

Lackawanna Energy POI 500 kV Re-termination Upgrade

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	907
Project title	Lackawanna Energy POI 500 kV Re-termination Upgrade
Project description	Install a new 1500 MVA 500/230 kV transformer at Lackawanna substation. Tie into bay #1 in the Lackawanna 500 kV yard. Install four single phase transformer units (one on-site spare). Install bus work necessary to facilitate restoration with the onsite spare. Install MODs on the high and low-side of the 500/230 kV transformer. Install a 230 kV dead-end for termination of the Lackawanna Energy 230kV lead line. The 500/230 kV transformer will have double-bundle 1590 ACSR leads on the high-side. Re-terminate the Lackawanna - Lackawanna Energy 230kV line into the dead-end for the new 500/230 kV transformer at Lackawanna utilizing triple bundle 1590 45/7 ACSR conductor and dual 144 OPGW.
Email	Proprietary Information
Project in-service date	12/2026
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. Lackawanna 500/230 kV Substation Upgrade to Change Termination POI for Lackawanna Energy

2. Lackawanna Energy - Lackawanna 230 kV line Extension to 500 kV Yard

Substation Upgrade Component

Component title	Lackawanna 500/230 kV Substation Upgrade to Change Termination POI for Lackawanna Energy
Project description	Proprietary Information
Substation name	Lackawanna 500/230 kV Substation
Substation zone	PPL EU
Substation upgrade scope	Install a new 1500 MVA 500/230 kV transformer (4 single phase units, 1 as an on-site spare) at Lackawanna substation. Tie into bay position 1E in the Lackawanna 500 kV yard. The Lackawanna yard will be expanded by 150'x260' and 440'x292' to accommodate the new transformer and a 500 kV dead-end structure will be installed in Bay 1 to terminate the new transformer. Four single pole 500/230 kV foundations and containment pits will be required. Install bus work necessary to facilitate restoration with the on-site spare. A 500 kV 3000 A MOD will be installed on the transformer high-side and a 230 kV 4000 A MOD will be installed on the low-side. Install a 230 kV dead-end for termination of the Lackawanna Energy 230kV lead line. The 500/230 kV transformer will have double-bundle 1590 ACSR leads on the high-side and triple-bundle 1590 ACSR leads on the low-side. A jack bus will be installed above the 500 kV and the 230 kV leads of the new transformer to allow for the on-site spare unit to be quickly energized in the event of the failure of one unit. Install necessary relay and controls.

Transformer Information

	Name	Capacity (MVA)		
Transformer	Lackawanna 500/230 kV LAEN-T5	1500		
	High Side	Low Side	Tertiary	
Voltage (kV)	500	230	12.47	
New equipment description	One 500 kV 4000 A MOD One 230 kV 4000 A MOD One 1500 MVA 500/230 kV transformer: Four 500 MVA single-phase units (1 as on-site spare) 500 kV dead-end structure 230 kV dead-end structure Double-bundle 1590 ACSR leads on the transformer high-side Triple-bundle 1590 ACSR leads on the transformer low-side 500 kV and 230 kV bus work, relay panels, associated jumpers, control cables, power cables, conduit, new foundation for new equipment, associated grounding. The new 500/230 kV T5 transformer will have a rating of approximately SN 1500 MVA, SE 2138 MVA, WN 2100 MVA and WE 2400 MVA.			

Substation assumptions	No assumptions were made with respect to substation availability. Bay position 1E of the 500kV yard is available. Bay 1 is already fully populated with three 500 kV breakers, so no new 500 kV breaker will be needed. Sufficient land is owned around the substation to facilitate the necessary expansion of the yard to accommodate the new 500/230 kV transformer termination upgrade.
Real-estate description	Substation expansion will be necessary to accommodate new 500 kV Lackawanna Energy POI. Existing property is sufficient, no new real estate is required.
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	\$45,822,791.60
Component cost (in-service year)	\$52,288,768.27
Greenfield Transmission Line Component	
Component title	Lackawanna Energy - Lackawanna 230 kV line Extension to 500 kV Yard
Project description	Proprietary Information
Point A	Lackawanna Energy
Point B	Lackawanna

Point C

	Normal ratings	Emergency ratings
Summer (MVA)	1786.000000	2138.000000
Winter (MVA)	2203.000000	2450.000000
Conductor size and type	Triple-bundle 1590 45/7 ACSR conductor	
Nominal voltage	AC	
Nominal voltage	230	
Line construction type	Overhead	
General route description	Route is through a mix of cleared ROW and forested area owned by the proposing entity.	
Terrain description	A mix of forested and cleared ROW on mountainous terrain.	
Right-of-way width by segment	This transmission line work would take place within an existing ROW the entirety for which the proposing entity owns or has easements. The ROW width is up to 1000 ft in some spots. Additional clearing may be required within the ROW.	
Electrical transmission infrastructure crossings	Lackawanna - East Carbondale 69 kV # 1 line (new line to cross over this line), Lackawanna - East Carbondale 69 kV # 2 line (new line to cross over this line), Lackawanna - Edella 69 kV # 1 line (new line to cross over this line), Lackawanna - Edella 69 kV # 2 line (new line to cross over this line), Lackawanna - North Meshoppen 230 kV line (new line to cross over this line), Lackawanna - Paupack 230 kV line (new line to cross under this line)	
Civil infrastructure/major waterway facility crossing plan	The new section of the Lackawanna Energy - Lackawanna 230 kV line will cross under the Lackawanna - Paupack 230 kV line. It was assumed that the Lackawanna - Paupack 230 kV line will need to be raised to allow for clearance. The Lackawanna - Paupack 230 kV line modification work was included in the estimate. The new section of the Lackawanna Energy - Lackawanna 230 kV line will cross over the existing North Meshoppen - Lackawanna 230 kV line, Lackawanna - East Carbondale # 1 & # 2 69 kV lines, and Lackawanna - Edella # 1 & # 2 69 kV lines. The Lackawanna Energy - Lackawanna 230 kV will be designed to ensure proper clearances and the lower lines will not need to be modified.	
Environmental impacts	Cost and schedule assume PNDI study will result in no additional environmental studies required.	

Tower characteristics Single-circuit 230 kV delta configuration with triple-bundle conductor and dual OPGW. Structures will be similar to the existing Lackawanna Energy - Lackawanna 230 kV line structures. See attached structure drawing.

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 \$5,659,883.34

Component cost (in-service year) \$6,454,253.34

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
2022W1-GD-S595	208009	LACK	200074	LACK	3	230/500	229	Summer Gen Deliv	Included

New Flowgates

None

Financial Information

Capital spend start date	04/2023
Construction start date	04/2026
Project Duration (In Months)	44

Cost Containment Commitment

Cost cap (in current year)	Proprietary Information
Cost cap (in-service year)	Proprietary Information

Components covered by cost containment

1. Lackawanna 500/230 kV Substation Upgrade to Change Termination POI for Lackawanna Energy - PPL
2. Lackawanna Energy - Lackawanna 230 kV line Extension to 500 kV Yard - PPL

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	Yes
ROW / land acquisition	Yes
Materials & equipment	Yes
Construction & commissioning	Yes
Construction management	Yes
Overheads & miscellaneous costs	Yes

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