

Juniata - Lewistown 230 kV # 2 line

General Information

Proposing entity name	Proprietary Information
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Proprietary Information
Company proposal ID	Proprietary Information
PJM Proposal ID	606
Project title	Juniata - Lewistown 230 kV # 2 line
Project description	Construct a new 32-mile Juniata - Lewistown 230 kV # 2 line by utilizing the existing brownfield 69 kV line route between Juniata and Mifflintown, and then building a greenfield line from Mifflintown to Lewistown. Build a new 2 breaker bay in the double bus double breaker Juniata 230 kV yard (note that today Juniata 230 kV is in a radial bus design, but the Juniata double bus double breaker upgrade is an existing PPL Supplemental Project {S0945.1} separate from this proposal). Build a new 2 breaker bay in the existing double bus double breaker Lewistown 230 kV yard.
Email	Proprietary Information
Project in-service date	03/2028
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	Proprietary Information

Project Components

1. Juniata - Lewistown 230/69 kV multi-circuit brownfield line upgrade
2. Juniata - Lewistown 230 kV greenfield line segments
3. Juniata 230 kV Bus Upgrade

4. Lewistown 230 kV Bus Upgrade

Transmission Line Upgrade Component

Component title	Juniata - Lewistown 230/69 kV multi-circuit brownfield line upgrade
Project description	Proprietary Information
Impacted transmission line	Juniata - Mifflintown 69 kV line
Point A	Juniata
Point B	Mifflintown
Point C	
Terrain description	Both mountainous and agricultural terrain.

Existing Line Physical Characteristics

Operating voltage	69
Conductor size and type	556.5 ACSR 24/7 conductor
Hardware plan description	We will not be reusing any of the existing line's hardware.
Tower line characteristics	The line is a combination of aging wood and steel pole infrastructure.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	738.000000	881.000000
Winter (MVA)	799.000000	943.000000
Conductor size and type	1272 ACSS/TW HS285 "Pheasant" conductor & 556.5 ACSR 24/7 conductor	

Shield wire size and type	OPGW
Rebuild line length	15.85 miles
Rebuild portion description	14.93 miles of triple circuit structures with one 230 kV circuit above two 69 kV circuits between Juniata and Mifflintown. 0.92 miles of single circuit structures with one 230 kV line exiting Juniata Substation.
Right of way	The proposed transmission line will be located within a 100' to 150'-wide ROW corridor. The brownfield section of the corridor will mainly consist of 100' of existing ROW, with an additional 25 feet of new ROW on each side. The greenfield section of the 100' to 150'-wide corridor will consist solely of new ROW. A total of approximately 435 acres of additional ROW will be acquired, with 418 acres privately owned and approximately 17 acres publicly owned. Negotiations with private landowners will be based on fair market values determined by a third-party appraiser. Negotiations with public landowners will be conducted through PPL ROW and negotiations with private landowners will be conducted by PPL ROW Agents and PPL contracted ROW agents.
Construction responsibility	Proprietary Information
Benefits/Comments	Proprietary Information
Component Cost Details - In Current Year \$	
Engineering & design	Proprietary Information
Permitting / routing / siting	Proprietary Information
ROW / land acquisition	Proprietary Information
Materials & equipment	Proprietary Information
Construction & commissioning	Proprietary Information
Construction management	Proprietary Information
Overheads & miscellaneous costs	Proprietary Information
Contingency	Proprietary Information
Total component cost	\$59,879,973.80
Component cost (in-service year)	\$63,185,176.23

Greenfield Transmission Line Component

Component title Juniata - Lewistown 230 kV greenfield line segments

Project description Proprietary Information

Point A Juniata

Point B Lewistown

Point C

	Normal ratings	Emergency ratings
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Summer (MVA)	739.000000	881.000000
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Winter (MVA)	799.000000	943.000000
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Conductor size and type 1272 ACSS/TW HS285 "Pheasant" conductor

Nominal voltage AC

Nominal voltage 230

Line construction type Overhead

General route description The proposed transmission line will be located within a 150'-wide ROW corridor. The brownfield section of the corridor will mainly consist of 100' of existing ROW, with an additional 25 feet of new ROW on each side. The greenfield section of the 150'-wide corridor will consist solely of new ROW. A total of approximately 435 acres of additional ROW will be acquired, with 418 acres privately owned and approximately 17 acres publicly owned. Negotiations with private landowners will be based on fair market values determined by a third-party appraiser. Negotiations with public landowners will be conducted through PPL ROW and negotiations with private landowners will be conducted by PPL ROW Agents and PPL contracted ROW agents.

Terrain description Both mountainous and agricultural terrain.

Right-of-way width by segment	The proposed transmission line will be located within a 150'-wide ROW corridor. The brownfield section of the corridor will mainly consist of 100' of existing ROW, with an additional 25 feet of new ROW on each side. The greenfield section of the 150'-wide corridor will consist solely of new ROW. A total of approximately 435 acres of additional ROW will be acquired, with 418 acres privately owned and approximately 17 acres publicly owned. Negotiations with private landowners will be based on fair market values determined by a third-party appraiser. Negotiations with public landowners will be conducted through PPL ROW and negotiations with private landowners will be conducted by PPL ROW Agents and PPL contracted ROW agents.
Electrical transmission infrastructure crossings	Juniata - Dauphin 230 kV line, Sunbury - Juniata 500 kV line
Civil infrastructure/major waterway facility crossing plan	We do not foresee any major waterway crossings, but the line will cross the following smaller waterways: (1) Juniata River (2) Markee Creek (3) East Licking Creek
Environmental impacts	The proposed project passes through the Pennsylvania Ridge and Valley region, which is characterized by southwest-northeast trending ridgelines and valleys with attendant streams. Terrain within the valleys is characterized by a mixture of agricultural and forested areas while the mountain ridges are primarily forested uplands. Robust erosion and sediment controls dictated by Pennsylvania's BMP Manual will be deployed as a baseline due to the steep terrain of the region. Temporary and permanent impacts to the landscape will be minimized by: <ul style="list-style-type: none"> • avoiding construction in wetlands and waterways to the extent possible; • limiting the construction of access roads and construction pads to the minimum required to safely execute construction and O&M; • deploying robust BMPs to limit erosion; • consulting with federal and state agencies to avoid or reduce impacts to rare, threatened, and endangered species. The project will require several wetland and waterway permits including GP 5 aerial crossings, along with several GP 7 and GP 8 permits, dependent on final constructability determinations. Based on a review of publicly available data the project will likely trigger an individual NPDES permit, necessitating the use of ABACT erosion and sediment control BMPs. The scope of the project will require extensive consultation with Pennsylvania's DEP. Federally protected species may occur within the proposed project area, including Northern Long Eared Bats, which would require time-of-year restrictions on tree clearing and construction activities. Greenfield sections of the proposed project will likely trigger archaeological field investigations to ensure project impacts to cultural resources are minimized to the extent practicable.
Tower characteristics	Single circuit delta 230 kV on a steel monopole structures. See attachment Development-Basis SCT-Framing Detail.pdf.
Construction responsibility	Proprietary Information
Benefits/Comments	Proprietary Information
Component Cost Details - In Current Year \$	
Engineering & design	Proprietary Information

Permitting / routing / siting	Proprietary Information
ROW / land acquisition	Proprietary Information
Materials & equipment	Proprietary Information
Construction & commissioning	Proprietary Information
Construction management	Proprietary Information
Overheads & miscellaneous costs	Proprietary Information
Contingency	Proprietary Information
Total component cost	\$67,287,461.56
Component cost (in-service year)	\$71,001,536.02

Substation Upgrade Component

Component title	Juniata 230 kV Bus Upgrade
Project description	Proprietary Information
Substation name	Juniata 500/230 kV Substation
Substation zone	PPL
Substation upgrade scope	Add a new 230 kV double bus double breaker bay at Juniata (Assumes completion of PPL EU Supplemental Project S0945.1) with two new 3000 amp 230 kV breakers and 4 new 3000 amp 230 kV MODs.

Transformer Information

None	
New equipment description	Two (2) 1590 ACSR conductor and spacers with assembly E178 for the insulators at downcomers. Three (3) 230kV CCVTs at line. Single (1) 1590 ACSR jumper to the line CCVTs. Install one (1) 230kV full tandem vertical break MOD rated for 3000A. Install two (2) 230kV, 3000A circuit breaker. Install two (2) - 1590ACSR cables from bushings of CB to hinge end of the switch. Install two (2) 230kV three insulator vertical break MOD rated for 3000A at buses. Two (2) - 1590ACSR from bus to jaw end of switch. One (1) load box and one (1) resistor box.

Substation assumptions	Substation owned by proposer. Assumed that this project would be completed at the same time as Supplemental Project S0945.1.
Real-estate description	The substation does not need to be expanded.
Construction responsibility	Proprietary Information
Benefits/Comments	Proprietary Information
Component Cost Details - In Current Year \$	
Engineering & design	Proprietary Information
Permitting / routing / siting	Proprietary Information
ROW / land acquisition	Proprietary Information
Materials & equipment	Proprietary Information
Construction & commissioning	Proprietary Information
Construction management	Proprietary Information
Overheads & miscellaneous costs	Proprietary Information
Contingency	Proprietary Information
Total component cost	\$3,771,767.44
Component cost (in-service year)	\$3,979,958.16
Substation Upgrade Component	
Component title	Lewistown 230 kV Bus Upgrade
Project description	Proprietary Information
Substation name	Lewistown 230 kV Substation
Substation zone	PENELEC
Substation upgrade scope	Add a new 230 kV double bus double breaker bay at Lewistown Substation with two new 3000 amp 230 kV breakers and 4 new 3000 amp 230 kV MODs.

Transformer Information

None

New equipment description

Three (3) 230kV CCVTs at line. Install two (2) 230kV, 3000A circuit breaker. Install four (4) 230kV three insulator vertical break MOD rated for 3000A at line and bus. Install approx. 400 lineal feet of 4" diameter schedule 80 aluminum or bus extension and bay conductor.

Substation assumptions

Substation could be expanded to either the north or south. If expansion to the north not possible, the existing JUNI-LEWI 230 kV # 1 line would be swapped with the new # 2 line and brought into the new southern bay so as to avoid line crossings east of the station. Expansion to the south of the station has been assumed due to nearby roadway and lower voltage equipment on the north side.

Real-estate description

Construction responsibility

Proprietary Information

Benefits/Comments

Proprietary Information

Component Cost Details - In Current Year \$

Engineering & design

Proprietary Information

Permitting / routing / siting

Proprietary Information

ROW / land acquisition

Proprietary Information

Materials & equipment

Proprietary Information

Construction & commissioning

Proprietary Information

Construction management

Proprietary Information

Overheads & miscellaneous costs

Proprietary Information

Contingency

Proprietary Information

Total component cost

\$10,221,956.48

Component cost (in-service year)

\$11,149,307.45

Congestion Drivers

None

Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S1807	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-GD-S1782	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-GD-S1800	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-GD-S1801	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-GD-W1252	200519	26REED TAP	200522	26SHADE GP	1	115	226	Winter Gen Deliv	Included
2022W3-GD-W1252	200519	26REED TAP	200522	26SHADE GP	1	115	226	Winter Gen Deliv	Included
2022W3-GD-W78	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Winter Gen Deliv	Included
2022W3-GD-S1522	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-GD-W121	200519	26REED TAP	200522	26SHADE GP	1	115	226	Winter Gen Deliv	Included
2022W3-N1-ST240	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Summer N-1 Thermal	Included
2022W3-GD-W1280	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Winter Gen Deliv	Included
2022W3-GD-W122	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Winter Gen Deliv	Included
2022W3-GD-S7792	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-N1-ST194	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Summer N-1 Thermal	Included
2022W3-GD-S7802	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-N1-ST241	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Summer N-1 Thermal	Included
2022W3-N1-WT141	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Winter N-1 Thermal	Included
2022W3-GD-S1752	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Summer Gen Deliv	Included
2022W3-N1-ST209	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Summer N-1 Thermal	Included
2022W3-N1-ST199	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Summer N-1 Thermal	Included
2022W3-N1-ST200	200512	26LEWISTWN	200519	26REED TAP	1	115/115	226/226	Summer N-1 Thermal	Included
2022W3-GD-W1240	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Winter Gen Deliv	Included
2022W3-GD-W85	200512	26LEWISTWN	200519	26REED TAP	1	115	226	Winter Gen Deliv	Included

New Flowgates

Proprietary Information

Financial Information

Capital spend start date 10/2023

Construction start date 08/2025

Project Duration (In Months) 53

Cost Containment Commitment

Cost cap (in current year) Proprietary Information

Cost cap (in-service year) Proprietary Information

Components covered by cost containment

1. Juniata - Lewistown 230/69 kV multi-circuit brownfield line upgrade - PPL
2. Juniata - Lewistown 230 kV greenfield line segments - PPL
3. Juniata 230 kV Bus Upgrade - PPL

Cost elements covered by cost containment

Engineering & design Yes

Permitting / routing / siting No

ROW / land acquisition No

Materials & equipment Yes

Construction & commissioning Yes

Construction management Yes

Overheads & miscellaneous costs No

Taxes No

AFUDC

No

Escalation

No

Additional Information

Proprietary Information

Is the proposer offering a binding cap on ROE?

No

Is the proposer offering a Debt to Equity Ratio cap?

Proprietary Information

Additional Comments

None