

Siegfried - Branchburg 500 kV 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	900
Project title	Siegfried - Branchburg 500 kV line
Project description	Bifurcate the Susquehanna - Orefield 500 kV line and bring the line in and out of the Siegfried Substation. Construct a new 500 kV breaker and a half yard at Siegfried. Build a new Siegfried - Branchburg 500 kV line. The line will consist of three primary segments: (1) a brownfield segment that consists of a conversion of the Siegfried - Martins Creek 230 kV line to 500 kV, (2) a greenfield segment from Martins Creek to the Drakestown area where the new line would meet with the Hopatcong - Branchburg 500 kV line, and (3) a brownfield segment that consists of a DCT with the existing Hopatcong - Branchburg 500 kV line from the junction point to Branchburg.
Email	Proprietary Information
Project in-service date	05/2031
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. Siegfried 500 kV Substation Upgrade
2. Branchburg 500 kV station expansion

3. Bifurcate the Susquehanna - Orefield 500 kV line in and out of new Siegfried 500 kV yard
4. New Siegfried - Branchburg 500 kV line (SCT) (PA segment)
5. Siegfried - Branchburg 500 kV line (NJ greenfield segment)
6. Siegfried - Branchburg 500 kV line (brownfield NJ segment DCT with existing Hopatcong - Branchburg 500 kV line)

Substation Upgrade Component

Component title	Siegfried 500 kV Substation Upgrade
Project description	Proprietary Information
Substation name	Siegfried
Substation zone	PPL
Substation upgrade scope	Construct a 500 kV yard at Siegfried Substation: Install a three bay, six breaker, breaker and a half substation with sufficient space to accommodate a final buildout of five bays. Utilize 4000 A circuit breakers (6) and 4000 A MODs (12) in the new station. All new bay equipment will have minimum ratings of 3609 MVA SN, 4149 MVA SE, 4276 MVA WN, and 4755 MVA WE.

Transformer Information

None	
New equipment description	Three breaker and a half 500 kV bays Six 4000 A circuit breakers Twelve 4000 A MODs
Substation assumptions	PPL owns the existing land under the SUSQ-WESC 500 kV and a 500 kV yard can be accommodated in the footprint that is there.
Real-estate description	PPL owns the existing land under the SUSQ-WESC 500 kV and a 500 kV yard can be accommodated in the footprint that is there. No new property is anticipated to be necessary.
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	\$70,557,441.00
Component cost (in-service year)	\$82,828,307.00
Substation Upgrade Component	
Component title	Branchburg 500 kV station expansion
Project description	Proprietary Information
Substation name	Branchburg
Substation zone	PSEG
Substation upgrade scope	Terminate the new Siegfried - Branchburg 500 kV line in the Branchburg 500 kV GIS, in existing bay position # 12.
Transformer Information	
None	
New equipment description	Install new GIL from existing GIS building to proposed new 500 kV dead-end structure.
Substation assumptions	Assumes that locations noted as open in the PSEG FERC 715 one-lines are available positions.
Real-estate description	No new property is required to accommodate this station upgrade project.
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	\$11,526,161.00
Component cost (in-service year)	\$12,425,969.00

Transmission Line Upgrade Component

Component title	Bifurcate the Susquehanna - Orefield 500 kV line in and out of new Siegfried 500 kV yard
Project description	Proprietary Information
Impacted transmission line	Susquehanna - Wescosville 500 kV line
Point A	Susquehanna
Point B	Wescosville
Point C	
Terrain description	Immediately adjacent to Siegfried transmission yard. Rolling hills.
Existing Line Physical Characteristics	
Operating voltage	500
Conductor size and type	Double Bundle 2493 ACAR 54/37 conductor

Hardware plan description	New hardware will be installed with the new facilities.	
Tower line characteristics	New transmission poles will be installed.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	3610.000000	4150.000000
Winter (MVA)	4276.000000	4755.000000
Conductor size and type	Triple bundle 1113 ACSS conductor	
Shield wire size and type	dual OPGW	
Rebuild line length	Less than 1 mile	
Rebuild portion description	Bifurcate the Susquehanna - Orefield 500 kV line near the new Siegfried 500 kV Switchyard and extend the lines into the new yard on a short double circuit of less than 0.2 miles. Utilize triple bundle 1113 ACSS with a rating of 3610 MVA SN, 4150 MVA SE, 4276 MVA WN, and 4755 MVA WE. Install dual OPGW.	
Right of way	No new ROW is anticipated to be needed to accommodate this project.	
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	\$8,985,000.00
Component cost (in-service year)	\$10,547,610.00
Transmission Line Upgrade Component	
Component title	New Siegfried - Branchburg 500 kV line (SCT) (PA segment)
Project description	Proprietary Information
Impacted transmission line	Siegfried - Martins Creek 230 kV line
Point A	Siegfried
Point B	Martins Creek
Point C	
Terrain description	Existing transmission line corridor, with existing 500 kV tower line operated at 230 kV. Line traverses farm fields from Siegfried to Martins Creek.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	Double Bundle 2493 ACAR 54/37 conductor
Hardware plan description	Developer intends to remove and replace existing structures and hardware.
Tower line characteristics	Existing structures are composed of steel H-frame towers.
Proposed Line Characteristics	
	Designed
	Operating

Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	3610.000000	4150.000000
Winter (MVA)	4276.000000	4755.000000
Conductor size and type	Triple-bundle 1113 ACSS conductor	
Shield wire size and type	Dual OPGW	
Rebuild line length	23.5 miles	
Rebuild portion description	23.5 miles rebuild utilizing existing transmission corridor.	
Right of way	The existing ROW will not be altered.	
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	\$125,790,473.00	
Component cost (in-service year)	\$147,667,089.00	

Greenfield Transmission Line Component

Component title	Siegfried - Branchburg 500 kV line (NJ greenfield segment)	
Project description	Proprietary Information	
Point A	Siegfried	
Point B	Branchburg	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	3610.000000	4150.000000
Winter (MVA)	4276.000000	4755.000000
Conductor size and type	triple bundle 1113 ACSS 54/19 conductor	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	Construct a greenfield single-circuit segment for the new Siegfried - Branchburg 500 kV line from Martins Creek to the point where it would intersect with the existing Hopatcong - Branchburg 500 kV line. This segment would be constructed by PPL TransLink since it is in the state of NJ.	
Terrain description	Land use between Martins Creek and the intersection point with the Hopatcong - Branchburg 500 kV line study area in eastern Pennsylvania and northwestern New Jersey is predominantly rural, consisting of forested ridges, agricultural valleys, and scattered development. The study area is primarily in New Jersey, with the Martins Creek substation sitting on the Pennsylvania-New Jersey border. Crop fields and pastures are concentrated in valleys, while extensive forest cover occurs along the ridges and mountainous portions of the study area.	
Right-of-way width by segment	Developer proposes a 200 foot ROW corridor.	
Electrical transmission infrastructure crossings	Delaware River	

Civil infrastructure/major waterway facility crossing plan	Developer will execute a waterway crossing using a helicopter. Ground crews first attach a lightweight, high-strength synthetic pilot line to a weighted pulling needle hanging beneath the aircraft. The helicopter then flies across the open water, unspooling the rope from a ground reel at a precise speed and altitude to keep it safely suspended above shipping lanes and out of the water. As the pilot reaches each shoreline tower, they expertly maneuver the needle directly through open-sided pulley blocks (stringing travelers) mounted on the tower arms. Once the pilot line is successfully threaded across the entire gap, heavy winches on the far bank reel the rope back in, using it to pull a stronger steel messenger cable, which ultimately drags the heavy, high-voltage electrical conductors into their final position.
Environmental impacts	See Civil infrastructure/major waterway facility crossing plan attachment.
Tower characteristics	Developer proposes single circuit 500 kV monopole structures.
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	\$131,020,161.00
Component cost (in-service year)	\$153,806,289.00
Transmission Line Upgrade Component	

Component title	Siegfried - Branchburg 500 kV line (brownfield NJ segment DCT with existing Hopatcong - Branchburg 500 kV line)	
Project description	Proprietary Information	
Impacted transmission line	Hopatcong - Branchburg 500 kV line	
Point A	Hopatcong	
Point B	Branchburg	
Point C		
Terrain description	The existing line traverses generally flat terrain with some urban development.	
Existing Line Physical Characteristics		
Operating voltage	500	
Conductor size and type	Double-bundle 2493 ACAR conductor	
Hardware plan description	Developer intends to remove and rebuild all infrastructure to double circuit.	
Tower line characteristics	Unknown. Owned by PSEG.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	3610.000000	4150.000000
Winter (MVA)	4276.000000	4755.000000
Conductor size and type	Triple bundle 1113 ACSS conductor	
Shield wire size and type	Dual OPGW	
Rebuild line length	20.75 miles	

Rebuild portion description	Developer proposes complete removal of existing structures and all infrastructure to facilitate complete rebuild of line to double circuit steel 500 kV monopoles.
Right of way	Existing ROW will be utilized for the rebuild. No new ROW will be 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	\$178,441,798.00
Component cost (in-service year)	\$192,372,144.00

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
2026W1-N11-ST2	213869	PCHBTMTTP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST5	213869	PCHBTMTTP	214087	COOPER2	1	230	230	Summer N-1-1	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2026W1-N11-ST6	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST7	213846	EXCLUDED_FROM_COMPETITION	213869	PCHBTMTMP	1	230	230	Summer N-1-1	Included
2026W1-N11-ST16	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST17	213846	EXCLUDED_FROM_COMPETITION	213869	PCHBTMTMP	1	230	230	Summer N-1-1	Included
2026W1-N11-ST31	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST32	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST33	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST46	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST49	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST50	213846	EXCLUDED_FROM_COMPETITION	213869	PCHBTMTMP	1	230	230	Summer N-1-1	Included
2026W1-N11-ST51	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST52	213846	EXCLUDED_FROM_COMPETITION	213869	PCHBTMTMP	1	230	230	Summer N-1-1	Included
2026W1-N11-ST53	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST54	213846	EXCLUDED_FROM_COMPETITION	213869	PCHBTMTMP	1	230	230	Summer N-1-1	Included
2026W1-N11-ST66	213846	EXCLUDED_FROM_COMPETITION	213869	PCHBTMTMP	1	230	230	Summer N-1-1	Included
2026W1-N11-ST67	213844	EXCLUDED_FROM_COMPETITION	213846	EXCLUDED_FROM_COMPETITION	1	230	230	Summer N-1-1	Included
2026W1-N11-ST102	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST104	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST105	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST106	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST107	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST111	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included
2026W1-N11-ST112	213869	PCHBTMTMP	214087	COOPER2	1	230	230	Summer N-1-1	Included

New Flowgates

Proprietary Information

Financial Information

Capital spend start date	02/2027
Construction start date	01/2030
Project Duration (In Months)	51

Cost Containment Commitment

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

Components covered by cost containment

1. Siegfried 500 kV Substation Upgrade - PROPOSER
2. Bifurcate the Susquehanna - Orefield 500 kV line in and out of new Siegfried 500 kV yard - PROPOSER
3. New Siegfried - Branchburg 500 kV line (SCT) (PA segment) - PROPOSER
4. Siegfried - Branchburg 500 kV line (NJ greenfield segment) - PROPOSER

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

Is the proposer offering a binding cap on ROE?

Is the proposer offering a Debt to Equity Ratio cap?

Additional cost containment measures not covered above

Additional Comments

None

Proprietary Information

No

Proprietary Information

Proprietary Information