

# Reactive Power VAR Reinforcements

## 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	231
Project title	Reactive Power VAR Reinforcements
Project description	Install 230KV/500kV shunt cap banks (static devices) as well as STATCOMs (dynamic devices) and associated equipment to address the reactive power needs of the system
Email	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Project in-service date	12/2027
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

## Project Components

1. Aspen
2. Aviator Substation
3. Barrister substation
4. Beaumeade Substation
5. Dawkins Branch Substation

6. Dooms Substation
7. DTC Substation
8. Golden Substation
9. Loudoun Substation
10. Mars Substation
11. Morrisville Substation
12. Nimbus Substation
13. Ocean Court Substation
14. Poland Road Substation
15. Rixlew Substation
16. Rollins Ford Substation
17. Spotsylvania Substation
18. Stratus Substation
19. Vint Hill Substation
20. Wishing Star Substation
21. Youngs Branch Substation

### **Substation Upgrade Component**

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

Substation upgrade scope

Purchase and install substation material: 1. Include the following within the 500 kV GIS building being built under the 99-2971 project: a. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers b. Two (2) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. c. Two (2) 500 kV relaying accuracy CCVTs. d. Gas-insulated bus, connectors, gas to air bushings as required. 2. One (1), 343.2MVA, 540.4KV, Capacitor Bank (Three Ø). 3. Three (3), 396kV, 318kV MCOV Surge Arresters. 4. Foundations and steel structures as required per current engineering standards. 5. Gas-insulated bus, conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. Two (2), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526\_B – Sync Breaker Fiber M.U. Box 8. One (1), 1816 – 28” SEL-787 Gas Zone Differential Panel 9. One (1), 4200 – Bus Differential C.T. Makeup Box

## Transformer Information

None

New equipment description

1. Include the following within the 500 kV GIS building being built under the 99-2971 project: a. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers b. Two (2) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. c. Two (2) 500 kV relaying accuracy CCVTs. d. Gas-insulated bus, connectors, gas to air bushings as required. 2. One (1), 343.2MVA, 540.4KV, Capacitor Bank (Three Ø). 3. Three (3), 396kV, 318kV MCOV Surge Arresters. 4. One (1), 4521 – Synchronous Breaker Monitor 5. One (1), 4510 - SEL-2411 Breaker Annunciator 6. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 7. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 8. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 9. Two (2), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 10. One (1), 4526\_B – Sync Breaker Fiber M.U. Box 11. One (1), 1816 – 28” SEL-787 Gas Zone Differential Panel 12. One (1), 4200 – Bus Differential C.T. Makeup Box

Substation assumptions

The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.

Real-estate description

Substation is not being expanded.

Construction responsibility

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

Benefits/Comments

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

## Component Cost Details - In Current Year \$

Engineering & design

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

Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$6,779,559.10
Component cost (in-service year)	\$7,260,907.69

### **Substation Upgrade Component**

Component title	Aviator Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Aviator
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

### **Transformer Information**

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs. 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. 9. One (1), 4521 – Synchronous Breaker Monitor 10. One (1), 4510 - SEL-2411 Breaker Annunciator 11. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 12. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 13. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 14. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 15. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$2,056,883.00
Component cost (in-service year)	\$2,202,921.69

## Substation Upgrade Component

Component title	Barrister substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Barrister
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

## Transformer Information

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. 9. One (1), 4521 – Synchronous Breaker Monitor 10. One (1), 4510 - SEL-2411 Breaker Annunciator 11. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 12. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 13. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 14. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 15. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.

Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$2,056,883.00
Component cost (in-service year)	\$2,202,921.69

**Substation Upgrade Component**

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

Substation upgrade scope

Purchase and install substation material: 1. Approximately 450' x 230' site preparation and grading as required for installation of the STATCOM Station. 2. One (1), 300MVAR STATCOM: a. One (1), 300 MVA, 230 - XX kV, three-phase Transformers (secondary voltage rating will be finalized by the STATCOM requirements) b. Three (3), 54kV, 42kV MCOV, Surge Arresters c. Three (3), 108kV, 144kV MCOV, Surge Arresters d. One (1), 200A, Fused Disconnects for STATCOM Station Service e. One (1), 23kV, 12A Fuses for STATCOM Station Service f. Three (3), 48kV, 39kV MCOV, Surge Arresters for STATCOM Station Service g. One (1), 34.5kV, 350kVA, 3-Phase Transformers for STATCOM Station Service h. One (1), 1000A Fused Disconnects for STATCOM Station Service i. One (1), 842A, 240VAC, 3- Phase Voltage Regulators for STATCOM Station Service j. One (1), 259kW Three Phase Generators for STATCOM Station Service k. Two (2), Propane Storage Tanks for STATCOM Station Service l. One (1), 800A Three Phase Outdoor ATS For STATCOM Station Service 3. Oil Containment System for the Transformer 4. Six (6), Surge Arresters 180 kV MO, 144 kV MCOV 5. Six (6), 230kV, Relaying Accuracy CCVT's 6. Two (2), 4000A, 80kAIC, SF6, Circuit Breakers 7. Five (5), 230kV, 4000A, 3-Phase Double End Break Switches 8. One (1), 230kV, 4000A, 3-Phase Double End Break Gang Operated Switches (for PVT's). 9. Three (3), 230kV, 167KVA Power PT's for Station Service. 10. One (1), SVC Control Enclosure 24' x 80' 11. Approximately 1200 linear FT of fence around the station along with the security cameras and integrators as per Design 4. 12. Foundations and steel structures as required per current engineering standards. 13. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. [Refer to 993093\_ Beaumeade Substation Scope of Work for Relay Materials to be installed]

## Transformer Information

None

New equipment description

1. Approximately 450' x 230' site preparation and grading as required for installation of the STATCOM Station. 2. One (1), 300MVAR STATCOM: a. One (1), 300 MVA, 230 - XX kV, three-phase Transformers (secondary voltage rating will be finalized by the STATCOM requirements) b. Three (3), 54kV, 42kV MCOV, Surge Arresters c. Three (3), 108kV, 144kV MCOV, Surge Arresters d. One (1), 200A, Fused Disconnects for STATCOM Station Service e. One (1), 23kV, 12A Fuses for STATCOM Station Service f. Three (3), 48kV, 39kV MCOV, Surge Arresters for STATCOM Station Service g. One (1), 34.5kV, 350kVA, 3-Phase Transformers for STATCOM Station Service h. One (1), 1000A Fused Disconnects for STATCOM Station Service i. One (1), 842A, 240VAC, 3- Phase Voltage Regulators for STATCOM Station Service j. One (1), 259kW Three Phase Generators for STATCOM Station Service k. Two (2), Propane Storage Tanks for STATCOM Station Service l. One (1), 800A Three Phase Outdoor ATS For STATCOM Station Service 3. Oil Containment System for the Transformer 4. Six (6), Surge Arresters 180 kV MO, 144 kV MCOV 5. Six (6), 230kV, Relaying Accuracy CCVT's 6. Two (2), 4000A, 80kAIC, SF6, Circuit Breakers 7. Five (5), 230kV, 4000A, 3-Phase Double End Break Switches 8. One (1), 230kV, 4000A, 3-Phase Double End Break Gang Operated Switches (for PVT's). 9. Three (3), 230kV, 167KVA Power PT's for Station Service. 10. One (1), SVC Control Enclosure 24' x 80' [Refer to 993093\_ Beaumeade Substation Scope of Work for Relay equipment]



Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$43,573,027.00
Component cost (in-service year)	\$46,666,711.92
<b>Substation Upgrade Component</b>	
Component title	Dawkins Branch Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Dawkins Branch
Substation zone	353

Substation upgrade scope

Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526\_B – Sync Breaker Fiber M.U. Box

## Transformer Information

None

New equipment description

1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. 9. One (1), 4521 – Synchronous Breaker Monitor 10. One (1), 4510 - SEL-2411 Breaker Annunciator 11. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 12. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 13. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 14. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 15. One (1), 4526\_B – Sync Breaker Fiber M.U. Box

Substation assumptions

The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.

Real-estate description

Substation is not being expanded.

Construction responsibility

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

Benefits/Comments

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

## Component Cost Details - In Current Year \$

Engineering & design

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

Permitting / routing / siting

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

ROW / land acquisition

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

Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$2,056,883.00
Component cost (in-service year)	\$2,202,921.69

### **Substation Upgrade Component**

Component title	Dooms Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Dooms
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. One (1), 343.2MVA, 540.4KV, Capacitor Bank (Three Ø). 2. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 500kV, 5000A, 3-Phase Double End Break Switches. 4. Three (3), 396kV, 318 kV MCOV Surge Arresters. 5. Two (2) 500 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

### **Transformer Information**

None

New equipment description	1. One (1), 343.2MVAR, 540.4KV, Capacitor Bank (Three Ø). 2. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 500kV, 5000A, 3-Phase Double End Break Switches. 4. Three (3), 396kV, 318 kV MCOV Surge Arresters. 5. Two (2) 500 kV relaying accuracy CCVTs 6. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$3,004,636.00
Component cost (in-service year)	\$3,217,965.16
<b>Substation Upgrade Component</b>	
Component title	DTC Substation

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	DTC
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box
<b>Transformer Information</b>	
None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. 9. One (1), 4521 – Synchronous Breaker Monitor 10. One (1), 4510 - SEL-2411 Breaker Annunciator 11. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 12. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 13. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 14. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 15. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

**Component Cost Details - In Current Year \$**

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$2,077,126.00
Component cost (in-service year)	\$2,224,601.95

**Substation Upgrade Component**

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

Substation upgrade scope

Purchase and install substation material: 1. Include the following within the 500 kV GIS building being built under the 99-2971 project: a. Two (2) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. b. Four (4) 500 kV relaying accuracy CCVTs. c. Gas insulated bus, connectors, gas to air bushings as required. 2. Include the following within the 230 kV GIS building being built under the 99-2971 project: a. Two (2) 230 kV, 4000 A, Group operated disconnect switches with grounding switches as required. b. Four (4) 500 kV relaying accuracy CCVTs. c. Gas insulated bus, connectors, gas to air bushings as required. 3. Two (2), 343.2MVA, 540.4KV, Capacitor Bank (Three Ø). 4. Two (2), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 5. Two (2), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 6. Two (2), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 7. Six (6), 396kV, 318kV MCOV Surge Arresters. 8. Six (6), 180kV, 144kV MCOV Surge Arresters. 9. Foundations and steel structures as required per current engineering standards. 10. Gas-insulated bus, conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. Four (4), 4521 – Synchronous Breaker Monitor 2. Four (4), 4510 - SEL-2411 Breaker Annunciator 3. Four (4), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. Four (4), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Eight (8), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. Eight (8), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. Four (4), 4526\_B – Sync Breaker Fiber M.U. Box 8. Two (2), 1816 – 28” SEL-787 Gas Zone Differential Panel 9. Four (4), 4200 – Bus Differential C.T. Makeup Box

## Transformer Information

None

New equipment description

1. Include the following within the 500 kV GIS building being built under the 99-2971 project: a. Two (2) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. b. Four (4) 500 kV relaying accuracy CCVTs. c. Gas insulated bus, connectors, gas to air bushings as required. 2. Include the following within the 230 kV GIS building being built under the 99-2971 project: a. Two (2) 230 kV, 4000 A, Group operated disconnect switches with grounding switches as required. b. Four (4) 500 kV relaying accuracy CCVTs. c. Gas insulated bus, connectors, gas to air bushings as required. 3. Two (2), 343.2MVA, 540.4KV, Capacitor Bank (Three Ø). 4. Two (2), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 5. Two (2), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 6. Two (2), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 7. Six (6), 396kV, 318kV MCOV Surge Arresters. 8. Six (6), 180kV, 144kV MCOV Surge Arresters. 9. Four (4), 4521 – Synchronous Breaker Monitor 10. Four (4), 4510 - SEL-2411 Breaker Annunciator 11. Four (4), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 12. Four (4), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 13. Eight (8), 4518 – Cap. Bank Mid-Point Potential M.U. Box 14. Eight (8), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 15. Four (4), 4526\_B – Sync Breaker Fiber M.U. Box 16. Two (2), 1816 – 28” SEL-787 Gas Zone Differential Panel 17. Four (4), 4200 – Bus Differential C.T. Makeup Box

Substation assumptions

The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.

Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$8,013,168.00
Component cost (in-service year)	\$8,582,102.93
<b>Substation Upgrade Component</b>	
Component title	Loudoun Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Loudoun
Substation zone	352



Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 6. Approximately 100 FT of Cable Trough 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4526_B – Sync Breaker Fiber M.U. Box
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**Transformer Information**

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. One (1), 4521 – Synchronous Breaker Monitor 6. One (1), 4510 - SEL-2411 Breaker Annunciator 7. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 8. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 9. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 10. One (1), 4526_B – Sync Breaker Fiber M.U. Box

Substation assumptions	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.
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Real-estate description	Substation is not being expanded.
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Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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**Component Cost Details - In Current Year \$**

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$1,931,680.00
Component cost (in-service year)	\$2,068,829.28

**Substation Upgrade Component**

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

## Substation upgrade scope

Purchase and install substation material: 1. One (1), 300MVAR STATCOM: a. One (1), 300 MVA, 500 - XX kV, three-phase Transformers (secondary voltage rating will be finalized by the STATCOM requirements) b. Three (3), 54kV, 42kV MCOV, Surge Arresters c. Three (3), 108kV, 144kV MCOV, Surge Arresters d. One (1), 200A, Fused Disconnects for STATCOM Station Service e. One (1), 23kV, 12A Fuses for STATCOM Station Service f. Three (3), 48kV, 39kV MCOV, Surge Arresters for STATCOM Station Service g. One (1), 34.5kV, 350kVA, 3-Phase Transformers for STATCOM Station Service h. One (1), 1000A Fused Disconnects for STATCOM Station Service i. One (1), 842A, 240VAC, 3- Phase Voltage Regulators for STATCOM Station Service j. One (1), 259kW Three Phase Generators for STATCOM Station Service k. Two (2), Propane Storage Tanks for STATCOM Station Service l. One (1), 800A Three Phase Outdoor ATS For STATCOM Station Service 2. Oil Containment System for the Transformer 3. Six (6), Surge Arresters 396 kV MO, 318 kV MCOV 4. Three (3), Surge Arresters 45 kV MO, 36.5 kV MCOV 5. Two (2), 19.9 - .12/.24 kV, 167 KVA, Station Service Transformer 6. Two (2), SMD-20 Fused Disconnect and Current Limiting Fuses 7. Include the following within the 500 kV GIS building being built under the 99-2972 project: a. Two (2) 500 kV, 63 kAIC, 5000A Circuit Breakers b. Four (4) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. c. Three (3) 500 kV relaying accuracy CCVTs. d. Gas insulated bus, connectors, gas to air bushings as required. 8. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 9. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 10. Include the following within the 230 kV GIS building being built under the 99-2972 project: a. One (1) 230 kV, 80 kAIC, 4000A Circuit Breaker b. Two (2) 230 kV, 4000 A, Group operated disconnect switches with grounding switches as required. c. Gas insulated bus, connectors, gas to air bushings as required. 11. Foundations and steel structures as required per current engineering standards. 12. Gas-insulated bus, conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. [Refer to 993093\_ Mars Substation Scope of Work for Relay Materials to be installed]

## Transformer Information

None

New equipment description	<p>1. One (1), 300MVAR STATCOM: a. One (1), 300 MVA, 500 - XX kV, three-phase Transformers (secondary voltage rating will be finalized by the STATCOM requirements) b. Three (3), 54kV, 42kV MCOV, Surge Arresters c. Three (3), 108kV, 144kV MCOV, Surge Arresters d. One (1), 200A, Fused Disconnects for STATCOM Station Service e. One (1), 23kV, 12A Fuses for STATCOM Station Service f. Three (3), 48kV, 39kV MCOV, Surge Arresters for STATCOM Station Service g. One (1), 34.5kV, 350kVA, 3-Phase Transformers for STATCOM Station Service h. One (1), 1000A Fused Disconnects for STATCOM Station Service i. One (1), 842A, 240VAC, 3- Phase Voltage Regulators for STATCOM Station Service j. One (1), 259kW Three Phase Generators for STATCOM Station Service k. Two (2), Propane Storage Tanks for STATCOM Station Service l. One (1), 800A Three Phase Outdoor ATS For STATCOM Station Service 2. Oil Containment System for the Transformer 3. Six (6), Surge Arresters 396 kV MO, 318 kV MCOV 4. Three (3), Surge Arresters 45 kV MO, 36.5 kV MCOV 5. Two (2), 19.9 - .12/.24 kV, 167 KVA, Station Service Transformer 6. Two (2), SMD-20 Fused Disconnect and Current Limiting Fuses 7. Include the following within the 500 kV GIS building being built under the 99-2972 project: a. Two (2) 500 kV, 63 kAIC, 5000A Circuit Breakers b. Four (4) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. c. Three (3) 500 kV relaying accuracy CCVTs. d. Gas insulated bus, connectors, gas to air bushings as required. 8. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 9. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 10. Include the following within the 230 kV GIS building being built under the 99-2972 project: a. One (1) 230 kV, 80 kAIC, 4000A Circuit Breaker b. Two (2) 230 kV, 4000 A, Group operated disconnect switches with grounding switches as required. c. Gas insulated bus, connectors, gas to air bushings as required. [Refer to 993093_ Mars Substation Scope of Work for Relay equipment]</p>
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$46,537,509.00
Component cost (in-service year)	\$49,841,672.14

## Substation Upgrade Component

Component title	Morrisville Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Morrisville
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. One (1), 171.6MVA, 540.4KV, Capacitor Bank (Three Ø). 2. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 500kV, 5000A, 3-Phase Double End Break Switches. 4. Three (3), 396kV, 318 kV MCOV Surge Arresters. 5. Approximately 500FT of 6 IN Schedule 80 AL Tubular Bus and Connectors. 6. Foundations and steel structures as required per current engineering standards. 7. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4526_B – Sync Breaker Fiber M.U. Box

## Transformer Information

None	
New equipment description	1. One (1), 171.6MVA, 540.4KV, Capacitor Bank (Three Ø). 2. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 500kV, 5000A, 3-Phase Double End Break Switches. 4. Three (3), 396kV, 318 kV MCOV Surge Arresters. 5. One (1), 4521 – Synchronous Breaker Monitor 6. One (1), 4510 - SEL-2411 Breaker Annunciator 7. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 8. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 9. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 10. One (1), 4526_B – Sync Breaker Fiber M.U. Box

Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$3,633,023.00
Component cost (in-service year)	\$3,890,967.63
<b>Substation Upgrade Component</b>	
Component title	Nimbus Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Nimbus
Substation zone	352

Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Approximately 100 FT of Cable Trough 8. Foundations and steel structures as required per current engineering standards. 9. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box
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**Transformer Information**

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$2,148,980.00
Component cost (in-service year)	\$2,301,557.58

### **Substation Upgrade Component**

Component title	Ocean Court Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Ocean Court
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. Two (2), 178.2MVAR, 249.4KV, Capacitor Bank (Three Ø). 2. Two (2), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. Two (2), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Six (6), 180 kV, 144 kV MCOV Surge Arresters. 5. Four (4), 230 kV relaying accuracy CCVTs. 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. Two (2), 4521 – Synchronous Breaker Monitor 2. Two (2), 4510 - SEL-2411 Breaker Annunciator 3. Two (2), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. Two (2), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Four (4), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. Two (2), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. Two (2), 4526_B – Sync Breaker Fiber M.U. Box

### **Transformer Information**

None



New equipment description	1. Two (2), 178.2MVAR, 249.4KV, Capacitor Bank (Three Ø). 2. Two (2), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. Two (2), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Six (6), 180 kV, 144 kV MCOV Surge Arresters. 5. Four (4), 230 kV relaying accuracy CCVTs. 6. Two (2), 4521 – Synchronous Breaker Monitor 7. Two (2), 4510 - SEL-2411 Breaker Annunciator 8. Two (2), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. Two (2), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Four (4), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. Two (2), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. Two (2), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$3,752,260.00
Component cost (in-service year)	\$4,018,670.46
<b>Substation Upgrade Component</b>	
Component title	Poland Road Substation

Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Poland Road
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Approximately 100 FT of Cable Trough 8. Foundations and steel structures as required per current engineering standards. 9. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

**Transformer Information**

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6.. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526_B – Sync Breaker Fiber M.U. Box

Substation assumptions	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.
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Real-estate description	Substation is not being expanded.
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Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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**Component Cost Details - In Current Year \$**

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
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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	\$2,148,980.00
Component cost (in-service year)	\$2,301,557.58

### **Substation Upgrade Component**

Component title	Rixlew Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Rixlew
Substation zone	353
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

### **Transformer Information**

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs. 6. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$2,077,126.00
Component cost (in-service year)	\$2,224,601.95

**Substation Upgrade Component**

Component title	Rollins Ford Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Rollins Ford
Substation zone	353
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 400FT of security fence. 7. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 8. Foundations and steel structures as required per current engineering standards. 9. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

## Transformer Information

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

## Component Cost Details - In Current Year \$

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$3,053,944.00
Component cost (in-service year)	\$3,270,774.02

## Substation Upgrade Component

Component title	Spotsylvania Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Spotsylvania
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. One (1), 343.2MVA, 540.4KV, Capacitor Bank (Three Ø). 2. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 500kV, 5000A, 3-Phase Double End Break Switches. 4. Three (3), 396kV, 318 kV MCOV Surge Arresters. 5. Two (2) 500 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 80 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

## Transformer Information

None

New equipment description

1. One (1), 343.2MVAR, 540.4KV, Capacitor Bank (Three Ø). 2. One (1), 500kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 500kV, 5000A, 3-Phase Double End Break Switches. 4. Three (3), 396kV, 318 kV MCOV Surge Arresters. 5. Two (2) 500 kV relaying accuracy CCVTs 6. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526\_B – Sync Breaker Fiber M.U. Box

Substation assumptions

The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.

Real-estate description

Substation is not being expanded.

Construction responsibility

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

Benefits/Comments

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

### Component Cost Details - In Current Year \$

Engineering & design

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

Permitting / routing / siting

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

ROW / land acquisition

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

Materials & equipment

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

Construction & commissioning

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

Construction management

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

Overheads & miscellaneous costs

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

Contingency

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

Total component cost

\$3,004,636.00

Component cost (in-service year)

\$3,217,965.16

## Substation Upgrade Component

Component title	Stratus Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Stratus
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box

## Transformer Information

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Foundations and steel structures as required per current engineering standards. 8. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. 9. One (1), 4521 – Synchronous Breaker Monitor 10. One (1), 4510 - SEL-2411 Breaker Annunciator 11. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 12. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 13. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 14. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 15. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.



Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$2,056,883.00
Component cost (in-service year)	\$2,202,921.69
<b>Substation Upgrade Component</b>	
Component title	Vint Hill Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Vint Hill
Substation zone	353

Substation upgrade scope

Purchase and install substation material: 1. Include the following within the 230 kV GIS building being built under the 99-3162 project: a. Two (2) 230 kV, 4000 A, Group operated disconnect switches with grounding switches as required. b. Six (6) 500 kV relaying accuracy CCVTs. c. Gas insulated bus, connectors, gas to air bushings as required. 2. Two (2), 178.2MVAR, 249.4KV, Capacitor Bank (Three Ø). 3. Two (2), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 4. Six (6), 180kV, 144kV MCOV Surge Arresters. 5. Foundations and steel structures as required per current engineering standards. 6. Gas-insulated bus, conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. Two (2), 4521 – Synchronous Breaker Monitor 2. Two (2), 4510 - SEL-2411 Breaker Annunciator 3. Two (2), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. Two (2), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Four (4), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. Four (4), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. Two (2), 4526\_B – Sync Breaker Fiber M.U. Box 8. One (1), 1816 – 28” SEL-787 Gas Zone Differential Panel 9. One (1), 4200 – Bus Differential C.T. Makeup Box

## Transformer Information

None

New equipment description

1. Include the following within the 230 kV GIS building being built under the 99-3162 project: a. Two (2) 230 kV, 4000 A, Group operated disconnect switches with grounding switches as required. b. Six (6) 500 kV relaying accuracy CCVTs. c. Gas insulated bus, connectors, gas to air bushings as required. 2. Two (2), 178.2MVAR, 249.4KV, Capacitor Bank (Three Ø). 3. Two (2), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 4. Six (6), 180kV, 144kV MCOV Surge Arresters. 5. Two (2), 4521 – Synchronous Breaker Monitor 6. Two (2), 4510 - SEL-2411 Breaker Annunciator 7. Two (2), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 8. Two (2), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 9. Four (4), 4518 – Cap. Bank Mid-Point Potential M.U. Box 10. Four (4), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 11. Two (2), 4526\_B – Sync Breaker Fiber M.U. Box 12. One (1), 1816 – 28” SEL-787 Gas Zone Differential Panel 13. One (1), 4200 – Bus Differential C.T. Makeup Box

Substation assumptions

The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.

Real-estate description

Substation is not being expanded.

Construction responsibility

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

Benefits/Comments

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

## Component Cost Details - In Current Year \$

Engineering & design

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

Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$3,651,729.10
Component cost (in-service year)	\$3,911,001.87

**Substation Upgrade Component**

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

Substation upgrade scope

Purchase and install substation material: 1. Include the following within the 500 kV GIS building being built under the 99-2972 project: a. One (1), 500 kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. b. Two (2) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. c. Two (2) 500 kV relaying accuracy CCVTs. d. Gas insulated bus, connectors, gas to air bushings as required. 2. Include the following within the 230 kV GIS building being built under the 99-2972 project: a. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers b. Gas insulated bus, connectors, gas to air bushings as required. 3. One (1), 343.2MVAr, 540.4KV, Capacitor Bank (Three Ø). 4. One (1), 178.2MVAr, 249.4KV, Capacitor Bank (Three Ø). 5. Three (3), 396kV, 318kV MCOV Surge Arresters. 6. Three (3), 180kV, 144kV MCOV Surge Arresters. 7. Foundations and steel structures as required per current engineering standards. 8. Gas-insulated bus, conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. Two (2), 4521 – Synchronous Breaker Monitor 2. Two (2), 4510 - SEL-2411 Breaker Annunciator 3. Two (2), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. Two (2), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Four (4), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. Four (4), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. Two (2), 4526\_B – Sync Breaker Fiber M.U. Box 8. One (1), 1816 – 28” SEL-787 Gas Zone Differential Panel 9. One (1), 4200 – Bus Differential C.T. Makeup Box

## Transformer Information

None

New equipment description

1. Include the following within the 500 kV GIS building being built under the 99-2972 project: a. One (1), 500 kV, 5000A, 63kA, Sync-Close, SF6 Circuit Breakers. b. Two (2) 500 kV, 5000 A, Group operated disconnect switches with grounding switches as required. c. Two (2) 500 kV relaying accuracy CCVTs. d. Gas insulated bus, connectors, gas to air bushings as required. 2. Include the following within the 230 kV GIS building being built under the 99-2972 project: a. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers b. Gas insulated bus, connectors, gas to air bushings as required. 3. One (1), 343.2MVAr, 540.4KV, Capacitor Bank (Three Ø). 4. One (1), 178.2MVAr, 249.4KV, Capacitor Bank (Three Ø). 5. Three (3), 396kV, 318kV MCOV Surge Arresters. 6. Three (3), 180kV, 144kV MCOV Surge Arresters. 7. Two (2), 4521 – Synchronous Breaker Monitor 8. Two (2), 4510 - SEL-2411 Breaker Annunciator 9. Two (2), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 10. Two (2), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 11. Four (4), 4518 – Cap. Bank Mid-Point Potential M.U. Box 12. Four (4), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 13. Two (2), 4526\_B – Sync Breaker Fiber M.U. Box 14. One (1), 1816 – 28” SEL-787 Gas Zone Differential Panel 15. One (1), 4200 – Bus Differential C.T. Makeup Box

Substation assumptions

The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.

Real-estate description

Substation is not being expanded.

Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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	\$10,057,061.00
Component cost (in-service year)	\$10,771,112.33
<b>Substation Upgrade Component</b>	
Component title	Youngs Branch Substation
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Youngs Branch
Substation zone	353

Substation upgrade scope	Purchase and install substation material: 1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. Approximately 500FT of 5 IN Schedule 40 AL Tubular Bus and Connectors. 7. Approximately 200 FT of Cable Trough 8. Foundations and steel structures as required per current engineering standards. 9. Conductors, connectors, conduit, control cable, and grounding materials as per current engineering standards. Purchase and install relay material: 1. One (1), 4521 – Synchronous Breaker Monitor 2. One (1), 4510 - SEL-2411 Breaker Annunciator 3. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 4. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 5. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 6. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 7. One (1), 4526_B – Sync Breaker Fiber M.U. Box
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**Transformer Information**

None	
New equipment description	1. One (1), 178.2MVA, 249.4KV, Capacitor Bank (Three Ø). 2. One (1), 230kV, 4000A, 80kA, Sync-Close, SF6 Circuit Breakers. 3. One (1), 230kV, 4000A, 3-Phase Double End Break Switches. 4. Three (3), 180 kV, 144 kV MCOV Surge Arresters. 5. Two (2) 230 kV relaying accuracy CCVTs 6. One (1), 4521 – Synchronous Breaker Monitor 7. One (1), 4510 - SEL-2411 Breaker Annunciator 8. One (1), 1518 – 28” SEL-351 Cap. Bank Breaker w/ Sync. Close Panel 9. One (1), 1558 – 28” SEL-487V Transmission Cap. Bank Panel 10. Two (2), 4518 – Cap. Bank Mid-Point Potential M.U. Box 11. One (1), 4519 – Cap. Bank, RX or C.B. Potential Makeup Box 12. One (1), 4526_B – Sync Breaker Fiber M.U. Box
Substation assumptions	The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<b>Component Cost Details - In Current Year \$</b>	
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

\$2,148,980.00

Component cost (in-service year)

\$2,301,557.58

### Congestion Drivers

None

### Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-W12	313399	6MARS	313805	6SHELLHORN1	1	230	345	Winter Gen Deliv	Included
2022W3-N1-ST25	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Summer N-1	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-N1-ST25	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1	Included
2022W3-LD-SNC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-S16	314006	6ASHBURA	314010	6BEAMEAD	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST25	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-W12	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W42	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-LD-SNC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-W43	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-LD-SNC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-ST98	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-S165	814084	6SULLY	314035	6DISCOVR	1	230	345	Summer Gen Deliv	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-N1-ST89	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-N1-ST91	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST21	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S169	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W13	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD_118	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Light Load Gen Deliv	Included
2022W3-GD-W49	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W13	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W82	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD_L310	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-S170	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-W82	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD_117	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Light Load Gen Deliv	Included
2022W3-GD-S201	314041	6GLEBE	314185	6RADNOR	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S170	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S177	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S178	314901	8BATH CO	314991	8VALLEY SC	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W13	314041	6GLEBE	314185	6RADNOR	1	230	345	Winter Gen Deliv	Included
2022W3-GD-W13	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WNC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST10	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included



FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-ST108	313752	6TAKEOFF	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST99	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1698	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WNC51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-S1663	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WNC52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-S1665	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WNC53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-S83	314041	6GLEBE	314185	6RADNOR	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WNC56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-S1783	314039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1703	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1705	314072	6PL VIEW	314004	6ASHBURN	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1787	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1708	314009	6BRADOCK	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1788	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W57	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST233	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD_L3593	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD_L2763	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-W823	314041	6GLEBE	314185	6RADNOR	1	230	345	Winter Gen Deliv	Included
2022W3-GD-S1782	314991	8VALLEY SC	314926	8VALLEY	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST233	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC68	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-WNC09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-S170314035	6DISCOVR	313774	6LINC PRK	1	230	345	Summer Gen Deliv	Included	
2022W3-N1-ST110313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC61	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-S88 314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included	
2022W3-N1-ST111814006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC62	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-S89 314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included	
2022W3-N1-ST111214009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC63	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC64	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-ST23514004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-ST111414039	6GALLOW S A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC65	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-ST111514068	6OX	314039	6GALLOW S A	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC66	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC67	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-S171214939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included	
2022W3-GD-W59 313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included	
2022W3-GD-S333314010	6BEAMEAD	313743	6INTERCONN EC	1	230	345	Summer Gen Deliv	Included	
2022W3-GD-S165314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included	
2022W3-GD-W60 313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included	
2022W3-GD-S204314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included	
2022W3-GD-S179713746	6SOJOURNER	313822	6RUNWAY	1	230	345	Summer Gen Deliv	Included	
2022W3-GD_L360314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included	
2022W3-N1-SNC6	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included	
2022W3-N1-SNC7	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included	

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-ST130	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-SNC8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-GD-W840	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W1370	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-WT138	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT139	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT140	313752	6TAKEOFF	313774	6LINC PRK	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WNC17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST121	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST242	313815	6SPRINGH	314079	6RESTON	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WT132	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST243	313805	6SHELLHORN1	313841	6ENTERPRIS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST122	313815	6SPRINGH	314079	6RESTON	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1676	313904	6GOOSECRK	314006	6ASHBURA	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT133	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-WT134	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-SNC2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-ST123	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-SNC3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-ST124	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-SNC4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-SNC5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-GD-S2103	314039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1803	314934	8SPOTSYL	314916	8MORRSVL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S1722	313399	6MARS	313805	6SHELLHORN1	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1798	313859	6BELMONT	314072	6PL VIEW	1	230	345	Summer Gen Deliv	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-ST133	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-SNC9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-ST133	14035	6DISCOVR	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-SNC10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-SNC11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Summer N-1 Non Converge	Included
2022W3-N1-WT143	13399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST133	14068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST17	314084	6SULLY	314035	6DISCOVR	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD_L2693	14820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD_L3093	14820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-N1-ST149	14009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST150	14009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT163	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST31	133399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1803	13393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1725	13815	6SPRINGH	314079	6RESTON	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S3473	13440	8VINTHIL	314913	8LOUDOUN	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT160	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT403	13399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT153	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST26	314010	6BEAMEAD	313743	6INTERCONNEC	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST147	14068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST27	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST148	13805	6SHELLHORN1	314098	6GREENWAY1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST28	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST163	14072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST163	14072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-LLT12	14041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S200314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included	
2022W3-N1-LLT12314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included	
2022W3-N1-LLT2214041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included	
2022W3-N1-ST36313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WT16314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Winter N-1 Thermal	Included	
2022W3-N1-ST38314084	6SULLY	314035	6DISCOVR	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-GD-S173813399	6MARS	313746	6SOJOURNER	1	230	345	Summer Gen Deliv	Included	
2022W3-LD-SNC2N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included	
2022W3-LD-SNC1N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included	
2022W3-GD-S222313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included	
2022W3-N1-ST16313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-LD-SNC4N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included	
2022W3-GD-S173914916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included	
2022W3-N1-ST49314035	6DISCOVR	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-ST17313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-LD-SNC3N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included	
2022W3-N1-ST17314039	6GALLOWS A	314052	6IDYLOWOD	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC1N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC2N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-LD-SNC5N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included	
2022W3-N1-ST17313743	6INTERCONNEC	313733	6NIMBUS	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC3N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-ST17314039	6GALLOWS A	314052	6IDYLOWOD	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC4N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-S173714004	6ASHBURN	314010	6BEAMEAD	1	230	345	Summer Gen Deliv	Included	
2022W3-GD-W15313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included	
2022W3-N1-ST16313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-GD-W14713399	6MARS	313746	6SOJOURNER	1	230	345	Winter Gen Deliv	Included	

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-WT55313904	5313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-W139813440	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WT57314010	7314010	6BEAMEAD	313743	6INTERCONNEC	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST48314006	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT17914004	7914004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-LD-ST10314290	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST60314939	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC11N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST61314939	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC12N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC13N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC14N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WT74314006	4314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WNC15N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-LD-ST9 314290	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-WNC16N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST55313399	5313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST17614072	614072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC17N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W16814004	814004	6ASHBURN	314010	6BEAMEAD	1	230	345	Winter Gen Deliv	Included
2022W3-N1-WNC18N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC19N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC20N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W140713440	713440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WNC21N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC22N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC23N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC24N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-WNC24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-LLT31	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-LLT32	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-LLT33	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-WNC16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST66	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W992	242701	05LEESVI	314667	4ALTVSTA	1	138	205/345	Winter Gen Deliv	Included
2022W3-N1-ST67	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST68	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WNC19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W999	242701	05LEESVI	314667	4ALTVSTA	1	138	205/345	Winter Gen Deliv	Included
2022W3-N1-WNC31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WT923	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WNC33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-S1813	313805	6SHELLHORN1	313841	6ENTERPRIS	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT943	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WNC35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W1923	313805	6SHELLHORN1	314098	6GREENWAY1	1	230	345	Winter Gen Deliv	Included
2022W3-N1-WNC36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W883	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-WNC37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-WNC27A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-ST77313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC28A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-W75313399	6MARS	313805	6SHELLHORN1	1	230	345	Winter Gen Deliv	Included	
2022W3-N1-ST78313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included	
2022W3-N1-WNC29A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-W875314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included	
2022W3-GD-W18314991	8VALLEY SC	314926	8VALLEY	1	500	345	Winter Gen Deliv	Included	
2022W3-N1-WT89313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included	
2022W3-N1-WNC30A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-W76313904	6GOOSECRK	314006	6ASHBURA	1	230	345	Winter Gen Deliv	Included	
2022W3-GD-W10313440	8VINTHIL	314125	6VINTHIL	2	500/230	345	Winter Gen Deliv	Included	
2022W3-GD-W77314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included	
2022W3-GD-W87313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included	
2022W3-N1-WNC41A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC42A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC43A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC44A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-W15213440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included	
2022W3-N1-WNC45A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-N1-WNC46A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-W79314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Winter Gen Deliv	Included	
2022W3-N1-WNC47A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-W79314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Winter Gen Deliv	Included	
2022W3-N1-WNC48A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	
2022W3-GD-S181314918	8NO ANNA	314911	8LADYSMITH	1	500	345	Summer Gen Deliv	Included	
2022W3-N1-WT97313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included	
2022W3-N1-WNC49A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included	



FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-WNC39A	39A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WNC40A	40A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WT10013904	13904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S181314068	1314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W89413393	413393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W89513393	513393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W94 314939	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-WNC49A	49A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-GD-W92 314006	314006	6ASHBURA	314010	6BEAMEAD	1	230	345	Winter Gen Deliv	Included
2022W3-GD-S182013440	013440	8VINTHIL	314913	8LOUDOUN	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT10913399	913399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WNC50A	50A	N/A	N/A	N/A	N/A	N/A	N/A	Winter N-1 Non Converge	Included
2022W3-N1-WT11313399	1313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S236313393	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S237313393	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-W10314072	314072	6PL VIEW	314004	6ASHBURN	1	230	345	Winter Gen Deliv	Included
2022W3-N1-WT12314006	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-W90413440	413440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST18513399	513399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST18613399	613399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST18714039	714039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W98 314939	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST17914039	914039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W1 2513440	2513440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST24 314939	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-GD-W1 2413440	2413440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W1 4113440	4113440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST26 314939	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S1763	314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W1130	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST25	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-GD-S1688	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345	Summer Gen Deliv	Included
2022W3-LD-ST28	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-GD-S1683	313399	6MARS	313805	6SHELLHORN1	1	230	345	Summer Gen Deliv	Included
2022W3-LD-ST27	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-GD-W1363	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST23	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST193	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST193	313746	6SOJOURNER	313822	6RUNWAY	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W786	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WT24	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1763	313805	6SHELLHORN1	314098	6GREENWAY1	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1683	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT25	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-LD-SNC7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-S1213	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1768	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-LD-SNC6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-S1418	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-LD-SNC9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-S1763	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-LD-SNC8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included
2022W3-GD-S1768	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1468	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-LD-SNC1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Load Deliverability	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S2018	14916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST206	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST85	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST207	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST86	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST87	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST208	313746	6SOJOURNER	313822	6RUNWAY	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST88	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-LD-ST30	313911	6TWINCREEKS	314072	6PL VIEW	1	230/230	345/345	Load Deliverability	Included
2022W3-GD-W319	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST29	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Load Deliverability	Included
2022W3-LD-ST32	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Load Deliverability	Included
2022W3-LD-ST31	313911	6TWINCREEKS	314072	6PL VIEW	1	230/230	345/345	Load Deliverability	Included
2022W3-LD-ST33	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST81	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST83	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included

## New Flowgates

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

## Financial Information

Capital spend start date	06/2025
Construction start date	06/2026
Project Duration (In Months)	30

## Additional Comments

None