DVP Central Area Improvement for Portfolios

General Information

Proposing entity name	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Company proposal ID	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
PJM Proposal ID	967
Project title	DVP Central Area Improvement for Portfolios
Project description	This proposal includes the following projects: 1. 99-3192 - Allman 230kV Switching Station 2. 99-3315 - New 230 kV Line - Ladysmith to Kraken to New Post to Lee's hill to Allman 3. 99-3376 - Line 2090 Uprate - Lee's hill to Fredericksburg 4. 99-3387 - Kraken 500/230kV Switching Station 5. 99-3446 - New 230kV Line - Kraken to Allman 6. 99-3454 - Town Run 500kV Switching Station 7. 99-3455 - New 500kV Line - North Anna to Kraken to Town Run 8. 99-3375 - Ladysmith Expansion 9. 99-3337 - Elmont Substation Expansion
Email	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Project in-service date	12/2029
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
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 to Kraken to Town Run (993455)
2. Kraken Substation Upgrade (993455)
3. North Anna Substation Upgrade (993455)

4. Town Run Substation Upgrade (993455)
5. Bristers Substation Upgrade (99-3454)
6. Morrisville Substation Upgrade (99-3454)
7. New 500kV switching station - Town Run (99-3454)
8. Four Rivers Substation Relay Reset (99-3387)
9. Fredericksburg Substation Relay Reset (99-3387)
10. Kraken 500/230kV Switching Station (99-3387)
11. Ladysmith Substation Relay Reset (99-3387)
12. Ladysmith CT Substation Relay Reset (99-3387)
13. Possum Point Substation Relay Reset (99-3387)
14. Lines 2090 (Future Line 2301) Rebuild - Lee's Hill to Fredericksburg (99-3376)
15. Line 545 - Town Run Substation Cut-in (993454)
16. Line 569 - Town Run Substation Cut-in (993454)
17. New 230 kV Line - Ladysmith to Kraken to New Post to Lees Hill (Temp Lines 9437/9438) (99-3315)
18. Ladysmith Substation Terminal Equipment Upgrade (99-3315)
19. Ladysmith CT Substation Terminal Equipment Upgrade (99-3315)
20. Lees Hill Substation Terminal Equipment Upgrade (99-3315)
21. New Post Substation Terminal Equipment Upgrade (99-3315)
22. Line 2083 Cut-in to Allman Substation (99-3192)
23. Line 2157 Cut-in to Allman Substation (99-3192)
24. Line 2305 Cut-in to Allman Substation (99-3192)
25. Line 256 / Line 2XX Cut-In to Kraken Substation (99-3387)
26. Line 568 / Line 5XXX Cut-In to Kraken Substation (99-3387)
27. Line 2090 / Line 2XXX Cut-In to Kraken Substation (99-3387)
28. New 230 kV Line (2XXX1) - Kraken to New Post (99-3446)
29. New 230 kV Line (2XX2) - New Post to Lee's Hill (99-3446)
30. New 230 kV Line (2XX3) - Lee's Hill to Allman (99-3446)
31. New 230kV Switching Station - Allman (99-3192)
32. Aquia Harbor Substation Upgrade (99-3192)

33. Birchwood Substation Upgrade (99-3192)
34. Cranes Corner Substation Upgrade (99-3192)
35. Fredericksburg Substation Upgrade (99-3192)
36. Elmont Substation Terminal Equipment Upgrade (99-3337)
37. Ladysmith Substation Expansion (99-3375)
38. Fredericksburg Substation Terminal Equipment Upgrade (99-3376)

Greenfield Transmission Line Component

Component title	New 500 kV Line - North Anna to Kraken to Town Run (993455)	
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.	
Point A	North Anna	
Point B	Kraken	
Point C	Town Run	
	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	This project is further divided into six (6) different sections outlined below: 1. From North Anna Substation to Ladysmith Substation, new 500kV steel lattice tower structures on foundations shall be constructed within existing 275’ wide ROW adjacent to existing line 575. Based on the operating one line for line 575, this section of line 5XX1 is approx. 14.53 miles long and will be constructed on the vacant south side of the existing ROW. 2. From Ladysmith Substation to Kraken Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a 100’ expanded ROW, on the west side of the existing ROW, adjacent to existing lines 568 and 2089. Based on google earth measurements, this section of line 5XX1 is approx. 7.79 miles long. a. Included in this section is a brief 2.1 mile segment of greenfield 150’ ROW. This section branches off the existing ROW near structure 568/251 and back on the existing ROW near 568/243. 3. From Kraken to existing structure 568/117, new 500kV steel lattice tower structures on foundations shall be constructed in a 25’ expanded ROW, to the northwest side of the existing ROW, adjacent to existing line 568. Based on google earth measurements, this section of line 5XX2 is approximately 18.80 miles long. 4. From existing structure 568/117 to approx. 0.80 miles east of Garrisonville Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a greenfield 150’ ROW. Based on google earth measurements, this section of line 5XX2 is approx. 12.71 miles long. 5. From approx. 0.80 miles east of Garrisonville Substation to existing structure 552/168 within the corridor between Bristers Substation and Chancellor Substation, new structures shall be constructed within an existing corridor. These structures will be 500kV steel lattice towers on foundations. Based on google earth measurements, this section of line 5XX2 is approx. 6.63 miles long. The existing corridor will need to be cleared of vegetation. 6. From existing structure 552/168 to Town Run Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a 35’ expanded ROW, on the east side of the existing ROW, adjacent to existing line 552. Based on google earth measurements, this section of line 5XX2 is approx. 6.67 miles long. The combined total length of lines 5XX1 and 5XX2 is 67.13 miles. Lines 5XX1 and 5XX2 will be installed with 3-phase 3-1351.5 ACSR (45/7) “Dipper” and dual (2) DNO-10100 OPGW.
Terrain description	The project area is in the Virginia Piedmont region with elevations ranging from approximately 9 to 361 feet. The terrain is predominately vegetated existing right-of-way consisting of minimal to moderate slopes. The line will include new crossings of Interstate 95 twice, US 1 twice, US 17, US 3, the Rappahannock River, Lake Anna, Potomac Creek, CSX Railroad multiple times, and numerous secondary roadways.

Right-of-way width by segment	1. From North Anna Substation to Ladysmith Substation, new 500kV steel lattice tower structures on foundations shall be constructed within existing 275’ wide ROW adjacent to existing line 575. Based on the operating one line for line 575, this section of line 5XX1 is approx. 14.53 miles long and will be constructed on the vacant south side of the existing ROW. 2. From Ladysmith Substation to Kraken Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a 100’ expanded ROW, on the west side of the existing ROW, adjacent to existing lines 568 and 2089. Based on google earth measurements, this section of line 5XX1 is approx. 7.79 miles long. a. Included in this section is a brief 2.1 mile segment of greenfield 150’ ROW. This section branches off the existing ROW near structure 568/251 and back on the existing ROW near 568/243. 3. From Kraken to existing structure 568/117, new 500kV steel lattice tower structures on foundations shall be constructed in a 25’ expanded ROW, to the northwest side of the existing ROW, adjacent to existing line 568. Based on google earth measurements, this section of line 5XX2 is approximately 18.80 miles long. 4. From existing structure 568/117 to approx. 0.80 miles east of Garrisonville Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a greenfield 150’ ROW. Based on google earth measurements, this section of line 5XX2 is approx. 12.71 miles long. 5. From approx. 0.80 miles east of Garrisonville Substation to existing structure 552/168 within the corridor between Bristers Substation and Chancellor Substation, new structures shall be constructed within an existing corridor. These structures will be 500kV steel lattice towers on foundations. Based on google earth measurements, this section of line 5XX2 is approx. 6.63 miles long. The existing corridor will need to be cleared of vegetation. 6. From existing structure 552/168 to Town Run Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a 35’ expanded ROW, on the east side of the existing ROW, adjacent to existing line 552. Based on google earth measurements, this section of line 5XX2 is approx. 6.67 miles long.
Electrical transmission infrastructure crossings	Some substantial line crossings include lines 575 and 581 near Ladysmith, a non-Dominion Energy Virginia transmission line near Ladysmith CT, line 2083 near Lee DP, lines 2104 and 29 near Spartan Sub, and line 522 near Bristers Sub.
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993455 Real Estate and Permitting Summary.
Environmental impacts	Refer to section A.4 of 993455 Real Estate and Permitting Summary.

Tower characteristics	1. From North Anna Substation to Ladysmith Substation, new 500kV steel lattice tower structures on foundations shall be constructed within existing 275’ wide ROW adjacent to existing line 575. Based on the operating one line for line 575, this section of line 5XX1 is approx. 14.53 miles long and will be constructed on the vacant south side of the existing ROW. 2. From Ladysmith Substation to Kraken Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a 100’ expanded ROW, on the west side of the existing ROW, adjacent to existing lines 568 and 2089. Based on google earth measurements, this section of line 5XX1 is approx. 7.79 miles long. a. Included in this section is a brief 2.1 mile segment of greenfield 150’ ROW. This section branches off the existing ROW near structure 568/251 and back on the existing ROW near 568/243. 3. From Kraken to existing structure 568/117, new 500kV steel lattice tower structures on foundations shall be constructed in a 25’ expanded ROW, to the northwest side of the existing ROW, adjacent to existing line 568. Based on google earth measurements, this section of line 5XX2 is approximately 18.80 miles long. 4. From existing structure 568/117 to approx. 0.80 miles east of Garrisonville Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a greenfield 150’ ROW. Based on google earth measurements, this section of line 5XX2 is approx. 12.71 miles long. 5. From approx. 0.80 miles east of Garrisonville Substation to existing structure 552/168 within the corridor between Bristers Substation and Chancellor Substation, new structures shall be constructed within an existing corridor. These structures will be 500kV steel lattice towers on foundations. Based on google earth measurements, this section of line 5XX2 is approx. 6.63 miles long. The existing corridor will need to be cleared of vegetation. 6. From existing structure 552/168 to Town Run Substation, new 500kV steel lattice tower structures on foundations shall be constructed in a 35’ expanded ROW, on the east side of the existing ROW, adjacent to existing line 552. Based on google earth measurements, this section of line 5XX2 is approx. 6.67 miles long.
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	$565,379,200.00
Component cost (in-service year)	$605,521,123.20

Substation Upgrade Component

Component title	Kraken Substation Upgrade (993455)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Kraken
Substation zone	366
Substation upgrade scope	Purchase & Install Substation Material: 1. Three (3), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Six (6), 500 kV, 5000 Amps, Double End Break Disconnect Switches 3. Three (3), 396 kV MO (S), 318 kV MCOV, Surge Arresters 4. Six (6), 500 kV, 5000 Amps, 63 kA SF6 Circuit Breakers 5. One (1) 500 kV Transmission line backbone (by Transmission) 6. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Purchase & Install Relay Material: 1. Six (6), 4510 - SEL-2411 Equipment Annunciator 2. Six (6), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Six (6), 1515 – 24” Dual SEL-351 500kV Transmission Breaker w/ Reclosing Panel 4. Six (6), 4535 or 4536 – 500kV Circuit Breaker Condition Monitor 5. One (1), 4506 – 3Ø CCVT Potential Makeup Box

Transformer Information

None

New equipment description	1. Three (3), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Six (6), 500 kV, 5000 Amps, Double End Break Disconnect Switches 3. Three (3), 396 kV MO (S), 318 kV MCOV, Surge Arresters 4. Six (6), 500 kV, 5000 Amps, 63 kA SF6 Circuit Breakers 5. One (1) 500 kV Transmission line backbone (by Transmission)
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 P&C 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	$14,407,375.50
Component cost (in-service year)	$15,430,298.63

Substation Upgrade Component

Component title	North Anna Substation Upgrade (993455)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	North Anna
Substation zone	366

Substation upgrade scope	Purchase & Install Substation Material: 1. Two (2), 500 kV, 63kAIC, 5000A SF6 Circuit Breakers. 2. Four (4), 500 kV, 5000A Double End Break Switches. 3. Five (5), 500 kV Coupling Capacitor Voltage Transformers. 4. Six (6), 396KV, 318kV MCOV Surge Arresters 5. Approximately 4500 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. Remove Substation Equipment: 1. Two (2), 500 kV Coupling Capacitor Voltage Transformers Purchase & Install Relay Material: 1. Two (2), 4507 - 1Ø CCVT Potential Makeup Box 2. Two (2), 4510 - SEL-2411 Equipment Annunciator 3. Two (2), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 4. Two (2), 4535 or 4536 – 500kV Circuit Breaker Condition Monitor 5. One (1), 1340 – 24” 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

Transformer Information

None

New equipment description	1. Two (2), 500 kV, 63kAIC, 5000A SF6 Circuit Breakers. 2. Four (4), 500 kV, 5000A Double End Break Switches. 3. Five (5), 500 kV Coupling Capacitor Voltage Transformers. 4. Six (6), 396KV, 318kV MCOV Surge Arresters
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 P&C design will be revised as part of the SPE Scope of Work. 3. 4-hole pad connections must be replaced with 6-hole and 8-hole connections to maintain 5000 A ratings. 4. This project is the alternative scenario to project 99-3149, in which a new 500kV is built to Ladysmith.
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	$9,124,627.30
Component cost (in-service year)	$9,772,475.52

Substation Upgrade Component

Component title	Town Run Substation Upgrade (993455)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Town Run
Substation zone	366
Substation upgrade scope	Purchase & Install Substation Material: 1. Three (3), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Five (5), 500 kV, 5000 Amps, Double End Break Disconnect Switches 3. Three (3), 396 kV MO (S), 318 kV MCOV, Surge Arresters 4. Two (2), 500 kV, 5000 Amps, 50 kA SF6 Circuit Breakers 5. One (1) 500 kV Transmission line backbone (by Transmission) 6. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Purchase & 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), 1515 – 24” Dual SEL-351 500kV Transmission Breaker w/ Reclosing Panel 4. Two (2), 4535 or 4536 – 500kV Circuit Breaker Condition Monitor 5. One (1), 4506 – 3Ø CCVT Potential Makeup Box

Transformer Information

None

New equipment description	1. Three (3), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Five (5), 500 kV, 5000 Amps, Double End Break Disconnect Switches 3. Three (3), 396 kV MO (S), 318 kV MCOV, Surge Arresters 4. Two (2), 500 kV, 5000 Amps, 50 kA SF6 Circuit Breakers 5. One (1) 500 kV Transmission line backbone (by Transmission)
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 P&C 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	$9,124,627.30
Component cost (in-service year)	$9,772,475.52

Substation Upgrade Component

Component title	Bristers Substation Upgrade (99-3454)
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	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$37,137.30
Component cost (in-service year)	$39,773.73

Substation Upgrade Component

Component title	Morrisville Substation Upgrade (99-3454)
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	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$74,273.60
Component cost (in-service year)	$79,547.45

Greenfield Substation Component

Component title	New 500kV switching station - Town Run (99-3454)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Town Run
Substation description	Purchase & Install Substation Material: 1. Fourteen (14), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Twelve (12), 500 kV, 5000 Amps, Double End Break Disconnect Switches 3. Twelve (12), 396 kV MO (S), 318 kV MCOV, Surge Arresters 4. Eight (8), 500 kV, 5000 Amps, 50 kA SF6 Circuit Breakers 5. Two (2) 500 kV Transmission line backbones (by Transmission) 6. One (1) 24’ X 60’ Control Enclosure 7. One (1) 14’ X 25’ Security Enclosure 8. Two (2) 125 VDC, 400 Ah Station Battery (size to be verified during detail engineering) 9. Four (4) 50 Amp Battery Chargers (size to be verified during detail engineering) 10. Site preparation and grading as required 11. Ground grid for the entire as per Dominion Energy Standards 12. Approximately 2300 FT of Level 1 Security Fence along with Security Integrators and associated infrastructure 13. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards.
Nominal voltage	AC
Nominal voltage	500

Transformer Information

None

Major equipment description	Purchase & Install Substation Material: 1. Fourteen (14), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Twelve (12), 500 kV, 5000 Amps, Double End Break Disconnect Switches 3. Twelve (12), 396 kV MO (S), 318 kV MCOV, Surge Arresters 4. Eight (8), 500 kV, 5000 Amps, 50 kA SF6 Circuit Breakers 5. Two (2) 500 kV Transmission line backbones (by Transmission) 6. One (1) 24’ X 60’ Control Enclosure 7. One (1) 14’ X 25’ Security Enclosure 8. Two (2) 125 VDC, 400 Ah Station Battery (size to be verified during detail engineering) 9. Four (4) 50 Amp Battery Chargers (size to be verified during detail engineering)

	Normal ratings	Emergency ratings
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000

Environmental assessment	Dominion will pursue the required permitting.
Outreach plan	Dominion Owned Land
Land acquisition plan	Dominion Owned Land
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	$49,692,557.30
Component cost (in-service year)	$53,220,728.55

Substation Upgrade Component

Component title	Four Rivers Substation Relay Reset (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Four Rivers
Substation zone	355
Substation upgrade scope	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$37,137.30
Component cost (in-service year)	$39,773.73

Substation Upgrade Component

Component title	Fredericksburg Substation Relay Reset (99-3387)

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Fredericksburg
Substation zone	353
Substation upgrade scope	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$37,137.30

Component cost (in-service year)	$39,773.73

Greenfield Substation Component

Component title	Kraken 500/230kV Switching Station (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Kraken
Substation description	Purchase & Install Substation Material: 1. (7), 500-230 kV, 480 MVA 1-Ph Transformers (includes one spare unit) 2. (6), 396 kV MO (S), 318 kV MCOV, Surge Arresters 3. (21), 180 kV MO (S), 144 kV MCOV, Surge Arresters 4. (6), 500 kV, 5000 Amps, 63 kA SF6 Circuit Breakers 5. (8), 500 kV, 5000 Amps, Double End Break Switches 6. (2), 500 kV, 4000 Amps, Double End Break Switches 7. (2), Motor Operators, 20K IN-LB 8. (6), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 9. (13), 230 kV, 4000 Amps, 80 kA Circuit Breakers 10. (34), 230 kV, 4000 Amps, Double End Break Switches 11. (2), 230 kV, 3000 Amps, Center- Break Disconnect Switches 12. (21), 230 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 13. Oil Containment system for the new Transformers 14. Rigid Bus and steel structures as required 15. Foundations as required including control house, equipment, and bus support stands 16. (2) 24’ X 60’ Control Enclosures 17. (1) 14’ X 25’ Security Enclosure 18. (2) 125 VDC, 400 Ah Station Battery (size to be verified during detail engineering) 19. (4) 50 Amp Battery Chargers (size to be verified during detail engineering) 20. Cable Trough, conduits and control cables as required 21. Conductor, connectors, insulators, and grounding materials as per engineering standards 22. Site preparation and grading as required 23. Ground grid for the entire as per Dominion Energy Standards 24. Approx. 3600 FT of Level 1 Security Fence along with Security Integrators and associated infrastructure 25. (2) 230 kV Transmission line backbones (by Transmission) 26. (2) Static pole structure and three spans of shield wires (by Transmission)
Nominal voltage	AC
Nominal voltage	500/230

Transformer Information

	Name	Capacity (MVA)
Transformer	Transformer 1	1400

	High Side	Low Side	Tertiary
Voltage (kV)	500	230	

Major equipment description	Purchase & Install Substation Material: 1. (7), 500-230 kV, 480 MVA 1-Ph Transformers (includes one spare unit) 2. (6), 396 kV MO (S), 318 kV MCOV, Surge Arresters 3. (21), 180 kV MO (S), 144 kV MCOV, Surge Arresters 4. (6), 500 kV, 5000 Amps, 63 kA SF6 Circuit Breakers 5. (8), 500 kV, 5000 Amps, Double End Break Switches 6. (2), 500 kV, 4000 Amps, Double End Break Switches 7. (2), Motor Operators, 20K IN-LB 8. (6), 500 kV Coupling Capacitor Voltage Transformers, Relay Accuracy 9. (13), 230 kV, 4000 Amps, 80 kA Circuit Breakers 10. (34), 230 kV, 4000 Amps, Double End Break Switches 11. (2), 230 kV, 3000 Amps, Center- Break Disconnect Switches 12. (21), 230 kV Coupling Capacitor Voltage Transformers, Relay Accuracy	
	Normal ratings	Emergency ratings
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Environmental assessment	Dominion to pursue all required permitting.	
Outreach plan	Real Estate acquisition by Dominion.	
Land acquisition plan	Real Estate acquisition by Dominion.	
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	$147,617,927.30
Component cost (in-service year)	$158,098,799.82

Substation Upgrade Component

Component title	Ladysmith Substation Relay Reset (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ladysmith
Substation zone	366
Substation upgrade scope	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$37,137.30
Component cost (in-service year)	$39,773.73

Substation Upgrade Component

Component title	Ladysmith CT Substation Relay Reset (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ladysmith CT
Substation zone	355
Substation upgrade scope	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$74,273.60
Component cost (in-service year)	$79,547.45

Substation Upgrade Component

Component title	Possum Point Substation Relay Reset (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Possum Point
Substation zone	366
Substation upgrade scope	Relay Reset.

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$37,137.30
Component cost (in-service year)	$39,773.73

Transmission Line Upgrade Component

Component title	Lines 2090 (Future Line 2301) Rebuild - Lee's Hill to Fredericksburg (99-3376)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 2090
Point A	Lee's Hill
Point B	Fredericksburg
Point C	
Terrain description	The project spans 6 miles in the Central Piedmont Region of Virginia. There is a slope change of approximately 100 feet over the length of the span. This project crosses several major arterial roads but no major waterways or railroads.
Existing Line Physical Characteristics	
Operating voltage	230

Conductor size and type	2-795 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	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	(2) DNO-11410 shield wire	
Rebuild line length	5.67 Miles	

Rebuild portion description	PERMANENT FACILITIES TO BE INSTALLED: 1. Install forty-one (41) 230kV custom engineered steel double circuit steel monopole suspension structures [Reference Drawing 12.610] on foundations as follows: a. Structures 2301/3-11 (9438/3-11), 2301/13-14 (9438/13-14), 2301/17-28 (9438/17-28), 2301/30-35 (9438/30-35), 2301/41-51 (9438/41-51), 2301/52A (9438/52A) 2. Install nine (9) 230kV custom engineered steel double circuit monopole double deadend structures [Reference Drawing 12.614] on foundations as follows: a. Structures 2301/2 (9438/2), 2301/12 (9438/12), 2301/15-16 (9438/15-16), 2301/29 (9438/29), 2301/52 (9438/52), 2301/53 (9438/53), 2301/54 (9348/54), 9438/54 3. Install five (5) 230kV custom engineered steel double circuit double deadend H-Frame structures [Reference Drawing 12.215] on foundations as follows: a. Structures 2301/36 (9348/36), 2301/37 (9348/37), 2301/38A (9348/37A) 2301/39 (9348/39), 2301/40 (9348/40) 4. Install three (3) 230kV custom engineered steel single circuit double deadend monopole structures [Reference 12.425] on foundations as follows: a. Structures 9348/1, 54A, 54B 5. Install two (2) set of 3-phase bundled (2) 768.2 ACSS/TW/HS risers to connect the switch to the main line. a. This includes the installation of two (2) set of floating deadend assemblies to be installed 6. Install 3-phase bundled (2) 768.2 ACSS/TW/HS (20/7) 250 MOT “Maumee” conductor as follows: a. 5.67 miles of Line 2301 from structures 2301/1A (2083/1) to 2301/54A b. 5.90 miles of Line 9438 from structures 9438/1A (2157/5397) the backbone structure in Lee’s Hill Substation. This is based on assumed structure locations and Google Earth measurements at Fredericksburg and Lee’s Hill substations since no GA providing termination details for line 9438 was available at the time that this scope was prepared. 7. Install dual (2) DNO-11410 OPGW as follows: a. 5.67 miles of Line 2301 from structures 2301/1A (2083/1A) to 2301/54A b. 5.90 miles of Line 9438 from structures 9438/1A (2157/5397) the backbone structure in Lee’s Hill Substation. This is based on assumed structure locations and Google Earth measurements at Fredericksburg and Lee’s Hill substations since no GA providing termination details for line 9438 was available at the time that this scope was prepared. c. Assumes 6 OPGW splices throughout the line. Refer to 993376 Conceptual Scope & One Lines for complete scope of work.
Right of way	No additional right of way is required 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	$38,648,010.01
Component cost (in-service year)	$41,392,018.71

Transmission Line Upgrade Component

Component title	Line 545 - Town Run Substation Cut-in (993454)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 545
Point A	Morrisville
Point B	Town Run
Point C	Bristers
Terrain description	The substation is located approximately in line with the existing transmission corridor.
Existing Line Physical Characteristics	
Operating voltage	500
Conductor size and type	2-2500 ACAR (84/7) 90°C MOT
Hardware plan description	Existing hardware will remain, and new hardware will be installed as needed for cut-in.
Tower line characteristics	Structures outside the new Town Run substation will be replaced with new deadend structures.
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	(2) DNO-10110 shield wire	
Rebuild line length	0.22	
Rebuild portion description	Refer to "993454 T-Line Scope & One Lines" for complete description.	
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	$3,804,993.40	
Component cost (in-service year)	$4,075,147.93	

Transmission Line Upgrade Component

Component title	Line 569 - Town Run Substation Cut-in (993454)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 545
Point A	Morrisville
Point B	Town Run
Point C	Loudoun
Terrain description	The substation is located approximately in line with the existing transmission corridor.
Existing Line Physical Characteristics	
Operating voltage	500
Conductor size and type	2-2500 ACAR (84/7) 90°C MOT
Hardware plan description	Existing hardware will remain, and new hardware will be installed as needed for cut-in.
Tower line characteristics	Structures outside the new Town Run substation will be replaced with new deadend structures.
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	(2) DNO-10110 shield wire	

Rebuild line length	0.22
Rebuild portion description	Refer to "993454 T-Line Scope & One Lines" for complete description.
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	$3,804,993.40
Component cost (in-service year)	$4,075,147.93

Greenfield Transmission Line Component

Component title	New 230 kV Line - Ladysmith to Kraken to New Post to Lees Hill (Temp Lines 9437/9438) (99-3315)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Ladysmith
Point B	New Post

Point C	Lees Hill	
	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	
Nominal voltage	AC	
Nominal voltage	230	
Line construction type	Overhead	
General route description	The line facing west of the corridor going north from Ladysmith Substation (Temp Line # 9437/9438) will be rerouted at structure 2089/17 to continue north along the ROW towards the Elmont/Fredericksburg Junction. A vertical configuration monopole line will be installed on the west side of the ROW, next to the existing 2090 & 256 tower line. At the Elmont/Fredericksburg Junction, line Temp Line # 9437/9438 will turn north and join line 2090 from structures 2090/106, terminating at New Post and Lees Hill Substations. Line 2090 structures along the Elmont/Fredericksburg Junction to Lees Hill will be replaced.	
Terrain description	The project area is in the Virginia Piedmont region with elevations ranging from approximately 112 to 300 feet. The terrain is predominately vegetated existing right-of-way consisting of minimal to moderate slopes. The line will include new crossings of Interstate 95, US 1, US 1 BUS, US 3, numerous secondary roads, Motto River, Matta River, Po River, Ni River, and Massaponax Creek.	
Right-of-way width by segment	Existing ROW will be used.	
Electrical transmission infrastructure crossings	To be determined in detailed design.	
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993315 Real Estate and Permitting Summary.	
Environmental impacts	Refer to section A.4 of 993315 Real Estate and Permitting Summary.	

Tower characteristics	• Install new weathering steel single circuit vertical configuration monopole line on the west side of the 2090/256/568 corridor. New line section will transition from existing structure 2089/17 and travel northeast along the 2090/256/568 ROW. See pole location sheet for structure details. • Install new conductor and OPGW for Temp Line # 9437 (2XXX) along a 4.5-mile section from Structure 2XXX/18 to 2090/106. • The single circuit monopole line will support only one OPGW on a davit arm facing the side supporting the circuit. The circuit will be facing the inside of the ROW. • Install OPGW Splices: o (1) at Structure 2089/17 o (1) at Structure 2090/106 • Total conductor length to be ordered for this section of the project: 161,000 ft • Total OPGW length to be ordered for this section of the project: 30,000 ft • Structures for line Temp Line # 9437 (2XXX) from 2090/104 to 2090/61 (FUTURE) will be installed previously under project 99-3183. • All OPGW and conductor for lines 2090 and Temp Line # 9437 (2XXX) between structure 2090/61 (FUTURE) and New Post backbone structures will be installed previously under project 99-3185. • Install conductor and OPGW: o Total conductor length to be ordered for this section of the project: 190,000 ft o Total OPGW length to be ordered for this section of the project: 35,000 ft • Install OPGW Splices • Structures for line Temp Line # 9438 (2XXX) between structure 2090/61 (2301/61) and Lees Hill backbone structures will be installed previously under project 99-3183. • Install conductor and OPGW: o Total conductor length to be ordered for this section of the project: 31,000 ft o Total OPGW length to be ordered for this section of the project: 7,000 ft • Install OPGW splice boxes: o (1) at structure 2301/54 o (1) at Lees Hill backbone structure
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	$35,488,973.07

Component cost (in-service year)	$38,008,690.00

Substation Upgrade Component

Component title	Ladysmith Substation Terminal Equipment Upgrade (99-3315)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ladysmith
Substation zone	355
Substation upgrade scope	Purchase & Install Substation Material: 1. Seven (7), 230kV, 4000A Double End Break Switches 2. One (1), 230kV, 4000A Center Break Switch 3. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 4. Three (3), 230kV Capacitor Coupling Voltage Transformers 5. Three (3), 180kV MO, 144kV MCOV Station Class Arrestors 6. Approximately 200 ft of 5 IN SCH 40 AL Tubular Bus and Connectors 7. Conductors, connectors, insulators, conduit, control cable, foundations, steel structures, trench, and grounding connections as per engineering standards. Remove Substation Material: 1. One (1), 230kV,63kAIC, 3000A, SF6 Circuit Breakers 2. One (1), 230kV,40kAIC, 3000A, SF6 Circuit Breakers 3. Six (6), 230kV, 3000A Center Break Switch Purchase & 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), 1340 – 24” Dual SEL-411L CD/Fiber Line Panel 4. One (1), 4506 – 3Ø CCVT Potential Makeup Box 5. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box One (1), Panel Retirement

Transformer Information

None

New equipment description	1. Seven (7), 230kV, 4000A Double End Break Switches 2. One (1), 230kV, 4000A Center Break Switch 3. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 4. Three (3), 230kV Capacitor Coupling Voltage Transformers 5. Three (3), 180kV MO, 144kV MCOV Station Class Arrestors
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 P&C design will be revised as part of the SPE Scope of Work.
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	$4,294,426.40
Component cost (in-service year)	$4,599,330.25

Substation Upgrade Component

Component title	Ladysmith CT Substation Terminal Equipment Upgrade (99-3315)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ladysmith CT
Substation zone	355
Substation upgrade scope	Purchase & Install Substation Material: 1. Two (2), 230kV, 4000A Double End Break Switches 2. Two (2), 230kV, 4000A Center Break Switch 3. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 4. Three (3), 230kV Capacitor Coupling Voltage Transformers 5. Conductors, connectors, insulators, conduit, control cable, foundations, steel structures, and grounding connections as per engineering standards. Remove Substation Material: 1. Two (2), 230kV,40kAIC, 3000A, SF6 Circuit Breakers 2. Four (4), 230kV, 3000A Center Break Switch Purchase & Install Relay Material: 1. Two (2), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 1340 – 24” Dual SEL-411L CD/Fiber Line Panel 3. One (1), 4506 – 3Ø CCVT Potential Makeup Box 4. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box 5. One (1), Panel Retirement

Transformer Information

None

New equipment description	1. Two (2), 230kV, 4000A Double End Break Switches 2. Two (2), 230kV, 4000A Center Break Switch 3. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 4. Three (3), 230kV Capacitor Coupling Voltage Transformers
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 P&C design will be revised as part of the SPE Scope of Work.
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	$2,383,757.30
Component cost (in-service year)	$2,553,003.75

Substation Upgrade Component

Component title	Lees Hill Substation Terminal Equipment Upgrade (99-3315)

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Lees Hill
Substation zone	355
Substation upgrade scope	Purchase & Install Substation Material: 1. Four (4), 230kV, 4000A Double End Break Switches 2. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 3. Six (6), 230kV Capacitor Coupling Voltage Transformers 4. Six (6), 180kV MO, 144kV MCOV Station Class Arrestors 5. Conductors, connectors, insulators, conduit, control cable, foundations, steel structures, trench, and grounding connections as per engineering standards. Purchase & 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), 1340 – 24” Dual SEL-411L CD/Fiber Line Panel 4. Two (2), 4506 – 3Ø CCVT Potential Makeup Box 5. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box

Transformer Information

None

New equipment description	1. Four (4), 230kV, 4000A Double End Break Switches 2. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 3. Six (6), 230kV Capacitor Coupling Voltage Transformers 4. Six (6), 180kV MO, 144kV MCOV Station Class Arrestors
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 P&C design will be revised as part of the SPE Scope of Work.
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	$2,441,840.90
Component cost (in-service year)	$2,615,211.71

Substation Upgrade Component

Component title	New Post Substation Terminal Equipment Upgrade (99-3315)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	New Post
Substation zone	355
Substation upgrade scope	Purchase & Install Substation Material: 1. Four (4), 230kV, 4000A Double End Break Switches 2. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 3. Six (6), 230kV Capacitor Coupling Voltage Transformers 4. Six (6), 180kV MO, 144kV MCOV Station Class Arrestors 5. Conductors, connectors, insulators, conduit, control cable, foundations, steel structures, trench, and grounding connections as per engineering standards. Purchase & 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), 1340 – 24” Dual SEL-411L CD/Fiber Line Panel 4. Two (2), 4506 – 3Ø CCVT Potential Makeup Box 5. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box

Transformer Information

None

New equipment description	1. Four (4), 230kV, 4000A Double End Break Switches 2. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers 3. Six (6), 230kV Capacitor Coupling Voltage Transformers 4. Six (6), 180kV MO, 144kV MCOV Station Class Arrestors
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 P&C design will be revised as part of the SPE Scope of Work.
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	$2,696,612.70
Component cost (in-service year)	$2,888,072.52

Transmission Line Upgrade Component

Component title	Line 2083 Cut-in to Allman Substation (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Lines 2083, 2157 & 2305
Point A	Fredericksburg
Point B	Allman
Point C	Birchwood
Terrain description	Detailed engineering survey required.

Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	2-721 ACAR (18/19) 90°C MOT [0.87 miles], 2-636.0 ACSR (24/7) 150°C MOT [0.05 miles], 2-545.6 ACAR (15/7) 90°C MOT [11.33 miles], 1534 ACAR (42/19) 90°C MOT [3.05 miles]
Hardware plan description	New hardware will be used for cut-in section.
Tower line characteristics	New structures will be used for cut-in section. Existing structures to remain are assumed to be in good condition.
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	0.15
Rebuild portion description	Refer to "993192 Conceptual Scope & One line" for completed description.
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	$3,318,996.67
Component cost (in-service year)	$3,554,645.43

Transmission Line Upgrade Component

Component title	Line 2157 Cut-in to Allman Substation (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 2157
Point A	Fredericksburg
Point B	Allman
Point C	Cranes Corner
Terrain description	Detailed engineering survey required.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	2-636.0 ACSR (24/7) 150°C MOT
Hardware plan description	New hardware will be used for cut-in section.
Tower line characteristics	New structures will be used for cut-in section. Existing structures to remain are assumed to be in good condition

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	0.15	
Rebuild portion description	Refer to "993192 Conceptual Scope & One line" for completed description.	
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	$3,318,996.67
Component cost (in-service year)	$3,554,645.43

Transmission Line Upgrade Component

Component title	Line 2305 Cut-in to Allman Substation (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Lines 2083, 2157 & 2305
Point A	Fredericksburg
Point B	Allman
Point C	Aquia Harbour
Terrain description	Detailed engineering survey required.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	2-721 ACAR (18/19) 90°C MOT [0.87 miles], 2-636.0 ACSR (24/7) 150°C MOT [0.05 miles], 2-545.6 ACAR (15/7) 90°C MOT [11.33 miles], 1534 ACAR (42/19) 90°C MOT [3.05 miles]
Hardware plan description	New hardware will be used for cut-in section.
Tower line characteristics	New structures will be used for cut-in section. Existing structures to remain are assumed to be in good condition
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	0.15	
Rebuild portion description	Refer to "993192 Conceptual Scope & One line" for completed description.	
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	$3,318,996.67	
Component cost (in-service year)	$3,554,645.43	

Transmission Line Upgrade Component

Component title	Line 256 / Line 2XX Cut-In to Kraken Substation (99-3387)

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 256
Point A	Ladysmith
Point B	Kraken
Point C	Four Rivers
Terrain description	Detailed engineering survey required.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	2-795 ACSR (26/7) 150°C MOT
Hardware plan description	New Hardware will be installed for cut-in scope.
Tower line characteristics	Existing Structures are assumed to be in good condition. New structures will be installed for cut-in scope.

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	0.45 Miles
Rebuild portion description	Refer to "993387_ Conceptual Scope & One Lines" for description of the complete scope.

Right of way	Existing ROW is 250’ from Ladysmith to Possum and from Fredericksburg to Pinewood it is 200’, additional ROW will need to be acquired in detailed design to accommodate the new 500/230 kV lines.
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	$5,398,872.00
Component cost (in-service year)	$5,782,192.00

Transmission Line Upgrade Component

Component title	Line 568 / Line 5XXX Cut-In to Kraken Substation (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 568
Point A	Ladysmith
Point B	Kraken
Point C	Possum Point

Terrain description	Detailed engineering survey required.
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 installed for cut-in scope.
Tower line characteristics	Existing Structures are assumed to be in good condition. New structures will be installed for cut-in scope.
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	(2) DNO-10110 shield wire
Rebuild line length	0.26 Miles
Rebuild portion description	Refer to "993387_ Conceptual Scope & One Lines" for description of the complete scope.
Right of way	Existing ROW is 250’ from Ladysmith to Possum and from Fredericksburg to Pinewood it is 200’, additional ROW will need to be acquired in detailed design to accommodate the new 500/230 kV lines.
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	$7,198,496.01
Component cost (in-service year)	$7,709,589.22

Transmission Line Upgrade Component

Component title	Line 2090 / Line 2XXX Cut-In to Kraken Substation (99-3387)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line 2090
Point A	Ladysmith
Point B	Kraken
Point C	Fredericksburg
Terrain description	Detailed engineering survey required.
Existing Line Physical Characteristics	
Operating voltage	230
Conductor size and type	2-795 ACSR (26/7) 150°C MOT
Hardware plan description	New Hardware will be installed for cut-in scope.

Tower line characteristics	Existing Structures are assumed to be in good condition. New structures will be installed for cut-in scope.	
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	0.44 Miles	
Rebuild portion description	Refer to "993387_ Conceptual Scope & One Lines" for description of the complete scope.	
Right of way	Existing ROW is 250’ from Ladysmith to Possum and from Fredericksburg to Pinewood it is 200’, additional ROW will need to be acquired in detailed design to accommodate the new 500/230 kV lines.	
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	$5,398,872.00
Component cost (in-service year)	$5,782,192.00

Greenfield Transmission Line Component

Component title	New 230 kV Line (2XXX1) - Kraken to New Post (99-3446)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Kraken
Point B	New Post
Point C	

	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
Nominal voltage	AC
Nominal voltage	230
Line construction type	Overhead
General route description	New structures shall be placed in expanded Row adjacent to existing line 2090 using primarily custom engineered double circuit 230kV steel structures on concrete foundations.

Terrain description	The project area is in the Virginia Piedmont region with elevations ranging from approximately 150 to 265 feet. The terrain is predominately vegetated existing right-of-way, consisting of minimal to moderate slopes, with areas of dense residential development. The line will include new crossings of Poni River, Massaponax Creek, Routes 17, 3, and 1, as well as numerous secondary roadways.
Right-of-way width by segment	Current ROW for existing corridor containing line 2090 and 47 width varies between 100-200’ based on existing plan and profiles, map viewer, or right of way extents provided by Dominion. An additional 60' of right of way is required for the greenfield line for the extent of the line.
Electrical transmission infrastructure crossings	To be determined in detailed design.
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993446 Real Estate and Permitting Summary.
Environmental impacts	Refer to section A.4 of 993446 Real Estate and Permitting Summary.
Tower characteristics	Refer to "993446 Conceptual Scope & One lines" for complete description.
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	$54,293,804.00
Component cost (in-service year)	$58,148,664.00

Greenfield Transmission Line Component

Component title	New 230 kV Line (2XX2) - New Post to Lee's Hill (99-3446)	
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.	
Point A	New Post	
Point B	Lee's Hill	
Point C		
	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	
Nominal voltage	AC	
Nominal voltage	230	
Line construction type	Overhead	
General route description	New structures shall be placed in expanded Row adjacent to existing line 2090 using primarily custom engineered double circuit 230kV steel structures on concrete foundations.	
Terrain description	The project area is in the Virginia Piedmont region with elevations ranging from approximately 150 to 265 feet. The terrain is predominately vegetated existing right-of-way, consisting of minimal to moderate slopes, with areas of dense residential development. The line will include new crossings of Poni River, Massaponax Creek, Routes 17, 3, and 1, as well as numerous secondary roadways.	
Right-of-way width by segment	Current ROW for existing corridor containing line 2090 and 47 width varies between 100-200’ based on existing plan and profiles, map viewer, or right of way extents provided by Dominion. An additional 60' of right of way is required for the greenfield line for the extent of the line.	
Electrical transmission infrastructure crossings	To be determined in detailed design.	
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993446 Real Estate and Permitting Summary.	

Environmental impacts	Refer to section A.4 of 993446 Real Estate and Permitting Summary.
Tower characteristics	Refer to "993446 Conceptual Scope & One lines" for complete description.
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	$13,573,451.01
Component cost (in-service year)	$14,537,166.00

Greenfield Transmission Line Component

Component title	New 230 kV Line (2XX3) - Lee's Hill to Allman (99-3446)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	New Post
Point B	Lee's Hill
Point C	

	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	
Nominal voltage	AC	
Nominal voltage	230	
Line construction type	Overhead	
General route description	New structures shall be placed in expanded Row adjacent to existing line 2090 using primarily custom engineered double circuit 230kV steel structures on concrete foundations.	
Terrain description	The project area is in the Virginia Piedmont region with elevations ranging from approximately 150 to 265 feet. The terrain is predominately vegetated existing right-of-way, consisting of minimal to moderate slopes, with areas of dense residential development. The line will include new crossings of Poni River, Massaponax Creek, Routes 17, 3, and 1, as well as numerous secondary roadways.	
Right-of-way width by segment	Current ROW for existing corridor containing line 2090 and 47 width varies between 100-200’ based on existing plan and profiles, map viewer, or right of way extents provided by Dominion. An additional 60' of right of way is required for the greenfield line for the extent of the line.	
Electrical transmission infrastructure crossings	To be determined in detailed design.	
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 993446 Real Estate and Permitting Summary.	
Environmental impacts	Refer to section A.4 of 993446 Real Estate and Permitting Summary.	
Tower characteristics	Refer to "993446 Conceptual Scope & One lines" for complete description.	
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	$67,867,255.01
Component cost (in-service year)	$72,685,830.11

Greenfield Substation Component

Component title	New 230kV Switching Station - Allman (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Allman
Substation description	Purchase and install substation material: 1. Approx. 42’ x 150’ 230 kV GIS building including the following: i. (13), 230kV, 80 kAIC, 4000A, Circuit Breakers (with provision for two (2) additional breakers) ii. (36), 230 kV, 4000A, Group Operated Disconnect Switches w/grounding switches as required (with the provision for (6) additional switches) iii. (8), 230 kV, 4000A, Line Terminal equipment iv. Provision for (2) 230 kV future line terminals v. Current Transformers and Potential Transformers as required vi. Gas Insulated Bus, connectors, gas to air bushings as required 2. (24), 230 kV, CCVT’s, Relay Accuracy 3. (30), 180 kV, 144 kV MCOV Surge Arresters 4. (6), 230 kV, 167 kVA, Power Voltage Transformers (size to be verified during detail engineering) 5. (2), 230 kV, 3000 A, 2-poles, center break switches 6. (2), 230 kV, 3000 A, 1-pole, center break switches 7. (1), 24’ x 80’ Control Enclosure CE1 for 230kV infrastructure 8. (1), 125 VDC, 500 Ah batteries w/two 50A chargers (size to be verified during detail engineering) 9. Approx. 1300 FT of Level 1 security fence, security integrators, and associated infrastructure. 10. Site development, access roads and stormwater management as required 11. Ground grid for the entire substation 12. Structural steel and foundations as per Dominion Energy Standards 13. Bus, conductor, connectors, conduits, control cables, foundations, and grounding material as per engineering standards 14. (8), 230 kV Backbone structure (by Transmission)
Nominal voltage	AC

Nominal voltage	230

Transformer Information

None

Major equipment description	1. Approx. 42’ x 150’ 230 kV GIS building including the following: i. (13), 230kV, 80 kAIC, 4000A, Circuit Breakers (with provision for two (2) additional breakers) ii. (36), 230 kV, 4000A, Group Operated Disconnect Switches w/grounding switches as required (with the provision for (6) additional switches) iii. (8), 230 kV, 4000A, Line Terminal equipment iv. Provision for (2) 230 kV future line terminals v. Current Transformers and Potential Transformers as required vi. Gas Insulated Bus, connectors, gas to air bushings as required 2. (24), 230 kV, CCVT’s, Relay Accuracy 3. (30), 180 kV, 144 kV MCOV Surge Arresters 4. (6), 230 kV, 167 kVA, Power Voltage Transformers (size to be verified during detail engineering) 5. (2), 230 kV, 3000 A, 2-poles, center break switches 6. (2), 230 kV, 3000 A, 1-pole, center break switches 7. (1), 24’ x 80’ Control Enclosure CE1 for 230kV infrastructure 8. (1), 125 VDC, 500 Ah batteries w/two 50A chargers (size to be verified during detail engineering)

	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000

Environmental assessment	Dominion will pursue all required permitting.
Outreach plan	Real Estate acquisition by Dominion.
Land acquisition plan	Real Estate acquisition by Dominion.
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	$117,292,929.60
Component cost (in-service year)	$125,620,728.00

Substation Upgrade Component

Component title	Aquia Harbor Substation Upgrade (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Aquia Harbor
Substation zone	353
Substation upgrade scope	(1) Relay Reset

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	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	$37,137.00
Component cost (in-service year)	$39,774.00

Substation Upgrade Component

Component title	Birchwood Substation Upgrade (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Birchwood
Substation zone	354
Substation upgrade scope	(1) Relay Reset

Transformer Information

None

New equipment description	NA

Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	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	$37,137.00
Component cost (in-service year)	$39,774.00

Substation Upgrade Component

Component title	Cranes Corner Substation Upgrade (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Cranes Corner
Substation zone	353

Substation upgrade scope	(1) Relay Reset

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	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	$37,137.00
Component cost (in-service year)	$39,774.00

Substation Upgrade Component

Component title	Fredericksburg Substation Upgrade (99-3192)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Fredericksburg
Substation zone	353
Substation upgrade scope	(3) Relay Resets

Transformer Information

None

New equipment description	NA
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except as mentioned in this Project Summary. 2. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.
Real-estate description	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	$111,411.00
Component cost (in-service year)	$119,321.00

Substation Upgrade Component

Component title	Elmont Substation Terminal Equipment Upgrade (99-3337)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Elmont
Substation zone	366
Substation upgrade scope	Purchase & Install Substation Material: 1. Three (3), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Six (6), 500kV, 5000A Double End Break Switches 3. Two (2), 500kV, 5000A Motor Operated Double End Break Switches 4. Two (2) 500kV, 5000A Wave Traps 5. Bus, conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Remove Substation Material: 1. One (1), 500kV, 40kAIC, 3000A, SF6 Circuit Breaker 2. One (1), 500kV, 50kAIC, 3000A, SF6 Circuit Breaker 3. One (1), 500kV, 40kAIC, 4000A, SF6 Circuit Breaker 4. Five (5), 500kV, 3000A Double End Break Switches 5. One (1), 500kV, 4000A Double End Break Switch 6. Two (2), 500kV, 3000A Motor Operated Double End Break Switches 7. One (1) 500kV, 3000A Wave Trap 8. One (1), 500kV, 4000A Wave Trap 9. Bus, conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Purchase & Install Relay Material: 1. Three (3), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 2. Three (3), 4510 – SEL-2411 Equipment Annunciator 3. Three (3), 4535 or 4536 – 500kV Circuit Breaker Condition Monitor 4. Three (3), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box 5. Three (3), 1340 – 24” Dual SEL-411L CD/Fiber Line Panel

Transformer Information

None

New equipment description	1. Three (3), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Six (6), 500kV, 5000A Double End Break Switches 3. Two (2), 500kV, 5000A Motor Operated Double End Break Switches 4. Two (2) 500kV, 5000A Wave Traps
Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole pad connections to maintain 5000A ratings. 3. Relay Settings and P&C design will be revised as part of the SPE Scope of Work.
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	$8,902,480.00
Component cost (in-service year)	$9,534,556.08

Substation Upgrade Component

Component title	Ladysmith Substation Expansion (99-3375)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ladysmith
Substation zone	366

Substation upgrade scope	Purchase & Install Substation Material: 1. Two (2), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Three (3), 500kV, 5000A Double End Break Switches 3. Three (3), 396kV, 318kV MCOV Station Class Surge Arresters 4. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Relocate Substation Material: 1. Five (5), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. One (1), 500kV, 50kAIC, 4000A, Live Tank Circuit Breaker 3. Three (3), 500kV, External Circuit Breaker CTs 4. Nine (9), 500kV, 5000A Double End Break Disconnect Switches 5. One (1), 500kV, 3000A Motor Operated Double End Break Disconnect Switch 6. Two (2), 500kV, 5000A, 90-200kHz Wave Traps 7. One (1), 500kV, 4000A, 115-300kHz Wave Trap 8. Nine (9), 396kV, 318kV MCOV Station Class Surge Arresters 9. Twelve (12), 500kV Coupling Capacitor Voltage Transformers, Relay Accuracy Remove Substation Material: 1. Three (3), 500kV, 3000A Double End Break Switches 2. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Purchase & Install Relay Material: 1. Two (2), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 2. Two (2), 4510 – SEL-2411 Equipment Annunciator 3. Two (2), 4535 or 4536 – 500kV Circuit Breaker Condition Monitor 4. Two (2), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box

Transformer Information

None

New equipment description	1. Two (2), 500kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Three (3), 500kV, 5000A Double End Break Switches 3. Three (3), 396kV, 318kV MCOV Station Class Surge Arresters
Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole pad connections to maintain 5000A ratings. 3. Relay Settings and P&C design will be revised as part of the SPE Scope of Work.
Real-estate description	The substation footprint 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	$8,236,669.10
Component cost (in-service year)	$8,821,472.50

Substation Upgrade Component

Component title	Fredericksburg Substation Terminal Equipment Upgrade (99-3376)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Fredericksburg
Substation zone	353
Substation upgrade scope	Purchase & Install Substation Material: 1. Two (2), 230kV, 4000A, 80kA, SF6 Circuit Breaker. 2. Four (4), 230kV, 4000A Center Break Switches. 3. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Removal Material: 1. One (1), 230kV, 3000A, 63kA, SF6 Circuit Breaker. 2. One (1), 230kV, 3000A, 40kA, SF6 Circuit Breaker. 3. Three (3), 230kV, 3000A Center Break Switches. 4. One (1), 230kV, 2000A Center Break Switches. 5. Conductor, connectors, conduit, control cable, foundations, structures, and grounding material as per engineering standards. Purchase & Install Relay Material: 1. Two (2), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 2. Two (2), 4510 - SEL-2411 Equipment Annunciator 3. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box

Transformer Information

None

New equipment description	1. Two (2), 230kV, 4000A, 80kA, SF6 Circuit Breaker. 2. Four (4), 230kV, 4000A Center Break Switches.
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 P&C design will be revised as part of the SPE Scope of Work. 3. It was determined that the GA would not need any additional equipment or equipment relocation thus it has been omitted from the submittal.

Real-estate description	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	$2,188,500.00
Component cost (in-service year)	$2,343,883.50

Congestion Drivers

None

Existing Flowgates

None

New Flowgates

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

Financial Information

Capital spend start date	02/2025
Construction start date	06/2025
Project Duration (In Months)	58

Cost Containment Commitment

Cost cap (in current year)	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Cost cap (in-service year)	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Components covered by cost containment

1. New 500 kV Line - North Anna to Kraken to Town Run (993455) - Dominion
2. Kraken Substation Upgrade (993455) - Dominion
3. Town Run Substation Upgrade (993455) - Dominion
4. New 500kV switching station - Town Run (99-3454) - Dominion
5. Kraken 500/230kV Switching Station (99-3387) - Dominion
6. Line 545 - Town Run Substation Cut-in (993454) - Dominion
7. Line 569 - Town Run Substation Cut-in (993454) - Dominion
8. Line 568 / Line 5XXX Cut-In to Kraken Substation (99-3387) - Dominion

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	No
ROW / land acquisition	No
Materials & equipment	No
Construction & commissioning	No

Construction management	No
Overheads & miscellaneous costs	No
Taxes	No
AFUDC	No
Escalation	No
Additional Information	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Is the proposer offering a binding cap on ROE?	Yes
Would this ROE cap apply to the determination of AFUDC?	Yes
Would the proposer seek to increase the proposed ROE if FERC finds that a higher ROE would not be unreasonable?	No
Is the proposer offering a Debt to Equity Ratio cap?	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Additional Comments

None