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Garrett P. Lent  
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August 2, 2022

***VIA ELECTRONIC FILING***

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

**Re: Letter Of Notification Of PPL Electric Utilities Corporation, Filed Pursuant To 52 Pa. Code Chapter 57 Subchapter G, For Approval Of (1) A Section Of The Double-Circuit Saegers-Elmsport/Clinton-Elmsport 230 kV Transmission Lines Connecting The Elmsport 230 kV Substation To The Clinton 230 kV Substation And (2) The Saegers-Elmsport/Saegers-Clinton 230 kV Transmission Lines Connecting The Clinton 230 kV Substation To The Saegers 230 kV Substation In Lycoming County, Pennsylvania  
Docket No. A-2022-\_\_\_\_\_**

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Dear Secretary Chiavetta:

Attached for filing is the Letter of Notification of PPL Electric Utilities Corporation in the above-referenced proceeding. As indicated on the Certificate of Service, copies of the Letter of Notification are being served by certified mail, return receipt requested, upon the involved governmental agencies, municipalities and property owners. Construction of the project contemplated by this Letter of Notification is scheduled to begin in July 2023 with an anticipated in-service date of September 2025.

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

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

Rosemary Chiavetta, Secretary  
August 2, 2022  
Page 2

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Garrett P. Lent". The signature is written in a cursive style with a large initial "G" and "L".

Garrett P. Lent

GPL/dmc  
Enclosures

cc: Renardo Hicks, Esquire  
Paul T. Diskin, Esquire  
Jordan Van Order, Esquire

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 § 1.54 (relating to service by a participant).

### VIA CERTIFIED MAIL: RETURN RECEIPT REQUESTED

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

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

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

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 Game Commission  
2001 Elmerton Avenue  
Harrisburg, Pennsylvania 17110-9797  
Attn: Peter Sussenbach, Director, Bureau of Wildlife Habitat Management

Pennsylvania Fish and Boat Commission  
450 Robinson Lane  
Bellefonte, Pennsylvania 16823-9620  
Attn: Christopher A. Urban, Chief, Natural Diversity Section

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

Pennsylvania Office of Small Business Advocate  
555 Walnut Street  
1<sup>st</sup> Floor Forum Place  
Harrisburg, Pennsylvania 17101  
Attn: Steven C. Gray, Senior Supervising Assistant Small Business Advocate

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

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

Lycoming County Conservation District  
542 County Farm Rd # 202  
Montoursville, PA 17754  
Attn: Matt Long, Conservation District  
Manager

Lycoming County Planning Commission  
330 Pine St # 300  
Williamsport, PA 17701  
Attn: Jenny Picciano, Lead Planner

Brady Township  
1986 Elimsport Road  
Montgomery, PA 17752  
Attn: Mike Goetz, Township Supervisor

Clinton Township  
2106 Rt. 54 Hwy  
Montgomery, PA 17752  
Attn: Lanny Wertz, Township Supervisor

Washington Township  
15973 South State Route 44 Highway  
Allenwood, PA 17810  
Attn: Devin O'Rourke, Chairman

Howard C and Kathleen Allen  
73 Route 54 Highway  
Montgomery, Pa 17752-9029

Kenneth J and Nancy J Bashista  
117 Green Pine Road  
Montgomery, Pa 17752-8632

Thomas K Bennett  
921 State Home Road  
Montgomery, Pa 17752-8508

Kevin W And Molly A Bittenbender  
193 Wentzel Road  
Montgomery, Pa 17752-8822

Sara J Campbell and Rodolfo Hernandez  
24 Green Pine Road  
Montgomery, Pa 17752-9174

Daniel B and Ana M Campbell  
240 Green Pine Road  
Montgomery, Pa 17752

Harold J and Caroline Carpenter  
230 Carpenters Lane  
Montgomery, Pa 17752-9178

Jeffery A Churba  
17937 Flagler Drive  
Austin, Tx 78738-7639

Craig A and Lorraine Confer  
319 Brouse Road  
Montgomery, Pa 17752-9187

Ronald L and Laura A Cross  
163 Tall Doerod  
Montgomery, Pa 17752-8905

Dawson Revocable Living Trust  
130 Forgedale Road  
Fleetwood, Pa 19522-9752

Carl And David K Esh  
21 Funk Street  
Strasburg, Pa 17579-1500

Fenstermacher Family R E Prot Trust  
5195 Rt 15 Hwy  
Montgomery, Pa 17752-9174

Lloyd R and Katie G Fisher  
425 Shaffer Path  
Montgomery, Pa 17752-8939

Samuel J and Linda E Fisher  
1348 Elimsport Road  
Montgomery, Pa 17752-8909

Melvin S and Ada K Fisher  
1078 Elimsport Road  
Montgomery, Pa 17752-8906

Christopher S and Kathryn Fisher  
1505 State Home Road  
Montgomery, Pa 17752-9166

Barry L Fisher and Sue Lane  
200 Meadow Brook Drive  
Montgomery, Pa 17752-8977

Shane R and Marisa J Gardner  
9 Pennbrook Drive  
Lincoln University, Pa 19352-1227

Raymond C Gulliver  
386 Wise Road  
Montgomery, Pa 17752-8951

Laverne H and Janice M Gulliver  
314 Wise Road  
Montgomery, Pa 17752-9657

Justin A Harer  
3989 Elimsport Road  
Montgomery, Pa 17752-8990

Cheryl J Howell and Mavis A Bosch  
7908 Armstrong Road  
Muncy, Pa 17756-6341

Matthew T and Amber Koch  
607 Shaffer Path  
Montgomery, Pa 17752-8940

John F Laforme/Laforme Family Trust  
430 Shaffer Path  
Montgomery, Pa 17752-8941

David M and Leona J Lehman  
1177 Packer Street  
Sunbury, Pa 17801-1645

Mark A Lockcuff and Margeret E Morrison  
384 Shaffer Path  
Montgomery, Pa 17752-8942

Olivia N Lowe and Jason M Staggert  
571 Bower Drive  
Montgomery, Pa 17752-8964

Robert L and Wendy Mandell  
2 Tompkins Road  
East Brunswick, Nj 08816

Tami A Mausteller  
1303 State Home Road  
Montgomery, Pa 17752-9231

Frederick F and Kay S McCarthy  
2785 8th Street Drive  
Watsonstown, Pa 17777-8700

Janis L Miller and Laverne Gulliver  
5354 Rt 15 Highway  
Montgomery, Pa 17752

Raymond J Miller  
1267 State Home Road  
Montgomery, Pa 17752-9169

Michael J Miller  
1621 Cemetery Hill Road  
Montgomery, Pa 17752-9087

Richard J and Karen E Mowery  
1487 State Route 54  
Montgomery, Pa 17752-9001

Joel L Myers  
100 Montgomery Street  
Montgomery, Pa 17752-1141

Pennsylvania State Inc Home  
2123 State Home Road  
Montgomery, Pa 17752-9164

Larry L Pentz  
327 Heberling Road  
Muncy, Pa 17756-8314

William E Pentz  
100 Duelk Avenue  
Monroe, Ny 10950-2023

Carter Phillips  
312 Sicklerville Road  
Williamstown, Nj 08094

Thomas N And Michelle M Shaneen  
5371 State Route 15 Highway  
Montgomery, Pa 17752

Steven S and Randy D Shenk  
355 East Main Street  
Leola, Pa 17540-1927

Anita L Shenk  
300 Typone Avenue  
Wilmington, De 19804-1931

Daniel M and Cindy K Smith  
303 Smith Drive  
Montgomery, Pa 17752-8913

Timothy L and Jeannie N Sommers  
5290 State Route 15 Highway  
Montgomery, Pa 17752

State Forest and Game Lands  
2001 Elmerton Avenue  
Harrisburg, Pa 17110-9762

Elam S and Lizzie A Stoltzfus  
5297 State Route 15 Highway  
Montgomery, Pa 17752

Elmer B and Anna R Stoltzfus  
1055 Elimspport Road  
Montgomery, Pa 17752-8635

Paul E and Tara L Stryker  
100 Wise Road  
Montgomery, Pa 17752-9644

Sugar Shack Hunting Club  
1705 Lower Manor Road  
Williamsport, Pa 17701-8358

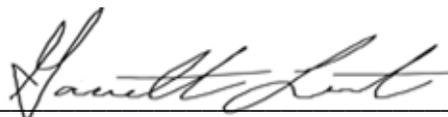
Daniel B and Louann Taylor  
33 Wise Road  
Montgomery, Pa 17752-8956

Rickie L and Alisia Y Troxell  
230 Green Pine Road  
Montgomery, Pa 17752-8645

O Michael Wright  
195 Tall Doe Road  
Montgomery, Pa 17752-8905

Donald F and Phoebe A Zarr  
1023 State Home Road  
Montgomery, Pa 17752-9172

Date: August 2, 2022



Garrett P. Lent

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Letter Of Notification Of PPL Electric :  
Utilities Corporation, Filed Pursuant To 52 :  
Pa. Code Chapter 57 Subchapter G, For : Docket No. A-2022-\_\_\_\_\_  
Approval Of The Rebuild Of (1) A Section :  
Of The Double-Circuit Saegers- :  
ElimSPORT/Clinton-ElimSPORT 230 kV :  
Transmission Lines Connecting The :  
ElimSPORT 230 kV Substation To The :  
Clinton 230 kV Substation And (2) The :  
Saegers-ElimSPORT/Saegers-Clinton 230 :  
kV Transmission Lines Connecting The :  
Clinton 230 kV Substation To The Saegers :  
230 kV Substation In Lycoming County, :  
Pennsylvania :

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**LETTER OF NOTIFICATION**

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**TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:**

PPL Electric Utilities Corporation (“PPL Electric”) hereby files this Letter of Notification pursuant to Section 57.72(d)(1)(i) of the Pennsylvania Public Utility Commission’s (“Commission”) regulations, 52 Pa. Code § 57.72(d)(1)(i), to rebuild a section of the existing double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines that extends from the ElimSPORT 230 kV Substation (“ElimSPORT Substation”) to the Clinton 230 kV Substation (“Clinton Substation”) and the Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines that connect the Clinton Substation to the Saegers 230 kV Substation (“Saegers Substation”), which are all located in Lycoming County, Pennsylvania (the “Saegers-ElimSPORT Project” or the “Project”).<sup>1</sup>

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<sup>1</sup> For a complete list of municipalities and counties crossed by the Project, please refer to Attachment 5 to this Letter of Notification.

The proposed Project will address reliability, asset health and safety concerns related to the deteriorated condition of the COR-TEN® lattice towers of PPL Electric’s Saegers-Elimsport/Clinton-Elimsport and Saegers-Elimsport/Saegers-Clinton 230 kV Transmission Lines (collectively, the “Saegers-Elimsport 230 kV Transmission Lines”). The Project contemplates the replacement and rebuilding of these existing COR-TEN® lattice towers to address structural reliability concerns associated with the experience of “pack-out rust”<sup>2</sup> in many of the joints of the subject lattice towers. The experience of pack-out rust in the joints of the subject towers has accelerated asset health concerns and accelerated the rate at which the subject towers were expected to reach end-of-life.

This project will be constructed in Brady Township, Clinton Township and Washington Township, all in Lycoming County, Pennsylvania. PPL Electric has provided information regarding this Project to all identified political subdivisions, and none of them have objected to the Project. Construction of the Project will commence upon the Commission’s approval of this filing, with an estimated construction start date of July 2023 with an anticipated in-service date of September 2025. In support thereof, PPL Electric states as follows:

## **I. INTRODUCTION**

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

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<sup>2</sup> As explained in Attachment 1 – Necessity Statement, “pack-out rust” or “pack rust” is a form of localized corrosion typical of steel components that develop a crevice into an open atmospheric environment, which results in rust packing between conjoined steel components. As described further herein, pack-out rust accelerates the deterioration of asset health and can result in shearing off bolts, loss of structural integrity, members disconnecting from lattice towers, and tower failure.

2. PPL Electric's address is as follows:

PPL Electric Utilities Corporation  
Two North Ninth Street  
Allentown, Pennsylvania 18101

3. PPL Electric's attorneys are:

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

David B. MacGregor (I.D. # 28804)  
Garrett P. Lent (I.D. #321566)  
Post & Schell, P.C.  
17 North Second Street  
12th Floor  
Harrisburg, PA 17101-1601  
Voice: 717-731-1970  
Fax: 717-731-1985  
E-mail: dmacgregor@postschell.com  
E-mail: glent@postschell.com

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

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

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

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

- Attachment 1 Necessity Statement.
- Attachment 2 Engineering Description.

- Attachment 3 Description of Right-of-Way.
- Attachment 4 PPL Electric Design Criteria and Safety Practices.
- Attachment 5 Landowners And Agencies List.

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

## **II. THE PROJECT**

### **A. NEED FOR THE PROJECT**

8. PPL Electric has a responsibility to provide transmission assets and maintain them in a manner that is safe, reliable, and resilient to meet the needs of the electric system and the service expectations of its customers. To meet this duty, PPL Electric applies its transmission asset management planning procedure, which includes system performance and condition assessments. These performance and condition assessments identify system needs and prioritize projects based on several variables such as equipment age, condition, maintenance schedule, and impact on system reliability and performance to ensure a reliable electric grid and reasonable service to its customers.

9. As explained in greater detail below and in Attachment 1 – Necessity Statement, this Project is necessary to resolve significant asset health condition concerns across the Saegers-Elimsport 230 kV Transmission Lines associated with the presence of pack-out rust in the existing COR-TEN® steel lattice towers and thereby resolve service reliability and safety risks associated with the potential failure of these structures.

10. The Project as proposed addresses these concerns in a cost-efficient manner, as compared to either a replacement alternative or a remediation and later replacement alternative. In particular, the Project as proposed avoids the substantial uncertainties surrounding potential remediation of the existing COR-TEN® steel lattice towers, avoids redundant inspection and/or

additional remediation of these structures, and is the lowest cost alternative. Therefore, and for the reasons more fully explained below, the Commission should approve the Project as proposed.

### **1. Existing System**

11. The ElimSPORT and Clinton 230 kV Substations are connected by the double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines, and the Clinton and Saegers 230 kV Substations are connected by the double-circuit Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines.

12. The Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines are approximately 7.0 miles long and supported by 43 COR-TEN® lattice structures. These towers are designed and being used for double-circuit 230 kV operation. The Saegers-ElimSPORT 230 kV Transmission Line is one of the circuits on these towers, and the Clinton-ElimSPORT 230 kV Transmission Line is the other.

13. The Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines are approximately 1.1 miles long and supported by 6 COR-TEN® lattice structures. These towers are designed and being used for double-circuit 230 kV operation. The Saegers-ElimSPORT 230 kV Transmission Line is one of the circuits on these towers, and the Saegers-Clinton 230 kV Transmission Line is the other.

14. The double-circuit Saegers-ElimSPORT 230 kV Transmission Lines are in PPL Electric's Central-Susquehanna Region and are part of a larger 230 kV transmission network that connects generation in this region to load throughout PPL Electric and the rest of PJM's footprint. This 230 kV network includes the Montour-Susquehanna 230 kV, Montour-Susquehanna T10 230 kV, Montour-Saegers #1 & #2 230kV, Sunbury-Susquehanna 230 kV, ElimSPORT – Lycoming #1, #2, & #3 230 kV, and ElimSPORT-Sunbury 230 kV Transmission Lines, which all support bulk power flow and feed various 230-69 kV substations in the Central-Susquehanna Regions.

15. The Saegers-Elimspport 230 kV Transmission Lines, together, are approximately 8.1 miles long and are supported by 49 COR-TEN® double-circuit steel lattice structures.

16. A map of the existing system configuration is provided as Figure 1-1, in Attachment 1 – Necessity Statement.

## **2. Definition of the Problem**

17. The existing Saegers-Elimspport 230 kV Transmission Lines are comprised of 49 weathering-steel COR-TEN® lattice structures spanning approximately 8.1 miles, which were originally constructed in the early 1970s. COR-TEN® lattice towers were commonly installed by the industry during this time because it was believed that the corrosion-resistant properties of weathering-steel would reduce future maintenance needs/costs. These towers had an expected service life of approximately 75 years at the time they were installed.

18. However, in 2013, PPL Electric hired a third-party contractor to perform an assessment of its 230 kV transmission lines under a steel structure capital maintenance program. The assessment identified that 126 of 131 surveyed structures (96%) had one or more structure legs rated Condition C (poor) or Condition D (very poor). Of those 126 structures, 25 had one or more structure legs that were identified as “priority,” requiring immediate attention. In order to extend the life of the asset and ensure no failures at the ground line, the 25 structures identified as “priority” received maintenance repairs in 2014, which included post leg, diagonal and base shoe repairs. Protective coating was applied to the remaining 101 COR-TEN® structures that rated Condition C or D but were not identified as “priority.” However, these remaining structures face constant asset health concerns due to the presence of pack-out rust.

19. The asset health concerns discovered by the 2013 assessment were heightened by the discovery of pack-out rust in the section joints of the subject COR-TEN® lattice towers. As explained in further detail in Attachment 1 – Necessity Statement, when the presence of pack-out

rust becomes too severe, it can deform steel members and connecting hardware. Pack-out rust can also shear off bolts, cause loss of structural integrity, cause members to disconnect from the tower, and even result in tower failure. This now well-known inherent problem with COR-TEN® steel is also being seen in other infrastructure where two pieces of COR-TEN® Steel overlap at joints, such as those present on lattice towers<sup>3</sup> and other steel structures such as steel bridges.

20. PPL Electric further verified the results of the 2013 assessment by contracting with several independent, non-affiliated inspection companies to conduct evaluations of COR-TEN® lattice towers to determine the overall condition of these towers on the PPL Electric Transmission System in 2019. The 2019 evaluations included inspection of 15 randomly selected COR-TEN® lattice towers across the PPL Electric Transmission System by three separate contractors.<sup>4</sup> Review of the three contractor reports revealed that over 90% of the joints at each structure exhibited visible pack-out in the connections. In addition, the review revealed that pack-out and section-loss was most prominent on the lower portions of the towers where there was higher likelihood of moisture build up.

21. Based on the prevalence of the observed deterioration, PPL Electric determined a more thorough and strategic evaluation was required to determine the full extent of the negative asset health impacts associated with COR-TEN® lattice towers. In early 2020, PPL Electric initiated a second more robust evaluation of the COR-TEN® lattice towers to determine the full

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<sup>3</sup> See, e.g., *Application of Virginia Electric and Power Company d/b/a Dominion Virginia Power For approval and certification of Carson-Rogers Road 500 kV Transmission Line Rebuild under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq.*, Va. SCC Case No. PUE-2016-00078, at pp. 2-3, 9-10 (Hearing Examiner Report dated March 10, 2017) ; *Application of Virginia Electric and Power Company For approval and certification of Cunningham-Dooms 500kV Transmission Line Rebuild under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq.*, Va. SCC Case No. PUE-2016-00020, at pp. 3-4 (Response of Dominion Virginia Power to Staff's Supplemental Filing of March 30, 2017, filed April 13, 2017) (discussing the problems associated with "pack-out" rust on another utility's COR-TEN® lattice tower structures).

<sup>4</sup> Each contractor was asked to inspect 5 structures and prepare an engineering analysis of their condition, proposed remediation approach and estimated costs to remediate the identified structural defects.

extent of the deterioration on the transmission system. The details of this analysis are more fully detailed in Attachment 1 – Necessity Statement.

22. The results of the 2020 inspection program again confirmed the severity of deterioration identified during the 2019 inspection program, as follows:

- Over 90% of the joints showed visible pack-out in the connections, which is anticipated to worsen over time.
- The protective patina needed to protect the steel from corrosion did not properly develop at numerous members resulting in section-loss across the entire structure.
- Pack-out damage was typically more prevalent on lower sections of the tower except for some specific attachment points where severe pack-out was observed on higher sections.
- Structural damage was found on several members from pack-out that ruptured bolts and split/deformed members.

23. Finally, in May 2022, PPL Electric contracted RTR Energy Solutions, Inc. (“RTR”) to perform a condition assessment of on the Saegers-Elimsport 230 kV Transmission Lines. The details of the RTR September 2021 Assessment are set forth in Attachment 1 – Necessity Statement. Importantly, 12 of the 49 structures received a “Severe” condition rating, with significant amounts of pack rust present, visibly bending the flat edge of the joint that was originally bolted. The remaining 37 structures received a “Moderate” condition rating; none of the structures received a “Mild” condition rating. In addition, as explained in Attachment 1 – Necessity Statement, the average structure classified as “Moderate” is in similar condition to structures classified as “Severe.” The average percentage of total joints found to contain pack-out rust on each structure classified as “Moderate” is approximately 46%. RTR classifies any structure with over 50% of its joints containing pack-out rust as “Severe.” Based upon this information, it is reasonable to anticipate that the average structure classified as “Moderate” will continue to deteriorate and, ultimately, meet the criteria to be classified as “Severe” in the near future.

24. The majority of pack rust observed on each structure was found in the lower sections of the post leg where horizontal and diagonal members are bolted to the post leg. This assessment shows that the asset health conditions observed in the system-wide assessment are being exhibited on the specific structures targeted for replacement by the Project.

25. Based on the results of the inspection programs described above, it is clear that the issue with COR-TEN® lattice towers has accelerated the deterioration of these structures and has brought the assets to the end of their service life much sooner than would have been anticipated. At roughly 50 years of age, the COR-TEN® lattice towers that comprise the Saegers-ElimSPORT 230 kV Transmission Lines have exceeded their useful life and can no longer be relied upon to safely operate as designed.

26. Furthermore, these asset health concerns are particularly important as the Saegers-ElimSPORT 230 kV Transmission Lines are critical components of PPL Electric's Bulk Transmission System and are required to serve local load to several critical customer facilities.

27. If the Saegers-ElimSPORT 230 kV Transmission Lines were to fail and the Sunbury – ElimSPORT 230 kV transmission line was to fail, it will result in the loss of the Lycoming, Clinton, and Lock Haven substations. This will result in up to 562 mega-watts ("MW") of load drop resulting in approximately 71,549 customers losing service. Critical facilities that would be impacted by this scenario include Alcan, two First Quality facilities, Avco, Jersey Shore Steel, Wire Rope, Williamsport Flood Protection, Plastic-Vac, Montour Pump, Atlantic Refining, and Little League World Series. This scenario would result in all PPL Electric distribution substation load from the Muncy to the Lock Haven area being removed from service.

28. Furthermore, as the topic of severe weather patterns becomes increasingly relevant, there is a need to take into consideration how changing weather patterns will impact the reliability

of the existing COR-TEN® lattice structures. Over the last 20 years, PPL Electric has seen a trend of increasing storms per year within the PPL Electric service territory. With each storm comes more exposure to extreme precipitation and wind events. If a tower is structurally compromised due to COR-TEN® pack-out and section loss, that wind event creates an increased risk of structural failure. With projected increases of more frequent and intense heat waves over the next century in the Northeast, the occurrence of more severe wind and precipitation events is expected to rise as well. This is evident in the storms associated with Hurricane Ida that hit the Northeast recently, as a storm of that strength would have been rare decades ago. Due to drastic weather pattern changes, it is imperative to re-evaluate the COR-TEN® structures in the safest and most reliable way to protect against the pack rust issue in the joints of the structures and guard the transmission system from catastrophic failures of COR-TEN® towers.

29. At the October 2020 PJM TEAC meeting,<sup>5</sup> PPL Electric presented its plan to address COR-TEN® needs on the 230 kV system. As part of this plan, PPL Electric also shared the need with PJM stakeholders to address COR-TEN® towers on the Saegers-Elimsport 230 kV Transmission Lines (need # PPL-2020-0007). The need # PPL-2020-0007 will be addressed by the Saegers-Elimsport 230 kV Transmission Line rebuild under supplemental project s2368, which will be completed at an estimated cost of \$33.2 Million.

## **B. THE PROPOSED PROJECT**

30. In order to resolve the identified COR-TEN® lattice tower health condition, PPL Electric proposes to rebuild the existing Saegers-Elimsport 230 kV Transmission Lines. All the COR-TEN® lattice structures as well as the conductors at the 49 locations will be replaced.

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<sup>5</sup> Refer to slides at <https://www.pjm.com/~media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx>.

31. The proposed Project will address the asset health needs associated with COR-TEN® lattice tower replacement, as well as improve overall reliability, safety, and system resiliency. It will also address the above-identified reliability needs. With respect to the COR-TEN® asset health condition, the Project will immediately and fully resolve the deteriorated condition of the existing structures on a long-term basis by removing the existing COR-TEN® lattice towers and replacing them with steel monopoles. By rebuilding these structures, PPL Electric will resolve the existing COR-TEN® issue and avoid the possibility of the issue worsening and/or recurring with respect to these structures and developing into both a reliability and public safety issue.

32. Importantly, as explained in Attachment 1 – Necessity Statement, the Project as proposed also avoids the additional costs and uncertainties surrounding the alternative remediation solution contemplated PPL Electric. As noted therein, PPL Electric evaluated and rejected the remediation alternative because it carries substantial uncertainties regarding its immediate and long-term effectiveness to address the subject COR-TEN® lattice towers. There are few, if any, other examples of fully remediating substantially deteriorated COR-TEN® towers which PPL Electric could review to benchmark the effectiveness of this alternative against. Although remediation could potentially extend the life of the structures, it would, at a minimum, require that the remediation work be re-evaluated and potentially repeated every ten years after the initial remediation. In addition, the initial cost of remediation could be substantially greater than anticipated, and the cost of repeated remediation would result in additional O&M expense. The Project as proposed avoids these additional costs and uncertainties and proposes to rebuild the transmission lines in a cost-efficient manner to ensure the continued provision of safe and reliable service.

33. The approximate cost of the entire transmission line rebuild Project is \$33.2 Million. On a total cost of service basis, the Proposed Solution is approximately 88% of the cost of Alternative 1 (replacing each of the existing structures) on a 45-year basis and 89% of the cost of Alternative 1 on 75-year basis. In addition, on a total cost of service basis, the Proposed Solution is approximately 91% of the cost of Alternative 2 (remediating the existing structures) on a 45-year basis and 56% of the cost of Alternative 2 on 75-year basis.

### **III. HEALTH AND SAFETY**

34. The proposed lines will not create any unreasonable risk of danger to public health or safety. 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 4 to this Letter of Notification.

35. Attachment 4 accompanying this Letter of Notification also explains PPL Electric’s standards for Magnetic Field Management. Ground clearances for the proposed Project will be increased between approximately 3.0 and 7.0 feet higher than those required by the NESC standard in order to reduce the magnetic field exposure. The proposed rebuild of the Saegers-Elimspport 230 kV Transmission Lines will continue to allow for double-circuit operation, which will allow for reverse phasing. A reduction in magnetic field exposure is anticipated due to the higher ground clearances and reverse phasing.

### **IV. DESCRIPTION OF THE RIGHT-OF-WAY**

36. The rebuilt double-circuit Saegers-Elimspport 230 kV Transmission Lines will be on the same structure alignment and in the same right-of-way (“ROW”) as the existing transmission lines. The existing ROW varies between 150 and 200 feet wide with the wider area

in sections where another PPL Electric-owned line parallels the Saegers-Elimsport 230 kV Transmission Lines. The Project will require the replacement of 49 existing structures that will be constructed entirely within the existing ROW, on PPL Electric fee-owned property, or on PPL Electric's Elimsport Substation property. *See* 52 Pa. Code § 57.72(d)(1)(i). In addition, the facilities associated with the Project will be constructed upon the same structure alignment as the existing facilities. PPL Electric does not require any additional ROW for the construction of the Project. An aerial map is provided at the end of Attachment 3 to this Letter of Notification, which depicts the proposed line and associated structures.

37. New structures will be located in close proximity to existing structures where it is reasonably practical to do so. Where structures will be relocated, PPL Electric will discuss the proposed structure locations with the respective property owners. Because the new pole locations are generally similar to the original locations, PPL Electric does not anticipate any objections. Further, the Project will involve the same number of poles that currently comprise the Saegers-Elimsport 230 kV Transmission Lines.

38. As explained in Attachment 2, existing COR-TEN® lattice tower structures range in height from between approximately 115 and 155 feet with an average structure height of approximately 127 feet. The proposed monopole structures for the Saegers-Elimsport 230 kV Transmission Lines will range in height from between approximately 120 and 148 feet with an average structure height of approximately 128 feet.

39. Two aerial plot plans are provided at the end of Attachment 1 to this Letter of Notification. Figure 1-1 depicts the location of the existing transmission facilities associated with this Project. Figure 1-2 depicts the location of the proposed transmission facilities associated with this Project.

## V. LAND USE AND ENVIRONMENTAL EVALUATION

40. As explained above, construction of the proposed Project will take place entirely within existing rights-of-way. Therefore, it is anticipated that the proposed Saegers-Elimsport Project will have minimal incremental impacts on land use in the area.

41. PPL Electric will use and update previously established access roads for construction to the extent practical to further reduce interference with existing uses and minimize land use impacts. A detailed description of the route of each individual component of the Project can be found in Attachment 3.

42. PPL Electric evaluated the existing land uses on the PPL Electric owned properties, within the existing ROW, and within 0.25 mile (1,320 feet) of the ROW (“Project Area”). This broader Project Area was reviewed to provide a sense of the landscape in which the Project is located. Based on review of the 2021 National Land Cover Data (“NLCD”), land use in the Project Area is approximately 95% forested with the remaining 5% comprised of mixed residential and commercial areas that are crossed near the intersection with U.S. Route 15.

43. The Project will not affect any state lands, national parks, local parks, recreational areas or natural landmarks because none of these features are located within the Project Area. In the western portion of the Project, the Saegers-Elimsport 230 kV Transmission Lines cross an approximate 0.6-mile section of Tiadaghton State Forest. This section extends along the southern base of North White Deer Ridge near the Elimsport Substation property. The next closest state conserved property is State Game Lands #252, which is located 1.35 miles southeast of the Elimsport Substation. The Project crosses a property twice near the Clinton Substation that is conserved through the Northcentral Pennsylvania Conservancy.

44. PPL Electric will coordinate with the Pennsylvania Department of Conservation and Natural Resources’ Bureau of Forestry regarding the work proposed on state forest lands. The

conservation easement with the Northcentral Pennsylvania Conservancy was established in 1994 after the development of the existing transmission line. Existing access roads will be used in these areas and limited tree clearing along the edge of the ROW is anticipated. Neither of these conserved properties will be affected by the Project.

45. PPL Electric conducted an online review of the Project Area and surrounding landscape through the Pennsylvania Historical and Museum Commission (“PHMC”) Cultural Resources Geographic Information System (“GIS”) site for this area. As described in Attachment 3, the closest State Historic Preservation Office (“SHPO”) eligible property is Eagle Grange Number One Hall, which is located on U.S. Route 15 approximately 1.5 miles south of the Project Area.

46. PPL Electric is in the initial stage of coordination with the PHMC for the modifications being made to the transmission lines. PPL Electric does not anticipate any impacts to these SHPO eligible or listed properties or any other PHMC related properties. PPL Electric will perform any reviews and field survey/sampling work required by the PHMC to avoid, minimize, and mitigate impacts to archaeological or historic architectural resources that may be located within the Project Area.

47. No nearby railroads, communication towers, or pipelines will be affected by the proposed Project. The Project crosses other PPL Electric electrical utility ROWs between the ElimSPORT Substation and Clinton Substation. The closest active airports relative to the Project Area are the Williamsport Regional Airport, which is approximately 3.5 miles to the north, and the Jersey Shore Airport, located approximately 16 miles to the west. PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are existing electrical facilities. However, PPL Electric will comply with any applicable

requirements of the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

48. No unique geological, scenic, or natural areas are located within the Project Area, according to the Pennsylvania Department of Conservation and Natural Resources (“PDCNR”).

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

50. The existing transmission lines span approximately twelve National Hydrography Dataset waterways that will remain in place after the Project construction activities have occurred. The waterways crossed by the Project are tributaries to Spring Creek and Black Hole Creek, which flow generally south to the West Branch Susquehanna River, as well as several unnamed tributaries that flow directly to the West Branch Susquehanna River. Spring Creek is located in the western portion of the Project and is in the Spring Creek Watershed (Hydrologic Unit Code (“HUC”) 020502060901). Black Hole Creek and the unnamed tributaries to the West Branch Susquehanna River are located in the eastern portion of the Project and are both in the Delaware Run-Lower West Branch Susquehanna River Watershed (HUC 020502061202). Both watersheds are sub-watersheds in the Susquehanna River Basin.

51. Spring Creek and Black Hole Creek and their tributaries have a PADEP Chapter 93 Designated Use Stream Classification of Trout Stocking Fishes, Migratory Fishes (“MF”). The

unnamed tributaries to the West Branch Susquehanna River have a PADEP Chapter 93 Designated Use Stream Classification of Warm Water Fishes, MF. The Pennsylvania Fish and Boat Commission (“PFBC”) has designated Black Hole Creek as a Natural Reproduction Trout Stream, which may require seasonal restrictions for any work planned in these streams. PPL Electric will adhere to any required seasonal restrictions. No direct impacts to these waterway features are anticipated by the Project activities. PPL Electric will obtain all approvals and permits necessary for the construction of the Project and will comply with any conditions placed on those permits.

52. PPL Electric also reviewed the U.S. Fish and Wildlife Service’s (“USFWS”) National Wetlands Inventory (“NWI”). The Project crosses twelve Riverine Intermittent Seasonally Flooded (R4SBC) stream habitats. No impacts to these NWI features are anticipated by the proposed Project activities.

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

54. In addition, PPL Electric obtained the National Flood Hazard Layer (“NFHL”) through the Pennsylvania Spatial Data Access (“PASDA”) database and analyzed for 100-year floodplains within the Project Area and surrounding landscape. Based on review of this data, the Project spans one FEMA 100-year floodplain area associated with two tributaries to Black Hole Creek. No impacts to this floodplain area is anticipated by the proposed Project activities.

55. Vegetative cover in the Project Area consists almost entirely of forested habitat. Areas of forest clearing associated with commercial and residential development are present based on aerial imagery. The existing ROW areas for the transmission line has previously been cleared of woody vegetation and no extensive tree clearing is anticipated for the Project. If vegetation management is required in this specific location, PPL Electric will apply its “Specifications for Transmission Vegetation Management LA-79827” to minimize potential impacts.

56. Based on review of the *Natural Areas Inventory of Lancaster County, Pennsylvania*, published by The Nature Conservancy in 1998, the Project is located less than one mile north of the Maple Hill Sinks Natural Area. This area includes state-listed endangered plant species. No impact to this area is anticipated as part of the Project. Natural areas identified in these documents generally focus on sites that provide habitat conditions for threatened and endangered plant or animal species.

57. PPL Electric completed a Pennsylvania Natural Diversity Inventory (“PNDI”) for the Project on November 16, 2020. The PNDI reviews evaluate the databases of the United States Fish and Wildlife Service (“USFWS”), Pennsylvania Fish and Boat Commission (“PFBC”), Pennsylvania Game Commission (“PGC”), and the PDCNR. No agencies reported any known impacts to threatened and endangered species and/or special concern species and resources within the Project Area. PPL Electric will continue to consult with the jurisdictional agencies regarding potential impacts to protected species, complete all required surveys, obtain all necessary approvals and permits for Project construction, and comply with all conditions placed on those permits.

## **VI. NOTICE**

58. PPL Electric has reached out to residents located immediately adjacent to PPL Electric’s fee owned parcels and owners of properties that are crossed by the Saegers-Elimsport

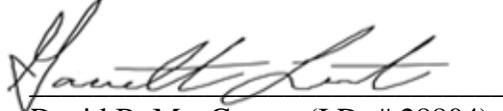
230 kV Transmission Lines. Copies of the Letter of Notification will be served upon landowners in accordance with 52 Pa. Code § 57.72(d)(3). A list of the landowners impacted by this project is provided in Attachment 5.

59. PPL Electric has provided information regarding the Project to representatives of Brady Township, Clinton Township and Washington Township, all in Lycoming County, Pennsylvania. These entities have not objected to the proposed Project. Copies of this Letter of Notification will be served on the governmental agencies, municipalities, and other public entities and organizations in accordance with 52 Pa. Code § 57.72(d)(3). A list of these entities and organizations is also provided in Attachment 5.

**VII. CONCLUSION**

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission approve the proposed Saegers-Elimsport Project located in Brady Township, Clinton Township and Washington Township, in Lycoming County, Pennsylvania that is explained above and in the Attachments hereto.

Respectfully submitted,



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Date: August 2, 2022

Attorneys for PPL Electric Utilities Corporation

# ATTACHMENT 1

# SAEGERS-ELIMSPORT 230 kV COR-TEN® REBUILD PROJECT

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## 1.0 INTRODUCTION

PPL Electric Utilities (“PPL Electric”) is requesting Pennsylvania Public Utility Commission (“PUC” or “the Commission”) approval to rebuild a section of the existing double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines that extends from the ElimSPORT 230 kV Substation (“ElimSPORT Substation”) to the Clinton 230 kV Substation (“Clinton Substation”) and the Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines that connect the Clinton Substation to the Saegers 230 kV Substation (“Saegers Substation”), which are all located in Lycoming County, Pennsylvania (“Project”)<sup>1</sup>.

This Project is required to address reliability concerns related to the deteriorated condition of the COR-TEN® lattice towers on the Saegers-ElimSPORT/Clinton-ElimSPORT and Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines (collectively “Saegers-ElimSPORT 230 kV Transmission Lines”). In addition, the Project is also required to comply with:

- The Consolidated Transmission Owners Agreement (“CTOA”) Rate Schedule - FERC No. 42 (FERC ER10-2713-000), which requires transmission systems to “[b]e kept in place and maintained in good operating condition in accordance with Good Utility Practice and principles, guidelines and standards of the applicable Regional Reliability Council and NERC.”

The Project is necessary for PPL Electric to avoid violating its obligations under the CTOA to maintain its transmission facilities in good operating condition and avoid public safety concerns caused by failed assets. The Project is one of several essential PPL Electric projects designed to address a system-wide concern related to the structural reliability of COR-TEN® lattice towers on its bulk transmission system. As explained below, the existence of “pack-out rust”<sup>2</sup> in many of the joints of the subject lattice towers diminishes structural integrity and increases the risk of system failures that could negatively impact public safety and affect approximately 71,549 PPL

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<sup>1</sup> For a complete list of municipalities and counties crossed by the Project, please refer to the Letter of Notification, Attachment 5.

<sup>2</sup> “Pack-out rust” or “pack rust” is a form of localized corrosion typical of steel components that develop a crevice into an open atmospheric environment, which results in rust packing between conjoined steel components. As described further herein, pack-out rust accelerates the deterioration of asset health and can result in shearing off bolts, loss of structural integrity, members disconnecting from lattice towers, and tower failure.

Electric customers. The Project is necessary to avoid these risks and provide the best solution to immediately address the identified asset health issues on a long-term basis.

Moreover, in order for PPL Electric’s transmission facilities to be considered in good operating condition, they must be maintained in a manner consistent with the standards of the North American Electric Reliability Corporation (“NERC”), Reliability First Corporation, and Good Utility Practice as defined by the CTOA.

Subject to the Commission’s approval, construction will begin in July 2023 to support an in-service date of September 2025. PPL Electric will continue to own, operate, and maintain the rebuilt 230 kV transmission lines. The total estimated cost of this Project, as described below, is approximately \$33.2 Million, and the cost for the Project will be paid by PPL Electric.<sup>3</sup>

## **2.0 BACKGROUND**

PPL Electric has a responsibility to provide transmission assets and maintain them in an adequate, efficient, safe, reliable, and reasonable manner to meet the needs of the electric system and the expectations of its customers. To achieve this, PPL Electric applies its Transmission Asset Management Procedure as part of its system performance and condition assessment process. These performance and condition assessments identify system needs and prioritize projects based on several variables such as equipment age, condition, maintenance schedule, and impact on system reliability and asset performance to ensure a reliable electric grid and service to its customers.

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

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<sup>3</sup> The estimated cost was developed using averages of recent costs for similar projects and without an in-depth analysis of field investigation. 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.

### **3.0 TRANSMISSION SYSTEM PLANNING PROCESS**

The nation’s interconnected transmission system (“Transmission Grid”) serves as the backbone for 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 critical that the Transmission Grid be planned and designed to ensure reliable electric service is provided under all loading conditions or when certain elements of the Transmission Grid are out of service (system contingencies) due to planned or unplanned outages.

Robust transmission planning enables the transmission system to supply electricity to all customer loads in a reliable and economical manner. This system planning process ensures that both the Bulk Electric System (“BES”)<sup>4</sup> and non-Bulk Electric System (non-BES)<sup>5</sup> 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 NERC, PJM Interconnection, LLC (“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 thirteen states and the District of Columbia, including Pennsylvania. To ensure reliable transmission service, PJM prepares an annual Regional Transmission Expansion Plan

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<sup>4</sup> Includes transmission facilities operated at voltages of 100 kV or higher.

<sup>5</sup> Includes transmission facilities operated at voltages less than 100 kV.

(“RTEP”)<sup>6</sup> 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.

PPL Electric’s Transmission Asset Management Procedure involves identifying system needs and determining the best available solution to address those needs. This process includes asset evaluation, asset condition and system risk assessments, analysis of alternative solutions and project initiation and scheduling. System needs are identified based on the overarching goals of reducing outage frequency and duration, improving system reliability, decreasing system maintenance cost, and maintaining operational flexibility to ensure safe and reliable electric service of the transmission system and to our customers.

When transmission owning utilities (including PPL Electric) set up PJM as an RTO, they agreed to bind themselves to maintaining their existing transmission systems using Good Utility Practice. The CTOA is an agreement among (1) individual Transmission Owners operating within the PJM Region and (2) between the Transmission Owners and PJM. The CTOA facilitates the planning and operation of the Transmission Grid within the PJM region and establishes the rights and responsibilities of each party to the CTOA. Section 4.6 of the CTOA requires that transmission systems “[b]e kept in place and maintained in good operating condition in accordance with Good Utility Practice and principles, guidelines and standards of the applicable Regional Reliability Council and NERC.” This Project is required to fulfil PPL Electric’s obligations under the CTOA.

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<sup>6</sup> 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.

## **4.0 THE NEED FOR THE PROJECT**

### **4.1 Existing System**

The ElimSPORT and Clinton 230 kV Substations are connected by the double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines and the Clinton and Saegers Substations are connected by the double-circuit Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines. The Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines are approximately 7.0 miles long and supported by 43 COR-TEN® lattice structures. These towers are designed and being used for double-circuit 230 kV operation. The Saegers-ElimSPORT 230 kV Transmission Line is one of the circuits on these towers, and the Clinton-ElimSPORT 230 kV Transmission Line is the other.

The Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines are approximately 1.1 miles long and supported by 6 COR-TEN® lattice structures. These towers are designed and being used for double-circuit 230 kV operation. The Saegers-ElimSPORT 230 kV Transmission Line is one of the circuits on these towers, and the Saegers-Clinton 230 kV Transmission Line is the other.

The double-circuit Saegers-ElimSPORT 230 kV Transmission Lines are in PPL Electric's Central-Susquehanna Region and are part of a larger 230 kV transmission network that connects generation in this region to load throughout PPL Electric and the rest of PJM's footprint. This 230 kV network includes the Montour-Susquehanna 230 kV, Montour-Susquehanna T10 230 kV, Montour-Saegers #1 & #2 230kV, Sunbury-Susquehanna 230 kV, ElimSPORT – Lycoming #1, #2, & #3 230 kV, and ElimSPORT-Sunbury 230 kV Transmission Lines, which all support bulk power flow and feed various 230-69 kV substations in the Central-Susquehanna Regions. As noted below, if the Saegers-ElimSPORT 230 kV Transmission Lines fail, it is expected that the service of approximately 71,549 customers would be impacted for the next contingency, including critical customers such as Alcan, two First Quality facilities, Avco, Jersey Shore Steel, Wire Rope, Williamsport Flood Protection, Plastic-Vac, Montour Pump, Atlantic Refining, and Little League World Series.

A map of the existing system configuration is provided as Figure 1-1.

## 4.2 Project Need

This Project is needed to address asset health concerns that are being accelerated by increased incidences of pack-out rust associated with COR-TEN® lattice towers. The subject lattice towers had an expected service life of 75 years and were installed in the early 1970s. The subsequent discovery of increased incidences of pack-out rust associated with COR-TEN® lattice towers has accelerated the rate at which these towers were expected to reach end-of-life, and, in some cases, the towers have deteriorated and are continuing to deteriorate beyond the point where they can safely operate as designed and cannot be reasonably or cost effectively remediated.

### 4.2.1 Asset Health

There are approximately 236 circuit miles containing COR-TEN® lattice structures or approximately 1,284 structures across PPL Electric’s Transmission System that it currently anticipates will need to be addressed in order to resolve asset health concerns similar to those identified below.<sup>7</sup>

Originally constructed in 1971, the existing Saegers-ElimSPORT 230 kV Transmission Lines have 49 weathering-steel COR-TEN® lattice structures spanning approximately 8.1 miles. COR-TEN® lattice towers were commonly installed by the industry during this time because it was believed that the corrosion-resistant properties of weathering-steel would reduce future maintenance needs/costs.

In 2013, PPL Electric utilized a third-party contractor to perform an assessment of the COR-TEN® lattice structures on its 230 kV transmission lines under a steel structure capital maintenance program. The program evaluated the ground-line of the steel structures, performing minor excavation around the base of the structure and assessing the condition of the steel, and then applying a protective coating to the exposed steel. No joints or members above the base of the structure were included in this assessment. The assessment identified that 126 of 131 COR-TEN®

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<sup>7</sup> PPL Electric anticipates that addressing the currently anticipated COR-TEN® projects associated with the 230 kV system (approx. 1112 of the identified structures) will cost approximately \$562 million in total. However, these estimates are preliminary in nature and subject to change. PPL Electric is also currently evaluating one other transmission line asset that includes 172 COR-TEN® lattice structures, but it has not yet developed a cost estimate for the remediation or replacement of these structures.

structures (96%) had one or more structure legs rated Condition C (poor) or Condition D (very poor). Of those 126 structures, 25 had one or more structure legs that were identified as “priority”, requiring immediate attention. In order to extend the life of the asset and ensure no failures at the ground line, the 25 structures identified as “priority” received maintenance repairs in 2014, which included post leg, diagonal and base shoe repairs. Protective coating was applied to the remaining 101 COR-TEN® structures that rated Condition C or D but were not identified as “priority”. However, these remaining structures face constant asset health concerns due to the presence of pack-out rust. Ongoing inspections conducted since 2014 have confirmed that these structures are continuing to degrade.

These asset health concerns were further heightened by the discovery of pack-out rust in the section joints of the COR-TEN® lattice towers. In particular, the protective surface coating of weathering steel that provides resistance to atmospheric corrosion, known as the patina, did not form properly on the structure joints and members due to moisture trapped between the joints. The trapped moisture prevented completion of the required wetting and drying cycle needed to form the patina. Over time, this has led to the formation of pack-out rust within the joints of connecting tower members and section-loss in the steel members and joints. When the pack rust becomes too severe, it can deform steel members and connecting hardware. It can shear off bolts, cause loss of structural integrity, cause members to disconnect from the tower, and even result in tower failure. PPL Electric is experiencing pack-out rust failures on its transmission line system, which are a leading indicator of ultimate structure failure as outlined above. Over the past few years, PPL Electric has encountered multiple instances of COR-TEN® tower members becoming detached, broken, and deformed/corroded to failure due to severe pack-out rust. Failures of this nature on a transmission tower create emergent safety and reliability concerns which must be proactively addressed.

This now well-known inherent problem with COR-TEN® steel is also being seen in other infrastructure where two pieces of COR-TEN® steel overlap at joints, such as those present on lattice towers<sup>8</sup> and other steel structures such as bridges. The presence of pack-out rust on COR-

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<sup>8</sup> See, e.g., *Application of Virginia Electric and Power Company d/b/a Dominion Virginia Power For approval and certification of Carson-Rogers Road 500 kV Transmission Line Rebuild under Va. Code § 56-46.1 and the Utility*

TEN® structures and its negative impacts on asset health have diminished the expected service life of these structures from 75 to 50 years. As these structures were installed approximately 50 years ago, they have effectively reached end-of-life<sup>9</sup>. No manufacturer’s warranty currently exists for remediation of the COR-TEN® lattice towers. After a reasonable investigation, PPL Electric is not aware of whether a manufacturer’s warranty was in existence at the time the structures were installed.

To better understand the heightened asset health concerns associated with COR-TEN® steel, PPL Electric contracted with independent, non-affiliated inspection companies to conduct evaluations of COR-TEN® lattice towers to determine the overall condition of these towers on the PPL Electric Transmission System in 2019. The 2019 evaluations included inspection of 15 randomly selected COR-TEN® lattice towers across the PPL Electric Transmission System by three separate contractors.<sup>10</sup> Review of the three contractor reports revealed that over 90% of the joints at each structure exhibited visible pack-out in the connections. In addition, the review revealed that pack-out and section-loss was most prominent on the lower portions of the towers where there was higher likelihood of moisture build up. The contractors’ estimates to remediate each tower ranged from \$140,000 to \$240,000 per tower depending on the contractor’s proposed remediation approach and extent of remediation recommended. For the sake of any analysis associated with the remediation option, a cost of \$183,891 per structure was utilized, which is the average of the 3 remediation costs received from contractors.

Based on the prevalence of observed deterioration on the COR-TEN® lattice towers across the PPL Electric Transmission System and the estimated per-tower cost to rehabilitate, PPL Electric determined that a more thorough and strategic evaluation was needed to determine the full extent of the deterioration of COR-TEN® lattice towers across its system.

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*Facilities Act, Va. Code § 56-265.1 et seq.*, Va. SCC Case No. PUE-2016-00078, at pp. 2-3, 9-10 (Hearing Examiner Report dated March 10, 2017) ; *Application of Virginia Electric and Power Company For approval and certification of Cunningham-Dooms 500kV Transmission Line Rebuild under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq.*, Va. SCC Case No. PUE-2016-00020, at pp. 3-4 (Response of Dominion Virginia Power to Staff’s Supplemental Filing of March 30, 2017, filed April 13, 2017) (discussing the problems associated with “pack-out” rust on another utility’s COR-TEN® lattice tower structures).

<sup>9</sup> New steel structures that will be installed under the Project have an anticipated service life of 75 years.

<sup>10</sup> Each contractor was asked to inspect 5 structures and prepare an engineering analysis of their condition, proposed remediation approach and estimated costs to remediate the identified structural defects.

In early 2020, PPL Electric initiated a second, more robust evaluation of the COR-TEN® lattice towers to determine the full extent of the deterioration on the transmission system. PPL Electric’s Data Analytics Team developed a strategic approach that utilized advanced statistical analysis and modeling to comprehensively determine the overall condition of the COR-TEN® lattice towers in a cost-efficient manner. The statistical analysis determined that inspection of 192 randomly selected COR-TEN® towers would provide a statistically significant representation of all 1,284 COR-TEN® towers on the PPL Electric system with a 90% confidence level and 5% confidence interval. To assist with the analysis, PPL Electric contracted with AmpJack, an independent consultant, to complete an inspection of 192 randomly selected COR-TEN® towers and classify the observed condition.

The inspection of 192 randomly selected COR-TEN® towers performed by AmpJack included a field-based visual overhead inspection of each structure from the ground, taking measurements of pack-out at each joint and section-loss at each member on the lower section of each structure, visual observations of pack-out and section loss for the higher sections of the towers, and visual observations of the damage at attachment points. The measured values of each joint and member rated according to guidelines provided by PPL Electric using both the measured and visual observations (A-Good, B-Fair, C-Poor, D-Severe and F-Priority). This approach is consistent with the method used by Osmose, an essential asset inspection service company, in grading steel structure corrosion in applications across the country. The results of the AmpJack overall structure ratings are summarized in Table 1-1 below:

**TABLE 1-1: Structure Rating Summary**

Overall Structure Rating			
Class	Condition	Structure Count	Percent
<b>A</b>	<b>Good</b>	0	0.0%
<b>B</b>	<b>Fair</b>	0	0.0%
<b>C</b>	<b>Poor</b>	95	49.5%
<b>D</b>	<b>Severe</b>	88	45.8%
<b>F</b>	<b>Priority</b>	9	4.7%

The results of the 2020 inspection program confirmed the severity of deterioration identified during the 2019 inspection program as follows:

- Over 90% of the joints showed visible pack-out in the connections, which is anticipated to worsen over time.
- The protective patina needed to protect the steel from corrosion did not properly develop at numerous members resulting in section-loss across the entire structure.
- Pack-out damage was typically more prevalent on lower sections of the tower except for some specific attachment points where severe pack-out was observed on higher sections.
- Structural damage was found on several members from pack-out that ruptured bolts and split/deformed members.

The accelerated deterioration of the asset health of the COR-TEN® lattice towers that are the subject of the Project revealed by 2019 and 2020 inspection programs has been further corroborated by a recent study prepared by RTR Energy Solutions, Inc. (“RTR”) in May 2022. RTR was contracted to perform a condition assessment on the Saegers-ElimSPORT 230 kV Transmission Lines. The assessment consisted of all 49 COR-TEN® lattice towers on this line. The scope of the assessment included a visual inspection of each selected structure from the ground. Each joint of the structure was reviewed to determine if pack rust was present. The structure condition was noted as either Mild, Moderate or Severe using the following classification:

- **Mild** Condition Rating: <25% of total joints contain pack rust.
- **Moderate** Condition Rating: >25% & <50% of total joints contain pack rust.
- **Severe** Condition Rating: >50% of total joints contain pack rust.

A summary of the results of the inspection are represented in Table 1-2 below:

**TABLE 1-2: Structure Condition Rating Summary**

Condition	Structure Count
<b>Mild</b>	0
<b>Moderate</b>	37
<b>Severe</b>	12
<b>Total</b>	49

In addition, the average structure classified as “Moderate” is in similar condition to structures classified as “Severe.” The average percentage of total joints found to contain pack-out rust on each structure classified as “Moderate” is approximately 46%. RTR classifies any structure with over 50% of its joints containing pack-out rust as “Severe.” The majority of pack rust observed on each structure was found in the lower sections of the post leg where horizontal and diagonal members are bolted to the post leg. However, pack rust was observed in joints all the way up some towers. This assessment shows that the asset health conditions observed in the system-wide assessment are being exhibited on the specific structures targeted for replacement by the Project.

Based on the results of the inspection programs described above, it is clear that the poor performance of the protective patina on the COR-TEN® lattice towers has accelerated the deterioration of these structures and has brought the assets to the end of their service life much sooner than would have been anticipated. At roughly 50 years of age, the COR-TEN® lattice towers that comprise the Saegers-ElimSPORT 230 kV Transmission Lines have exceeded their useful life and can no longer be relied upon to safely operate as designed. The proposed rebuild addresses the safety issues resulting from the presence of pack-out rust (e.g., structures failing due to deteriorated joints at the arms or legs). Possible shearing of bolts, members disconnecting from lattice towers, or complete tower failure pose a major safety risk to both the public and PPL Electric employees. PPL Electric has determined to address these safety risks now, rather than at a later date, in order to avoid these risks increasing.

These asset health concerns are also important as the Saegers-ElimSPORT 230 kV Transmission Lines are a critical component of PPL Electric’s Bulk Transmission System and are required to serve local load to several critical customer facilities. If these transmission lines were to fail due to COR-TEN® issues, the following reliability issues would likely occur:

**A) Failure of the Clinton-Saegers and Saegers-ElimSPORT 230 kV Transmission Lines and:**

- The next contingency loss of the Sunbury – ElimSPORT 230kV line will result in the loss of the Lycoming, Clinton, and Lock Haven substations. This will result in up to 562 mega-watts (“MW”) of load drop resulting in approximately 71,549 customers losing service. Critical facilities including Alcan, two First Quality facilities, Avco, Jersey Shore Steel, Wire Rope, Williamsport Flood Protection,

Plastic-Vac, Montour Pump, Atlantic Refining, and Little League World Series will be impacted by this outage. This would result in all PPL Electric distribution substation load from the Muncy to Lock Haven area being removed from service.

As the topic of severe weather patterns becomes increasingly relevant, there is a need to take into consideration how changing weather patterns will impact the reliability of the existing COR-TEN® lattice structures. Over the last 20 years, PPL Electric has seen a trend of increasing storms per year within the PPL Electric service territory. With each storm comes more exposure to extreme precipitation and wind events. If a tower is structurally compromised due to COR-TEN® packout and section loss, that wind event creates an increased risk of structural failure. With projected increases of more frequent and intense heat waves over the next century in the Northeast, the occurrence of more severe wind and precipitation events is expected to rise as well. This is evident in the storms associated with Hurricane Ida that hit the Northeast in 2021, as a storm of that strength would have been rare decades ago. Due to drastic weather pattern changes, it is imperative to re-evaluate the COR-TEN® structures in the safest and most reliable way to protect against the pack rust issue in the joints of the structures and guard the transmission system from catastrophic failures of COR-TEN® towers.

At the October 2020 PJM TEAC meeting,<sup>11</sup> PPL Electric presented its plan to address COR-TEN® needs on the 230 kV system. As part of this plan, PPL Electric also shared the need with PJM stakeholders to address COR-TEN® towers on the Saegers-ElimSPORT 230 kV Transmission Lines (need # PPL-2020-0007). The need # PPL-2020-0007 will be addressed by the Saegers-ElimSPORT 230 kV Transmission Line rebuild under supplemental project s2368, which will be completed at an estimated cost of \$33.2 Million.

## **5.0 ALTERNATIVES**

PPL Electric evaluated three potential solutions to address the degrading health of the Saegers-ElimSPORT 230 kV Transmission Lines. The following three alternatives were considered and

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<sup>11</sup> Refer to slides at <https://www.pjm.com/~media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx>

compared based upon their ability to resolve the asset health conditions identified by PPL Electric and upon a 45-year and 75-year cost of service basis<sup>12</sup>:

- (1) Alternative 1 – Replace all structures on the Saegers-ElimSPORT 230 kV Transmission Lines;
- (2) Alternative 2 – Remediate all structures on the Saegers-ElimSPORT 230 kV Transmission Lines; and
- (3) Alternative 3 – Full Rebuild of the Saegers-ElimSPORT 230 kV Transmission Lines (“Proposed Solution”).

The Proposed Solution is necessary to address the COR-TEN® asset health condition described above. Although PPL Electric evaluated replacement and remediation options, these alternatives present substantial uncertainties regarding their immediate and long-term effectiveness to address the COR-TEN® issue. As explained herein, the health and safety risks associated with the assets’ advanced age and degree of deterioration are so great that replacement and remediation would fail to adequately address their poor health conditions. For these reasons, the replacement and remediation alternatives were rejected as neither prudent nor reasonable.

Furthermore, the Proposed Solution is the most cost-effective. To estimate the total cost of each alternative over both a 45-year and 75-year period (the expected service life of a new steel structure), cost-of-service calculations for the revenue requirement were completed on a per-structure basis.<sup>13</sup> A summary of this analysis is presented in Table 1-3 below. Based upon this

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<sup>12</sup> PPL Electric is providing this comparison based upon a 45-year cost of service basis, due to the Commission’s routine data requests for a 45-year cost of service analysis in prior LON proceedings. PPL Electric notes that it does not utilize a stand-alone cost of service calculation for individual projects, and does not prepare a cost of service analysis for rebuild projects in its regular course of business. However, PPL Electric has prepared this line-specific calculation in anticipation of data requests from the Commission. PPL Electric used its current transmission rate for these calculations and notes that it cannot predict what its transmission rate will be in the future. The Company’s transmission rate, and the associated calculations, are subject to change. Furthermore, PPL Electric submits that it is reasonable and appropriate to consider the 75-year cost of service for this project, as the expected life of the steel structures at issue is 75 years.

<sup>13</sup> Because all COR-TEN® lattice structures on the system are of a similar design and vintage, doing the cost of service calculation on a per structure basis allows for a determination of the most cost effective option for any COR-TEN® structure on the system regardless of the total line length. It is assumed that the cost of service calculation could be extrapolated across the total number of structures on a given line with a similar result. The revenue requirement is the total cost that the customers would be charged based on calculations that include a combination of operations and maintenance (“O&M”) expense, depreciation, and return on capital.

analysis, PPL Electric determined that Alternative 3 – Full Rebuild most efficiently addresses the asset health conditions of the Saegers-ElimSPORT 230 kV Transmission Lines. Therefore, as explained in Section 6.0, PPL Electric has proposed Alternative 3 as the Proposed Solution in this proceeding.

### **5.1 Alternative 1 – Structure Replacement**

The first alternative considered by PPL Electric to address the poor health condition of the weathering steel COR-TEN® lattice towers on these lines was to replace each of the lattice structures. This alternative would include replacing the existing weathering-steel lattice towers with new standard monopole structures. The estimated replacement cost is approximately \$541,984/structure. This option would also require PPL Electric to replace the conductors with new conductors in 2026 when the conductors have reached their end-of-life at an additional \$229,142/structure. In addition, there would be ongoing O&M costs for the remainder of the service life of the transmission lines.

### **5.2 Alternative 2 – Structure Remediation**

The second alternative considered by PPL Electric to address the poor health condition of the weathering steel COR-TEN® lattice towers on these lines was to remediate the entire lattice tower line, which would include replacing badly damaged members with galvanized steel members, installing new hardware and spacers, and cleaning pack-out from affected joints. The average estimated cost of remediation is approximately \$200,943/structure. This alternative was rejected by PPL Electric due to substantial uncertainties regarding its immediate and long-term effectiveness to address the COR-TEN® issue.<sup>14</sup> Although remediation could extend the life of the structures, it would, at a minimum, require re-evaluation and possible subsequent remediation every 10 years following the initial remediation. Moreover, the health and safety risks associated with the assets' advanced age and degree of deterioration are so great that remediation would fail to adequately address their poor health conditions.

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<sup>14</sup> The contractors that provided the cost estimate have never performed a full weathering-steel COR-TEN® lattice tower remediation before. And, moreover, it is PPL Electric's understanding that complete remediation of COR-TEN® lattice towers has never been undertaken by another electric utility. Given the lack of industry experience with remediation, PPL Electric cannot adequately benchmark the efficacy and costs of this alternative. Rebuilding the subject transmission lines, as proposed by the Project, would avoid these potential unknown risks and costs.

Subsequent remediation work would be treated as an O&M expense. However, after 30 years, the structures will have to be replaced with new structures. Further, remediation would not address all underlying issues, ultimately requiring additional, duplicative projects.

For the reasons stated above, it is not reasonable or prudent to pursue Alternative 2. Remediation would fail to address the underlying COR-TEN® asset health conditions on a long-term basis and is a less cost-efficient option.

### **5.3 Alternative 3 – Full Rebuild**

The third alternative considered by PPL Electric is to fully rebuild the existing Saegers-ElimSPORT 230 kV Transmission Lines. Replacing the existing lattice towers with monopoles will improve performance by increasing clearances and improving lightning performance. The estimated rebuild cost is approximately \$677,584/structure.

Although the full rebuild cost per structure is higher than the replacement and remediation options, the revenue requirements over both a 45 and 75-year period<sup>15</sup> are lower (as shown in Table 1-3) due to lower O&M expense and fully replacing the affected structures (as opposed to attempting to add more useful life being added to those structures via remediation), which makes the rebuild a more cost-effective solution. Rebuilds are also less risky than remediation due to factors such as lack of remediation experience, lack of evidence for long-term remediation effectiveness, and risk of returning pack-out rust. The structure replacement option would continue to have ongoing O&M expense with the additional need to return in 2026 to reconductor the line for an additional \$229,142/structure. When compared to the remediation or replacement options, the full rebuild option has advantages in both cost-effectiveness and lower risk, making full rebuild the best long-term solution.

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<sup>15</sup> The \$33.2 Million is the total estimated upfront cost of the Project, including design and construction. To evaluate total cost-of-service, the calculation must factor in all lifecycle costs associated with that asset over the analysis window (i.e., 45 years). The Project lifecycle costs include 1) annual depreciation expense over the 45-year window, 2) annual Return on Capital over the 45-year window, and 3) O&M expense for minor repairs at year 45. Those costs will make up the total revenue requirement that is entered annually on the FERC Form 1 formula rate.

**TABLE 1-3: Cost of Service of Evaluated Options**

Project Scope	45 Year Cost of Service (\$M)	75 Year Cost of Service (\$M)
Replace Structures on Saegers-ElimSPORT 230 kV Transmission Lines	\$114.4	\$137.2
Remediate Structures on Saegers-ElimSPORT 230 kV Transmission Lines	\$110.0	\$218.3
Full Rebuild of Saegers-ElimSPORT 230 kV Transmission Lines	\$100.4	\$122.0

**6.0 PROPOSED SOLUTION**

To resolve COR-TEN® lattice tower health condition, PPL Electric proposes to rebuild the existing Saegers-ElimSPORT 230 kV Transmission Lines. All the COR-TEN® lattice structures as well as the conductors at the 49 locations will be replaced.

The proposed Project will improve overall reliability, safety and system resiliency by resolving the asset health needs associated with COR-TEN® lattice tower replacement. The transmission line rebuild solution was deemed to be the most cost-effective solution to immediately address these needs on a long-term.

Importantly, the Proposed Solution also avoids excess costs and uncertainties surrounding the remediation solution contemplated in Alternative 2. As noted above, if PPL Electric were to remediate the existing COR-TEN® lattice towers, further routine inspections would be required to identify any new pack-out rust growth requiring additional corrective action. The remediation effort could provide a short-term extension of life, but ultimately these towers will still need to be replaced to permanently address the issue of pack-out rust since structural integrity of the COR-TEN® steel will become too compromised to remediate. In this regard, Alternative 2 does not

represent an alternative that effectively addresses the structural issues associated with the COR-TEN® lattice towers. Moreover, PPL Electric is unaware of another project that has undergone full weathering-steel COR-TEN® lattice tower remediation. As such, the recurring costs of remediation could be even greater than anticipated and are unlikely to successfully mitigate the risk. The Proposed Solution avoids these excess costs and uncertainties, efficiently rebuilds the transmission lines to ensure the continued provision of safe and reliable service and resolves the additional reliability concerns identified herein.

The approximate cost of the entire transmission line rebuild Project is \$33.2 Million.

On a total cost of service basis, the Proposed Solution is approximately 88% of the cost of Alternative 1 (replacing each of the existing structures) on a 45-year basis and 89% of the cost of Alternative 1 on 75-year basis. In addition, on a total cost of service basis, the Proposed Solution is approximately 91% of the cost of Alternative 2 (remediating the existing structures) on a 45-year basis and 56% of the cost of Alternative 2 on 75-year basis.

As discussed in Section 4.2.1, above, the project scope (Supplemental Project Number s2368) to rebuild the Saegers-ElimSPORT 230 kV Transmission Lines was presented to PJM in the October 2020 TEAC meeting,<sup>16</sup> to address the COR-TEN® asset health issues.

A map of the proposed system alignment is provided as Figure 1-2.

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<sup>16</sup> Refer to slides 15 and 16 at <https://www.pjm.com/~media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx>

**Figure 1-1: Existing System Configuration**



**Legend**

- Existing Structure (To Remain)
- Existing Structure (To Be Replaced)
- PPL Electric ROW
- Chapter 93 Designated Use Stream
  - CWF
  - TSF
  - WWF
  - NWI Wetlands
  - Natural Areas (Core Habitat)
- Existing Transmission Lines
  - 69 kV
  - 230 kV

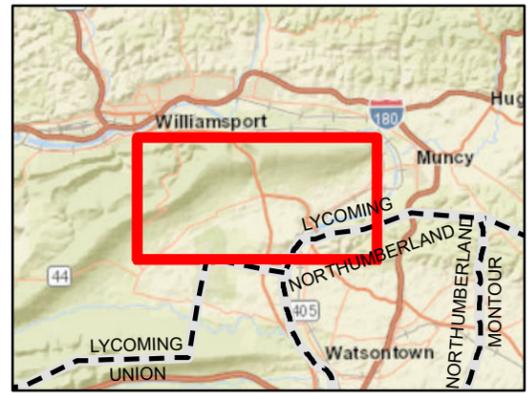
**Notes:**

- Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
- Existing Transmission Lines provided by PPL Electric in April 2019.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NWI Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

0 1,750 3,500 7,000  
 Feet  
 1 inch = 3,500 feet



**AECOM**

**FIGURE 1-1**  
**Existing System Configuration**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania

PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elim-Saeg	Date: 5/9/2022

## **Figure 1-2: Proposed System Configuration**



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

- Proposed Structure
- Existing Structure (To Remain)
- PPL Electric ROW
- Chapter 93 Designated Use Stream
  - CWF
  - TSF
  - WWF
- ▨ NWI Wetlands
- ▨ Natural Areas (Core Habitat)

**Existing Transmission Lines**

- 69 kV
- 230 kV

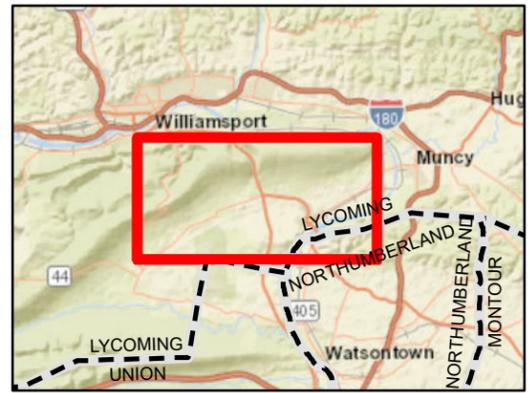
**Notes:**

- Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
- Existing Transmission Lines provided by PPL Electric in April 2019.
- Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
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 NWI Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

0 1,750 3,500 7,000  
 Feet  
 1 inch = 3,500 feet



**AECOM**

**FIGURE 1-2**  
**Proposed System Configuration**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania

PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elim-Saeg	Date: 7/18/2022

# ATTACHMENT 2

# SAEGERS-ELIMSPORT 230 kV COR-TEN® REBUILD PROJECT

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## 1.0 INTRODUCTION

As explained in **Attachment 1**, PPL Electric Utilities (“PPL Electric”) is requesting Pennsylvania Public Utility Commission (“PUC” or “the Commission”) approval to rebuild a section of the existing double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines that extends from the ElimSPORT 230 kV Substation (“ElimSPORT Substation”) to the Clinton 230 kV Substation (“Clinton Substation”) and the Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines (collectively “Saegers-ElimSPORT 230 kV Transmission Lines”) that connect the Clinton Substation to the Saegers 230 kV Substation (“Saegers Substation”), which are all located in Lycoming County, Pennsylvania (“Project”).

The proposed transmission line system will be designed according to, and generally exceed, all National Electrical Safety Code (“NESC”) standards. Design specifications and safety rules adhered to by PPL Electric are included as **Attachment 4**.

## 2.0 DESCRIPTION OF THE EXISTING AND PROPOSED LINES AND STRUCTURES

The connection between the ElimSPORT Substation and Clinton Substation involves a 7.0-mile-long section of the double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines. The connection between the Clinton Substation and Tower 24971-N-37875 near the Saegers Substation involves a 1.1-mile section of the double-circuit Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines. The existing Saegers-ElimSPORT 230 kV Transmission Lines contain six 1590 kcmil<sup>1</sup>, 45/7 stranding, “Lapwing” ACSR<sup>2</sup> conductor wires and two optical ground wires (“OPGW”) from the ElimSPORT Substation to Tower 24971-N-37875. These conductor and ground wires are supported by a series of transmission line structures that include 49 COR-TEN® double-circuit steel lattice tower structures.

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<sup>1</sup> A kcmil is a thousand circular mils. A circular mil is the cross-sectional area of a wire one mil in diameter, where 1 kcmil = 0.5067 mm<sup>2</sup>.

<sup>2</sup> ACSR stands for aluminum conductor steel reinforced

Due to the corrosion and development of pack rust<sup>3</sup> on these COR-TEN® lattice tower structures, PPL Electric proposes to replace them with double-circuit steel monopole structures. The COR-TEN® lattice tower structures to be replaced extend consecutively between existing Tower 20938-N-36658 (Structure 148) located near the ElimSPORT Substation and Tower 24971-N-37875 (Structure 100) located approximately 1.1 miles north of the Saegers Substation. Two monopole structures used to direct the wires into the ElimSPORT Substation (Structures 20888-N-36613 and 20919-N-36639) and a two-pole structure used to turn the wires into the Clinton Substation (Structures 24458-N-37687 and 24458-N-37683) will not be replaced but will be upgraded with new ground wires. A detailed map of the Project alignment is provided as **Figure 3-1 in Attachment 3**.

The existing COR-TEN® lattice tower structures range in height from between approximately 115 and 155 feet with an average structure height of approximately 127 feet. The proposed monopole structures for the Saegers-ElimSPORT 230 kV Transmission Lines will range in height from between approximately 120 and 148 feet with an average structure height of approximately 128 feet. **Table 2-1** provides a summary of the number and heights of the existing and proposed structures.

**Table 2-1: Existing and New Transmission Line Structures**

Transmission Line	No. of Existing Structures	Existing Structure Height Range (feet)	Proposed No. of New Structures	Proposed Structure Height Range (feet)	Applicable Framing/ Specifications
SAEGERS-ELIMSPORT 230 kV	49	115-155	49	120-148	7-009-061 7-009-062 7-009-064
<b>Total</b>	<b>49</b>		<b>49</b>		

**Figures 2-1 through 2-3** depict typical structure types that will be used for the Saegers-ElimSPORT 230 kV Transmission Lines, which include the following:

- Install approximately 35 new double-circuit long span suspension structures (**Figure 2-1**).
- Install approximately 2 new double-circuit long span angle suspension structures (**Figure 2-2**).
- Install approximately 12 new double-circuit long span angle tension structures (**Figure 2-3**).

<sup>3</sup> “Pack-out rust” or “pack rust” is a form a localized corrosion typical of steel components that develop a crevice into an open atmospheric environment, which results in rust packing between conjoined steel components. As described in Attachment 1, pack-out rust accelerates the deterioration of asset health and can result in shearing off bolts, loss of structural integrity, members disconnecting from lattice towers, and tower failure.

The proposed monopole structures for the Saegers-ElimSPORT 230 kV Transmission Lines will be constructed in generally the same location as the existing COR-TEN® lattice towers. The transmission lines cannot be fully deenergized during the construction process, thereby requiring the new monopoles to be offset typically 20 feet ahead or behind and horizontally offset 10 feet from the COR-TEN® structure locations as a safety precaution. PPL Electric has designed the proposed transmission line system so that it fits entirely within the existing right-of-way.

The proposed Saegers-ElimSPORT 230 kV Transmission Lines will consist of six 1590 kcmil, 54/19 stranding, “Falcon” ACSS<sup>4</sup> conductors. The two existing OPGW will be removed and be replaced with 0.791-inch-diameter 144 fiber OPGW. The minimum conductor-to-ground clearance will be 25.5 feet which occurs at the emergency maximum thermal conductor temperature of 250°C (482°F). The design minimum conductor clearances and conductor thermal ratings for the reconstructed lines are noted in **Tables 2-2 and 2-3**.

**Table 2-2: Design for Minimum Conductor Clearance for 1590 kcmil 54/19 Stranding ACSS**

Condition	Transmission Double-Circuit Design Clearance-to-Ground
PPL Heavy Ice (1” ice, 32°F)	25.5’
Max Operating Temperature (250°C / 482°F)	25.5’
PPL Blowout (15psf, 60°F)	25.5’

**Table 2-3: Conductor Thermal Rating 1590 kcmil 54/19 Stranding Falcon ACSS – 200°C Normal Maximum Conductor Temperature (250°C Emergency)**

Condition	Ambient Temperature (°C)	Wind Speed (Ft./sec)	Ampacity (Amps)
Summer Normal	35	0	2344
Winter Normal	10	0	2506
Summer Emergency	35	2.53	3074
Winter Emergency	10	2.53	3201

<sup>4</sup> ACSS stands for aluminum conductor steel supported

Figure 2-1: Typical 230 kV Long Span Double-Circuit Steel Pole Structure

	<b>7-009-061</b> 230kV Long Span Double Circuit Steel Pole 0° to 1° Suspension Structure	Revision: 0 Effective Date: 3/18/2016 Sheet 1 of 1

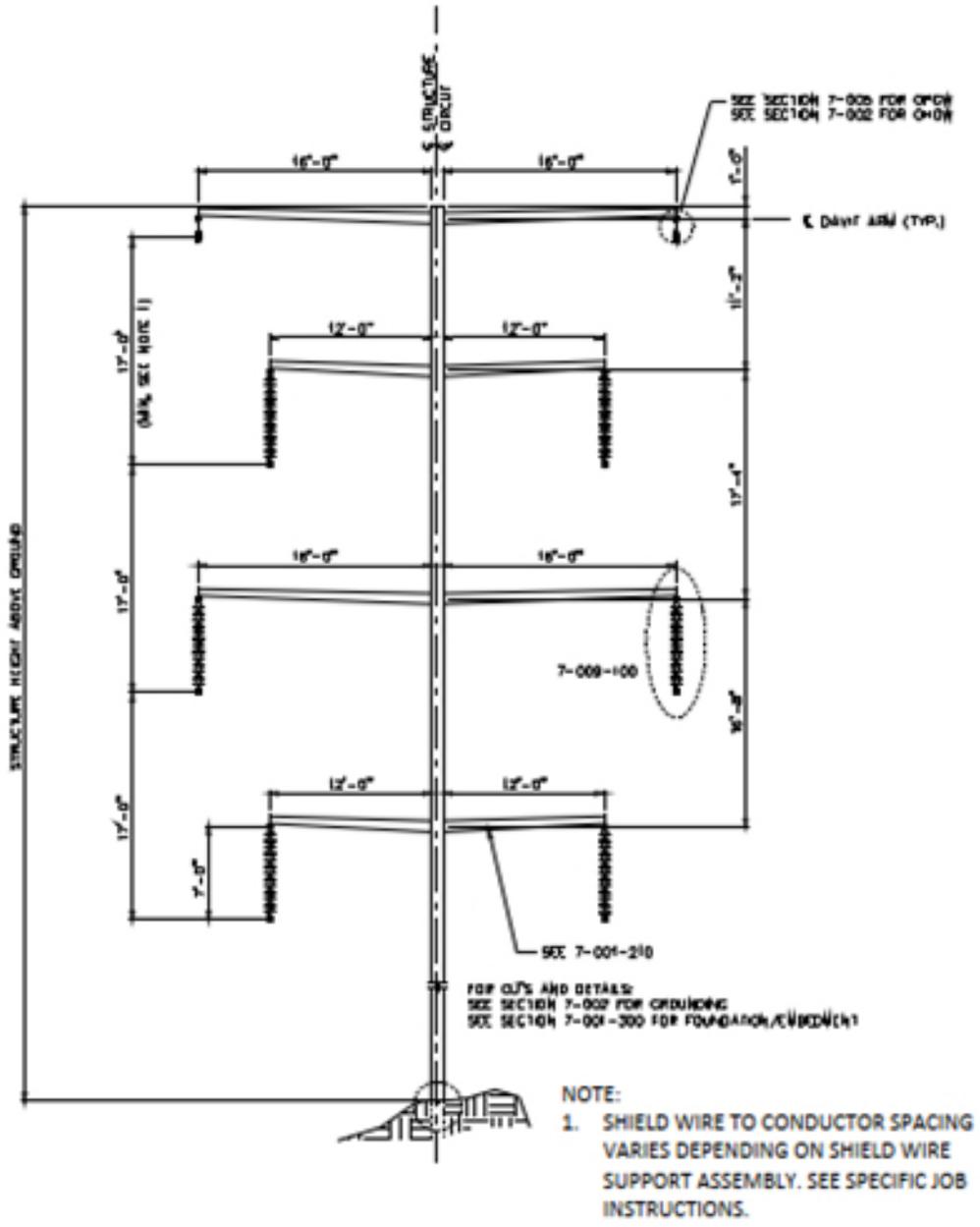
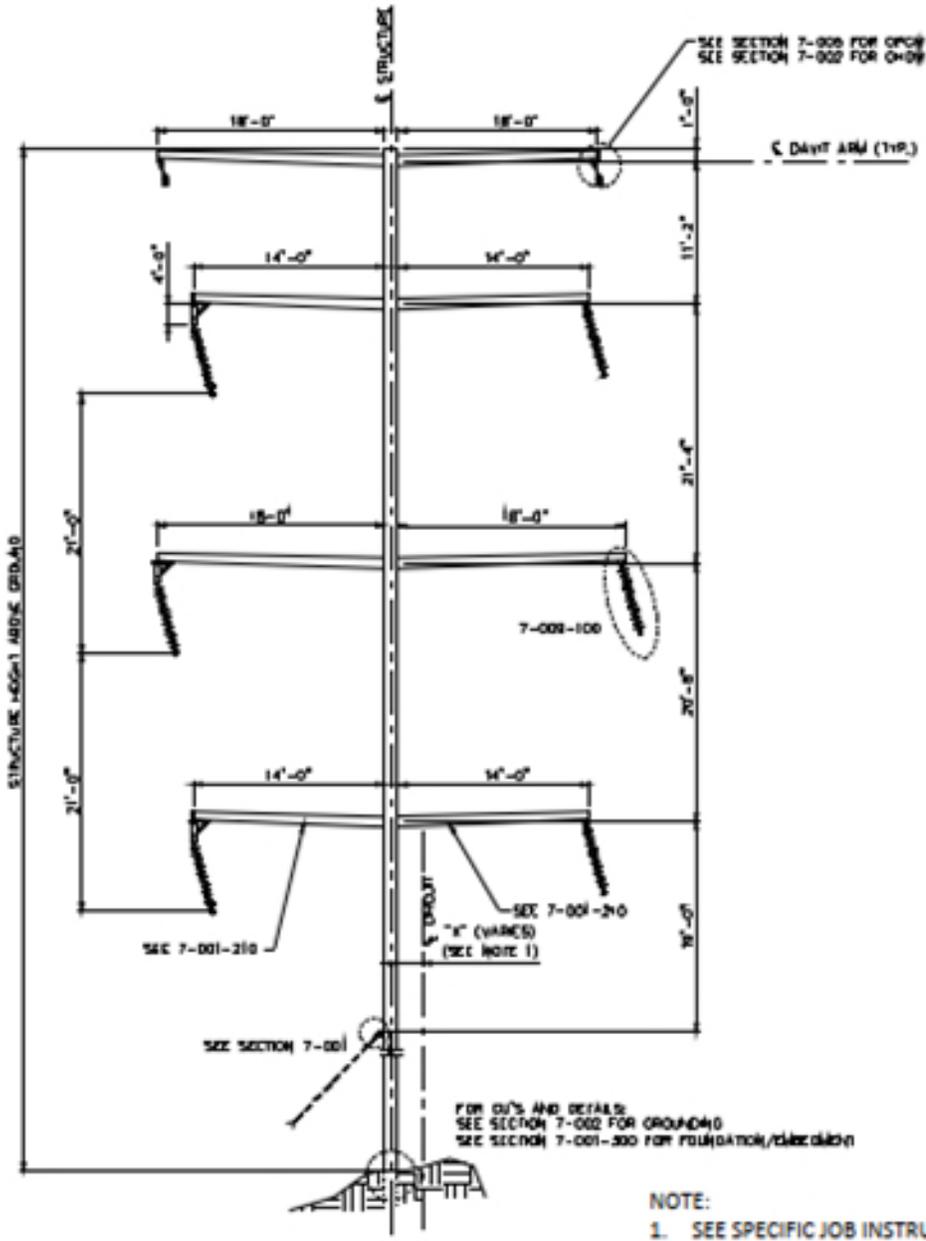


Figure 2-2: Typical 230 kV Long Span Double-Circuit Steel Pole Angle Suspension Structure

 PPL Electric Utilities	<b>7-009-062</b> <b>230kV Long Span Double Circuit Steel Pole</b> <b>1° to 10° Angle Suspension Structure</b>	Revision: 0 Effective Date: 3/18/2016 Sheet 1 of 1
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# ATTACHMENT 3

# SAEGERS-ELIMSPORT 230 kV COR-TEN® REBUILD PROJECT

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## **1.0 INTRODUCTION**

PPL Electric Utilities (“PPL Electric”) is requesting Pennsylvania Public Utility Commission (“PUC” or “the Commission”) approval to rebuild a section of the existing double-circuit Saegers-ElimSPORT/Clinton-ElimSPORT 230 kV Transmission Lines that extends from the ElimSPORT 230 kV Substation (“ElimSPORT Substation”) to the Clinton 230 kV Substation (“Clinton Substation”) and the Saegers-ElimSPORT/Saegers-Clinton 230 kV Transmission Lines (collectively “Saegers-ElimSPORT 230 kV Transmission Lines”) that connect the Clinton Substation to the Saegers 230 kV Substation (“Saegers Substation”), which are all located in Lycoming County, Pennsylvania (“Project”).

The rebuilt double-circuit Saegers-ElimSPORT 230 kV Transmission Lines will be on the same structure alignment and in the same right-of-way (“ROW”) as the existing transmission lines. The existing ROW varies between 150 and 200 feet wide with the wider area in sections where another PPL Electric-owned line parallels the Saegers-ElimSPORT 230 kV Transmission Lines. The Project will require the replacement of 49 existing structures that will be constructed entirely within the existing ROW, on PPL Electric fee-owned property, or on PPL Electric’s ElimSPORT Substation property. A network of existing access roads or temporary roads will be utilized during construction of the rebuilt transmission lines. Detailed maps of the proposed rebuilt double-circuit Saegers-ElimSPORT 230 kV Transmission Lines and associated structures are provided in **Figure 3-1**.

From the turn structure (Tower 24971-N-37875) near the Saegers Substation, the Project travels in a westerly direction along the base of a forested mountain side into the ElimSPORT Substation as shown in **Figure 3-1**. The ROW for the Project is further described below:

- From the ElimSPORT Substation, the Project extends northeast approximately 0.2 mile (980 feet) to Structure 148 using two existing monopoles (Structures 20888-N-36613 and 20919-N-36639) that will be upgraded with new conductor and optical ground wires (Sheet 1, **Figure 3-1**). These structures are located entirely on PPL Electric’s ElimSPORT Substation property.
- From Structure 148 (Tower 20938-N-36658), the Project extends to northeast through forested areas along the southern base of North White Deer Ridge for 2.0 miles (10,780 feet) to Structure 136 (Tower 21845-N-37244) (Sheets 1 to 4 Structures 148 to 136 in

**Figure 3-1).** Portions of this section are part of Tiadaghton State Forest. Starting with Structure 148, the thirteen COR-TEN® structures along this segment will be replaced with 10 long span suspension monopole structures (7-009-061) and 3 long span angle tension monopole structures (7-009-064). Structure 148 is located on PPL Electric’s Elimспорт Substation property and the remaining structures are located entirely on ROW maintained by PPL Electric.

- From Structure 136, the Project turns east and continues through the forested area along the base of the ridge for 5.0 miles (26,260 feet) to Structure 106 (Tower 24428-N-37684) (Sheets 4 to 10, Structures 135 to 106 in **Figure 3-1**). Approximately halfway along this section, the alignment spans U.S. Route 15, which is sparsely bordered by a mix of commercial and residential development. Starting with Structure 135, the thirty COR-TEN® structures along this segment will be replaced with 22 long span suspension monopole structures (7-009-061), 1 long span angle suspension structures (7-009-062), and 7 long span angle tension monopole structures (7-009-064). Structure 106 is located on PPL Electric property and the remaining structures are located entirely on ROW maintained by PPL Electric.
- From Structure 106, the Project extends to the northeast along the southern base of North White Deer Ridge for 1.1 miles (5,900 feet) to Structure 100 (Tower 24971-N-37875) located on the turn in the line heading to Saegers Substation (Sheets 10 and 11, Structures 105 to 100 in **Figure 3-1**). At Structure 100, the 230 kV line turns and extends south for approximately one mile to the Saegers Substation. The six COR-TEN® structures along this segment will be replaced with 3 long span suspension monopole structures (7-009-061), 1 long span angle suspension structures (7-009-062), and 2 long span angle tension monopole structures (7-009-064). All of the structures are located entirely on ROW maintained by PPL Electric.

## **2.0 LAND USE**

PPL Electric evaluated the existing land uses on the PPL Electric owned properties, within the existing ROW, and within 0.25 mile (1,320 feet) of the ROW (“Project Area”). This broader Project Area was reviewed to provide a sense of the landscape in which the Project is located. Based on review of the 2021 National Land Cover Data (“NLCD”), land use in the Project Area

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is approximately 95% forested with the remaining 5% comprised of mixed residential and commercial areas that are crossed near the intersection with U.S. Route 15.

No nearby railroads, communication towers, or pipelines will be affected by the proposed Project. The Project crosses other PPL Electric electrical utility ROWs between the ElimSPORT Substation and Clinton Substation. The closest active airports relative to the Project Area are the Williamsport Regional Airport, which is approximately 3.5 miles to the north, and the Jersey Shore Airport, located approximately 16 miles to the west. PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are existing electrical facilities. However, PPL Electric will comply with any applicable requirements of the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

### *Conserved Lands*

The proposed Project will not affect any national parks, state parks, local parks, recreational areas, or natural landmarks. None of these features are located within the Project Area. In the western portion of the Project, the Saegers-ElimSPORT 230 kV Transmission Lines cross an approximate 0.6-mile section of Tiadaghton State Forest. This section extends along the southern base of North White Deer Ridge near the ElimSPORT Substation property. The next closest state conserved property is State Game Lands #252, which is located 1.35 miles southeast of the ElimSPORT Substation. The Project crosses a property twice near the Clinton Substation that is conserved through the Northcentral Pennsylvania Conservancy.

PPL Electric will coordinate with the Pennsylvania Department of Conservation and Natural Resources' Bureau of Forestry regarding the work proposed on state forest lands. The conservation easement with the Northcentral Pennsylvania Conservancy was established in 1994 after the development of the existing transmission line. Existing access roads will be used in these areas and limited tree clearing along the edge of the ROW is anticipated. Neither of these conserved properties will be affected by the Project.

### **3.0 CULTURAL RESOURCES**

An online review of the Project Area and surrounding landscape was conducted through the Pennsylvania Historical and Museum Commission (“PHMC”) State Historic and Archaeological Resource Exchange site. The closest State Historic Preservation Office (“SHPO”) eligible property is Eagle Grange Number One Hall, which is located on U.S. Route 15 approximately 1.5 miles south of the Project Area.

PPL Electric is in the initial stage of coordination with the PHMC for the modifications being made to the transmission lines. This coordination will be required to receive permits to construct the Project and will be conducted in the near future. PPL Electric does not anticipate any impacts to SHPO listed or eligible structures or districts. PPL Electric will perform any reviews and field survey/sampling work required by the PHMC to avoid, minimize, and mitigate impacts to archaeological or historic architectural resources that may be located within the Project Area.

### **4.0 NATURAL FEATURES**

#### *Unique Natural Features*

No unique geological, scenic, or natural areas are located within the Project Area, according to the Pennsylvania Department of Conservation and Natural Resources (“PDCNR”).

#### *Soils*

The Project parallels the southern base of North White Deer Ridge with topography ranges from approximately 800 feet above sea level (“abs”) along the western portion of the transmission line alignment to approximately 640 feet abs at a stream crossing near U.S. Route 15 and the eastern edge of the Project Area. The soils present within the Project Area consist of very stony to channery loams, silt loams, and shaly silt loams found on moderate to steeply sloped ridge landforms.

Erosion and Sedimentation (“E&S”) control plans will be developed and implemented for the Project to minimize the displacement of soils. These plans will require prior approval from the

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local county conservation districts. National Pollutant Discharge Elimination System (“NPDES”) permits will also be required from the Pennsylvania Department of Environmental Protection (“PADEP”) as needed. During construction, PPL Electric will adhere to all conditions specified in the NPDES permit. Impacts to local soil resources are anticipated to be minimal.

### *Waterways*

The existing transmission lines span approximately twelve National Hydrography Dataset waterways that will remain in place after the Project construction activities have occurred. The waterways crossed by the Project are tributaries to Spring Creek and Black Hole Creek, which flow generally south to the West Branch Susquehanna River, as well as several unnamed tributaries that flow directly to the West Branch Susquehanna River. Spring Creek is located in the western portion of the Project and is in the Spring Creek Watershed (Hydrologic Unit Code (“HUC”) 020502060901). Black Hole Creek and the unnamed tributaries to the West Branch Susquehanna River are located in the eastern portion of the Project and are both in the Delaware Run-Lower West Branch Susquehanna River Watershed (HUC 020502061202). Both watersheds are sub-watersheds in the Susquehanna River Basin.

Spring Creek and Black Hole Creek and their tributaries have a PADEP Chapter 93 Designated Use Stream Classification of Trout Stocking Fishes, Migratory Fishes (“MF”). The unnamed tributaries to the West Branch Susquehanna River have a PADEP Chapter 93 Designated Use Stream Classification of Warm Water Fishes, MF. The Pennsylvania Fish and Boat Commission (“PFBC”) has designated Black Hole Creek as a Natural Reproduction Trout Stream, which may require seasonal restrictions for any work planned in these streams. PPL Electric will adhere to any required seasonal restrictions. No direct impacts to these waterway features are anticipated by the Project activities.

An E&S control plan will be developed to address stormwater control in all watershed areas crossed by the Project. PPL Electric will obtain all approvals and permits necessary for the construction of the Project and will comply with any conditions placed on those permits.

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### ***Wetlands***

Based on review of the U.S. Fish and Wildlife Service’s (“USFWS”) National Wetlands Inventory (“NWI”), the Project crosses twelve Riverine Intermittent Seasonally Flooded (R4SBC) stream habitats. No impacts to these NWI features are anticipated by the proposed Project activities.

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

### ***100-year Floodplains***

The National Flood Hazard Layer for Lycoming County, Pennsylvania was obtained through the Federal Emergency Management Agency (“FEMA”) Flood Map Service Center website and analyzed for 100-year floodplains within the Project Area and surrounding landscape. Based on review of this data, the Project spans one FEMA 100-year floodplain area associated with two tributaries to Black Hole Creek. No impacts to this floodplain area is anticipated by the proposed Project activities.

### ***Vegetation***

Vegetative cover in the Project Area consists almost entirely of forested habitat. Areas of forest clearing associated with commercial and residential development are present based on aerial imagery. The existing ROW areas for the transmission line has previously been cleared of woody vegetation and no extensive tree clearing is anticipated for the Project. If vegetation management is required in this specific location, PPL Electric will apply its “Specifications for Transmission Vegetation Management LA-79827” to minimize potential impacts.

## 5.0 **THREATENED AND ENDANGERED SPECIES**

### *Natural Areas Inventory*

Based on review of the *Natural Areas Inventory of Lycoming County, Pennsylvania*, published by The Nature Conservancy in 1998, the Project is located less than one mile north of the Maple Hill Sinks Natural Area. This area includes state-listed endangered plant species. No impact to this area is anticipated as part of the Project. Natural areas identified in these documents generally focus on sites that provide habitat conditions for threatened and endangered plant or animal species.

### *Threatened and Endangered Species*

A Pennsylvania Natural Diversity Inventory was run for the Project on August 18, 2021 to assess the potential presence of threatened and endangered species and/or special concern species. Specific agencies reviewing the Project included the following:

- Pennsylvania Game Commission,
- PFBC,
- PDCNR, and
- USFWS.

No agencies reported any known impacts to threatened and endangered species and/or special concern species and resources within the Project Area. PPL Electric will continue to consult with the jurisdictional agencies regarding potential impacts to protected species, complete all required surveys, obtain all necessary approvals and permits for Project construction, and comply with all conditions placed on those permits.

**Figure 3-1: Aerial Map of the Project (11 pages)**



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- Chapter 93 Designated Use Stream
  - WWF
- Parcel Boundary

**Existing Transmission Lines**

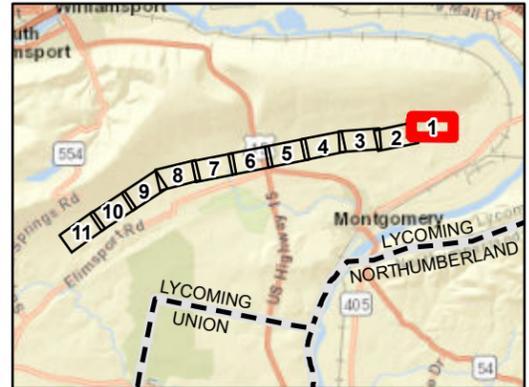
- 69 kV
- 230 kV

**Notes:**

- Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
- Existing Transmission Lines provided by PPL Electric in April 2019.
- Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NW1 Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

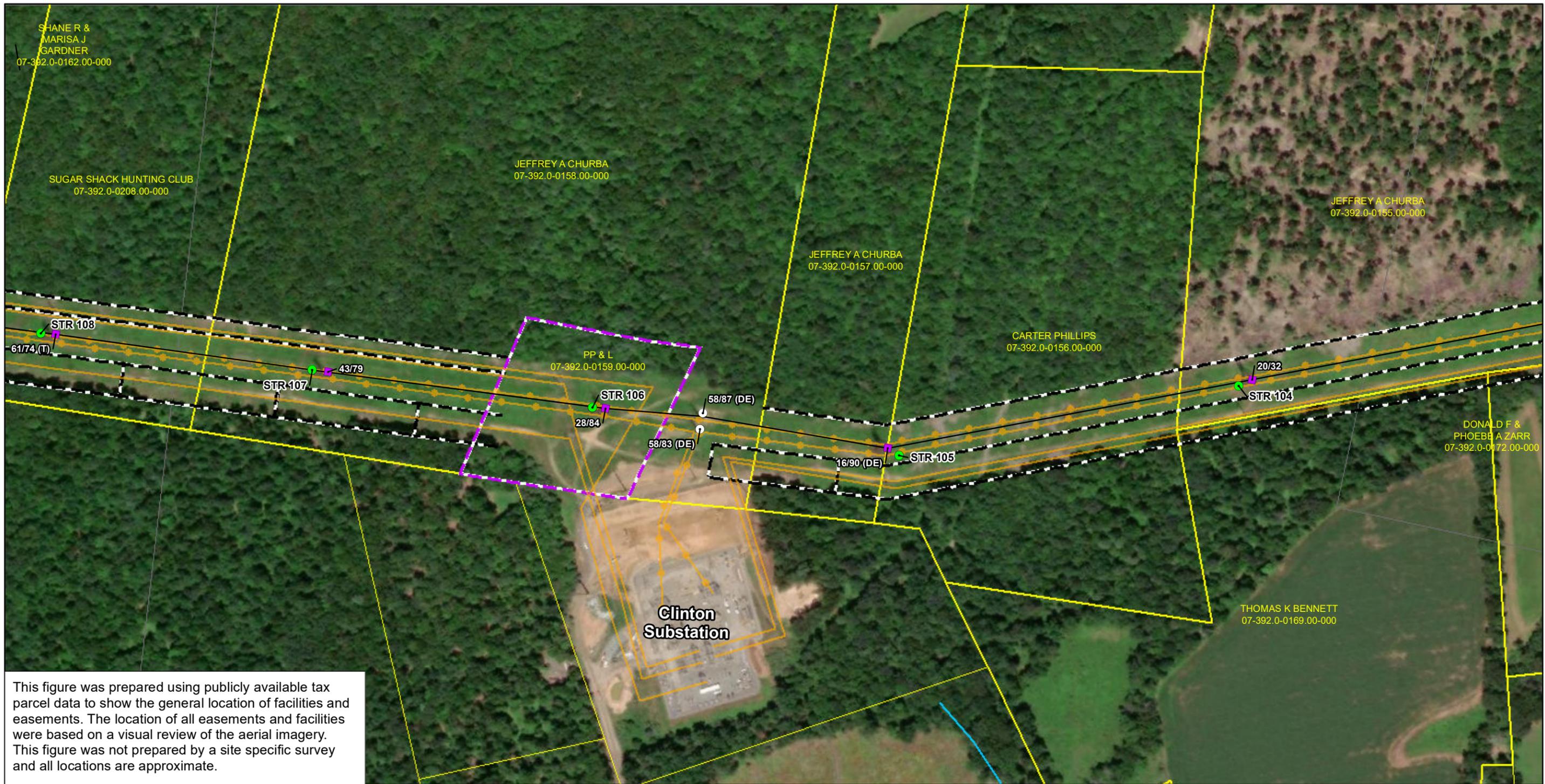


**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 1 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elim-Saeg	Date: 7/18/2022



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

- Proposed Structure
- Existing Structure (To Remain)
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- PPL Electric Property Line
- Chapter 93 Designated Use Stream
- WWF
- Parcel Boundary

**Existing Transmission Lines**

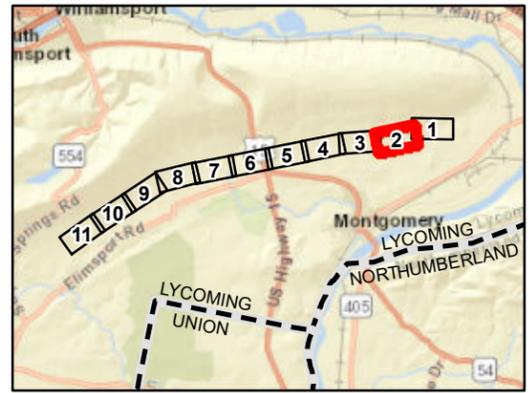
- 69 kV
- 230 kV

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3. Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NW1 Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)



**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 2 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- - - PPL Electric ROW
- Chapter 93 Designated Use Stream
  - WWF
- Parcel Boundary

**Existing Transmission Lines**

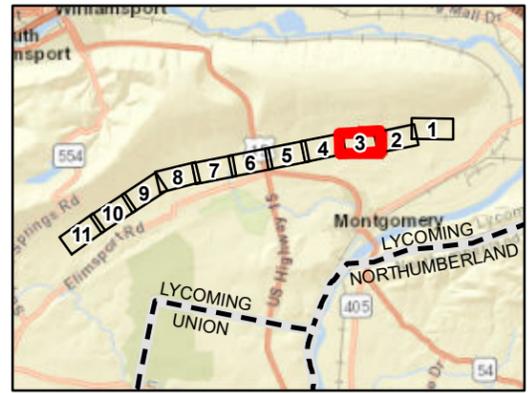
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- 230 kV

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 Pennsylvania North FIPS 3701  
 Projection: Lambert Conformal Conic  
 Linear Unit: US Foot

References:  
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 Natural Areas (PNHP 2020)  
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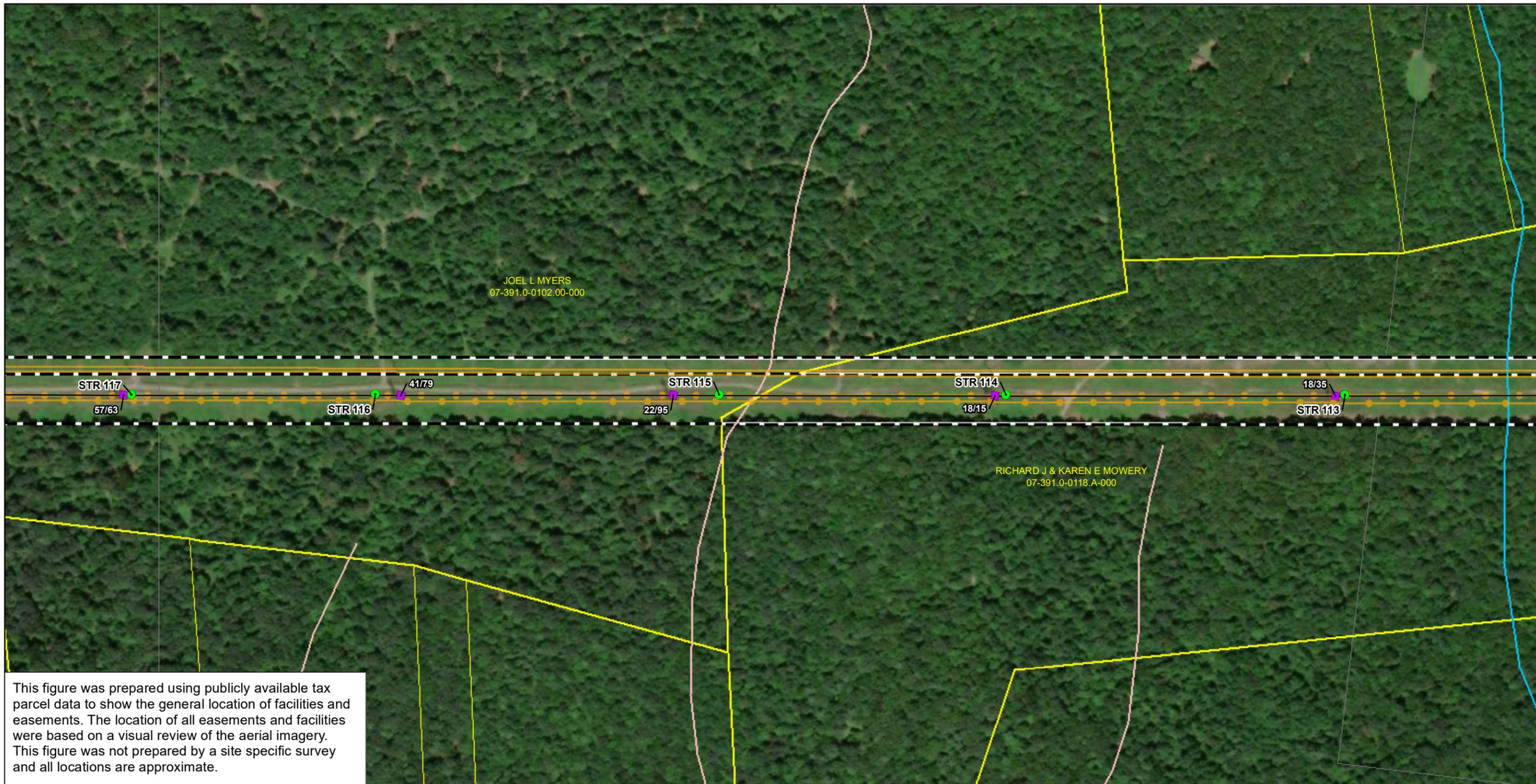


**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elmsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 3 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



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**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- Chapter 93 Designated Use Stream**
- TSF
- WWF
- Parcel Boundary

**Existing Transmission Lines**

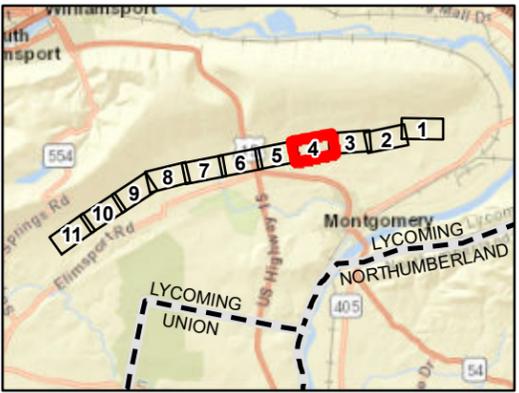
- 69 kV
- 230 kV

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NW1 Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)



**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elmsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 4 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



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**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- Chapter 93 Designated Use Stream**
- TSF
- NWI Wetlands
- Parcel Boundary

**Existing Transmission Lines**

- 69 kV
- 230 kV

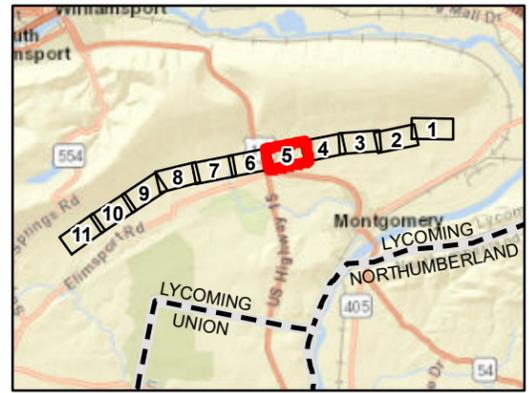
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 Pennsylvania North FIPS 3701  
 Projection: Lambert Conformal Conic  
 Linear Unit: US Foot

References:  
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 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

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 Feet  
 1 inch = 300 feet

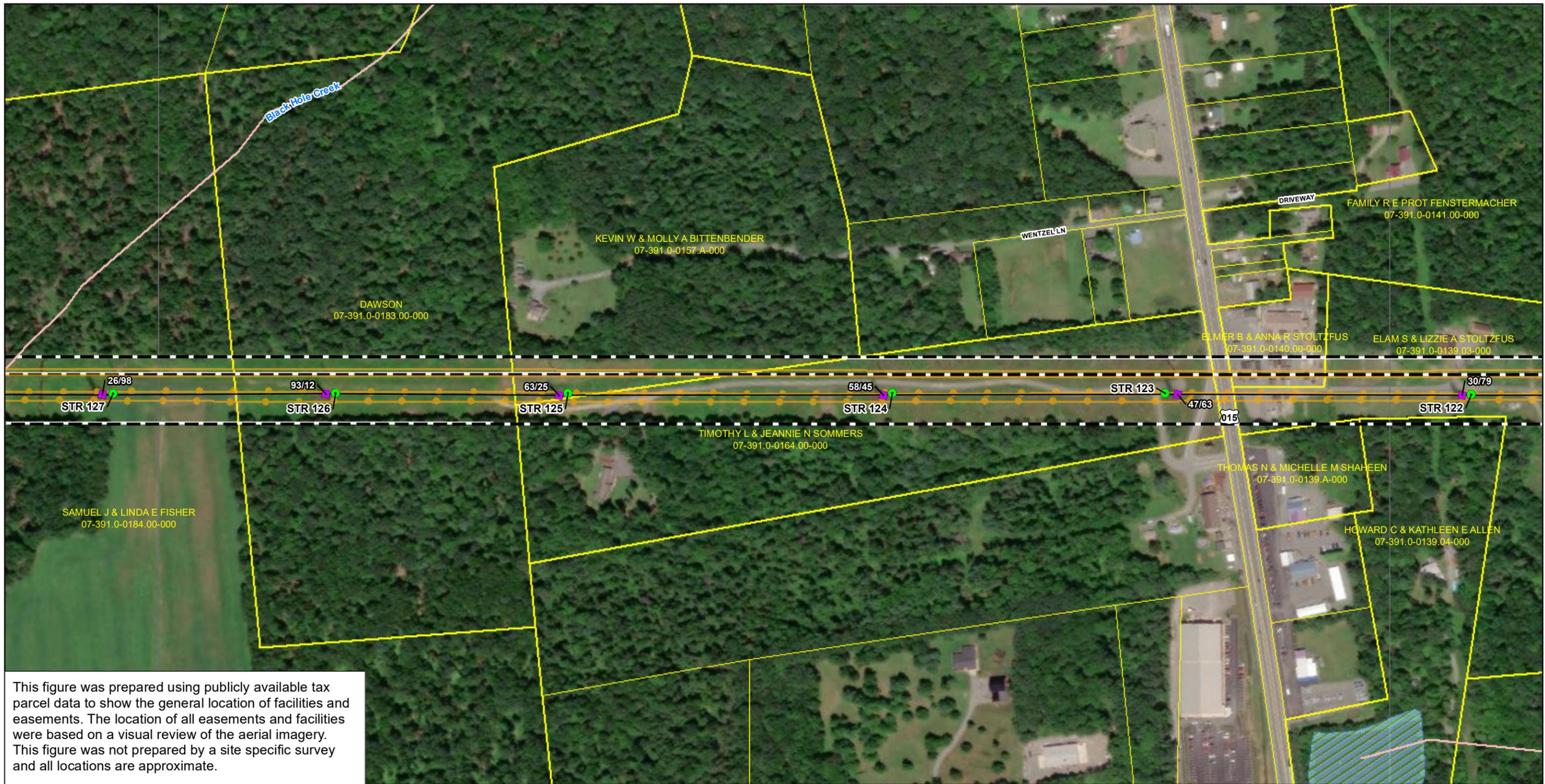


**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 5 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



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**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- Chapter 93 Designated Use Stream
- TSF
- ▨ NWI Wetlands
- ▭ Parcel Boundary

**Existing Transmission Lines**

- 69 kV
- 230 kV

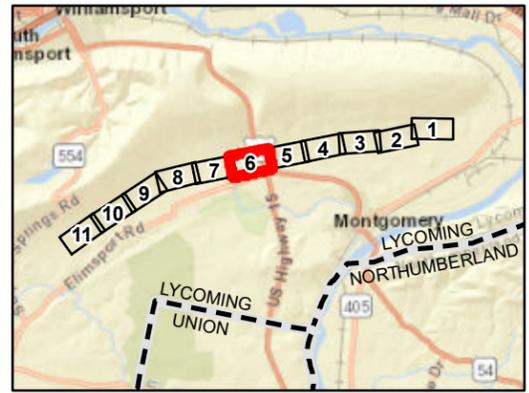
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NAD 1983 State Plane  
 Pennsylvania North FIPS 3701  
 Projection: Lambert Conformal Conic  
 Linear Unit: US Foot

References:  
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 NWI Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

0 150 300 600  
 Feet  
 1 inch = 300 feet



**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elmsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 6 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



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**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- Chapter 93 Designated Use Stream
- TSF
- Parcel Boundary

**Existing Transmission Lines**

- 69 kV
- 230 kV

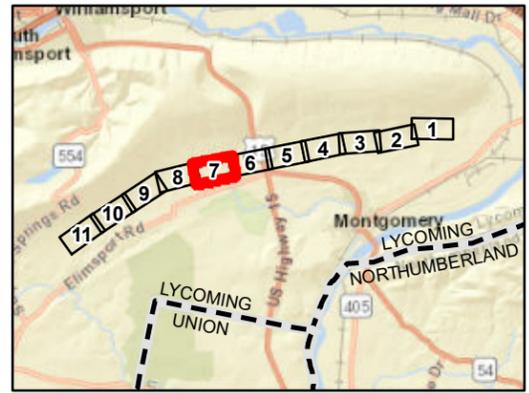
**Notes:**

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- Existing Transmission Lines provided by PPL Electric in April 2019.
- Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
Ch. 93 Designated Use Streams (PADEP 2019)  
NWI Wetlands (2020)  
Natural Areas (PNHP 2020)  
World Imagery Basemap (ESRI)

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1 inch = 300 feet

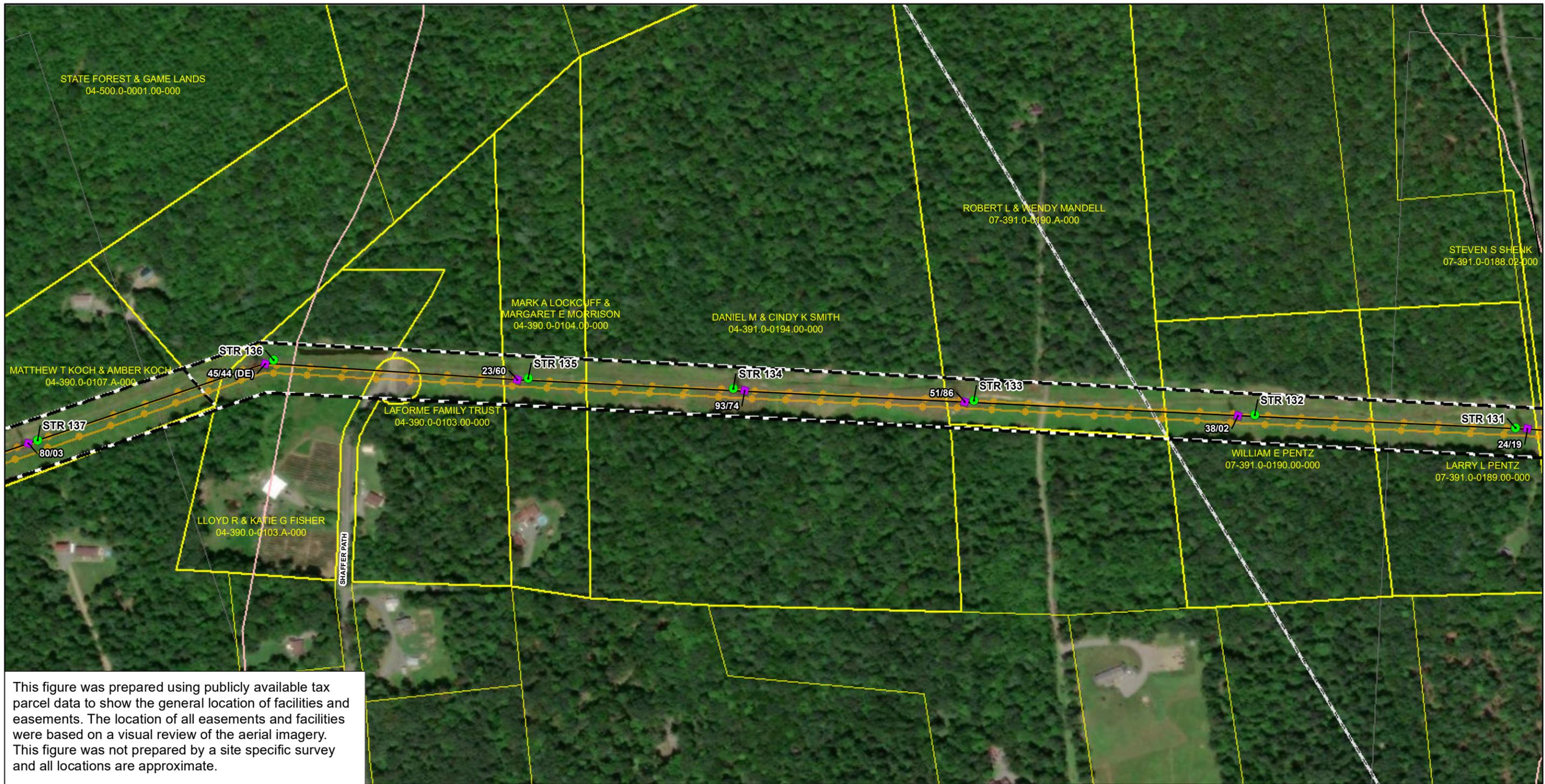


**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
Sheet 7 of 11  
PPL Electric Utilities  
Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



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**Legend**

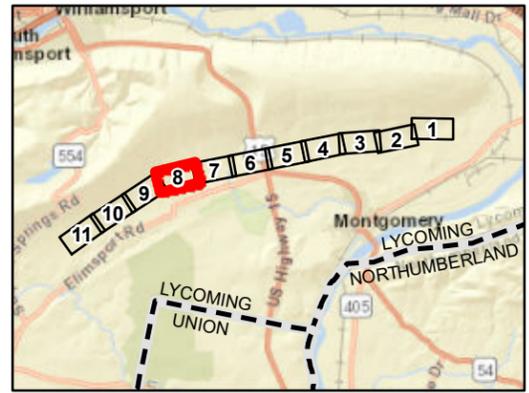
- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- - - PPL Electric ROW
- Existing Transmission Lines 230 kV
- Chapter 93 Designated Use Stream
- TSF
- Parcel Boundary

**Notes:**

- Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
- Existing Transmission Lines provided by PPL Electric in April 2019.
- Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NW1 Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)



**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 8 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

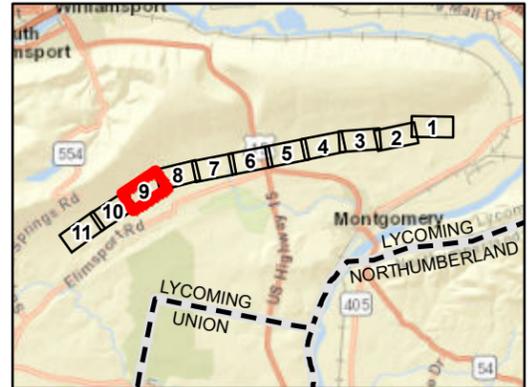
- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- - - PPL Electric ROW
- Chapter 93 Designated Use Stream**
- TSF
- NWI Wetlands
- Parcel Boundary
- Existing Transmission Lines
- 230 kV

**Notes:**

1. Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
2. Existing Transmission Lines provided by PPL Electric in April 2019.
3. Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NWI Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

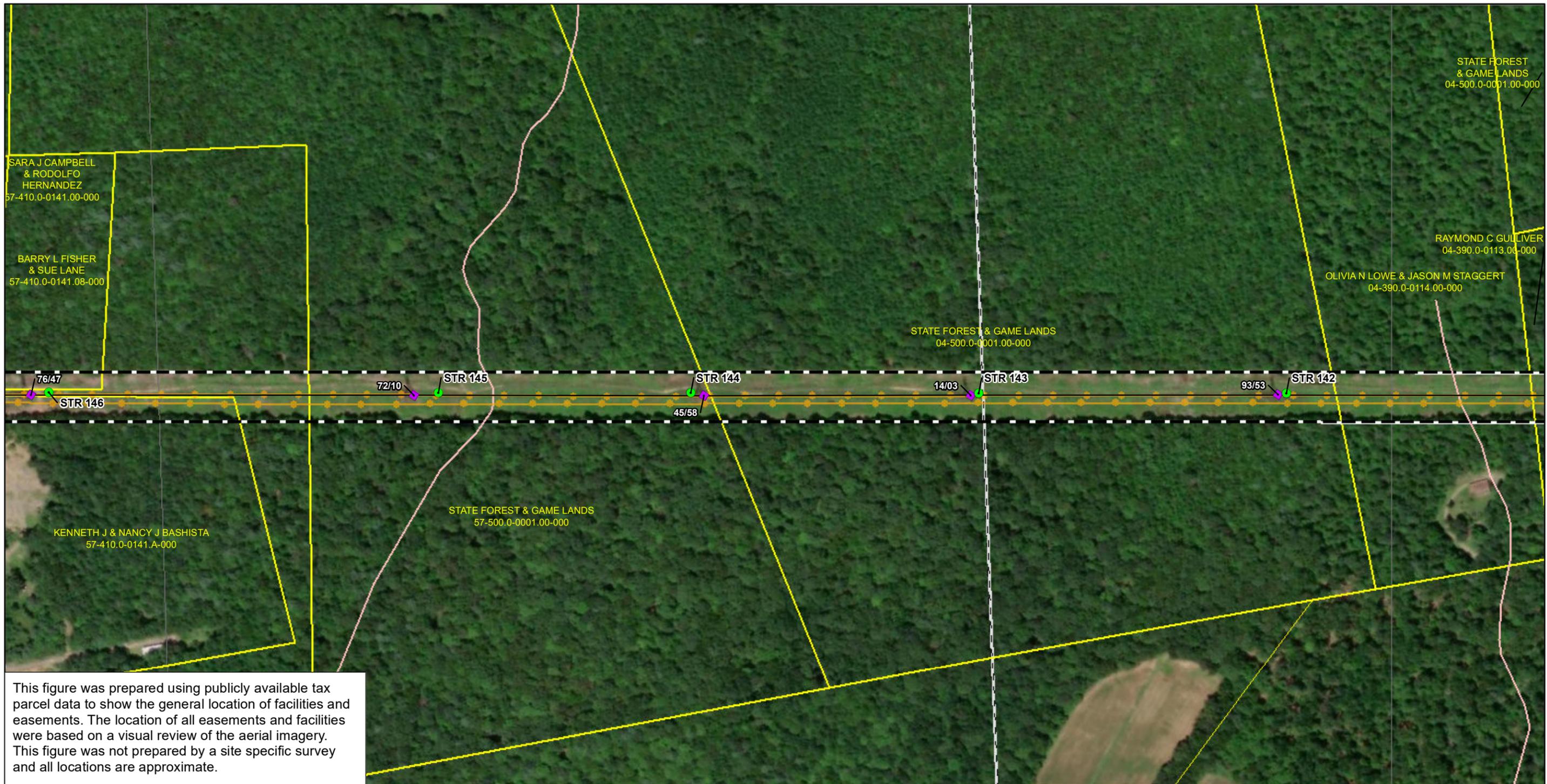


**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elimsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 9 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

- Proposed Structure
- Existing Structure (To Be Replaced)
- Existing Centerline
- - - PPL Electric ROW
- Chapter 93 Designated Use Stream
- TSF
- Parcel Boundary

**Existing Transmission Lines**

- 230 kV

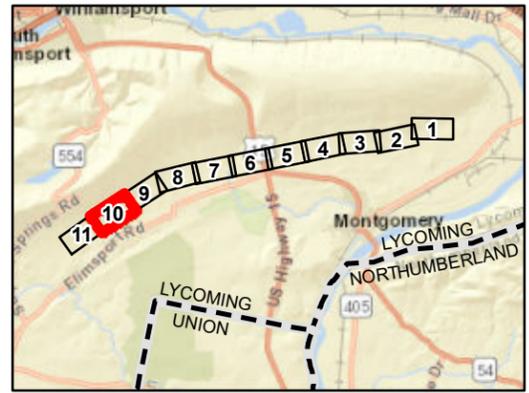
**Notes:**

1. Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
2. Existing Transmission Lines provided by PPL Electric in April 2019.
3. Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NW1 Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

0 150 300 600  
 Feet  
 1 inch = 300 feet

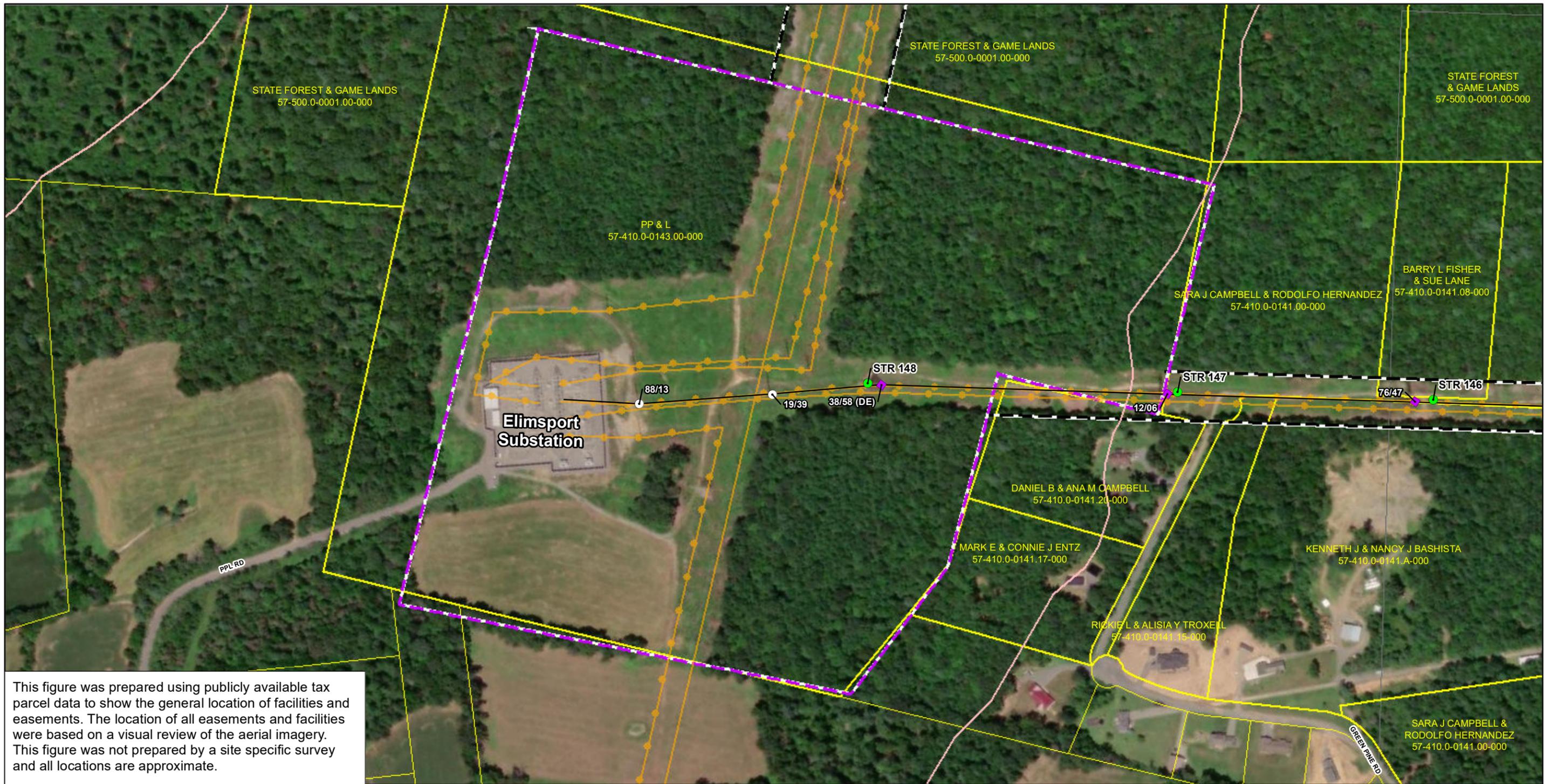


**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elmsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 10 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022



This figure was prepared using publicly available tax parcel data to show the general location of facilities and easements. The location of all easements and facilities were based on a visual review of the aerial imagery. This figure was not prepared by a site specific survey and all locations are approximate.

**Legend**

- Proposed Structure
- Existing Structure (To Remain)
- Existing Structure (To Be Replaced)
- Existing Centerline
- PPL Electric ROW
- PPL Electric Property Line
- Chapter 93 Designated Use Stream
- TSF
- Parcel Boundary

**Existing Transmission Lines**

- 69 kV
- 230 kV

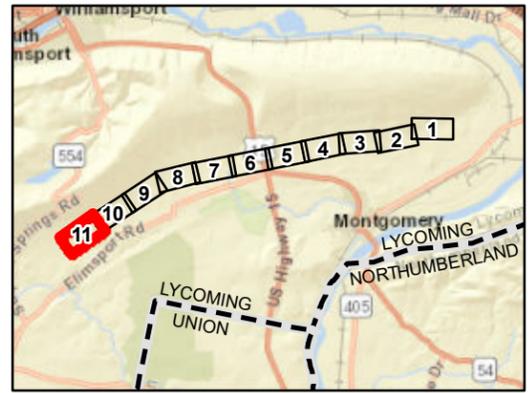
**Notes:**

- Existing structure locations were provided by PPL Electric in January 2022 and existing right-of-way was provided by PPL Electric in July 2021.
- Existing Transmission Lines provided by PPL Electric in April 2019.
- Proposed structure locations were provided by PPL Electric in July 2022.

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

References:  
 Ch. 93 Designated Use Streams (PADEP 2019)  
 NW1 Wetlands (2020)  
 Natural Areas (PNHP 2020)  
 World Imagery Basemap (ESRI)

0 150 300 600  
 Feet  
 1 inch = 300 feet



**AECOM**

**FIGURE 3-1**  
**Aerial Map of the Project**  
**Saegers - Elmsport 230 kV**  
**COR-TEN Rebuild Project**

Lycoming County, Pennsylvania  
 Sheet 11 of 11  
 PPL Electric Utilities  
 Allentown, Pennsylvania

Prepared By: BSF	Checked By: DJY/BAB
Job: Elm-Saeg	Date: 7/18/2022

# ATTACHMENT 4

# SAEGERS-ELIMSPORT 230 kV COR-TEN® REBUILD PROJECT

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## **1.0 DESIGN CONSIDERATIONS**

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

The NESC includes loading requirements and clearances for the design, construction, and operation of power lines. The “loads” on conductors and supporting structures are the mechanical forces that develop from the weight of the conductors, the weight of ice on the conductors, plus wind pressure on the conductors and supporting structures. Loading requirements 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 are designed to maintain public safety.

The NESC specifies strength and loading rules based on three different “grades of construction” for conductors and supporting structures:

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

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

PPL Electric’s rigorous design standards are further incorporated into the parameters utilized to account for ice and wind loadings on the wires and structure. Structure loading and line designs must accommodate a variety of operating conditions as different ice and wind combinations can impact

the conductor sags and tensions of the line. PPL Electric’s transmission lines are designed to exceed NESC requirements by accounting for additional load cases due to various ice and wind loading conditions beyond what is required by NESC. This means that PPL Electric lines are designed to operate safely and reliably during extreme inclement weather. In addition, PPL Electric design standards include a clearance to ground buffer in excess of NESC required clearances to account for construction and design tolerances and the filling or grading of land within the right-of-way by property owners. This buffer also significantly reduces the risk of a property owner inadvertently contacting a transmission line. This has occurred on PPL Electric’s system in the past and higher clearances minimize the likelihood of future occurrences.

**TABLE 4-1: 69 kV Vertical Clearance to Ground**

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, and other areas subject to truck traffic	19.2 Ft.	22.2 Ft.
Other land traversed by vehicles such as cultivated grazing, forest, orchards, etc.	19.2 Ft.	22.2 Ft.
Spaces and ways subject to pedestrians or restricted traffic only	15.2 Ft.	22.2 Ft.
Track rails of railroads (except electrified railroads using overhead trolley conductors)	27.2 Ft.	30.2 Ft.

**TABLE 4-2: 138 kV Vertical Clearance to Ground**

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, and other areas subject to truck traffic	20.6 Ft.	23.6 Ft.
Other land traversed by vehicles such as cultivated grazing, forest, orchards, etc.	20.6 Ft.	23.6 Ft.
Spaces and ways subject to pedestrians or restricted traffic only	16.6 Ft.	23.6 Ft.
Track rails of railroads (except electrified railroads using overhead trolley conductors)	28.6 Ft.	31.6 Ft.

**TABLE 4-3: 230 kV Vertical Clearance to Ground**

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, and other areas subject to truck traffic	22.5 Ft.	25.5 Ft.
Other land traversed by vehicles such as cultivated grazing, forest, orchards, etc.	22.5 Ft.	25.5 Ft.
Spaces and ways subject to pedestrians or restricted traffic only	18.5 Ft.	25.5 Ft.
Track rails of railroads (except electrified railroads using overhead trolley conductors)	30.5 Ft.	33.5 Ft.

**TABLE 4-4: 500 kV Vertical Clearance to Ground**

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, and other areas subject to truck traffic	28.4 Ft.	31.4 Ft.
Other land traversed by vehicles such as cultivated grazing, forest, orchards, etc.	28.4 Ft.	31.4 Ft.
Spaces and ways subject to pedestrians or restricted traffic only	24.4 Ft.	31.4 Ft.
Track rails of railroads (except electrified railroads using overhead trolley conductors)	36.4 Ft.	39.4 Ft.

A relay protection system is also used on PPL Electric’s transmission lines to protect public safety, as well as the equipment on the transmission system. The purpose of relay protection is 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 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 regard to both public and employee safety and follows or exceeds all codes and requirements. The following are a few examples of PPL Electric’s safety rules that demonstrate its dedication to employee and contractor safety:

- 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 has been received.
- Various other tags are used for limited operations and informational purposes.
- Employees or contractors will not apply or remove a tag or change the status of tagged equipment unless authorized.

- Temporary safety grounds are used on de-energized facilities for employee lineman safety during maintenance, construction, or reconstruction work. Safety grounds are wires connecting the de-energized facility to an electrical ground. If the facility should be energized, the safety grounds will divert the current directly to ground and reduce the likelihood of personal injury.
- Before applying grounds, a voltage test is performed 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. Although there is no current scientific evidence demonstrating that magnetic fields cause any adverse health effects or pose a health or safety threat to the public, PPL Electric has established a policy to design its new and rebuilt transmission lines to reduce magnetic fields. 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 is considered, provided those modifications can be made at low or no cost and will not interfere with the operation of the line.

The program will be applied to this Project and designed with clearances that are at least three feet higher than NESC standards.

# ATTACHMENT 5

## **SAEGERS-ELIMSPORT 230 kV COR-TEN® REBUILD PROJECT**

### **STATE AGENCIES**

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

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

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

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 Game Commission  
2001 Elmerton Avenue  
Harrisburg, Pennsylvania 17110-9797  
Attn: Peter Sussenbach, Director, Bureau of Wildlife Habitat Management

Pennsylvania Fish and Boat Commission  
450 Robinson Lane  
Bellefonte, Pennsylvania 16823-9620  
Attn: Christopher A. Urban, Chief, Natural Diversity Section

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

Pennsylvania Office of Small Business Advocate  
555 Walnut Street  
1<sup>st</sup> Floor Forum Place  
Harrisburg, Pennsylvania 17101  
Attn: Steven C. Gray, Senior Supervising Assistant Small Business Advocate

**FEDERAL AGENCIES**

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

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

**COUNTY AGENCIES**

Lycoming County Conservation District  
542 County Farm Rd # 202  
Montoursville, PA 17754  
Attn: Matt Long, Conservation District Manager

Lycoming County Planning Commission  
330 Pine St # 300  
Williamsport, PA 17701  
Attn: Jenny Picciano, Lead Planner

**MUNICIPALITIES**

Brady Township  
1986 ElimSPORT Road  
Montgomery, PA 17752  
Attn: Mike Goetz, Township Supervisor

Clinton Township  
2106 Rt. 54 Hwy  
Montgomery, PA 17752  
Attn: Lanny Wertz, Township Supervisor

Washington Township  
15973 South State Route 44 Highway  
Allenwood, PA 17810  
Attn: Devin O'Rourke, Chairman

**LANDOWNERS**

HOWARD C AND KATHLEEN ALLEN 73 ROUTE 54 HIGHWAY MONTGOMERY, PA 17752-9029	KENNETH J AND NANCY J BASHISTA 117 GREEN PINE ROAD MONTGOMERY, PA 17752-8632
THOMAS K BENNETT 921 STATE HOME ROAD MONTGOMERY, PA 17752-8508	KEVIN W AND MOLLY A BITTENBENDER 193 WENTZEL ROAD MONTGOMERY, PA 17752-8822
SARA J CAMPBELL AND RODOLFO HERNANDEZ 24 GREEN PINE ROAD MONTGOMERY, PA 17752-9174	DANIEL B AND ANA M CAMPBELL 240 GREEN PINE ROAD MONTGOMERY, PA 17752
HAROLD J AND CAROLINE CARPENTER 230 CARPENTERS LANE MONTGOMERY, PA 17752-9178	JEFFERY A CHURBA 17937 FLAGLER DRIVE AUSTIN, TX 78738-7639
CRAIG A AND LORRAINE CONFER 319 BROUSE ROAD MONTGOMERY, PA 17752-9187	RONALD L AND LAURA A CROSS 163 TALL DOEROAD MONTGOMERY, PA 17752-8905
DAWSON REVOCABLE LIVING TRUST 130 FORGEDALE ROAD FLEETWOOD, PA 19522-9752	CARL AND DAVID K ESH 21 FUNK STREET STRASBURG, PA 17579-1500
FENSTERMACHER FAMILY R E PROT TRUST 5195 RT 15 HWY MONTGOMERY, PA 17752-9174	LLOYD R AND KATIE G FISHER 425 SHAFFER PATH MONTGOMERY, PA 17752-8939
SAMUEL J AND LINDA E FISHER 1348 ELIMSPORT ROAD MONTGOMERY, PA 17752-8909	MELVIN S AND ADA K FISHER 1078 ELIMSPORT ROAD MONTGOMERY, PA 17752-8906

CHRISTOPHER S AND KATHRYN FISHER 1505 STATE HOME ROAD MONTGOMERY, PA 17752-9166	BARRY L FISHER AND SUE LANE 200 MEADOW BROOK DRIVE MONTGOMERY, PA 17752-8977
SHANE R AND MARISA J GARDNER 9 PENNBROOK DRIVE LINCOLN UNIVERSITY, PA 19352-1227	RAYMOND C GULLIVER 386 WISE ROAD MONTGOMERY, PA 17752-8951
LAVERNE H AND JANICE M GULLIVER 314 WISE ROAD MONTGOMERY, PA 17752-9657	JUSTIN A HARER 3989 ELIMSPORT ROAD MONTGOMERY, PA 17752-8990
CHERYL J HOWELL AND MAVIS A BOSCH 7908 ARMSTRONG ROAD MUNCY, PA 17756-6341	MATTHEW T AND AMBER KOCH 607 SHAFFER PATH MONTGOMERY, PA 17752-8940
JOHN F LAFORME/LAFORME FAMILY TRUST 430 SHAFFER PATH MONTGOMERY, PA 17752-8941	DAVID M AND LEONA J LEHMAN 1177 PACKER STREET SUNBURY, PA 17801-1645
MARK A LOCKCUFF AND MARGERET E MORRISON 384 SHAFFER PATH MONTGOMERY, PA 17752-8942	OLIVIA N LOWE AND JASON M STAGGERT 571 BOWER DRIVE MONTGOMERY, PA 17752-8964
ROBERT L AND WENDY MANDELL 2 TOMPKINS ROAD EAST BRUNSWICK, NJ 08816	TAMI A MAUSTELLER 1303 STATE HOME ROAD MONTGOMERY, PA 17752-9231
FREDERICK F AND KAY S MCCARTHY 2785 8 <sup>TH</sup> STREET DRIVE WATSONTOWN, PA 17777-8700	JANIS L MILLER AND LAVERNE GULLIVER 5354 RT 15 HIGHWAY MONTGOMERY, PA 17752
RAYMOND J MILLER 1267 STATE HOME ROAD MONTGOMERY, PA 17752-9169	MICHAEL J MILLER 1621 CEMETERY HILL ROAD MONTGOMERY, PA 17752-9087

<p>RICHARD J AND KAREN E MOWERY          1487 STATE ROUTE 54          MONTGOMERY, PA 17752-9001</p>	<p>JOEL L MYERS          100 MONTGOMERY STREET          MONTGOMERY, PA 17752-1141</p>
<p>PENNSYLVANIA STATE IND HOME          2123 STATE HOME ROAD          MONTGOMERY, PA 17752-9164</p>	<p>LARRY L PENTZ          327 HEBERLING ROAD          MUNCY, PA 17756-8314</p>
<p>WILLIAM E PENTZ          100 DUELK AVENUE          MONROE, NY 10950-2023</p>	<p>CARTER PHILLIPS          312 SICKLerville ROAD          WILLIAMSTOWN, NJ 08094</p>
<p>THOMAS N AND MICHELLE M SHANEEN          5371 STATE ROUTE 15 HIGHWAY          MONTGOMERY, PA 17752</p>	<p>STEVEN S AND RANDY D SHENK          355 EAST MAIN STREET          LEOLA, PA 17540-1927</p>
<p>ANITA L SHENK          300 TYPONE AVENUE          WILMINGTON, DE 19804-1931</p>	<p>DANIEL M AND CINDY K SMITH          303 SMITH DRIVE          MONTGOMERY, PA 17752-8913</p>
<p>TIMOTHY L AND JEANNIE N SOMMERS          5290 STATE ROUTE 15 HIGHWAY          MONTGOMERY, PA 17752</p>	<p>STATE FOREST AND GAME LANDS          2001 ELMERTON AVENUE          HARRISBURG, PA 17110-9762</p>
<p>ELAM S AND LIZZIE A STOLTZFUS          5297 STATE ROUTE 15 HIGHWAY          MONTGOMERY, PA 17752</p>	<p>ELMER B AND ANNA R STOLTZFUS          1055 ELIMSPORT ROAD          MONTGOMERY, PA 17752-8635</p>
<p>PAUL E AND TARA L STRYKER          100 WISE ROAD          MONTGOMERY, PA 17752-9644</p>	<p>SUGAR SHACK HUNTING CLUB          1705 LOWER MANOR ROAD          WILLIAMSPORT, PA 17701-8358</p>
<p>DANIEL B AND LOUANN TAYLOR          33 WISE ROAD          MONTGOMERY, PA 17752-8956</p>	<p>RICKIE L AND ALISIA Y TROXELL          230 GREEN PINE ROAD          MONTGOMERY, PA 17752-8645</p>

O MICHAEL WRIGHT 195 TALL DOE ROAD MONTGOMERY, PA 17752-8905	DONALD F AND PHOEBE A ZARR 1023 STATE HOME ROAD MONTGOMERY, PA 17752-9172
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## 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: 08/01/2022

  
Joseph B. Lookup (Aug 1, 2022 16:56 EDT)  
Joseph B. Lookup