New Allen 115 kV Source

General Information

Proposing entity name	Company Specific
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Yes
Company proposal ID	Company Specific
PJM Proposal ID	789
Project title	New Allen 115 kV Source
Project description	Loop the PPL owned Cumberland - Williams Grove 230 kV Line into a new MAIT owned substation constructed adjacent to the line. The substation will be a three-breaker ring bus and will include a 300 MVA 230/115 kV transformer. The MAIT owned Allen 115 kV Substation is to be reconfigured into a four-breaker ring bus. A new 115 kV line (approx. 2.1 miles) is to be constructed and terminated at the new substation and the Allen Substation along the TMI-Juniata 500 kV Line corridor.
Email	Company specific
Project in-service date	06/2026
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	

Project Components

1. Allen 115 kV Ring Bus
2. PPGI Relay Setting Modifications
3. Roundtop Substation Terminal Upgrade and Relay Setting Modifications

4. New 230/115 kV Substation

5. Allen Fiber Communication Equipment

6. New Substation - Design, Install and Test/Commission MPLS Equipment for ...

7. Allen 115 kV Substation: Design, Install, and Test/commission MPLS equip...

8. Construct New 115 kV line

9. Loop the PPL 230 kV Line into New 230/115 kV Substation

10. Re-Terminate the 115 kV Lines at Allen Substation.

Substation Upgrade Component

Component title	Allen 115 kV Ring Bus
Project description	Convert the existing MAIT owned Allen 115 kV Substation into a four-breaker ring bus.
Substation name	Allen
Substation zone	MAIT - Metropolitan Edison
Substation upgrade scope	Convert the existing MAIT owned Allen 115 kV Substation into a four-breaker ring bus: -Install (4) 115 kV, 3000 A, 40 kAIC circuit breakers -Install (8) 115 kV, 2000 A GOAB disconnect switches -Install (2) 115 kV, 2000 A MOAB line disconnect switches -Install (1) medium control building. -Install (3) 115 kV H-frames. -Install (2) 115 kV, 2000 A wave traps and line tuners, one each to the Round Top and PPGI line terminals. -Install (9) 115 kV surge arresters, three each on the Round Top, PPGI, and New Allen line terminals. -Install (9) 115 kV CCVTs, three each to the Round Top, PPGI, and New Allen line terminals. Install (1) 115 kV SSVT. -Install (1) one lot of rigid and strain bus, steel structures, cable, and fittings as shown in the attached layout. -Install (3) standard line relaying panels, one each for the Round Top, PPGI, and New Allen lines containing (1) SEL-421, (1) SEL-411L -Install (2) carrier panels, one each for the Round Top and PPGI lines containing (1) Ametek UPLC and (1) PCM5350 -Install (4) breaker control panels with (1) SEL-501 BFT and (1) SATEC meter. -Install (1) transformer protection panel with (2) SEL-421. -Install (1) SCADA RTU and HMI panel, including RTAC and GPS clock. -Install (1) ATS. -Install (1) fiber patch panel.

Transformer Information

None

New equipment description	See "Substation upgrade scope".

Substation assumptions	-Fiber will be installed on the New 115 kV line. -Substation expansion is on existing FE/MAIT property. -Northern expansion is limited due to extreme grading change. Larger expansion is possible with more grading. -Existing distribution transformer MOAB is adequate and will remain. -Line MOABS will be mounted on new 115 kV H-frames. -New control building is required. -New SSVT will be installed to provide primary while existing 13.2 kV will provide backup and will not be replaced. -Transformer CCVTs are not required per the protection requirements.
Real-estate description	Substation expansion is on existing FE/MAIT property.
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
Permitting / routing / siting	This information is considered confidential and proprietary
ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$6,533,424.15
Component cost (in-service year)	$7,417,867.62

Substation Upgrade Component

Component title	PPGI Relay Setting Modifications
Project description	Modify relay settings on the PPGI - Allen - Roundtop (981) 115 kV Line, PPGI terminal.
Substation name	PPGI

Substation zone	MAIT - Metropolitan Edison
Substation upgrade scope	Modify relay settings on the PPGI - Allen - Roundtop (981) 115 kV Line, PPGI terminal.

Transformer Information

None

New equipment description	N/A
Substation assumptions	N/A
Real-estate description	N/A
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
Permitting / routing / siting	This information is considered confidential and proprietary
ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$24,976.85
Component cost (in-service year)	$28,723.37

Substation Upgrade Component

Component title	Roundtop Substation Terminal Upgrade and Relay Setting Modifications

Project description	Replace 115 kV wave trap and line tuner, and modify relay settings on the PPGI - Allen - Roundtop (981) 115 kV Line at Roundtop Substation.
Substation name	Roundtop
Substation zone	MAIT - Metropolitan Edison
Substation upgrade scope	Replace 115 kV wave trap and line tuner, and modify relay settings on the PPGI - Allen - Roundtop (981) 115 kV Line at Roundtop Substation.

Transformer Information

None

New equipment description	N/A
Substation assumptions	N/A
Real-estate description	N/A
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
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ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$199,865.08

Component cost (in-service year)	$229,017.22

Greenfield Substation Component

Component title	New 230/115 kV Substation
Project description	Construct a new 230/115 kV substation consisting of a three-breaker ring bus and a 300 MVA, 230/115 kV transformer.
Substation name	TBD
Substation description	Construct a new 230/115 kV substation consisting of a three-breaker ring bus and a 300 MVA, 230/115 kV transformer.
Nominal voltage	AC
Nominal voltage	230/115

Transformer Information

	Name	**Capacity (MVA)**	
Transformer	Bank #1	300	
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	230	115	13.2

Major equipment description	Transformer will be an 180/240/300 MVA 230/115/13.2 kV Autotransformer with an approximate impedance of 6.72% at 180 MVA base. Cooling methods are ONAN/ONAF/ONAF2.

	Normal ratings	**Emergency ratings**
Summer (MVA)	361.000000	387.000000
Winter (MVA)	456.000000	483.000000

Environmental assessment	Support as required to build a three-breaker ring bus substation.
Outreach plan	Support as required to build a three-breaker ring bus substation.

Land acquisition plan	Support as required to build a three-breaker ring bus substation.
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
Permitting / routing / siting	This information is considered confidential and proprietary
ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$11,009,377.22
Component cost (in-service year)	$12,345,621.07

Substation Upgrade Component

Component title	Allen Fiber Communication Equipment
Project description	Install fiber equipment at the MAIT owned Allen 115 kV Substation.
Substation name	Allen
Substation zone	MAIT - Metropolitan Edison
Substation upgrade scope	Install fiber equipment at the MAIT owned Allen 115 kV Substation.

Transformer Information

None

New equipment description	N/A
Substation assumptions	N/A
Real-estate description	N/A
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

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Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$139,287.17
Component cost (in-service year)	$159,592.62

Substation Upgrade Component

Component title	New Substation - Design, Install and Test/Commission MPLS Equipment for SCADA transport.
Project description	At the new 230/115 kV substation, design, install, and test/commission MPLS equipment for SCADA transport.
Substation name	New 230/115 kV Substation
Substation zone	MAIT - Metropolitan Edison

Substation upgrade scope	At the new 230/115 kV substation, design, install, and test/commission MPLS equipment for SCADA transport.

Transformer Information

None

New equipment description	N/A
Substation assumptions	N/A
Real-estate description	N/A
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
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ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$207,310.41
Component cost (in-service year)	$237,813.89

Substation Upgrade Component

Component title	Allen 115 kV Substation: Design, Install, and Test/commission MPLS equipment for SCADA transport.

Project description	At the MAIT owned Allen 115 kV Substation, design, install, and test/commission MPLS equipment for SCADA transport.
Substation name	Allen
Substation zone	MAIT - Metropolitan Edison
Substation upgrade scope	At the MAIT owned Allen 115 kV Substation, design, install, and test/commission MPLS equipment for SCADA transport.

Transformer Information

None

New equipment description	N/A
Substation assumptions	N/A
Real-estate description	
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
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ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$207,310.41

Component cost (in-service year)	$237,813.89

Greenfield Transmission Line Component

Component title	Construct New 115 kV line
Project description	Build a new 115 kV line between the MAIT owned Allen 115 kV Substation and the proposed new 230/115 kV substation. The total length of the new line is approximately 2 miles.
Point A	Allen 115 kV Substation
Point B	New 230/115 kV Substation
Point C	

	Normal ratings	**Emergency ratings**
Summer (MVA)	232.000000	282.000000
Winter (MVA)	263.000000	334.000000

Conductor size and type	795 KCMIL 26/7 STR ACSR
Nominal voltage	AC
Nominal voltage	115 kV
Line construction type	Overhead
General route description	The proposed route will cross under and then parallel the existing 5008 (Juniata-Three Mile Island) 500 kV Line through cultivated fields
Terrain description	The line will traverse through cultivated fields.
Right-of-way width by segment	The new structures can be located within the existing 500 kV ROW and still maintain clearances. An engineering analysis during project development will be required to confirm.
Electrical transmission infrastructure crossings	5008 (Juniata-Three Mile Island) 500kV Line
Civil infrastructure/major waterway facility crossing plan	N/A

Environmental impacts	An environmental survey will be required to identify any construction constraints or additional permitting requirements.
Tower characteristics	To minimize impact to the cultivated fields and to reduce the risk of blowout concerns with the 500k V circuit it is assumed that steel poles on drilled shaft foundations will be utilized adjacent to the existing 5008 (Juniata-Three Mile Island) 500 kV Line lattice towers. The following will be installed: -(1) 115 kV Single Circuit Wood 3-Pole Deadend Structure -(1) 115 kV Single Circuit Steel 3-Pole Deadend Structure -(8) 115 kV Single Circuit Steel monopole Delta suspension Structures -(1) 115 kV Single Circuit Steel monopole Deadend Structure -(6) 115 kV substation deadend assemblies -The line will roll from a horizontal configuration to a delta configuration after crossing the 500 kV line
Construction responsibility	Company specific
Benefits/Comments	-Assume a majority of the work will be performed within the existing 500 kV ROW or on substation property. New ROW may be required to the east of the line for approximately (1.9) miles. -Existing transmission ROW on FE substation property will need to be updated for the new route. -A rights and restrictions review by Real Estate will be required. -Georeferenced ROW extents will be required to be provided to engineering.

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
Permitting / routing / siting	This information is considered confidential and proprietary
ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$6,334,333.94
Component cost (in-service year)	$7,191,629.55

Greenfield Transmission Line Component

Component title	Loop the PPL 230 kV Line into New 230/115 kV Substation	
Project description	Cut the existing PPL Cumberland – Williams Grove 230 kV Line to loop into the proposed New 230/115 kV Substation.	
Point A	Cumberland 230 kV	
Point B	New 230/115 kV Substation	
Point C	Williams Grove 230 kV	
	Normal ratings	**Emergency ratings**
Summer (MVA)	493.000000	624.000000
Winter (MVA)	569.000000	702.000000
Conductor size and type	1033.5 KCMIL 54/7 ACSR	
Nominal voltage	AC	
Nominal voltage	230 kV	
Line construction type	Overhead	
General route description	New substation will be located adjacent to the existing 230 kV line. Line loop will be approximately 1-span long.	
Terrain description	The line will traverse through cultivated fields.	
Right-of-way width by segment	New ROW will be required for the line loop.	
Electrical transmission infrastructure crossings	N/A	
Civil infrastructure/major waterway facility crossing plan	N/A	
Environmental impacts	An environmental survey will be required to identify any construction constraints or additional permitting requirements.	

Tower characteristics	Structures Installed: -(2) 230 kV Single Circuit Steel 3-Pole Deadend Structures (Modified TR-230075) -(6) 230 kV substation deadend assemblies
Construction responsibility	Company specific
Benefits/Comments	PPL may take on responsibility of making the necessary changes to their structures. -New ROW will be required for approximately (0.1) miles. -New guying right will be required. -PPL to transfer existing ROW (0.1) miles to FirstEnergy.

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
Permitting / routing / siting	This information is considered confidential and proprietary
ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$3,212,754.16
Component cost (in-service year)	$3,672,352.13

Transmission Line Upgrade Component

Component title	Re-Terminate the 115 kV Lines at Allen Substation.
Project description	Re-terminate the 981 (PPGI-Round Top) 115 kV line into the reconfigured four-breaker ring bus at the Allen Substation.
Impacted transmission line	981 (PPGI-Round Top) 115 kV Line
Point A	Allen
Point B	Round Top

Point C

Terrain description	Line work will utilize existing ROW.

Existing Line Physical Characteristics

Operating voltage	115 kV
Conductor size and type	556 KCMIL 26/7 ACSR
Hardware plan description	No changes to the structures outside of the substation. Structures Installed: -(3) 115 kV substation deadend assemblies -Approximately (0.1) circuit miles of 556.5 kcmil 26/7 ACSR shielded by (1) 7#8 Alumoweld
Tower line characteristics	No changes to the structures outside of the substation.

Proposed Line Characteristics

	Designed	**Operating**
Voltage (kV)	115.000000	115.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	184.000000	223.000000
Winter (MVA)	208.000000	264.000000

Conductor size and type	556 KCMIL 26/7 ACSR
Shield wire size and type	7#8 Alumoweld
Rebuild line length	0.1 Mile
Rebuild portion description	Majority of the line is not affected by the scope of work. The line is being re-terminated at the Allen 115 kV Substation after re-configuration of the substation to a four-breaker ring bus is complete.
Right of way	Line work will utilize existing ROW.
Construction responsibility	Company specific
Benefits/Comments	

Component Cost Details - In Current Year $

Engineering & design	This information is considered confidential and proprietary
Permitting / routing / siting	This information is considered confidential and proprietary
ROW / land acquisition	This information is considered confidential and proprietary
Materials & equipment	This information is considered confidential and proprietary
Construction & commissioning	This information is considered confidential and proprietary
Construction management	This information is considered confidential and proprietary
Overheads & miscellaneous costs	This information is considered confidential and proprietary
Contingency	This information is considered confidential and proprietary
Total component cost	$675,235.50
Component cost (in-service year)	$763,963.27

Congestion Drivers

None

Existing Flowgates

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
N2-SVM8	204520	27ALLEN	204520	27ALLEN	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM9	204520	27ALLEN	204520	27ALLEN	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM10	204526	27DILLSBRG	204526	27DILLSBRG	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM11	204526	27DILLSBRG	204526	27DILLSBRG	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM12	204528	27GARDNERS	204528	27GARDNERS	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM13	204528	27GARDNERS	204528	27GARDNERS	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM16	204546	27MOUNTAIN	204546	27MOUNTAIN	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM17	204546	27MOUNTAIN	204546	27MOUNTAIN	0	115	227	Summer N-1-1 Voltage Magnitude	Included

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
N2-SVM18	204552	27P.P.G.I.	204552	27P.P.G.I.	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM19	204552	27P.P.G.I.	204552	27P.P.G.I.	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM26	204556	27ROUND TP	204556	27ROUND TP	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVM27	204556	27ROUND TP	204556	27ROUND TP	0	115	227	Summer N-1-1 Voltage Magnitude	Included
N2-SVD1	200504	26CARLISLE	200504	26CARLISLE	0	115	226	Summer N-1-1 Voltage Drop	Included
N2-SVD2	200504	26CARLISLE	200504	26CARLISLE	0	115	226	Summer N-1-1 Voltage Drop	Included
N2-SVD3	204520	27ALLEN	204520	27ALLEN	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD4	204520	27ALLEN	204520	27ALLEN	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD5	204526	27DILLSBRG	204526	27DILLSBRG	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD6	204526	27DILLSBRG	204526	27DILLSBRG	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD7	204528	27GARDNERS	204528	27GARDNERS	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD8	204528	27GARDNERS	204528	27GARDNERS	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD9	204546	27MOUNTAIN	204546	27MOUNTAIN	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD10	204546	27MOUNTAIN	204546	27MOUNTAIN	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD11	204552	27P.P.G.I.	204552	27P.P.G.I.	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD12	204552	27P.P.G.I.	204552	27P.P.G.I.	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD15	204556	27ROUND TP	204556	27ROUND TP	0	115	227	Summer N-1-1 Voltage Drop	Included
N2-SVD16	204556	27ROUND TP	204556	27ROUND TP	0	115	227	Summer N-1-1 Voltage Drop	Included

New Flowgates

None

Financial Information

Capital spend start date	04/2023
Construction start date	09/2025
Project Duration (In Months)	38

Additional Comments

None