

Second 500 kV line from Lexington to Dooms

General Information

Proposing entity name	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Company proposal ID	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
PJM Proposal ID	923
Project title	Second 500 kV line from Lexington to Dooms
Project description	Construct approximately 40.5-miles of a new 500 kV transmission line from Lexington to Dooms with current 500 kV standards.
Email	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Project in-service date	12/2027
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Project Components

1. New 500 kV Line (Lexington to Dooms)
2. Dooms Substation
3. Lexington Substation

Greenfield Transmission Line Component

Component title	New 500 kV Line (Lexington to Dooms)
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Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.	
Point A	Lexington	
Point B	Dooms	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	<p>PERMANENT FACILITIES TO BE INSTALLED: 1. Install one hundred fifty-eight (158) 500kV custom engineered steel monopole tangent structures on foundations [15.200]. 2. Install eighteen (18) 500kV custom engineered steel monopole deadend structures on foundations [15.212]. 3. Install fourteen (14) 500kV custom engineered large angle steel 3-pole deadend structures on foundations [Modified 15.212 w/ two additional poles to catch the bottom two phases]. a. Modifications were necessary to reduce groundline moments. 4. Install approximately 40.50 miles of 3-phase 3-1351.5 ACSR (45/7) "Dipper" conductor from Lexington Substation to Dooms Substation. 5. Install approximately 40.50 miles of two (2) DNO-10100 OPGW from Lexington Substation to Dooms Substation. a. Assumes a total of forty (40) Fiber splices throughout the line. i. Twenty (20) splices per DNO-10100 OPGW</p>	
Terrain description	The project area is in the Shenandoah Valley region with elevations ranging from approximately 1200 to 2100 feet. The terrain is predominately vegetated existing right-of-way and adjacent vegetated expanded right-of-way. The line will cross four primary roads and several small streams.	
Right-of-way width by segment	The new 500 kV line will run parallel to the existing Line # 555, and about 60 ft wide additional right of way would be needed for the entire length of the the line. 90 ft wide right of way would be needed at both Lexington and Dooms substations. Refer to section A.2 of "993177 Real Estate and Permitting Summary" document attached to this submission.	
Electrical transmission infrastructure crossings	Several electrical crossings at each of the connecting substation locations (Lexington and Dooms).	

Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of "993177 Real Estate and Permitting Summary" document attached to this submission.
Environmental impacts	Refer to section A.4 of "993177 Real Estate and Permitting Summary" document attached to this submission.
Tower characteristics	PERMANENT FACILITIES TO BE INSTALLED: 1. Install one hundred fifty-eight (158) 500kV custom engineered steel monopole tangent structures on foundations [15.200]. 2. Install eighteen (18) 500kV custom engineered steel monopole deadend structures on foundations [15.212]. 3. Install fourteen (14) 500kV custom engineered large angle steel 3-pole deadend structures on foundations [Modified 15.212 w/ two additional poles to catch the bottom two phases]. a. Modifications were necessary to reduce groundline moments. 4. Install approximately 40.50 miles of 3-phase 3-1351.5 ACSR (45/7) "Dipper" conductor from Lexington Substation to Dooms Substation. 5. Install approximately 40.50 miles of two (2) DNO-10100 OPGW from Lexington Substation to Dooms Substation. a. Assumes a total of forty (40) Fiber splices throughout the line. i. Twenty (20) splices per DNO-10100 OPGW
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year \$	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$209,086,060.00
Component cost (in-service year)	\$223,931,170.26

Substation Upgrade Component

Component title	Dooms Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Dooms
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. Four (4), 500kV, 5000A Double End Break Switches. 2. Three (3), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3), 500kV CCVT. 5. Approximately 1000FT. of 6 IN. Sch. 80 AL tube bus and connectors. 6. Foundations and steel structures as required. 7. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Two (2), 4510 - SEL-2411 Equipment Annunciator 2. Two (2), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2), 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 4. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 5. One (1), 4506 – 3Ø CCVT Potential Makeup Box 6. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box Reuse relay material (if possible): 1. One (1), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 3. One (1), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box Retire substation material: 1. Two (2), 500kV, 4000A Double End Break Switches. 2. One (1), 500kV, 50kAIC, 4000A, SF6 Circuit Breakers. 3. Approximately 350FT. of 6 IN. Sch. 40 AL tube bus and connectors. 4. Approximately 1000FT. of 5 IN. Sch. 40 AL tube bus and connectors.

Transformer Information

None	
New equipment description	1. Four (4), 500kV, 5000A Double End Break Switches. 2. Three (3), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3), 500kV CCVT. 5. Two (2), 4510 - SEL-2411 Equipment Annunciator 6. Two (2), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 7. Two (2), 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 8. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 9. One (1), 4506 – 3Ø CCVT Potential Makeup Box 10. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box

Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design to add transmission breakers will be revised as part of the SPE scope of work.? 3. 4-hole pad connections must be replaced with 6-hole connections to maintain 5000A ratings.
Real-estate description	The Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year \$	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$8,750,823.00
Component cost (in-service year)	\$9,372,131.43
Substation Upgrade Component	
Component title	Lexington Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Lexington
Substation zone	366

Substation upgrade scope

Purchase and install substation material: 1. Four (4), 500kV, 5000A Double End Break Switches. 2. Three (3), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3), 500kV CCVT. 5. Approximately 1200 FT. of 6 in. Sch. 80 AL tube and connectors. 6. Approximately 250 FT. of 5 in. Sch. 40 AL tube and connectors. 6. Foundations and steel structures as required. 7. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Two (2), 4510 - SEL-2411 Equipment Annunciator 2. Two (2), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2), 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 4. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 5. One (1), 4506 – 3Ø CCVT Potential Makeup Box 6. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box Reuse relay material (if possible): 1. One (1), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 4514 – Circuit Breaker C.T. Makeup Box 3. One (1), 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 4. One (1), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box Retire substation material: 1. Two (2), 500kV, 4000A Double End Break Switches. 2. One (1), 500kV, 50kAIC, 4000A, SF6 Circuit Breakers. 3. Approximately 1200FT. of 5 IN. Sch. 40 AL tube bus and connectors.

Transformer Information

None

New equipment description

1. Four (4), 500kV, 5000A Double End Break Switches. 2. Three (3), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3), 500kV CCVT. 5. Two (2), 4510 - SEL-2411 Equipment Annunciator 6. Two (2), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 7. Two (2), 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 8. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 9. One (1), 4506 – 3Ø CCVT Potential Makeup Box 10. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box

Substation assumptions

1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design to add transmission breakers will be revised as part of the SPE scope of work. 3. 4-hole pad connections must be replaced with 6-hole connections to maintain 5000A ratings.

Real-estate description

The Substation is not being expanded.

Construction responsibility

The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Benefits/Comments

The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year \$

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$14,343,563.00
Component cost (in-service year)	\$15,361,955.97

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-N1-ST183	314912	8LEXNGTN	314856	6LEXNGT2	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1780	314901	8BATH CO	314991	8VALLEY SC	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W183	314991	8VALLEY SC	314926	8VALLEY	1	500	345	Winter Gen Deliv	Included
2022W3-GD-S1782	314991	8VALLEY SC	314926	8VALLEY	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST214	314912	8LEXNGTN	314854	6LEXNGT1	1	500/230	345/345	Summer N-1 Thermal	Included

New Flowgates

The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Financial Information

Capital spend start date	12/2024
Construction start date	06/2026
Project Duration (In Months)	36

Additional Comments

NA