

Otter Creek - Conastone 500 and 230 kV DCT 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	374
Project title	Otter Creek - Conastone 500 and 230 kV DCT Line
Project description	Construct a new Otter Creek 500 kV 3-breaker Switching Station and bring the Three Mile Island - Peach Bottom 500 kV line in and out of the new switching station. Construct a new 500 kV line from the new Otter Creek 500 kV Switching Station to the existing Conastone 500 kV Substation.
Email	Proprietary Information
Project in-service date	05/2027
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. Tap TMIS - Peach Bottom 500 kV line
2. Otter Creek - Conastone 500 and 230 kV DCT line (PPL EU Section)
3. Otter Creek - Conastone 500 and 230 kV DCT line (BGE Section)
4. Otter Creek 500 kV Switchyard
5. Conastone 500 kV Substation upgrade

6. Peach Bottom South Yard bus upgrades

Transmission Line Upgrade Component

Component title	Tap TMIS - Peach Bottom 500 kV line
Project description	Proprietary Information
Impacted transmission line	Three Mile Island - Peach Bottom 500 kV line
Point A	Three Mile Island
Point B	Peach Bottom
Point C	
Terrain description	New switchyard and tap points located in a relatively flat agricultural area.
Existing Line Physical Characteristics	
Operating voltage	500
Conductor size and type	Double Bundle 2493 ACAR 54/37
Hardware plan description	Existing structures will not be modified. New conductor will be installed between tap point and new 500 kV switchyard. Conductor will match or exceed current rating.
Tower line characteristics	Existing structures will not be touched. Two new 3-pole structures will need to be installed in PECO ROW to break the existing line into the new substation.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	2644.000000	2844.000000
Winter (MVA)	2946.000000	3106.000000

Conductor size and type	Double Bundle 2493 ACAR 54/37
Shield wire size and type	19 number 9 Alumoweld
Rebuild line length	Not applicable. Not a reconductor, just tapping the line.
Rebuild portion description	Not applicable. Not a reconductor, just tapping the line.
Right of way	Substation property to extend to existing PECO ROW. No additional 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	\$6,326,976.01
Component cost (in-service year)	\$7,026,612.55

Transmission Line Upgrade Component

Component title	Otter Creek - Conastone 500 and 230 kV DCT line (PPL EU Section)
Project description	Proprietary Information
Impacted transmission line	Otter Creek - Conastone 230 kV line

Point A	Otter Creek
Point B	Conastone
Point C	
Terrain description	Agricultural lands and rolling hills.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	Single 1590 ACSR 45 / 7
Hardware plan description	None of the existing infrastructure will be reused.
Tower line characteristics	Existing structures will need to be replaced to accommodate the new 500 kV circuit. See attachment Development-Basis DCT-Framing Detail.pdf.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	4398.500000	5237.700000
Winter (MVA)	4762.270000	5609.250000
Conductor size and type	Triple-Bundle 1113 54/19 ACSS	
Shield wire size and type	OPGW	
Rebuild line length	12	
Rebuild portion description	The line is presently single circuit 1590 ACSR 45/7 and 795 ACSR 30/19. 12 miles of the line is owned by PPL EU (1590 ACSR) and 4.76 miles owned by BGE (795 ACSR). This component refers to the 12-mile section that is owned by PPL.	

Right of way	ROW will be acquired to widen the existing transmission line corridor from 150 feet to 200 feet. Approximately 102 acres of additional ROW will be acquired, which is all privately owned. Negotiations with private landowners will be based on fair market values determined by a third-party appraiser. Negotiations with private landowners will be conducted by PPL ROW Agents and PPL contracted ROW agents.
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Construction responsibility	Proprietary Information
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Benefits/Comments	Proprietary Information
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Component Cost Details - In Current Year \$

Engineering & design	Proprietary Information
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Permitting / routing / siting	Proprietary Information
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ROW / land acquisition	Proprietary Information
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Materials & equipment	Proprietary Information
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Construction & commissioning	Proprietary Information
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Construction management	Proprietary Information
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Overheads & miscellaneous costs	Proprietary Information
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Contingency	Proprietary Information
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Total component cost	\$77,397,908.72
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Component cost (in-service year)	\$85,887,355.06
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Transmission Line Upgrade Component

Component title	Otter Creek - Conastone 500 and 230 kV DCT line (BGE Section)
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Project description	Proprietary Information
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Impacted transmission line	Otter Creek - Conastone 230 kV line
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Point A	Otter Creek
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Point B	Conastone
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Point C

Terrain description Agricultural lands and rolling hills.

Existing Line Physical Characteristics

Operating voltage 230

Conductor size and type 795 ACSR 30 / 19

Hardware plan description None of the existing infrastructure will be reused.

Tower line characteristics Existing structures will need to be replaced to accommodate the new 500 kV circuit. See attachment Development-Basis DCT-Framing Detail.pdf.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	4398.500000	5237.700000
Winter (MVA)	4762.270000	5609.250000
Conductor size and type	Triple-Bundle 1113 54/19 ACSS	
Shield wire size and type	OPGW	
Rebuild line length	4.76	
Rebuild portion description	The line is presently single circuit 1590 ACSR 45/7 and 795 ACSR 30/19. 12 miles of the line is owned by PPL EU (1590 ACSR) and 4.76 miles owned by BGE (795 ACSR). This component refers to the 4.76-mile section that is owned by BGE.	
Right of way	ROW will be acquired to widen the existing transmission line corridor from 150 feet to 200 feet. Approximately 102 acres of additional ROW will be acquired, which is all privately owned. Negotiations with private landowners will be based on fair market values determined by a third-party appraiser. 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	\$29,949,451.74
Component cost (in-service year)	\$33,261,259.94

Greenfield Substation Component

Component title	Otter Creek 500 kV Switchyard
Project description	Proprietary Information
Substation name	Otter Creek 500 kV Switching Station
Substation description	Construct a new 500 kV Otter Creek Switchyard that breaks the Three Mile Island - Peach Bottom 500 kV line. Station will be a double-bus double breaker design with two bays, three 4000 amp 500 kV breakers, six 4000 amp 500 kV MODs, and a location for one future breaker. All bay and bus equipment will be designed so as not to limit the line rating below that of the conductor.
Nominal voltage	AC
Nominal voltage	500

Transformer Information

None

Major equipment description

- Install seventy-two (72) 500kV 1-phase post insulators. - Install nine (9) 500kV 1-phase CCVTs. - Install fifteen (15) 500kV 1-phase surge arresters. - Install eighteen (18) 500kV 4000A Pascor switches with MODs. - Install nine (9) single pole 500kV, 4000A circuit breakers. - Install six (6) 500kV-480V, 100kVA power voltage transformers. - Install two (2) 480V-240/120V padmount station service transformers. - Install two (2) Arc Flash circuit breakers. - Include 5" schedule 80 bus, components, hardware, and insulators. - Assume 500kV substation conductor will be three (3) 1590 ACSR conductors. - Install approx. 40000 linear feet of 4/0 copper ground grid through the 500kV switchyard. - Install 20'x45' modular control cubicle.

Normal ratings

Emergency ratings

Summer (MVA)

4398.500000

5237.700000

Winter (MVA)

4762.270000

5609.250000

Environmental assessment

The proposed project passes through a landscape characterized by rolling terrain with a mixture of farming and forested areas which will require relatively moderate grading during construction. Temporary and permanent impacts to the landscape will be minimized by: • 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 Pennsylvania segment will require several GP 5 aerial crossing permits, 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 in Pennsylvania, necessitating the use of ABACT erosion and sediment control BMPs. Maryland's portion of the project includes several overhead crossings of waterbodies; care will be taken to reduce the impact of the project to a Minor Project under the Department of Environment's Nontidal Wetland's program. A general discharge permit under NPDES is anticipated, along with a forest conservation plan. Several federally protected species may occur within the proposed project area including Bog Turtles and Northern Long Eared Bats, which would require time-of-year restrictions on tree clearing and construction activities. Using an existing ROW should minimize impact to buried cultural resources as well as to the viewsheds of above-ground historic resources.

Outreach plan	PPL Electric is committed to open communications and transparency throughout the project lifecycle. As such, PPL Electric develops a project-specific Community and Outreach Plan based on the unique conditions associated with each project. To communicate clearly and transparently, PPL Electric utilizes a wide variety of strategies including, in-person meetings with local municipalities and regulators, direct mail, project websites, fact sheets, frequently asked questions, and public open houses. For example, during previous projects, PPL Electric has developed a strategic public outreach program that served as the cornerstone of project success. The program included soliciting input from, and providing timely updates to, external stakeholders from the onset of the project through to completion. This was achieved using face to face meetings, direct mailings, multiple rounds of open houses, fact sheets, press releases and an interactive website.
Land acquisition plan	>Ordering of title, Phase 1 environmental study and appraisal > Various disciplines would perform a review to ensure the site meets standards > Meet with the property owner(s) to deliver the 15 Day Packet (PUC Requirement) and begin negotiations > Ongoing property owner negotiations and presentation of formal written offer (Agreement of Sale) once an agreement is reached > Revision (as needed) and execution of Agreement of Sale > PPL to perform due diligence activities (core boring, soil resistivity testing, infiltration testing, all other site testing) during the due diligence period outlined in the Agreement of Sale > Once the site has been approved by all required departments, PPL ROW to coordinate scheduling of closing with OGC and outside counsel
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	\$30,440,891.84

Component cost (in-service year) \$33,876,252.29

Substation Upgrade Component

Component title Conastone 500 kV Substation upgrade

Project description Proprietary Information

Substation name Conastone 500 kV

Substation zone BGE

Substation upgrade scope Addition of one 4000 amp 500 kV circuit breaker and two 4000 amp 500 kV MODs to create a new bay position north of the existing H breaker to terminate the new 500 kV line from Otter Creek.

Transformer Information

None

New equipment description - Install one (1) line entrance 500kV Pascor switch with MOD. - Install three (3) 500kV 1-phase CCVTs. - Install three (3) 500kV 1-phase surge arresters. - Install six (6) 500kV 1-phase Pascor 4000A switches with MODs. - Install three (3) single pole 500kV 4000A circuit breakers. - Include 5" schedule 80 bus, components, hardware, and insulators. Estimate 200 lineal ft. - Assume 500kV substation conductor will be three (3) 1590 ACSR conductors. - Install ground loops to equipment.

Substation assumptions It is assumed that the position that is presently open north of the H breaker in the 500 kV yard at Conastone will be available to accommodate a new line termination. If the bay position is not available, or if the existing Conastone-Brighton 500 kV line outage concerns that are posted in this window are not adequately addressed by other proposals received by PJM to allow for the adjacent termination of this line and the Brighton line, a new bay would need to be developed in the open area east of the bay with the H and J breakers.

Real-estate description No expansion 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	\$8,857,979.61
Component cost (in-service year)	\$9,837,494.35

Substation Upgrade Component

Component title	Peach Bottom South Yard bus upgrades
Project description	Proprietary Information
Substation name	Peach Bottom South 500 kV Station
Substation zone	PECO
Substation upgrade scope	Upgrade the top and bottom buses in the south yard at Peach Bottom to 5 inch aluminum to remove terminal limitations on the tie lines between the north and south yards.

Transformer Information

None	
New equipment description	Install 3500' of existing 5" bus.
Substation assumptions	Assume we can reuse the existing post insulators.
Real-estate description	No substation expansion is anticipated necessary 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	\$1,235,816.66
Component cost (in-service year)	\$1,372,473.18

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-S173200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S172800064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S172200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S170200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S76200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S165200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S103200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included
2022W3-GD-S166200064	2000064	PCHBTM1S	200004	CNASTONE	1	500	232/230	Summer Gen Deliv	Included

New Flowgates

Proprietary Information

Financial Information

Capital spend start date 10/2023

Construction start date 01/2026

Project Duration (In Months) 43

Cost Containment Commitment

Cost cap (in current year) Proprietary Information

Cost cap (in-service year) Proprietary Information

Components covered by cost containment

1. Otter Creek - Conastone 500 and 230 kV DCT line (PPL EU Section) - PPL
2. Otter Creek 500 kV Switchyard - 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