Monroe Township
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Attn: Karen Lowery, Secretary

Monroe Township Board of Supervisors
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Attn: Phil Kehoe, Chairman

Monroe Township Planning Commission
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Attn: Sharon Nelson, Chairman

Upper Allen Township
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Attn: Scott Fraser, Manager

Upper Allen Township Board of Supervisors
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Attn: Kenneth M. Martin, President

Upper Allen Township Planning Commission
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Attn: R. Wayne Willey, Chairperson

President of Public Utility Other Than Applicant

President of Metropolitan Edison Company
C/O Tori L. Giesler, Esq.
FirstEnergy Service Company
2800 Pottsville Pike
P.O. Box 16001
Reading, PA 19612-6001

President of Mid-Atlantic Interstate Transmission LLC
C/O Tori L. Giesler, Esq.
FirstEnergy Service Company
2800 Pottsville Pike
P.O. Box 16001
Reading, PA 19612-6001

Notice Recipients

Federal Agencies

U.S. Army Corps of Engineers
Baltimore District Regulatory Branch
2 Hopkins Plaza
Baltimore, Maryland 21201
Attn: Planning Division

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

State Agencies

Pennsylvania State Historic Preservation Office
Historical and Museum Commission
Commonwealth Keystone Building
400 North Street, Second Floor
Harrisburg, Pennsylvania 17120-0053
Attn: Mr. Douglas C. McLearen, Chief

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797
Attn: David J. Gustafson, Director, Bureau of Wildlife Habitat Management

Pennsylvania Fish and Boat Commission
Center Region Office
595 East Rolling Ridge Drive
Bellefonte, Pennsylvania 16823-9620
Attn: Christopher A. Urban, Chief, Natural Diversity Section

Pennsylvania Department of Conservation and Natural Resources
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17105-8767
Attn: Rebecca Bowen, Ecological Services Section Chief

Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, Fifth Floor
Harrisburg, Pennsylvania 17120
Attn: Donald J. Smith, Acting Chief Counsel

Elected Officials

Pennsylvania State Senate

Senator Mike Regan
31st District
1 East Harrisburg Street
Dillsburg, PA 17019

Pennsylvania House of Representatives

State Representative Scott Perry
10th District
Cumberland County District Office
730 North Front Street
Wormleysburg, PA 17043

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 9

ATTACHMENT 9
WILLIAMS GROVE - ALLEN
115 KV TRANSMISSION LINE PROJECT
LIST OF GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES CONTACTED

Federal Agencies

U.S. Army Corps of Engineers
Baltimore District Regulatory Branch
2 Hopkins Plaza
Baltimore, Maryland 21201
Contact: Bill Jenkins

U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, Pennsylvania 16801
Contact: Brian Scofield

State Agencies

Pennsylvania State Historic Preservation Office
Historical and Museum Commission
Commonwealth Keystone Building
400 North Street, Second Floor
Harrisburg, Pennsylvania 17120-0053
Contact: Emma Diehl, Environmental Review Division Manager

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797
Contact: John Taucher

Pennsylvania Fish and Boat Commission
Center Region Office
595 East Rolling Ridge Drive
Bellefonte, Pennsylvania 16823-9620
Contact: Christopher A. Urban

Pennsylvania Department of Conservation and Natural Resources
Bureau of Forestry
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17105-8767
Contact: Greg Podniesinki, Section Chief

Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, Fifth Floor
Harrisburg, Pennsylvania 17120
Contact: Andy Schweitzer, Manager

County/Municipal Agencies

Cumberland County Board of Commissioners
1 Courthouse Square, 2nd Floor, Suite 200
Carlisle, Pennsylvania 17013
Contact: Tom Muller – County Executive

Cumberland County Conservation District
310 Allen Road, Suite 301
Carlisle, Pennsylvania 17013
Contact: Carl Goshorn, District Manager

Cumberland County Agricultural Land Preservation Board
310 Allen Road, Suite 101
Carlisle, Pennsylvania 17013
Contact: Stephanie Williams, Program Administrator

Cumberland County Planning Department
310 Allen Road, Suite 101
Carlisle, Pennsylvania 17013
Contact: Heather Sweitzer, Chair

Monroe Township
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Contact: Karen Lowery, Secretary

Monroe Township Board of Supervisors
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Contact: Phil Kehoe, Chairman

Monroe Township Planning Commission
1220 Boiling Springs Road
Mechanicsburg, Pennsylvania 17055
Contact: Sharon Nelson, Chairman

Upper Allen Township
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Contact: Scott Fraser, Manager

Upper Allen Township Board of Supervisors
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Contact: Kenneth M. Martin, President

Upper Allen Township Planning Commission
100 Gettysburg Pike
Mechanicsburg, Pennsylvania 17055
Contact: R. Wayne Willey, Chairperson

Elected Officials

Pennsylvania Senate

Senator Mike Regan
31st District
1 East Harrisburg Street
Dillsburg, PA 17019

Pennsylvania House of Representatives

State Representative Scott Perry
10th District
Cumberland County District Office
730 North Front Street
Wormleysburg, PA 17043

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 10

ATTACHMENT 10
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
LIST OF LOCATIONS APPLICATION CAN BE VIEWED BY THE PUBLIC

Upper Allen Township
100 Gettysburg Pike
Mechanicsburg, PA 17055

Monroe Township
1220 Boiling Springs Road
Mechanicsburg, PA 17055

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 11

ATTACHMENT 11
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
PPL ELECTRIC MAGNETIC FIELD MANAGEMENT PROGRAM

PPL Electric Utilities

MAGNETIC FIELD MANAGEMENT

PPL Electric Utilities Corporation

EU00547114
Revision Date: August 5, 2019

TABLE OF CONTENTS

INTRODUCTION

At PPL Electric Utilities Corp. (PPL EU), magnetic field management means investigating and implementing methods based on an optimized cost approach to reduce magnetic fields in new or rebuilt transmission lines. This document explains PPL EU's Magnetic Field Management Program.

PPL EU's View

Panels of scientists that have researched EMF (Electric Magnetic Field) generally have drawn two main conclusions. First, the large body of evidence does not demonstrate that EMF are harmful. Second, additional research is recommended to explore questions raised in some studies.

Given these conclusions, PPL EU is taking a reasoned approach when considering EMF in our design process. PPL EU's approach to EMF has five elements:

- Providing EMF educational information to customers and employees
- Providing magnetic field measurements to customer upon request
- Establishing and implementing a Magnetic Field Management Program to reduce magnetic fields in new or rebuilt facilities
- Integrating EMF educational information in the public outreach process that PPL EU undertakes in the siting of transmission lines
- Supporting additional research

For more information related to EMF, visit https://www.pplelectric.com/reliability/delivering-electricity/emf.aspx.

EMF Are All Around Us

Electric and magnetic fields occur in nature. For instance, the earth has a magnetic field, which makes the needle on a compass point north.

Electric and magnetic fields also surround every wire that carries electricity, such as power lines, electrical appliances, home and building wiring, and currents flowing on water pipes. EMF are made up of two components: Electric Fields and Magnetic Fields. Public and scientific interest has focused on the magnetic fields.

Electric Fields

Electric fields are produced by the voltage of a power line. The higher the voltage, the higher the electric field. If a wire is energized—has voltage present—an electric field is present. For example, an appliance doesn't have to be turned on to create an electric field – only plugged in. Electric fields diminish with distance and can be blocked or partially shielded by objects such as trees and houses.

Magnetic Fields

Magnetic fields are created by the current or flow of electricity through a wire. The higher the current, the greater the magnetic field strength. Because magnetic fields only occur when current is flowing, magnetic fields are present only when the power is turned on. Magnetic fields also diminish with distance, but unlike electric fields, are not blocked by common objects. Magnetic fields usually are measured in a unit called a milligauss (mG). Figure 1 shows examples of magnetic field strengths.

Examples of Magnetic Field Sources* (in milligauss)	
Coffee makers	7
Distribution line upper level of typical average	20
Dishwashers	20
500 kV transmission line typical average at edge of right-of-way	30
Distribution line typical maximum above underground	40
Florescent lights	40
Distribution line typical maximum under overhead line	70
Blenders	70
500 kV transmission line typical average under the line	87
Toasters	100
Hair dryers	300
Can openers	600

*People typically change activities and locations during a day, so we are exposed to a variety of sources of EMF and a wide range of field levels. In the table above, field levels are taken from the U.S. National Institute of Environmental Health Sciences (NIEHS) EMF Questions & Answers, pages 33-35 (median level at 6 inches from appliances), page 36 (distribution lines), and page 37 (transmission lines). As noted by NIEHS, field levels of transmission lines can approximately double during peak loads, which occur about 1% of the time.

Figure 1 Examples of Magnetic Field Sources
(From PPL's EMF Website)

SUMMARY OF PPL EU's
MAGNETIC FIELD MANAGEMENT PROGRAM

Under its Magnetic Field Management Program, PPL EU has changed the way it builds and rebuilds some of its transmission lines. These guidelines are applied to new and rebuilt transmission facilities.

PPL EU has criteria limits for magnetic and electric fields of rebuilt and newly constructed lines. Implementing guidance based on IEEE Standard C95.6, PPL EU has selected a Maximum Permissible Exposure (MPE) limit for magnetic fields levels of 9,040mG.

The magnetic field calculations used in this document for the design of PPL EU's overall Magnetic Field Management Plan assume balanced load conditions among the phases and a fixed typical level of current, typical framing and PPL EU clearance above ground and are a representation of an existing transmission line. These levels were calculated using BPA's (Bonneville Power Administration) CAFEP calculator.

Under actual operating conditions, magnetic field levels may vary a minor amount due to the conductor and the electrical configuration.

MAGNETIC FIELD MANAGEMENT PROGRAM GUIDELINES

The guidelines for magnetic field management are noted below, with discussion points for each.

OVERHEAD LINES

NEW OR REBUILT TRANSMISSION LINES

69/138/230 kV Transmission Lines

- Since typical magnetic fields from 69 kV, 138 kV & 230 kV transmission lines designed to PPL EU standards are significantly below the PPL EU magnetic field limit, no additional magnetic field mitigation in necessary. By PPL EU standard framing and clearance criteria, the typical calculated magnetic fields at the edge of the right of way (ROW) are significantly less than the established PPL EU Limit. Refer to Table 2 & 3 for calculated magnetic field.

345/500 kV Transmission Lines

- Studies are required for each new transmission line with voltages of 345 kV and above to determine magnetic field levels with respect to the PPL EU limit. Such studies could include analysis of magnetic field reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced-phase spacing, installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set, if warranted.

RECONDUCTORING OR ADDING ADDITIONAL CIRCUITS TO EXISTING TRANSMISSION LINES

When reconductoring or adding additional circuits to existing transmission lines, PPL EU will ensure that the modification to the line shall conform to the PPL EU criteria limit on a case-by-case basis if it can be completed at a reasonable cost.

When reconductoring existing transmission lines or adding additional circuits, low-cost alternatives may not exist; however, the following steps will be taken:

- For a single-circuit line, modifications such as reduced-phase spacing will be evaluated dependent on voltage class.
- For double-circuit lines, application of reverse phasing will be evaluated.

UNDERGROUND TRANSMISSION LINES

Underground transmission lines are required due to environmental or land use factors or restrictions on available clearances, PPL EU will evaluate magnetic field and any warranted remediation on a case-by-case basis.

Table 2: 69/138 kV CIRCUIT TRANSMISSION LINES CALCULATED MAGNETIC FIELDS USING BPA's CAFEP CALCULATOR

Type of Construction	Magnetic Field (mG) at the Edge of the ROW for 69kV, 868A	Magnetic Field (mG) at the Edge of the ROW for 138kV, 1139A
Single Ckt – Vertical	32	48
Single Ckt – Delta	20	35
Single Ckt – Horizontal	44	67
Double Ckt – Same Phasing	54	78
Double Ckt – Reverse Phasing	11	20

Assuming the edge of right of way is 50 feet from the centerline of the transmission line - phase currents are balanced between phases. Calculations are based on a minimum ground clearance of 22.2ft and 23.6ft for 69kV and 138kV respectively.

Table 3: 230 kV CIRCUIT TRANSMISSION LINES CALCULATED MAGNETIC FIELDS USING BPA's CAFEP CALCULATOR

Type of Construction	Magnetic Field (mG) at the Edge of the ROW for 230kV, 1640A
Single Ckt - Vertical	45
Single Ckt – Delta	37
Single Ckt – Horizontal	84
Double Ckt – Same Phasing	77
Double Ckt – Reverse Phasing	21

Assuming the edge of right of way is 75 feet from the centerline - phase currents are balanced between phases. Calculations are based on a minimum ground clearance of 26ft

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 12

ATTACHMENT 12
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
PPL ELECTRIC VEGETATION MANAGEMENT PROGRAM

PPL ELECTRIC UTILITIES SPECIFICATION FOR TRANSMISSION VEGETATION MANAGMENT

LA-79827-14

EFFECTIVE JULY 5, 2022

Prepared by Stephen Dahl – Forester

TABLE OF CONTENTS

1.0 PURPOSE/SCOPE

This document outlines the methods and procedures for Vegetation Management (VM) activities associated with the establishment and maintenance of PPL Electric Utilities Corporation (PPL EU) transmission circuits operating at or above 69 kilovolts.

2.0 RESPONSIBILITY

All Contractors performing vegetation maintenance activities on PPL EU rights-of-way or adjacent areas shall have a thorough knowledge of PPL EU specifications. A copy of this and other appropriate specifications (provided by the Contractor) must be always on the work site. The Contractor shall make reasonable accommodations for non-English speaking employees.

The Contractor Shall:

- Take the necessary safety precautions to prevent injury to human life or damage to property and shall carry on its operations with a minimum of interference to traffic or inconvenience to the public.
- In the event of an on-the-job injury or Contractor caused electrical interruption, follow the procedures outlined in the most recent version of the following documents:

"Vegetation Management Contractor Reporting Requirements for Safety Incidents or Property Damage"
or
"Vegetation Management Contractor Reporting Requirements for Electrical System Events"

- Follow all applicable rules and regulations of federal, state, and local agencies.
- Report to PPL EU without intentional delay, all accidents or incidents resulting in injury to workmen or the public or property damage.
- Complete all work as specified by PPL EU and as documented in easement agreements.
- Notify PPL EU of any changes which may be required to work schedules including property owner requests.
- Make changes to work schedules only upon PPL EU authorization.
- Provide all supervision, labor, and equipment necessary for the execution of the work. All personnel must be adequately trained in safety and vegetation management techniques including species identification. PPL EU Authorized Representatives reserve the right to reject any personnel or equipment that do not meet PPL EU standards.
- Maintain copies of all permits obtained by PPL EU on the job site.
- Be responsible for obtaining and maintaining copies of all local permits on the job site.
- Keep all roads open to traffic, as per the most recent revision of The Pennsylvania Department of Transportation Publication 213 (Temporary Traffic Control Guidelines).

- Be familiar with all designated wetlands within any job site and keep mechanical equipment outside any such designated wetlands unless specifically approved by a PPL EU Environmental Professional. Upon approval by the PPL EU Environmental Professional, vehicles may only be taken into wetlands by using existing roads or using temporary matting.
- Obtain prior consent from a PPL EU Environmental Professional before traversing any access roads which have been restored by PPL EU or any PPL EU Contractors.
- Re-grade and seed any deep cuts, ruts, stump holes, mounded areas, or general soil disturbance caused by the vegetation management operations when, in the opinion of the PPL EU Authorized Representative, they could cause future ground erosion, interfere with line access, or have otherwise caused property damage.
- Without intentional delay, restore and stabilize (e.g., rake out, seed, and mulch) any earth disturbance created during vegetation management activities. If the earth disturbance results in an agency inspection or formal complaint, the PPL EU Environmental professional shall be notified by phone within 4 hours of the event.
- Clean up all debris and rubbish resulting from work as the work progresses, leaving the area in a condition satisfactory to the PPL EU Authorized Representative.
- Take precautions to preserve all survey stakes, hubs, and property corners. Those destroyed shall be replaced at Contractor's expense.
- Without intentional delay, repair or replace all fences or gates damaged by Contractor at Contractor's expense.
- Take adequate care to assure that gates are not left open. If existing fences or gates along a right-of-way are in a state of disrepair prior to the start of clearing, the property owner shall be so notified. In all cases the Contractor shall close and lock all gates behind them.
- Submit daily crew locations to the Regional PPL EU Authorized Representatives.

3.0 APPLICABILITY

The provisions outlined in this specification and additional referenced documents within shall be the primary methods and procedures implemented by all Contractors performing vegetation management activities directly or indirectly for PPL Electric Utilities. Changes to PPL EU Vegetation Management specifications may be made from time to time to stay current with business objectives and regulatory environments. Changes to PPL EU Vegetation Management specifications shall be made at the sole discretion of PPL EU. Any deviation from PPL EU Vegetation Management methods and procedures must be approved in writing by a PPL EU Authorized Representative or the PPL EU Supervisor of Vegetation Management.

4.0 ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
DEP	Department of Environmental Protection
E&S	Erosion and Sedimentation
EU	Electric Utilities
FAC-003	NERC Standard for Transmission Owner Vegetation Management
FERC	Federal Energy Regulatory Commission
GF	General Foreman (Contractor Representative)
IROL	Interconnection Reliability Operating Limit
kV	kilovolt = 1000 volts
MVCD	Minimum Vegetation Clearance Distance[1]
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
OGC	Office of General Counsel
OSHA	Occupational Safety and Health Administration
PA	The Commonwealth of Pennsylvania
PPL EU	PPL Electric Utilities Corporation
RMC	Records Management Coordinator
ROW	Right-of-way
TCC	Transmission Control Center
TSO	Transmission System Operator
TVMP	Transmission Vegetation Management Program (EU-NERC-OPS-13)
VM	Vegetation Management
WSZ	Wire Security Zone
WZ/BZ	Wire Zone / Border Zone

The term “Contractor” refers to a business, employee, or agent thereof executing vegetation management activities under contract for PPL EU in accordance with this specification and all other applicable PPL EU policies and procedures.[2]

The term “PPL EU Authorized Representative” refers to an individual is who given authority by the PPL EU Supervisor of Vegetation Management to make decisions and perform quality assurance inspections on behalf of PPL EU.

[1] MVCD – Minimum Vegetation Clearance Distance required to prevent flashover according to FAC-003. MVCD is less than WSZ and shall not be interpreted as an acceptable line clearance at the time of maintenance.

[2] Requirements exclusive to planning contractors are noted as such. Otherwise, Contractor refers to all PPL EU Vegetation Management Contractors.

5.0 PROPERTY OWNER NOTIFICATION AND REFUSALS

The planning contractor shall be responsible for notifying all property owners and other stakeholders of the intent to perform vegetation management activities unless such notification has been completed and provided in writing to the Contractor by PPL EU.

5.1 General Notification Requirements

- Contractor personnel directly involved in contacting customers are required to have identification, complete with photograph associating them with their employer and/or must possess a PPL EU Contractor Employee badge issued by PPL EU[3]. Identification shall be prominently displayed while engaged in customer contact activities.
- The Contractor may begin operations only after notification to proceed is received from PPL EU.
- The planning contractor shall furnish proof of notification to PPL EU upon request.
- Refusals shall be referred to a PPL EU Authorized Representative.

5.2 Property Owner Refusal Process

The following process shall be followed when required clearances cannot be achieved on any transmission line because of a property owner refusal. **In all cases, the Contractor may not negotiate any work that is below PPL EU specifications.**

- Following initial property owner notification by the planning contractor, if a property owner refuses to allow the Contractor access to the property to perform needed VM work, the planning contractor will notify the responsible PPL EU Authorized Representative and prepare a written Line Clearance Refusal Form documented in work management software.
- The planning contractor will secure a copy of the appropriate right-of-way (ROW) agreement if applicable to determine PPL EU's rights and will provide a copy of the agreement to the landowner if necessary.
- The planning Supervisor will then make an additional attempt to resolve the property owner refusal within two weeks. The planning Supervisor shall make every effort to successfully resolve the refusal before turning it over to PPL EU.
- PPL EU Authorized Representatives may negotiate with landowners however all negotiations must result in the maintenance of adequate line clearance throughout the vegetation management cycle length.
- In the event of an emergent refusal during the work process, the contractor general foreperson is encouraged to contact the property owner and resolve the refusal. In the event the contractor general foreperson cannot resolve the refusal, the contractor general foreperson shall without intentional delay notify the PPL EU Authorized Representative in writing.
- If the property owner still offers resistance, legal assistance/guidance will be requested from PPL EU OGC.

[3] Refer to Contractor Badging Process in the latest version of PPL EU Vegetation Contractor Orientation document.

5.3 Notification of State[3] and Federal Agencies[4]

All planned vegetation management activities on state and federal lands shall be identified by the planning contractor before the beginning of the annual contract start date. For each work location the easement language shall be reviewed by the Contractor to identify restrictions. If the land is under license agreement, the Contractor will prepare all appropriate notification materials including draft permit applications for PPL EU review. The PPL EU Authorized Representative shall submit the final application to the federal/state agency. Vegetation Management activities may not commence until PPL EU receives confirmation from the applicable agency that all notification and permit requirements have been achieved. Any Contractor who begins work on state or federal land without the express permission of the land manager and the PPL EU Authorized Representative will be responsible for paying all applicable fines as well as being subject to possible contract termination.

6.0 CLEARING REQUIREMENTS

6.1 General Requirements

All re-clearing and herbicide treatments performed on PPL EU rights-of-way must adhere to the following requirements:

A. The entire transmission corridor width shall be treated in accordance with the voltage hierarchy concept.

Voltage Hierarchy in a Common Corridor

Vegetation management work within transmission corridors containing multiple PPL EU facilities shall be maintained following the schedule for the highest operating voltage circuit that is energized within the corridor. During the maintenance cycle for the highest voltage circuit in a corridor, all circuits within the transmission corridor shall be maintained during the highest voltage cycle. When lower voltage circuits are undergoing cycle maintenance, any portion of a lower voltage circuit occurring within a corridor containing a higher voltage circuit shall be passed over and therefore maintained when the highest voltage circuit is scheduled.

Example 1: A 230kV circuit runs parallel with a 69kV circuit for 15 spans. If the 230kV circuit is scheduled for maintenance then the entire corridor is managed. If the 69kV circuit is scheduled, the portion of the 69kV circuit within the common corridor area is not maintained until the 230 kV vegetation management cycle

[3] State Agencies include but are not limited to Pennsylvania Game Commission and Pennsylvania Department of Conservation and Natural Resources – Bureau of Forestry

[4] All work within the National Park Service - Delaware Water Gap National Recreation Area is subject to the provisions of the latest version of the PPL EU Vegetation Maintenance and Condition Monitoring Plan for Susquehanna – Roseland.

Example 2: Multiple transmission circuits of the same operating voltage run parallel for 10 spans, there are no higher voltage circuits within the corridor. Since the circuits are of the same operating voltage, the higher numbered circuit shall be the ruling circuit within the corridor. The corridor shall be managed following the schedule of the ruling circuit until such a time that a higher operating voltage circuit is energized within the common corridor.

In all cases every circuit within a transmission corridor shall be treated at the same time.

B. Any vegetation, which could grow into the Wire Security Zone (defined in Table1), shall be treated to remove the potential hazard[5]. Treatment could involve cutting to ground line, and or applying herbicides, depending on easement and site restrictions.

C. Trees shall be felled in a manner that minimizes damage to those trees and/or shrubs which are to be preserved. All stumps shall be cut as low to the ground as practical. Stumps shall be cut parallel to the ground with no sharp splinters or points remaining. Where existing usable fences are attached to trunks of trees to be felled, the trees shall be cut at a height approximately 6" above the top wire strand, unless otherwise specified. The continuity of all electric fences shall be maintained. All stumps shall be treated with the appropriate herbicide for species and site conditions.

Table 1
Right-of-Way Clearing Widths and Minimum Conductor-to-Vegetation Clearances

Line Voltage	Desired Clearing Width[6]	Wire Security Zone	Minimum Acceptable Clearance[7] Under / Around
69-138 kV	100’	7’	22’/ 13’
230 kV	150’	14’	25’/ 18'
500 kV	200’	17’	32’/ 23’

[5] No corrective remediation pruning actions required for encroachments of “under” WSZ where compatible species or annual seasonal crops are in the WSZ to the extent vegetation is not expected to encroach into the MVCD. Species acceptability shall be confirmed through on-site review by vegetation management personnel to determine that vegetation growth has been maximized or dead and that the vegetation presents no threat that MVCD could be breached. See the latest version of PPL Electric Utilities FAC-003 Transmission Vegetation Program Document.

[6] Some lines may have agreements specifying different widths. It is not the practice of PPL EU to clear adjacent un- used rights-of-way beyond the clearing widths listed.

[7] Where possible, these distances are the Minimum Acceptable Clearances at time of maintenance where pre- existing agreements do not allow the full implementation of wire zone-border zone management.

D. Hazard and Danger Trees

To ensure reliability, vegetation management operations must extend to trees located outside the clearing widths given in Table 1. Hazard trees are a subset of danger trees as defined in ANSI standards (ANSI A300 Part 7). Accordingly, ***a danger tree*** is any tree on or off the right-of-way which would either strike the conductor or pass within the minimum conductor clearances noted in Table 2. ***A hazard tree is*** a danger tree which is structurally unsound and therefore presents an increased risk to safety and reliability. A PPL EU Authorized Representative will work with vegetation management Contractors to approve the removal of hazard trees during line clearing/maintenance operations.

Table 2
Clearance for Hazard and Danger Trees

Line Voltage	Hazard and Danger Tree Clearance (Minimum Clearance for Falling Vegetation)[8]
69-230 kV	5’
500 kV	10’

Hazard Trees are defined as trees having one or more of the following characteristics:

1. Decay, cankers, and or hollows present in the main trunk of the tree.
2. Animal and or mechanical damage present in the main trunk of the tree showing visible signs of decay to the extent that it affects its structural integrity.
3. Disease and or insect damage that has affected the tree to such an extent that the trees survival to the next maintenance cycle is in doubt.
4. Root systems exposed to such an extent that the integrity of the tree is reduced.
5. Leaning and or over-crowned trees that cannot be pruned without removing their tops.
6. Splits and or cracks that are to such an extent that the splitting is affecting the integrity of the tree. Trees with Horizontal cracks should be made a high priority for removal.
7. Dead or dying trees that can strike the conductor or pass within the minimum conductor clearances shall be removed.
8. Species known to be weak wooded and or poorly rooted and therefore prone to an increased risk of failure.
9. All co-dominant stems should be considered for removal

[8] Additional clearance to be added to total tree height when assessing hazard and danger trees to prevent flashover.

6.2 Initial Clearing of a New Right-of-Way or Transmission Line Rebuild

When initially clearing a transmission corridor for a new transmission circuit or transmission line rebuild, all vegetation shall be cleared from the limits of the right-of-way with the exception of grasses and herbaceous or non-woody plants. This is necessary to both establish the extent of the new right-of-way and to accommodate the many construction activities that will occur within the right-of-way to install new foundations, tower structures, and conductors. After the initial clearing of a new right-of-way, PPL EU shall maintain the right-of-way in accordance with §6.3.

Initial clearing of a new right-of-way must adhere to these requirements:

A. All vegetation shall be cleared from the limits of the right-of-way with the exception of herbaceous or non-woody plants. Any mowed areas shall be treated with an appropriate cut stubble application wherever easement rights and regulation allow. Any vegetation that is hand cut shall be treated with the appropriate herbicide whenever easement rights and regulation allow. All debris shall be handled in accordance with the provisions of this document, or as specified by a PPL EU Authorized Representative, and/or by applicable agreements.[9][10]

B. The edge of the right-of-way shall be trimmed “Ground to Sky”. Ground to sky means that all branches overhanging into the easement area shall be removed. All required tree pruning shall conform to the latest approved edition of ANSI Z133 Safety Standards, ANSI A-300 Plant Maintenance, and OSHA 1910.269 as a minimum to assure safety and industry standards are maintained.

C. All off corridor hazard trees shall be removed including edge trees which cannot be properly pruned to the standards outlined above.

D. All stumps and hardwood brush which have not been mechanically removed shall be treated with herbicides to prevent the growth and regrowth of non-compatible vegetation. All applications shall be made under the direction of PA Certified Commercial Pesticide Applicators and done in accordance with product labels and all applicable laws. Herbicide applications may be applied during the following growing season upon mutual agreement of the vegetation Contractor and PPL EU.

E. When required, off right-of-way access roads and structure pad sites shall be cleared of all vegetation. This clearing shall be specified by project management personnel.

F. While general clearing activities (e.g., maintenance) do not generally require job specific environmental permits, the clearing of a new right-of-way will often be done as part of a larger capital job with unique environmental permits. Unless specifically directed otherwise by the PPL EU Environmental Professional, the vegetation clearing contractor will need to review and ensure compliance with any constraints or limitations detailed in the site-specific permit (i.e., General NPDES, General Permit, Joint Permit, etc.).

[9] Exceptions for ravine crossings are described in item D of § 6.3.1of this document.
[10] Wetland Vegetation Management is described in § 6.4 of this document.

6.3 Vegetation Cycle Maintenance for Existing Circuits

6.3.1 Wire Zone/ Border Zone

The Wire Zone/ Border Zone (WZ/BZ) method of managing transmission rights-of-way is the preferred vegetation management method of PPL EU. Wire Zone/ Border Zone shall be applied where the WZ/BZ method is not explicitly prohibited by easement restriction.

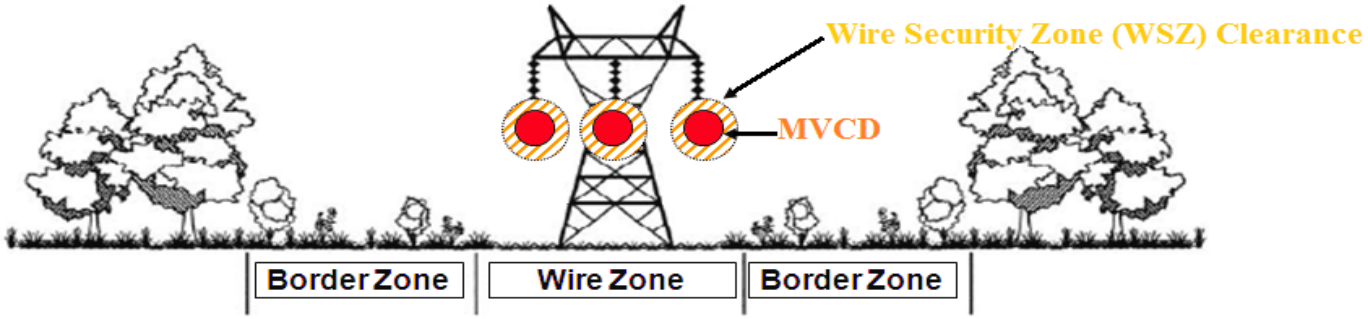
A. The ***Wire Zone*** is defined as that area of the right-of-way corridor that extends from the centerline to a distance ten (10) feet from the outer most conductors. All woody stems shall be controlled in the wire zone. Only Grasses, Ferns, and Herbaceous Plants may be preserved in the Wire Zone.

B. The ***Border Zone*** is defined as that area of the right-of-way corridor that extends from the limits of the Wire Zone to the limits of the easement boundary. Low growing trees and shrubs may be preserved in the border zone.

C. The area outside the easement boundary shall be managed for Hazard Trees.

D. The only exception to the above applies to non-compatible trees growing in ravines, gullies, or on side hills where topography is such that vegetation at a species maximum height will never encroach into the maximum sag wire security zone. In those areas non-compatible species may be preserved across with entire corridor at the desecration of the PPL EU Authorized Representative.

Wire Zone – Border Zone Concept



Where wire zone/ border zone cannot be applied due to an existing documented easement restriction or other limitation such as a documented site or environmental concern, the following procedures may be utilized as appropriate to the site conditions present.

6.3.2 Selective Clearing

A. All compatible species[11] shall be preserved to the greatest extent possible. Those, which would violate the wire security zone before the next scheduled treatment, shall be removed[12].

B. Any species that exhibits growth characteristics which may violate PPL EU clearances in its lifetime are considered a “non-compatible species” and shall be removed to the greatest extent possible.

C. Selective clearing is an acceptable practice for 69 kilovolt transmission lines which are not designated as an element of an IROL (Interconnection Reliability Operating Limit).

6.3.3 Restricted Clearing

A. All compatible species shall be preserved, wherever possible. Those which would violate the wire security zone before the next scheduled treatment shall be pruned or removed to obtain required “Minimum Acceptable Clearance” (defined in Table 1).

B. Any non-compatible species, which have violated or would violate the wire security zone before the next scheduled treatment shall be removed.

C. The remaining non-compatible species shall be preserved until the time comes when they can no longer be effectively pruned to maintain line clearance throughout the vegetation management maintenance cycle. This means that smaller (young) trees of non-compatible species are temporarily retained. As an adequate compatible cover becomes established over time, these non-compatible species shall be removed.

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[11] Compatible species guidelines are located in the “attachments” section of this document.

[12] No corrective remediation pruning actions required for encroachments of “under” WSZ where compatible species or annual seasonal crops are in the WSZ to the extent vegetation is not expected to encroach into the MVCD.
Species acceptability shall be confirmed through on-site review by vegetation management personnel to determine that vegetation growth has been maximized or dead and that the vegetation presents no threat that MVCD could be breached

6.3.4 Centerline Agreements

Some PPL EU rights-of-way may be described under what is referred to as a Centerline Agreement. Centerline Agreements establish the location of the centerline of the right-of-way; however, they do not define the total width of the easement or the distance from the centerline to the edge of the right-of-way.

A. Rights-of-way with centerline agreements shall be cleared to the existing large tree edge or at a minimum to 20’ from the outmost conductor, whichever distance is greater.

B. Any tree at or beyond the large tree edge with limbs encroaching within 20’ of the outermost conductor shall be pruned back to the main stem from ground to sky.

6.3.5 Tree Pruning

Tree pruning for apical clearance is only considered when specified within the language of pre-existing right-of-way agreements and may only be undertaken with PPL EU authorization. Removal of vegetation that poses a clearance concern is the preferred method of management.

All trees will be pruned by the guidelines detailed in the most current revision of the American National Standard for Tree Care Operations (ANSI A300). All pruning cuts should be made back to lateral branches at least one-third the diameter of the limb being removed or to the branch collar of the parent stem.

Every effort shall be made during the pruning process, to prevent damage to surrounding property and/or the tree itself. Tree gaffs or hooks will not be permitted in any maintained yard tree to be pruned. They will, however, be permitted in any tree to be removed or in forest trees to be pruned, unless objected to by the property owner.

6.4 Wetland Vegetation Management

Wetlands are defined in Section 404 of the Federal Clean Water Act and PA DEP’s Chapter 105 regulations as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions including swamps, marshes, bogs, and similar areas.

Note: Wetlands may have standing water, have plants that are adapted to wet conditions, and/or contain hydric soils. Not all wetlands have visible water or classic wetland plants (i.e., cat tails) so it is imperative the wetland surveys are completed, and the areas noted on the plans and/or in the field. The contractor shall use a combination of the National Wetlands Inventory and actual field observations to make a final wetlands determination.

- “Drop and lop” (see § 7.2 of this document) shall be the preferred method for the disposal of woody debris in wetlands. The intention of drop and lop is to minimize impacts to the wetland by leaving woody debris where it falls.

- Special care will be made to ensure that felled trees, logs, slash, brush, and chips do not impede any running water or seasonally dry waterways or drainage culverts. Slash will be compacted in such a manner that it will not be carried away by high water.
- Mechanical Equipment shall not be used in wetlands unless specifically approved by a PPL EU Environmental Professional. Upon approval by the PPL EU Environmental Professional, vehicles may only be taken into wetlands by using existing roads or through the use of temporary matting.

7.0 DISPOSITION OF CLEARED VEGETATION

The procedures and equipment used for the disposition of cleared vegetation should minimize disturbance to both the right-of-way soil cover and to the vegetation that is to remain within the right-of-way. All disposal operations shall closely follow (by no more than 3 days) clearing operations to keep work confined to one area and to prevent unsightly and unsafe conditions. **Wind Rowing as described below, shall be the preferred method of debris disposition** unless otherwise specified by a PPL EU Authorized Representative or as required by site conditions or permit restriction.

7.1 Wind Rowing

A. Timber Piles (6" or larger in diameter)

- All timber shall be placed in neat piles along the edge of the right-of-way, away from areas of preserved compatible vegetation. Under normal conditions timber piles will be interspersed with slash piles.
- Timber shall be stacked in tree length piles unless otherwise specified, in piles not greater in length than the longest tree length. A separation of at least 10' shall be provided on either side of each pile.
- All access roads, trails and streams (including their banks) shall be kept clear. Piling shall not be done where piles would be highly visible from any improved road.
- When working in a floodway or floodplain, all timber piles shall be placed on the side of the ROW furthest from the river/water source to the greatest extent possible.

B. Slash Piles

- All slash (i.e., trees less than 6" in diameter, treetops, and limbs) shall be stacked in flattened mounds along the edge of the right-of-way, away from areas of preserved compatible vegetation.
- Slash piles shall be dressed of excessively protruding limbs and compacted to keep visual obstruction to a minimum. Generally, they should not exceed 5-6' in height, except where site conditions are such that higher piles are acceptable (e.g., depressions, rough terrain in remote areas). Compaction of piles may be facilitated by use of equipment employed in the associated clearing operation.
- The length of a slash pile should not be any greater than a tree length timber pile, and its width limited so as not to interfere with access road construction or conductor stringing. A separation of at least 10' shall be provided on either side of each pile.

- All roads, trails, and streams (including their banks) shall be kept clear. No piling shall be undertaken where piles would be highly visible from any improved roads, at other locations involving high public visibility, or near tower or pole sites.
- When working in a floodway or floodplain, all slash piles shall be placed on the side of the ROW furthest from the river/water source to the greatest extent possible.

7.2 Drop and Lop

- All non-compatible vegetation shall be cut so that it falls toward the edge of the right-of-way, away from any designated access paths. After trees are felled, all long limbs shall be removed from the trunk, and the tree shall be bucked in order to keep the vegetation as close to the ground as possible.
- If necessary, trees and/or slash shall be moved to create a clear path for wire stringing, as needed.
- In all areas where drop and lop is implemented, the Contractor shall establish a path for reasonable access between structures.

7.3 Chipping

- All timber shall be stacked, according to the procedure described under “Wind Rowing” above.
- All slash shall be fed through a mechanical chipper immediately after cutting.
- Unless otherwise specified, chips may be randomly scattered on the right-of-way, except in the following areas: fields, along city streets, park areas, within wetlands, and on the banks of streams or ponds. In such areas, chips must be disposed of at an acceptable site.

8.0 HERBICIDE APPLICATIONS

Herbicide Applications:

- Shall be performed in accordance with the latest version of “PPL EU Herbicide Application Policy”
- Contractor employees shall possess appropriate Commercial Applicator/Technician certification and the Contractor shall have a pesticide application business license, in compliance with the Pennsylvania Pesticide Control Act of 1973 (3 P. S. § § 111.21—111.61).
- The Contractor shall maintain a record of all required property owner contacts on log sheets. These records will be submitted to a PPL EU Authorized Representative at his/her request and at the completion of each line.
- All target species will be adequately treated to produce the necessary control. A responsible Contractor Representative will review all prior year herbicide applications for quality control. The Contractor shall retreat at their own expense until the desired results are obtained.
- Vehicles used for application and property owner contacts must have Contractor identification of suitable size lettering as approved by a PPL EU Authorized Representative.

9.0 COMPLIANCE AND EXCEPTIONS

All vegetation management activities shall be performed in accordance with the latest version of NERC FAC-003 and the latest version of EU-NERC-OPS-013.

In addition to the exceptions specifically authorized herein, the PPL EU Supervisor of Vegetation Management, or his or her designee, may from time to time grant an exception to PPL EU's documented vegetation maintenance strategies, procedures, processes or specifications related to this document for good cause, including, but not limited to, such factors as safety conditions, weather, ice, flooding, emergencies, disasters, labor disputes, or legal limitations. Any such exceptions shall be in writing.

10.0 WORK UNIT DEFINITIONS

Refer to latest version of the PPL EU Transmission Unit Descriptions Table.

11.0 ATTACHMENTS

Compatible Species List[13] (Does not include Horticultural plant varieties)

I. SMALL TREES[14]

a) Flowering Dogwood (*Cornus florida*)
b) Redbud (*Cercis canadensis*)
c) Hawthorn (*Crataegus spp.*)
d) Blue Beech (American Hornbeam) (*Carpinus caroliniana*)
e) Shadbush (Juneberry, Serviceberry) (*Amelanchier spp*.)
f) Eastern Red Cedar (*Juniperus virginia*)
g) Northern White Cedar (*Thuja occidentalis*)
h) Dwarf Willow (*Salix spp*.)
i) Deciduous Holly (Winterberry) (*Ilex verticillata*)

II. LARGE SHRUBS

a) Alder (*Alnus spp.*)
b) Witch-hazel *(Hamamelis virginiana*)
c) Spicebush (*Lindera benzoin*)
d) Common Chokecherry (*Prunus virginiana*)
e) Elderberry (*Sambucus spp.)*
f) Rhododendron (*Rhododendron spp.*)
g) Virburnum (*Viburnum spp*.)
h) Dogwood (*Cornus spp.)*
i) Smooth (Dwarf) Sumac (*Rhus glabra*)
j) Staghorn Sumac (*Rhus typhina*)
k) Chokeberry (*Pyrus arbutifolia*)

III. SMALL SHRUBS

a) Mountain Laurel (*Kalmia latifolia*)
b) American Yew-Ground Hemlock (*Taxus canadensis*)
c) Sweetfern (*Comptonia peregrina*)
d) Honeysuckle (*Lonicera spp.)*
e) Huckleberries (*Gaylussacia spp*.)
f) Blueberries (*Vaccinium spp*.)
g) Viburnum (*Viburnum spp*.)
h) Meadowsweet (*Spirea spp*.)
i) Wintergreen (*Gaultheria procumbens*)
j) Trailing Arbutus (*Epigaea repens*)
k) Blackberry (*Rubus allegheniensis*)
l) Raspberry (*Rubus occidentalis*)
m) Hazlenut or Filbert (*Corylus spp*.)
n) Scrub Oak (*Quercus spp*.)

IV. ALL NATIVE GRASSES, FERNS AND HERBACEOUS PLANT

12.0 RECORD RETENTION

12.1 Record retention shall be consistent with the PPL Corporation Records Management Project Retention Schedule.

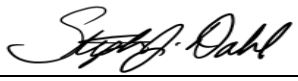
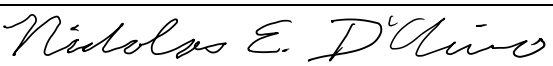
12.2 This document shall be reviewed annually by the Supervisor of Vegetation Management in Electric Utilities.

12.3 The review shall be facilitated by the Records Management Coordinator (RMC).

[13] This list is not all inclusive and is meant to be a guideline. These species are to be preserved as appropriate in accordance with this and other PPL EU Vegetation Management Specifications. Some species represented on this list as compatible may require removal due to site conditions, regulatory requirements, and other needs of PPL EU to build, operate, and maintain a safe and reliable transmission system.

[14] These species shall be evaluated on an individual basis. Over mature specimens can exceed 40’ in height and must be removed if they become a clearance threat.

13.0 REVISION HISTORY

Prepared by:	
	Stephen Dahl - Forester
Approved by:	
	Nicholas E. D'Amico - Supervisor – Vegetation Management

Revision	Date	Revision Comments
14	07/05/2022	• Removed requirement to submit weekly transmission locations to TSO. • Updated Manager of Vegetation Management to Supervisor of Vegetation Management. • Removed footnote reference to Vegetation Management Contractor Portal. • Remove CARC from Acronyms and Abbreviations. • Updated acronym definition of TVMP. • Updated responsibilities for property owner notification. • Updated language for property owner refusals. • Removed references to access roads from Selective and Restrictive clearing sections. • Removed requirement to notify PPL EU ROW department of sub-standard ROW widths from Centerline Agreement Section. • Updated chipping definition in section 7.3. • Removed work unit definition discussion and replaced with reference to the latest version of the PPL Transmission Unit Descriptions table. • Minor grammatical corrections.
13	06/01/2018	• Removed Reviewed By section
12	10/1/2017	• Edited Example 2 of section 6.1 General Requirements, Section A • Added Work Unit Definitions section • Edited Section 6.2 A.

11	01/01/2017	• Update to Wire Security Zone and Minimum Acceptable Clearance Distance Table. • Update to Initial Clearing of New Right-Of-Way or Transmission Line Rebuild section language related to herbicide treatment of vegetation removal. • Updated to Wire Zone/Border Zone section language related to herbicide treatment of vegetation removal. • Added Reviewed by section to the Revision History section.
10	12/22/2014	• Reformatted entire document into preferred PPL EU format. • Removed Roman numeral section numbers. • Added expanded Responsibility section. • Removed herbicide mix tables from body, created herbicide supporting document. • Added Voltage Hierarchy concept to beginning in 2016. • Added no remediation required for annual crops or dead vegetation that will never encroach into MVCD. • Added Hazard tree terminology, replaced references to danger trees with hazard tree in most cases. • Removed transmission line cross section diagrams. • Updated clearing width table. • Removed referenced to retired TVMP and previous versions of LA-79827. • Further defined WZ/BZ concept. • Updated WZ/BZ diagram. • Reduced applicability of pruning in favor of removing non-compatible vegetation. • Replaced debris disposal with debris disposition. • Established wind rowing as the preferred method of debris disposition. • Added requirements to restore earth disturbance. • Added requirement to not access any restored areas or wetlands with mechanical equipment without contacting PPL EU Environmental professional. • All references to Forester or LCI replaced with PPL EU Authorized Representative. • All references to company representative replaced with PPL EU Authorized Representative. • All references to PPL Electric changed to PPL EU • Added sub-section describing centerline rights-of-way. • Added footnote to reference PPL EU Vegetation Contractor Orientation Document. • Added Acronyms and Abbreviations section. • Added Compliance and Exceptions section. • Added Record Retention section.

09	09/12/2013	• Simplified Document Title • Section I, Updated scope to include compliance with all permits and laws. • Section II, Added “Initial Clearing of a New Right-of-Way” • Section III, Updated verbiage. • Table 3, Removed American Chestnut as a Compatible Species • Section IV removed references to burning brush as an acceptable method of debris disposal. • Table 4, Updated list of Approved Herbicides and Spray Mixtures • Section VI removed references to burning brush. • Section VI, Updated instructions for reporting Electrical System Events and on the job injuries.
08	12/01/2010	• Section III, Part A updated to add Wire Zone-Border Zone management technique to be used where applicable and not sole management technique. • Section III, Part A, sections 2 and 3 updated to clarify acceptable/non-compatible species and possible exceptions to WZ-BZ. • Acceptable Species Table 3 specified as to not include horticultural plant varieties. • Section III, Part A, section 4 amended to reflect pruning is not preferred for trees under wires. All pruning to be completed with PPL authorization • Section V, parts A & B amended to reflect new herbicide application techniques (cut-stubble). • Table 4 Amended to reflect updates to approved herbicide mix alternatives. • Section IV, remove reference to PPL Specification A-118231 as it was retired. • Amended applicable footnotes to reference current Specification, LA-79827-8, for species acceptability.
07	07/01/2009	• Section III updated to add Wire Zone-Border Zone Management technique to be used where applicable. • Herbicide Alternative 6 amended to remove Oust and replaced with Escort into mix. • Amended applicable footnotes to reference current Specification, LA-79827-7, for species acceptability.

06	03/01/2009	• Specification update to add clarification footnotes to Section II – Clearing Requirements, Section III Clearing Procedures, and Table 1 Right-of-Way Clearing Widths and Conductor-to Vegetation Clearances to note: “No corrective remediation pruning actions required for encroachments of WSZ (only) where maximum-sag conductor conditions have been identified, species acceptability- per PPL EU Specification LA-79827-6 confirmed, and vegetation growth has been determined to be maximized or vegetation is dead.”
05	03/01/2008	• Update specification for NERC FAC-003-1 compliance requirements of defined clearance 1 and 2 as applicable to lines operated at 200kV or above. • Updated acceptable use herbicides, adjuvants and mixture alternatives. • Added additional contractor requirement in event of work-related interruption or identification of imminent threat. • Remove references to PP&L throughout and replace with PPL Electric Utilities.
04	12/31/1993	• Update specifications to more current vegetation management practices and materials.
00	1970	• Earliest known reference to LA-79827-0

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 13

Table of Contents

LIST OF TABLES

1.0 DESIGN CONSIDERATIONS

The new transmission line will be designed according to, and generally exceed, all National Electric Safety Code ("NESC") minimum standards. The NESC is a set of rules to safeguard people 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 Utilities Corporation ("PPL Electric" or the "Company") 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 are 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 were developed to ensure public safety and welfare.

PPL Electric transmission line design standards meet or surpass the NESC standards. For example, the relative order of grades of construction for conductors and supporting structures is B, C, and N; Grade B being the highest. According to the NESC standards, construction Grades B, C, or N may be used for transmission lines (except at crossings of railroad tracks and limited access highways where Grade B construction is specified). However, PPL Electric designs all its transmission lines for Grade B construction. The use of Grade B design and construction specifies enhancements such as increased safety factors.

Another example is the design parameters utilized to account for ice and wind loadings on the wires and structure. The conductor sags and tensions along with the structure loading used in line designs are the result of various ice and wind combinations, PPL Electric transmission lines are designed to exceed NESC requirements with additional load cases to account for various ice and wind loading conditions not required by NESC. This means that PPL Electric lines are designed to operate safely

and reliably during inclement weather even more severe than assumed by the NESC. In addition, PPL Electric transmission lines are designed with more clearance to the ground than required by the NESC. **Tables 13-1 through 13-4** compare PPL Electric and NESC ground clearances for lines of various voltages. For this Project, PPL Electric applied their 138 kV design requirements. The 138 kV ground clearances provide slightly enhanced clearances for the new single circuit 115 kV transmission line. **Table 13-2** details ground clearances that will meet or exceed those required for 115 kV.

Table 13-1. 69 kV Vertical Clearance to Ground		
Surface Underneath Conductors	**NESC Standard Clearance**	**Minimum Conductor Clearances**
Roads, streets, alleys	19.2 Ft.	22.2 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	19.2 Ft.	22.2 Ft.
Spaces accessible to pedestrians only	15.2 Ft.	22.2 Ft.
Railroad tracks	27.2 Ft.	30.2 Ft.

Table 13-2. 138 kV Vertical Clearance to Ground		
Surface Underneath Conductors	**NESC Standard Clearance**	**Minimum Conductor Clearances**
Roads, streets, alleys	20.6 Ft.	23.6 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	20.6 Ft.	23.6 Ft.
Spaces accessible to pedestrians only	16.6 Ft.	23.6 Ft.
Railroad tracks	28.6 Ft.	31.6 Ft.

Table 13-3. 230 kV Vertical Clearance to Ground		
Surface Underneath Conductors	**NESC Standard Clearance**	**Minimum Conductor Clearances**
Roads, streets, alleys	22.4 Ft.	25.5 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	22.4 Ft.	25.5 Ft.
Spaces accessible to pedestrians only	18.4 Ft.	25.5 Ft.
Railroad tracks	30.4 Ft.	33.5 Ft.

Table 13-4. 500 kV Vertical Clearance to Ground		
Surface Underneath Conductors	**NESC Standard Clearance**	**Minimum Conductor Clearances**
Roads, streets, alleys	28.4 Ft.	31.4 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	28.4 Ft.	31.4 Ft.
Spaces accessible to pedestrians only	24.4 Ft.	31.4 Ft.
Railroad tracks	36.4 Ft.	39.4 Ft.

A relay protection system is used to protect the public safety and welfare as well as equipment and 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 using helicopter patrols, with supplemental foot patrols as needed. Helicopter patrols are performed on all lines on a predetermined frequency, depending on voltage level. The two-man helicopter crew flies parallel, to the left, 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 with high regards to public safety and follows or exceeds all codes and requirements.

The following are a few of the PPL Electric safety rules that demonstrate the Company's concern for employee and contractor safety:

- Work procedures have been developed to allow work to be performed on energized facilities in a safe manner. When lines or apparatus are removed from service to be worked on, the Energy Control Process system is applied. 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.
    - 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 in the form of body belts, safety straps, hard hats, gloves, etc., 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 reverse phasing of new double circuit lines where it is feasible to do so at low or no cost. The implementation of additional modifications to reduce magnetic field levels, are considered, provided those modifications can be made at low or no cost and will not interfere with the operation of the line.

The new Williams Grove – Allen 115 kV Transmission Line will be designed and operated as a single circuit line. Reverse phasing requires a double circuit line. Therefore, reverse phasing will not be possible for the new 115 kV transmission line. However, pursuant to PPL Electric's Magnetic Field Management Program, PPL Electric will utilize ground clearances that are three feet higher than NESC standards to further mitigate the potential for exposure to magnetic fields.

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 14

ATTACHMENT 14
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
AGENCY COORDINATION

As described in **Attachment 4**, an on-line preliminary Pennsylvania Natural Diversity Inventory (PNDI) review was conducted for the Study Area on October 11, 2022. Following the selection of the Proposed Route, a final online PNDI review was conducted on July 18, 2023. Specific agencies reviewing the Project include the United States Fish and Wildlife Service (USFWS), Pennsylvania Game Commission (PGC), Pennsylvania Fish & Boat Commission (PFBC), and Pennsylvania Department of Conservation and Natural Resources (DCNR). Following the final online PNDI review, PPL Electric conducted further consultation with the DCNR, as requested, regarding the two state-listed species known to occur in proximity to the Project: the red-head pondweed, a state threatened species, and the white water-crowfoot, a state species of concern. In their response, the DCNR indicated no red-head pondweed or white water-crowfoot were identified along the Proposed Route. The DCNR response is provided in this attachment. The remaining agencies reported no known impacts to threatened and endangered species and/or special concern species and resources within the Project Area. Therefore, no further consultation with USFWS, PGC, PFBC or DCNR is required for this Project.

PPL Electric also conducted an on-line review through the Pennsylvania State Historic Preservation Office (SHPO) PA-SHARE on July 18, 2023. On July 18, 2023, the SHPO indicated that no impacts to archeological and historic architectural resources are anticipated. The SHPO response letter is provided at the end of this attachment.

In October 2022, PPL Electric initiated coordination with Cumberland County representatives. PPL Electric used the feedback received from the County to create the Alternative Routes presented at the November 2022 open house meeting. After the meeting, Cumberland County representatives and PPL Electric continued coordination, as routes were removed and modified. In selecting the Proposed Route, PPL Electric continued incorporating suggestions and comments provided by the County. After the Proposed Route was announced to the public in January 2023, some slight modifications were made to the route, based on landowner requests. These modifications resulted in the revised Proposed Route, which is the subject of this filing.

As required by Pennsylvania Title 25, Chapter 102, a National Pollutant Discharge Elimination System (NPDES) Permit for Construction Activities is required, and coordination with PADEP has begun. Because there is presence of High-Quality waters, an Individual Permit is being obtained for the Project. Coordination of the NPDES Permit has also begun with the Cumberland County Conservation District (CCCD).

Wetlands and waterways within the right-of-way of the Williams Grove – Allen 115 kV Transmission Line Project have been delineated using PADEP- and USACE-approved methodologies. The findings from the delineation were developed into a Wetland Delineation Report that will be filed with the Permit Application required for the construction of this Project. Information on the location of these features has been used by project engineers to help guide the placement of transmission poles and alignment of access roads. Based on current engineering design, no proposed poles will be in a wetland area. The Project is anticipated to require clearing through a forested wetland. Evaluation of the development of temporary versus permanent access roads through wetlands and across waterways is being conducted by project engineers. Unavoidable impacts to these features will be reviewed with CCCD, PADEP, and USACE to determine the form and level of mitigation that will be required. Pre-application meetings with these agencies have been coordinated and discussions regarding the project are on-going.

Highway Occupancy Permits (HOPs) are required through the Pennsylvania Department of Transportation (PennDOT) for limited access at three locations for the project. PPL Electric will continue to coordinate with PennDOT to obtain these permits.

A Notice of Proposed Construction must be reviewed by the Federal Aviation Administration (FAA) for any structures greater than 200 feet in height or located within 20,000 feet of an airport, or for those structures whose filing is requested after running the Notice Criteria Tool[1] to determine if there is potential interference with airport operations. Although the proposed structure heights are less than 200 feet, a private FAA heliport is located within 20,000 feet of the Proposed Route.

[1] A tool used to determine if a company meets the requirements to file notice of construction.

PPL Electric will consult with the FAA and prepare all items pertaining to the required Notice of Proposed Construction.

July 20, 2023

PNDI Number: 780915
Version: Final_1; 7/18/23

Joe Scott
WSP
350 Eagleview Boulevard, Suite 250
Exton, PA 19341
Email: joe.scott@wsp.com (hard copy will not follow)

Re: WIGR-Allen Proposed Route
Monroe, Upper Allen Township; Cumberland County, PA

Dear Joe Scott,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number **780915 (Final_1)** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

Recommended Best Management Practices:

- Use a conservative approach to project design that minimizes permanent and temporary disturbances to soil and native vegetation. This will conserve habitat and limit opportunities for invasive plants.
- Clean boot treads, tools, construction equipment, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site. This will remove invasive plant seeds and invasive earthworms/cocoons that may have been picked up at other worksites.
- Use clean project materials (e.g., weed-free straw) or materials native to the worksite to avoid introducing invasive species from contaminated sources.
- Revegetate or cover disturbed soil and stockpiles quickly to discourage the germination of invasive plants. Implement proper erosion control practices to stabilize soil and reduce runoff.
- Do not use seed mixes that include invasive species. More information about invasive plants in Pennsylvania can be found at the following link: http://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/Pages/default.aspx
- Use habitat appropriate seed mixes. For example, use a riparian seed mix when reseeding along a waterway. The Bureau of Forestry Planting & Seeding Guidelines can be found at the following link for recommendations: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031083.pdf
- Use native plants for landscaping, revegetation, and stormwater management. Do not use nonnative invasive species. Reduce the area of lawn and impermeable surfaces to the fullest extent practicable in favor of native gardens or habitat

restoration (e.g., forest, meadow, wetland, etc.). More information about lawn conversion can be found at the following link: https://www.dcnr.pa.gov/Conservation/Water/LawnConversion/Pages/default.aspx

- Plant forest buffers where trees were historically present along streams, wetlands, and bodies of water. Buffers should be a minimum of 35 feet in width (ideally at least 100 feet in width). Where trees are not appropriate (e.g., powerline rights-of-way), buffer with native shrubs and herbaceous plants. More information about riparian buffers can be found at the following link: https://www.dcnr.pa.gov/Conservation/Water/RiparianBuffers/Pages/default.aspx

- Manage rights-of-way for diverse native plant communities and wildlife (e.g., monarch butterfly). In seed mixes, include wildflowers that have overlapping bloom periods and provide forage for pollinators throughout the growing season. Avoid blanket herbicide applications; instead, spot-treat undesirable tall woody vegetation and invasive weeds. Where mowing is necessary, reduce frequency to once every few years during the dormant season (i.e., after first frost in late fall and before bird nesting in early spring), leaving some refugia for overwintering wildlife.

- Monitor for invasive plants before, during, and after project activities and promptly control any identified infestations. Frequent monitoring allows for early detection and rapid response.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an "Update" (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR's jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth's other resource agencies for environmental review.

Should you have any questions or concerns, please contact Alexander Dogonniuck, Ecological Information Specialist, by phone (717-783-3913) or via email (c-adogonni@pa.gov).

Sincerely,

Greg Podniesinski

Greg Podniesinski, Section Chief
Natural Heritage Section

Pennsylvania State Historic Preservation Office
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

July 18, 2023

Joseph Scott
WSP USA
350 Eagleview Blvd.
Suite 250
Exton PA 193410000

RE: ER Project # 2023PR03497.001, Williams Grove - Allen 115 kV Transmission Line Project, PA Utility Commission, Upper Allen Township, Cumberland County

Dear Joseph Scott:

Thank you for submitting information concerning the above referenced project. The Pennsylvania State Historic Preservation Office (PA SHPO) reviews projects in accordance with state and federal laws. Section 106 of the National Historic Preservation Act of 1966, and the implementing regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation, is the primary federal legislation. The Environmental Rights amendment, Article 1, Section 27 of the Pennsylvania Constitution and the Pennsylvania History Code, 37 Pa. Cons. Stat. Section 500 et seq. (1988) is the primary state legislation. These laws include consideration of the project's potential effects on both historic and archaeological resources.

Above Ground Resources
No Above Ground Concerns - Environmental Review - No Effect - Above Ground

Based on the information received and available within our files, it is our opinion that the proposed project will have No Effect on above ground historic properties, including historic buildings, districts, structures, and/or objects, should they exist. Should the scope of the project change and/or should you be made aware of historic property concerns, you will need to reinitiate consultation with our office using PA-SHARE.

For questions concerning above ground resources, please contact Emma Diehl at emdiehl@pa.gov.

Archaeological Resources
No Archaeological Concerns - Environmental Review - No Effect - Archaeological

Based on the information received and available in our files, in our opinion, the proposed project should have No Effect on archaeological resources. Our analysis indicates that archaeological resources are potentially located in this project area. Should the scope of the project be amended to include additional ground-disturbing activity and/or should you be made aware of historic property concerns, you will need to reinitiate consultation with our office using PA-SHARE.

For questions concerning archaeological resources, please contact Emma Diehl at emdiehl@pa.gov.

Sincerely,

Emma Diehl
Environmental Review Division Manager

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 15

The following table of National Register of Historic Places (NRHP) lists, eligible and potentially eligible or unevaluated cultural resources located within 2 miles of the Alternative Routes. Ineligible resources are not included in this Attachment. Previously identified cultural resources located within the Study Area are discussed in **Attachment 3**, **Section 2.4** and resources located within 1 mile of the Alternative Routes are discussed in **Attachment 4**, **Section 4.2.3**.

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
2021RE02571	2629 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	Yes
2021RE02569	2701 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02568	2705 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	Yes
2021RE02567	2707 & 2709 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02566	2711 & 2713 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02573	2714 Middle St	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02565	2717 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02564	2719 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02562	2723 Mill Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02560	620 College Ave	Cumberland	Upper Allen Twp	Building	Undetermined	Yes
2021RE02574	621 Grantham Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2021RE02561	624 College Ave	Cumberland	Upper Allen Twp	Building	Undetermined	No

[1] Some previously identified cultural resources are located outside of the project Study Area, but within 2 miles of the Alternative Routes.

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
2021RE02570	636 Grantham Rd	Cumberland	Upper Allen Twp	Building	Undetermined	No
2009RE00216	Barleycroft Farm	York	Carroll Twp	Building	Eligible	No
2016RE01015	Beelman, John, House	Cumberland	Monroe Twp	Building	Undetermined	No
1977RE00121	Bielman-Musselman Farm	Cumberland	Upper Allen Twp	Building	Eligible	No
2016RE00331	Bomberger, Joseph, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2016RE01926	Brandt, G./Plank, J., Farm	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE02303	Brandt, John, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2016RE01328	Brandt, Martin, House	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE01005	Brindle, Peter, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
1987RE00814	Bryson or King's House	Cumberland	Upper Allen Twp	Building	Undetermined	No
1995RE40780	Carolyn & Charles Christine	York	Carroll Twp	Building	Undetermined	No
1995RE46851	Cocklin Family Cemetery	Cumberland	Monroe & Upper Allen Twp's	Site	Undetermined	No
1995RE38761	Cocklin, Jacob, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
1995RE39959	Cocklin, Jacob, House & Spring	Cumberland	Upper Allen Twp	Building	Undetermined	No
1996RE00196	Cocklin, Samuel, Farmstead	Cumberland	Silver Spring Twp	Building	Eligible	No
1987RE00132	Cocklin, Samuel, House	Cumberland	Monroe Twp	Building	Undetermined	No
2019RE13886	Conoy Path	Multiple	Multiple	Site	Aggregate File[2]	Yes

[2] An aggregate file does not represent a historic resource survey and will not have a determination of eligibility. It is a means of collecting and displaying previously surveyed components ("associated resources") of a particular railroad line or path.

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
2010RE03283	Cumberland Valley Railroad	Multiple	Multiple	District	Eligible	Yes
2019RE25532	D. Brougher Property	York	Carroll Twp	Building	Undetermined	No
2019RE22240	Daniel Hoover Property	York	Carroll Twp	Building	Undetermined	No
1996RE00860	Earl's Garage	Cumberland	Silver Spring Twp	Building	Eligible	No
2016RE00021	Eberly, Jacob, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2000RE00403	Eberly, Moses, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
2016RE01922	Enck, Henry Sr., House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2016RE01924	Erb, John, Tenant House	Cumberland	Upper Allen Twp	Building	Undetermined	No
1986RE00242	Fahrenbaugh, Joseph, House	Cumberland	Monroe Twp	Building	Undetermined	No
2019RE23411	Frankstown Path	Multiple	Multiple	Site	Undetermined	No
1986RE00375	Gantz, Frederick & Barbara, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2023RE0467	Garver-Miller Barn	Cumberland	Monroe Twp	Building	Undetermined	Yes
2016RE02321	Gensler, Adam Shoe Shop	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE02305	Gensler, Adam, House	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE01310	Givler School	Cumberland	Monroe Twp	Building	Undetermined	Yes
1986RE00935	Gleim, John, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
1995RE38764	Gold, Thomas, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
2016RE01309	Gratz, John, House	Cumberland	Monroe Twp	Building	Undetermined	No
1999RE00383	Harkness, William II, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
2009RE00201	Hartzler, Christian, Farm	Cumberland	Monroe Twp	Building	Eligible	Yes

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
2016RE02302	Hertxler, Abraham & Mary, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2007RE01029	Hoover, Christian Jr. Farm	Cumberland	Upper Allen Twp	Building	Eligible	No
1986RE01103	Hoover, Dr. Michael L., House	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE00693	Hoover, Michael L., House	Cumberland	Monroe Twp	Building	Undetermined	No
2007RE00372	Hoover, Rebecca Farm	Cumberland	Monroe & Upper Allen Twp's	Building	Eligible	No
1987RE00002	Hotel Churchtown	Cumberland	Monroe Twp	Building	Undetermined	No
2019RE01547	Irene Stoner Property	York	Carroll Twp	Building	Undetermined	No
1995RE38759	Knisely, Samuel, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
1995RE38762	Knisely, Samuel, Mill	Cumberland	Upper Allen Twp	Building	Undetermined	No
1986RE00542	Kyle, Adam, House	Cumberland	Monroe Twp	Building	Undetermined	No
2019RE19165	Lenig Property	York	Carroll Twp	Building	Undetermined	No
2015RE00955	Lincoln Cemetery	Cumberland	Upper Allen Twp	Site	Undetermined	No
2019RE11972	Mark M. McClellan Property	York	Carroll Twp	Building	Undetermined	No
1987RE00290	McElhenny, Thomas, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2005RE00539	Mechanicsburg Local Historic District - HDA	Cumberland	Mechanicsburg	District	Listed	No
2016RE00324	Meixel, John, House	Cumberland	Monroe Twp	Building	Undetermined	No
1987RE00707	Miller, Henry, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
1995RE38767	Miller, Tobias, House	Cumberland	Upper Allen Twp	Building	Undetermined	No

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
1995RE39323	Moore, James, House	Cumberland	Monroe Twp	Building	Undetermined	No
1986RE00543	Morrett, Nicholas, House	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE00022	Morrett, Samuel, House	Cumberland	Monroe Twp	Building	Undetermined	No
1987RE00054	Moser, Margaret J., House	Cumberland	Upper Allen Twp	Building	Eligible	No
2016RE00024	Mumma, Jacob, Farm	Cumberland	Monroe Twp	Building	Undetermined	No
1995RE38765	Mumma, Robert & Catherine, House	Cumberland	Upper Allen Twp	Building	Undetermined	Yes
2003RE02604	Mumper, John, Jr., House & Barn	York	Carroll Twp	Building	Eligible	No
2017RE00702	Murray Library	Cumberland	Upper Allen Twp	Building	Undetermined	No
1995RE38763	Nebinger, Robert, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
2002RE01892	Pennsylvania Turnpike: Philadelphia [Eastern] Extension (Carlisle to Valley Forge)	Multiple	Multiple	Structure	Eligible	No
2010RE02630	Philadelphia & Reading Railroad	Multiple	Multiple	District	Eligible	No
2021RE00355	Philadelphia and Reading Railroad-Philadelphia, Harrisburg, and Pittsburgh Branch	Multiple	Multiple	Structure	Undetermined	No
1995RE38757	Quigley Store & House	Cumberland	Upper Allen Twp	Building	Undetermined	No
2016RE00694	Reed, William Row Houses	Cumberland	Monroe Twp	Building	Undetermined	No

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
2021RE02572	Reeser Building	Cumberland	Upper Allen Twp	Building	Undetermined	No
1987RE00300	River, John, House	Cumberland	Monroe Twp	Building	Undetermined	No
2019RE23905	Samuel Knisely House	York	Monaghan Twp	Building	Undetermined	No
2016RE00330	Schenck, Adam & Rebecca, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
1995RE38755	Smith, R.S., Manufacturing Plant	Cumberland	Upper Allen Twp	Building	Undetermined	No
2016RE02304	Stambaugh, John, Farm	Cumberland	Monroe Twp	Building	Undetermined	Yes
1995RE38760	Statler, Samuel, House	Cumberland	Upper Allen Twp	Building	Undetermined	No
2016RE00702	Sturgeon/Plank House	Cumberland	Monroe Twp	Building	Undetermined	No
2016RE02306	Swanger, John, House	Cumberland	Monroe Twp	Building	Undetermined	No
1986RE00537	Union Hotel (Hilltop Inn)	Cumberland	Upper Allen Twp	Building	Listed	No
1976RE00124	Upper Allen Historic Districts - HDA	Cumberland & York	Carroll, Monaghan, & Upper Allen Twp's	District	Listed	No
2016RE01327	Wenger, Michael, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
1977RE00044	Williams, John, House	Cumberland	Monroe Twp	Building	Listed	No
2016RE01308	Zeigler, Phillip, House	Cumberland	Monroe Twp	Building	Undetermined	Yes
2016RE01918	Zell Home	Cumberland	Monroe Twp	Building	Undetermined	No
1995RE12883		York	Monaghan Twp	Building	Undetermined	No
1995RE12884		York	Monaghan Twp	Building	Undetermined	No
1995RE17483		York	Carroll Twp	Building	Undetermined	No
1995RE17484		York	Carroll Twp	Building	Undetermined	No
1995RE17485		York	Carroll Twp	Building	Undetermined	No
1995RE17486		York	Carroll Twp	Building	Undetermined	No
1995RE17487		York	Carroll Twp	Building	Undetermined	No

Table 15-1
Historic Architectural Sites Within 2 Miles of the Alternative Routes

Resource Number	Name	County	Municipality	Type	NRHP Status	Within Study Area[1]
1995RE44269		York	Carroll Twp	Building	Undetermined	No
1995RE53215		York	Carroll Twp	Building	Undetermined	No

PPL Electric Williams Grove - Allen 115 kV Transmission Line Project

Attachment 16

ATTACHMENT 16
WILLIAMS GROVE – ALLEN 115 KV
TRANSMISSION LINE PROJECT
PUBLIC NOTICE REQUIREMENTS

PPL Electric Utilities Corporation ("PPL Electric") proposes to build approximately 3.9 miles of new single circuit 115 kV transmission line between the Williams Grove 230-69 kV Substation ("Williams Grove Substation") in Cumberland County and Mid-Atlantic Interstate Transmission LLC's ("MAIT") Allen 115-13kV Substation ("Allen Substation") in Cumberland County, Pennsylvania (the "Project"). The Project is required to resolve reliability issues on MAIT's 115 kV system.

Pursuant to Subchapters G and I of the Commission regulations, 52 Pa. Code §§ 57.71-57.77, 57.91-57.93, and the Commission's Interim Siting Guidelines, 52 Pa. Code §§ 69.3101-69.3107, PPL Electric has provided packets of information to fully notify landowners who will be subject to the rights-of-way and easements for the proposed Project. These packets of information include the following:

- A Cover Letter from a PPL Electric Senior Real Estate Specialist
- A Disclosure of Eminent Domain Power of Electric Utilities Required by 52 Pa. Code § 57.91
- Notification of Right-of-Way Maintenance Practices Required by 52 Pa. Code § 57.91
- PPL Electric's Internal Practices for Dealing with the Public on Power Line Project Required by 52 Pa. Code § 69.3102
- Notification to Contact the Commission or Office of Consumer Advocate for Improper Land Agent Practices
- A Brochure on Electromagnetic Fields
- A Brochure on Vegetation Management
- A Glossary of Real Estate Terms
- A Request for Survey Permission

Following this Attachment is a representative information packet that was sent to all landowners that PPL Electric negotiated with to acquire rights-of-way for the Project. In addition, copies of the Application and supporting Attachments or Notice of Filing are being served in accordance with the provisions of Section 57.74 of the Commission's regulations, 52 Pa. Code 57.74.

INFORMATION PACKET

Chris Bishop
Lead Right of Way Agent

PPL Electric Utilities
5000 Tilghman Street, Suite 157
Allentown, PA 18104
Tel. 570-231-5141

January 10, 2023

Metropolitan Edison Company
c/o FirstEnergy Service Company
2800 Pottsville Pike
Reading, PA 19605

RE: Williams Grove - Allendale Transmission Line
Parcel #: 22-11-0280-052PU

Dear Metropolitan Edison Company,

PPL Electric Utilities Corporation (PPL) is planning to build the Williams Grove - Allendale 115 kV transmission line in your area. I am notifying you of this proposed project as required by the Pennsylvania Public Utility Commission since we would like to place the transmission line on your property.

Enclosed are notices required by the Pennsylvania Public Utility Commission that provide important information regarding eminent domain, right-of-way maintenance practices, and land agent conduct. Also enclosed is PPL's Internal Practices for Dealing with the Public on Power Line Projects. The Pennsylvania Public Utility Commission's regulations require that PPL provide you with this information at least 15 days in advance of our discussions. For your convenience, I have also enclosed information on electromagnetic fields and a brochure on vegetation management, as well as a glossary of real estate terms.

If you have any questions or concerns, please feel free to contact me at 205-454-4552 or email: Chris.bishop@contractlandstaff.com.

I kindly request that you sign, in the space provided, on the following page to indicate that you have received this information.

Sincerely,

Chris Bishop
Lead Right of Way Agent
Representing PPL Electric Utilities

Chris Bishop
Lead Right of Way Agent

PPL Electric Utilities
5000 Tilghman Street, Suite 157
Allentown, PA 18104
Tel. 570-231-5141

January 10, 2023

Metropolitan Edison Company
c/o FirstEnergy Service Company
2800 Pottsville Pike
Reading, PA 19605

Parcel ID: 22-11-0280-052PU - Located at Park Place

RE: Survey Permission

In order for PPL Electric Utilities Corporation [PPL] to design its transmission line, various surveys may need to be performed first. This survey work can include but are not limited to, property boundary location surveys, topographic survey, utility easement locating, environmental and archaeological surveys, core borings, soil resistivity testing, infiltration testing, etc. All PPL employees and contractors will be able to provide their company identification upon request.

Please sign in the space provided below to indicate the granting of your permission for PPL or its agents or contractors to perform surveys on your property.

Sincerely,

Chris Bishop
Lead Right of Way Agent
Representing PPL Electric Utilities Corporation

I hereby grant PPL or its agents or contractors permission to enter onto my property for the purpose of performing the above various surveys.

Signed: _____ Print Name: _____

Date: _____ Title: _____

Phone: _____

I acknowledge receiving the information referred to in the letter above and understand that it does not obligate me in any way.

_____

Date _____

Phone _____

Attachments:
- Disclosure of Eminent Domain Power
- Notification of Right-of-Way Maintenance Practices
- Internal Practices for Dealing with the Public on Power Line Project
- Notification Regarding Land Agent Practices
- Information on Electromagnetic Fields
- Brochure on Vegetation Management
- Glossary of Real Estate Terms

DISCLOSURE of
EMINENT DOMAIN POWER

The Pennsylvania Public Utility Commission requires PPL Electric Utilities Corporation to give you the following information:

PPL Electric Utilities Corporation (PPL) is planning to build the Williams Grove - Allendale 115 kV transmission line. Since a field survey and detailed engineering have not been completed, the physical dimensions of the proposed lines and the type and height of supporting structures to be used cannot be precisely determined at this time. However, based on past experience it is expected that the structures will average 90 feet in height. There may be isolated physical conditions that would require either higher or lower structures than those mentioned above. At this time, we do not know the number of structures to be placed on any properties. PPL currently plans to acquire a right of way corridor 100 feet in width to accommodate the 115 kV transmission line.

Since the route could affect your property, a representative of the utility will contact you in the near future to discuss the utility's plans as they may affect your property. In order to better prepare you for these discussions and to avoid possible misunderstandings, we want to take this opportunity to inform you of your legal rights and the legal rights of PPL Electric Utilities Corporation with regard to this project. You have the right to have legal counsel represent you in these negotiations. You do not have to sign any agreement without the advice of counsel. If you do not know an attorney, you may contact your local bar association.

MUST YOU ACCEPT AN OFFER MADE BY THE UTILITY FOR YOUR PROPERTY?

No. You may refuse to accept it. However, the utility has the power to take property by eminent domain, subject to the approval of the Public Utility Commission, for the construction of transmission lines if the utility is unable to negotiate an agreement to buy a right of way. If your property is condemned, you must be paid "just compensation". "Just compensation" has been defined by the courts in Pennsylvania as the difference between the fair market value of your property before condemnation, unaffected by the condemnation, and the fair market value of your remaining property after condemnation, as affected by the condemnation.

CAN THE UTILITY CONDEMN YOUR HOUSE?

The company cannot condemn your house or a reasonable "curtilage" around your house. Generally, "curtilage" includes the land or buildings within 100 meters of your house which are used for your domestic purposes. However, the 100 meters limit does not automatically extend beyond the homeowner's property line.

DO YOU HAVE A RIGHT TO A PUBLIC HEARING WHEN THE UTILITY SEEKS TO CONDEMN YOUR PROPERTY?

Yes. When an electric utility seeks to have your property condemned, the utility must first apply to the Pennsylvania Public Utility Commission for a certificate finding the condemnation to be necessary or proper for the service, accommodation, convenience, or safety of the public. The Commission will then hold a public hearing. As the landowner whose property may be condemned, you are a party to the proceeding and may retain counsel, present evidence, and/or testify yourself in opposition to the application for a certificate. If you wish to testify at the public hearing, you should make your intention known by letter to Secretary, Pennsylvania Public Utility Commission, P.O. Box 3265, Harrisburg, PA 17120.

If the Commission approves the utility's application for a certificate finding the condemnation in the public interest, then the utility may proceed before the local Court of Common Pleas to condemn your land. If the Commission denies the utility's application, the utility cannot condemn your land. If you retain an attorney to represent you before the Commission, you must do so at your own expense.

The Commission will not decide how much money you should receive if your land is condemned. The only issue the Commission will decide is whether the condemnation serves the public interest. If the Commission approves the utility's application for condemnation, the amount of money to which you are entitled will be determined by a local Board of View of the Court of Common Pleas. However, you may at any time make an agreement with the utility as to the amount of damages you are to be paid.

NOTIFICATION of RIGHT-OF-WAY MAINTENANCE PRACTICES

The Pennsylvania Public Utility Commission requires that PPL Electric Utilities Corporation give you the following information on the right of way maintenance practices for the 115 kV line:

The methods currently used by PPL Electric Utilities Corporation are set forth in PPL Electric Utilities Corporation “Program for Vegetation Management”, which will be made available to you for your inspection upon request. If you wish further information concerning right of way maintenance methods, you may contact the person named on the cover letter. You may discuss with this person, either before or during negotiation of the right of way agreement, these methods and any other questions you may have about right of way maintenance.

Once a utility has constructed an electric transmission line on a right of way across your land, the utility must maintain the right of way free of tall growing trees and brush which might impair the reliability of electric service, the safety of the line, and access to the line or its towers. The utility or its contractors may remove and control tall growing trees and brush by several methods: hand cutting of trees, limbs and brush; mechanical cutting with chain saws or motorized cutting machines or application of herbicides. The utility must confine its maintenance activities to the approved right of way across your land, except where tall growing trees or brush or their root systems grow into the right of way from adjoining land and constitute a threat to the electric transmission line and its structures.

If you believe that the maintenance method(s) used by the company would raise problems with your use of your land adjacent to the right of way, it is your responsibility as the landowner to bring this to the attention of the utility before you sign the right of way agreement.

The utility company has the responsibility to maintain its right of way, and regular maintenance must occur. Although you as the landowner cannot determine whether or not maintenance will occur, your right of way agreement may specify certain conditions on the performance of the maintenance program which are important to you. These conditions can be part of the negotiations between you and the utility company for your land, since a right of way agreement is a legal contract between a landowner and a utility company. It is important for you to understand also that the maintenance methods used by the utility company may change over time as the costs of maintenance or the methods of performing maintenance change. You may want to specify in your right of way agreement that the utility company inform you of changes in its maintenance methods or in the maintenance schedule for your land.

The provisions of the right of way agreement are enforceable in the local Court of Common Pleas. The right of way agreement cannot be enforced by the Pennsylvania Public Utility Commission. Any claims for damages resulting from improper maintenance of the right of way must be settled with the utility, its contractors, or in the local Court of Common Pleas at your own expense. The Commission cannot award damages for violations of the right of way agreement.

INTERNAL PRACTICES
for
DEALING WITH THE PUBLIC ON POWER LINE PROJECT

PPL Corporation has a long-standing commitment to conducting business in an honest and ethical manner. Consistent with expectations for our employees and representatives laid out in the PPL Standards of Conduct and Integrity, and the Standards of Conduct and Integrity for Suppliers, PPL Electric Utilities Corporation's employees, contractors and agents who interact with members of the public (including landowners along proposed rights of way) in activities such as planning, real estate and right-of-way transactions, siting, and construction of power lines and other facilities will:

- Act with integrity at all times.
- Treat people courteously and in a professional manner.
- Be forthright and honest in all actions and communications.
- Comply with applicable laws and regulations.
- Seek to avoid conflicts of interest.
- Accept responsibility for actions and decisions.
- Be responsible stewards of the environment.
- Place a high priority on the safety of the public and our representatives and employees.

NOTIFICATION REGARDING
LAND AGENT PRACTICES

PPL Electric Utilities Corporation is planning to build the Williams Grove - Allendale transmission line. Since the route could affect your property, a representative from PPL Electric Utilities Corporation will contact you in the near future to discuss the utility's plans as they may affect your property.

The Pennsylvania Public Utility Commission requires PPL Electric Utilities Corporation to provide you the following contact information for concerns regarding the practices of the land agents acting on behalf of PPL Electric Utilities Corporation in connection with the construction of the 115 kV transmission line:

Law Bureau
Pennsylvania Public Utility Commission
400 North Street, 3rd Floor, 4 North
Harrisburg, PA 17120
717-787-5000

Pennsylvania Office of Consumer Advocate
555 Walnut Street
5th Floor Forum Place
Harrisburg, PA 17101-1923
Phone: 717-783-5048 or toll free 800-684-6560 (PA only) Fax: 717-783-7152
Email: consumer@paoca.org

GLOSSARY of REAL ESTATE TERMS

ABSTRACT OF TITLE: The condensed history of ownership to a particular parcel of real estate, consisting of a summary of ownership from a given time to the present owner.

ACRE: A measure of land equal to 43,560 square feet.

APPRAISAL: An estimate of the value of property; the process through which conclusions of property value are reached.

APPRECIATION: An increase in the worth or value of a property.

CHAIN OF TITLE: A history of ownership of a particular property (see abstract of title).

CONDEMNATION: A judicial or administrative proceeding to exercise the power of eminent domain through which private property is taken for public use.

CONDUCTOR: The wire which carries electric energy.

CONVEYANCE: A transfer of property ownership.

DEED: A written document that, when executed and delivered, conveys title to or an interest in real estate.

DEED RESTRICTIONS: Clauses in a deed limiting the use of the property.

DEPRECIATION: A loss of value in property.

EASEMENT: A right to use the land of another for a specific purpose (e.g., as a right of way for utilities.)

EGRESS: The right to exit a tract of land.

EMINENT DOMAIN: The right of a government, municipal body or public utility to acquire property for public use. (See condemnation)

ENCROACHMENT: An intrusion, such as a house, sign, wall or fence, that intrudes on another's property or right of way.

FAIR MARKET VALUE: The highest price which a willing buyer would pay and the lowest price a willing seller would accept.

FEE OR FEE SIMPLE: The complete and absolute ownership of real estate.

GRANT: The transfer of property rights through a legal document.

GRANTEE: One who acquires property or any property rights from another person.

GRANTOR: One who transfers property or any property rights to another person.

INGRESS: The right to enter a tract of land.

KV: Kilovolt or 1000 volts (138 kV = 138 x 1000)

LIEN: A claim against real or personal property for satisfaction of a debt.

METES-AND-BOUNDS DESCRIPTION: The legal description of a parcel of land that begins at a well-marked point and follows the boundaries, using directions and distances.

MONUMENT: A fixed natural or artificial object used to establish real estate boundaries.

OPTION: The right to purchase a certain property at stated terms, price and time.

RECORDING: The act of entering documents in the Recorder of Deeds office established in each county.

RIGHT OF WAY: Used interchangeably with the word easement. (See easement)

SURVEY: A process of scientifically measuring the quantity and location of a parcel of land.

TAX MAP: Maps used by the county Tax Assessment office showing the locations of properties.

TITLE: Evidence of ownership of land.

ZONING: Regulations pertaining to the use of land and/or buildings.

EMF and Health Information **FACT SHEET**

What is EMF?
"EMF" is an abbreviation for "electric and magnetic fields" and "electromagnetic fields." Power lines, appliances, and home wiring all produce electric and magnetic fields. "EMF" is also often used by people as shorthand for just "magnetic fields," which some people are concerned about, so that is what "EMF" refers to here.

Is EMF "radiation" like medical X-rays or ultraviolet sunlight? No. Radiation from medical X-rays and from the ultraviolet part of sunlight is strong enough to damage DNA. EMF from power lines, appliances, and home wiring is not.

What are the EMF levels from common sources? (in milligauss)

Examples of EMF Sources*	
Coffee makers	7
Electricity distribution line – upper level of typical average	20
Dishwashers	20
500 kV electricity transmission line -- typical average at end of right of way	30
Electricity distribution line -- typical maximum above underground line	40
Florescent lights	40
Electricity distribution line -- typical maximum under overhead line	70
Blenders	70
500 kV electricity transmission line -- typical average under line	87
Toasters	100
Hair dryers	300
Can openers	600

* *People typically change activities and locations during a day, so we are exposed to a variety of sources of EMF and a wide range of field levels. In the table above, field levels are taken from the U.S. National Institute of Environmental Health Sciences (NIEHS) EMF Questions & Answers, pages 33-35 (median level at 6 inches from appliances), page 36 (distribution lines), and page 37 (transmission lines). As noted by NIEHS, field levels of transmission lines can approximately double during peak loads, which occur about 1% of the time.*

What conclusions have public health authorities reached about whether EMF causes health effects?
The EMF health research has been examined by governmental public health authorities and public health organizations in over 160 reports. The World Health Organization has examined the reports on the research and says on its website:

> "Based on a recent in-depth review of the scientific literature, the World Health Organization concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."
>
> (http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html, section 2, "Conclusions from scientific research.")

Q. Are there any exposure limits for EMF in Pennsylvania?
A. Pennsylvania has not adopted any electric or magnetic field exposure limits.

Q. What is PPL Electric Utilities doing about EMF?
A. PPL Electric Utilities has a magnetic field management program to design and build new lines when practicable in ways that reduce magnetic fields at low or no cost to our customers. For example, the options we will consider for new lines include:

- Reversing the phases of new overhead double-circuit transmission lines, which can result in some cancellation of magnetic fields from the line and lowers the magnetic fields at the edge of the right of way.
- Building new transmission and distribution lines higher than previous designs because the level of magnetic fields at ground level will be lower.

Magnetic field management is considered in the process we use to site new facilities, balancing cost and function with land use and environmental concerns.

Q. Where can I get additional information on EMF?
A. This guide contains detailed information on EMF. More information is also available at the PPL Electric Utilities website at **www.PPLElectric.com/EMF.** If you would like to speak with someone at PPL Electric Utilities about EMF, please call **1-800-DIAL-PPL (1-800-342-5775).**

ppl
PPL Electric Utilities

Vegetation management is critical to electric reliability

Millions of people served by PPL Electric Utilities depend on having reliable power for their homes and businesses. Effective vegetation management along high-voltage transmission lines is a critical part of maintaining that reliability.

PPL Electric Utilities operates thousands of miles of high-voltage transmission lines. Our vegetation management program is designed to promote the safe and reliable operation of the electric grid while making sure that we are sensitive to the concerns of property owners and our obligations to electric customers.

PPL Electric Utilities' right to do this work
The vegetation management work we do will depend on the specific rights we have for each property. We will be happy to discuss these rights with you in advance of any work.

To schedule a meeting with a PPL Electric Utilities representative, email us at **PPLVegetationManagement@pplweb.com.**

For further information, visit **pplelectric.com/vegetation.**

TREE LINE USA®

An award-winning program

PPL Electric Utilities is a proud recipient of the **Tree Line USA award** from the **Arbor Day Foundation and the National Association of State Foresters.** The groups seek to promote proper utility arboriculture and public education through annual worker training, quality tree care, tree planting and public education, energy conservation and collaboration with community groups. For information about planting the right tree in the right place, visit arborday.org.

PPL Electric Utilities works with state and local conservation, land management and environmental groups to advance common goals of electric reliability and environmental stewardship.

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PPL Electric Utilities
pplelectric.com/vegetation

1/2019

Transmission Line Vegetation Management

Keeping your electric service reliable

Transmission Line Vegetation Management

Trees on other vegetation must be kept away from power lines. They are the top cause of storm-related power outages.

If trees get too close to power lines, the result can be a serious power outage. There is also the potential of a serious safety risk to you and to our employees.

We have an obligation to keep the grid safe and reliable and oversight is provided at both the state and federal levels.

Events like the Northeast Blackout of 2003 and the Halloween 2011 snowstorm involved prolonged outages caused by trees. Our vegetation management program is aimed at limiting the effects of trees on the grid.

We take a proactive approach to vegetation management

PPL trims and clears its transmission line rights of way in a much more comprehensive way than in the past. Coupled with investments in new poles, wires, equipment and technology, we've been able to substantially improve reliability for customers.

Our pledge to you

We maintain our transmission line rights of way according to a schedule that allows us to cover our entire system over a period of several years.

We know removing and trimming trees is not always popular, but it is the right thing to do on behalf of everyone who depends on the grid.

- We pledge to communicate with property owners well in advance of scheduled work.
- We pledge to work in a professional manner, and to work within the limits of the rights we have to perform this work on each property.
- We pledge to treat all property with care.
- We pledge to strike a careful balance between landowner concerns and the need to keep the grid safe and reliable.

Details of the work we will do

Reducing tree-related power outages is important everywhere, especially along transmission lines which carry high-voltage electricity over long distances.

When it comes to transmission line vegetation management, we view the rights of way in two main sections. The area directly under the wires, plus an additional 10 feet is called the wire zone. The rest of the right of way is called the border zone. What kind of vegetation is allowed in the rights of way depends on the voltage of the line, but in all cases it must be compatible with PPL's job to reduce the threat from trees and other vegetation.

Hazard trees – Sometimes, trees near the right of way fall into poor condition because of disease, storms or other factors. In order to prevent these trees from falling onto our lines, we remove them at no cost to the property owner. Those who decline the removal of a hazard tree could be liable for the cost of repairs to the power line due if it is damaged by the hazard tree.

Benefits to birds – Managing transmission line rights of way creates openings and edges that provide opportunities for native plants to grow and attract birds. According to the National Audubon Society, there are many birds that favor shrub lands and thrive along edge habitat.

Compatible species* –

SMALL TREES
Flowering Dogwood
Redbud
Hawthorn
American Hornbeam
Shadbush (Juneberry, Serviceberry)
Eastern Red Cedar
Northern White Cedar
Dwarf Willow
Deciduous Holly (Winterberry)

All native grasses, ferns and non-woody plants

LARGE SHRUBS
Alder
Witch-hazel
Spicebush
Common Chokecherry
Elderberry
Rhododendron
Viburnum
Dogwood
Smooth (Dwarf) Sumac
Staghorn Sumac
Chokeberry

SMALL SHRUBS
Mountain Laurel
American Yew
Sweetfern
Honeysuckle
Huckleberries
Blueberries
Viburnum
Meadowsweet
Wintergreen
Trailing Arbutus
Blackberry
Raspberry
Hazlenut
Scrub Oak

**This list is not all inclusive and is meant as a guide. Mature specimens of any species may be removed for operational, safety or reliability reasons.*

VERIFICATION

I, JOSEPH B. LOOKUP, being the Director of Asset Management at PPL Services 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: 11/03/2023

Joseph Lookup (Nov 3, 2023 10:13 EDT)

Joseph B. Lookup

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania	:	Docket No. A-2023-_____

PPL ELECTRIC UTILITIES CORPORATION

DIRECT TESTIMONY

STATEMENT NO. 1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania	:	Docket No. A-2023-_____

PPL ELECTRIC UTILITIES CORPORATION

STATEMENT NO. 1

DIRECT TESTIMONY OF JOSEPH B. LOOKUP

TOPICS ADDRESSED: GENERAL DESCRIPTION OF PROJECT
NEED FOR PROJECT

DATE: NOVEMBER 3, 2023

I. INTRODUCTION

Q. Please state your full name and business address.

A. My name is Joseph B. Lookup. My business address is 827 Hausman Road, Allentown, Pennsylvania 18104.

Q. By whom are you employed and in what capacity?

A. I am employed by PPL Services Corporation as Director of Asset Management and provide services to PPL Electric Utilities Corporation ("PPL Electric" or the "Company").

Q. What are your current responsibilities?

A. I oversee the Transmission Planning, Asset Strategy, Portfolio Management, Project Development, Real Estate, Project Management and Construction Management Groups. This includes responsibility for Transmission system reliability, investment strategy and project execution.

Q. Please provide your educational background.

A. I received a Bachelors of Engineering in Architectural Engineering – Electrical, from The Pennsylvania State University.

Q. Please describe your professional experience.

A. Prior to working at PPL Electric, I worked as a consultant providing engineering, project management, construction management services for utility, industrial, commercial, and educational clients. At PPL Electric I have worked in Engineering, Project and

Construction Management, and Asset Management in various engineering and project leadership, and management roles.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to generally explain the Williams Grove – Allen 115 kV Transmission Line Project, and why it is necessary or proper for the service, accommodation, convenience, or safety of the public. More specifically, I will summarize the information detailed in the above-captioned Application and associated Attachment 2 – Necessity Statement, Attachment 5 – Design and Engineering Description, Attachment 11 – PPL Electric Magnetic Field Management Program, Attachment 12 – Vegetation Management, and Attachment 13 – PPL Electric Design Criteria and Safety Practices to PPL Electric's Project.

Q. Are you responsible for the preparation of any of the Attachments filed with the above-captioned Application?

A. Yes. The above-mentioned Attachments to the Application were prepared by me or under my supervision. In addition, I verified the contents of the Application filed by the Company at the above-captioned docket.

II. NEED FOR THE PROJECT

Q. Please describe the existing system relevant to this Project.

A. Metropolitan Edison Company ("Met-Ed") serves portions of Adams, Cumberland, and York counties from the Mid-Atlantic Interstate Transmission, LLC's ("MAIT") 115 kV transmission network system. The MAIT 115 kV network feeds multiple distribution

substations in the area, including the Round Top, Allen, Dillsburg, PPGI and Gardners substations. MAIT's 115 kV transmission lines are mainly supplied by the MAIT-owned Hunterstown 500 kV/230 kV/115 kV and Middletown Junction 230 kV/115 kV substations.

PPL Electric operates a 230 kV network system to supply 230 kV-69 kV substations in Cumberland County. The 230 kV transmission lines connect the PPL Electric-owned Cumberland, Williams Grove, West Shore, and Brunner Island substations. PPL Electric's 230 kV transmission lines also connect with MAIT transmission infrastructure at Middletown Junction Substation. PPL Electric's transmission lines and territory are located north of MAIT's 115 kV system. There are presently no existing 115 kV ties between PPL Electric's and MAIT's transmission systems.

A one line diagram of the 230 kV and 115 kV transmission systems is provided as **Figure 2-1** to Attachment 2 – Necessity Statement. A map of the existing system alignment is provided as **Figure 2-2** to Attachment 2 – Necessity Statement.

Q. Why is the Project needed?

A. The Project is needed to address reliability concerns identified by PJM Interconnection, L.L.C. ("PJM") on the MAIT 115 kV transmission system. The reliability concerns to be addressed are voltage magnitude and voltage drop violations for multiple N-1-1 contingencies—identified by PJM on the MAIT 115 kV transmission system in the Cumberland County area. Failure to address this concern could result in large uncontrolled cascading outages, localized load drop, or low system voltages that could damage customer equipment A total of 19,878 customers could be affected if this were to occur. Of the

19,878 customers, 30 customers are deemed critical customers by Met-Ed. A summary of customers served by each substation is provided below[1]:

MAIT Substation	Total Customers	Critical Customers
Round Top	2,538	8
Allen	4,939	5
Dillsburg	6,422	13
PPGI	1*	0
Gardners	5,978	4
Total	**19,878**	**30**

- One industrial retail customer

Q. Do other PPL Electric witnesses further describe the Transmission Planning Process, the need identified by PJM, and PJM's review of the proposed Project and various alternatives?

A. Yes. PPL Electric witness Mr. Christopher Szmodis (PPL Electric Statement No. 2) provides this information. In addition, Attachment 2 – Necessity Statement provides details related to the Transmission Planning process.

III. OVERVIEW OF THE PROJECT

Q. Please summarize the proposed Williams Grove – Allen 115 kV Transmission Line Project.

A. The Project involves (1) installing a new 300 MVA 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation, (2) building a new 3.9-mile single circuit transmission line connecting the PPL Electric-owned Williams Grove Substation to the

[1] Data provided by MAIT and/or Met-Ed.

MAIT-owned Allen Substation, and (3) modifying the MAIT-owned Allen Substation to a four-breaker ring bus arrangement. Relative to the Commission, the proposed Williams Grove-Allen 115 kV Transmission Line Project involves the construction of approximately 3.9 miles of new single-circuit 115 kV transmission line between the PPL Electric-owned Williams Grove Substation in Upper Allen Township and the MAIT-owned Allen Substation in Monroe Township, all in Cumberland County, Pennsylvania.

Q. Please describe the proposed HV transmission line facilities that are the subject of the Williams Grove – Allen 115 kV Transmission Line Project.

A. The new HV transmission line will be installed on new single-shaft steel poles. The proposed HV transmission line will require the installation of approximately 36 structures ranging in height from 40 to 95 feet, with an average height of approximately 77 feet. The spans between the structures will be approximately 600 feet. Further, the Williams Grove-Allen 115 kV Transmission Line will consist of approximately 19 self-weathering tubular steel tangent structures. These tangent structures will be equipped with steel arms and will be installed as direct embedded structures (*i.e.*, without foundations). Approximately three additional direct embedded single pole and two-pole angle tension steel structures will be guyed. There also will be approximately 14 angle and tension structures, which will consist of single pole steel structures on concrete foundations. The proposed double circuit line will consist of three power conductors and two overhead ground wires. Each conductor will be 1003.5 kcmil, 54/7 stranding aluminum conductor steel reinforced ("ACSR"). The overhead ground wires ("OHGW") will be one 3/8-inch extra high strength ("EHS") steel OHGW and one a 48 fiber 0.567-inch diameter Optical Ground Wire ("OPGW"). A full

engineering description of the proposed Project is provided in Attachment 5 – Design and Engineering Description, to the Williams Grove-Allen 115 kV Transmission Line Project Application.

Q. What is the estimated cost of the Project?

A. The total estimated cost of the proposed Project is $23.14 million.[2]

Q. How does this cost compare to the estimated cost of the Project as submitted to PJM?

A. This cost is higher than the estimated cost provided to PJM. The costs are higher due to material pricing as a result of inflation and increased ROW acquisition costs. PPL Electric will notify the Commission of any changes in this cost estimate, and will provide the Commission with a report on the actual costs incurred to complete the Project once it is in service.

Q. When is construction of the Project scheduled to begin?

A. Construction of the Project is anticipated to begin in Fall 2024, subject to the Commission's approval. The construction in PPL Electric's Williams Grove Substation, described below and needed to support the Project, is scheduled to begin in Summer 2024.

Q. What is the in-service date for the proposed Project?

[2] PPL Electric notes that the HV transmission line component of the Project is estimated to cost $8.5 million. The estimated cost was developed based on preliminary engineering. The 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.

A. The anticipated in-service date is Spring 2026. Importantly, pursuant to Schedule 6 of PJM's Amended and Restated Operating Agreement, Section 4.2.2 of the PJM Consolidated Transmission Owners Agreement, and as stated in the Construction Responsibility Letter, PPL Electric is required to complete the Project by June 1, 2026.

IV. DESIGN DESCRIPRTION AND SAFETY PRACTICES

Q. Please describe the design of the proposed construction of the Project.

A. As I noted previously, the Project will resolve the reliability problems on the MAIT 115 kV network system and involves (1) installing a new 300 Mega Volt Amp ("MVA") 230 kV/115 kV transformer at PPL Electric's Williams Grove Substation, (2) building a new 3.9-mile single circuit transmission line to MAIT's Allen Substation, and (3) modifying the Allen Substation to a four-breaker ring bus arrangement. As part of the Project, the new 300 MVA 230/115 kV transformer will connect to Williams Grove 230 kV west bus by installing one 230 kV breaker, one 230 kV switch, and associated bus work. The transformer will occupy the third transformer position at Williams Grove Substation. The 115 kV terminal of the transformer will connect to a new 115 kV dead-end through one 115 kV breaker, 115 kV disconnect switch, and associated bus work.

Additionally, MAIT will modify the existing Allen Substation to a four-breaker ring bus arrangement and install the dead-end structure to terminate the new 115 kV transmission line and PPL Electric will modify the Williams Grove Substation. These substation modifications are not part of the Application.

A detailed engineering description is provided in Attachment 5 – Design and Engineering Description.

Q. Will the proposed Project create any unreasonable risk of danger to the public health or safety?

A. No. The proposed lines will be designed, constructed, operated, and maintained in a manner that meets or surpasses all applicable National Electrical Safety Code ("NESC") minimum standards and all applicable legal requirements. Descriptions of the NESC standards, PPL Electric's design criteria, and PPL Electric's safety practices are provided in Attachment 13 - PPL Electric Design Criteria and Safety Practices.

Q. Does the Application explain how PPL Electric managements magnetic fields?

A. Yes. Included with the Application is Attachment 11 – PPL Electric Magnetic Field Management Program. Attachment 13 – PPL Electric Design Criteria and Safety Practices also explains PPL Electric's standards for Magnetic Field Management. Ground clearances for the proposed Project will be at least 3 feet higher than those required by the NESC standard in order to reduce the magnetic field exposure.

Q. Does the Application also include information regarding PPL Electric's Vegetation Management Practices?

A. Yes. Attachment 12 – Vegetation Management provides this information. PPL Electric will maintain[3] the right-of-way for the Project in accordance with its Vegetation Management practices, to ensure that the new HV transmission lines are operated and maintained in a reasonably safe and reliable manner.

[3] The proposed 115 kV transmission line will be maintained to the 138 kV practices described in Attachment 12.

V. CONCLUSION

Q. Does this conclude your Direct Testimony at this time?

A. Yes. I reserve the right to supplement my testimony as additional issues arise during the course of this proceeding.

STATEMENT NO. 2

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania	:	Docket No. A-2023-_____

PPL ELECTRIC UTILITIES CORPORATION

STATEMENT NO. 2

DIRECT TESTIMONY OF CHRISTOPHER SZMODIS

TOPICS ADDRESSED: TRANMISSION AND PJM PLANNING PROCESSES

DATE: NOVEMBER 3, 2023

I. INTRODUCTION

Q. Please state your full name and business address.

A. My name is Christopher Szmodis. My business address is 827 Hausman Road Allentown, PA 18104.

Q. By whom are you employed and in what capacity?

A. I am employed by PPL Services Corporation as the Transmission Planning Manager and provide services to PPL Electric Utilities Corporation ("PPL Electric" or "Company").

Q. What are your current responsibilities?

A. I manage the Transmission Planning group in the Asset Management group for PPL Electric. Transmission planning in PPL Electric's Asset Management group involves conducting load flow analysis of PPL Electric's transmission system to determine if future voltage issues or equipment overloads will occur on the transmission system. If and when any issues are discovered, the Asset Management Group, under my supervision, develops alternatives to solve the issue and then creates a written document summarizing the technical requirements for the selected alternative to resolve the issue. Under my supervision, the Asset Management group conducts studies to connect new customers and generators to the Company's transmission system. In sum, we are responsible for ensuring that the transmission system is stable and reliable.

Q. Please provide your educational background.

A. I received a Bachelors degree in Electrical Engineering with a minor in Engineering Leadership Development from The Pennsylvania State University.

Q. Please describe your professional experience.

A. Prior to working at PPL Electric, I worked at an engineering company in Reading, Pennsylvania, providing services for relay and substation engineering projects for approximately one year. I have now worked for PPL Electric for approximately 16 years in the following capacities: Distribution Planner, Customer Support Engineer, Asset Strategy & Policy, Transmission Design Engineering, and Transmission Planning. I've been a supervisor for the past 6 years; four of those years I have been a supervisor in Transmission Planning and the other two years I have been a supervisor in Transmission Design Engineering.

Q. What is the subject matter of your direct testimony?

A. The purpose of my testimony is to summarize and detail the planning processes that predated and led to the Application requesting Pennsylvania Public Utility Commission ("Commission") approval to site and construct a new 3.9 mile long, single-circuit 115 kilovolt ("kV") transmission line between the Williams Grove 230-69 kV Substation ("Williams Grove Substation") and the Allen 115-13 kV Substation ("Allen Substation"), located in Cumberland County, Pennsylvania (the "Williams Grove-Allen 115 kV Transmission Line Project" or "Project").[1] The

[1] The contemplated transmission line will be known as the "Williams Grove-Allen 115 kV Transmission Line."

Project is required to resolve reliability issues—specifically, voltage magnitude and voltage drop violations for multiple N-1-1 contingencies—identified by PJM Interconnection, L.L.C. ("PJM") on the Mid-Atlantic Interstate Transmission, LLC ("MAIT") 115kV system in the Cumberland County area.

More specifically, I will speak to the PJM processes and analyses of alternatives that took place. These analyses revealed that the Project (a) solved the reliability issues as identified by PJM, (b) provided greater operational flexibility compared to other alternatives, (c) was cost-competitive relative to other alternatives, and (d) utilized existing substations.

Q. Please describe the portions of the Siting Application that you are sponsoring.

A. I am responsible for describing the transmission planning process and the need for the Project. Specific to the Siting Application, I am responsible or partly responsible for Attachment 2 – the Necessity Statement.

II. OVERVIEW OF TRANSMISSION PLANNING PROCESS

Q. Could you provide a brief explanation of the transmission planning process?

A. Yes. The nation's interconnected transmission grid serves as the backbone for the safe and reliable delivery of large amounts of electrical power from generating stations over substantial distances to customers served by transmission and local distribution systems. It is critically important that this interconnected transmission system (*i.e.*, the "Transmission Grid") be planned and designed to ensure that reliable electric service can be provided under all loading conditions and when

certain elements of the Transmission Grid are out of service (system contingencies) due to planned or unplanned outages.

Robust Transmission Planning assures that the transmission system can supply electricity to all customer loads in a manner that is reliable and economical. This System Planning process ensures that both the Bulk Electric System ("BES")[2] and non-Bulk Electric System ("non-BES")[3] are planned and constructed so that:

- They can accommodate forecasted system flows during summer and winter peak load;
- They can adequately serve each customer's need regarding capacity, voltage, and reliability for all load levels throughout the daily load cycle;
- They can sustain probable contingencies and disturbances with minimal customer service interruptions; and
- They are in conformance with North American Electric Reliability Corporation ("NERC"), PJM, and the Transmission Owner's reliability criteria for all normal and emergency operating conditions.

Q. Could you explain PJM's role in the transmission planning process?

A. Yes. PJM is a Federal Energy Regulatory Commission ("FERC")-approved Regional Transmission Organization ("RTO") charged with ensuring the reliability of the electric transmission system under its functional control (100 kV and above) and coordinating the movement of electrical power in all or parts of thirteen states and the District of Columbia, including Pennsylvania. To ensure reliable transmission service, PJM prepares an annual Regional Transmission Expansion

[2] BES – Includes transmission facilities operated at voltages of 100 kV or higher.
[3] non-BES – Includes transmission facilities operated at voltages less than 100 kV.

Plan ("RTEP")[4] to identify system reinforcements that are required to, among other things, meet the NERC Reliability Standards, PJM reliability planning criteria, and Transmission Owner reliability criteria.

When PJM's Reliability Analysis identifies a need to solve a reliability issue on electric transmission facilities, PJM opens a Proposal Window to solicit the submittal of potential solutions (i.e., reliability projects) to address those needs.

The reliability projects that are selected through PJM's Reliability Window are presented to stakeholders and recommended to the PJM Board of Managers ("PJM Board") for approval. If approved, such reliability projects are included in the RTEP as Baseline Projects.

Importantly, pursuant to Schedule 6 of PJM's Amended and Restated Operating Agreement, after the PJM Board approves a proposed reliability project, the successful project proponent is obligated to complete the project once PJM and the successful entity execute a Designated Entity Agreement or a Construction Responsibility Letter, which specifically designates the entity or entities having construction responsibility for the project.

[4] PJM's RTEP process is currently set forth in Schedule 6 of PJM's Amended and Restated Operating Agreement ("Schedule 6"). Schedule 6 governs the process by which PJM's members rely on PJM to prepare an annual regional plan for the enhancement and expansion of the transmission facilities to ensure long-term, reliable electric service consistent with established reliability criteria. In addition, Schedule 6 addresses the procedures used to develop the RTEP, the review and approval process for the RTEP, the obligation of transmission owners to build transmission upgrades included in the RTEP, and the process by which interregional transmission upgrades will be developed.

Q. Was the Williams Grove – Allen 115 kV Transmission Line Project subject to review by PJM?

A. Yes, it was.

Q. Was the Project reviewed as "Baseline" project or a "Supplemental" project?

A. It was reviewed and approved as a Baseline project by PJM.

Q. Please describe how PJM determined that a reliability need existed on the MAIT 115 kV system.

A. PJM completes an annual review of the transmission system through the RTEP process. PJM builds a five-year-out case, among others, for the summer, winter, and light load periods. PJM then studies the cases based on the NERC Standard TPL-001 contingencies along with the FERC 715 criteria filed by the transmission owners. Based on these studies, PJM is able to identify facilities with overloads and/or voltage violations. PJM then posts these cases and results and opens an RTEP window for accepting proposals to address the violations.

Q. What was the reliability need identified by PJM?

A. PJM identified voltage magnitude and voltage drop violations for multiple N-1-1 contingencies around Round Top, Allen, Dillsburg, PPGI, and Gardners substations.

Q. What is an N-1-1 contingency?

A. North American Electric Reliability Corporation ("NERC") Standard TPL-001-1 (Transmission System Planning Performance Requirements) imposes several requirements for demonstrating reliable operation of the power system. This standard requires the study of different outage contingencies that require the transmission system to still be operational with equipment out of service. The standard includes the analysis of N-1-1 contingencies. An N-1-1 Contingency is a sequence of events consisting of the initial loss of a single generator, transmission line, or transformer component (Primary Contingency), followed by system adjustments, followed by another loss of a single generator, transmission line, or transformer component (Secondary Contingency).

Q. Why are TOs required to plan their system to account for N-1-1 Contingencies in accordance with NERC Standard TPL-001?

A. As a NERC registered entity, PPL Electric is required to meet TPL-001 to ensure that reliable transmission systems are developed that meet specified performance requirements with sufficient lead time, and continue to be modified or upgraded as necessary to meet present and future system needs.

Q. What impacts can the failure to plan for N-1-1 Contingencies have on the operation of the transmission and distribution system?

A. Failure to plan for N-1-1 Contingencies could result in large uncontrolled cascading outages, localized load drop, or low system voltages that could damage customer equipment. In turn, fines could be levied by NERC.

Q. What occurred after PJM completed its reliability analysis?

A. As described above, once the Reliability Analysis identifies a need PJM will open a Proposal Window to solicit the submittal of potential solutions (i.e., reliability projects) to address those needs. In July 2021, PJM opened a Proposal Window to solicit proposals to address, among other things, transmission reliability issues on the MAIT 115 kV system.

Q. Did PPL Electric respond to PJM's request for solutions during this Proposal Window?

A. Yes, it did.

Q. How did it respond?

A. In response to PJM's request for solution, PPL Electric submitted four potential solutions to address the voltage violations on the MAIT 115 kV system.

Q. Were other solutions besides those proposed by PPL Electric submitted to PJM?

A. Yes. As per the FERC 1000 order, incumbent utilities as well as outside entities are able to submit proposals through the PJM RTEP window process. This ensures a competitive process that results in the best proposal being selected to solve the violations. Six additional proposals were submitted by other entities to resolve the identified voltage violations on the MAIT 115 kV system. PPL Electric submitted four of the ten total proposals.

Q. How did PJM evaluate all of the proposals submitted to it during this Proposal Window?

A. PJM evaluated all the proposals submitted based upon (a) their ability to solve the reliability problems it had identified on the MAIT 115 kV system while not adversely affecting the reliability of the transmission system (i.e., "do no harm" evaluation), (b) their impact on operational flexibility, and (c) any market efficiency improvements they would result in. In addition, PJM completed a detailed constructability review of the top three proposals. This constructability review analyzes the top proposals based on an independent cost estimate, the quality of the proposal, the proposal completeness, environment and siting along with permitting risk, and project development risk. The top three proposals were scored based on this criterion with PPL Electric Proposal 99, *i.e.*, the Project, receiving the highest ranking.

Q. Which of the proposed solutions was selected by PJM?

A. After the evaluation and review with stakeholders PJM selected PPL Electric Proposal 99 as the preferred solution.

Q. Please describe this proposal.

A. PPL Electric Proposal 99 is the Williams Grove – Allen 115 kV Transmission Line Project that is the subject of the above-captioned Application. PPL Electric Proposal 99 proposed to address the reliability need identified by PJM by constructing a new single-circuit 115 kV transmission line between PPL Electric's existing Williams Grove Substation, located off of Fisher Road, and the MAIT-owned Allen Substation, located along Park Place in Cumberland County, Pennsylvania.

Q. How did PPL Electric Proposal 99 compare to the other potential solutions reviewed by PJM?

A. As noted above, a total of 10 potential solutions were submitted to address the voltage violations on the MAIT 115 kV system. Ultimately, PPL Electric Proposal 99 was selected as it resolved the PJM-identified reliability issues, provided increased operation flexibility, was cost-competitive relative to other alternatives, and utilized existing substations with the only "greenfield" work being the construction of the new 115 kV line connecting the MAIT-owned Allen Substation to the PPL Electric-owned Williams Grove Substation. Thus, PJM deemed PPL Electric Proposal 99 the preferred option to address the identified issues on MAIT's

system. Further details regarding how PPL Electric Proposal 99 compared to the other potential solutions reviewed by PJM can be found in Attachment 2 – Necessity Statement.

III. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes, it does. If necessary, I will supplement my testimony if and as additional issues arise during the course of this proceeding.

STATEMENT NO. 3

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania	:	Docket No. A-2023-_____

PPL ELECTRIC UTILITIES CORPORATION

STATEMENT NO. 3

DIRECT TESTIMONY OF PETER SPARHAWK

TOPICS ADDRESSED: **ROUTE ALTERNATIVES**
SITING ANALYSIS
ENVIRONMENTAL ASSESSMENT AND MITIGATION

DATE: NOVEMBER 3, 2023

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Peter Sparhawk. My business address is 350 Eagleview Boulevard, Suite 250, Exton, PA 19341.

Q. By whom are you employed and in what capacity?

A. I am employed by WSP USA ("WSP") as Senior Vice President, T&D Market Sector Lead, Earth & Environment.

Q. What are your principal responsibilities in this position?

A. My responsibilities include managing, coordinating, and conducting a variety of environmental assessment and compliance projects and tasks for electric transmission projects and other energy projects. These projects include leading and participating in siting and routing studies, feasibility studies, compliance with state and federal regulatory processes, state filings before public utility commissions, environmental permitting projects, and similar environmental and planning assignments.

Q. Please provide a summary of your education and professional work experience.

A. I graduated from Cornell University in Ithaca, New York in 1985 with a Bachelor of Arts degree in History. I also completed a Certificate Program for the Environmental Manager in 1996 at the University of Washington. I have 33 years of experience in preparing, coordinating, and managing environmental, infrastructure, and energy projects, including federal and state environmental impact statements and assessments, environmental compliance and permitting efforts, and state certification applications for transmission line

projects. My experience with energy projects includes licensing and permitting for electric transmission lines, gas-fired generation, wind power, and hydroelectric facilities. I have conducted and overseen numerous environmental analyses and coordinated license applications to state energy agencies and siting boards for power facilities and infrastructure in various states throughout the United States, including Pennsylvania. Specifically, my electric transmission line experience includes routing and siting, licensing, public outreach, permitting, consultation with resource agencies, expert witness testimony before the Pennsylvania Public Utility Commission ("PUC" or "Commission"), and everyday coordination with WSP utility clients and programs. I have been responsible for helping PPL Electric Utilities Corporation's ("PPL Electric") prepare various attachments and analyses for inclusion in full siting applications or letters of notification to the PUC for more than 30 electric transmission line projects since 2008.

Q. What is the purpose of your direct testimony in this proceeding?

A. My testimony provides a summary of the Route Selection of the Williams Grove – Allen 115 kV Transmission Line Project. In my testimony, I identify and generally describe the *Williams Grove – Allen Transmission Line Project Environmental Analysis*, included as Attachment 3 to the Application of PPL Electric for the Siting and Construction of a 115 kV Transmission Line in Cumberland County, Pennsylvania ("Siting Application"), as well as the *Williams Grove – Allen 115 kV Transmission Line Project Alternatives and Siting Analysis,* which is included as Attachment 4 to the Siting Application of PPL Electric. Attachment 4 explains: (1) the methodology utilized by WSP and PPL Electric (together, the "Siting Team") to site the line route alternatives, (2) the evaluation of the alternatives

and selection of a Proposed Route for the Project, and (3) the assessment and recommended mitigation, as needed, of the potential environmental effects of the Proposed Route. The siting and environmental study activities described in the Report were performed by WSP, under my supervision, in coordination with PPL Electric. The Report was filed with the Siting Application as Attachment 4.

Q. Were any portions of the siting study prepared by you or under your supervision?

A. Yes. I am sponsoring certain attachments to PPL Electric's Siting Application. Specifically, I am responsible for portions of the following attachments to the Siting Application:

- Attachment 1 PUC Regulation Cross-Reference Matrix
- Attachment 3 Environmental Setting
- Attachment 4 Siting Analysis
- Attachment 6 List of Owners of Property Within the Right-of-Way
- Attachment 7 Agency Permit Requirements
- Attachment 8 List of Government Agencies, Municipalities and Other Public Entities Receiving the Application
- Attachment 9 List of Government Agencies, Municipalities, and Other Public Entities Contacted
- Attachment 10 List of Public Locations Where Application Can be Examined
- Attachment 14 Agency Coordination (PNDI/Wetlands)
- Attachment 15 Cultural Resources Report

I was involved in preparing these attachments to the Siting Application or otherwise provided oversight to WSP technical staff who prepared them. I also provided review for the complete Siting Application prior to assembly and submission to the Commission.

Q. Please provide an overview of the Project.

A. As explained in the written direct testimony of Company witness Mr. Joseph B. Lookup (PPL Electric Statement No. 1), and Mr. Christopher Szmodis (PPL Electric Statement No. 2), preferred solution for addressing the PJM-identified issues included the construction of a new single circuit 115 kV transmission line for approximately 3.9 miles between the Williams Grove 230-69 kV Substation ("Williams Grove Substation") in Cumberland County and MAIT's Allen 115-13kV Substation ("Allen Substation") in Cumberland County, Pennsylvania (the "Project").

II. OVERVIEW OF THE SITING PROCESS

Q. Please provide an overview of the siting process and explain how the study area was determined and the potential and alternative routes were developed.

A. The Siting Team, made up of representatives of PPL Electric and WSP, conducted an Alternative Analysis Study to identify a Proposed Route for constructing a new single-circuit 115 kV transmission line between the PPL Electric Williams Grove Substation and MAIT Allen Substation that best balances environmental, social, engineering and economic considerations. That analysis included the determination of a Study Area, the compilation of an environmental inventory, identification and analysis of alternative line routes and, finally, selection of a Proposed Route. The Study Area is that territory in which

line route alternatives could be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and Project costs.

The boundaries of the Study Area were determined by the geographic area encompassing the two final end points (the PPL Electric Williams Grove Substation to the northeast and the MAIT Allen Substation to the southwest). The Study Area was intended to encompass all reasonable Potential Routes for a new transmission line located between the endpoints.

Given these considerations, the Siting Team identified a Study Area encompassing approximately 3,340 acres (5.2 square miles) in Cumberland County. The northern edge of the Study Area roughly follows Fisher Road, Strock Drive, and Boiling Springs Road. The PPL Electric Williams Grove Substation defines the furthest eastern extent of the Study Area; the remainder of the eastern boundary of the Study Area follows parcel and neighborhood boundaries and excludes Williams Grove Park. The western terminus of the Project, MAIT's Allen Substation, delineates the southern boundary of the Study Area in a line roughly coincident with Park Place Road. To the west, the Study Area predominantly follows Heisey Road and an existing infrastructure corridor containing the existing Juniata – Three Mile Island 500 kV Transmission Line and a natural gas pipeline.

Q. Explain the methodology employed to develop alternative routes for the Williams Grove – Allen 115 kV Transmission Line Project.

A. The ultimate goal of the Williams Grove – Allen 115 kV Transmission Line Project Alternative Analysis Study was to identify an overhead electric transmission line route that minimizes the impact to the built and natural environments to the maximum extent

practicable, while still maintaining the technical and economic viability of the Project. The Siting Team worked together during the Alternative Analysis Study to define the Study Area, develop routing criteria, identify routing constraints and opportunities, collect and analyze environmental and design data, solicit public input and concerns, consult with natural resource and permitting agencies, develop and revise the siting alternatives, and analyze and report on the selection of a Proposed Route. Once the Study Area was identified, the Siting Team met in September 2022 to develop basic route selection criteria that would be used to select and analyze potential Alternative Routes. The methodology employed to develop alternative routes for the proposed Williams Grove – Allen 115 kV Transmission Line Project involves five fundamental phases:

(1) Identify Route Selection Criteria – Once the Study Area is identified, the Siting Team develops basic route selection criteria that would be used to select and analyze potential Alternative Routes. The route selection criteria established and considered in the routing process includes minimizing impacts to the natural and human environment; minimizing route length and cost; using general line design parameters specified by PPL Electric; maximizing the use of or paralleling of existing rights-of-way or easements; maximizing the distance from residences, schools, cemeteries, historical resources, recreation areas, and other important cultural sites; and minimizing new crossings of designated natural resource lands such as state forests, national and state parks, wildlife management areas, designated game lands and wildlife areas, and conservation areas.

(2) Consider Routing Constraints and Routing Opportunities – Potential Routes are identified to avoid large area constraints[1] to the extent practical, and maximize the distance from small area constraints.[2] Although complete avoidance of all constraints is not feasible, PPL Electric seeks routes that would minimize intrusions into constrained areas. Potential Routes also are identified to take advantage of routing opportunities. Practical routing opportunities considered in the Study Area include sharing and/or paralleling existing rights-of-way and linear features, including 69 and 138 kV transmission circuits, gas pipelines, railroads and major roads.

(3) Generate Potential Routes – Potential Routes are an early iteration of the routing process that involves the development of conceptually based routes and general consideration of these routes with respect to constraints and opportunity features in the Study Area. Once the initial Potential Route Network is developed, the Siting Team reviews each route in the field. The field investigations result in changes to the potential route alignments to reduce impacts on constrained areas. As a result, some potential routes are eliminated from further consideration.

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[1] Large area constraints are those generally covering large areas such as: National Register Historic Districts and adjacent areas; large recreational sites; large wetlands and water bodies; critical habitat areas; State Forests, State Parks, and State Game Lands; Wildlife Management Areas and other natural and conservation areas; Natural Lands Trust Preserves; large mining areas; and wind or solar energy facilities or farms.

[2] Small area constraints include individual residences; barns, garages, and other outbuildings; commercial and industrial buildings; recorded, designated historic buildings and sites, including any specified buffer zone around each site; recorded threatened, endangered, and other rare species sites or unique natural areas, including any specified buffer zone around each site; small wetlands and water bodies, including transition areas/buffer zones; small recreational sites or facilities; communication towers; windmills; designated scenic areas; tree farms, orchards, and vineyards.

(4) Generate Alternative Routes – After carefully analyzing and evaluating the Potential Routes, PPL Electric selects Alternative Routes for detailed examination. A qualitative and quantitative screening process is employed to eliminate or modify route links from the Potential Route Network that are not considered suitable for additional study to narrow down the network and focus on refining the more preferable links to establish Alternative Routes.

(5) Select Proposed Route – The Siting Team undertakes a quantitative and qualitative assessment to compare the Alternative Routes. The Alternative Routes are compared and a proposed route is selected based upon a detailed analysis and balance of environmental impacts, societal concerns, engineering considerations, and costs. Additionally, the Siting Team solicits input from the general public during the evaluation phase. Based on these evaluation processes, the Siting Team selects a Proposed Route for the proposed transmission line.

Each of these phases of the siting process for the proposed Williams Grove – Allen 115 kV Transmission Line is fully explained in Attachment 4 to the Siting Application.

Q. How did PPL Electric develop potential routes for the Project?

A. Many sources of information were employed to develop the Alternative Analysis Study and Potential Routes. Aerial photography was an important data source for the study. The following sources for aerial photography were used:

- Imagery from the National Agricultural Inventory Project ("NAIP") was obtained from the United States Department of Agriculture that covered the entire Study Area in Pennsylvania (dated 2019)
- Environmental Systems Research Institute ("ESRI") imagery, which is provided through Aerials Express (dated 2020)
- Bing Maps imagery, which ranges in date depending on location (dated 2021).

GIS data was used extensively during the Alternative Analysis Study. This information was obtained from many sources, including federal, state, and county governments. Much of this information was obtained through official agency GIS data access websites, some was provided directly by government agencies, and some was created by the Siting Team by either digitizing information from paper-based maps or through aerial photo interpretation.

GIS data allows for the consideration and efficient use of a wide variety of information that would otherwise be unavailable or impractical to consider for a planning effort of this scope. GIS information is a highly effective tool when utilized for broad level planning studies, identifying and characterizing landscape level constraints and features, and developing environmental inventory information useful for comparisons between planning alternatives.

Maps reviewed for the Alternatives Analysis Study include U.S. Geological Survey ("USGS") 7.5-minute topographic quadrangle maps, existing County-level and park-level natural resource maps, state and county road maps, transmission line map information and land ownership maps.

Siting Team members conducted field inspections throughout the Study Area. The team members examined potential routes from points of public access and correlated observed features to information shown on aerial photography, USGS 7.5-minute topographic maps, road maps, locally available development sketch maps, and other information. Relevant features were viewed, verified, and recorded on laptop computers displaying aerial photography using GIS software supported by real-time Global Positioning System ("GPS") tracking for positional information in each vehicle.

Q. Please explain how the Company evaluated potential routes.

A. A field inspection was conducted in October 2022 to examine the Potential Routes within the Study Area. This review involved the visual examination of the Potential Routes from road crossings and other points of public access. The Siting Team utilized mapping software showing the Potential Routes to track precise locations. Residences (single family, multi-family, modular homes, and mobile homes), outbuildings (garages, sheds, barns, etc.), commercial buildings, and other potentially sensitive receptors (e.g., cemeteries, churches, and schools) within 1,000 feet of each Potential Route center line were identified and recorded. Various routing challenges were also identified during the field inspection, such as locations where homes or structures are near the existing or proposed ROW and areas of environmental concern. Photographs were taken at selected or representative locations throughout the Potential Route Network.

The Siting Team subsequently discussed the Potential Route Network in late October 2022. During this meeting, comparative data, aerial photos, and notes taken during the field reconnaissance were reviewed. The major environmental and land use factors

considered and evaluated in this evaluation were: wetlands, ponds, and other stream crossings, tree clearing requirements, length of new ROW required, proximity of residences and other buildings, known or suspected historic sites, and incremental aesthetic impact. Engineering factors were also considered and evaluated during the route evaluation, including extent of ROW overlapping opportunities and areas that presented engineering and construction challenges (e.g., the number of angle structures required and siting a lower voltage line beneath the higher voltage line).

Assessing the impacts of a proposed transmission line on the natural and built environments, as well as engineering and construction factors, is an important component of the overall siting process, even at the Potential Route stage. Natural environment impacts include potential impacts to vegetation and habitat, surface waters, and conservation and recreation lands. Potential impacts were evaluated based on publicly available maps, observations in the field and data as well as consultation with federal and state agencies.

Built environment impacts include direct and indirect impacts to residential, commercial and industrial development, institutional uses, cultural resources, and land use. Construction of a new transmission line can result in changes in land use and aesthetic impacts to residents, commuters and travelers, employees, and recreational uses.

Potential engineering challenges or difficulties are also important to consider. Sharp transmission structure angles, crossing of existing transmission lines, excessive road and stream crossings, narrow ROW alignments, steep topography, and unnecessary length are all elements that could ultimately require extensive engineering and can lead to increases in overall cost. For example, every turn in the line requires a different, and often more expensive, type of structure.

As shown in Figure 4-3 in Attachment 4 to the Application, Potential Routes 24 and 25 each require one crossing of the existing Cumberland – Williams Grove 230 kV Transmission Line. Potential Route 23 paralleled the existing 230 kV transmission line and was ultimately eliminated as non-standard angle structures were required to maintain 150 feet of centerline-to-centerline separation parallel to the existing transmission lines.

The Siting Team initially developed Potential Routes 15, 17, 28, 29, 30, 31, and 32 to predominately parallel property boundaries, existing transmission line, and tree rows. The Siting Team chose to parallel the east side of the existing Juniata – Three Mile Island 500 kV Transmission Line (Potential Route 15) primarily because of residences in close proximity to the west. However, due to its added length and proximity to residential properties, Potential Route 15 was eliminated. For this reason, Potential Routes 13 and 14 were also dropped altogether. The Siting Team also eliminated Potential Route 29 due to its additional impact to farmland. Similarly, Potential Route 32 was removed as it would result in additional natural environment and built environment impacts, including proximity to a historic building.

The remaining links were assembled into Potential Routes and presented to the public for comment during an open house meeting held in November 2022. The Potential Routes presented at the November open house meeting are shown in Figure 4-4 of Attachment 4 as Potential Routes A through G.

Q. Was public outreach part of the routing process?

A. Yes. Agency and public outreach is an important component of the siting process. PPL Electric conducted public outreach throughout the siting process, including regulatory

agency consultation, public notification and an open house meeting, and meetings with property owners. PPL Electric's public outreach efforts for this Project are summarized by Mr. Weseloh in PPL Electric Statement No. 4. We also engaged in consultation with various federal, state, and local agencies to inform them of the Project and request data used in the route planning process. Feedback provided by landowners and agencies resulted in adjustments to the alternative routes for the Williams Grove – Allen 115 kV Transmission Line. Additional details regarding PPL Electric's agency and public outreach efforts are provided in Attachments 15 and 16 to the Siting Application.

Q. Did PPL Electric consider local comprehensive plans and zoning in selecting the proposed route for the Williams Grove – Allen 115 kV Transmission Line?

A. Yes. As required by the PUC's guidelines found at 52 Pa. Code, § 69.1101 (2)(3) and § 69.3104 (1), local zoning ordinances and comprehensive land use plans were reviewed by PPL Electric to evaluate the impact of the proposal to construct a 115 kV transmission line between the Williams Grove Substation and the Allen Substation. PPL Electric evaluated the Project's consistency with the zoning ordinances and comprehensive plans of the government entities through which the Proposed Route would pass. PPL Electric has reviewed the Project with Cumberland County, and Monroe and Upper Allen Townships. A discussion of PPL Electric's review of the local zoning ordinances and land use comprehensive plans is provided in Attachment 3 to the Siting Application.

III. SELECTION OF THE PROPOSED ROUTE

Q. Please summarize how PPL Electric identified Alternative Routes for the proposal to construct the Williams Grove – Allen 115 kV Transmission Line.

A. Using the information described above, PPL Electric began identification of potential routes. The process for identifying potential transmission line routes produced a network of links that could be considered as alternatives to construct the Williams Grove – Allen 115 kV Transmission Line. Those links were combined into initial Potential Routes for the Project. After carefully analyzing and evaluating the Potential Routes, PPL Electric refined the more preferable links to establish Alternative Routes for detailed examination.

The Siting Team developed two Alternative Routes from the remaining Potential Route Network and relabeled them as Alternative Routes A and B. The Alternative Routes were revised slightly based on landowner discussions and negotiations after the open house meetings.

Q. Please summarize Alternative Route A.

A. Alternative Route A is approximately 3.9 miles long and located within Upper Allen and Monroe townships, Cumberland County.

Route A exits the existing Williams Grove substation to the west and south, following the edge of the substation on PPL property for 0.1 miles, then turning west to parallel the north side of the existing Cumberland – Williams Grove 230 kV Transmission Line for 0.4 miles within existing PPL-owned ROW. The route turns northwest along the edge of a parcel, diverting from the existing transmission line to avoid crossing through denser residential development and non-condemnable properties. From here, the route

heads generally west for 0.4 miles through agricultural properties adjacent to Williams Grove Road. At this point, Route A angles southwest for 0.6 miles, crossing the existing Cumberland – Williams Grove 230 kV Transmission Line and avoiding three newly constructed agricultural buildings.

Upon crossing the abandoned Cumberland Valley Railroad corridor, Route A parallels the west side of the abandoned corridor for a short distance before turning west along parcel boundaries and through an open field for 0.5 miles. North of Lisburn Road, Route A turns sharply southward, paralleling parcel boundaries for approximately 0.8 miles until crossing Baish Road. The route continues straight across Baish Road and through an agricultural field for an additional 0.2 miles before turning southwest towards the Allen Substation. Of the final 0.6 miles of Route A, 0.5 miles are sited either parallel to a parcel boundary or on the Allen Substation parcel owned by MAIT.

Q. Please summarize Alternative Route B.

A. Alternative Route B is approximately 3.9 miles long and located within Upper Allen and Monroe Townships, Cumberland County.

Route B exits the existing Williams Grove Substation to the west and north, following the edge of the substation on PPL property north for approximately 0.1 miles, then turning west to parallel parcel boundaries for 0.4 miles. The route continues west across an agricultural field for an additional 0.3 miles and crosses Williams Grove Road. Route B then turns generally south, paralleling the west side of Williams Grove Road for 0.5 miles, although the route is offset slightly farther from the road than required by its 100-foot ROW to maintain clearances from distribution lines also placed along the road.

To avoid crossing a residential parcel, Route B turns west along the edge of an agricultural parcel for 0.3 miles, where it crosses the abandoned Cumberland Valley Railroad ROW. Route B then turns southward to parallel the west side of the abandoned railroad ROW for 0.8 miles. Immediately north of Williams Grove Park, Route B diverts away from the railroad ROW, turning west along the northern edge of the park and following the north side of Baish Road for 0.3 miles. From here, Route B crosses Baish Road and turns southwest towards the Allen Substation. Of the final 1.0 mile of Route B, 0.8 miles are located either parallel to a parcel boundary or on the Allen Substation parcel owned by MAIT.

Q. Did the Siting Team consider impacts of Alternative Routes A and B on the natural environment?

A. Yes. From a combined soil and water resources perspective, the Alternative Routes are similar for most siting evaluation criteria. Each route avoids crossing the Yellow Breeches Creek – Leidigh to Williams Grove County Natural Heritage Inventory ("CNHI")-Core Habitat, National Hydrography Dataset ("NHD") waterbodies, and Federal Emergency Management Agency ("FEMA") floodplain areas. Additionally, both routes require one crossing of an unnamed tributary (UNT) of Yellow Breeches Creek and have minimal (1%) hydric soils within their proposed ROW.

Although Alternative Routes A and B are similar for ROW tree clearing requirements (2.2 and 2.3 acres, respectively), Alternative Route B significantly reduces potential permanent impacts to freshwater emergent and forested wetlands identified in the

Project Study Area. Thus, Alternative Route B is slightly more favorable for the combined natural resources criteria.

Field wetland delineations were conducted for the Proposed Route and proposed access roads to determine the exact location of any wetlands or waterways. PPL Electric anticipates that project engineering can minimize wetland and stream impacts through spanning and avoidance. PPL Electric will obtain and adhere to all required state and federal permits, as well as any conditions imposed on those permits.

Q. Did the Siting Team evaluate the impacts of Alternative Routes A and B on the built or human environment?

A. Yes. After analyzing and comparing the two Alternative Routes, neither stands out as being noticeably better or worse with respect to the built environment. Routes A and B would each traverse within 500 feet of almost the same number of residences (19 and 21, respectively) and each cross 12 property owners. Additionally, neither route crosses non-condemnable properties, thereby reducing risks to the overall Project. While the transmission structure footprint would be permanently impacted and property owners would be restricted from constructing buildings within the ROW, in most cases construction of the transmission line will not result in changes in land use and property owners can continue to use land within the ROW for farming, residential, recreational, and other purposes.

Each route crosses agricultural land for approximately 90 percent of their alignment, avoiding developed land and forest cover to the best extent practicable. Both

Alternative Routes require approximately 2 acres of ROW tree clearing, which accounts for 5% of their proposed 100-foot-wide ROW.

Q. Did the Siting Team consider the impacts of Alternative Routes A and B on aesthetics and recreation areas?

A. Yes. No existing federal, state, or local recreation areas are crossed by the Alternative Routes. As shown on Figure 4-9 in Attachment 4 to the Siting Application, the abandoned Cumberland Valley Railroad corridor bisects the Study Area north to south. As of 2021, the CVRTC is proposing the South Mountain Trolley Greenway[3] along the abandoned Cumberland Valley Railroad corridor. Alternative Routes A and B parallel the abandoned Cumberland Valley Railroad corridor for 0.1 and 0.7 mile, respectively. Additionally, each Alternative Route requires one crossing of the abandoned Cumberland Valley Railroad corridor.

Although Williams Grove Park is located within 500 feet of Alternative Route B, no substantial visual impacts are anticipated since the proposed alignment follows a parcel boundary behind the wooded portion of the park. Construction in the vicinity of Williams Grove Park will not impact operations of the recreation area.

Since it parallels the abandoned Cumberland Valley Railroad for a longer distance, Alternative Route B may have the potential to result in more impacts to existing and proposed recreational areas if the proposed South Mountain Trolley Greenway project commences. Still, paralleling the abandoned Cumberland Valley Railroad for a longer

[3] https://www.cvrtc.org/south-mountain-trolley-greenway/

length may be more favorable from an access perspective since it is currently utilized for farm equipment transportation by adjacent landowners.

Since a portion of its alignment parallels Williams Grove Road, Alternative Route B is likely to affect the viewshed of slightly more residences within 500 feet of the centerline when compared to Alternative Route A. Still, landowner feedback obtained during the Project's public open houses favored Alternative Route B over Alternative Route A.

Q. Did the Siting Team consider the impacts of Alternative Routes A and B on cultural resources?

A. Yes. As shown above in Table 4-6 of Attachment 4 to the Siting Application, Alternative Routes A and B are identical in terms of the architectural resources located within 0.25 and 1 mile from the routes, while only Alternative Route B is located within 1 mile of the NRHP-eligible Christian Hoover, Jr. Farm. Both Alternative Routes parallel a portion of the Cumberland Valley Railroad, which is an NRHP-eligible historic district.

Q. Did the Siting Team reach a conclusion regarding the engineering and constructability of Alternative Routes A and B?

A. Yes. From a combined engineering and constructability perspective, both Alternative Routes are similar for most evaluation criteria. First, Alternative Route A and B both measure 3.9 miles long, resulting in similar ROW acquisition needed for the proposed 100-foot-wide ROW (approximately 48 acres). Further, each Alternative Route crosses minimal steep slopes, requires 6 road crossings, requires approximately 2 acres of ROW tree

clearing, and requires one 230 kV crossing and one 500 kV crossing. Alternative Route B requires fewer angle structures greater than 20 degrees.

Q. Did the Siting Team reach a conclusion with respect to Alternative Routes A and B?

A. Yes. Based on a qualitative and quantitative review of information obtained from GIS data, existing easements, field reconnaissance, and extensive public outreach as well as engineering and financial estimates for this Project, the Siting Team selected Alternative Route B as the Proposed Route. While both Alternative Routes are nearly identical or similar for most of the siting evaluation criteria, the Siting Team ultimately believes that the cumulative environmental, engineering and constructability, and social and financial impacts associated with constructing Alternative Route B are more favorable when compared to Alternative Route A.

Alternative Route B parallels local roads and the abandoned Cumberland Valley Railroad for a greater extent than Alternative Route A, making it more accessible during construction and operation of the transmission line.

From a natural environment perspective, Alternative Route B effectively reduces permanent wetland impacts by crossing 1 acre less Pennsylvania Spatial Data Access ("PASDA") modeled forested wetlands (0.4 acre) compared to Alternative Route A (1.4 acres), in addition to crossing less National Wetland Inventory ("NWI") palustrine emergent ("PEM") wetlands. From a combined social and financial impact perspective, responses gathered during the public open houses indicated that Alternative Route B was preferred by the landowners impacted by the Project, thereby reducing potential risks and costs during ROW negotiations.

Q. Please explain the process to select the Proposed Route.

A. As discussed previously, the Alternative Routes were evaluated and compared against each other to determine a Proposed Route for the Project. The evaluation of the Alternative Routes included a quantitative and qualitative analysis of potential impacts to the natural environment, built environment, and engineering and constructability.

Natural environment impacts include potential impacts to vegetation and habitat, surface waters, and conservation and recreation lands. Potential impacts are evaluated based on publicly available maps and data as well as consultation with federal and state agencies.

Built environment impacts include direct and indirect impacts to residential, commercial and industrial development, institutional uses, cultural resources, and land use. Construction of a new transmission line can result in changes in land use and aesthetic impacts to residents, commuters and travelers, employees, and recreational uses.

Potential engineering challenges or difficulties are important to consider. Sharp transmission structure angles, crossing of existing transmission lines, excessive road and stream crossings, narrow ROW alignments, steep topography, and unnecessary length are all elements that could ultimately require extensive engineering and can lead to increases in overall cost. For example, every turn in the line requires a different, and often more expensive, type of structure.

The Alternative Routes were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Siting Team. As discussed in the previous section of this testimony, the Siting Team ultimately decided that the cumulative

environmental, engineering and constructability, and social and financial impacts associated with constructing Alternative Route B are more favorable when compared to Alternative Route A. Therefore, Alternative Route B was selected as the Proposed Route for the Project.

After announcing the selection of the Proposed Route in January 2023, PPL Electric initiated real estate discussions with property owners. Based on these meetings, several property owners requested route alignment modifications through their property. PPL Electric accommodated individual property owners' re-alignment requests to the maximum extent practical. In cases where a re-alignment would affect adjacent property owners, PPL Electric considered accommodating the request if reasonable and mutually agreed upon by all affected parties. These discussions resulted in several changes to the final Proposed Route. Additional alignment changes were considered in consultation with property owners following wetland delineation of the Proposed Route to further minimize wetland and stream impacts. The changes did not increase the cumulative impacts of the Proposed Route. The resulting changes are reflected in Figure 4-13 of Attachment 4.

IV. COMPLIANCE WITH POTENTIAL PERMIT AND MITIGATION REQUIREMENTS

Q. Please summarize PPL Electric's efforts to minimize the anticipated impacts and potential permit and mitigation requirements of the Williams Grove – Allen 115 kV Transmission Line Project.

A. Efforts were made during the transmission line siting process to minimize impacts on existing and future land uses, as well as avoid sensitive natural resources such as wetlands

and streams. Where impacts are unavoidable, best management practices will be employed and PPL Electric will obtain and comply with any necessary permits.

As part of the permitting process, any required waterway or floodplain encroachment permits will be obtained from the Pennsylvania Department of Environmental Protection ("PADEP") and United States Army Corps of Engineers ("USACE") prior to construction and PPL Electric will comply with all special conditions placed on the permits. In addition, PPL Electric will comply with the regulations of the National Pollutant Discharge Elimination System ("NPDES") permit program, obtain the required soil erosion and sedimentation control approvals and permits, and follow the specified conditions required for the permit.

A detailed discussion of the Company's efforts to minimize the anticipated impacts and potential permit and mitigation requirements of the proposed Williams Grove – Allen 115 kV Transmission Line Project is provided in Attachments 3, 4, and 7 to the Siting Application, including potential impacts to: land use; natural features; rare, threatened, and endangered species; cultural resources; community features and conserved lands; and agency requirements and permits.

V. CONCLUSION

Q. Does this conclude your testimony at this time?

A. Yes, it does. I reserve the right to supplement my testimony as additional issues arise during the course of this proceeding.

STATEMENT NO. 4

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of PPL Electric Utilities Corporation filed Pursuant to 52 Pa. Code Chapter 57, Subchapter G, for Approval to Site and Construct a New Single-Circuit 115 kV Transmission Line Between the Williams Grove 230-69 kV Substation and the Allen 115-13 kV Substation Located in Cumberland County, Pennsylvania	:	Docket No. A-2023-_____

PPL ELECTRIC UTILITIES CORPORATION

STATEMENT NO. 4

DIRECT TESTIMONY OF AUSTIN K. WESELOH

TOPICS ADDRESSED: RIGHT-OF-WAY AND EASEMENT RIGHTS

DATE: NOVEMBER 3, 2023

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Austin K. Weseloh. My business address is 827 Hausman Road, Allentown, Pennsylvania 18104.

Q. By whom are you employed and in what capacity?

A. I am employed by PPL Services Corporation ("PPL Electric") as Transmission Right of Way and Real Estate Supervisor. In this position, my primary responsibility is to supervise all Transmission Right of Way ("ROW") and Real Estate assets for PPL Service Corporation in service to PPL Electric.

Q. What is your educational background?

A. I attended for 3 years at University of Pittsburgh majoring in Economics.

Q. Are you a member of any professional organizations?

A. Yes. I am currently a member of the International Right of Way Association ("IRWA") where I am taking classes to attain the Senior Right of Way Agent ("SR/WA") certification which is the highest-level industry designation. The certification requires course work consisting of both core courses and elective courses. The certification requires satisfactory completion of the certification test administered by the IRWA.

Q. Please describe your background and employment history.

A. I have been employed by PPL Electric in my current position as Transmission Right of Way and Real Estate Supervisor for approximately seven years. Prior to that, I was a Senior Right of Way Specialist at PPL Electric for three and a half years.

- From 2012 through 2013 I worked as a Right of Way Agent for Doyle Land Services negotiating the acquisition of ROW grants, access roads, property damages and real estate contracts to add a 60-mile pipe adjacent to an existing ROW in Pennsylvania.
- From 2011 through 2012 I worked as a Right of Way Agent for Meridian Land Group negotiating the acquisition of ROW grants, access roads and property damages for 75 miles of new pipeline ROW to connect 69 new natural gas wells in Northeast Pennsylvania.
- From 2010 through 2011 I worked as a Right of Way Agent for Miller Land Professionals reviewing title for potential natural gas leases and ROWs in Bradford and Susquehanna Counties, Pennsylvania.

From 2004 through 2010 I worked for LTS Builders and Realty Company purchasing land for new home construction. My duties included negotiating for individual lots as well as large tracts to be subdivided into developments.

Q. What are your responsibilities in connection with the proposed Project?

A. As explained in PPL Electric Statement No. 1 the proposed new 3.9 mile long single-circuit 115 kilovolt ("kV") transmission line connects the PPL Electric owned Williams Grove Substation and the Mid-Atlantic Interstate Transmission ("MAIT") owned Allen substation in Cumberland County, Pennsylvania. The proposed line will occupy an approximately

100-foot-wide ROW. My colleagues and I are responsible for identifying all property owners along the route selected for the shared-ROW.

For new ROWs and easements, the Company attempts to negotiate with the property owners for the required land rights. We also provide the landowners along the selected route with literature regarding electromagnetic fields, compatible ROW uses, pictures of typical transmission line structures, and other information to help them fully understand the project. The ROW Agent will meet with property owners as necessary to answer questions, address concerns, and/or to resolve issues. The ROW Agent provides the property owner with information on how he/she can be contacted at any time, to answer questions or to address issues or concerns, should any arise. The ROW Agent is the direct link for the property owner to communicate with PPL Electric.

Q. What are the subjects of your testimony?

A. First, I will identify the portions of the above-captioned Application that I am sponsoring. Second, I will summarize our process for identifying new ROW required for the Project and the property owners that would be affected. Third, I will explain the process we employed to attempt to acquire rights of way and easements for the Williams Grove-Allen 115 kV Transmission Line Project. Fourth, I will explain the Company's policy regarding the property owner's use of the ROW area and will provide examples of measures the Company employs to mitigate the impacts of the Transmission Lines on property owners' present and future uses of their properties. Fifth, I will explain the status of our efforts to acquire the rights-of-way and easements needed for the Project.

Q. Please describe the portions of the Siting Application that you are sponsoring.

A. I am responsible for assisting in the identification of landowners crossed by the proposed project and the ROW acquisition process.

II. RIGHT-OF-WAY IDENTIFICATION AND ACQUISITION

Q. Please describe the Company's process for identifying the owners of property that will be traversed by Project facilities.

A. Starting in 2022, Company personnel and contractors researched the Project routes for property owner names, property records, and mapping. ROW agents then collected boundary and physical evidence from the field to determine or confirm property boundaries. My colleagues then prepared mapping for the contract ROW agents to meet with the property owners to show them where the proposed ROW would be located.

Q. Please explain the Company's policy regarding dealing with owners of property to be traversed by Project facilities.

A. The Company's policy regarding dealing with property owners is described in the informational packet provided to property owners along the Proposed Route, included as Attachment 16 – Public Notice Requirements. Included in this informational packet, described in more detail below, this packet provides that PPL Electric representatives are to: act with integrity at all times; treat everyone courteously and in a professional manner; be forthright and honest in all actions and communications; comply with all laws and regulations; avoid any conflicts of interest; accept responsibility for any actions or decisions; be good stewards of the environment; and place a high priority on safety for the public, as well as Company employees and representatives. In addition, it is PPL Electric's

practice to accommodate the landowner's use of their property by shifting the location of the ROW on a landowner's property when it can be reasonably accomplished without incurring significant costs or challenges.

Q. Did the Company provide information to owners of land that may be subject to a ROW or easement for the Project?

A. Yes. As mentioned above, prior to contacting property owners to negotiate ROW agreements, the Company provided informational packets to notify property owners of the Company's plans to negotiate to acquire rights of way and easements across their land. This packet discloses to the property owner information including the name, purpose, and general location of the Project; PPL Electric's standards of employee and agent conduct; notices of eminent domain power and ROW management practices; and includes a permission form for landowners to grant PPL Electric access to their property.

This packet also contains the notices required by the Pennsylvania Public Utility Commission in its regulations at 52 Pa. Code § 57.91. The first notice discusses the Company's power of eminent domain with respect to the Project, and the associated rights of the property owner. The second notice provides information regarding the ROW maintenance practices for the Project facilities. An example of this informational packet is included as Attachment 16 to the Siting Application.

Additionally, as discussed in PPL Electric Statement No. 3, the direct testimony of Mr. Sparhawk, the Company held public meetings on November 16, 2022, and January 18, 2022, at the Hidden Hillside Events in Camp Hill, PA to provide information about the Project to owners of property in the area of the Project. At these meetings, Company

representatives delivered informational presentations about the Project need, potential routes, design, and operational characteristics; answered questions from attendees; and provided informational literature regarding property owner rights, and eminent domain.

Q. What does the Company do after providing the information and notices to property owners?

A. Pursuant to 52 Pa. Code § 57.91, the Company waits at least 15 days following landowner's receipt of the informational packet. We then contact the property owner(s) via telephone or in person to schedule a convenient time to meet so that we can explain the details of the Project and answer any questions they may have. At such meetings, we usually make a monetary offer to the property owner(s) for the ROW sought. The amount of the offer is based on the fair market value of the property that would be occupied by the ROW the Company wishes to acquire.

Q. Please explain the Company's policy regarding the property owner's use of the ROW area.

A. Following the Company's acquisition of a ROW and easement, the property owner can continue to use the ROW area, so long as such use is compatible with the safe and reliable operation and maintenance of Company facilities. Compatible uses that require no prior review or approval from the Company include farming and gardening. The Company also allows compatible development within the ROW area, provided that the design and work in the area does not interfere with the safe and reliable operation and maintenance of

Company facilities. Such uses include grading, installation of roadways or parking lots, and installation of underground infrastructure (such as utilities).

Q. Please identify methods and/or examples where the Company has worked with property owners along the Proposed Route to mitigate effects of the Project on their present and future land uses.

A. The Company sought feedback from landowners at the open houses and subsequent individual meetings and made shifts to the ROW centerline to accommodate landowner concerns. For example, the Company shifted structure locations to move them out of a farm field, shifted the center line of the ROW to follow a property line, agreed to a reroute to accommodate future expansion of a chicken farming operations and keep the line off agricultural land, and moved the ROW closer to a property line to prevent impacting future solar development.

Q. Please explain the status of the Company's efforts to acquire ROW and easements for the Project.

A. There are a total of 11 deeded properties along the Proposed Route, owned by a total of 7 distinct property owners. The Company requires easements from all 7 of those property owners for this Project. All but one of these easements have been obtained.

The parcel where an easement has not been acquired is owned by MAIT. Based on discussions with MAIT, PPL Electric does not anticipate that condemnation will be required to obtain the required ROW. The Company is continuing to pursue negotiations with the owner of this remaining property.

III. CONCLUSION

Q. Does this conclude your Direct Testimony?

A. Yes. I reserve the right to supplement my testimony as additional issues arise during the course of this proceeding.