

500kV Solutions for Portfolios

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	781
Project title	500kV Solutions for Portfolios
Project description	This proposal includes the following projects: 1. 99-3459 - Goose Creek 500/230kV TX Uprate 2. 99-3462 - Line 576 Rebuild - North Anna to Vontay 3. Remove Vint Hill Sub termination from New Wishing Star - Vint Hill - Morrisville 500kV Line 4. Aspen - Brambleton Line #558 terminal uprate to 5000 Amps
Email	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Project in-service date	12/2029
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. Goose Creek 500/230kV Transformer Upgrade (99-3459)
2. Line 576 Rebuild - North Anna to Vontay (99-3462)
3. North Anna Substation Upgrade (99-3462)
4. Vontay Substation Relay Reset (99-3462)

- 5. Vint Hill Substation Termination Removal - Wishing Star to Vint Hill to Morrisville 500kV Line
- 6. Vint Hill Substation Terminal Equipment Removal
- 7. Brambleton 500kV Uprate

Substation Upgrade Component

Component title	Goose Creek 500/230kV Transformer Upgrade (99-3459)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Goose Creek
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. Four (4) 500-230 kV, 1440 MVA, 1-phase units 2. Four (4), 180 kV, 144 kV MCOV Surge Arresters 3. Conductor, connectors, insulators, conduit, control cable, foundations, steel structures and grounding connections as per engineering standards Purchase and install relay material: 1. Four (4), SPR Relay Auxiliary Package 2. Four (4), 1218 - Transformer SPR Blocking Package (Install w/ Shell Type Transformer) 3. Four (4), 7614 – Transformer Critical Low Oil Assembly 4. One (1), 1217 – 24” Dual SEL-487E Transmission Transformer Diff. Panel 5. One (1), 4542 – Transformer Makeup Box 6. Four (4), 4526_E – 1Ø Transformer Fiber Optic Makeup Box 7. One (1), Panel Retirement

Transformer Information

	Name	Capacity (MVA)		
Transformer	Existing 500/230kV Transformer	1440		
	High Side	Low Side	Tertiary	
Voltage (kV)	500	230		
New equipment description	1. Four (4) 500-230 kV, 1440 MVA, 1-phase units 2. Four (4), 180 kV, 144 kV MCOV Surge Arresters 3. Four (4), SPR Relay Auxiliary Package 4. Four (4), 1218 - Transformer SPR Blocking Package (Install w/ Shell Type Transformer) 5. Four (4), 7614 – Transformer Critical Low Oil Assembly 6. One (1), 1217 – 24” Dual SEL-487E Transmission Transformer Diff. Panel 7. One (1), 4542 – Transformer Makeup Box 8. Four (4), 4526_E – 1Ø Transformer Fiber Optic Makeup Box			

Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole connections to maintain 5000A ratings. 3. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	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	\$34,010,707.30
Component cost (in-service year)	\$36,425,467.20
Transmission Line Upgrade Component	
Component title	Line 576 Rebuild - North Anna to Vontay (99-3462)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 576
Point A	North Anna

Point B	Vontay	
Point C		
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 240 to 400 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross Route 33, several small streams, and Lake Anna.	
Existing Line Physical Characteristics		
Operating voltage	500	
Conductor size and type	2-2500 ACAR (84/7) 90°C MOT	
Hardware plan description	New hardware will be used for line rebuild.	
Tower line characteristics	Existing Structures will be removed and new structures will be used for this rebuild.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	5479.000000	5479.000000
Winter (MVA)	6066.000000	6066.000000
Conductor size and type	3-1351.5 ACSR (45/7) 150°C MOT	
Shield wire size and type	(2) DNO-10100 OPGW	
Rebuild line length	21 Miles	

Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove (102) existing steel single circuit suspension lattice tower structures. 2. Remove (1) existing steel single circuit DDE lattice tower structure. 3. Remove (5) existing steel single circuit running angle lattice tower structures. 4. Remove approx. 21 miles of 3-phase 2-2500 ACAR (84/7) conductor. 5. Remove approx. 21 miles of two (2) 45/45 MM2 OPGW. MODIFICATIONS TO EXISTING FACILITIES: 1. Replace (3) 500kV conductor strain assemblies on structure 576/1A at North Anna Substation. 2. Replace (2) OPGW strain assemblies on structure 576/1A at North Anna Substation. 3. Transfer existing 3-phase 2-2500 ACAR (84/7) conductor to the ahead side of proposed structure 5XX/108. 4. Transfer existing two (2) 45/45 MM2 OPGW to the ahead side of proposed structure 5XX/108. This includes training the tails down the pole shaft to be used with fiber splice. PERMANENT FACILITIES TO BE INSTALLED: 1. Install (101) 500/230kV double circuit steel 5-2kT suspension tower structures on foundations as follows: a. Structures 576/2-29, 31, 33-69,71, 72, 74, and 76-107 2. Install (1) 500/230kV double circuit steel 5-2MA running angle tower structures on foundations as follows: a. Structure 576/70 3. Install (3) 500/230kV double circuit 3 pole steel DDE heavy angle structures on foundations as follows: a. Structures 576/1, 576/108, and 5XX/108 4. Install (4) 500/230kV double circuit 3 pole steel DDE small/medium angle structures on foundations as follows: a. Structures 576/30, 32, 73, and 75 5. Install one (1) 500kV single circuit A-frame backbone structure on foundations as follows: a. Structure 576/108A (5XX/108A) 6. Install approx. 21 miles of 3-phase 3-1351.5 ACSR (45/7) "Dipper" conductor from existing structure 576/1A (North Anna Substation) to proposed structure 576/108A (5XX/108A) (Vontay Substation). 7. Install approx. 21 miles of two (2) DNO-10100 OPGW from existing structure 576/1A (North Anna Substation) to proposed structure 576/108A (5XX/108A) (Vontay Substation). a. This includes twenty (20) fiber splices based on DNO-10100 reel lengths. 8. Install approx. 0.25 miles of two (2) DNO-10100 OPGW from proposed structure 576/108A (5XX/108A) (Vontay Substaion) to proposed structure 5XX/108 a. This includes two (2) fiber splices. 9. Install approx. 0.25 miles of two (2) DNO-10100 OPGW from proposed structure 576/108A (5XX/108A) (Vontay Substaion) to proposed structure 5XX/108. a. This includes two (2) fiber splices.
Right of way	Existing Right-of-Way shall be used.
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	\$125,214,771.70
Component cost (in-service year)	\$134,105,020.49

Substation Upgrade Component

Component title	North Anna Substation Upgrade (99-3462)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	North Anna
Substation zone	366
Substation upgrade scope	Purchase & Install Substation Material: 1. Four (4), 500kV, 5000A Double End Break Switches 2. Three (3), 500kV, Capacitor Coupling Voltage Transformers 3. Approximately 600' of 6 IN SCH 80 AL Tubular Bus and Connectors 4. Conductors, connectors, insulators, conduit, control cable, foundations, steel structures, and grounding connections as per engineering standards Remove Substation Material: 1. One (1), 500kV, 4000A Wave Trap 2. Three (3), 500kV, Capacitor Coupling Voltage Transformers 3. Approximately 600 ft of 6 IN SCH 40 AL Tubular Bus and Connectors 4. Conductors, connectors, insulators, conduit, control cable, foundations, steel structures, and grounding connections as per engineering standards Purchase & Install Relay Material: 1. One (1), 1340 – 24" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 2. One (1) 4506 – 3Ø CCVT Potential Makeup Box 3. One (1) Panel Retirement 4. One (1), Relay Reset

Transformer Information

None	
New equipment description	1. Four (4), 500kV, 5000A Double End Break Switches 2. Three (3), 500kV, Capacitor Coupling Voltage Transformers 3. One (1), 1340 – 24" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 4. One (1) 4506 – 3Ø CCVT Potential 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. 4-hole pad connections must be replaced with 6-hole pad connections to maintain 5000A ratings. 3. Relay Settings and P&C design will be revised as part of the SPE Scope of Work. 4. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	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	\$2,436,020.90
Component cost (in-service year)	\$2,608,978.49
Substation Upgrade Component	
Component title	Vontay Substation Relay Reset (99-3462)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Vontay

Substation zone	366
Substation upgrade scope	Relay Reset only.
Transformer Information	
None	
New equipment description	NA
Substation assumptions	None.
Real-estate description	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	\$19,210.00
Component cost (in-service year)	\$20,573.91
Transmission Line Upgrade Component	
Component title	Vint Hill Substation Termination Removal - Wishing Star to Vint Hill to Morrisville 500kV Line

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.	
Impacted transmission line	Proposed Line (99-3232)	
Point A	Wishing Star	
Point B	Vint Hill	
Point C	Morrisville	
Terrain description	N/A	
Existing Line Physical Characteristics		
Operating voltage	500	
Conductor size and type	3-1351.5 ACSR (45/7) "DIPPER" @ 110C MOT	
Hardware plan description	N/A	
Tower line characteristics	N/A	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	1351.5 ACSR (45/7) "DIPPER" @ 110C MOT	
Shield wire size and type	Existing Shield wire will remain	
Rebuild line length	0.2 Miles	

Rebuild portion description	Scope of Work: Remove the 500 kV conductor previously planned to terminate into the Vint Hill 500 kV substation and extend approximately 0.2 miles of conductor to fly-over the site. The conductor used along this path will be (3) 1351.5 ACSR (45/7) "DIPPER" @ 110C MOT.
Right of way	Existing ROW will be used.
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	\$.00
Component cost (in-service year)	\$.00
Substation Upgrade Component	
Component title	Vint Hill Substation Terminal Equipment Removal
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Vint Hill
Substation zone	366
Substation upgrade scope	Remove (4) 500 kV GIS breakers and associated substation equipment.

Transformer Information

None

New equipment description

N/A

Substation assumptions

Since the original 99-3232 (b3800.350) project requiring the termination of this line into Vint Hill has not yet been constructed, the costs for this scope of work have been removed, thus resulting in a negative cost estimate.

Real-estate description

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

\$.00

Component cost (in-service year)

\$.00

Substation Upgrade Component

Component title

Brambleton 500kV Uprate

Project description

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

Substation name	Brambleton
Substation zone	366
Substation upgrade scope	Uprate 15 feet bus span of 6" Al Sch. 40 (25) to 6" AL Sch. 80 (26)
Transformer Information	
None	
New equipment description	N/A
Substation assumptions	Since the original 99-2971 project requiring removal of wavetraps at Brambleton sub has not yet been constructed, the cost for this scope of work has been added to already approved 99-2971 project (b3800.225), thus resulting in a zero-cost estimate.
Real-estate description	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	\$.00
Component cost (in-service year)	\$.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
2024W1N1SVM1200	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1201	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1198	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1199	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1204	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1202	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1203	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1N1SVM1197	314939	8GOOSE CREEK	314939	8GOOSE CREEK	1	500	345	Summer Voltage Magnitude	Included
2024W1-32GD-W1	313403	8ASPEN	314933	8BRAMBLETON	1	500	345	2032 Winter Gen Deliv	Included
2024W1-32GD-W25	313403	8ASPEN	314933	8BRAMBLETON	1	500	345	2032 Winter Gen Deliv	Included
2024W1-32GD-LL14	313403	8ASPEN	314933	8BRAMBLETON	1	500	345	2032 Light Load Gen Deliv	Included
2024W1-32GD-S45	313403	8ASPEN	314933	8BRAMBLETON	1	500	345	2032 Summer Gen Deliv	Included
2024W1-32GD-S46	313403	8ASPEN	314933	8BRAMBLETON	1	500	345	2032 Summer Gen Deliv	Included

New Flowgates

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

Financial Information

Capital spend start date 06/2025

Construction start date 06/2026

Project Duration (In Months) 54

Additional Comments

None