Regional Solution - 500 kV North Anna-Wishing Star Upgrades

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	711
Project title	Regional Solution - 500 kV North Anna-Wishing Star Upgrades
Project description	This proposal is a comprehensive solution to add new 500 kV Transmission Lines from North Anna substation to Wishing Star Substation (North Anna-Spotsylvania-VintHill-Wishing Star). The proposal will include the following components: 1. Building a new single circuit 500 kV line parallel to existing line #573 from North Anna Substation to Spotsylvania Substation. 2. Wrecking and rebuilding both the 5-2 towers in the Morrisville-Loudoun-Brambleton corridor and free up space for adding one new single-500kV monopole within the same corridor. The new over-head 500kV lines will be from Spotsylvania to VintHill, and VintHill to Wishing Star in the existing ROW with current 500 kV Standards. 3. Uprating Line #535 from structure 389 (First Energy Demarcation Point) to the point joining Morrisville-Loudoun corridor to 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 (North Anna - Spotsylvania) (993169)

2. North Anna Equipment Uprate (993169)
3. Spotsylvania Equipment Uprate (993169)
4. Loudoun 230 kV Overdutied Breaker Replacement (993208_2)
5. North Anna 500 kV Overdutied Breaker Replacement (993208_2)
6. Ox 500kV overdutied Breaker Replacement (993208_2)
7. New 500 kV Line (Spotsylvania to Vint Hill) (993232)
8. New 500 kV Line (Vint Hill to Wishing Star) (993232)
9. Line #37 (Spotsylvania - Wilderness D.P.) Rebuild
10. Line #545 (Bristers - Morrisville) Rebuild
11. Line #569 (Loudoun to Morrisville) Rebuild
12. Line #535 (Meadow Brook-VintHill- Loudoun) Rebuild
13. Line #546 (Mosby - Wishing Star) Rebuild
14. Line #590 (Mosby - Wishing Star) Rebuild
15. Line #2030 (Gainesville - Loudoun) Rebuild
16. Line #2045 (Loudoun - Brambleton) Rebuild
17. Line #2094 & 2227 (Brambleton - Racefield - Loudoun) Rebuild
18. Line #2101 (Bristers - Vint Hill) Rebuild
19. Line #2114 (Remington CT - Rollin Ford) Rebuild
20. Line #2140 (Loudoun - Heathcote) Rebuild
21. Line #2151 (Railroad DP - Gainesville) Rebuild
22. Line #2163 (Vint Hill - Liberty) Rebuild
23. Line #2176 (Heathcote - Gainesville) Rebuild
24. Line #2222 (Rollins Ford - Gainesville) Rebuild
25. Line #183 (Bristers - Ox) Rebuild
26. Line #535 (Meadow Brook-VintHill- Loudoun) Resag
27. Bristers Substation
28. Brambleton Substation
29. Dawkins Branch Substation
30. Gainesville Substation

31. Heathcote Substation
32. Loudoun Substation
33. Mint Springs Substation
34. Morrisville Substation
35. Mosby Substation
36. North Star Substation
37. Racefield Substation
38. Railroad Substation
39. Spotsylvania Substation
40. Vint Hill Substation
41. Wishing Star Substation
42. Youngs Branch Substation

Greenfield Transmission Line Component

Component title	New 500 kV Line (North Anna - Spotsylvania) (993169)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	North Anna
Point B	Sportsylvania
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 [13.94 Miles]	
Nominal voltage	AC	
Nominal voltage	500	

Line construction type	Overhead
General route description	New 500 kV line will be parallel to existing Line #573.
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 300 to 450 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross no major roads, several small streams, and Lake Anna.
Right-of-way width by segment	Existing Right-of-Way parallel to Line #573 will be used.
Electrical transmission infrastructure crossings	East side of existing 500 kV line from structure 8 to structure 75 (See attached Cross Section Drawing - 2)., West side of existing 500 kV line from structure 3 to structure 7 (See attached Cross Section Drawing - 1)., West side of existing 500 kV line from structure 76 to structure 87 (See attached Cross Section Drawing - 1).
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993169 Real Estate and Permitting Summary.
Environmental impacts	Refer to section A.4 of 993169 Real Estate and Permitting Summary.
Tower characteristics	PERMANENT FACILITIES TO BE INSTALLED: 1. Install sixty-eight (68) 500/230kV custom engineered steel monopole double circuit tangent structures on foundations [15.205]. 2. Install six (6) 500kV custom engineered steel monopole deadend structures on foundations [15.212]. 3. Install nineteen (19) 230kV custom engineered steel monopole deadend structures on foundations [Modified 15.212 configuration with 12.425 assemblies]. 4. Install thirteen (13) 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. 5. Install one (1) 500kV substation backbone structures (15.900). 6. Install approximately 13.94 miles of 3-phase 3-1351.5 ACSR (45/7) Dipper conductor from North Anna Substation to Spotsylvania Substation. 7. Install approximately 13.94 miles of one (1) DNO-10100 OPGW from North Anna Substation to Spotsylvania Substation. a. Includes installation of 8 splices per DNO-10100 OPGW 8. Install approximately 13.94 miles of one (1) DNO-11410 OPGW from North Anna Substation to Spotsylvania Substation. a. Includes installation of 8 splices per DNO-11410 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	$119,369,466.00
Component cost (in-service year)	$127,844,698.09

Substation Upgrade Component

Component title	North Anna Equipment Uprate (993169)
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	Install substation material: 1. Five (5) 500 kV, 5000A Double End Break Switches 2. Two (2) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters 4. Five (5) 500 kV CCVTs 5. Approximately 6000 FT of 6 in. Sch. 80 AL tube bus. 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) 4514 – Circuit Breaker C.T. Makeup Box 4. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. One (1) 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1) 4506 – 3Ø CCVT Potential Makeup Box 7. Two (2) 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 8. One (1) 5203 – 24” Traveling Wave Fault Locator Panel

Transformer Information

None

New equipment description	Substation Equipment: 1. Five (5) 500 kV, 5000A Double End Break Switches 2. Two (2) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters 4. Five (5) 500 kV CCVTs Relay Equipment: 1. Two (2) 4510 – SEL-2411 Equipment Annunciator 2. Two (2) 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2) 4514 – Circuit Breaker C.T. Makeup Box 4. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. One (1) 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1) 4506 – 3Ø CCVT Potential Makeup Box 7. Two (2) 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 8. One (1) 5203 – 24” Traveling Wave Fault Locator Panel
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. 4. Reuse the existing CCVT makeup box.
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	$11,429,878.00

Component cost (in-service year)	$12,241,399.34

Substation Upgrade Component

Component title	Spotsylvania Equipment Uprate (993169)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Sportsylvania
Substation zone	366
Substation upgrade scope	Install substation material: 1. Four (4) 500 kV, 5000A Double End Break Switches. 2. Three (3) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3) 500 kV CCVTs. 5. Approximately 2000 FT 6 in. Sch. 80 AL tube bus. 6. Foundations and steel structures as required. 7. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. 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) 4514 – Circuit Breaker C.T. Makeup Box 4. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. One (1) 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1) 4506 – 3Ø CCVT Potential Makeup Box 7. Two (2) 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 8. One (1) 5203 – 24” Traveling Wave Fault Locator Panel

Transformer Information

None

New equipment description	Substation Equipment: 1. Four (4) 500 kV, 5000A Double End Break Switches. 2. Three (3) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3) 500 kV CCVTs. Relay Equipment: 1. Two (2) 4510 – SEL-2411 Equipment Annunciator 2. Two (2) 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2) 4514 – Circuit Breaker C.T. Makeup Box 4. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. One (1) 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1) 4506 – 3Ø CCVT Potential Makeup Box 7. Two (2) 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 8. One (1) 5203 – 24” Traveling Wave Fault Locator Panel
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 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	$7,059,228.00
Component cost (in-service year)	$7,560,433.19

Substation Upgrade Component

Component title	Loudoun 230 kV Overdutied Breaker Replacement (993208_2)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Loudoun
Substation zone	352

Substation upgrade scope	Purchase and install substation material: 1. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4510 - SEL-2411 Equipment Annunciator 2. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box Retire substation material: 1. Four (4), 230kV, 63kAIC, 3000A, SF6 Circuit Breakers.

Transformer Information

None

New equipment description	1. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Four (4), 4510 - SEL-2411 Equipment Annunciator 4. Four (4), 4526_A – Circuit Breaker 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. 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	$1,723,610.00

Component cost (in-service year)	$1,845,986.31

Substation Upgrade Component

Component title	North Anna 500 kV Overdutied Breaker Replacement (993208_2)
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 and install substation material: 1. One (1), 500kV, 63kAIC, 5000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 – SEL-2411 Breaker Annunciator. 2. One (1), 1511 – 24” Single SEL-351 Transmission Breaker w/o Reclosing Panel 3. One (1), 1516 – 24” Single SEL-351 500kV Transmission Breaker w/o Reclosing Panel 4. One (1), 4535 – 500kV GE Circuit Breaker Condition Monitor OR One (1), 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. One (1), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 6. One (1), Panel Retirement (Panel 56) Retire substation material: 1. One (1), 500kV, 40kAIC, 4000A, SF6 Circuit Breaker. 2. Three (3), 500kV, 3000/5, CTs.

Transformer Information

None

New equipment description	1. One (1), 500kV, 63kAIC, 5000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. One (1), 4510 – SEL-2411 Breaker Annunciator. 4. One (1), 1511 – 24” Single SEL-351 Transmission Breaker w/o Reclosing Panel. 5. One (1), 1516 – 24” Single SEL-351 500kV Transmission Breaker w/o Reclosing Panel. 6. One (1), 4535 – 500kV GE Circuit Breaker Condition Monitor OR One (1), 4536 – 500kV Axion Circuit Breaker Condition Monitor. 7. One (1), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 8. One (1), Panel Retirement (Panel 56).
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. 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	$1,334,615.50
Component cost (in-service year)	$1,429,372.77

Substation Upgrade Component

Component title	Ox 500kV overdutied Breaker Replacement (993208_2)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ox
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. One (1), 500kV, 63kAIC, 5000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 – SEL-2411 Breaker Annunciator. 2. One (1), 4535 – 500kV GE Circuit Breaker Condition Monitor OR One (1), 4536 – 500kV Axion Circuit Breaker Condition Monitor. 3. One (1), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. Retire substation material: 1. One (1), 500kV, 40kAIC, 4000A, SF6 Circuit Breaker. 2. Three (3), 500kV, 3000/5, CTs.

Transformer Information

None

New equipment description	1. One (1), 500kV, 63kAIC, 5000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. One (1), 4510 – SEL-2411 Breaker Annunciator. 4. One (1), 4535 – 500kV GE Circuit Breaker Condition Monitor OR One (1), 4536 – 500kV Axion Circuit Breaker Condition Monitor. 5. One (1), 4526_D – C.B. w/ BCM 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. 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	$1,291,249.10
Component cost (in-service year)	$1,382,927.68

Greenfield Transmission Line Component

Component title	New 500 kV Line (Spotsylvania to Vint Hill) (993232)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Point A	Spotsylvania	
Point B	Vint Hill	
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	The new line will follow existing corridor from Spotsylvania - Morrisville - Bristers - Nokesville - Vint Hill.	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will include new crossings of Routes 17, 28, 29, 234, 50, and I-66, several secondary roads, two railroads, several smaller streams, and Cedar Run, Broad Run, and Bull Run within the existing right-of-way.	
Right-of-way width by segment	Existing Right-of-Way will be used. No new Right-of-Way required for this proposal.	
Electrical transmission infrastructure crossings	To be determined in detailed design.	
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993232 Real Estate and Permitting Summary.	
Environmental impacts	Refer to section A.4 of 993232 Real Estate and Permitting Summary.	
Tower characteristics	The new line will be supported on single circuit monopoles with dual DNO-10100 48-fiber OPGW and 3-phase 3-1351.5 ACSR “Dipper” conductor.	
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	$219,526,083.51
Component cost (in-service year)	$235,112,435.43

Greenfield Transmission Line Component

Component title	New 500 kV Line (Vint Hill to Wishing Star) (993232)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Vint Hill
Point B	Wishing Star
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	The new line will follow existing corridor from Spotsylvania - Morrisville - Bristers - Nokesville - Vint Hill.
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will include new crossings of Routes 17, 28, 29, 234, 50, and I-66, several secondary roads, two railroads, several smaller streams, and Cedar Run, Broad Run, and Bull Run within the existing right-of-way.
Right-of-way width by segment	Existing Right-of-Way will be used. No new Right-of-Way required for this proposal.
Electrical transmission infrastructure crossings	To be determined in detailed design.
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993232 Real Estate and Permitting Summary.
Environmental impacts	Refer to section A.4 of 993232 Real Estate and Permitting Summary.
Tower characteristics	The new line will be supported on single circuit monopoles with dual DNO-10100 48-fiber OPGW and 3-phase 3-1351.5 ACSR “Dipper” conductor.
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	$87,810,433.41
Component cost (in-service year)	$94,044,974.17

Transmission Line Upgrade Component

Component title	Line #37 (Spotsylvania - Wilderness D.P.) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #37
Point A	Spotsylvania
Point B	Lake of the Woods D.P.
Point C	Wilderness D.P.
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	115
Conductor size and type	336.4 ACSR (26/7) 150°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)	230.000000	115.000000

	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	8.92 Miles	
Rebuild portion description	From Spotsylvania to Wilderness DP (8.92 miles), the existing 115kV line will be rebuilt as a double circuit 500/230kV monopole line. From Wilderness DP to Morrisville (10.95 miles), the line will continue as double circuit 500/230kV monopoles but with the 230kV side left vacant.	
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	$17,562,086.68	
Component cost (in-service year)	$18,808,994.83	

Transmission Line Upgrade Component

Component title	Line #545 (Bristers - Morrisville) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #545
Point A	Bristers
Point B	Morrisville
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

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)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT	

Shield wire size and type	DNO-10100 OPGW
Rebuild line length	7.91 Miles
Rebuild portion description	Existing single circuit 500 kV tower line will be replaced with single circuit monopole line, in order to conserve right-of-way to fit three 500 kV lines within the existing corridor.
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	$65,857,825.05
Component cost (in-service year)	$70,533,730.63

Transmission Line Upgrade Component

Component title	Line #569 (Loudoun to Morrisville) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #569

Point A	Loudoun
Point B	Morrisville
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

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)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT	
Shield wire size and type	DNO-10100 OPGW	
Rebuild line length	31.78 Miles	
Rebuild portion description	The existing double-circuit 500 kV tower lines will be replaced with double-circuit monopoles, in order to conserve right-of-way to fit the new 500 kV lines within the existing corridor.	
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	$175,620,866.80
Component cost (in-service year)	$188,089,948.34

Transmission Line Upgrade Component

Component title	Line #535 (Meadow Brook-VintHill- Loudoun) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #535
Point A	Loudoun
Point B	Vint Hill
Point C	Meadow Brook
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	500
Conductor size and type	3-1351.5 ACSR (45/7) 110°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)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000

Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT
Shield wire size and type	DNO-10100 OPGW
Rebuild line length	10.29 Miles
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as one single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).
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	$65,857,825.05
Component cost (in-service year)	$70,533,730.63

Transmission Line Upgrade Component

Component title	Line #546 (Mosby - Wishing Star) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #546
Point A	Mosby
Point B	Wishing Star
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	500
Conductor size and type	3-1351.5 ACSR (45/7) 110°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)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT	
Shield wire size and type	DNO-10100 OPGW	
Rebuild line length	4.83 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as one single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	
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	$43,905,216.71
Component cost (in-service year)	$47,022,487.09

Transmission Line Upgrade Component

Component title	Line #590 (Mosby - Wishing Star) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #590
Point A	Mosby
Point B	Wishing Star
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	500
Conductor size and type	3-1351.5 ACSR (45/7) 110°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)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT	
Shield wire size and type	DNO-10100 OPGW	
Rebuild line length	4.59 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as one single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	
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	$43,905,216.71	
Component cost (in-service year)	$47,022,487.09	

Transmission Line Upgrade Component

Component title	Line #2030 (Gainesville - Loudoun) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2030
Point A	Gainesville
Point B	Loudoun
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	

Shield wire size and type	DNO-11410 shield wire
Rebuild line length	7.75 Miles
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).
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	$17,562,086.68
Component cost (in-service year)	$18,808,994.83

Transmission Line Upgrade Component

Component title	Line #2045 (Loudoun - Brambleton) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2045

Point A	Loudoun
Point B	Brambleton
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	5.08 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	

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	$17,562,086.68
Component cost (in-service year)	$18,808,994.83

Transmission Line Upgrade Component

Component title	Line #2094 & 2227 (Brambleton - Racefield - Loudoun) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2094 & 2227
Point A	Brambleton
Point B	Racefield
Point C	Loudoun

Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°C MOT [4.81 miles] & 1233.6 ACSS/TW/HS285 (38/19) 250°C MOT [0.05 miles]
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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Shield wire size and type	DNO-11410 shield wire
Rebuild line length	3.69 Miles
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).
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	$17,562,086.68
Component cost (in-service year)	$18,808,994.83

Transmission Line Upgrade Component

Component title	Line #2101 (Bristers - Vint Hill) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2094
Point A	Bristers
Point B	Vint Hill
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230

Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Shield wire size and type	DNO-11410 shield wire
Rebuild line length	12.38 Miles
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).
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	$17,562,086.68
Component cost (in-service year)	$18,808,995.00

Transmission Line Upgrade Component

Component title	Line #2114 (Remington CT - Rollin Ford) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2114
Point A	Remington CT
Point B	Rollin Ford
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	13.41 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	
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	$17,562,086.68
Component cost (in-service year)	$18,808,995.00

Transmission Line Upgrade Component

Component title	Line #2140 (Loudoun - Heathcote) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2140
Point A	Loudoun
Point B	Heathcote
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000

	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	7.31 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	
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	$17,562,086.68	
Component cost (in-service year)	$18,808,994.83	

Transmission Line Upgrade Component

Component title	Line #2151 (Railroad DP - Gainesville) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2151
Point A	Railroad DP
Point B	Gainesville
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	

Shield wire size and type	DNO-11410 shield wire
Rebuild line length	0.25 Miles
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).
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	$4,390,521.68
Component cost (in-service year)	$4,702,248.71

Transmission Line Upgrade Component

Component title	Line #2163 (Vint Hill - Liberty) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2163

Point A	Vint Hill
Point B	Liberty
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	4.14 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	

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	$17,562,086.68
Component cost (in-service year)	$18,808,994.83

Transmission Line Upgrade Component

Component title	Line #2176 (Heathcote - Gainesville) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2176
Point A	Heathcote
Point B	Gainesville
Point C	

Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°C MOT [0.38 miles] & 2-795 ACSR (26/7) 150°C MOT [0.10 miles]
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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	0.48 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	
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	$8,781,043.35
Component cost (in-service year)	$9,404,497.42

Transmission Line Upgrade Component

Component title	Line #2222 (Rollins Ford - Gainesville) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2222
Point A	Rollins Ford
Point B	Gainesville
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230

Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Shield wire size and type	DNO-11410 shield wire
Rebuild line length	1.11 Miles
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).
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	$13,171,565.00
Component cost (in-service year)	$14,106,746.13

Transmission Line Upgrade Component

Component title	Line #183 (Bristers - Ox) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #183
Point A	Bristers
Point B	Ox
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 150°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)	230.000000	115.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	
Shield wire size and type	DNO-11410 shield wire	
Rebuild line length	1.65 Miles	
Rebuild portion description	The existing tower line will be replaced with monopoles, in order to conserve right-of-way to fit the new 500 kV line within the existing corridor. The entire corridor is being rebuilt as a single circuit 500kV and two double circuit 500/230kV line configuration (5-2-5-2-5).	
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	$8,781,043.35
Component cost (in-service year)	$9,404,497.42

Transmission Line Upgrade Component

Component title	Line #535 (Meadow Brook-VintHill- Loudoun) Resag
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #535
Point A	Loudoun
Point B	Vint Hill
Point C	Meadow Brook
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 190 to 430 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	500
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT
Hardware plan description	Existing hardware will be reused. Hardware is assumed to be in good reusable condition.
Tower line characteristics	Existing Structures will be reused. Structures are assumed to be in good reusable condition.

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	3-1351.5 ACSR (45/7) 110°C MOT	
Shield wire size and type	DNO-10100 OPGW	
Rebuild line length	42.91 Miles (Resag)	
Rebuild portion description	To accommodate the uprate, the existing suspension towers are to have AMPJACK body extensions installed. The extensions will range from ten (10) to twenty (20) feet. The uprate will occur utilizing existing structures, conductor, and most of the existing hardware while increasing the maximum operating temperature (MOT) of the circuit from 90°C to 110°C. The existing 500kV strain and suspension clamps will need to be replaced with high temp hardware. In addition to the tower extensions, the 500kV and/or underbuilt 230kV/34.5kV circuits may need to be re-tensioned due to the impacts of the tower extensions and to meet wire clearances. The existing line primarily consists of lattice tower structures and steel monopole structures. This project only accounts for the line uprate of Line 535 between structure 535/120 (2114/71) and Meadow Brook Substation. It is assumed that Open Window Project #99-3232 will rebuild and uprate the remainder of the line between Vint Hill Substation and structure 535/120 (2114/71).	
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	$111,527,300.00
Component cost (in-service year)	$119,445,738.30

Substation Upgrade Component

Component title	Bristers Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Bristers
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. Two (2), 500 kV, 5000A, Double End Break Switches. 2. Two (2), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Approximately 1000 FT of 6 in. Sch. 80 AL tube bus. 5. Foundations and steel structures as required. 6. 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. One (1), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. One (1), 1511 – 24” Dual SEL-351 Transmission Breaker w/o Reclosing Panel 4. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 6. One (1), Traveling Wave Fault Locator TWS Module 7. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel Retire substation material: 1. One (1), 500kV, 40kAIC, 4000A, Live Tank SF6 Circuit Breaker. 2. Three (3), 500kV, Current Transformers. 3. Two (2), 500kV, 3000A, Double End Break Switches. 4. Foundations and steel structures as required.

Transformer Information

None

New equipment description	1. Two (2), 500 kV, 5000A, Double End Break Switches. 2. Two (2), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Two (2), 4510 - SEL-2411 Equipment Annunciator 5. One (1), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 6. One (1), 1511 – 24” Dual SEL-351 Transmission Breaker w/o Reclosing Panel 7. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 8. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 9. One (1), Traveling Wave Fault Locator TWS Module 10. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel
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	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	$5,720,668.00
Component cost (in-service year)	$6,126,835.43

Substation Upgrade Component

Component title	Brambleton Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Brambleton
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. Eight (8), 230kV, 4000A Double End Break Switches. 2. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 3. Six (6), 230kV, 180kV MO (S), 144kV MCOV, Surge Arrestor. 4. Approximately 700FT of 5 IN Sch 40 AL Tubular Bus and Connectors. 5. Foundations and steel structures as required. 6. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box Retire substation material: 1. Eight (8), 230kV, 3000A Center Break Switches. 2. Four (4), 230kV, 63kAIC, 3000A, SF6 Circuit Breakers. 3. Approximately 700FT of 3.5 IN Sch 40 AL Tubular Bus and Connectors. 4. Foundations and steel structures as required.

Transformer Information

None

New equipment description	1. Eight (8), 230kV, 4000A Double End Break Switches. 2. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 3. Six (6), 230kV, 180kV MO (S), 144kV MCOV, Surge Arrestor. 4. Four (4), 4526_A – Circuit Breaker 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. 4-hole pad connections must be replaced with 4-hole connections to maintain 4000A 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	$4,650,556.00
Component cost (in-service year)	$4,980,745.48

Substation Upgrade Component

Component title	Dawkins Branch Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Dawkins Branch
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A
Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$17,939.00
Component cost (in-service year)	$19,212.67

Substation Upgrade Component

Component title	Gainesville Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Gainesville
Substation zone	352

Substation upgrade scope	Purchase and install substation material: 1. Four (4), 230kV, 4000A Double End Break Switches. 2. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 90-200kHz Wave trap. 4. Approximately 900FT of 5 IN Sch 40 AL Tubular Bus and Connectors. 5. Foundations and steel structures as required. 6. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 - SEL-2411 Breaker Annunciator 2. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box Retire substation material: 1. Two (2), 230kV, 3000A, Center Break Switches. 2. One (1), 230kV, 40kAIC, 3000A, SF6 Circuit Breaker. 3. One (1), 230kV, 63kAIC, 3000A, Hybrid-GIS Circuit Breaker. 4. One (1), 230kV, 3000A, Wave Trap. 5. Approximately 900FT of 3.5 IN Sch 40 AL Tubular Bus and Connectors.

Transformer Information

None

New equipment description	1. Eight (8), 230kV, 4000A Double End Break Switches. 2. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 3. Two (2), 230kV, 4000A, Wave Traps. 1. Four (4), 230kV, 4000A Double End Break Switches. 2. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 90-200kHz Wave trap. 4. One (1), 4510 - SEL-2411 Breaker Annunciator 5. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box 6. Four (4), 4526_A – Circuit Breaker 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. 4-hole pad connections must be replaced with 4-hole connections to maintain 4000A 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	$3,714,306.40
Component cost (in-service year)	$3,978,021.73

Substation Upgrade Component

Component title	Heathcote Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Heathcote
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A
Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$17,939.00
Component cost (in-service year)	$19,212.67

Substation Upgrade Component

Component title	Loudoun Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Loudoun
Substation zone	352,366

Substation upgrade scope	Purchase and install substation material: 1. Two (2), 500 kV, 5000A Double End Break Switches. 2. Two (2), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Approximately 1000 FT of 6 in. Sch. 80 AL tube bus. 5. Twelve (12), 230kV, 4000A Double-End Break Switches. 6. Two (2), 230 kV, 80kAIC, 5000A, SF6 Circuit Breakers. 7. Approximately 2000 FT of 5 in. Sch. 40 AL tube bus. 8. Two (2), 230KV, 4000A Wave Traps 9. Foundations and steel structures as required. 10. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 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. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 5. Two (2), 4526_A – Transmission Breaker w/o monitor Fiber MU box 6. One (1), Traveling Wave Fault Locator Module 7. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel Retire substation material: 1. One (1), 500kV, 50kAIC, 3000A, Live Tank SF6 Circuit Breaker. 2. Two (2), 500kV, 4000A, Double End Break Switches. 3. Three (3), 500kV, Current Transformers. 4. One (1), 500kV, 4000A, Wave Trap. 5. One (1), 500kV, 4000A, Ground Switch. 6. Approximately 1000FT of 5 in. Sch. 40 AL tube bus. 7. Two (2), 230kV, 63kAIC, 3000A, SF6 Circuit Breakers. 8. Nine (9), 230kV, 3000A, Center Break Switches. 9. Three (3), 230kV, 3000A, Vertical Break Switches. 10. Three (3), 230kV, Motor Operated Grounding Switches. 11. Two (2), 230kV, 3000A, Wave Traps. 12. Approximately 2000FT of 3.5 in. Sch. 40 AL tube bus. 13. Foundations and steel structures as required.

Transformer Information

None

New equipment description	1. Two (2), 500 kV, 5000A Double End Break Switches. 2. Two (2), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Three (3), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Twelve (12), 230kV, 4000A Double-End Break Switches. 5. Two (2), 230 kV, 80kAIC, 5000A, SF6 Circuit Breakers. 6. Two (2), 230KV, 4000A Wave Traps 7. Four (4), 4510 - SEL-2411 Equipment Annunciator 8. One (1), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 9. Two (2) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 10. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 11. Two (2), 4526_A – Transmission Breaker w/o monitor Fiber MU box 12. One (1), Traveling Wave Fault Locator Module 13. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel
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	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	$16,699,205.00
Component cost (in-service year)	$17,884,848.56

Substation Upgrade Component

Component title	Mint Springs Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Mint Springs
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A

Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$29,171.00
Component cost (in-service year)	$31,242.14

Substation Upgrade Component

Component title	Morrisville Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Morrisville
Substation zone	366

Substation upgrade scope	Purchase and install substation material: 1. Seven (7), 500 kV, 5000A Double End Break Switches. 2. Five (5), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Six (6), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Approximately 1500 FT of 6 in. Sch. 80 AL tube bus. 5. Foundations and steel structures as required. 6. 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), 1511 – 24” Dual SEL-351 Transmission Breaker w/o Reclosing Panel 4. Two (2), 1515 – 24” Single SEL-351 500kV Transmission Breaker w/ Reclosing Panel 5. Two (2), 1516 – 24” Single SEL-351 500kV Transmission Breaker w/o Reclosing Panel 6. Four (4) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 7. Four (4), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 8. One (1), 5203 – 24” Traveling Wave Fault Locator Panel 9. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel Reuse existing relay material, if possible: 1. Three (3), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. One (1) 1515 – 24” Single SEL-351 500kV Transmission Breaker w/ Reclosing Panel 4. One (1) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 5. One (1), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 6. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel

Transformer Information

None

New equipment description	1. Seven (7), 500 kV, 5000A Double End Break Switches. 2. Five (5), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Six (6), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Two (2), 4510 - SEL-2411 Equipment Annunciator 5. Two (2), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 6. Two (2), 1511 – 24” Dual SEL-351 Transmission Breaker w/o Reclosing Panel 7. Two (2), 1515 – 24” Single SEL-351 500kV Transmission Breaker w/ Reclosing Panel 8. Two (2), 1516 – 24” Single SEL-351 500kV Transmission Breaker w/o Reclosing Panel 9. Four (4) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 10. Four (4), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 11. One (1), 5203 – 24” Traveling Wave Fault Locator Panel 12. One (1), 1340 – 24” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel
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	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	$9,304,393.00
Component cost (in-service year)	$9,965,004.90

Substation Upgrade Component

Component title	Mosby Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Mosby
Substation zone	366

Substation upgrade scope	Purchase and install substation material: 1. Six (6), 500 kV, 5000A Double End Break Switches. 2. Four (4), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Six (6), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Approximately 4000 FT of 6 in. Sch. 80 AL tube bus. 5. Foundations and steel structures as required. 6. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Four (4) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 4. Four (4), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 5. Two (2), Traveling Wave Fault Locator Modules. 6. Two (2), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel 7. Two (2), Panel Retirements (lines 546 & 590) Retire substation material: 1. Three (3), 500kV, 50kAIC, 4000A, SF6 Circuit Breakers. 2. Six (6), 500kV, 4000A, Double End Break Switches. 3. Approximately 4000 FT of 6 in. Sch. 40 AL tube bus.

Transformer Information

None

New equipment description	1. Six (6), 500 kV, 5000A Double End Break Switches. 2. Four (4), 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers. 3. Six (6), 396 kV, 318 kV MCOV Station Class Surge Arresters. 4. Four (4), 4510 - SEL-2411 Equipment Annunciator 5. One (1), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 6. Four (4) 4535 – 500kV GE Circuit Breaker Condition Monitor OR 4536 – 500kV Axion Circuit Breaker Condition Monitor 7. Four (4), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 8. Two (2), Traveling Wave Fault Locator Modules. 9. Two (2), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel 10. Two (2), Panel Retirements (lines 546 & 590)
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	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	$11,746,857.00
Component cost (in-service year)	$12,580,883.85

Substation Upgrade Component

Component title	North Star Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	North Star
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A
Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$29,171.00
Component cost (in-service year)	$31,242.14

Substation Upgrade Component

Component title	Racefield Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Racefield
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A

Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$29,171.00
Component cost (in-service year)	$31,242.14

Substation Upgrade Component

Component title	Railroad Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Railroad
Substation zone	352

Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A
Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$17,939.00
Component cost (in-service year)	$19,212.67

Substation Upgrade Component

Component title	Spotsylvania Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Spotsylvania
Substation zone	352,366
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), 396kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3), 500kV CCVT. 5. Approximately 2000 ft. of 6” Sch. 80 Al Tube Bus. 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 Breaker 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. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 5. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1), 4506 – 3Ø CCVT Potential Makeup Box 7. One (1), TWS Travelling Wave Fault Locator Module Reuse relay material, if possible: 1. One (1), 4510 – SEL-2411 Breaker 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.

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), 396kV, 318 kV MCOV Station Class Surge Arresters. 4. Three (3), 500kV CCVT. 5. Two (2), 4510 – SEL-2411 Breaker 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. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 9. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 10. One (1), 4506 – 3Ø CCVT Potential Makeup Box 11. One (1), TWS Travelling Wave Fault Locator Module
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 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	$7,983,805.00
Component cost (in-service year)	$8,550,655.16

Substation Upgrade Component

Component title	Vint Hill Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Vint Hill
Substation zone	352,366

Substation upgrade scope	Purchase and install substation material: 1. Eight (8), 500kV, 5000A GIS Motor Operated Switches. 2. Eight (8), 500kV, 5000A GIS Motor Operated Breaker Grounding Switches. 3. Two (2), 500kV, 5000A GIS Motor Operated Line Grounding Switches. 4. Ten (10), 500kV, 5000A GIS Motor Operated High-Speed Ground Switches. 5. Four (4), 500kV, 63kAIC, 5000A, SF6 GIS Circuit Breakers. 6. Six (6), 500kV relaying accuracy CCVTs. 7. Three (3), 396kV, 318 kV MCOV Station Class Surge Arresters. Purchase and install relay material: 1. Four (4), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 2. Four (4), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 3. Two (2), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 4. Two (2), 4506 – 3Ø CCVT Potential Makeup Box 5. Two (2), 4200 – Bus Differential C.T. Makeup Box 6. Two (2), TWS Travelling Wave Fault Locator Modules

Transformer Information

None

New equipment description	1. Eight (8), 500kV, 5000A GIS Motor Operated Switches. 2. Eight (8), 500kV, 5000A GIS Motor Operated Breaker Grounding Switches. 3. Two (2), 500kV, 5000A GIS Motor Operated Line Grounding Switches. 4. Ten (10), 500kV, 5000A GIS Motor Operated High-Speed Ground Switches. 5. Four (4), 500kV, 63kAIC, 5000A, SF6 GIS Circuit Breakers. 6. Six (6), 500kV relaying accuracy CCVTs. 7. Three (3), 396kV, 318 kV MCOV Station Class Surge Arresters. 8. Four (4), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 9. Four (4), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 10. Two (2), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 11. Two (2), 4506 – 3Ø CCVT Potential Makeup Box 12. Two (2), 4200 – Bus Differential C.T. Makeup Box 13. Two (2), TWS Travelling Wave Fault Locator Modules
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 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	$23,725,526.00
Component cost (in-service year)	$25,410,038.35

Substation Upgrade Component

Component title	Wishing Star Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Wishing Star
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. Four (4), 500kV, 5000A GIS Motor Operated Switches. 2. Four (4), 500kV, 5000A GIS Motor Operated Breaker Grounding Switches. 3. One (1), 500kV, 5000A GIS Motor Operated Line Grounding Switches. 4. Five (5), 500kV, 5000A GIS Motor Operated High-Speed Ground Switches. 5. Two (2), 500kV, 63kAIC, 5000A, SF6 GIS Circuit Breakers. 6. Six (6), 500kV relaying accuracy CCVTs. 7. Three (3), 396kV, 318 kV MCOV Station Class Surge Arresters. Purchase and install relay material: 1. Two (2), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 2. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 3. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 4. One (1), 4506 – 3Ø CCVT Potential Makeup Box 5. One (1), 4200 – Bus Differential C.T. Makeup Box 6. One (1), TWS Travelling Wave Fault Locator Module

Transformer Information

None

New equipment description	1. Four (4), 500kV, 5000A GIS Motor Operated Switches. 2. Four (4), 500kV, 5000A GIS Motor Operated Breaker Grounding Switches. 3. One (1), 500kV, 5000A GIS Motor Operated Line Grounding Switches. 4. Five (5), 500kV, 5000A GIS Motor Operated High-Speed Ground Switches. 5. Two (2), 500kV, 63kAIC, 5000A, SF6 GIS Circuit Breakers. 6. Six (6), 500kV relaying accuracy CCVTs. 7. Three (3), 396kV, 318 kV MCOV Station Class Surge Arresters. 8. Two (2), 1510 – 28" Dual SEL-351 Transmission Breaker w/ Reclosing Panel 9. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 10. One (1), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 11. One (1), 4506 – 3Ø CCVT Potential Makeup Box 12. One (1), 4200 – Bus Differential C.T. Makeup Box 13. One (1), TWS Travelling Wave Fault Locator Module
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 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	$12,300,662.00
Component cost (in-service year)	$13,174,009.00

Substation Upgrade Component

Component title	Youngs Branch Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Youngs Branch
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. No substation material. Purchase and install relay material: 1. No relay material (Relay Resets Only).

Transformer Information

None

New equipment description	N/A
Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. 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.
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	$17,939.00
Component cost (in-service year)	$19,212.67

Congestion Drivers

None

Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S2103	314039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST2538	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1	Included
2022W3-GD-S1803	314934	8SPOTSYL	314916	8MORRSVL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST2528	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1	Included
2022W3-GD-W42	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W43	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD-S1829	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST134	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST137	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1773	314197	6LDYSMITH CT	313837	6SUMMIT	1	230	345	Summer Gen Deliv	Included
2022W3-GD_118	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Light Load Gen Deliv	Included
2022W3-GD-W822	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W823	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST149	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST150	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD_117	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Light Load Gen Deliv	Included
2022W3-GD-W904	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-S1805	313837	6SUMMIT	314138	6MINE RD	1	230	345	Summer Gen Deliv	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S172	313815	6SPRINGH	314079	6RESTON	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S347	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W133	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST187	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST23	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-GD-S166	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S166	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT156	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST179	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST147	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST180	314919	8OX	314068	6OX	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT37	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT159	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-GD-S178	314039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT12	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-GD-W112	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-S178	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT15	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-GD-W112	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WT16	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT93	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-GD-W114	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W113	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WT95	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST239	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD_L359	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD_L276	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-N1-LLT12	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-LLT12	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-ST11	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST23	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST11	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-GD-S88	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W136	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD-S89	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W101	313440	8VINTHIL	314125	6VINTHIL	2	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W77	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST19	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT16	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-W786	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD-S168	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S173	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S1213	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST17	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W798	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Winter Gen Deliv	Included
2022W3-N1-ST17	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W798	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Winter Gen Deliv	Included
2022W3-LD-ST1	223938	DICKH230	223937	DICK 230	2	230/230	233/233	Load Deliverability	Included
2022W3-LD-ST3	223938	DICKH230	223937	DICK 230	2	230/230	233/233	Load Deliverability	Included
2022W3-LD-ST2	223938	DICKH230	223937	DICK 230	2	230/230	233/233	Load Deliverability	Included
2022W3-GD-S201	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S181	314918	8NO ANNA	314911	8LADYSMITH	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT54	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST165	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-GD-W139	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST12	313815	6SPRINGH	314079	6RESTON	1	230/230	345/345	Summer N-1 Thermal	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-WT56	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST46	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST79	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1813	314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST47	314916	8MORRSVL	313440	8VINTHIL	1	500/500	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST80	314916	8MORRSVL	313440	8VINTHIL	1	500/500	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	06/2025
Project Duration (In Months)	36

Additional Comments

None