Acahela 500/230 kV Substation expansion project

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	312
Project title	Acahela 500/230 kV Substation expansion project
Project description	Bifurcate the proposed Lackawanna – Siegfried 500 kV line (see proposal 2024-W1-922) near the existing Acahela 230/69 kV Substation and extend the lines as a DCT for less than 1 mile into a new Acahela 500 kV yard. Utilize triple bundle 1590 ACSR with a rating of 3637 MVA SN, 4503 MVA SE, 4156 MVA WN, and 5022 MVA WE. Install dual 144 count OPGW. Terminate fiber into the Acahela control house. Expand Acahela 230/69 kV yard to accommodate a new 3 bay breaker and a half (BAAH) 500/230 kV substation. The initial layout will have only two breakers in each bay, essentially a double bus, double breaker (DBDB) design. Install six 4000 A 500kV breakers and twelve 4000 A 500 kV MODs. All substation conductors and equipment will have a minimum rating of 3690 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE. Install one 750 MVA 500/230 KV transformer. Construct a new 230 kV BAAH bay at Acahela. Install two 3000 A 230 kV circuit breakers and four 3000 A 230 kV MODs initially. Utilize both the new 500/230 kV transformer tertiary and one 230/69 kV transformer tertiary for station service. Install a portable generator hook-up. Coordinate relaying with Lackawanna and Siegfried. The Lackawanna – Acahela 500 kV line will be terminated in bay position 1W. The Acahela – Siegfried 500 kV line will be terminated in bay position 3W. The new Acahela 500/230 kV T3 transformer will be terminated in bay position 2E.
Email	Proprietary Information
Project in-service date	12/2032
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes

Additional benefits	Proprietary Information

Project Components

1. Acahela 500/230/69 kV Substation Expansion
2. Lackawanna - Siegfried 500 kV line taps in and out of Acahela

Substation Upgrade Component

Component title	Acahela 500/230/69 kV Substation Expansion
Project description	Proprietary Information
Substation name	Acahela 500/230/69 kV Substation
Substation zone	PPL
Substation upgrade scope	Expand Acahela 230/69 kV yard to accommodate a new 3 bay breaker and a half (BAAH) 500/230 kV substation. The initial layout will have only two breakers in each bay, essentially a double bus, double breaker (DBDB) design. Install six 4000 A 500kV breakers and twelve 4000 A 500 kV MODs. All substation conductors and equipment will have a minimum rating of 3690 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE. Install one 750 MVA 500/230 KV transformer. Construct a new 230 kV BAAH bay at Acahela. Install two 3000 A 230 kV circuit breakers and four 3000 A 230 kV MODs initially. Utilize both the new 500/230 kV transformer tertiary and one 230/69 kV transformer tertiary for station service. Install a portable generator hook-up. Coordinate relaying with Lackawanna and Siegfried. The Lackawanna – Acahela 500 kV line will be terminated in bay position 1W. The Acahela – Siegfried 500 kV line will be terminated in bay position 3W. The new Acahela 500/230 kV T3 transformer will be terminated in bay position 2E.

Transformer Information

	Name	Capacity (MVA)
Transformer	Acahela 500/230 kV T3 transformer	750

	High Side	Low Side	Tertiary
Voltage (kV)	500	230	12.5

New equipment description	New 3 bay BAAH 500 kV yard Six 4000 A 500 kV breakers Twelve 4000 A 500 kV MODs All substation conductors and equipment will have a minimum rating of 3690 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE One 750 MVA 500/230 KV transformer One new 230 kV BAAH bay Two 3000 A 230 kV circuit breakers Four 3000 A 230 kV MODs One portable generator hook-up Fiber as necessary to protect new facilities
Substation assumptions	Assuming that it is feasible to acquire a site adjacent to the existing Acahela 230/69 kV Substation yard for a new 500 kV yard.
Real-estate description	Assuming that it is feasible to acquire a site adjacent to the existing Acahela 230/69 kV Substation yard for a new 500 kV yard.
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	$104,427,305.52
Component cost (in-service year)	$129,084,272.30

Greenfield Transmission Line Component

Component title	Lackawanna - Siegfried 500 kV line taps in and out of Acahela
Project description	Proprietary Information

Point A	Lackawanna	
Point B	Siegfried	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	3637.000000	4503.000000
Winter (MVA)	4156.000000	5022.000000
Conductor size and type	Triple bundle 1590 ACSR conductor	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	Bifurcate the proposed Lackawanna – Siegfried 500 kV line (see proposal 2024-W1-922) near the existing Acahela 230/69 kV Substation and extend the lines as a DCT for less than 1 mile into a new Acahela 500 kV yard.	
Terrain description	Mountainous terrain. Adjacent to existing Acahela 230/69 kV Substation yard.	
Right-of-way width by segment	Taps will be on property owned by Proposer. No new ROW required.	
Electrical transmission infrastructure crossings	N/A	
Civil infrastructure/major waterway facility crossing plan	N/A	

Environmental impacts	Proposer will provide comprehensive siting and right of way (ROW) support for the siting and construction of a new 500 kV yard at Acahela. Proposer Siting will identify an appropriate location for the proposed Acahela 500 kV yard that will minimize social and environmental impacts. Upon completion of the siting activities, Proposer ROW will acquire in accordance with its standard procedures and general industry good practices. Proposer Siting will prepare and file a Letter of Notification (LON) with the Pennsylvania (PUC) to obtain necessary approvals, and our siting efforts. LON is required for reterminating the proposed Lackawanna – Siegfried/Albrightsville 500 kV line into the new yard. Potential siting and ROW risks include not having enough land for the new yard, interactions with adjacent landowners, and potential interveners in the Siting approval process. The Proposer Siting and ROW team will engage proactively with landowners and serve as project liaisons to address concerns and maintain positive relationships throughout the project. This includes communicating the project need, timeline, activities, construction impacts and site restoration.
Tower characteristics	See attached document Acahela-Structures.pdf for illustrations of towers to be used for this upgrade.
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	$11,907,114.33
Component cost (in-service year)	$14,718,575.58

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
2024W1-N11-WVD6	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM14	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM13	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD15	208092	ACAH	208092	ACAH	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM12	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM7	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD10	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM6	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD9	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM5	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD8	207930	BUSH	207930	BUSH	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVD7	207918	BLGR TR1	207918	BLGR TR1	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVD14	208092	ACAH	208092	ACAH	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM11	207930	BUSH	207930	BUSH	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD13	208092	ACAH	208092	ACAH	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM10	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM9	207918	BLGR TR1	207918	BLGR TR1	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD12	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM8	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD11	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVD17	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVD16	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM4	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Magnitude	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2024W1-N11-WVM3	207918	BLGR TR1	207918	BLGR TR1	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM2	207918	BLGR TR1	207918	BLGR TR1	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD5	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM1	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD4	208049	PAUP	208049	PAUP	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM18	207918	BLGR TR1	207918	BLGR TR1	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM17	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM16	208046	POCO	208046	POCO	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVM15	208092	ACAH	208092	ACAH	1	230	229	Winter N-1-1 Voltage Magnitude	Included
2024W1-N11-WVD3	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVD2	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVD1	207918	BLGR TR1	207918	BLGR TR1	1	230	229	Winter N-1-1 Voltage Drop	Included
2024W1-N11-WVM19	207919	BLGR TR2	207919	BLGR TR2	1	230	229	Winter N-1-1 Voltage Magnitude	Included

New Flowgates

Proprietary Information

Financial Information

Capital spend start date	01/2025
Construction start date	06/2029
Project Duration (In Months)	95

Cost Containment Commitment

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

Components covered by cost containment

1. Acahela 500/230/69 kV Substation Expansion - PPL
2. Lackawanna - Siegfried 500 kV line taps in and out of Acahela - PPL

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	No
ROW / land acquisition	No
Materials & equipment	No
Construction & commissioning	No
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