

Bremo TX#9 Load Relief~Alternative 2~Relocate Bremo to Fork Union substation

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	873
Project title	Bremo TX#9 Load Relief~Alternative 2~Relocate Bremo to Fork Union substation
Project description	This proposal solves the 10% overload on Bremo TX#9 under N-1 contingency in 2027 light load case. It also increases the reliability of the grid by using breaker and a half scheme for transmission equipment connections at Fork Union vs. straight bus configuration at Bremo substation. It includes relocation of all the six transmission lines and transformers at Bremo substation to Fork Union substation, and addition of a second 224 MVA 230/115 KV transformer at Fork Union. All transmission lines need to fit in the existing right-of-way using three double-circuit lines. The six transmission lines that need to fit in the existing right-of-way are 230KV lines #298, Line #2111, Line #2106, and Line #2027, 138KV Line #8, and 115KV Line #4.
Email	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Project in-service date	06/2027
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. 230kV Line #2193 (Bremo to Fork Union) Removal

2. Extension of 230kV Line #2106 Bear Garden to Fork Union
3. Extension of 230kV Line #2111 Bear Garden to Fork Union
4. Bear Garden Substation – Relocate Brema to Fork Union Substation
5. Brema Substation Retirement
6. Fork Union Substation – Relocate Brema to Fork Union Substation
7. Midlothian Substation - Relocate Brema to Fork Union Substation
8. James River Substation - Relocate Brema to Fork Union Substation
9. Farmville Substation - Relocate Brema to Fork Union Substation
10. Cartersville Substation - Relocate Brema to Fork Union Substation
11. Buckingham Substation - Relocate Brema to Fork Union Substation
12. Powhatan Substation - Relocate Brema to Fork Union Substation
13. Extension of 115kV Line #4 Columbia D.P. to Fork Union
14. Extension of 138kV Line #8 APCO to Fork Union
15. Extension of 230kV Line #298 Farmville to Fork Union
16. Extension of 230kV Line #2027 Midlothian to Fork Union
17. 115kV Line #1030 (Brema to Fork Union) Removal
18. 115kV Line #5 (Brema to Fork Union) Removal

Transmission Line Upgrade Component

Component title	230kV Line #2193 (Brema to Fork Union) Removal
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2193
Point A	Brema
Point B	Fork Union
Point C	

Terrain description

The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage

230

Conductor size and type

2-636 ACSR (24/7) 150°C MOT [0.11 miles]; 2-721 ACAR (18/19) 90°C MOT [1.63 miles]

Hardware plan description

Existing line hardware will be removed.

Tower line characteristics

Most of the existing structures are built in 1980's and are suitable for single circuits. New Structures are being installed to accommodate with extension of lines #2106 and #2111.

Proposed Line Characteristics

Designed

Operating

Voltage (kV)

0.000000

0.000000

Normal ratings

Emergency ratings

Summer (MVA)

0.000000

0.000000

Winter (MVA)

0.000000

0.000000

Conductor size and type

NA

Shield wire size and type

NA

Rebuild line length

NA

Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove eighteen (8) wood H-frame structures: Structures 2193/186, 2193/183, 2193/181, 2193/180, 2193/179, 2193/176, 2193/175, and 2193/174. 2. Remove two (2) wood 3-pole structures: Structure 2193/185, and 2193/182. 3. Remove one (1) steel 2-pole switch structures: Structure 2193/184. 4. Remove three (3) steel H-frame structures: Structures 2193/184A, 2193/178, and 2193/177. 5. Remove one (1) steel 3-pole structure: Structure 2193/173. 6. Remove one (1) circuit of bundled (2) 721 kcmil 18/19 ACAR in the following sections: Approximately 1.6 miles from structure 2193/186A to structure 2193/171. 7. Remove two (2) 3#6 Alumoweld shield wire in the following sections: Approximately 1.7 miles from structure 2193/186A to structure 2193/171. MODIFICATIONS TO EXISTING FACILITIES: 1. Re-number the following one (1) structure: Structure 2193/172 to Structure 2106/1014 (2111/1014).
Right of way	No new or additional right of way is required to complete this project.
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	\$460,818.91
Component cost (in-service year)	\$493,537.04
Transmission Line Upgrade Component	
Component title	Extension of 230kV Line #2106 Bear Garden to Fork Union

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2106
Point A	Bear Garden
Point B	Fork Union
Point C	Bremo
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°C MOT [1.4miles]
Hardware plan description	New hardware will be used for the line extension.
Tower line characteristics	New structures will be installed for the line extension.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768 ACSS/TW-HS (20/7) 250 Deg C MOT for segment 2 (extension segment); 2-636 ACSR (24/7) 150°C MOT on segment 1 (existing segment)	
Shield wire size and type	DNO-11410 OPGW shield wire	

Rebuild line length	1.6
Rebuild portion description	<p>MODIFICATIONS TO EXISTING FACILITIES: 1. Replace three (3) strain assemblies on two (2) structures for single circuit bundled conductor on the following structures: a. Structures 2106/1. 2. Replace six (6) insulators on one (1) structure for single circuit bundled conductor on the following structures: a. Structure 2106/1A. 3. Install two (2) jumpers on the following two (2) structures: a. Structures 2106/1, and 2106/1A (2111/1A). 4. Add two (2) shield wire strain assembly to one (1) structure: a. Structure 2106/1014 (2111/1014). 5. Re-number the following four (4) structures: a. Structure 2193/172 to Structure 2106/1014 (2111/1014). PERMANENT FACILITIES TO BE INSTALLED: 1. Install nine (9) double circuit steel monopole tangent structures (12-610) as follows: a. Structures 2106/1004 (2111/1004), 2106/1005 (2111/1005), 2106/1006 (2111/1006), 2106/1007 (2111/1007), 2106/1008 (2111/1008), 2106/1009 (2111/1009), 2106/1010 (2111/1010), 2106/1011 (2111/1011), and 2106/1012 (2111/1012). 2. Install four (4) double circuit steel monopole double deadend structures (12-614) as follows: a. Structures 2106/1001(2111/1001), 2106/1002 (2111/1002), 2106/1003 (2111/1003), and 2106/1013 (2111/1013). 3. Install two (2) bundled (2) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approximately 1.5 miles from Structure 2106/1002 (2111/1001) to Structure 2106/1014 (2111/1014). 4. Install one (1) bundled (2) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approximately 0.1 miles from Structure 2106/1 to Structure 2106/1001 (2111/1001) on the Line 2106 structures. b. Approximately 0.1 miles from Structure 2106/1014 (2111/1014) to Structure 2106/1015. 5. Install two (2) DNO-11410 OPGW in the following sections: a. Approximately 0.1 miles from Structure 2106/1 to Structure 2106/1001 (2111/1001) on the Line 2106 structures. b. Approximately 1.5 miles from Structure 2106/1001 (2111/1001) to Structure 2106/1014 (2111/1014). c. Approximately 0.1 miles from Structure 2106/1014 (2111/1014) to Structure 2106/1015. d. Approximately 0.1 miles from Structure 2106/1014 (2111/1014) to Structure 2111/1015.</p>
Right of way	No new or additional right of way is required to complete this project.
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	\$2,506,854.82
Component cost (in-service year)	\$2,684,841.51

Transmission Line Upgrade Component

Component title	Extension of 230kV Line #2111 Bear Garden to Fork Union
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2111
Point A	Bear Garden
Point B	Fork Union
Point C	Bremo
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°C MOT [1.34 miles]
Hardware plan description	New hardware will be used for the line extension.
Tower line characteristics	New structures will be installed for the line extension.

Proposed Line Characteristics

Designed	Operating
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Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768 ACSS/TW-HS (20/7) 250 Deg C MOT for segment 2 (extension segment); 2-636 ACSR (24/7) 150°C MOT on segment 1 (existing segment)	
Shield wire size and type	DNO-11410 OPGW shield wire	
Rebuild line length	1.6	
Rebuild portion description	<p>MODIFICATIONS TO EXISTING FACILITIES: 1. Replace three (3) strain assemblies on two (2) structures for single circuit bundled conductor on the following structure: a. Structures 2111/1. 2. Install two (2) jumpers on the following two (2) structures: a. Structures 2111/1, and 2111/1A (2106/1A). 3. Add two (2) shield wire strain assembly to one (1) structure: a. Structure 2111/1014 (2106/1014). 4. Re-number the following structures: a. Structure 2193/172 to Structure 2111/1014 (2106/1014). PERMANENT FACILITIES TO BE INSTALLED: 1. Install one (1) single circuit steel monopole double deadend structures (12-425) as follows: a. Structure 2111/1A. 2. Install nine (9) double circuit steel monopole tangent structures (12-610) as follows: a. Structures 2111/1004 (2106/1004), 2111/1005 (2106/1005), 2111/1006 (2106/1006), 2111/1007 (2106/1007), 2111/1008 (2106/1008), 2111/1009 (2106/1009), 2111/1010 (2106/1010), 2111/1011 (2106/1011), and 2111/1012 (2106/1012). 3. Install four (4) double circuit steel monopole double deadend structures (12-614) as follows: a. Structures 2111/1001 (2106/1001), 2111/1002 (2106/1002), 2111/1003 (2106/1003), and 2111/1013 (2106/1013). 4. Install two (2) bundled (2) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approximately 1.5 miles from Structure 2111/1001 (2106/1002) to Structure 2111/1014 (2106/1014). 5. Install one (1) bundled (2) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approximately 0.1 miles from Structure 2111/1 to Structure 2106/1001 (2111/1001) on the Line 2111 structures. b. Approximately 0.1 miles from Structure 2106/1014 (2111/1014) to Structure 2111/1015. 6. Install two (2) DNO-11410 OPGW in the following sections: a. Approximately 0.1 miles from Structure 2111/1 to Structure 2106/1001 (2111/1001) on the Line 2111 structures. b. Approximately 1.5 miles from Structure 2111/1001 (2106/1001) to Structure 2111/1014 (2106/1014). c. Approximately 0.1 miles from Structure 2106/1014 (2111/1014) to Structure 2111/1015.</p>	
Right of way	No new or additional right of way is required to complete this project.	
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	\$2,746,480.63
Component cost (in-service year)	\$2,941,480.77

Substation Upgrade Component

Component title	Bear Garden Substation – Relocate Bremo to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Bear Garden Substation
Substation zone	363
Substation upgrade scope	Replace Line #2106 and Line #2111 relay panels and change destinations to support the Bremo to Fork Union relocation

Transformer Information

None	
New equipment description	Two (2), 1340 – 24” Dual SEL-411L CD/Fiber Line Panel
Substation assumptions	NA

Real-estate description	The substation will not be expanded for this project.
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	\$265,001.00
Component cost (in-service year)	\$283,816.07
Substation Upgrade Component	
Component title	Bremo Substation Retirement
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Bremo
Substation zone	363
Substation upgrade scope	Relocate Bremo TX#8, TX#9 to Fork Union Retire Bremo Substation / Remove all above ground structures

Transformer Information

None	
New equipment description	No new substation equipment will be installed as part of this proposal.
Substation assumptions	The substation is being retired.
Real-estate description	The substation will not be expanded for this project.
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	\$1,826,377.00
Component cost (in-service year)	\$1,956,049.77

Substation Upgrade Component

Component title	Fork Union Substation – Relocate Bremono to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Fork Union
Substation zone	363

Substation upgrade scope	Purchase and install: Transformers, breakers, connectors, leads, insulators, and grounding materials as per engineering standards.
Transformer Information	
None	
New equipment description	See Fork Union Scope of Work attached to the Supporting Documentation for detailed description of new substation equipment and relay materials.
Substation assumptions	There is enough space for installing the required equipment discussed in the Fork Union Scope of Work, attached to the Supporting Documentation.
Real-estate description	The substation will not be expanded for this project.
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	\$14,520,857.60
Component cost (in-service year)	\$15,551,838.92

Substation Upgrade Component

Component title	Midlothian Substation - Relocate Bremo to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Midlothian Substation
Substation zone	363
Substation upgrade scope	Provide drawing work, relay resets and field support necessary to change Line 2027 destination from Bremo Substation to Fork Union Substation.

Transformer Information

None	
New equipment description	None
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	\$21,613.00

Component cost (in-service year) \$23,148.00

Substation Upgrade Component

Component title James River Substation - Relocate Bremo to Fork Union Substation

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

Substation name James River Substation

Substation zone 363

Substation upgrade scope Provide drawing work, relay resets and field support necessary to change Line 4 destination from Bremo Substation to Fork Union Substation.

Transformer Information

None

New equipment description None

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	\$21,613.00
Component cost (in-service year)	\$23,148.00

Substation Upgrade Component

Component title	Farmville Substation - Relocate Bremo to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Farmville Substation
Substation zone	363
Substation upgrade scope	Provide drawing work, relay resets and field support necessary to change Line 298 destination from Bremo Substation to Fork Union Substation.

Transformer Information

None	
New equipment description	None
Substation assumptions	None
Real-estate description	Substation is not being extended
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	\$21,613.00
Component cost (in-service year)	\$23,148.00

Substation Upgrade Component

Component title	Cartersville Substation - Relocate Bremo to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Cartersville Substation
Substation zone	363
Substation upgrade scope	Provide drawing work, relay resets and field support necessary to change Line 2027 destination from Bremo Substation to Fork Union Substation.

Transformer Information

None	
New equipment description	NA
Substation assumptions	NA
Real-estate description	Substation is not being extended
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	\$21,613.00
Component cost (in-service year)	\$23,148.00

Substation Upgrade Component

Component title	Buckingham Substation - Relocate Bremo to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Buckingham Substation
Substation zone	363
Substation upgrade scope	Provide drawing work, relay resets and field support necessary to change Line 298 destination from Bremo Substation to Fork Union Substation.

Transformer Information

None	
New equipment description	None
Substation assumptions	None
Real-estate description	Substation is not being extended

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	\$21,613.00
Component cost (in-service year)	\$23,148.00
Substation Upgrade Component	
Component title	Powhatan Substation - Relocate Bremo to Fork Union Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Powhatan Substation
Substation zone	363
Substation upgrade scope	Provide drawing work, relay resets and field support necessary to change Line 2027 destination from Bremo Substation to Fork Union Substation.

Transformer Information

None

New equipment description	None
Substation assumptions	None
Real-estate description	Substation is not being extended
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	\$21,613.00
Component cost (in-service year)	\$23,148.00

Transmission Line Upgrade Component

Component title	Extension of 115kV Line #4 Columbia D.P. to Fork Union
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #4
Point A	Columbia D.P.
Point B	Fork Union

Point C	Bremo
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	115
Conductor size and type	545.6 ACAR (15/7) 90°C MOT; 636 ACSR (24/7) 90°C MOT; 336.4 ACSR (26/7) 90°C MOT; 4/0 ACSR (6/1) 90°C MOT
Hardware plan description	New hardware will be used for the line extension.
Tower line characteristics	New structures will be installed for the line extension.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	115.000000	115.000000
	Normal ratings	Emergency ratings
Summer (MVA)	393.000000	393.000000
Winter (MVA)	412.000000	412.000000
Conductor size and type	768 ACSS/TW-HS (20/7) 250°C MOT (extension segment); [Existing segments: 545.6 ACAR (15/7) 90°C MOT; 636 ACSR (24/7) 90°C MOT; 336.4 ACSR (26/7) 90°C MOT; 4/0 ACSR (6/1) 90°C MOT]	
Shield wire size and type	DNO-11410 OPGW	
Rebuild line length	1.6 Miles	

Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) steel tower substation backbones: a. Structure 4/8518. 2. Remove one (1) steel A-frame substation backbones: a. Structures 4/8517. 3. Remove two (2) steel 2-pole switch structures: a. Structure 4/8514, and 4/8516B (5/183B). 4. Remove three (3) steel 3-pole structure: a. Structure 4/8515, 4/8516, and 4/8516A. 5. Remove one (1) circuit of 636 kcmil 24/7 ACSR in the following sections: a. Approximately 0.2 miles from structure 4/8513 to structure 4/8518. 6. Remove two (2) 3#6 Alumoweld shield wire in the following sections: a. Approximately 0.2 miles from structure 4/8513 to structure 4/8518. MODIFICATIONS TO EXISTING FACILITIES: 1. Re-number the following four (4) structures: a. Structure 5/172C to Structure 4/8529. PERMANENT FACILITIES TO BE INSTALLED: 1. Install two (2) 115kV single circuit steel 3-pole double deadend structures as follows: a. Structures 4/8515 and 4/8514. 2. Install one (1) double circuit steel monopole double deadend structure (11-445) as follows: a. Structure 8/98 (4/8516). 3. Install two (2) 7#7 Alumoweld in the following sections: a. Approximately 0.1 miles from Structure 4/8513 (2027/256) to Structure 4/8514. b. Approximately 0.1 miles from Structure 4/8513 (2027/256) to Structure 2027/257. [See Scope of Work in attachments for designation of removed, modified and installed structures]
Right of way	1- No new or additional right of way is required to complete this project. 2- Rating on the extension part is limited to the existing line segments rating. 3- Existing segments of line #4 will limit the rating of line #4 to the followings: Summer: Normal: 79MVA/ Emergency:79MVA Winter: Normal: 100MVA/ Emergency:100MVA
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	\$2,599,018.61
Component cost (in-service year)	\$2,783,548.92

Transmission Line Upgrade Component

Component title	Extension of 138kV Line #8 APCO to Fork Union
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #8
Point A	APCO
Point B	Fork Union
Point C	Bremo
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	138
Conductor size and type	397.5 ACSR (26/7) 100°C MOT
Hardware plan description	New hardware will be used for the line extension.
Tower line characteristics	New structures will be installed for the line extension.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	472.000000	472.000000

Winter (MVA)	495.000000	495.000000
Conductor size and type	768 ACSS/TW-HS (20/7) 250°C MOT(extension segment); 397.5 ACSR (26/7) 100°C MOT(existing segment)	
Shield wire size and type	DNO-11410 OPGW	
Rebuild line length	1.6 Miles	
Rebuild portion description	<p>EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) steel tower substation backbones: a. Str. 8/99. 2. Remove one (1) circuit of 397.5 kcmil 26/7 ACSR conductor in the following sections: a. Approx. 0.1 miles from new str. 8/99 to existing str. 8/99. 3. Remove one (1) 3/8" 7-Strand EHS Steel shield wire in the following sections: a. Approx. 0.1 miles from new str. 8/99 to existing str. 8/99. MODIFICATIONS TO EXISTING FACILITIES: 1. Transfer one (1) circuit of 397.5 kcmil 26/7 ACSR conductor to the following structure: a. Str. 8/99. 2. Transfer one (1) 3/8" 7-Strand EHS Steel shield wire to the following structure: a. Str. 8/99. 3. Add one (1) shield wire strain assembly to one (1) structure: a. Str. 8/86 (4/8528). 4. Re-number the following four (4) structures: a. Str. 5/173A to Str. 8/86 (4/8528). b. Str. 5/173B to Str. 8/87 (4/8527). PERMANENT FACILITIES TO BE INSTALLED: 1. Install one (1) single circuit steel monopole double deadend structures (11-446) as follows: a. Str. 8/85. 2. Install ten (10) double circuit steel monopole tangent structures (11-442) as follows: a. Str.s 8/97 (4/8517), 8/96 (4/8518), 8/95 (4/8519), 8/94 (4/8520), 8/93 (4/8521), 8/92 (4/8522), 8/91 (4/8523), 8/90 (4/8524), 8/89 (4/8525), and 8/88 (4/8526). 3. Install one (1) double circuit steel monopole double deadend structure (11-445) strung as a single circuit as follows: a. Str. 8/99. 4. Install one (1) double circuit steel monopole double deadend structure (11-445) as follows: a. Str. 8/98 (4/8516). 5. Install one (1) single circuit steel backbone (11-955) as follows: a. Str. 8/84. 6. Install two (2) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approx. 1.5 miles from Str. 8/98 (4/8516) to Str. 8/86 (4/8528). 7. Install one (1) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approx. 0.1 miles from Str. 8/99 to Str. 8/98 (4/8516). b. Approx. 0.1 miles from Str. 8/86 (4/8528) to Str. 4/8529. c. Approx. 0.1 miles from Str. 8/86 (4/8528) to Str. 8/84. 8. Install two (2) DNO-11410 OPGW in the following sections: a. Approx. 0.1 miles from Str. 8/86 (4/8528) to Str. 4/8529. b. Approx. 0.1 miles from Str. 8/86 (4/8528) to Str. 8/84. c. Approx. 1.5 miles from Str. 8/98 (4/8516) to Str. 8/86 (4/8528). 9. Install one (1) DNO-11410 OPGW in the following sections: a. Approx. 0.1 miles from Str. 8/99 to Str. 8/98 (4/8516). [See Scope of Work in attachments for designation of removed, modified and installed structures]</p>	
Right of way	No new or additional right of way is required to complete this project.	
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	\$2,691,182.38
Component cost (in-service year)	\$2,882,256.32

Transmission Line Upgrade Component

Component title	Extension of 230kV Line #298 Farmville to Fork Union
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #298
Point A	Farmville
Point B	Fork Union
Point C	Bremo
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-545.6 ACAR (15/7) 90°C MOT and 1590 AAC 61S 90°C MOT

Hardware plan description

New hardware will be used for the line extension.

Tower line characteristics

New structures will be installed for the line extension.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768 ACSS/TW-HS (20/7) 250°C MOT(extension segment); [Existing segments:2-545.6 ACAR (15/7) 90°C MOT and 1590 AAC 61S 90°C MOT]	
Shield wire size and type	DNO-11410 OPGW	
Rebuild line length	1.6 Miles	

Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) concrete 3-pole structure: a. Structure 298/189. 2. Remove one (1) circuit of bundled (2) 545.6 ACAR (15/7) in the following sections: a. Approximately 0.1 miles from structure 298/189 to structure 298/189A. 3. Remove two (2) 3#6 Alumoweld shield wire in the following sections: a. Approximately 0.1 miles from structure 298/189 to structure 298/189A. MODIFICATIONS TO EXISTING FACILITIES: 1. Transfer one (1) circuit of bundled (2) 545.6 ACAR (15/7) to the following structure: a. Structure 298/189. 2. Transfer two (2) 3#6 Alumoweld shield wire to the following structure: a. Structure 298/189. PERMANENT FACILITIES TO BE INSTALLED: 1. Install three (3) single circuit steel monopole double deadend structures (12-425) as follows: a. Structures 298/189, 298/188, 298/187. 2. Install nine (9) double circuit steel monopole tangent structures (12-610) as follows: a. Structures 298/185 (2027/260), 298/184 (2027/261), 298/183 (2027/262), 298/182 (2027/263), 298/181 (2027/264), 298/180 (2027/265), 298/179 (2027/266), 298/178 (2027/267), 298/177 (2027/268). 3. Install three (3) double circuit steel monopole double deadend structures (12-614) as follows: a. Structures 298/186 (2027/259), 298/176 (2027/269), 298/175 (2027/270). 4. Install one (1) double circuit steel backbone (12-903) as follows: a. Structure 298/174 (2027/271). 5. Install one (1) bundled (2) 768.2 kcmil Type 13 ACSS/TW-HS in the following sections: a. Approximately 0.1 miles from Structure 4/8513 (2027/256) to Structure 298/186 (2027/259). b. Approximately 0.2 miles from Structure 298/189 to Structure 298/186 (2027/259). 6. Install two (2) DNO-11410 OPGW in the following sections: a. Approximately 0.1 miles from Structure 2027/258 to Structure 298/186 (2027/259). b. Approximately 1.4 miles from Structure 298/186 (2027/259) to Structure 298/174 (2027/270). c. Approximately 0.2 miles from Structure 298/189 to Structure 298/186 (2027/259). [See Scope of Work in attachments for designation of removed, modified and installed structures]
Right of way	No new or additional right of way is required to complete this project.
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	\$3,299,463.31
Component cost (in-service year)	\$3,533,725.22

Transmission Line Upgrade Component

Component title	Extension of 230kV Line #2027 Midlothian to Fork Union
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2027
Point A	Midlothian
Point B	Fork Union
Point C	Bremo
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	1033.5 ACSS (45/7) 200°C MOT and 2*636 ACSR (24/7) 150°C MOT
Hardware plan description	New hardware will be used for the line extension.
Tower line characteristics	New structures will be installed for the line extension.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000

	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768 ACSS/TW-HS (20/7) 250°C MOT (extension segment); [existing segments: 1033.5 ACSS (45/7) 200°C MOT and 2-636 ACSR (24/7) 150°C MOT]	
Shield wire size and type	DNO-11410 OPGW	
Rebuild line length	1.6 Miles	
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) circuit of 1033.5 kcmil 45/7 ACSS in the following sections: a. Approximately 0.1 miles from structure 2027/256 to structure 2027/257. 2. Remove two (2) 3#6 Alumoweld shield wire in the following sections: a. Approximately 0.1 miles from structure 2027/256 to structure 2027/257. PERMANENT FACILITIES TO BE INSTALLED: 1. Install two (2) single circuit steel 3-pole double deadend structures (12-159) as follows: a. Structures 2027/257 and 2027/258. 2. Install two (2) DNO-11410 OPGW in the following sections: a. Approximately 0.1 miles from Structure 2027/258 to Structure 298/186 (2027/259). [See Scope of Work in attachments for designation of removed, modified and installed structures]	
Right of way	No new or additional right of way is required to complete this project.	
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	\$3,004,539.23
Component cost (in-service year)	\$3,217,861.51

Transmission Line Upgrade Component

Component title	115kV Line #1030 (Bremo to Fork Union) Removal
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #1030
Point A	Bremo
Point B	Fork Union
Point C	
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	115
Conductor size and type	2-636 ACSR (24/7) 150°C MOT
Hardware plan description	Existing line hardware will be removed.
Tower line characteristics	New Structures are being installed.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	0.000000	0.000000
	Normal ratings	Emergency ratings

Summer (MVA)	0.000000	0.000000
Winter (MVA)	0.000000	0.000000
Conductor size and type	NA	
Shield wire size and type	NA	
Rebuild line length	0	
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) steel tower substation backbones: Structure 1030/235. 2. Remove one (1) steel A-frame substation backbones: Structure 1030/236. 3. Remove eighteen (18) wood H-frame structures: Structure 1030/234. 4. Remove twelve (12) steel H-frame structures: Structures 1030/231, 1030/230, 1030/229, 1030/228, 1030/227, 1030/226, 1030/225, 1030/224, 1030/223, 1030/222, 1030/221, 1030/220. 5. Remove two (2) steel 3-pole structure: Structure 1030/233, 1030/232. 6. Remove five (5) steel static pole structures: Structures 1030/235A, 1030/234A, 1030/233A, 1030/232A, and 1030/232B. 7. Remove one (1) circuit of bundled (2) 636 kcmil 24/7 ACSR in the following sections: Approximately 1.5 miles from structure 1030/236 to structure 1030/217. 8. Remove two (2) 3#6 Alumoweld shield wire in the following sections: Approximately 0.1 miles from structure 1030/231 to structure 1030/232. Approximately 0.1 miles from structure 1030/234 to structure 1030/235. 9. Remove two (2) DNO-8482 OPGW shield wire in the following sections: Approximately 1.5 miles from structure 1030/236 to structure 1030/217. 10. Remove two (2) ADSS shield wire in the following sections: Approximately 0.2 miles from structure 1030/235A to structure 1030/231. [See Scope of Work in attachments for designation of removed, modified and installed structures]	
Right of way	No new or additional right of way is required to complete this project.	
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	\$645,146.48
Component cost (in-service year)	\$690,951.86

Transmission Line Upgrade Component

Component title	115kV Line #5 (Bremo to Fork Union) Removal
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #5
Point A	Bremo
Point B	Fork Union
Point C	
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 200 to 360 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no roads, a railroad track, several small streams, and one Section 10 Navigable waterway (James River).

Existing Line Physical Characteristics

Operating voltage	115
Conductor size and type	636 ACSR (24/7) 75°C MOT
Hardware plan description	Existing line hardware will be removed.
Tower line characteristics	NA

Proposed Line Characteristics

Designed

Operating

Voltage (kV)	0.000000	0.000000
	Normal ratings	Emergency ratings
Summer (MVA)	0.000000	0.000000
Winter (MVA)	0.000000	0.000000
Conductor size and type	NA	
Shield wire size and type	NA	
Rebuild line length	0	
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) steel A-frame substation backbones: a. Structure 5/186A. 2. Remove nine (9) wood H-frame structures: a. Structures 5/184, 5/183, 5/182, 5/181, 5/180, 5/179, 5/176, 5/175, 5/174. 3. Remove three (3) wood 3-pole structures: a. Structure 5/186, 5/185, 5/182A. 4. Remove one (1) steel 2-pole switch structures: a. Structures 5/183A. 5. Remove two (2) steel H-frame structures: a. Structures 5/178, 5/177. 6. Remove one (1) steel 3-pole structure: a. Structure 5/173. 7. Remove one (1) circuit of 636 kcmil 24/7 ACSR in the following sections: a. Approximately 1.7 miles from structure 5/186A to structure 5/172C. 8. Remove two (2) 3#6 Alumoweld shield wire in the following sections: a. Approximately 1.7 miles from structure 5/186A to structure 5/172C.	
Right of way	No new or additional right of way is required to complete this project.	
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

\$479,251.66

Component cost (in-service year)

\$513,278.52

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
2022W2-GD-LL1	314747	6BREMO	314744	3BREMO	1	230/115	345/345	Light Load Generation Deliverability	Included
2022W2-N1-LLT	314747	6BREMO	314744	3BREMO	1	230/115	345/345	Light Load Baseline	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)

24

Additional Comments

None