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February 5, 2021

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 (i) the Reconstruction of the Montour-Milton 230kV Transmission Line Located in Montour and Northumberland Counties, Pennsylvania, and (ii) the Rebuild of the Milton-Sunbury 230 kV Transmission Line Located in Snyder County, Pennsylvania, and (iii) Perform Additional Line Modifications in Connection with the Montour-Milton and Milton-Sunbury 230 kV Transmission Lines
Docket No. A-2021-_____

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 September 2021 with an anticipated in-service date of July 2023.

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.

Respectfully submitted,

Garrett P. Lent

GPL/kls
Attachments

cc: Renardo Hicks, Esquire
Paul T. Diskin
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

Bureau of Investigation and Enforcement
PA Public Utility Commission
Commonwealth Keystone Building
400 North Street 2nd Floor, F West
Harrisburg, PA 17120
Attn: Richard Kanaskie

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

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

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

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

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797
Attn: Peter Sussenbach

Pennsylvania Fish and Boat Commission
450 Robinson Lane
Bellefonte, PA 16823-9620
Attn: Christopher A. Urban

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

Office of Small Business Advocate
PA Public Utility Commission
555 Walnut Street
1st Floor Forum Place
Harrisburg, PA 17101
Attn: John R. Evans

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

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

Montour County Conservation District
1210 Bloom Road,
Danville, PA 17821
Attn: Mathew Derr, Chairman

Montour County Planning Commission
21 Woodline Lane, Suite 103
Danville, PA 17821
Attn: Greg Molter, Director

Northumberland County
Conservation District
441 Plum Creek Road
Sunbury, PA 17801
Attn: Judy Becker, District Manager

Northumberland County
Planning Commission
399 Stadium Drive
Sunbury, PA 17801
Attn: Justin Skavery, Planning Coordinator

Union County Conservation District
Union County Government Center
155 North 15th Street
Lewisburg, PA 17837
Attn: Eric Nyerges, District Manager

Union County Planning Commission
Union County Government Center
155 North 15th Street
Lewisburg, PA 17837
Attn: Shawn McLaughlin, Planning Dir.

Snyder County Conservation District
10541 Route 522
Middleburg, PA 17842
Attn: Jason Winey, District Manager

Snyder County Planning Commission
9 West Market Street
P.O. Box 217
Middleburg, PA 17842
Attn: Lincoln Kaufman, Planning Director

Derry Township
109 Shed Road
Danville, PA 17821
Attn: Greg Molter, Supervisor

Liberty Township (Montour County)
c/o Montour County Planning Commission
21 Woodline Lane, Suite 103
Danville, PA 17821

East Chillisquaque Township
1110 Mexico Road
Milton, PA 17847
Attn: Chris Trate, Chairman

West Chillisquaque Township
PO Box 252
485 Railroad Street
Montandon, PA 17850
Attn: Vaughn Murray, Chairman

Point Township
759 Ridge Road,
Northumberland, PA 17857
Attn: Randall W. Yoxheimer, Chairman

Union Township
70 Municipal Lane
PO Box 184
Winfield, PA 17889
Attn: Tom Reitz, Chairman

Monroe Township
39 Municipal Drive
Selinsgrove, PA 17870
Attn: Dean Davis, Chairman

Shamokin Dam Borough
42 West 8th Avenue
PO Box 273
Shamokin Dam, PA 17876
Attn: Donald Musser, Council President

Charles D. Hilbish
177 Hilbish Road
Northumberland, PA 17857-8620

James F. Kohl
527 Ridge Road
Northumberland, PA 17857-8600

Steven L. and Judith Whitenight
116 Chevy Lane
Northumberland, PA 17857-8551

William A. and Jamie D. Jaworski
2059 Captain Bloom Road
Sunbury, PA 17801-6605

Kenneth Deitrick
154 Quarry Road
Coal Township, PA 17866-7810

Colin O. and Nike D. Long
248 6th Street
Northumberland, PA 17857-1441

Jeffrey J. and Suann K. Hinkle
742 Susquehanna Trail
Northumberland, PA 17857-8514

Paul E. Yocum
109 Yocum Lane
Northumberland, PA 17857-8505

Carlette S. Leppert
907 State Street
Millersburg, PA 17061-8435

Joseph Sterling Daniel Hilbish
211 Hilbish Heights Road
Northumberland, PA 17857

Norfolk Southern
4600 Deer Path Road
Harrisburg, PA 17110

Ricky A. and Brenda L. Lahr
115 Chevy Lane
Northumberland, PA 17857-8551

Harold E. and Nancy E. Wynn
335 Lahrs Road
Northumberland, PA 17857-8557

Jeffrey D. Mertz
130 Lahrs Road
Northumberland, PA 17857-8552

Grantor Trust - c/o Ronald Beam and Carol Beam
428 Ridge Rod
Northumberland, PA 17857-8504

Kelli M. and Bradley Molyneaux
408 Ridge Road
Northumberland, PA 17857-8504

Roy H. and Melissa A. Burns
390 Ridge Road
Northumberland, PA 17857-8503

Charles T. Coxe
412 Ridge Road
Northumberland, PA 17857-8504

Aaron W. Clewell
1769 Creek Road
Danville, PA 17821

Carl L. and Gina T. Pardoe
P.O. Box 267
Montandon, PA 17850-0267

Holly V. VanKirk
118 Franklin Street
Northumberland, PA 17857-8409

Kent J. Kohl
648 Miller Road
Sunbury, PA 17801-6049

Wade G. and Melissa L. Yocum
173 Yocum Lane
Northumberland, PA 17857-8505

Mack A. Yocum
109 Yocum Lane
Northumberland, PA 17857-8505

Raymond B. and Verna R. Weaver
3810 Old Turnpike Road
Lewisburg, PA 17837-7806

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149 Arts Way
Northumberland, PA 17857-8558

Toby Shane Luke William Murray
P.O. Box 301
Montandon, PA 17850-0301

Mark A. and Kelly J. Hower
2665 Shakespeare Road
Milton, PA 17847-8323

Robert Pardoe
346 Covered Bridge Road
Milton, PA 17847-8504

Robert E. and Jane Long
59 Mount Zion Road
Milton, PA 17847-8423

Larry E. and Geraldine Forrey
1215 Mount Zion Road
Milton, PA 17847-8433

Jeffrey S. and Kelly J. Forrey
2735 Shakespeare Road
Milton, PA 17847-8354

Thomas Edward and Gail Zechman
363 Diehl Road
Milton, PA 17847-7720

Clyde W. and Eleanor F. Diehl
15 Diehl Road
Milton, PA 17847-7719

James M. and Ruth Weaver
1550 Ridge Road
Milton, PA 17847-8307

Keith E. and Lois M. Buck
1700 Ridge Road
Milton, PA 17847-8309

Stanley W. and Rebeca D. Taggart
1215 Mansion Road
Milton, PA 17847-8407

Charles A. and Deborah J. Hupp
1165 Skyview Drive
Milton, PA 17847-7607

George W. and Ellen H. Pardoe
P.O. Box 8
Montandon, PA 17850-0008

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586 Dancehall Road
Milton, PA 17847-7715

Ray S. Wolfe, Ernest L. Wolfe,
Jennie P. Wolfe
4325 State Route 45
Milton, PA 17847-8210

John E. Meckley
478 South Mill Road
Milton, PA 17847-7724

Ricky L. Long
734 South Mill Road
Milton, PA 17847-7725

Stephen M. and Susan M. Cromley
2930 Shakespeare Road
Milton, PA 17847-8324

Ray J. and Bradly R. Kremer
400 Voris Road
Danville, PA 17821

Donald M. and Brenda J. Rovenolt
4810 Sate Route 642
Milton, PA 17847-8225

Eugene L. Jenkins
4850 State Route 642
Milton, PA 17847-8225

Jay R. Buck
505 Dancehall Road
Milton, PA 17847-7715

June M. Taggart
1240 Mansion Road
Milton, PA 17847-8407

Tabitha Rose O'Halloran
156 Linden Street
Sunbury, PA 17801

George E. and Frances I. VanKirk
1360 Mount Zion Road
Milton, PA 17847-8434

John F. and Bonnie L. Crabb
113 Mansion Road
Milton, PA 17847-8400

Susquehanna Motorcycle Club, Inc.
P.O. Box 12
Milton, PA 17847-0012

Tina G. Smith
794 Grangers Road
Selinsgrove, PA 17870-7717

Robert C. Snyder Farms, Inc.
1883 Susquehanna Trail
Northumberland, PA 17857-8534

Ryan B. Mack
5771 Route 15
Selinsgrove, PA 17870

Mark A. Smith
5925 Route 15
Selinsgrove, PA 17870-7724

Michael A. Homas
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Sunbury Generation, LLC
P. O. Box 517
Shamokin Dam, PA 17876-0517

Michelle Mengle
2289 County Line Road
Selinsgrove, PA 17870-8184

Gregory A. Mull
77 Mull Road
Middleburg, PA 17842-8656

Hummel Bros. Farm
653 Stetler Avenue
Selinsgrove, PA 17870-9028

Stephen P. Berthelsen
2465 Green Ridge Road
Mifflinburg, PA 17844-6750

Commonwealth of Pennsylvania
Department of Transportation
715 Jordan Avenue
Montoursville, PA 17754-2415

DL&D Properties Limited Par.
268 Villa Vista Avenue
Lewisburg, PA 17837-6704

Thomas D. Musser
544 Buffalo Creek Road
Mifflinburg, PA 17844-7703

David M. Bobb
910 West 11th Avenue
Shamokin Dam, PA 17876-9314

David B. Gray
661 Gray Farm Lane
Selinsgrove, PA 17870-7869

Wayne J. Walter
1826 Sunbury Road
Selinsgrove, PA 17870-7706

George W. Reynolds
2565 North Old Trail
Selinsgrove, PA 17870-7763

Jason S. and Kelly J. Graybill
2902 State Route 890
Sunbury, PA 17801-7602

Kenneth E. Springfield
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Shamokin Dam, PA 17876-9310

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29 Sun Valley Drive
Sunbury, PA 17801-2535

Commonwealth of Pennsylvania
P.O. Box 218
Montoursville, PA 17754-0218

Sandra J. Shaffer
3103 Park Road
Selinsgrove, PA 17870-7855

Leroy G. Brugger
619 Pine Lane
Selinsgrove, PA 17870-9619

Robert E. Cook
36 Bridge Road
Danville, PA 17821-7051

Lisa Kay and Teresa Lynne Jones
459 Narehood Road
Danville, PA 17821-6804

Robert W. and Brenda Bond
560 Narehood Road
Danville, PA 17821-6598

Richard F. and Marilyn G. Landis
246 Stecker Mill Road
Danville, PA 17821-6818

Gordon E. and Terry L. Roup
24 Hagenbuch Loop
Danville, PA 17821-6811

Allen J. and Gay L. DiMarco
22 Mill Road
Allenwood, PA 17810-9502

Larry W. and Norma J. Bridge
1047 Smith Road
Danville, PA 17821-7103

Liberty Township
42 Keefer Mill Road
Danville, PA 17821-6802

Michael D. and Kathryn J. McCarty
59 Blackberry Lane
Danville, PA 17821-6890

Richard R. and Brenda M. Nixon
1051 Smith Road
Danville, PA 17821-7103

George J. and Suk Sauers
339 Stecker Mill Road
Danville, PA 17821-6590

Derry Township Supervisors
26 Shed Road
Danville, PA 17821

Thomas W. Geise
125 Stecker Mill Road
Danville, PA 17821-6803

Robert E. Cook
36 Bridge Road
Danville, PA 17821-7051

Karl J. and Michael J. Schafer
167 Stecker Mill Road
Danville, PA 17821-6803

Henry J. Larsen
233 Stecker Mill Road
Danville, PA 17821-6818

Lynn C. and Sally L. Appelman
59 Hedge Road
Bloomsburg, PA 17815-7610

Gavin M. and Michelle R. Claycomb
72 Blackberry Lane
Danville, PA 17821-6889

Brian K. and Michelle L. Brady
1073 Smith Road
Danville, PA 17821-7103

Jeremy L. and Laura J. Erb
44 Strick Road
Milton, PA 17847-8932

Donna L. and Mark Cooper-Hackenberg
86 Bridge Road
Danville, PA 17821-7051

James W. and Gwendolyn J. Lewis
32 Kellys Dam Road
Danville, PA 17821-6856

Alexandra Beverlee T. Hovak
1063 Smith Road
Danville, PA 17821-7103

Stephen M. Skerda
72 Vansant Rod
Danville, PA 17821-6921

William R. Smith
159 Narehood Road
Danville, PA 17821-6844

Richard E. and Deborah A. Jones
115 Vansant Road
Danville, PA 17821-6922

Tabitha R. and Christy J. O'Halloran
12 Wedgewood Drive
Selinsgrove, PA 17870-8400

Reading R/W Company, Inc.
46 Public Square
Wilkes-Barre, PA 18701-2609

Ruby J. Stump
83 Bridge Road
Danville, PA 17821-7051

DJT Real Estate
6 Black Run Road
Bloomsburg, PA 17815-6502

John S. and Bieonkia R. Lesho
40 Kellys Dam Road
Danville, PA 17821-6856

Michael P. and Katharine L. McWilliams
348 Jackson Road
Danville, PA 17821-6595

George W. and Trudy S. Brown
228 Jackson Road
Danville, PA 17821-6847

Joseph D. and Kay L. Cassel
20 Mowery Road
Danville, PA 17821-6586

Scott R. and Suzanne A. Hummel
346 Jackson Road
Danville, PA 17821-6595

Donna M. Laubach Hall
221 Narehood Road
Danville, PA 17821-6845

Franklin G. and Shelley C. Love
241 Narehood Road
Danville, PA 17821-6845

Gene A. Wieand
139 Knapp Road
Danville, PA 17821-6929

Carl E. and Priscilla A. Buck
420 Mowery Road
Danville, PA 17821-6813

Adam and Tanya McHale
59 Camp Road
Bloomsburg, PA 17815-7608

Jeremy L. and Laura J. Erb
44 Strick Road
Milton, PA 17847-8932

Donald E. and Michelle M. Hilkert
183 Narehood Road
Danville, PA 17821-6844

Joseph A. Blackstone
1357 Mulls Hollow Road
Selinsgrove, PA 17870-8119

Pamela K. Deem
1310 Mulls Hollow Road
Selinsgrove, PA 17870-8124

Peaceful Trails, LLC
47 Daves Lane
Middleburg, PA 17842

Thomas B. Fantaskey
1286 Mulls Hollow Road
Selinsgrove, PA 17870-8118

Edward L. and Gale A. Kline
1452 Mulls Hollow Road
Selinsgrove, PA 17870-8120

Todd G. Ross
109 Schenk Lane
Selinsgrove, PA 17870-8121

PPL Montour, LLC
18 McMicheal Road
Washington, PA 17884

PR Monroe Limited Partnership
C/O Bre RC Monroe PA LP
10920 VIA Frontera, Suite 220
San Diego, CA 92127

Date: February 5, 2021

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 Approval of (i) the Reconstruction of the Montour – Milton 230 kV Transmission Line Located in Montour and Northumberland Counties, Pennsylvania, and (ii) the Rebuild of the Milton – Sunbury 230 kV Transmission Line Located in Snyder County, Pennsylvania, and (iii) Perform Additional Line Modifications in Connection With The Montour – Milton and Milton – Sunbury 230 kV Transmission Lines	:	Docket No. A-2021-_____

LETTER OF NOTIFICATION

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

PPL Electric Utilities Corporation ("PPL Electric") hereby files this Letter of Notification pursuant to Section 57.72(d) of the Pennsylvania Public Utility Commission's ("Commission") regulations, 52 Pa. Code § 57.72(d), to (i) reconstruct the existing 230 kV transmission line connecting the Montour 230 kV Switchyard ("Montour Switchyard") in Montour County to the Milton 230-69 kV Substation ("Milton Substation") in Northumberland County (the "Montour-Milton 230 kV Transmission Line"), (ii) rebuild the existing 230 kV transmission line connecting the Milton Substation to the Sunbury 500-230-69 kV Substation ("Sunbury Substation") in Snyder County, Pennsylvania (the "Milton-Sunbury 230 kV Transmission Line"), and (iii) perform additional 230 kV and 69 kV line modifications to the above referenced transmission lines, as

described in detail in this Letter of Notification (collectively the "Montour-Milton-Sunbury Project," the "Lines" or the "Project").[1]

The proposed Montour-Milton-Sunbury Project will address several reliability concerns related to PPL Electric's existing electric transmission system. The Project contemplates the replacement and rebuilding of existing COR-TEN® lattice towers on the Montour-Milton and Milton-Sunbury 230 kV lines to address structural reliability concerns associated with the experience of "pack-out rust" in many of the joints of the subject lattice towers. In addition, the Project will address an existing thermal violation on the Montour-Milton 230 kV line and certain generator stability concerns related to PPL Electric's bulk 230 kV transmission system in the Project area. Furthermore, PPL notes that the Project is required to comply with its obligations under the Consolidated Transmission Owners Agreement ("TOA") Rate Schedule - FERC No. 42 (FERC ER10-2713-000), which requires "[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." In this regard, the Project as proposed efficiently and effectively resolves three separate needs at a single time.

This project will be constructed in Liberty Township, and Derry Township in Montour County, Point Township, West Chillisquaque Township, and East Chillisquaque Township in Northumberland County, Shamokin Dam Borough, and Monroe Township in Snyder County, and Union Township in Union County. PPL Electric has provided information regarding this Project to all identified political subdivisions, and none of them have objected to the Project. Construction

[1] PPL Electric notes that it anticipates a separate LON to be filed regarding the relocation of certain facilities that will be impacted by the Pennsylvania Department of Transportation's ("PennDOT") Central Susquehanna Valley Transportation ("CSVT") Project. Although these facilities are a part of the Sunbury – Milton and Sunbury – Elimsport 230 kV transmission lines, the contemplated relocation of these facilities due to the CSVT Project would be required independent of this LON.

of the Project will commence upon the Commission's approval of this filing, with an estimated construction start date of September 2021 with an anticipated in-service date of July 2023. In support thereof, PPL Electric states as follows:

I. INTRODUCTION

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

2. PPL Electric's address is 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 List of Property Owners Within The Right-of-Way
- Attachment 6 List of Involved Governmental Agencies, Municipalities and Other Public Entities

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 the Necessity Statement, this Project is necessary to (i) resolve significant asset health condition concerns across the Montour-Milton and Milton Sunbury 230 kV Transmission lines associated with the presence of pack-out rust in the existing COR-TEN® steel lattice towers; (ii) resolve projected thermal violations in the affected region; and (iii) resolve generator stability concerns.

10. The Project as proposed addresses all three of these areas of concern in a cost-efficient manner. In particular, the Project, as compared to a remediation and later replacement of these facilities, 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 addresses all three need issues, and is the lowest cost alternative by a substantial margin. Therefore, and for the reasons more fully explained below, the Commission should approve the Project as proposed.

1. Existing System

11. The Montour 230 kV Switchyard and the Milton 230-69 kV Substation are connected by the Montour – Milton 230 kV Transmission Line. This transmission line is approximately 12 miles long and is supported by 63 COR-TEN® lattice structures. These towers are designed for double circuit 230kV operation. The Montour – Milton 230 kV line is one of the circuits on these towers. The other position on these towers is occupied by sections of the Milton – Millville 69kV or Montour – Columbia 230 kV transmission lines. The Montour – Columbia 230 kV transmission line is collocated on the Montour – Milton 230 kV Transmission line for the first mile out of the Montour Switchyard until the Montour – Columbia 230 kV transmission line

separates and continues as a single circuit transmission line. Where the Montour – Columbia line separates from the Montour – Milton 230 kV transmission line, the Milton-Millville 69 kV transmission line is collocated on the Montour-Milton 230 kV transmission line for approximately 2 miles. From this point, the Milton-Millville line separates from the Montour-Milton 230 kV transmission line and continues on as a separate single circuit transmission line that parallels the Montour – Milton 230 kV transmission line (i.e., there are two parallel single circuit transmission lines in the same corridor).

12. The double-circuit Milton-Sunbury 230 kV transmission line connects the Milton 230-69 kV Substation to the Sunbury 500-230-69 kV Substation. The existing Milton-Sunbury transmission line is designed for double circuit 230 kV operation; however, one circuit, the Milton – Sunbury 69 kV line, is presently energized at 69 kV and is a non-bulk electric transmission line that operates in network configuration. This existing transmission line is approximately 11 miles long and is supported by 68 COR-TEN® lattice structures.

2. Definition of the Problem

a. Asset Health Conditions

13. The existing Montour-Milton 230 kV Transmission Line has 63 weathering-steel COR-TEN® lattice structures spanning approximately 10.7 miles of 12.6 miles that were originally constructed in 1971. The Milton-Sunbury 230 kV Transmission Line has 68 weathering-steel COR-TEN® lattice structures spanning approximately 10.5 miles that were originally constructed in 1969. 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.

14. However, in 2013, PPL Electric hired a third-party contractor to perform an assessment of the Montour-Milton and Milton-Sunbury 230 kV Transmission Lines under a steel structure capital maintenance program. The assessment identified that 126 of 131 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.

15. 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[2] and other steel structures such as steel bridges.

16. 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

[2] *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).

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.[3] 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.

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

18. 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.

[3] 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.

19. Finally, in November 2020, PPL Electric contracted Osmose to perform a condition assessment on the Milton-Sunbury 230kV and Montour-Milton 230kV lines. The details of the Osmose November 2020 Assessment are set forth in Attachment 1 – Necessity Statement. Of the structures evaluated, over 80% were determined to have a condition rating of "Severe," which indicates that greater than 50% of the existing structure's joints contain pack-out rust. Moreover, 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.

20. 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 Montour-Milton and Milton Sunbury 230 kV lines have exceeded their useful life and can no longer be relied upon to safely operate as designed.

21. Furthermore, these asset health concerns are particularly important as the Montour-Milton and Milton-Sunbury 230 kV lines are critical components of PPL Electric's Bulk Transmission System and are required to serve local load to several critical customer facilities.

22. If the Montour-Milton 230 kV Transmission Line were to fail it would result in the subject transmission lines exceeding their subject summer emergency rating. In particular: (1) the loss of Montour-Glen Brook 230 kV tower line will overload the Elimsport-Sunbury and Columbia-Montour 230 kV lines to 111% and 103% of the Summer Emergency rating respectively; and (2) Loss of Glen Brook-Susquehanna 230 kV tower line will overload the Elimsport-Sunbury and Columbia-Montour 230 kV lines to 105% and 100.1% of the Summer Emergency rating respectively. Loss of the Montour-Milton 230 kV Transmission Line will also

cause a 105 MW load drop resulting in approximately 14,000 customers losing service. The load at the Milton 230-69 kV substation is served by Montour-Milton and Milton-Sunbury 230 kV lines. Failure of either line will put Milton's substation load at risk for the next contingency. Critical facilities including Geisinger Medical and their satellite facilities, Cherokee Merck, Lewisburg Federal Penitentiary, and Milton Regional Sewer Authority will be impacted by an outage.

23. Similarly, if the Milton-Sunbury 230 kV Transmission were to fail it would also result in the subject transmission lines exceeding their subject summer emergency rating. In particular, the loss of Montour-Glen Brook 230 kV tower line will overload the Elimsport-Sunbury 230 kV line to 105% of the Summer Emergency rating. In addition, loss of Milton-Sunbury 230 kV line will cause 105 MW of load drop resulting in approximately 14,000 customers losing service, for the same reasons described in Paragraph 22 above. Furthermore, the same critical facilities would be impacted by such an outage.

24. At the October 2020 PJM TEAC meeting,[4] 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 Montour-Milton 230 kV line (need # PPL-2020-0004) and Milton-Sunbury 230 kV line (need # PPL-2020-0005). The need # PPL-2020-0004 does not require a new solution as it will be addressed by the Montour-Milton 230 kV line rebuild project under supplemental project s1106. The need # PPL-2020-0005 will require the rebuild of the Milton-Sunbury 230 kV line at an estimated cost of $26.1 Million.

[4] Refer to slide 9 to 12 at https://www.pjm.com/~/media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx

b. Thermal Violation and General Stability Concerns

25. In addition to addressing the asset health issues associated with the deterioration of COR-TEN® lattice towers, the Project is necessary to address thermal overload and generator stability issues by the addition of a section 230 kV circuit to these lines.

26. Section 4.4 (Stability) of PPL Electric's TO criteria document[5] establishes reliability requirements and lists various events that must be tested to assess the system stability performance and appropriate steps that should be taken to address any deficiencies. In addition to normal events as listed in the Table 4.4-1 of PPL Electric's TO criteria document, PPL Electric's reliability criteria requires PPL Electric to undertake a study of less probable but extreme impact events and take appropriate action based on the impacts of those events on the system.

27. PPL Electric's Susquehanna Region has excess generation, *i.e.*, more electric capacity is produced than is utilized in the area. There is approximately 7,300 MW of generation in the Susquehanna Region representing approximately 45% of total generation (16,000 MW) in the area. This excess generation and the need to transmit it elsewhere on the bulk 230 kV transmission system has created operational challenges under certain conditions.

28. For example, a three-phase fault on the double circuit Montour-Susquehanna T10 230 kV and Montour-Susquehanna 230 kV Transmission Line under light load conditions will cause generator instability leading to the loss of the Montour and Patriot power plants, approximately 2,400 MW of generation. The tripping of these plants along with the underlying contingencies causing these unit trips will reduce the system operating margin and limit the transmission system's ability to bounce back from the next contingency.

[5] https://www.pjm.com/-/media/planning/planning-criteria/ppl-planning-criteria.ashx?la=en

29. In January 2016, PPL Electric proposed supplemental project s1106[6] to build a new 500-230 kV substation with a cost of $95 Million to address the above-mentioned issue. In early, 2020 PPL Electric identified a less costly ($63 Million) alternative to solve the stability problem. The alternative will require PPL Electric to provide an additional 230 kV outlet from the Montour substation by rebuilding the existing Montour-Milton 230 kV line to double circuit and changing the operating voltage of the 69 kV circuit on the Milton-Sunbury double circuit tower to 230 kV. The existing Milton-Sunbury line is a double circuit 230 kV line where one of the circuits operates at 230 kV and the other circuit operates at 69 kV voltage. The alternative was proposed to PJM stakeholders[7] at the March 2020 TEAC meeting. The proposed changes were included by PJM staff in the final RTEP plan.[8]

30. PPL Electric's planning analysis also shows that if the Project is not completed a thermal violation will occur on the Montour-Milton 230 kV line under the PJM generator deliverability test. PPL Electric performed the PJM's generator deliverability analysis using the 2025 RTEP summer peak case and found that the Montour-Milton 230 kV line will be overloaded to 104% of its summer emergency rating for the loss of the double circuit Saegers-Elimsport and Saegers-Clinton 230 kV Transmission Line.

31. PPL Electric proposed supplemental project s1106 in 2016, as discussed above. At that time there was no thermal violation on the Montour-Milton 230 kV line. However, during last five years, approximately 2,750 MW of new generation has been added in the area. The

[6] Refer to slide 48 at https://www.pjm.com/-/media/committees-groups/committees/teac/20160107/20160107-reliability-analysis-update-and-2016-rtep-assumptions.ashx

[7] https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20200310/20200310-item-08-ppl-supplemental.ashx

[8] https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201104/20201104-teac-info-only-ppl-local-plan-submission-of-the-supplemental-projects-for-2020-rtep.ashx

presence of s1106 in the RTEP model has prevented a thermal overload on the Montour-Milton 230 kV line caused by the addition of new generation.

32. While s1106 did not initially contemplate the rebuild proposed by the Project, PPL Electric proposed to address the subject thermal violation as a part of the Project in order to address multiple needs at once, rather than undertaking separate projects at an additional cost.

B. THE PROPOSED PROJECT

33. In order to resolve the identified COR-TEN® lattice tower health conditions, thermal violation and generator stability issues as explained above, PPL Electric proposes to rebuild the existing Montour-Milton 230 kV and the Milton-Sunbury 230 kV Transmission Lines as a double-circuit 230kV line. The addition of the second 230 kV circuit on the Montour-Milton 230 kV line, and operation of it and the Milton-Sunbury 230 kV line as double-circuit 230 kV transmission lines as a part of this project are required to address the generator stability and thermal violation noted above. The Project contemplates that all the COR-TEN® lattice structures as well as the conductor at the 131 locations subject to the Project will be replaced for the Montour-Milton 230 kV Transmission Line and the Milton-Sunbury 230 kV Transmission Line.

34. As a result of the Project, the Montour – Columbia 230kV line that is currently collocated with the Montour – Milton 230 kV line for about a mile will be relocated and connected into the Montour substation. The existing Montour-Milton 230 kV Transmission Line will be re-designated as the Montour-Milton #1 230 kV Transmission Line and the added 230 kV circuit on this section of the line will be designated as the Montour-Milton #2 230 kV Transmission Line and will terminate in a breaker and a half configuration at Milton 230-69 kV Substation, and in a double breaker/double bus configuration at Montour 230 kV Switchyard.

35. In addition, the existing Milton-Sunbury 230 kV Transmission Line will be re-designated as the Milton-Sunbury #1 230 kV Transmission Line and will be terminated in a breaker and a half configuration at both the Milton 230-69 kV and Sunbury substations. The existing Sunbury-Milton 69 kV line will be retired and the second circuit between Sunbury and Milton will be designated as the Milton-Sunbury #2 230 kV Transmission Line. The new Milton-Sunbury #2 230 kV Transmission Line will be terminated in a breaker and a half configuration (*i.e.*, a configuration consisting of two buses, each normally energized, and between the buses are three circuits breakers, and between each two breakers a circuit) in both Milton 230-69 kV Substation and Sunbury 500-230-69 kV Substation.

36. The proposed Project will address the asset health needs associated with COR-TEN® lattice tower replacement, as well as the generator stability and thermal violation 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. Moreover, the Project will also resolve the thermal violation and generator stability issues in the most effective and efficient manner. Rather than separately constructing a new substation, the proposed rebuild will resolve the identified stability issues as a part of the same replacement and rebuilding of the Montour-Milton 230 kV and the Milton-Sunbury 230 kV Transmission Lines that must occur to resolve the COR-TEN® concerns. In this regard, the transmission line rebuild solution is the most effective and cost-efficient solution to address both the COR-TEN® and stability needs. The Project will not only improve the reliability

of the system but will also provide robustness and resilience during future challenging operating conditions both electrically and physically.[9]

37. 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 lowers. 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.

38. The approximately total cost of the entire Project is approximately $89.9 million. On a total cost of service basis, the Proposed Solution is approximately 72% of the cost of Alternative 1 (i.e., replacing the existing structures and constructing a new 500-230 kV Substation) on a 45-year basis and 68% of the cost of Alternative 1 on 75-year basis. In addition, on a total cost of service basis, the Proposed Solution is approximately 70% of the cost of Alternative 2 (i.e.,

[9] For example, PPL Electric anticipates that it as additional renewable generation sources are connected to its electric transmission facilities in the future, the Project will proactively alleviate such additional system congestion. Addition, the Project is expected to provide additional redundancies that insulate the electric transmission grid from outages in the event of severe weather.

remediating the existing structures and constructing a new 500-230 kV Substation) on a 45-year basis and 54% of the cost of Alternative 1 on 75-year basis.

III. HEALTH AND SAFETY

39. The proposed lines will not create any unreasonable risk of danger to the 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.

40. Attachment 4 accompanying this Letter of Notification explains PPL Electric's standards for Magnetic Field Management. Ground clearances for the proposed Project will be increased between approximately 4.5 and 10.5 feet higher than those required by the NESC standard in order to reduce the magnetic field exposure. The proposed Montour-Milton 230 kV line and the Milton-Sunbury 230 kV line will be constructed 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

41. The existing Montour-Milton and Milton-Sunbury 230 kV Transmission lines are located in a corridor consisting of 150-foot wide existing right-of-way ("ROW"). The Project will be constructed entirely within PPL Electric's existing transmission right-of-way and corridor, except for modifications to the existing alignment of the existing Milton-Millville 69 kV line ROW, which is limited to a two-mile section near the Montour Switchyard. The addition of the second 230 kV circuit contemplated for the Milton-Sunbury 230 kV Transmission Line requires

this two-mile 69 kV line section to be removed and relocated to a new ROW.[10] 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.

42. 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 has discussed the proposed structure locations with the respective property owners, none of which had any objection to the new pole locations. Further, the Project will reduce the number of poles used for the Montour-Milton (*i.e.*, from 65 to 48) and Milton-Sunbury 230 kV (*i.e.*, from 68 to 63) Transmission lines, and substantially reduce ground impacts in comparison to existing lattice towers.

43. As explained in Attachment 2, the average height of the new structures of the Montour-Milton line will be about 18 feet taller than the average height of the existing structures and the average height of the new structures of the Milton-Sunbury line will be about 2 feet taller than the average height of the existing structures. Although the new structures will increase in height as compared to the existing outdated structures, the rebuilt Transmission Lines will reduce overall impacts to land use within the right-of-way by replacing lattice tower structures with steel monopoles, which have a smaller overall footprint.

[10] Approval of the contemplated realignment and relocation of the 69 kV ROW is not being sought as a part of the Project, because the Commission's authority to regulate the location and construction of a "HV transmission line" is limited to transmission lines with a design voltage of greater than 100 kV. *See* 52 Pa. Code § 57.1 (defining "HV transmission line" or "HV line").

44. An aerial plot plan is provided at the end of Attachment 3 to this Letter of Notification. The plot plan depicts the location of the existing transmission facilities for this Project.

V. LAND USE AND ENVIRONMENTAL EVALUATION

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

46. 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.

47. Neither the Montour-Milton nor the Milton-Sunbury segment of the Project will affect any state lands, national parks, local parks, recreational areas or natural landmarks because none of these features are located within the Project Area. PPL Electric notes, however, that the Montour-Milton section of the Project does cross through a federal Wetlands Reserve Program Easement located in Montour County. This easement was founded in 2001 and is held by the U.S. Natural Resources Conservation Service. Reconstruction of the 230 kV transmission lines in the Montour-Milton Section will beneficially decrease the impacts of the Montour-Milton 230 kV line on this property because it will reduce the number of towers on the property and the ground impacts of each structure.

48. 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, several State Historic Preservation Office ("SHPO") listed or eligible properties were found within or close to the Project Area.

49. PPL Electric will coordinate with the PHMC as needed for the modifications being made to these transmission lines. This coordination will be required to receive permits to construct the Project. 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.

50. No communications towers will be affected by the Project. The Montour-Milton and Milton-Sunbury section of the Project will intersect with other transmission line and pipeline corridors that will need to be evaluated by engineering. Furthermore, PPL Electric does not anticipate any interference with airport operations. The Montour-Milton section of the Project is located in an area where there are similar existing electrical facilities, and the Milton-Sunbury section of the Project is not located nearby any active airports. However, PPL Electric will comply with any applicable requirements of the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

51. The Montour-Milton Section of the Project extends through portions of Montour and Northumberland Counties. In Montour County, the Montour-Milton Section is located in close proximity to two Pennsylvania Natural Heritage Program identified natural areas. In Northumberland County, this Section is located in close proximity to one Pennsylvania Natural Heritage Program identified natural area.

52. The Milton-Sunbury Section of the Project extends through portions of Northumberland and Snyder Counties. In Northumberland County, the Milton-Sunbury Section

is located in close proximity to two Pennsylvania Natural Heritage Program identified natural areas. The portion in Snyder County is located in close proximity to two Pennsylvania Natural Heritage Program identified natural areas.

53. 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.

54. Data was also collected through PADEP's eMapPA website to determine classifications of Chapter 93 Designated Use Streams in the Project Area. The transmission lines associated with both the Montour-Milton and Milton-Sunbury Sections of the Project span over several Warm Water Fishes ("WWF") classified streams. However, PPL Electric does not anticipate any impacts to these WWF streams.

55. PPL Electric also reviewed the U.S. Fish and Wildlife Service's ("USFWS") National Wetlands Inventory ("NWI") to determine whether the Project will impact any wetlands. 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.

56. 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, minimal floodplain impacts are anticipated for the Milton-Sunbury Section as it spans the Susquehanna River, but some floodplain impacts are anticipated by the re-construction of portions of the Montour-Milton Section. Similarly, some new floodplain impacts are anticipated for the new 69 kV ROW required near the Montour Switchyard, but not for the new 230 kV alignment.

57. With respect to both the Montour-Milton Section and the Milton-Sunbury Section of the Project, the existing ROW for the transmission lines has previously been cleared of woody vegetation and no extensive tree clearing is anticipated. However, the new 69 kV[11] and 230 kV alignments contemplated in the Montour-Milton Section may involve some areas of forest clearing.

58. PPL Electric is in the preliminary stages of completing Pennsylvania Natural Diversity Inventory ("PNDI") Project Environmental Reviews for the Project. 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 Pennsylvania Department of Conservation and Natural Resources ("DCNR").

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

[11] *See* footnote 9 *supra*.

VI. NOTICE

60. PPL Electric has reached out to residents located immediately adjacent to PPL Electric's fee owned parcels and owners of properties that are crossed by the Line. 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 as Attachment 5.

61. PPL Electric has provided information regarding the Project to representatives of Liberty Township, and Derry Township in Montour County, Point Township, West Chillisquaque Township, and East Chillisquaque Township in Northumberland County, Shamokin Dam Borough, and Monroe Township in Snyder County, and Union Township in Union County. 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 provided as Attachment 6.

VII. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission approve the proposed Montour-Milton-Sunbury Project in Montour County, Northumberland County, Snyder County and Union County, Pennsylvania that is explained above and in the Attachments hereto.

Respectfully submitted,

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MONTOUR-MILTON AND MILTON-SUNBURY 230 KV 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 (i) reconstruct the existing 230 kV transmission line connecting the Montour 230 kV Switchyard ("Montour Switchyard") in Montour County to the Milton 230-69 kV Substation ("Milton Substation") in Northumberland County, (ii) rebuild the existing 230 kV transmission line connecting the Milton Substation to the Sunbury 500-230-69 kV Substation ("Sunbury Substation") in Snyder County, Pennsylvania, and (iii) perform additional 230 kV and 69 kV line modifications to the above referenced transmission lines as described in detail below (collectively the "Project").[1] This Project is required to address the following reliability concerns:

1. Deteriorated COR-TEN® lattice towers on Montour-Milton and Milton-Sunbury 230 kV lines;
2. Thermal violation on the Montour-Milton 230 kV line; and
3. Stability concerns on the bulk 230 kV system.

In addition, the Project is also required to comply with:

- The Consolidated Transmission Owners Agreement ("TOA") Rate Schedule - FERC No. 42 (FERC ER10-2713-000), which requires "[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 to avoid substantial negative impacts to the reliability of PPL Electric's transmission system, to avoid PPL Electric from violating its obligations under the TOA to maintain its transmission facilities in good operating condition and avoid public safety concerns caused by failed assets. Importantly, the Project is PPL Electric's first project designed to address

[1] PPL Electric notes that it anticipates a separate LON to be filed regarding the relocation of certain facilities that will be impacted by the Pennsylvania Department of Transportation's ("PennDOT") Central Susquehanna Valley Transportation ("CSVT") Project. Although these facilities are a part of the Sunbury – Milton and Sunbury – Elimsport 230 kV transmission lines, the contemplated relocation of these facilities due to the CSVT Project would be required independent of this LON.

a system-wide concern related to structural reliability of COR-TEN® lattice towers on its bulk transmission system. As explained below, the experience of "pack-out rust" in many of the joints of the subject lattice towers diminishes structural integrity and increases the risk of system failures that could affect approximately 14,000 PPL Electric customers and also negatively impact public safety. The Project is necessary to avoid these risks and represents 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 TOA. The Project is needed to address generator stability concerns caused by excess generation in the PPL Electric Susquehanna Region and to resolve a thermal violation. Failure to complete the project and resolve these issues would be contrary to PPL Electric's responsibility to provide transmission assets and transmission service that is adequate, efficient, safe, reliable and reasonable.

Importantly, the Project as proposed represents the only alternative that allows PPL Electric to resolve all three reliability concerns (*i.e.*, the COR-TEN asset health condition, the thermal violation and the generator stability issue) with a single project. Neither the remediation nor the replacement alternatives considered by the Company resolve all of these issues by themselves; rather, they would each also require the construction of a new substation in order to resolve the thermal violation and generator stability concerns. In addition, the remediation alternative carries with it substantial uncertainties regarding its immediate and long-term effectiveness to address the COR-TEN® issue. Moreover, the Project as proposed represents the most cost-effective solution to address each of the identified issues.

Subject to the Commission's approval, construction will begin in September 2021 to support an in-service date of July 2023. 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 $89.9 million, and the cost for the Project will be paid by PPL Electric.[2]

2.0 BACKGROUND

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

3.0 TRANSMISSION SYSTEM PLANNING PROCESS

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

[2] The estimate 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.

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

- They can accommodate forecasted system flows during summer and winter peak load;
- They can adequately serve each customer's need regarding capacity, voltage, and reliability for all load levels throughout the daily load cycle;
- They can sustain probable contingencies and disturbances with minimal customer service interruptions; and
- They are in conformance with 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. In order to ensure reliable transmission service, PJM prepares an annual Regional Transmission Expansion Plan ("RTEP")[5] to identify system reinforcements that are required to, among other things, meet the NERC Reliability Standards, PJM reliability planning criteria, and Transmission Owner reliability criteria.

PPL Electric's transmission asset management planning procedure involves identifying system needs and determining the best available solution to address those needs. This process includes: Asset Evaluation, Asset Condition and System Risk Assessments, Analysis of Alternative

[3] Bulk Electric System (BES) – Includes transmission facilities operated at voltages of 100 kV or higher.

[4] Non-Bulk Electrical System (non-BES) – Includes transmission facilities operated at voltages less than 100 kV.

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

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

4.0 THE NEED FOR THE PROJECT

4.1 Existing System

The Montour 230 kV Switchyard and the Milton 230-69 kV Substation are connected by the Montour – Milton 230 kV Transmission Line. This transmission line is approximately 12 miles long and is supported by 63 COR-TEN® lattice structures. These towers are designed for double circuit 230kV operation. The Montour – Milton 230 kV line is one of the circuits on these towers. The other position on these towers is occupied by sections of the Milton – Millville 69kV or Montour – Columbia 230 kV transmission lines. The Montour – Columbia 230 kV transmission line is collocated on the Montour – Milton 230 kV Transmission line for the first mile out of the Montour Switchyard until the Montour – Columbia 230 kV transmission line separates and continues as a single circuit transmission line. Where the Montour – Columbia line separates from the Montour – Milton 230 kV transmission line, the Milton-Millville 69 kV transmission line is collocated on the Montour-Milton 230 kV transmission line for approximately 2 miles. From this point, the Milton-Millville line separates from the Montour-Milton 230 kV transmission line and

continues on as a separate single circuit transmission line that parallels the Montour – Milton 230 kV transmission line (e.g., there are two parallel single circuit transmission lines in the same corridor).

The double-circuit Milton-Sunbury 230 kV transmission line connects the Milton 230-69 kV Substation to the Sunbury 500-230-69 kV Substation. The existing Milton-Sunbury transmission line is designed for double circuit 230 kV operation; however, one circuit, the Milton – Sunbury 69 kV line, is presently energized at 69 kV and is a non-bulk electric transmission line that operates in network configuration. This existing transmission line is approximately 11 miles long and is supported by 68 COR-TEN® lattice structures.

Both the Montour-Milton and Milton-Sunbury 230 kV electric transmission lines are in PPL Electric's Susquehanna Region and are part of a larger 230 kV transmission network that connects generation in this region to load throughout PPL Electric and rest of PJM's footprint. This 230 kV network includes the Montour-Susquehanna 230 kV Transmission Line, the Montour-Susquehanna T10 230 kV Transmission Line, the Sunbury-Susquehanna 230 kV Transmission Line, and the Elimsport-Sunbury 230 kV Transmission Line, that support bulk power flow and feeds various 230-69 kV substations in the Central-Susquehanna Regions. As noted below, if these transmission lines fail, it is expected that the service of approximately 14,000 customers would be impacted for the next contingency, including critical customers such as Geisinger Medical and its satellite facilities, Cherokee Merck, Lewisburg Federal Penitentiary, and Milton Regional Sewer Authority.

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

4.2 Project Need

This project is needed to address both (i) asset health concerns that are being accelerated by increased incidences of pack-out rust associated with COR-TEN® lattice towers, and (ii) system reliability concerns associated with excess generation in the region and the existence of thermal violations on the existing infrastructure, as described below. With specific respect to the asset

health needs, the subject lattice towers had an expected service life of 75 years and were installed in the late 1960s and 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 they can no longer safely operate as designed and cannot be reasonably or cost effectively remediated.

Each of these needs on their own, necessitate the complete reconstruction of the Montour-Milton and Milton-Sunbury 230 kV Transmission Lines. However, the Project will address both of these needs at the same time, and avoid the duplication of costs, impacts and construction activities associated with each of the alternatives noted below. Rebuilding the Montour–Milton and Milton-Sunbury 230 kV transmission lines will eliminate the risks associated with aging infrastructure. In addition, rebuilding the Montour–Milton 230 kV to double circuit and operating both it and the Milton-Sunbury 230 kV transmission lines as double circuit 230 kV lines will address reliability concerns on the bulk transmission system.

4.2.1 Asset Health

The existing Montour-Milton 230 kV Transmission Line has 63 weathering-steel COR-TEN® lattice structures spanning approximately 10.7 miles of 12.6 miles that were originally constructed in 1971. The Milton-Sunbury 230 kV Transmission Line has 68 weathering-steel COR-TEN® lattice structures spanning approximately 10.5 miles that were originally constructed in 1969. 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.

In 2013, PPL Electric utilized a 3rd party contractor to perform an assessment of the Montour-Milton and Milton-Sunbury 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 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 structures that rated Condition C or D that were not identified as "priority." However, these remaining structures face continued asset health concerns due to the presence of pack-out rust. Continued 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 subject 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 our 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 both an emergent safety and reliability concern 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[6] and other steel structures such as steel bridges. The presence of pack-out rust on

[6] *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*

COR-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.

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.[7] 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.

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

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).

[7] 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.

a cost-efficient manner. The statistical analysis determined that inspection of 192 randomly selected COR-TEN® towers would provide a complete representation of all 1,284 COR-TEN® Towers on the PPL Electric system with a 90% confidence level and 5% confidence interval. As a result of this 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 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
A	**Good**	0	0.0%
B	**Fair**	0	0.0%
C	**Poor**	95	49.5%
D	**Severe**	88	45.8%
F	**Priority**	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 Osmose, in November 2020. Osmose was contracted to perform a condition assessment on the Milton-Sunbury 230kV and Montour-Milton 230kV lines. The sample set for the assessment consisted of a random selection of 41 of the 131 structures on these lines, which would represent a statistically significant sample set using the same approach applied to the 192 evaluated system-wide. 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.
- **Medium** 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
Mild	0
Moderate	8

Severe	33
Total	41

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. In one instance, pack rust had forced a diagonal redundant member to disconnect at the conductor arm. This item was noted for priority repair. This assessment corroborates the asset health conditions observed in the system-wide assessment.

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 Montour-Milton and Milton Sunbury 230 kV 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).

These asset health concerns are also important as the Montour-Milton and Milton-Sunbury 230 kV lines are critical components 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 Montour-Milton 230 kV line:

- Loss of Montour-Glen Brook 230 kV tower line will overload the Elimsport-Sunbury and Columbia-Montour 230 kV lines to 111% and 103% of the Summer Emergency rating respectively.
- Loss of Glen Brook-Susquehanna 230 kV tower line will overload the Elimsport-Sunbury and Columbia-Montour 230 kV lines to 105% and 100.1% of the Summer Emergency rating respectively.
- Loss of Milton-Sunbury 230 kV line will cause 105 mega-watts ("MW") of load drop resulting in approximately 14,000 customers losing service. The load at

Milton 230-69 kV substation is served by Montour-Milton and Milton-Sunbury 230 kV lines. Failure of either line will put Milton's substation load at risk for the next contingency. Critical facilities including Geisinger Medical and its satellite facilities, Cherokee Merck, Lewisburg Federal Penitentiary, and Milton Regional Sewer Authority will be impacted by this outage.

B) **Failure of Milton-Sunbury 230 kV line:**

- Loss of Montour-Glen Brook 230 kV tower line will overload the Elimsport-Sunbury 230 kV line to 105% of the Summer Emergency rating.

- Loss of Montour-Milton 230 kV line will cause a 105 MW load drop resulting in r approximately 14,000 customers losing service. The load at Milton 230-69 kV substation is served by Montour-Milton and Milton-Sunbury 230 kV lines. Failure of either line will put Milton's substation load at risk for the next contingency. Critical facilities including Geisinger Medical and their satellite facilities, Cherokee Merck, Lewisburg Federal Penitentiary, and Milton Regional Sewer Authority will be impacted by an outage.

At the October 2020 PJM TEAC meeting,[8] 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 Montour-Milton 230 kV line (need # PPL-2020-0004) and Milton-Sunbury 230 kV line (need # PPL-2020-0005). The need # PPL-2020-0004 does not require a new solution as it will be addressed by the Montour-Milton 230 kV line rebuild project under supplemental project s1106. The need # PPL-2020-0005 will require the rebuild of the Milton-Sunbury 230 kV line at an estimated cost of $26.1 Million.

4.2.1 Generator Stability and Thermal Violation:

As discussed above, rebuilding the Montour-Milton and Milton-Sunbury 230 kV lines is required to address the COR-TEN® lattice towers health issues. In order to address the generator stability

[8] Refer to slide 9 to 12 at https://www.pjm.com/~/media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx

and thermal overload issues as explained below the project also contemplates the addition of a second 230 kV circuit to these lines.

1) Generator Stability Concerns.

Section 4.4 (Stability) of PPL Electric's TO criteria document[9] establishes reliability requirements and lists various events that must be tested to assess the system stability performance and appropriate steps that should be taken to address any deficiencies. In addition to normal events as listed in the table 4.4-1 of PPL Electric's TO criteria document, PPL Electric's reliability criteria requires PPL Electric to undertake a study of less probable but extreme impact events and take appropriate action based on the impacts of those events on the system.

PPL Electric's Susquehanna Region has excess generation, *i.e.*, more electric capacity is produced than is utilized in the area. There is approximately 7,300 MW of generation in the Susquehanna Region representing approximately 45% of total generation (16,000 MW) in the entire PPL Electric service area. This excess generation and the need to transmit it elsewhere on the bulk 230 kV transmission system has created operational challenges under certain conditions. For example, a three-phase fault on the double circuit Montour-Susquehanna T10 230 kV and Montour-Susquehanna 230 kV Transmission Line under light load conditions will cause generator instability leading to the loss of the Montour and Patriot power plants, approximately 2,400 MW of generation. The tripping of these plants along with the underlying contingencies causing these unit trips will reduce the system operating margin and limit the transmission system's ability to bounce back from the next contingency.

In January 2016, PPL Electric proposed supplemental project s1106[10] to build a new 500-230 kV substation with a cost of $95 Million to address the above-mentioned issue. In early, 2020 PPL Electric identified a less costly ($63 Million) alternative to solve the stability problem. The alternative will require PPL Electric to provide an additional 230 kV outlet from the Montour substation by rebuilding the existing Montour-Milton 230 kV line to double circuit and changing

[9] https://www.pjm.com/-/media/planning/planning-criteria/ppl-planning-criteria.ashx?la=en

[10] Refer to slide 48 at https://www.pjm.com/-/media/committees-groups/committees/teac/20160107/20160107-reliability-analysis-update-and-2016-rtep-assumptions.ashx

the operating voltage of the 69 kV circuit on the Milton-Sunbury double circuit tower to 230 kV. The existing Milton-Sunbury line is a double circuit 230 kV line where one of the circuits operates at 230 kV and the other circuit operates at 69 kV voltage. The alternative was proposed to PJM stakeholders[11] at the March 2020 TEAC meeting. The proposed changes were included by PJM staff in the final RTEP plan.[12]

2) Thermal violation on the Montour-Milton 230 kV line.

PPL Electric's planning analysis shows that if this project is not completed a thermal violation will occur on the Montour-Milton 230 kV line under the PJM generator deliverability test. PPL Electric performed the PJM's generator deliverability analysis using the 2025 RTEP summer peak case and found that the Montour-Milton 230 kV line will be overloaded to 104% of its summer emergency rating for the loss of the double circuit Saegers-Elimsport and Saegers-Clinton 230 kV Transmission Line.

PPL Electric proposed supplemental project s1106 in 2016, as discussed above. At that time there was no thermal violation on the Montour-Milton 230 kV line. However, during last five years, approximately 2,750 MW of new generation has been added in the area. The presence of s1106 in the RTEP model has prevented a thermal overload on the Montour-Milton 230 kV line caused by the addition of new generation.

While s1106 did not initially contemplate the rebuild proposed by the Project, PPL Electric proposed to address the subject thermal violation as a part of the Project in order to address multiple needs at once, rather than undertaking separate projects at an additional cost. The Project to rebuild the Montour-Milton and Milton-Sunbury 230 kV path is the most cost-effective solution to address this thermal violation in addition to addressing the stability and COR-TEN® tower needs discussed above.

[11] https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20200310/20200310-item-08-ppl-supplemental.ashx

[12] https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20201104/20201104-teac-info-only-ppl-local-plan-submission-of-the-supplemental-projects-for-2020-rtep.ashx

5.0 ALTERNATIVES

PPL Electric evaluated three potential solutions to address both the degrading health of the Montour – Milton and Milton – Sunbury 230 kV transmission lines and the stability concerns in the Susquehanna Area. The following three alternatives were considered and compared based upon their ability to resolve the asset health conditions and stability concerns identified by the PPL Electric and upon a 45 and 75 year cost of service basis[13]: (1) Alternative 1 – Build new Catawissa 500-230 kV substation and replace all structures on the Montour Milton and Sunbury – Milton transmission lines; (2) Alternative 2 – Build new Catawissa 500-230 kV substation and remediate all structures on the Montour - Milton and Sunbury – Milton transmission lines; and (3) Alternative 3 – Full Rebuild of the Montour - Milton and Sunbury – Milton transmission lines (i.e., the Proposed Solution).

The Proposed Solution is necessary to address the COR-TEN® asset health condition described above. Moreover, the Proposed Solution resolves all three of the needs identified by the Company in a single project. Although the Company evaluated a remediation option, this alternative carries with it substantial uncertainties regarding its immediate and long-term effectiveness to address the COR-TEN® issue. As explained herein, the health and safety risks associated with the deterioration of these assets, the advanced age of the assets and the degree of deterioration are such that it is clear that remediation will not and cannot adequately address the asset health conditions. And as explained below, it also would not be cost effective and would not address the other concerns, i.e., thermal violation and generator deliverability/stability issues. For these reasons, the remediation alternative was rejected as neither prudent nor reasonable.

[13] 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 calculations provided in the spreadsheet, 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.

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.[14] A summary of this analysis is presented in Table 1-3 below. Based upon this analysis, PPL Electric determined that Alternative 3 – Full Rebuild most efficiently addresses both the asset health conditions of the Montour – Milton and Milton – Sunbury 230 kV transmission lines and the stability concerns in the Susquehanna Area. Therefore, as explained in Section 6.0, PPL Electric has proposed Alternative 3 as the Proposed Solution in this proceeding.

TABLE 1-3: Cost of Service of Evaluated Options

Project Scope	45 Year Cost of Service ($M)	75 Year Cost of Service (M)
Build Catawissa 500-230kV Substation and Replace Structures on Montour-Milton and Milton-Sunbury	$385.8	$496.1
Build Catawissa 500-230kV Substation and Remediate Structures on Montour-Milton and Milton-Sunbury	$394.2	$621.9
Full Rebuild of the Montour-Milton and Milton-Sunbury 230kV Lines	$277.5	$336.0

5.1 Alternative 1 – Structure Replacement + Addition of the Catawissa Substation

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 a new standard structure and replacing the conductor with new conductor. However, this alternative does not involve the addition of the second 230 kV circuit on the Montour-Milton 230 kV line, and the operation of the Montour-Milton 230 kV line and the Milton-Sunbury 230 kV line

[14] 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.

as double-circuit 230 kV transmission lines. The estimated replacement cost is approximately $421,429/structure. However, replacement would not address the additional needs (*i.e.*, the generation stability concerns and thermal violations) noted above, and would necessitate additional, duplicative projects to address those needs.

Specifically, the construction of a new 500-230kV Substation would be required in order to address the stability concerns in the Susquehanna Area. As discussed above, PPL Electric considered building a new 500-230 kV Substation as a potential alternative to address the generator stability issues as explained in the need section. The 500-230 kV Substation is modelled by connecting the Sunbury-Susquehanna #1 230 kV, the Sunbury-Susquehanna #2 500 kV, and the Frackville-Columbia 230 kV Transmission Lines.

As shown in Table 1-3, Alternative 1 has a total cost of service of $385.8 million on a 45-year basis and $496.1 million on a 75-year basis. In addition, Alternative 1 has a net present value of $130.1 million on a 45-year basis and $131.4 million on a 75-year basis.

5.2 Alternative 2 – Structure Remediation + Addition of the Catawissa Substation

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 includes 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 $183,891/structure. This alternative was rejected by PPL Electric because it carries with it substantial uncertainties regarding its immediate and long-term effectiveness to address the COR-TEN® issue.[15] Although, remediation could potentially extend the life of the structure it would, at a minimum, require that the remediation work be re-evaluated and potentially repeated every 10 years after the initial remediation. Moreover, the health and

[15] 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.

safety risks associated with the deterioration of these assets, the advanced age of the assets and the degree of deterioration are such that it is clear that remediation will not and cannot adequately address the asset health conditions.

In addition, the subsequent remediation work would be treated as O&M expense. However, after 30 years, the structure will have to be replaced with a new structure. Moreover, remediation does not address all of the underlying issues and would not address the additional needs (*i.e.*, the generation stability concerns and thermal violations) noted above, and would necessitate additional, duplicative projects to address those needs.

Specifically, the construction of a new 500-230kV Substation would be required in order to address the stability concerns in the Susquehanna Area.

For these reasons, it would not be reasonable or prudent to pursue Alternative 2. The remediation alternative would not address the underlying COR-TEN® asset health conditions on a long-term basis and, furthermore, is a less cost efficient option.

5.3 Alternative 3 – Full Rebuild And 230 kV Operation

The third alternative considered by PPL Electric is to fully rebuild the existing Montour-Milton 230 kV Transmission Line and the Milton-Sunbury 230 kV Transmission Lines as a double-circuit 230kV line. Furthermore, the addition of the second 230 kV circuit on the Montour-Milton 230 kV line, and operation of it and the Milton-Sunbury 230 kV line as double-circuit 230 kV transmission lines as a part of this project are required to address the generator stability and thermal violation noted above. In addition to addressing the reliability concerns, replacing the existing lattice towers with monopoles will also improve performance by increasing clearances, improving lightning performance and reducing impact to the ROW as explained in more detail in Attachments 2 and 3. The estimated rebuild cost is approximately $680,000/structure[16].

Although the full rebuild cost per structure is higher than the remediation option, the revenue requirements over both a 45 and 75-year period are lower (as shown in Table 1-3) due to lower

[16] The referenced per structure cost all includes the costs of relocating the existing 69 kV lines and re-terminating the lines at the substations. These costs are in addition to the proposed replacement of the existing structures.

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. With advantages in both cost-effectiveness and lower risk, a full rebuild is the best long-term solution.

Moreover, Alternative 3 does not require PPL Electric to construct a new 500-230 kV Substation in order to address the generation stability concerns identified in the Susquehanna region. As such, the cost of service comparison of Alternative 3 to the other alternatives does not include the gross plant and O&M expense of constructing and operating the Catawissa Substation, which further increases its cost-effectiveness to address both the identified asset health and generation stability concerns as compared to Alternatives 1 and 2.

As shown in Table 1-3, Alternative 3 has a total cost of service of $277.5 million on a 45-year basis and $336.0 million on a 75-year basis. In addition, Alternative 3 has a present value of $87.0 million on a 45-year basis and $87.8 million on a 75-year basis.

6.0 PROPOSED SOLUTION

To resolve COR-TEN® lattice tower health condition and reliability issues as explained above, PPL Electric proposes to rebuild the existing Montour-Milton 230 kV Transmission Line and the Milton-Sunbury 230 kV Transmission Lines as a double-circuit 230kV line. Furthermore, the addition of the second 230 kV circuit on the Montour-Milton 230 kV line, and operation of it and the Milton-Sunbury 230 kV line as double-circuit 230 kV transmission lines as a part of this project are required to address the generator stability and thermal violation noted above. All the COR-TEN® lattice structures as well as the conductor at the 131 locations will be replaced for the Montour-Milton 230 kV Transmission Line and the Milton-Sunbury 230 kV Transmission Line.

The Montour – Columbia 230kV line that is currently collocated with the Montour – Milton 230 kV line for about a mile will be relocated and connected into the Montour substation. The existing Montour-Milton 230 kV Transmission Line will be re-designated as the Montour-Milton #1 230

kV Transmission Line and the added 230 kV circuit on this section of the line will be designated as the Montour-Milton #2 230 kV Transmission Line and will terminate in a breaker and a half configuration at Milton 230-69 kV Substation, and in a double breaker/double bus configuration at Montour 230 kV Switchyard. The existing Milton-Sunbury 230 kV Transmission Line will be re-designated as the Milton-Sunbury #1 230 kV Transmission Line and will be terminated in a breaker and a half configuration at both the Milton 230-69 kV and Sunbury substations. The existing Sunbury-Milton 69 kV line will be retired and the second circuit between Sunbury and Milton will be designated as the Milton-Sunbury #2 230 kV Transmission Line. The new Milton-Sunbury #2 230 kV Transmission Line will be terminated in a breaker and a half configuration in both Milton 230-69 kV Substation and Sunbury 500-230-69 kV Substation.

The proposed project will improve the overall reliability and system resiliency by addressing the asset health needs associated with COR-TEN® lattice tower replacement, as well as the generator stability and thermal violation needs. The transmission line rebuild solution was deemed to be the most cost-effective solution to address both the COR-TEN® and stability needs.

Importantly, the Proposed Solution also avoid the additional costs and uncertainties surrounding the attempted remediation solution contemplated in Alternative 2. As noted above, if PPL Electric were to remediate the existing COR-TEN® lattice towers, additional routine inspections would be required to identify any new pack-out rust growth requiring additional remediation. The remediation effort will 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 would be 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 required full weathering-steel COR-TEN® lattice tower remediation. As such, the repeated incurring of the costs of remediation could be even greater than anticipated and the remediation efforts may not be able to successfully mitigate the risk. The Proposed Solution avoids these additional costs and uncertainties, efficiently rebuilds the transmission lines to ensure the continued provision of safe and reliable service, and also resolves the additional reliability concerns identified herein.

The approximate cost of the entire transmission line rebuild project is $89.9 Million. Table 1-4 provides the cost breakdown.

TABLE 1-4: Estimated Cost Breakdown for the Transmission Line Rebuild Option

Project Scope	Cost ($M)	Supplemental Project Number
Rebuild Montour-Milton 230 kV line to double-circuit and perform substation work at Montour, Milton, and Sunbury Substation	$63	s1106
Rebuild Milton-Sunbury 230 kV line to double-circuit	$26.1	s2366
Total Cost ($M)	$89.9	

On a total cost of service basis, the Proposed Solution is approximately 72% of the cost of Alternative 1 (i.e., replacing the existing structures and constructing a new 500-230 kV Substation) on a 45-year basis and 68% of the cost of Alternative 1 on 75-year basis. In addition, on a total cost of service basis, the Proposed Solution is approximately 70% of the cost of Alternative 2 (i.e., remediating the existing structures and constructing a new 500-230 kV Substation) on a 45-year basis and 54% of the cost of Alternative 1 on 75-year basis.

As discussed in Section 3.2.1, above, the updated project scope (Supplemental Project Number s1106) to rebuild the Montour-Milton 230 kV line to double-circuit was presented to PJM in the March 2020 TEAC[17] meeting to address the stability issues. Upon further evaluation and based on the third-party inspection, PPL Electric determined that the COR-TEN® tower issue needs to be addressed. Therefore, in the October 2020 TEAC meeting, PPL Electric updated the need of the project as it will address both the COR-TEN® tower needs and stability issues in the area. In the October 2020 TEAC meeting,[18] PPL Electric also presented the project to rebuild the Milton-

[17] https://www.pjm.com/-/media/committees-groups/committees/teac/2020/20200310/20200310-item-08-ppl-supplemental.ashx

[18] Refer to slide 9 to 12 at https://www.pjm.com/~/media/committees-groups/committees/teac/2020/20201006/20201006-item-09-ppl-supplemental.ashx

Sunbury 230 kV line to double-circuit to address the COR-TEN® tower need and received Supplemental Project Number s2366 from PJM to complete this work.

A one-line diagram of the proposed 230 kV system is provided in Figure 1-3. A map of the proposed system alignment is provided as Figure 1-4.

Figure 1-1: Existing 230 kV and 69 kV One Line Diagram

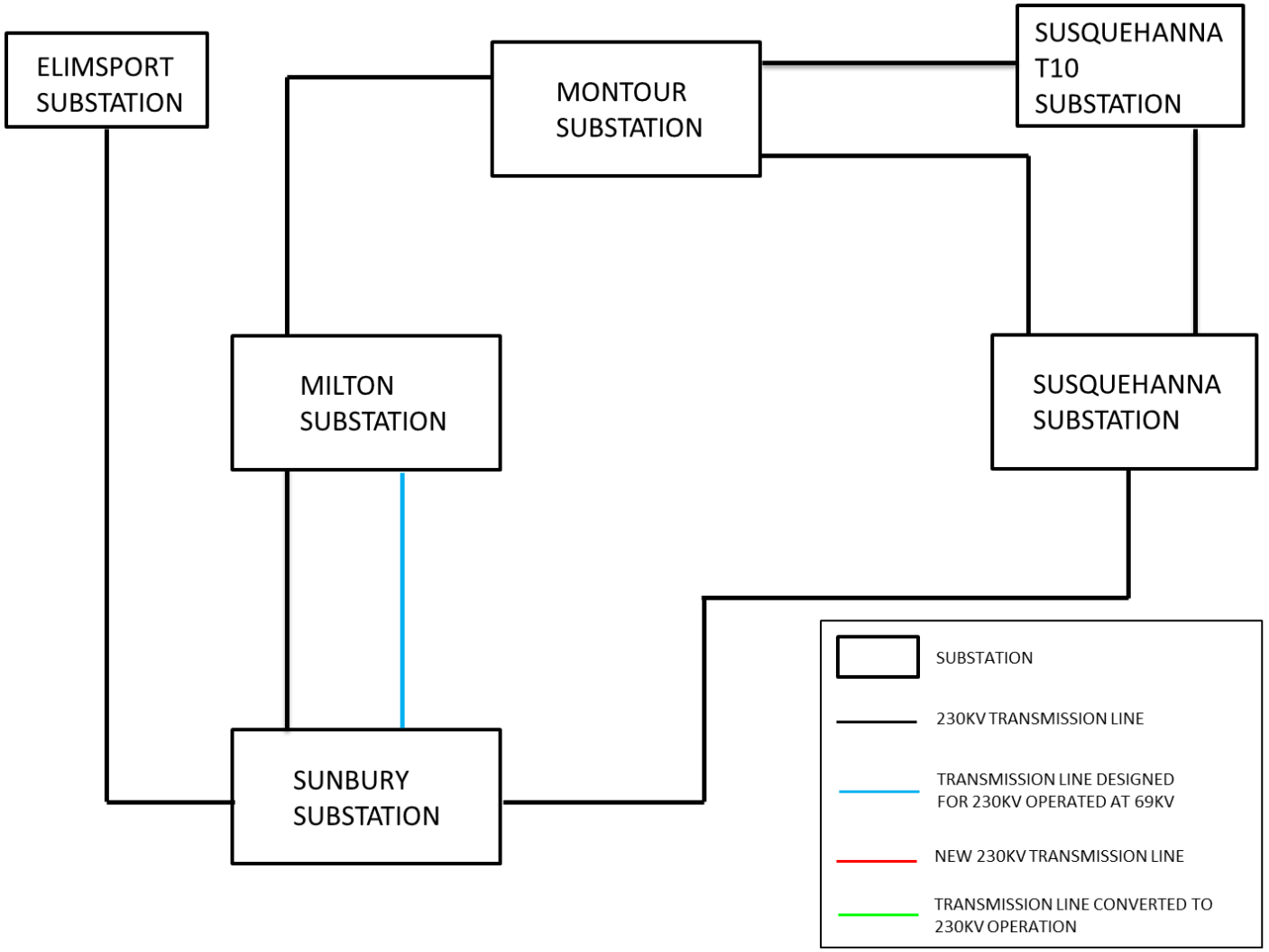


Figure 1-2: Existing System Map

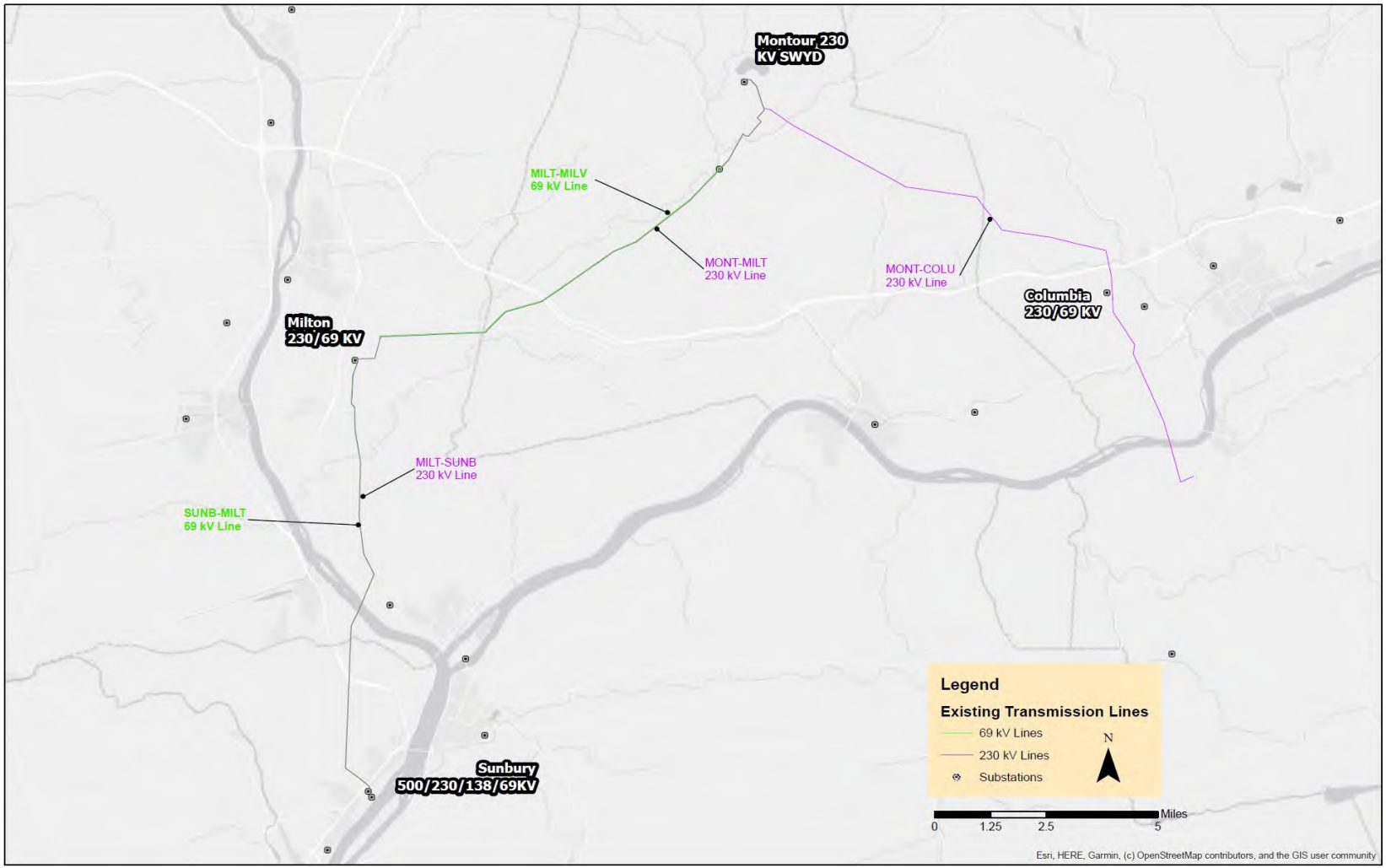


Figure 1-3: Proposed 230 kV and 69 kV One Line Diagram

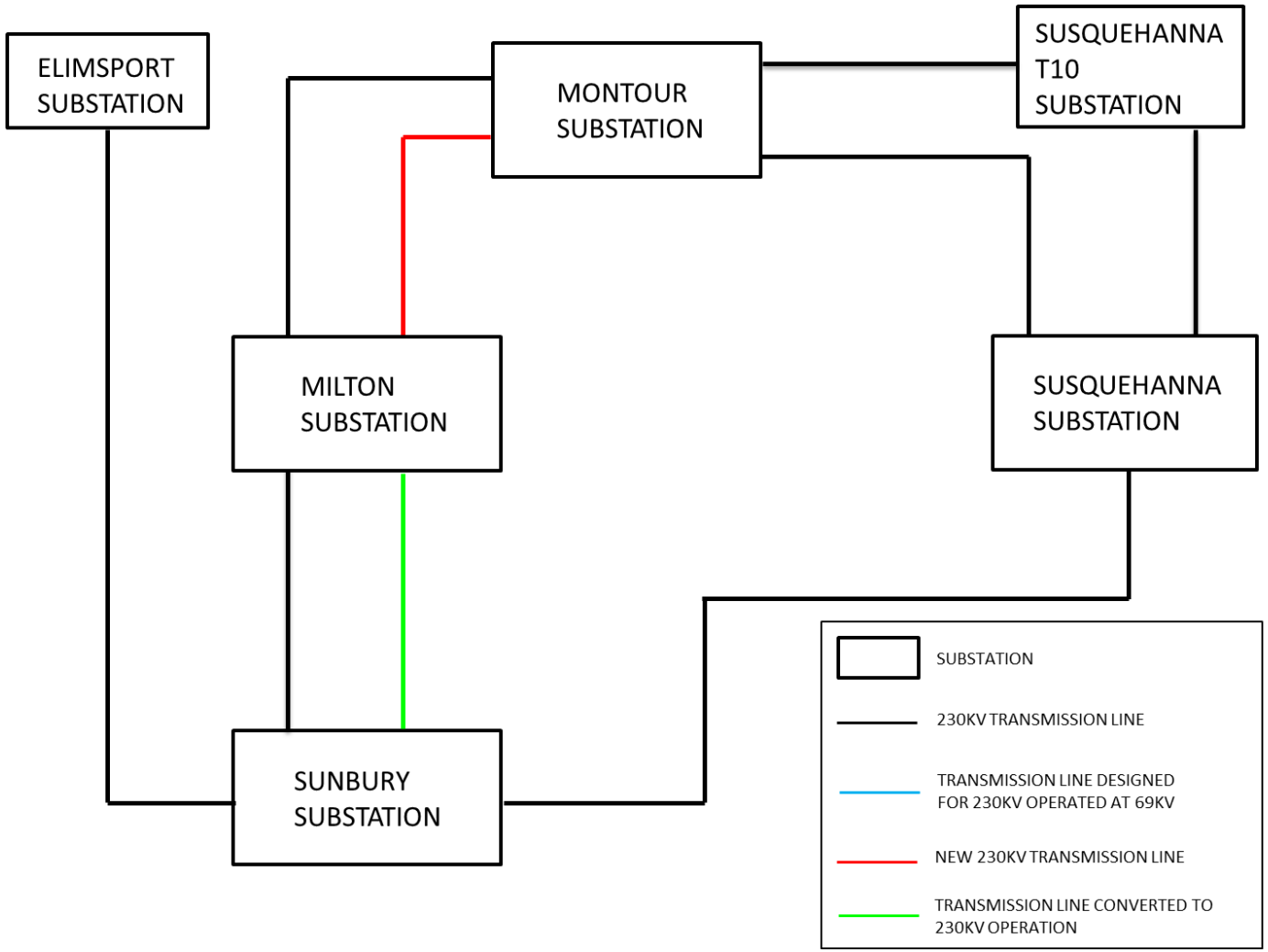
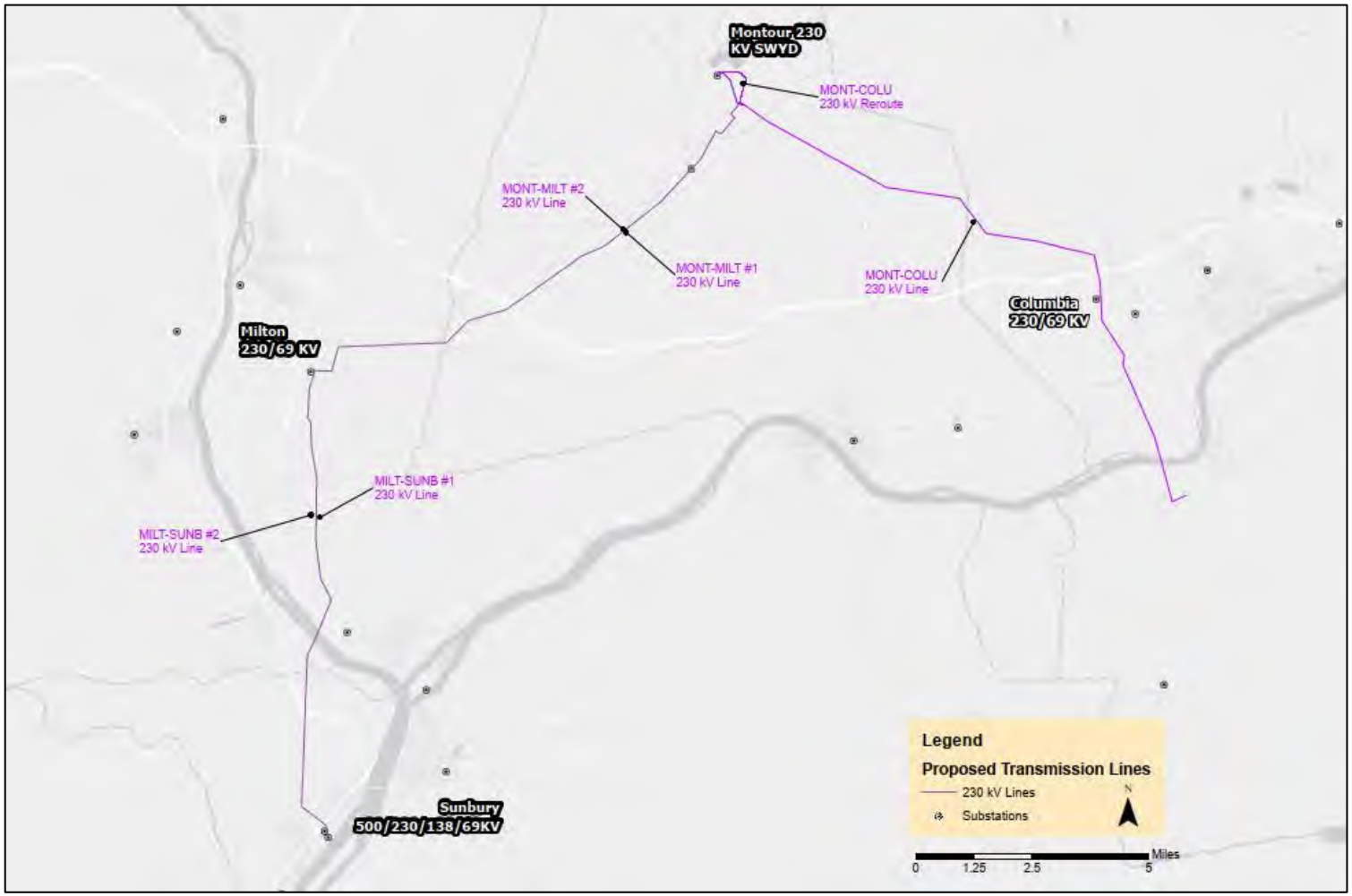


Figure 1-4: Proposed System Map



MONTOUR-MILTON AND MILTON-SUNBURY 230 KV 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 the existing 230 kV transmission line connecting the Montour 230 kV Switchyard in Montour County ("Montour Switchyard"), the Milton 230-69 kV Substation in Northumberland County ("Milton Substation"), and the Sunbury 500-230-69 kV Substation in Snyder County ("Sunbury Substation") (collectively the "Project"). Rebuilding the 230 kV transmission line will involve removing the existing COR-TEN® lattice tower structures, constructing new optimized steel structures, and modifying the alignment of sections of the existing 230 kV and 69 kV network. The modifications to the alignment of sections of the existing 230 kV transmission line network include re-routing a one-mile section of the Montour-Columbia 230 kV Transmission Line that is currently co-located on the Montour-Milton 230 kV Transmission Line on the Montour Power Plant property. Modifications to the existing alignment of the 69 kV ROW is limited to a two-mile section near the Montour Switchyard.[1]

Connection between the Montour Switchyard and the Milton Substation involves an 11-mile long section of the Montour-Milton ("MONT-MILT") 230 kV line, which is composed of 62 COR-TEN® lattice structures, 10 COR-TEN® steel monopole or two-pole structures, and 13 painted steel pole structures. All of the COR-TEN® lattice tower structures along this corridor were built for a double-circuit 230 kV system but are currently only supporting a single 230 kV circuit for most of the alignment. Due to the corrosion and development of "pack-out rust"[2] on these COR-TEN® lattice structures, PPL Electric proposes to replace them with steel monopole or two-pole structures. A painted steel monopole and a COR-TEN® two-pole structure will also be replaced

[1] Approval of the contemplated realignment and relocation of the 69 kV ROW is not being sought as a part of the Project, because the Commission's authority to regulate the location and construction of a "HV transmission line" is limited to transmission lines with a design voltage of greater than 100 kV. *See* 52 Pa. Code § 57.1 (defining "HV transmission line" or "HV line").

[2] "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.

along the alignment. The new steel monopoles will accommodate the addition of a second 230 kV circuit. Span lengths for the rebuild will be optimized which will result in the installation of only 48 new steel monopole or two-pole structures.

The existing Milton-Millville ("MILT-MILV") 69 kV line primarily parallels the MONT-MILT 230 kV line for most of the alignment toward the Montour Switchyard. However, as the MILT-MILV 69 kV circuit approaches the Montour Switchyard, a 2-mile section is co-located on the MONT-MILT 230 kV line structures occupying the second circuit on the existing structures that were developed for double-circuit configuration. The addition of the second 230 kV circuit requires this two-mile 69 kV line section to be removed and relocated to a new ROW.[3]

Additionally, to accommodate the second 230 kV circuit within the existing MONT-MILT 230 kV corridor, the Montour-Columbia ("MONT-COLU") 230 kV line, which is currently co-located on painted steel structures with the MONT-MILT 230 kV line for a one mile section connecting into the Montour Switchyard, will be re-routed in a new alignment for approximately one mile on the Montour Power Plant property. The new MONT-COLU 230 kV alignment will be located in a future use corridor that PPL Electric has on the Montour Power Plant property and does not require any new ROW.

The existing connection between the Milton Substation and the Sunbury Substation involves the 11-mile long double circuit Milton-Sunbury 230 kV line ("MILT-SUNB"). The section was previously designed and constructed for double circuit 230 kV operation; however, one circuit is presently operating at 69 kV operation (Sunbury-Milton 69 kV line ("SUNB-MILT")). The 68 COR-TEN® lattice structures along this alignment were built to allow for double-circuit 230 kV lines, but due to corrosion and the development of pack rust on these COR-TEN® lattice structures the structures can no longer support a second circuit. PPL Electric proposes to replace the existing COR-TEN® lattice structures with steel monopole or two-pole structures. The new monopole and

[3] *See* footnote 1 *supra*.

two pole structures will be designed for double circuit 230 kV operation. The rebuilt line will consist of 63 structures that will be built within close proximity to the existing structures. The Company is able to reduce the number of structures because the existing line contains five sets of dual lattice structures that will be replaced by single monopole structures.

2.0 DESCRIPTION OF THE EXISTING AND PROPOSED LINES AND STRUCTURES

2.1 MONTOUR TO MILTON SEGMENT

The existing conditions of the MONT-MILT 230 kV line between the Montour and Milton substations are described below:

- From the Montour Switchyard the MONT-MILT 230 kV line traverses south easterly across the Montour Power Plant property for approximately one mile. On this 1-mile section of the transmission line, the MONT-COLU 230 kV line is co-located on the same painted steel monopole structures;
- As the MONT-MILT 230 kV line leaves the Montour Power Plant property it turns southwesterly towards the US Gypsum plant and the MONT-COLU 230 kV line separates from it and the co-location of the MILT-MILV 69 kV with the MONT-MILT 230 kV line begins. The MONT-MILT 230 kV and MONT-MILT 69 kV lines are co-located on a mix of painted steel structures, COR-TEN® monopole and 2-pole structures, and COR-TEN® lattice towers for approximately two miles;
- Structures between the US Gypsum plant and the Milton Substation consist of 62 double-circuit COR-TEN® lattice steel towers, a painted steel monopole, a COR-TEN® two-pole structure, and one COR-TEN® monopole structure located adjacent to the Milton Substation;
- From the US Gypsum play, the MONT-MILT 230 kV extends southwesterly towards the Milton Substation as a single-circuit line until it reaches the Milton Substation from where the MILT-MILV 69 kV line departs
- .

Details for the proposed rebuilt MONT-MILT 230 kV and re-termination of the MONT-COLU 230 kV lines are provided below:

- The new MONT-MILT 230 kV transmission line will be designed for double-circuit 230 kV operation for the entire length between Montour and Milton.
- To facilitate rebuilding this line to double-circuit 230 kV operation, the sections of the MONT-COLU 230 kV and MONT-MILV 69 kV transmission lines that are presently co-located with the MONT-MILT 230 kV line will need to be re-routed as described below:
    - A two-mile section of MILT-MILV 69 kV will be moved onto a new set of 69 kV structures that will be built in a new 100-foot wide ROW. ROW for this section is presently being acquired.
    - A one-mile section of the MONT-COLU 230 kV line will be rebuilt in existing ROW across the Montour Power Plant property and re-terminated with the main section of the MONT-COLU 230 kV line in the southeastern part of the property.
- The new MONT-MILT double-circuit 230 kV transmission line will be optimized between the US Gypsum plant and the Milton Substation to reduce the number of structures from 65 to approximately 48.
- The new structures include a new monopole structure to be installed next to the existing COR-TEN® monopole located adjacent to the Milton Substation to create a two-pole structure to support the second MONT-MILT 230 kV circuit extending into the substation.
    - The proposed transmission structures will consist of weathering steel monopoles or two-pole structures equipped with steel davit arms and glass 230 kV insulator assemblies. All new poles will be self-supported, either direct embedded or on concrete caisson foundations.
    - The structures are expected to range between approximately 115 and 180 feet in height. Most structures will be approximately 145 feet in height.
    - **Figure 2-1** through **Figure 2-3** depict typical structure types that will be used for the MONT-MILT 230 kV line described below:
        - Install approximately 11 new double-circuit two-pole tension structures (**Figure 2-1**).

- Install approximately 36 new monopole tangent suspension structures (**Figure 2-2)**.
- Install approximately 1 new monopole tension structure **(Figure 2-3**).

- The existing MONT-MILT 230 kV line will become the MONT-MILT #1 230 kV Transmission Line and new 230 kV circuit will become the MONT-MILT #2 230 kV Transmission Line;
- The existing 62 COR-TEN® lattice tower structures, one painted steel monopole, and one COR-TEN® two-pole structure near the US Gypsum plant will be demolished and removed from the ROW.

- The new one-mile section of the MONT-COLU 230 kV transmission line will be designed for double-circuit 230 kV operation however, only one circuit will be installed initially;
  - The new section of MONT-COLU 230 kV transmission line will involve construction of seven double-circuit steel structures;
  - The proposed transmission structures will consist of weathering steel monopoles structures equipped with steel davit arms and glass 230 kV insulator assemblies. All new poles will be self-supported, either direct embedded or on concrete caisson foundations;
  - The structures are expected to range between approximately 121.5 and 141.5 feet in height. Most structures will be approximately 131.5 feet in height.
  - **Figure 2-2** through **Figure 2-3** depict typical structure types that will be used for the MONT-COLU 230 kV line as described below:
    - Install approximately 2 new long span single-circuit steel pole structures (**Figure 2-2**).
    - Install approximately 5 new long span single-circuit steel pole angle tension structures (**Figure 2-3)**.
- All structures from the Montour Switchyard to the US Gypsum plant will be reused except:
  - One painted steel pole will be replaced with a similar painted steel pole, and
  - An additional painted steel pole will be added adjacent to an existing painted steel pole to create a two-pole structure to support the second MONT-MILT 230 kV circuit.

The existing MONT-MILT 230 kV line contains three conductor wires and two optical guide wires ("OPGW"). The new 230 kV conductor will be 1590 kcmil[4], 54/19 stranding, ACSS[5] conductors. One of the OPGW's will be removed and the other will be replaced with 144 count OPGW as an underbuild design. A new overhead ground wire ("OHGW") will also be added to the top of the structure. The minimum conductor-to-ground clearance will be 34 feet which occurs at a maximum thermal conductor temperature of 200°C (392°F).

The new MONT-COLU 230 kV line will initially contain three conductor wires, one 144 count OPGW, and one OHGW. The new 230 kV conductor will be double-bundled 1590 kcmil, 54/19 stranding, ACSR[6] conductors. The minimum conductor-to-ground clearance will be 25.5 feet which occurs at a maximum thermal conductor temperature of 125°C (257°F).

A detailed map of the alignment of this segment, including the rebuilt section of the MONT-COLU 230 kV line, is provided as **Figure 3-1 in Attachment 3**. The design minimum conductor clearances and conductor thermal ratings for the new MONT-MILT 230 kV lines are shown in **Tables 2-1 and 2-2**. The design minimum conductor clearances and conductor thermal ratings for the new MONT-COLU 230 kV lines are shown in **Tables 2-3 and 2-4**. Information on the new double-circuit MONT-MILT 230 kV structures is provided in **Table 2-5**.

TABLE 2-1: DESIGN MINIMUM CONDUCTOR CLEARANCES (MONT-MILT 230 kV) *

Condition	Ground Clearance (conductor)	Ground Clearance (underbuild)
Heavy Ice (1", 32°F)	38.0'	19.0'
Maximum Temperature	34.0' (392°F)	24.0' (120°F)
Blowout (6 psf, 60°F)	28.0' (from edge of ROW)	N/A

*Based on 1590 kcmil 54/19 stranding ACSS

[4] 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 mm².
[5] ACSS stands for aluminum conductor steel supported.
[6] ACSR stands for aluminum conductor steel reinforced.

TABLE 2-2: CONDUCTOR THERMAL RATING (ACSS) *

Condition	Ambient Temperature °C	Wind Speed ft/sec	Rating (Amps)
Summer Normal	35	0	2340
Winter Normal	10	0	2500
Summer Emergency	35	2.533	2700
Winter Emergency	10	2.533	2870

Based on 1590 kcmil 54/19 stranding ACSS (392°F) 200°C Maximum Conductor

TABLE 2-3: DESIGN MINIMUM CONDUCTOR CLEARANCES (ACSR)

Condition	Transmission Double-Circuit Design Clearance to Ground
Heavy Ice (1.25" ice, 32°F)	25.5'
Maximum Temperature (257°F / 125°C)	25.5'
Blowout (15psf, 60°F)	25.5'

*Based on 1590 kcmil 54/19 stranding ACSR

TABLE 2-4: CONDUCTOR THERMAL RATING (ACSR) *

Condition	Ambient Temperature °C	Wind Speed ft/sec	Rating (Amps)
Summer Normal	35	0	3343
Winter Normal	10	0	3849
Summer Emergency	35	2.533	4127
Winter Emergency	10	2.533	4646

***** Based on 1590 kcmil 54/19 stranding ACSR (257°F) 125°C Maximum Conductor

Table 2-5 provides a summary of the existing structures to be replaced along the MONT-MILT 230 kV line between the Montour Switchyard and the Milton Substation and the proposed number of new structures and their heights.

TABLE 2-5: EXISTING AND NEW STRUCTURES (MONT-MILT 230 kV)

TRANSMISSION LINE	NO. OF EXISTING STRUCTURES	EXISTING STRUCTURE HEIGHT RANGE (FEET)	PROPOSED NO. OF NEW STRUCTURES	PROPOSED STRUCTURE HEIGHT RANGE (FEET)	APPLICABLE FRAMING/ SPECIFICATIONS
MONTOUR-MILTON 230 kV	65	107 to 130			
MONTOUR-MILTON 230 kV			11	115 to 180	7-009-005
MONTOUR-MILTON 230 kV			36	115 to 180	7-009-061
MONTOUR-MILTON 230 kV			1	131.5	7-009-064
TOTAL STRUCTURES	**65**		**48**		

Table 2-6 provides a summary of the proposed number of structures and structure heights for the re-termination section of the MONT-COLU 230 kV line.

TABLE 2-6: NEW STRUCTURES (MONT-COLU 230 kV)

TRANSMISSION LINE	PROPOSED NO. OF NEW STRUCTURES	PROPOSED STRUCTURE HEIGHT RANGE (FEET)	APPLICABLE FRAMING/ SPECIFICATIONS
MONTOUR-COLUMBIA 230 kV	2	130-135	7-009-061
MONTOUR-COLUMBIA 230 kV	5	121.5-141.5	7-009-064

2.2 MILTON TO SUNBURY SEGMENT

The proposed reconstruction of the double-circuit MILT-SUNB 230 kV line is discussed below. Existing conditions for this segment note the following:

- The existing structures are double-circuit COR-TEN® lattice steel towers, and
- The MILT-SUNB 230 kV is designed and built for double circuit 230 kV transmission line, but one side is operating at 69 kV in network configuration.

Details for the MILT-SUNB 230 kV line rebuild are provided below:

- The MILT-SUNB 230 kV transmission structures will be rebuilt in generally their same location.
- There will be approximately five less structures overall (63 proposed) to account for a five span section that is currently composed of dual low-profile towers that will be replaced with single monopole structures.
- The proposed transmission structures will consist of weathering steel monopoles and two-pole structures equipped with steel davit arms and glass 230 kV insulator assemblies. All new poles will be self-supported, either direct embedded or on concrete caisson foundations.
- The structures are expected to range between approximately 100 and 210 feet in height. Most structures will be approximately 130 feet in height.
- **Figure 2-2** and **Figure 2-3** depict typical structure types that will be used for the MILT-SUNB 230 kV line as described below:

  - Install approximately 41 new monopole tangent suspension structures (**Figure 2-2**).
  - Install approximately 22 new monopole tension structure (**Figure 2-3**).
- The existing COR-TEN® lattice tower structures will be demolished and removed from the ROW.

The existing MILT-SUNB 230 kV and SUNB-MILT 69 kV line contains six conductor wires and two OHGW. The new 230 kV conductor will be 1590 kcmil, 54/19 stranding, ACSS conductors and the OHGWs will be replaced with 144 count OPGW. The minimum conductor-to-ground clearance will be 31 feet which occurs at a maximum thermal conductor temperature of 125°C (257°F).

A detailed map of the alignment of this segment is provided as **Figure 3-1 in Attachment 3**. The design minimum conductor clearances is provided in **Table 2-7** and conductor thermal ratings for the new 230 kV lines are shown in **Table 2-2**. **Table 2-8** provides a summary of the existing and proposed number of structures and structure heights for the MILT-SUNB 230 kV line between the Milton and Sunbury substations.

TABLE 2-7: DESIGN MINIMUM CONDUCTOR CLEARANCES (ACSS)

Condition	Transmission Double-Circuit Design Clearance to Ground
Heavy Ice (1.25” ice, 32°F)	25.5’
Maximum Temperature (392°F / 200°C)	25.5’
Blowout (15psf, 60°F)	25.5’

*Based on 1590 kcmil 54/19 stranding ACSS

TABLE 2-8: EXISTING AND NEW STRUCTURES (MILT-SUNB 230 kV)

TRANSMISSION LINE	NO. OF EXISTING STRUCTURES	EXISTING STRUCTURE HEIGHT RANGE (FEET)	PROPOSED NO. OF NEW STRUCTURES	PROPOSED STRUCTURE HEIGHT RANGE (FEET)	APPLICABLE FRAMING/ SPECIFICATIONS
MILTON-SUNBURY 230 kV	68	61 to 215			
MILTON-SUNBURY 230 kV			41	120 to 160	7-009-061
MILTON-SUNBURY 230 kV			22	100 to 210	7-009-064

3.0 MAGNETIC FIELD MANAGEMENT

PPL Electric's Magnetic Field Management Program is applied to new and reconstructed transmission line projects. The Company does not believe that current scientific evidence demonstrates that magnetic fields cause any adverse health effects or pose a health or safety danger to the public. Nevertheless, PPL Electric has determined, as a matter of policy, to design its new and rebuilt transmission lines to reduce magnetic fields. When consistent with functional requirements, the program generally prescribes the use of a line design with ground clearance that exceeds NESC standards by five feet and reverse phasing of new double-circuit lines where feasible and can be implemented at low or no additional cost.

The program can be feasibly applied to this Project and it will be designed with clearances that are at least 5 feet higher than NESC standards.

Figure 2-1: 230 kV Double-Circuit Two-Pole Tension Structure (7-009-005)

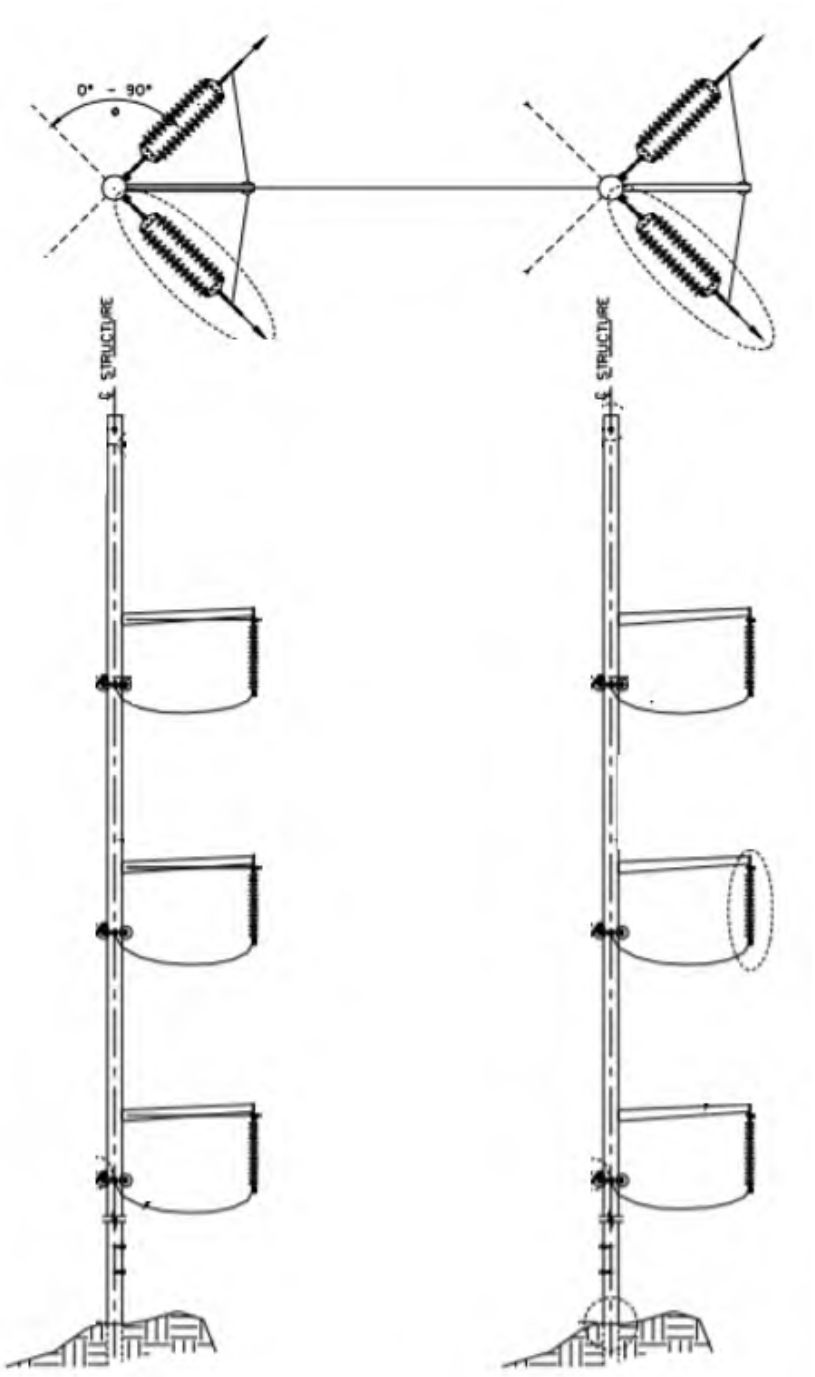
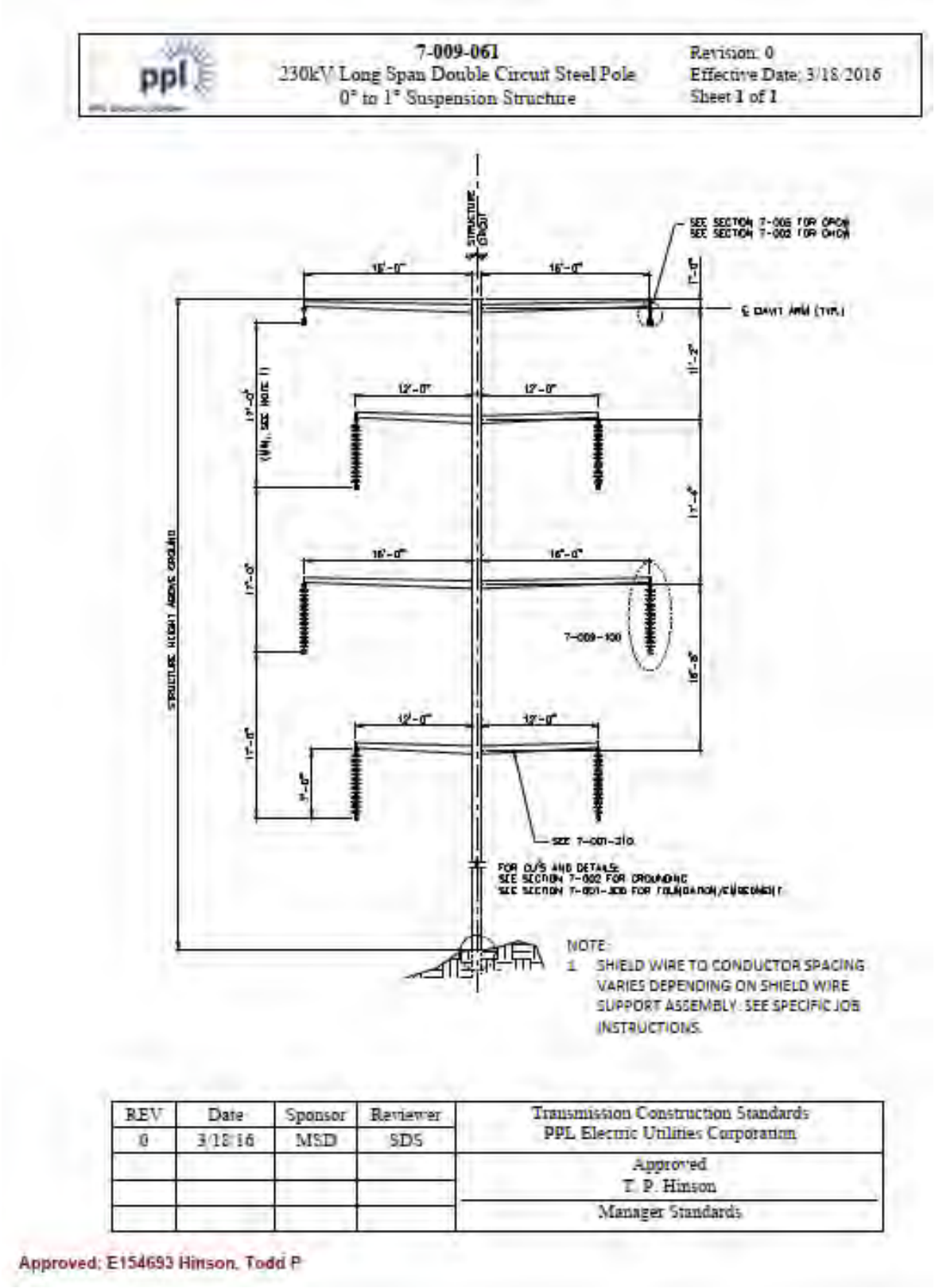


Figure 2-2: 230 kV Double-Circuit Suspension Structure (7-009-061)



REV	Date	Sponsor	Reviewer	Transmission Construction Standards PPL Electric Utilities Corporation
0	3/18/16	MSD	SDS	
				Approved T. P. Hinson
				Manager Standards

Approved: E154693 Hinson, Todd P

Figure 2-3: 230 kV Double-Circuit Monopole Tension Structure (7-009-064)

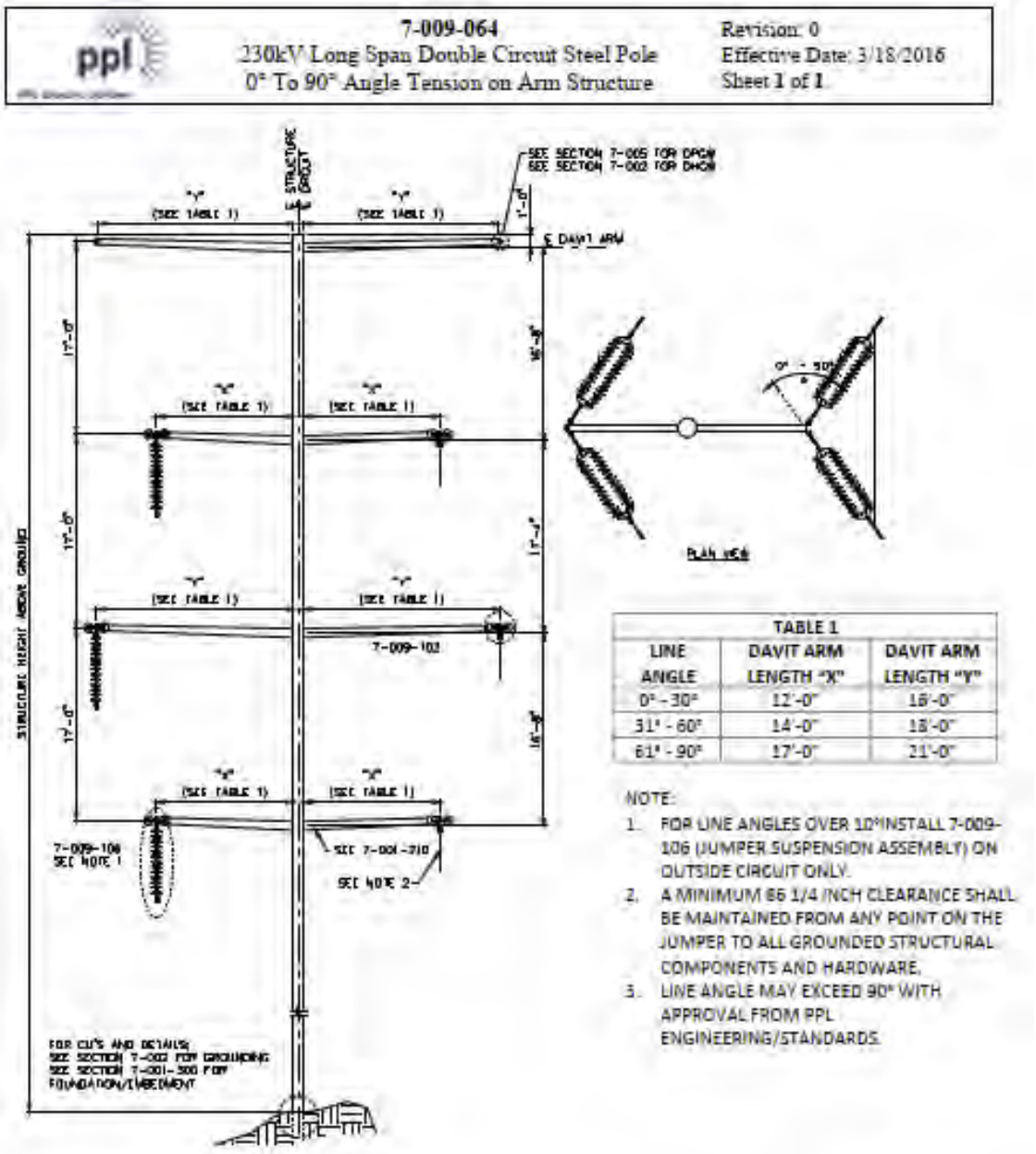


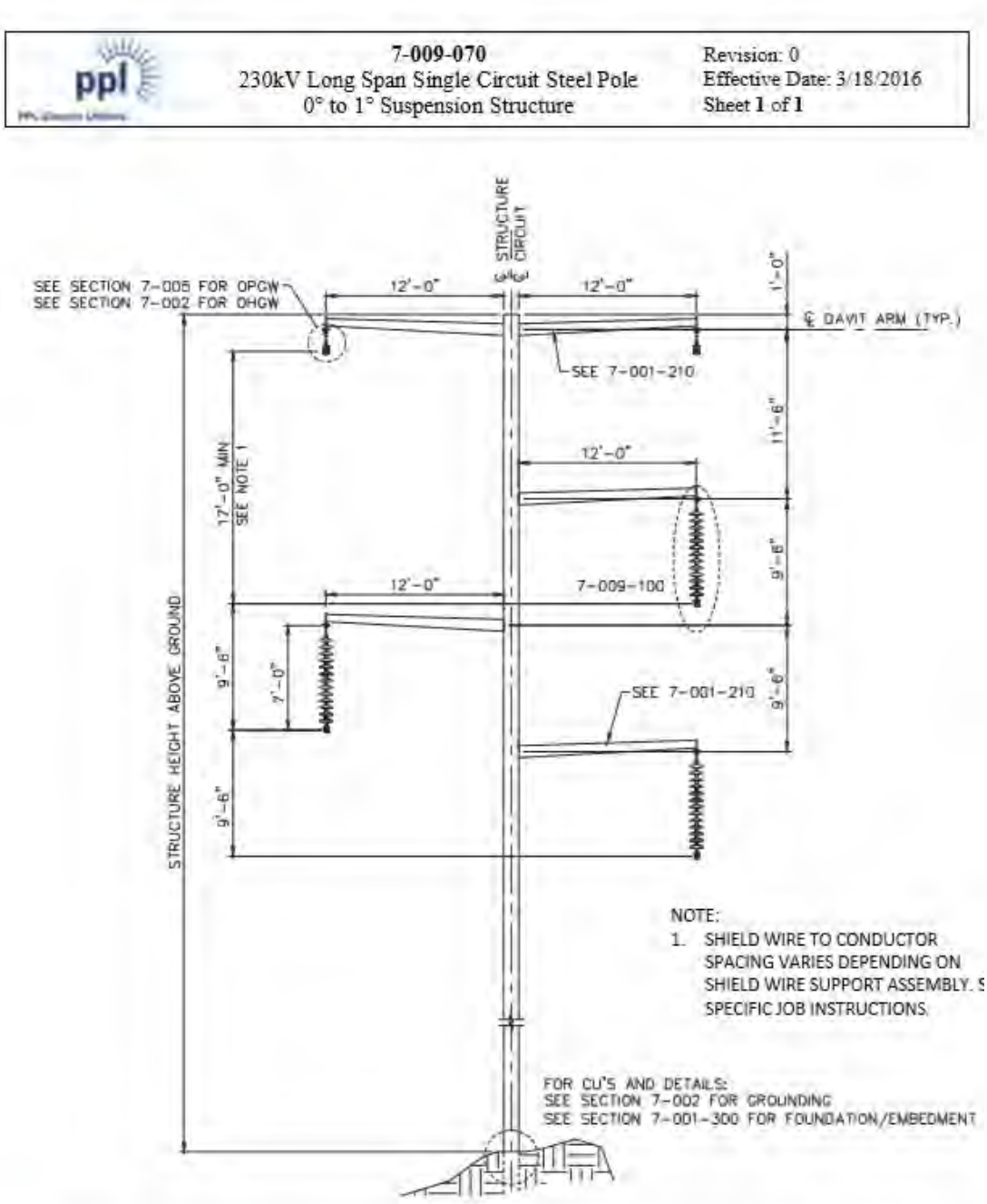
TABLE 1		
LINE ANGLE	DAVIT ARM LENGTH "X"	DAVIT ARM LENGTH "Y"
0° - 30°	12'-0"	16'-0"
31° - 60°	14'-0"	18'-0"
61° - 90°	17'-0"	21'-0"

NOTE:
1. FOR LINE ANGLES OVER 10°INSTALL 7-009-106 (JUMPER SUSPENSION ASSEMBLY) ON OUTSIDE CIRCUIT ONLY.
2. A MINIMUM 66 1/4 INCH CLEARANCE SHALL BE MAINTAINED FROM ANY POINT ON THE JUMPER TO ALL GROUNDED STRUCTURAL COMPONENTS AND HARDWARE.
3. LINE ANGLE MAY EXCEED 90° WITH APPROVAL FROM PPL ENGINEERING/STANDARDS.

REV	Date	Sponsor	Reviewer	Transmission Construction Standards PPL Electric Utilities Corporation
0	3/18/16	MSD	SDS	
				Approved T. P. Hinson
				Manager Standards

Approved: E154693 Hinson, Todd P

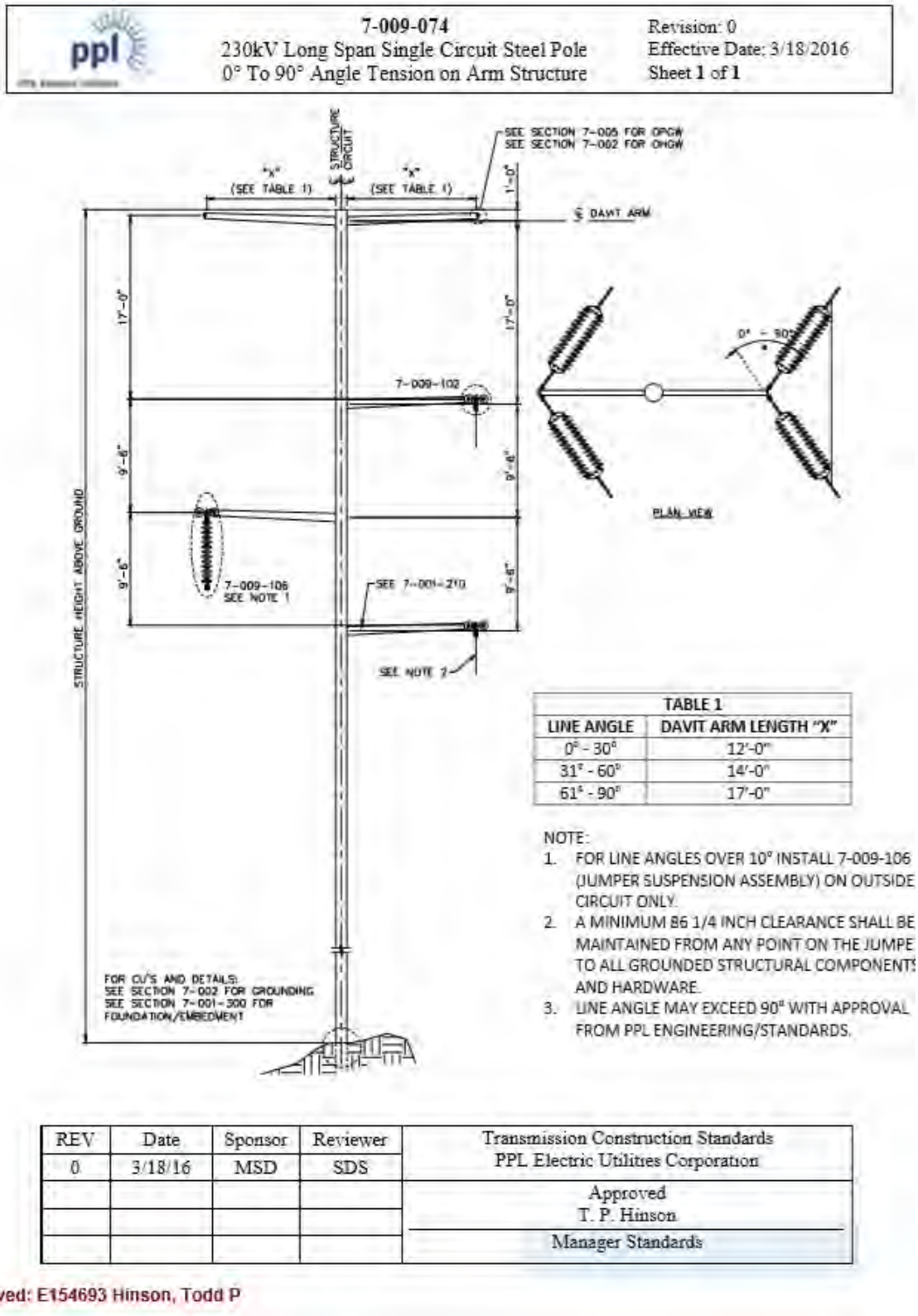
Figure 2-4: 230 kV Long Span Single-Circuit Steel Pole Structure (7-009-070)



REV	Date	Sponsor	Reviewer	Transmission Construction Standards PPL Electric Utilities Corporation
0	3/18/16	MSD	SDS	
				Approved T. P. Hinson
				Manager Standards

Approved: E154693 Hinson, Todd P

Figure 2-5: 230 kV Long Span Single-Circuit Steel Pole Angle Tension Structure (7-009-070)



MONTOUR-MILTON AND MILTON-SUNBURY 230 KV 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 the existing 230 kV transmission line connecting the Montour 230 kV Switchyard in Montour County and the Milton 230-69 kV Substation in Northumberland County and the 230 kV transmission line connecting the Milton 230-69kV Substation and the Sunbury 500-230-69 kV Substation in Snyder County, Pennsylvania (collectively the "Project"). Rebuilding the existing 230 kV transmission lines will involve removing the existing COR-TEN® lattice tower structures, constructing new optimized steel structures and associated modifications of various sections the adjacent 230 kV and 69 kV transmission lines needed to facilitate the Project. The modifications to the alignment of sections of the existing 230 kV transmission line network include re-routing a one-mile section of the Montour-Columbia 230 kV Transmission Line that is currently co-located on the Montour-Milton 230 kV Transmission Line on the Montour Power Plant property Realignment of the 69 kV ROW for the Milton – Millville is needed because a two-mile section of this line is on the same transmission towers as the Montour – Milton 230 kV transmission line as it approaches the Montour Substation Parcel.[1]

A detailed map of the existing and proposed alignments and associated structures are provided in **Figure 3-1**.

2.0 LAND USE

Evaluation of the existing land uses reviewed the uses on any PPL Electric owned properties, within the existing 150-foot wide ROW, and within 0.25 mile (1,320 feet) outside of the ROW. This broader area was reviewed to provide a sense of the landscape in which the Project is located. Land uses were determined based on review of the 2011 National Land Cover Data ("NLCD").

Montour-Milton Section

[1] As explained in Attachment 2, approval of the contemplated realignment and relocation of the 69 kV ROW is not being sought as a part of the Project, because the Commission's authority to regulate the location and construction of a "HV transmission line" is limited to transmission lines with a design voltage of greater than 100 kV. *See* 52 Pa. Code § 57.1 (defining "HV transmission line" or "HV line").

Assessment of the data shows that agricultural areas are the dominant land use, accounting for over 70% of the review area, used for pasture and cultivated crops approximately evenly. Forested areas bordering the Project ROW accounts for about 15% of the review area. Low to moderate density development and associated open space is noted across about 10% the review area.

Impacts to some areas of the agricultural land use are anticipated to be minimal because the proposed work for this section will involve demolition of the existing structures and, due to the optimization of new structure locations, construction of new structures in different locations relative to the existing structures. Some forested areas will be affected by the development of the new 69 kV and 230 kV alignments required near the Montour Switchyard but most of these alignments will also extend across maintained meadows associated with the surrounding industrial facilities. This section of the Project will be accessed through use of the surrounding state and secondary roads at locations where they intersect the ROW. A few temporary access roads may be necessary outside the ROW to reach several structure locations. PPL Electric will use and update previously established access roads within the ROW for the construction task to the extent practical to further reduce interference with existing land uses.

Due to span optimization and the fact that single monopole structures will be replacing the COR-TEN® lattice towers, there will be fewer structures along the line route at the completion of the Project than exist today. Specifically, PPL Electric will replace all 64 existing COR-TEN® lattice structures with 48 new steel monopoles. Each of the existing lattice towers currently occupy approximately 400 square feet of ground. These structures will be replaced by a single steel monopole that will occupy approximately 20 square feet of ground. Although the proposed structures will increase in height compared to the existing lattice towers, the proposed Project will reduce the reduce the number of structures impacting the visual effect on the surrounding community and the smaller footprint of the monopoles will lessen impacts on the agricultural practices prevalent in the Project area. PPL Electric will not place new structures on properties that do not presently contain lattice towers without discussing with the landowner first. As a result, the new line will have substantially less impact on the landscape and the land use practices relative to the existing line.

No communication towers will be affected by this section of the proposed Project. This section of the Project will intersect with other transmission line and pipeline corridors that will need to be evaluated by engineering. An active railroad corridor extends around the Montour Switchyard that is currently spanned by the existing transmission lines and will require coordination for the re-alignment of the new 230 kV transmission line. The closest active airport to this section of the Project Area is the Danville Airport which is approximately 7 miles to the southeast near the town of Danville.

PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are similar 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.

Milton-Sunbury Section

Assessment of the data shows that agricultural areas are the dominant land use, accounting for over 50% of the review area, with the primary component being cultivated crops. Forested areas bordering the Project ROW accounts for 30% of the review area. Low to moderate density development and associated open space is noted across 20% the review area. Impacts to land use are anticipated to be moderate because the proposed work for this section of the Project will involve structure optimization.

No substantial impacts to the agricultural land use are anticipated because the proposed work for this section will involve demolition of the existing structures and, due to the optimization of new structure replacement with fewer structures. Specifically, PPL Electric will replace all 68 existing COR-TEN® lattice structures with 63 new steel monopoles and the footprint for each structure will decrease from approximately 400 square feet of ground for lattice towers to approximately 20 square feet of ground for monopoles. Ultimately, at the end of construction, the total impact of the new line will be substantially less than the existing line. Although the proposed structure will increase in height compared to the existing structures, span optimization and the fact that single monopole structures will be replacing the COR-TEN® lattice towers, will reduce the number of

structures along the line route and the ground impacts of each structure at the completion of the Project than exist today.

Portions of the widened ROW may cross through forested areas that will require clearing. This section of the Project will be accessed through use of the surrounding state and secondary roads at locations where they intersect the ROW. A few temporary access roads may be necessary outside the ROW to reach several structure locations. PPL Electric will use and update previously established access roads within the ROW for the Project to the extent practical to further reduce interference with existing land uses.

No communication towers or pipelines will be affected by this section of the proposed Project. This section of the Project will intersect with other transmission line corridors that will need to be evaluated by engineering. A railroad corridor that extends along the east side of the Susquehanna River near the town of Northumberland is currently spanned by the existing transmission lines and will require coordination for the re-conductoring process.

PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are existing electrical facilities. The closest active airports relative to this section of the Project Area are the Penn Valley Airport which is approximately 3 miles to the southwest of the Sunbury Substation and the Sunbury Airport located approximately 3 miles east of the Project near the town of Northumberland. Review of the surrounding area also observed one other identified airport, Snyders Airport, that is about 0.1 mile to the northwest of the Milton Substation but does not appear to be active. 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

Montour-Milton Section

This section of the proposed Project will not affect any state lands, national parks, local parks, recreational areas or natural landmarks. None of these features are located within the Project Area. State Game Lands #115 is located approximately 3.2 miles to the southeast of the Project. This property will not be affected.

This section of the Project does cross through a federal Wetlands Reserve Program Easement located in Montour County. This easement was founded in 2001 and is held by the U.S. Natural Resources Conservation Service. Reconstruction of the 230 kV transmission lines in the Montour-Milton Section will beneficially decrease the impacts of the Montour-Milton 230 kV line on this property because it will reduce the number of towers on the property and the ground impacts of each structure.

Milton-Sunbury Section

This section of the proposed Project will not affect any state lands, national parks, local parks, recreational areas or natural landmarks. None of these features are located within the Project Area. State Game Lands #193 is located approximately 2.4 miles to the northwest of the Project and State Game Lands #115 is located approximately 5.5 miles to the east of the Project. Neither of these properties will be affected.

3.0 CULTURAL RESOURCES

An online review of the Project Area and surrounding landscape was conducted through the Pennsylvania Historical and Museum Commission ("PHMC") Cultural Resources Geographic Information System site and the following State Historic Preservation Office ("SHPO") listed or eligible properties were found within or close to the Project Area:

Montour-Milton Section

The following SHPO eligible property was found close to this section of the Project Area:

- Jane Delong, Memorial Hall (eligible).

Milton-Sunbury Section

The following SHPO listed or eligible properties are close to this section of the Project Area:

- Jacob Hoch, Farm Property (eligible);
- Brown Farm Property (eligible);
- John Young Farm (eligible);
- Daniel Hummel Tavern (eligible);
- James Kessler Property (eligible);
- Trexler Property (eligible);
- Talen Energy's Sunbury Steam Electric Station(eligible);
- Blair Property(eligible);
- Philadelphia & Erie Railroad (Sunbury to Milton) (eligible); and
- Sodom Schoolhouse (listed).

PPL Electric will coordinate with the PHMC as needed for the modifications being made to these transmission lines. This coordination will be required to receive permits to construct the Project. 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.

4.0 NATURAL FEATURES

Unique Natural Features

Montour-Milton Section

The Montour-Milton Section of the Project extends through portions of Montour and Northumberland Counties. In Montour County, the Montour-Milton Section is located in close proximity to two Pennsylvania Natural Heritage Program identified natural areas. The Hillside Wet Meadow has a very good diversity of native plants and is a quality habitat for many species

of wildlife. The Mexico Road Marsh – Bucknell Preserve contains a good number of species on concern, including marsh wren (*Cistothorus palustris)* and cat-tail sedge (*Carex typhina*).

In Northumberland County, this Section is located in close proximity to one Pennsylvania Natural Heritage Program identified natural area. The Montandon Wetlands Complex has unique geologic features of sand dunes interspersed with swamps and marshes and is one of the top sites for preservation in the county.

Milton-Sunbury Section

The Milton-Sunbury Section of the Project extends through portions of Northumberland and Snyder Counties. In Northumberland County, the Milton-Sunbury Section is located in close proximity to two Pennsylvania Natural Heritage Program identified natural areas. The Chillisquaque Creek at Shangri-La Campground contains a small number of invertebrate species of concern. The Chillisquaque Floodplain Forest provides a breeding and foraging habitat for many amphibian species.

The portion in Snyder County is located in close proximity to two Pennsylvania Natural Heritage Program identified natural areas. The Shamokin Dam Slopes natural area consists of forested areas that may contain populations of northern long-eared bats (*Myotis septentrionalis*). The Shikellamy Bluffs natural area is the location of two populations of jeweled shooting star (*Dodecatheon meadia*), a state threatened plant, and golden corydalis (*Corydalis aurea*), a state endangered plant.

Soils

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

Montour-Milton Section

Data was collected through PADEP's eMapPA website to determine classifications of Chapter 93 Designated Use Streams. The transmission lines in the Montour-Milton Section of the Project span over the Cillisquaque Creek, Mud Creek and up to fifteen unnamed tributaries to these named watercourses. All are classified as Warm Water Fishes ("WWF") streams.

Milton-Sunbury Section

The transmission lines in the Milton-Sunbury Section of the Project span over the West Branch Susquehanna River, Cillisquaque Creek, and up to twelve unnamed tributaries to these named watercourses. All are classified as WWF streams.

Wetlands

Montour-Milton Section

Based on review of the U.S. Fish and Wildlife Service's ("USFWS") National Wetlands Inventory ("NWI"), the Montour-Milton Section of the Project passes less than 0.5 miles from one Palustrine Forested ("PFO") wetland system. No impacts to this wetland feature are anticipated by the proposed structure reconstruction process. The need for new 69 kV and 230 kV ROW may impact adjacent PFO or Palustrine Emergent ("PEM") wetlands that may be located in the area.

Milton-Sunbury Section

The Milton-Sunbury Section of the Project crosses one PEM and one PFO wetland system. No impacts to these wetland features are anticipated by the proposed re-conductoring process.

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 wetland impacts where feasible. Additionally, PPL Electric will avoid impacts to wetlands where possible by aerially spanning these features.

100-year Floodplains

The National Flood Hazard Layer ("NFHL") was obtained through the Pennsylvania Spatial Data Access ("PASDA") database and analyzed for 100-year floodplains within the Project Area and surrounding landscape. The NFHL data incorporates all Flood Insurance Rate Map ("FIRM") databases published by the Federal Emergency Management Agency ("FEMA"), and any Letters of Map Revision ("LOMRs") that have been issued against those databases since their publication date.

Montour-Milton Section

Based on the NFHL data from Montour County, the Project is within a FEMA 100-year floodplain for a large area adjacent to Chillisquaque Creek near Washingtonville and the Montour Switchyard. In Northumberland County, the Montour-Milton Section spans the FEMA 100-year floodplain of Chillisquaque Creek as it crosses from Montour to Northumberland County.

Milton-Sunbury Section

Based on the data for Northumberland County, the Project is within the FEMA 100-year floodplain located along the eastern bank of the West Branch Susquehanna River. Based on the data for Snyder County, the Project is within a FEMA 100-year floodplain that is located along the western bank of the West Branch Susquehanna River. This section of the Project also spans the FEMA 100-year floodplain of Chillisquaque Creek as the transmission lines extends down the north slope of Montour Ridge.

Based on review of this data, minimal floodplain impacts are anticipated for the Milton-Sunbury Section as it spans the Susquehanna River, but some floodplain impacts are anticipated by the re-construction of portions of the Montour-Milton Section. Similarly, some new floodplain impacts are anticipated for the new 69 kV ROW required near the Montour Switchyard, but not for the new 230 kV alignment.

Vegetation

Montour-Milton Section

Vegetative cover in the Montour-Milton Section of the Project also consists primarily of row crops and meadows associated with fallow fields. There are limited areas of forest cover located adjacent to the existing ROWs. Planted vegetation associated with residential land uses is noted in the more densely populated areas. The existing transmission line ROW has previously been cleared of woody vegetation and no extensive tree clearing is anticipated. The new 69 kV and 230 kV alignments may involve some areas of forest clearing.

Milton-Sunbury Section

Vegetative cover in the Milton-Sunbury Section of the Project consists primarily of row crops and meadows associated with fallow fields. Several sections of forest consisting of deciduous trees, including Montour Ridge, are also located adjacent to the Project Area. Planted vegetation associated with residential land uses is also noted in the more densely populated areas. The existing ROW for the transmission lines has previously been cleared of woody vegetation and no extensive tree clearing is anticipated.

5.0 THREATENED AND ENDANGERED SPECIES

Coordination with the following state and federal agencies regarding potential threatened and endangered plants or animals may be required for the Project:

- Pennsylvania Game Commission
- Pennsylvania Fish and Boat Commission

- Pennsylvania Department of Conservation and Natural Resources
- United States Fish and Wildlife Service

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

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- Parcels Crossed
- County Parcel Lines
- NHA Core

Notes:

- Transmission centerlines provided by PPL EU February 2019.
- Proposed structure locations provided by PPL EU November 2020.

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

References:
World Imagery Basemap (ESRI),
Northumberland County Parcel Boundaries (2018),
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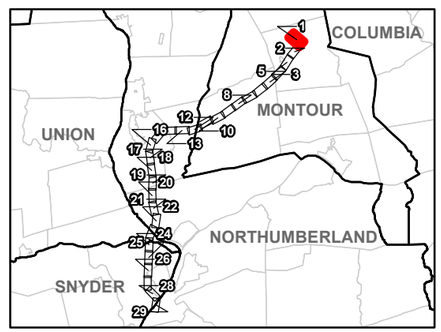

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FIGURE 3-1
Montour - Milton - Sunbury
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Montour, Northumberland &
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PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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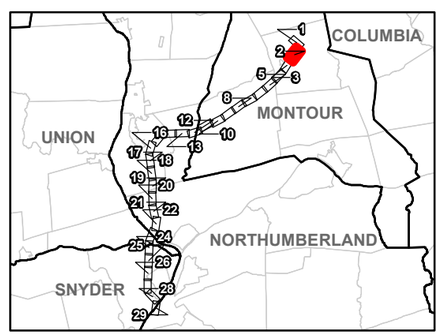

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FIGURE 3-1
Montour - Milton - Sunbury
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PPL Electric Utilities
Allentown, Pennsylvania

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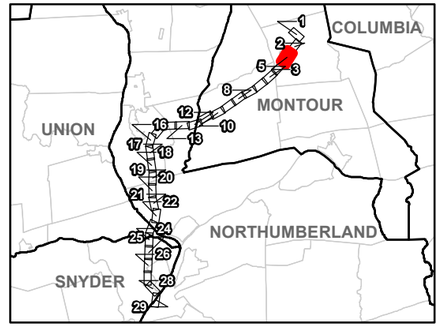

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FIGURE 3-1
Montour - Milton - Sunbury
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Allentown, Pennsylvania

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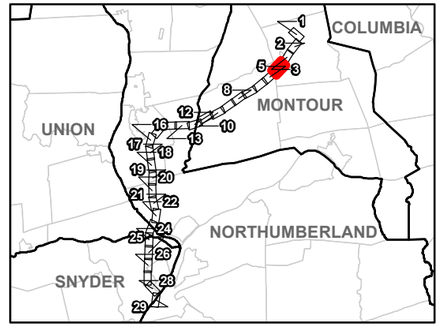

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FIGURE 3-1
Montour - Milton - Sunbury
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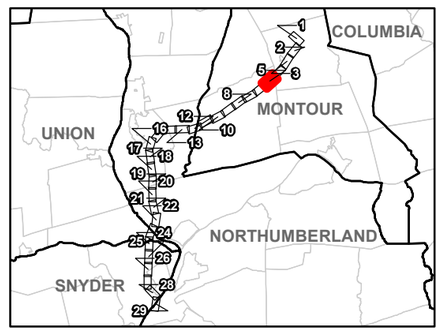

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FIGURE 3-1
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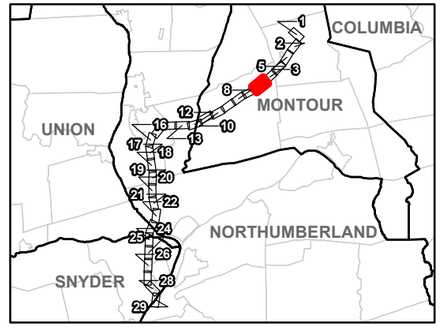

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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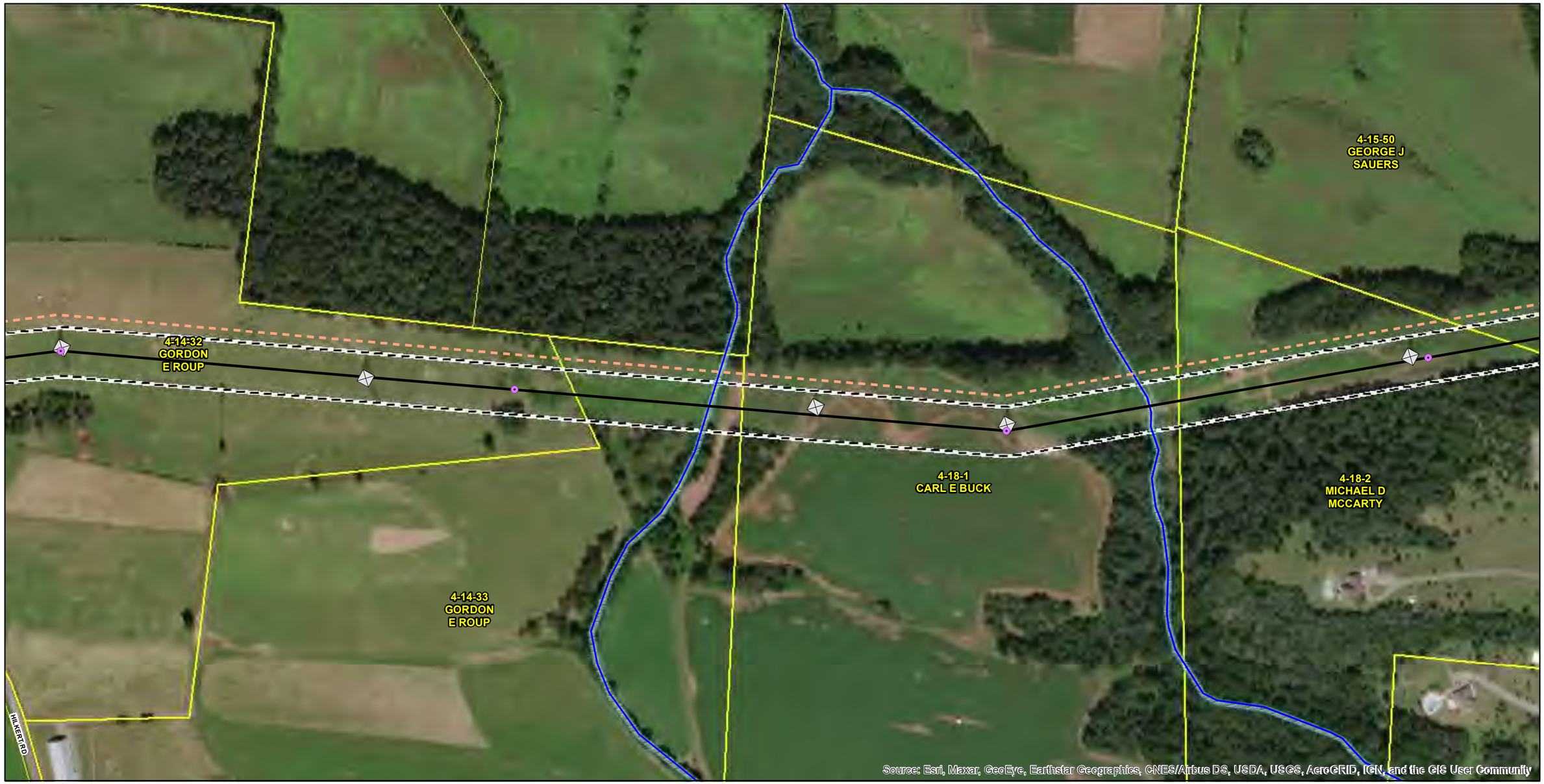

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Notes:

- Transmission centerlines provided by PPL EU February 2019.
- Proposed structure locations provided by PPL EU November 2020.

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

References:
World Imagery Basemap (ESRI),
Northumberland County Parcel Boundaries (2018),
Montour County Parcel Boundaries (2020),
Snyder County Parcel Boundaries (2019),
Union County Parcel Boundaries (2018)

0 150 300 600
Feet
1 inch = 300 feet

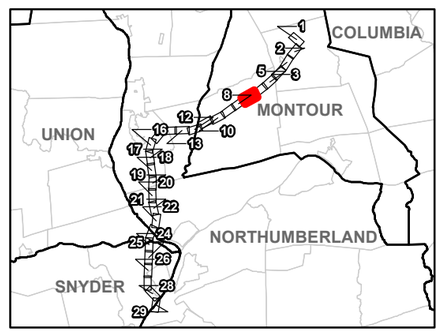

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
Page 7 of 29
Montour, Northumberland &
Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

Legend

- CSVT Poles to be Added
- Proposed Optimized Structure Locations
- Steel Pole to be Replaced or Added
- Re-Location Structures
- Existing Pole Locations
- Montour - Sunbury 230 kV Transmission Centerline
- Sunbury - Milton 69 kV Transmission Line
- Milton - Millville 69 kV Transmission Line
- Proposed MONT - COLU Reroute
- Existing PPL EU Transmission Line
- Chapter 93 Streams
- NWI Wetlands
- 150' ROW
- Parcels Crossed
- County Parcel Lines
- NHA Core

Notes:

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

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0 150 300 600
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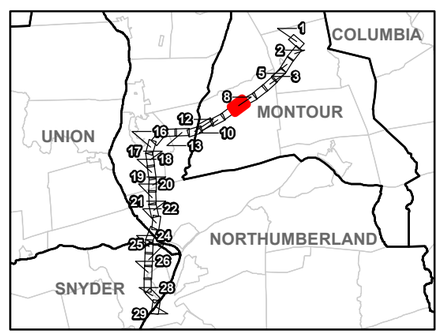

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
Page 8 of 29
Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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Notes:

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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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0 150 300 600
Feet
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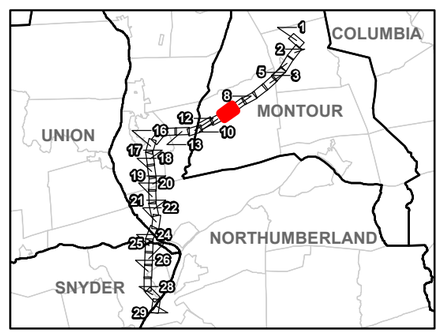

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

Legend

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Notes:

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

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Montour County Parcel Boundaries (2020),
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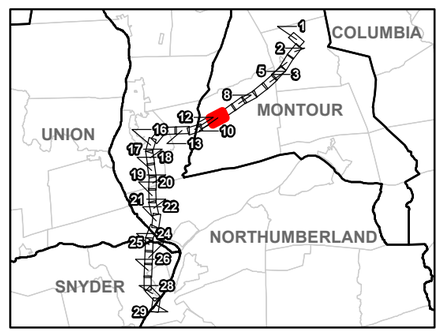

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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

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Feet
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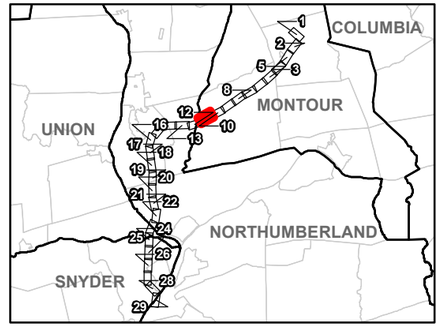

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
Projection: Lambert Conformal Conic
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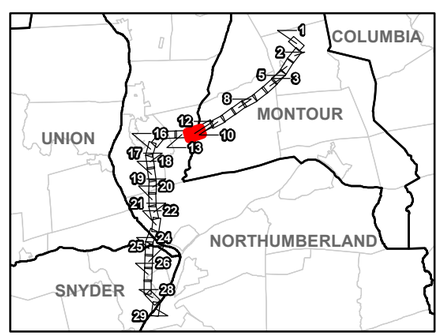

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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

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0 150 300 600
Feet
1 inch = 300 feet

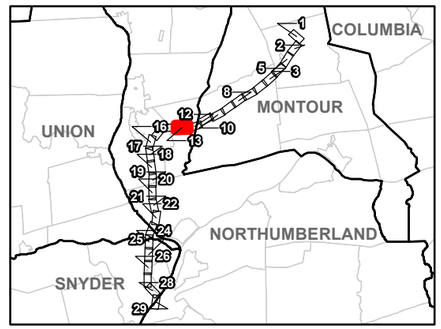

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
Page 13 of 29
Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
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0 150 300 600
Feet
1 inch = 300 feet

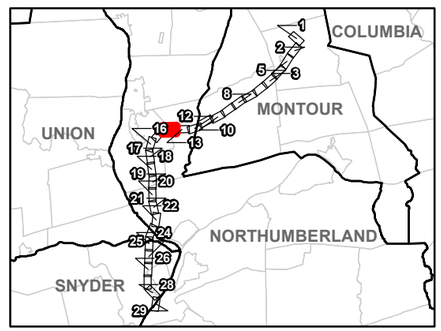

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
Projection: Lambert Conformal Conic
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Montour County Parcel Boundaries (2020),
Snyder County Parcel Boundaries (2019),
Union County Parcel Boundaries (2018)

0 150 300 600
Feet
1 inch = 300 feet

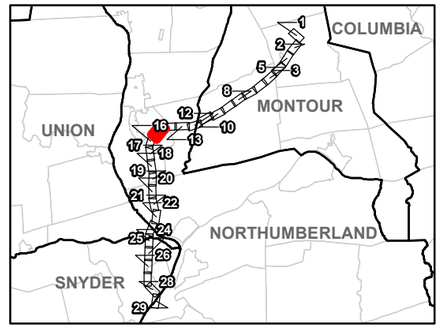

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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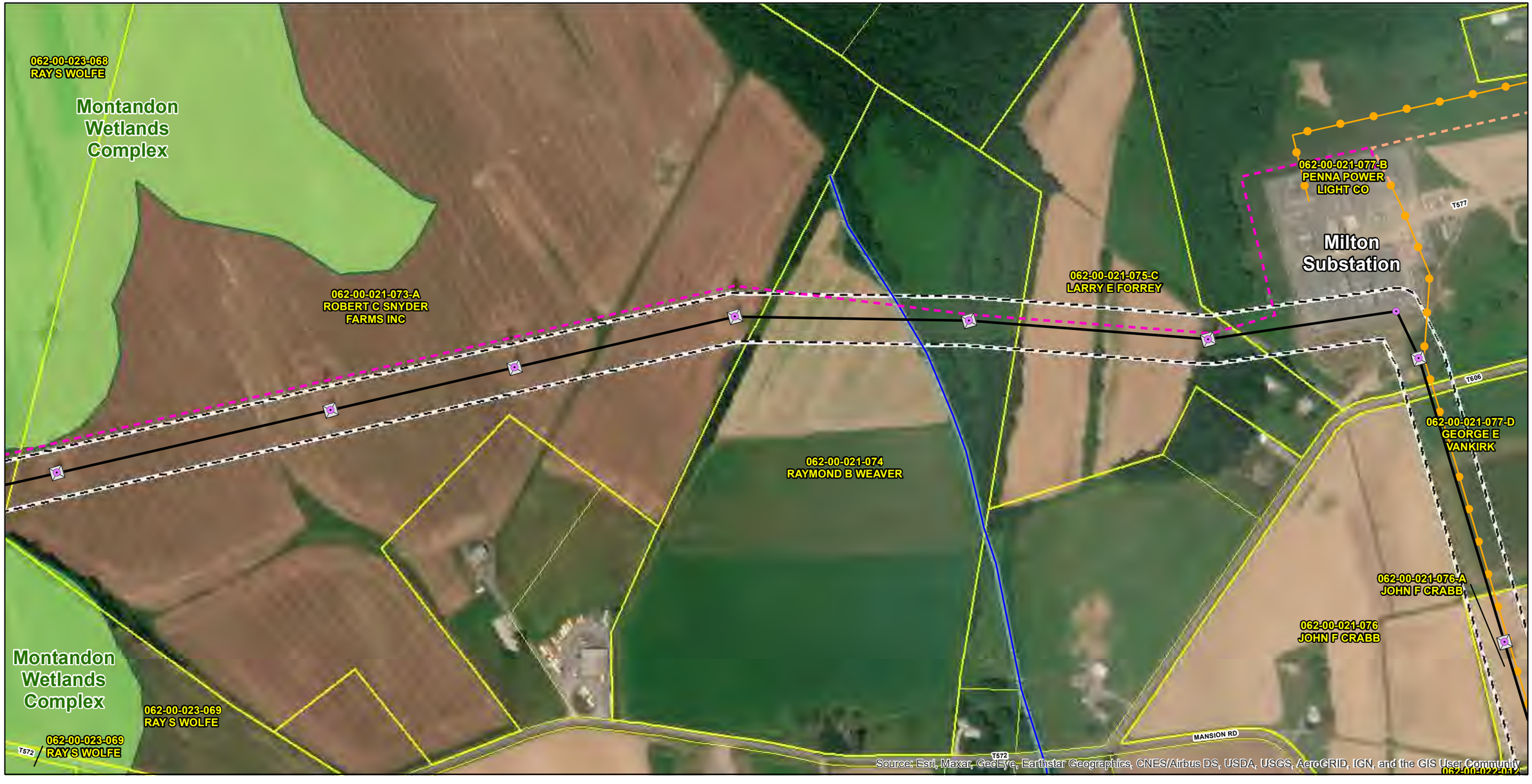
Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021



Legend

- CSVT Poles to be Added
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NAD 1983 State Plane
Pennsylvania North FIPS 3701
Projection: Lambert Conformal Conic
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Snyder County Parcel Boundaries (2019),
Union County Parcel Boundaries (2018)

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Feet
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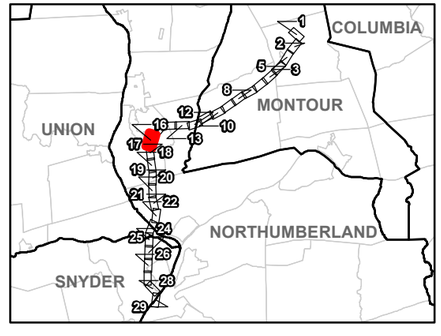

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

Legend

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
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Linear Unit: US Foot

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Feet
1 inch = 300 feet

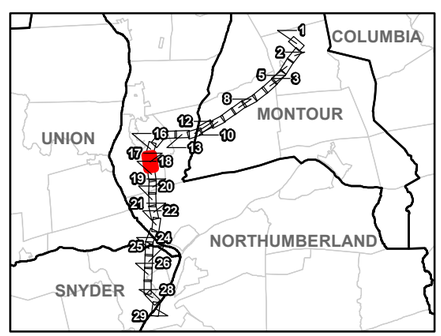

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

Legend

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
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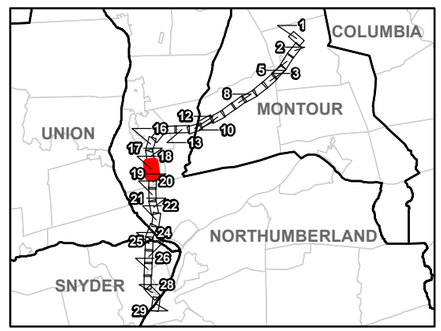

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
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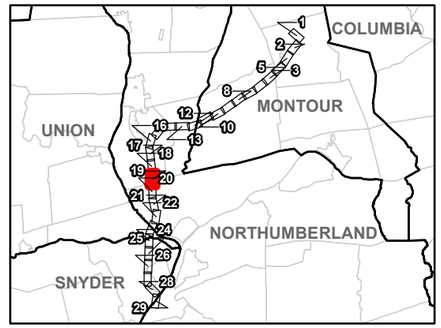

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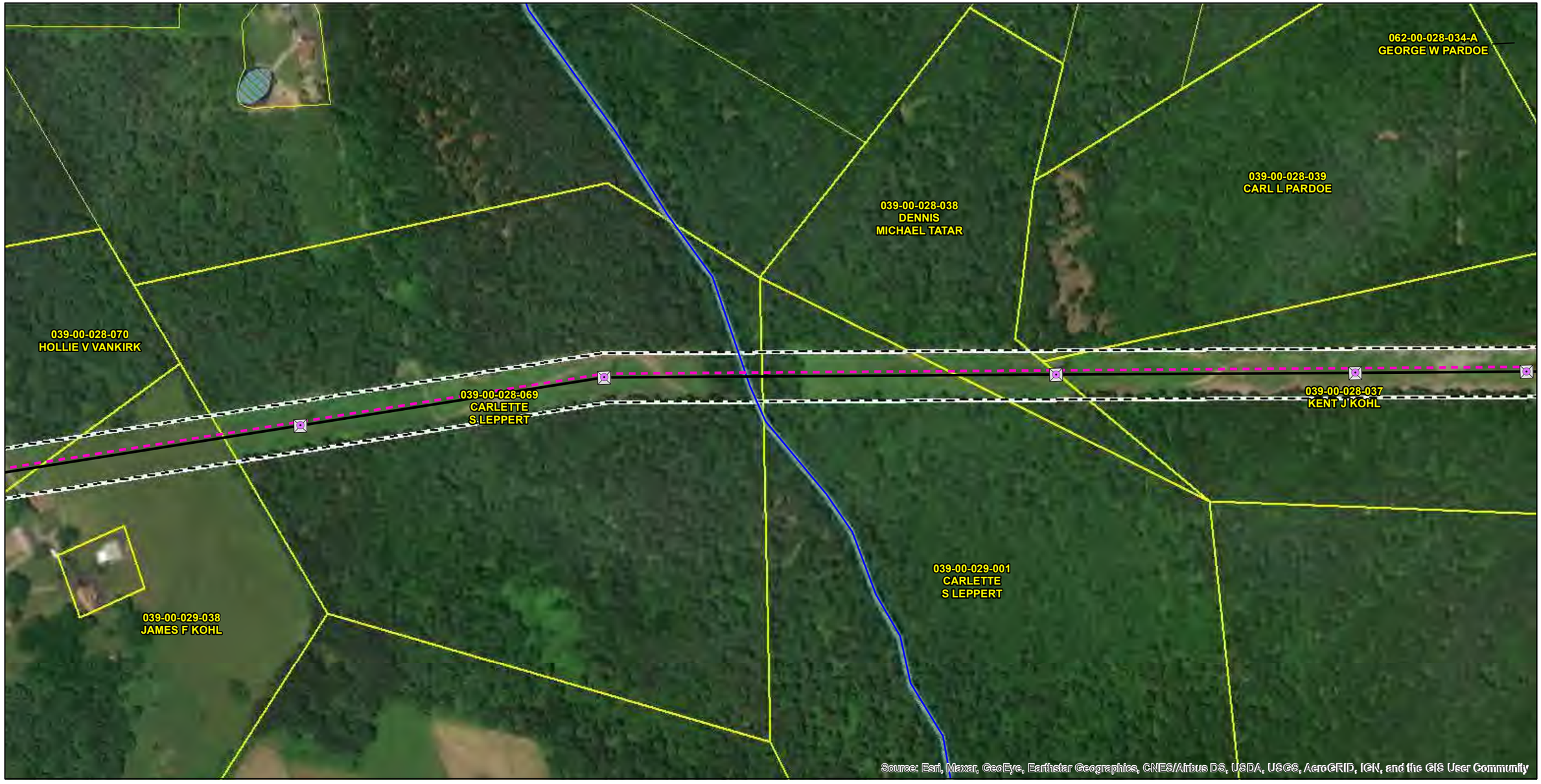
FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
Page 19 of 29
Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021



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NAD 1983 State Plane
Pennsylvania North FIPS 3701
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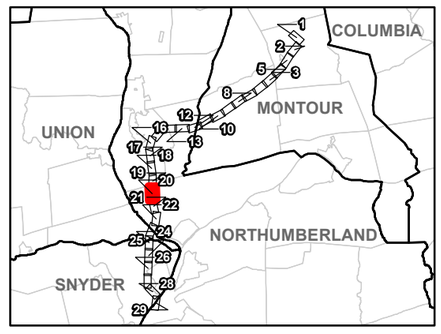

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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NAD 1983 State Plane
Pennsylvania North FIPS 3701
Projection: Lambert Conformal Conic
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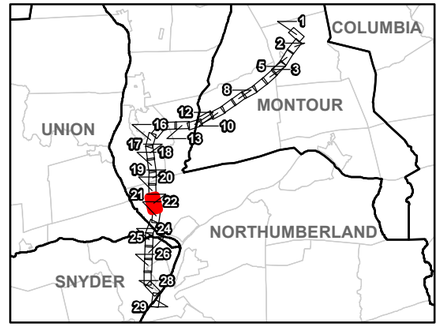

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FIGURE 3-1
Montour - Milton - Sunbury
230 kV Rebuild
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Montour, Northumberland & Snyder Counties, Pennsylvania

PPL Electric Utilities
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021

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Snyder County Parcel Boundaries (2019),
Union County Parcel Boundaries (2018)

0 150 300 600
Feet
1 inch = 300 feet

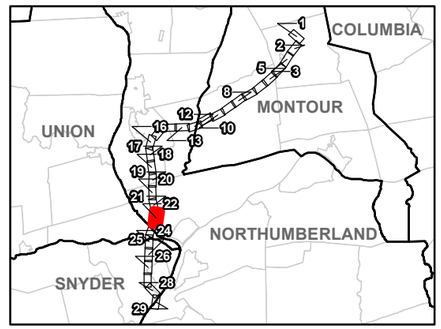

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FIGURE 3-1
Montour - Milton - Sunbury 230 kV Rebuild
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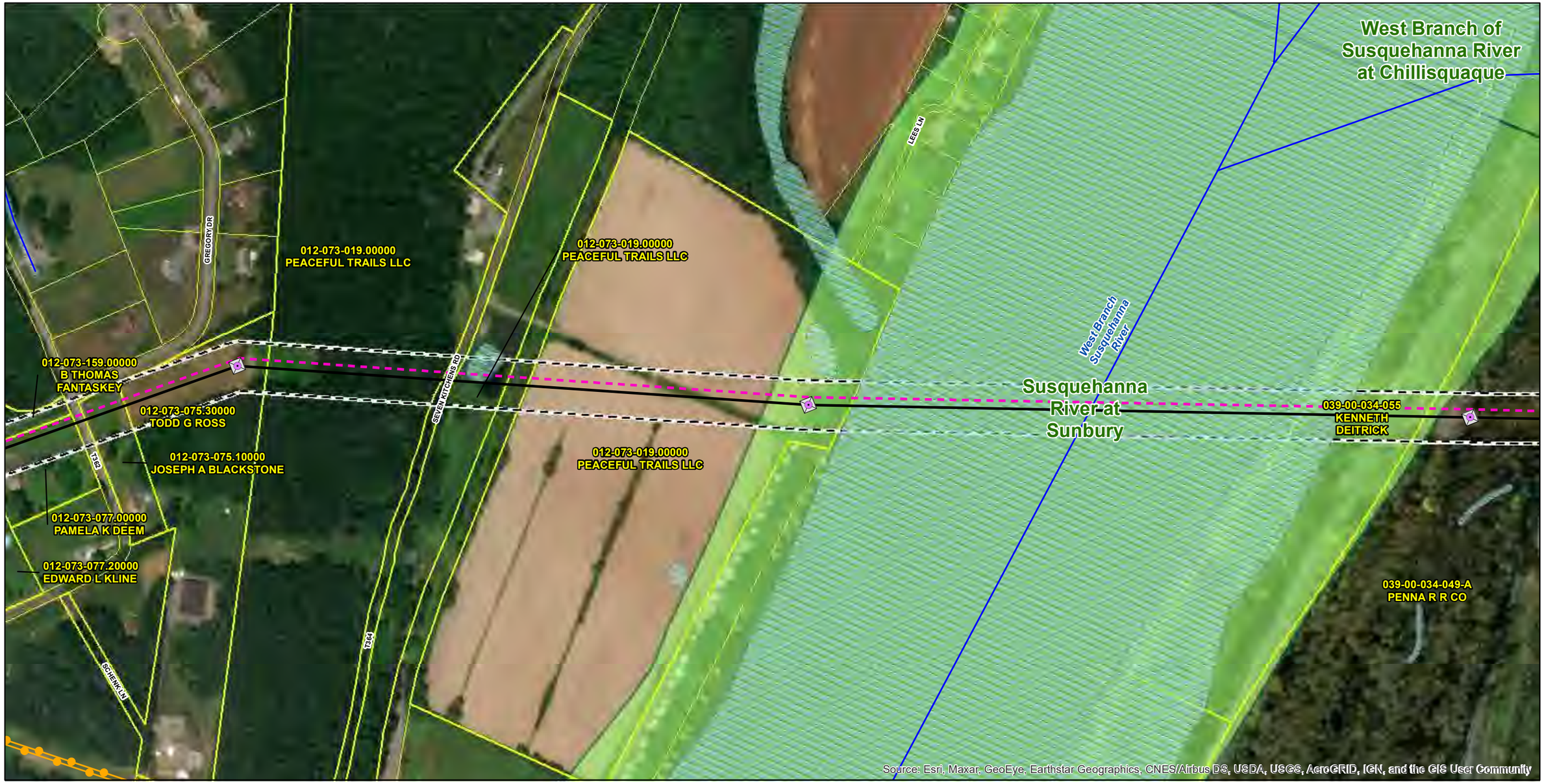
Allentown, Pennsylvania

Prepared By: NAB	Checked By: BAB
Job: Montour - Sunbury LON	Date: 1/26/2021



Legend

- CSVT Poles to be Added
- Proposed Optimized Structure Locations
- Steel Pole to be Replaced or Added
- Re-Location Structures
- Existing Pole Locations
- Montour - Sunbury 230 kV Transmission Centerline
- Sunbury - Milton 69 kV Transmission Line
- Milton - Millville 69 kV Transmission Line
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- Existing PPL EU Transmission Line
- Chapter 93 Streams
- NWI Wetlands
- 150' ROW
- Parcels Crossed
- County Parcel Lines
- NHA Core

Notes:

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- Proposed structure locations provided by PPL EU November 2020.

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

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1 inch = 300 feet

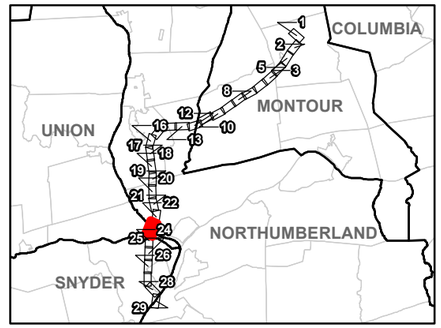

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FIGURE 3-1
Montour - Milton - Sunbury
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Allentown, Pennsylvania

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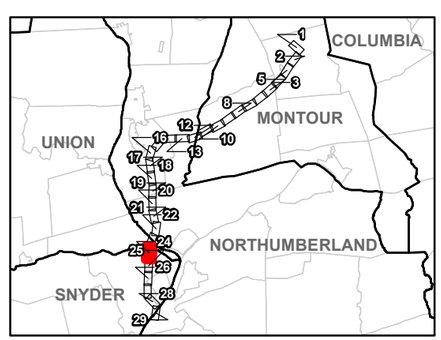

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FIGURE 3-1
Montour - Milton - Sunbury
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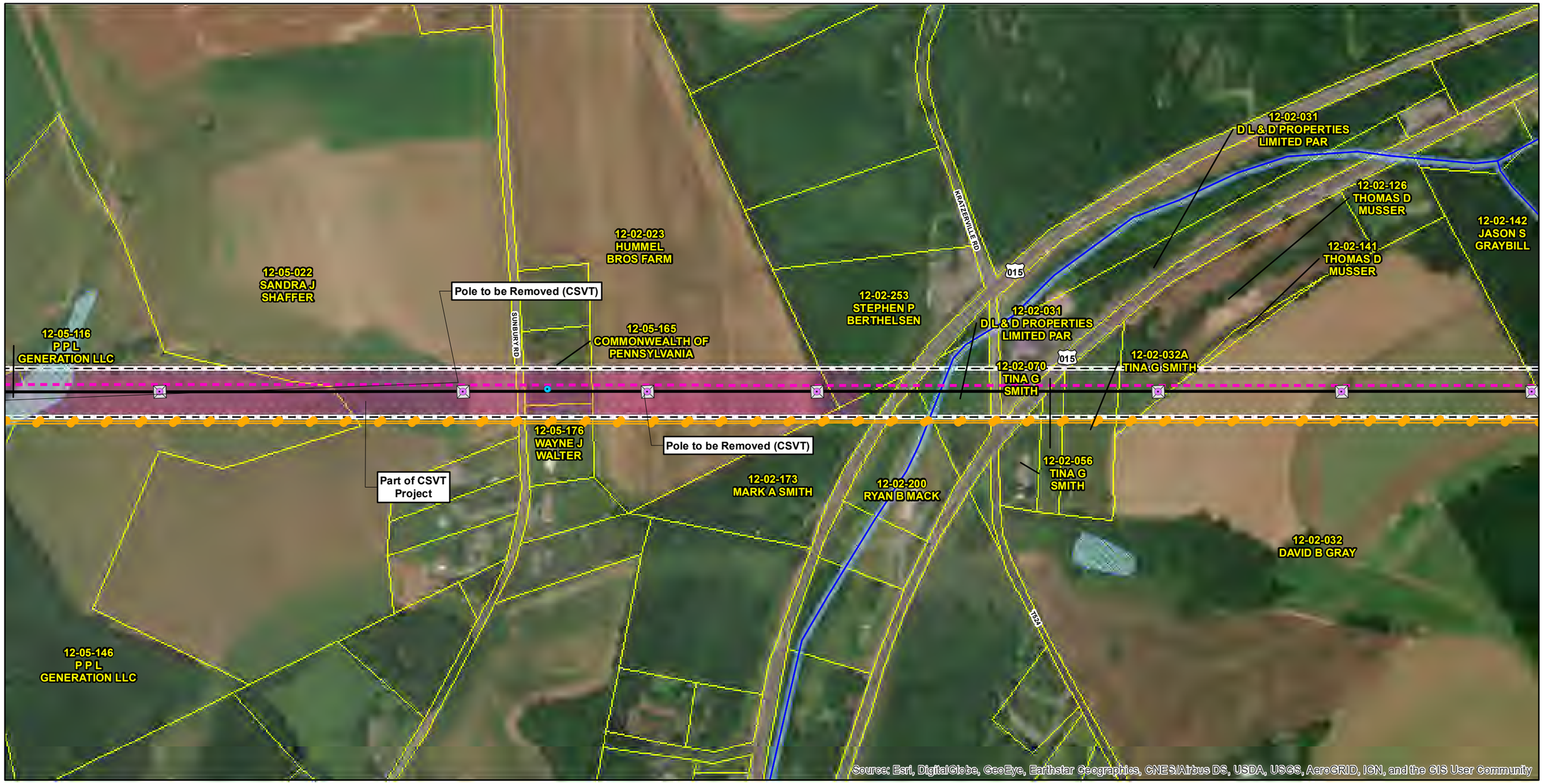

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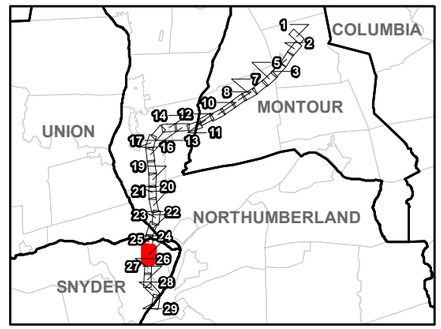

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FIGURE 3-1
Montour - Milton - Sunbury
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Job: Montour - Sunbury LON	Date: 1/27/2021

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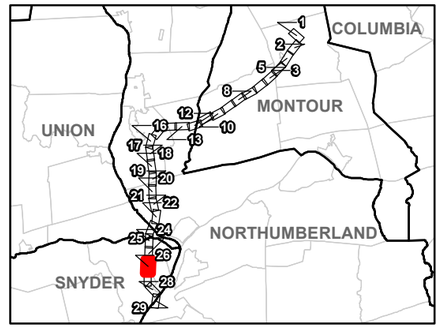

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FIGURE 3-1
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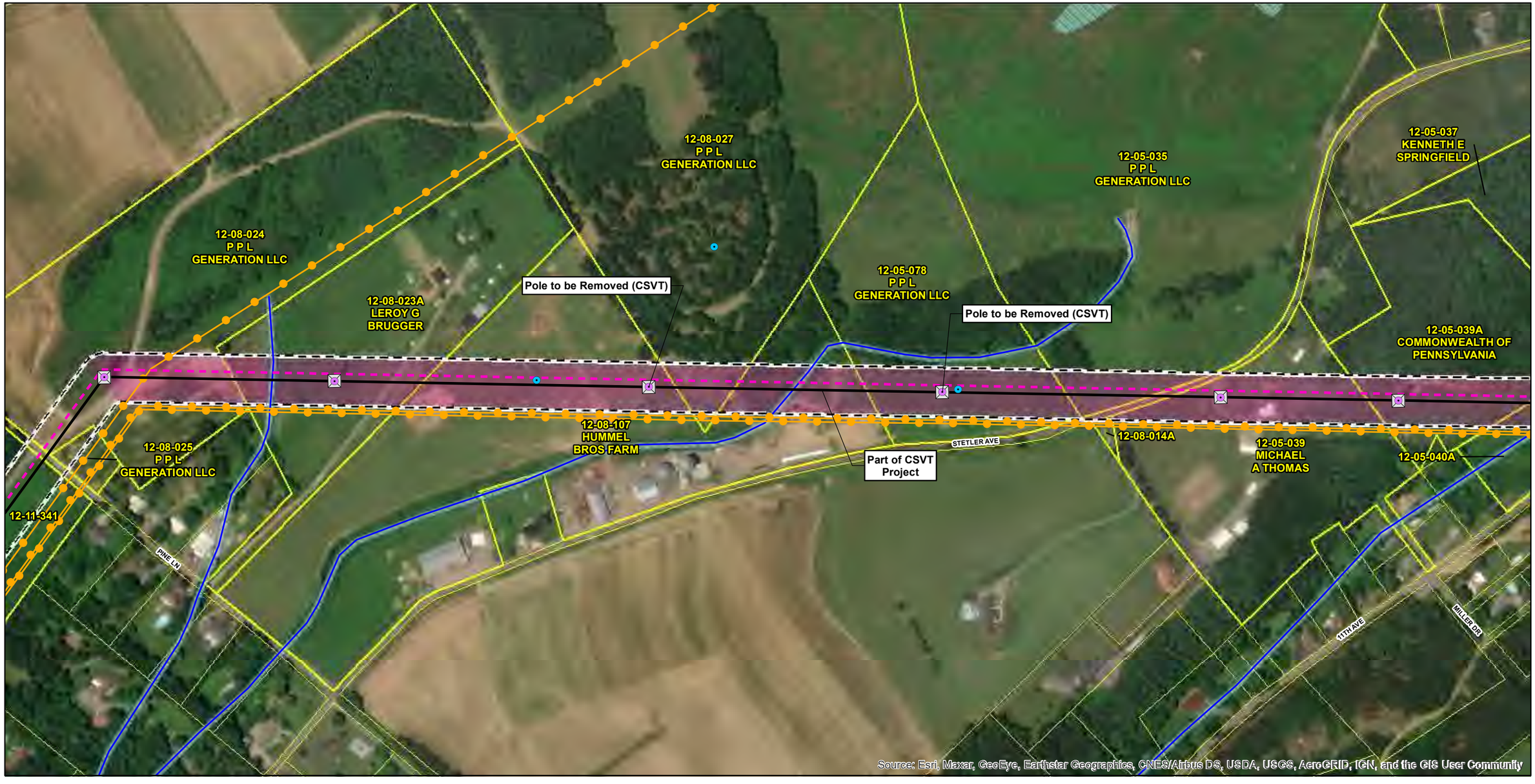

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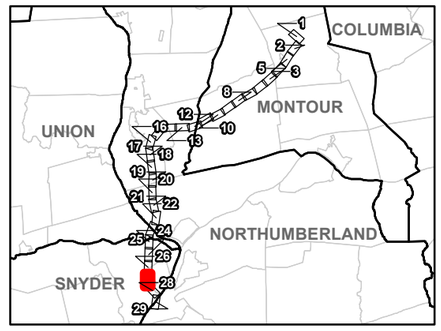

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FIGURE 3-1
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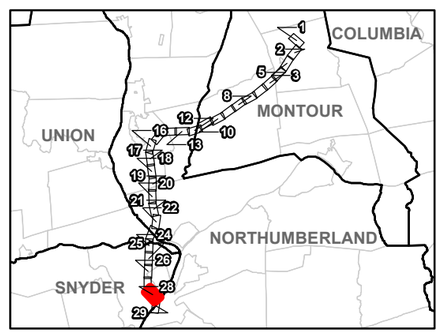

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FIGURE 3-1
Montour - Milton - Sunbury 230 kV Rebuild
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Allentown, Pennsylvania

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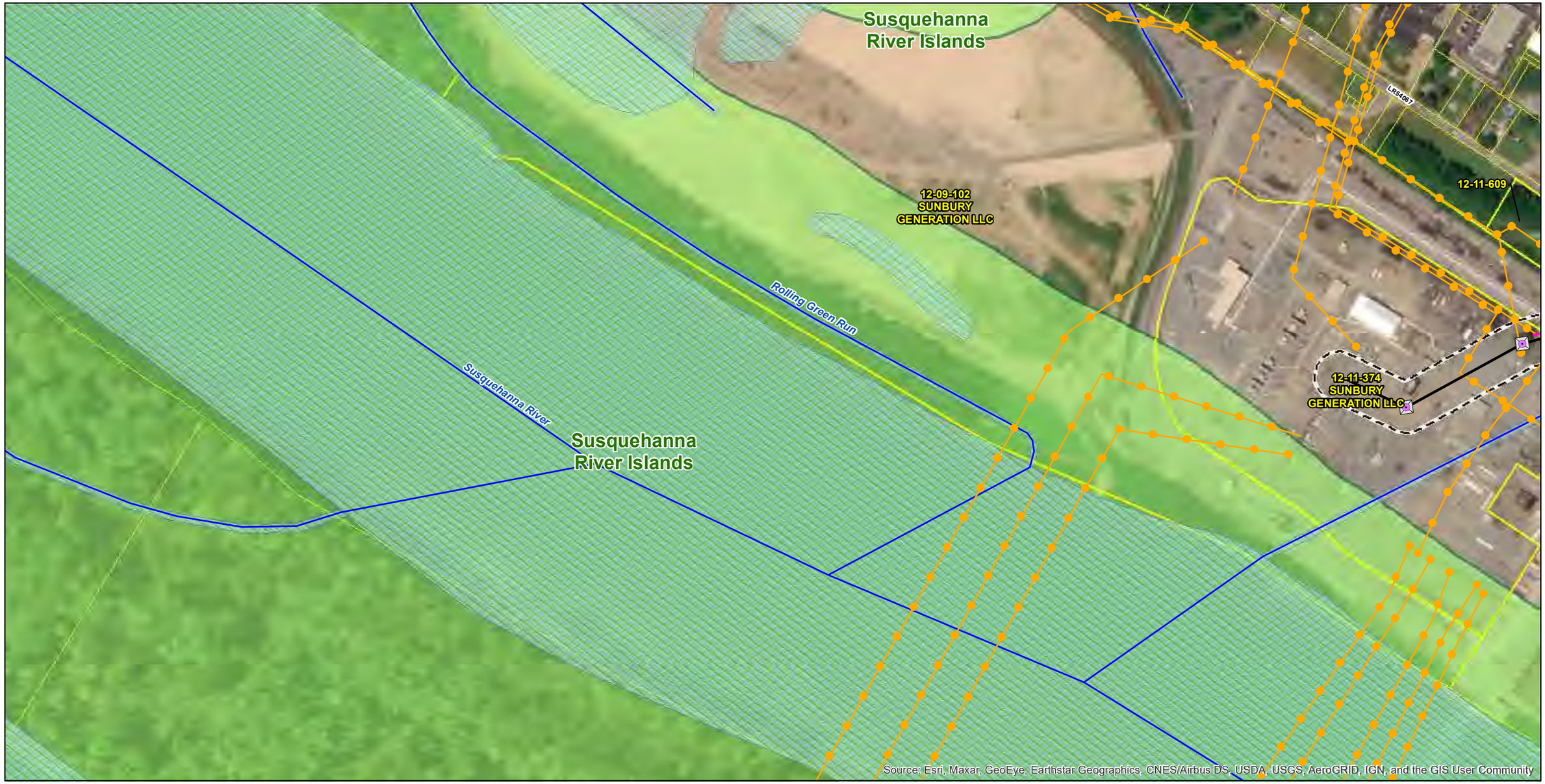

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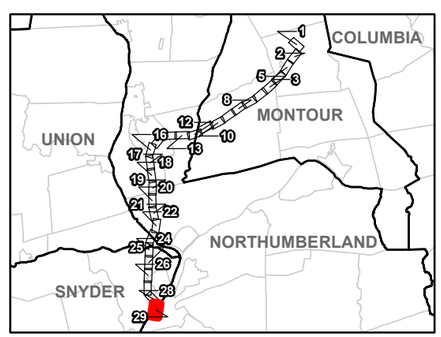

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FIGURE 3-1
Montour - Milton - Sunbury
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MONTOUR-MILTON AND MILTON-SUNBURY 230 KV REBUILD PROJECT

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1.0 DESIGN CONSIDERATIONS

PPL Electric Utilities' ("PPL Electric") new and rebuilt transmission lines will be designed according to, and generally exceed, all NESC minimum standards. The NESC is a set of rules to provide 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. PPL Electric's transmission line design standards meet or surpass the NESC clearances and loading requirements.

For example, the NESC specifies strength and loading rules based on three different "grades of construction" for conductors and supporting structures:

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

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

Another example is the design parameters utilized to account for ice and wind loadings on the wires and structure. The conductor sags and tensions along with the structure loading used in line designs are the result of various ice and wind combinations. PPL Electric's transmission lines are designed to exceed NESC requirements by accounting for additional load cases due to various ice and wind loading conditions not required by NESC. This means that PPL Electric lines are designed to operate safely and reliably during extreme inclement weather. In addition, where practicable, PPL Electric transmission lines are designed with more clearance to the ground than required by the NESC. The tables below compare PPL Electric's general conductor to ground design and the NESC minimum ground clearances for lines of various voltages.

TABLE 4-1: 69 kV Vertical Clearance to Ground

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

TABLE 4-2: 138 kV Vertical Clearance to Ground

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

TABLE 4-3: 230 kV Vertical Clearance to Ground

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

TABLE 4-4: 500 kV Vertical Clearance to Ground

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

A relay protection system is also used on PPL Electric's transmission lines to protect the public safety, as well as the equipment on the transmission system. Relay protection is installed for all transmission lines to automatically de-energize the line in the unlikely event that the line or supporting structure fails and the line contacts the ground.

2.0 PERIODIC MAINTENANCE PROGRAM ON ALL TRANSMISSION LINES

To ensure continued public safety and integrity of service, a periodic maintenance and inspection program is implemented for every transmission line. The program is administered through the use of helicopter patrols, with supplemental foot patrols as needed. Helicopter patrols are performed on all lines on a predetermined frequency, depending on voltage level. The two-man helicopter crew flies parallel and above the line so that the observer can look for signs of line damage or

deterioration and observe clearances between vegetation and conductors. The observations are included in a report that is forwarded to the appropriate department for corrective action.

3.0 PERSONNEL SAFETY RULES

Overall PPL Electric designs and constructs projects with high regards to both public and employee safety, and follows or exceeds all codes and requirements. The following are a few, but not all, of the PPL Electric safety rules that demonstrate the Company's dedication to employee and contractor safety:

- Work procedures have been developed to allow work to be performed on energized facilities in a safe manner. When lines or apparatus are removed from service to be worked on, the Energy Control Process system is applied. This system provides that a red tag must be physically placed on the control handle of the de-energized equipment.
- The red tag may be removed only after proper authorization to energize the equipment.
- Various other tags are used for limited operations and informational purposes.
- Employees or contractors will not apply or remove a tag or change the status of tagged equipment unless authorized.
- Temporary safety grounds are used on de-energized facilities for employee lineman safety during maintenance, construction, or reconstruction work. Safety grounds are wires connecting the de-energized facility to an electrical ground. If the facility should be energized, the safety grounds will divert the current directly to ground and reduce the likelihood of personal injury.
- Before applying grounds, a test is done to confirm that the line is de-energized. The voltage test device is checked before and after use to assure reliability.
- Poles or structures are inspected and examined for structural integrity before climbing. If there is any reason to believe that a pole is unsafe, it is stabilized before work is performed. Appropriate safety gear in the form of body belts, safety straps, hard hats, gloves, etc., is worn by linemen during line work activity.

4.0 MAGNETIC FIELD MANAGEMENT PLAN

PPL Electric's Magnetic Field Management Program is applied to new and reconstructed transmission line projects. In order to lower magnetic field exposures, the program generally prescribes the use of a line design that provides ground clearances higher than the required minimum NESC ground clearance and reverse phasing of new double circuit lines where it is feasible to do so at low or no cost. The implementation of additional modifications to reduce magnetic field levels, are considered, provided those modifications can be made at low or no cost and will not interfere with the operation of the line.

SUNBURY-MILTON-MONTOUR 230 KV REBUILD PROJECT

CHARLES D HILBISH 177 HILBISH RD NORTHUMBERLAND PA 17857-8620	JAMES F KOHL 527 RIDGE RD NORTHUMBERLAND PA 17857-8600
STEVEN L JUDITH WHITENIGHT 116 CHEVY LN NORTHUMBERLAND PA 17857-8551	WILLIAM A JAMIE D JAWORSKI 2059 CAPTAIN BLOOM RD SUNBURY PA 17801-6605
KENNETH DEITRICK 154 QUARRY RD COAL TOWNSHIP PA 17866-7810	COLIN O NIKE D LONG 248 6TH ST NORTHUMBERLAND PA 17857-1441
JEFFREY J SUANN K HINKLE 742 SUSQUEHANNA TRL NORTHUMBERLAND PA 178578514	PAUL E YOCUM 109 YOCUM LN NORTHUMBERLAND PA 17857-8505
CARLETTE S LEPPERT 907 STATE ST MILLERSBURG PA 17061-8435	JOSEPH STERLING DANIEL HILBISH 211 HILBISH HEIGHTS RD NORTHUMBERLAND PA 17857
NORFOLK SOUTHERN 4600 DEER PATH ROAD HARRISBURG, PA 17110	RICKY A BRENDA L LAHR 115 CHEVY LN NORTHUMBERLAND PA 17857-8551
HAROLD E NANCY E WYNN 335 LAHRS RD NORTHUMBERLAND PA 17857-8557	JEFFREY D MERTZ 130 LAHRS RD NORTHUMBERLAND PA 17857-8552
GRANTOR TRUST C/O RONALD & CAROL BEAM 428 RIDGE RD NORTHUMBERLAND PA 17857-8504	KELLI M BRADLEY MOLYNEAUX 408 RIDGE RD NORTHUMBERLAND PA 17857-8504
ROY H MELISSA A BURNS 390 RIDGE RD NORTHUMBERLAND PA 17857-8503	CHARLES T COXE 412 RIDGE RD NORTHUMBERLAND PA 17857-8504
AARON W CLEWELL 1769 CREEK RD DANVILLE PA 17821	CARL L GINA T PARDOE PO BOX 267 MONTANDON PA 17850-0267

HOLLIE V VANKIRK 118 FRANKLIN ST NORTHUMBERLAND PA 17857-8409	KENT J KOHL 648 MILLER RD SUNBURY PA 17801-6049
CARLETTE S LEPPERT 907 STATE ST MILLERSBURG PA 17061-8435	WADE G MELISSA L YOCUM 173 YOCUM LN NORTHUMBERLAND PA 17857-8505
MACK A YOCUM 109 YOCUM LN NORTHUMBERLAND PA 17857-8505	RAYMOND B VERNA R WEAVER 3810 OLD TURNPIKE RD LEWISBURG PA 17837-7806
DENNIS MICHAEL SUSAN LYNN TATAR 149 ARTS WAY NORTHUMBERLAND PA 17857-8558	TOBY SHANE LUKE WILLIAM MURRAY PO BOX 301 MONTANDON PA 17850-0301
MARK A KELLY J HOWER 2665 SHAKESPEARE RD MILTON PA 17847-8323	ROBERT PARDOE 346 COVERED BRIDGE RD MILTON PA 17847-8504
ROBERT E JANE LONG 59 MOUNT ZION RD MILTON PA 17847-8423	LARRY E GERALDINE FORREY 1215 MOUNT ZION RD MILTON PA 17847-8433
JEFFREY S KELLY J FORREY 2735 SHAKESPEARE RD MILTON PA 17847-8354	THOMAS EDWARD GAIL ZECHMAN 363 DIEHL RD MILTON PA 17847-7720
CLYDE W ELEANOR F DIEHL 15 DIEHL RD MILTON PA 17847-7719	JAMES M RUTH WEAVER 1550 RIDGE RD MILTON PA 17847-8307
KEITH E LOIS M BUCK 1700 RIDGE RD MILTON PA 17847-8309	STANLEY W REBECA D TAGGART 1215 MANSION RD MILTON PA 17847-8407
CHARLES A DEBORAH J HUPP 1165 SKYVIEW DR MILTON PA 17847-7607	GEORGE W ELLEN H PARDOE PO BOX 8 MONTANDON PA 17850-0008

OLEG P NATALYA A KARPESHOV 586 DANCEHALL RD MILTON PA 17847-7715	RAY S ERNEST L & JENNIE P WOLFE 4325 STATE ROUTE 45 MILTON PA 17847-8210
JOHN E MECKLEY 478 S MILL RD MILTON PA 17847-7724	RICKY L LONG 734 S MILL RD MILTON PA 17847-7725
STEPHEN M SUSAN M CROMLEY 2930 SHAKESPEARE RD MILTON PA 17847-8324	RAY J BRADLY R KREMER 400 VORIS RD DANVILLE PA 17821
DONALD M BRENDA J ROVENOLT 4810 STATE ROUTE 642 MILTON PA 17847-8225	EUGENE L JENKINS 4850 STATE ROUTE 642 MILTON PA 17847-8225
JAY R BUCK 505 DANCEHALL RD MILTON PA 17847-7715	JUNE M TAGGART 1240 MANSION RD MILTON PA 17847-8407
TABITHA ROSE OHALLORAN 156 LINDEN ST SUNBURY PA 17801	GEORGE E FRANCES I VANKIRK 1360 MOUNT ZION RD MILTON PA 17847-8434
JOHN F BONNIE L CRABB 113 MANSION RD MILTON PA 17847-8400	SUSQUEHANNA MOTORCYCLE CLUB INC PO BOX 12 MILTON PA 17847-0012
RAY J BRADLY R KREMER 400 VORIS RD DANVILLE PA 17821	TABITHA ROSE OHALLORAN 156 LINDEN ST SUNBURY PA 17801
TINA G SMITH 794 GRANGERS RD SELINSGROVE PA 17870-7717	ROBERT C SNYDER FARMS INC 1883 SUSQUEHANNA TRL NORTHUMBERLAND PA 17857-8534
RYAN B MACK 5771 ROUTE 15 SELINSGROVE PA 17870	MARK A SMITH 5925 ROUTE 15 SELINSGROVE PA 17870-7724

MICHAEL A HOMAS 1104 STETLER AVE SELINSGROVE PA 17870-9025	SUNBURY GENERATION LLC PO BOX 517 SHAMOKIN DAM PA 17876-0517
MICHELLE MENGLE 2289 COUNTY LINE RD SELINSGROVE PA 17870-8184	GREGORY A MULL 77 MULL RD MIDDLEBURG PA 17842-8656
HUMMEL BROS FARM 653 STETLER AVE SELINSGROVE PA 17870-9028	STEPHEN P BERTHELSEN 2465 GREEN RIDGE RD MIFFLINBURG PA 17844-6750
COMMONWEALTH OF PENNSYLVANIA 715 JORDAN AVE MONTOURSVILLE PA 17754-2415	D L & D PROPERTIES LIMITED PAR 268 VILLA VISTA AVE LEWISBURG PA 17837-6704
THOMAS D MUSSER 544 BUFFALO CREEK RD MIFFLINBURG PA 17844-7703	DAVID M BOBB 910 W 11TH AVE SHAMOKIN DAM PA 17876-9314
DAVID B GRAY 661 GRAY FARM LN SELINSGROVE PA 17870-7869	WAYNE J WALTER 1826 SUNBURY RD SELINSGROVE PA 17870-7706
GEORGE W REYNOLDS 2565 N OLD TRL SELINSGROVE PA 17870-7763	JASON S KELLY J GRAYBILL 2902 STATE ROUTE 890 SUNBURY PA 17801-7602
KENNETH E SPRINGFIELD 955 W 11TH AVE SHAMOKIN DAM PA 17876-9310	JEFFREY L BALESTRINI 29 SUN VALLEY DR SUNBURY PA 17801-2535
COMMONWEALTH OF PENNSYLVANIA PO BOX 218 MONTOURSVILLE PA 17754-0218	SANDRA J SHAFFER 3103 PARK RD SELINSGROVE PA 17870-7855
LEROY G BRUGGER 619 PINE LN SELINSGROVE PA 17870-9619	ROBERT E COOK 36 BRIDGE RD DANVILLE PA 17821-7051

LISA KAY TERESA LYNNE JONES 459 NAREHOOD RD DANVILLE PA 17821-6804	ROBERT W BRENDA BOND 560 NAREHOOD RD DANVILLE PA 17821-6598
RICHARD F MARILYN G R F LANDIS 246 STECKER MILL RD DANVILLE PA 17821-6818	GORDON E TERRY L ROUP 24 HAGENBUCH LOOP DANVILLE PA 17821-6811
ALLEN J GAY L DIMARCO 22 MILL RD ALLENWOOD PA 17810-9502	LARRY W NORMA J BRIDGE 1047 SMITH RD DANVILLE PA 17821-7103
LIBERTY TOWNSHIP 42 KEEFER MILL RD DANVILLE PA 17821-6802	MICHAEL D KATHRYN J MCCARTY 59 BLACKBERRY LN DANVILLE PA 17821-6890
RICHARD R BRENDA M NIXON 1051 SMITH RD DANVILLE PA 17821-7103	GEORGE J SUK SAUERS 339 STECKER MILL RD DANVILLE PA 17821-6590
TOWHSHIP SUPERVISORS DERRY 26 SHED RD DANVILLE PA 17821	THOMAS W GEISE 125 STECKER MILL RD DANVILLE PA 17821-6803
ROBERT E COOK 36 BRIDGE RD DANVILLE PA 17821-7051	KARL J MICHAEL J SCHAFER 167 STECKER MILL RD DANVILLE PA 17821-6803
HENRY J HENRY J LARSEN 233 STECKER MILL RD DANVILLE PA 17821-6818	LYNN C SALLY L APPELMAN 59 HEDGE RD BLOOMSBURG PA 17815-7610
LIBERTY TOWNSHIP 42 KEEFER MILL RD DANVILLE PA 17821-6802	GAVIN M MICHELLE R CLAYCOMB 72 BLACKBERRY LN DANVILLE PA 17821-6889
BRIAN K MICHELLE L BRADY 1073 SMITH RD DANVILLE PA 17821-7103	JEREMY L LAURA J ERB 44 STRICK RD MILTON PA 17847-8932

DONNA L MARK COOPER-HACKENBERG 86 BRIDGE RD DANVILLE PA 17821-7051	JAMES W GWENDOLYN J LEWIS 32 KELLYS DAM RD DANVILLE PA 17821-6856
ALEXANDRA BEVERLEE T HOVAK 1063 SMITH RD DANVILLE PA 17821-7103	STEPHEN M SKERDA 72 VANSANT RD DANVILLE PA 17821-6921
WILLIAM R SMITH 159 NAREHOOD RD DANVILLE PA 17821-6844	RICHARD E DEBORAH A JONES 115 VANSANT RD DANVILLE PA 17821-6922
TABITHA R CHRISTY J OHALLORAN 12 WEDGEWOOD DR SELINSGROVE PA 17870-8400	READING R/W CO INC 46 PUBLIC SQ WILKES BARRE PA 18701-2609
RUBY J STUMP 83 BRIDGE RD DANVILLE PA 17821-7051	DJT REAL ESTATE 6 BLACK RUN RD BLOOMSBURG PA 17815-6502
JOHN S BIEONKIA R LESHO 40 KELLYS DAM RD DANVILLE PA 17821-6856	MICHAEL P KATHARINE L MCWILLIAMS 348 JACKSON RD DANVILLE PA 17821-6595
GEORGE W TRUDY S BROWN 228 JACKSON RD DANVILLE PA 17821-6847	JOSEPH D KAY L CASSEL 20 MOWERY RD DANVILLE PA 17821-6586
SCOTT R SUZANNE A HUMMEL 346 JACKSON RD DANVILLE PA 17821-6595	MICHAEL P KATHARINE L MCWILLIAMS 348 JACKSON RD DANVILLE PA 17821-6595
DONNA M LAUBACH HALL 221 NAREHOOD RD DANVILLE PA 17821-6845	FRANKLIN G SHELLEY C LOVE 241 NAREHOOD RD DANVILLE PA 17821-6845
GENE A WIEAND 139 KNAPP RD DANVILLE PA 17821-6929	CARL E PRISCILLA A BUCK 420 MOWERY RD DANVILLE PA 17821-6813

ADAM TANYA MCHALE 59 CAMP RD BLOOMSBURG PA 17815-7608	JEREMY L LAURA J ERB 44 STRICK RD MILTON PA 17847-8932
DONALD E MICHELLE M HILKERT 183 NAREHOOD RD DANVILLE PA 17821-6844	JOSEPH A BLACKSTONE 1357 MULLS HOLLOW RD SELINSGROVE PA 17870-8119
GORDON E TERRY L ROUP 24 HAGENBUCH LOOP DANVILLE PA 17821-6811	PAMELA K DEEM 1310 MULLS HOLLOW RD SELINSGROVE PA 17870-8124
PEACEFUL TRAILS LLC 47 DAVES LN MIDDLEBURG PA 17842	THOMAS B FANTASKEY 1286 MULLS HOLLOW RD SELINSGROVE PA 17870-8118
EDWARD L GALE A KLINE 1452 MULLS HOLLOW RD SELINSGROVE PA 17870-8120	TODD G ROSS 109 SCHENK LN SELINSGROVE PA 17870-8121
PPL MONTOUR, LLC 18 MCMICHEAL ROAD WASHINGTONVILLE, PA 17884	PR MONROE LIMITED PARTNERSHIP C/O BRE RC MONROE PA LP 10920 VIA FRONTERA, SUITE 220 SAN DIEGO, CA 92127
HUMMEL BROS. FARM, LP 653 STETLER AVE SELINSGROVE, PA 17870	COMMONWEALTH OF PA DEPARTMENT OF TRANSPORTATION 715 JORDAN AVE, PO BOX 218 MONTOURSVILLE, PA 17754-0218
STEPHEN SKERDA 72 VANSANT ROAD DANVILLE, PA 17821	

SUNBURY-MILTON-MONTOUR 230 KV REBUILD PROJECT

STATE AGENCIES

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

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

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

Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 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
PO Box 8767
400 Market Street
Harrisburg, Pennsylvania 17105-8767
Attn: Rebecca Bowen

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, Pennsylvania 17110-9797
Attn: Peter Sussenbach

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

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

Pennsylvania Office of Small Business Advocate
555 Walnut Street
1st Floor Forum Place
Harrisburg, Pennsylvania 17101
Attn: John R. Evans

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

Montour County Conservation District
1210 Bloom Road,
Danville, Pennsylvania 17821
ATTN: Mathew Derr, Chairman

Montour County Planning Commission
21 Woodline Lane, Suite 103
Danville, Pennsylvania 17821
ATTN: Greg Molter, Director

Northumberland County Conservation District
441 Plum Creek Road
Sunbury, Pennsylvania 17801
ATTN: Judy Becker, District Manager

Northumberland County Planning Commission
399 Stadium Drive
Sunbury, Pennsylvania 17801
ATTN: Justin Skavery, Planning Coordinator

Union County Conservation District
Union County Government Center
155 North 15th Street
Lewisburg, Pennsylvania 17837
ATTN: Eric Nyerges, District Manager

Union County Planning Commission
Union County Government Center
155 North 15th Street
Lewisburg, Pennsylvania 17837
ATTN: Shawn McLaughlin, Planning Director

Snyder County Conservation District
10541 Route 522
Middleburg, Pennsylvania 17842
ATTN: Jason Winey, District Manager

Snyder County Planning Commission
9 West Market Street
P.O. Box 217
Middleburg, Pennsylvania 17842
ATTN: Lincoln Kaufman, Planning Director

MUNICIPALITIES

Derry Township
109 Shed Road
Danville, Pennsylvania 17821
ATTN: Greg Molter, Supervisor

Liberty Township (Montour County)
C/o Montour County Planning Commission

East Chillisquaque Township
1110 Mexico Road
Milton, Pennsylvania 17847
ATTN: Chris Trate, Chairman

West Chillisquaque Township
PO Box 252
485 Railroad Street
Montandon, Pennsylvania 17850
ATTN: Vaughn Murray, Chairman

Point Township
759 Ridge Road,
Northumberland, Pennsylvania 17857
ATTN: Randall W. Yoxheimer, Chairman

Union Township
70 Municipal Lane
PO Box 184
Winfield, Pennsylvania 17889
ATTN: Tom Reitz, Chairman

Monroe Township
39 Municipal Drive
Selinsgrove, Pennsylvania 17870
ATTN: Dean Davis, Chairman

Shamokin Dam Borough
42 West 8th Avenue
PO Box 273
Shamokin Dam, Pennsylvania 17876
ATTN: Donald Musser, Council President

VERIFICATION

I, DAVID A. QUIER, being the Director of Asset Management at PPL Electric Utilities Corporation, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect PPL Electric Utilities Corporation to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: February 5, 2021

Dave Quier
Dave Quier (Feb 5, 2021 08:01 EST)

David A. Quier