

# Charlottesville - Hollymead Line # 2054 Rebuild

## General Information

Proposing entity name	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Company proposal ID	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
PJM Proposal ID	967
Project title	Charlottesville - Hollymead Line # 2054 Rebuild
Project description	This project serves to wreck/rebuild segment one of 230kV line 2054, demarcation point between Charlottesville Substation to Proffit D.P. using double-circuit capable 500/230 kV poles (the 500kV circuit will not be wired as part of this project). The line will be rebuilt with 3-phase 2-768 ACSS Maumee Type 13 bundled conductor and two (2) DNO-11410 shield wire. Switches and line lead at Charlottesville substation will be upgraded to 4000A. Upgrading line #2054, causes an overload on lines #233 and #291 under Summer Generator Deliverability study for the loss of line #553. This overload can happen by adding some new loads in Louisa area as well. By wrecking and rebuilding lines #233 and #291 using (2) 768.2 ACSS/TW (20/7) "MAUMEE" conductor with 3948A ampacity, 1573MVA, and upgrading the ratings of substation equipment at Charlottesville, Crozet, Barracks Rd, Hydraulic Rd and Dooms, the overload is mitigated.
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. Hollymeade Substation Relay Revision
2. Charlottesville Substation Terminal Equipment Upgrade for Line #2054 Rebuild
3. Line # 2054 (Charlottesville to Hollymead)
4. Profit DP Substation Relay Revision
5. Barracks Rd Substation Relay Reset
6. Crozet Substation Relay Reset
7. Charlottesville Substation Terminal Equipment Upgrade for Line #233 & #291 Rebuild
8. Hydraulic Rd Substation Equipment Upgrade for Line #233 & #291 Rebuild
9. Dooms Substation Terminal Equipment Upgrade for Line #233 & #291 Rebuild
10. Line #233 (Charlottesville to Dooms) Rebuild
11. Line #291 (Charlottesville to Dooms) Rebuild

### **Substation Upgrade Component**

Component title	Hollymeade Substation Relay Revision
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Hollymeade
Substation zone	363
Substation upgrade scope	Project 99-3132 at Hollymeade substation provides for relay resets for the revised current rating of 230 kV Line 2054 (Charlottesville – Hollymeade).

### **Transformer Information**

None	
New equipment description	No new equipment being installed.
Substation assumptions	<ol style="list-style-type: none"> <li>1. Relay Settings and protection &amp; control design will be revised as part of the SPE scope of work.</li> <li>2. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.</li> </ol>
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

\$13,599.00

Component cost (in-service year)

\$14,564.53

**Substation Upgrade Component**

Component title

Charlottesville Substation Terminal Equipment Upgrade for Line #2054 Rebuild

Project description

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

Substation name

Charlottesville

Substation zone

345

Substation upgrade scope

Removed substation material: 1. One (1), 230kV, 2000A Center Break Switches. 2. Foundation & Steel as required. New Substation Materials: 1. One (1), 230kV, 4000A Double-End Break Switches. 2. Approximately 100 FT of 5 IN AL Tubular Bus. 3. Foundations and steel structures as required. 4. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Relay Materials: 1. No relay material (Relay Resets Only).

**Transformer Information**

None	
New equipment description	New Substation Materials: 1. One (1), 230kV, 4000A Double-End Break Switches. 2. Approximately 100 FT of 5 IN AL Tubular Bus. 3. Foundations and steel structures as required. 4. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards.
Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 4-hole connections to maintain 4000A ratings. 3. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<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	\$967,577.00
Component cost (in-service year)	\$1,036,274.97
<b>Transmission Line Upgrade Component</b>	
Component title	Line # 2054 (Charlottesville to Hollymead)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Impacted transmission line	Line #2054
Point A	Charlottesville
Point B	Hollymead
Point C	
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 400 to 1000 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross Route 20 twice and some smaller roads, a railroad track, several small streams, and the Rivanna River.

**Existing Line Physical Characteristics**

Operating voltage	230 kV
Conductor size and type	2-477 ACSR (24/7) 90°C MOT [8.72 miles]
Hardware plan description	Existing segment of the line will remain as is. For the extension segment, new hardware will be used. The existing hardware were installed in 1985.
Tower line characteristics	Existing Structures will be removed and new structures will be used for this rebuild.

**Proposed Line Characteristics**

	<b>Designed</b>	<b>Operating</b>
Voltage (kV)	230.000000	230.000000
	<b>Normal ratings</b>	<b>Emergency ratings</b>
Summer (MVA)	1047.000000	1047.000000
Winter (MVA)	1160.000000	1160.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT [8.72 miles]	
Shield wire size and type	DNO-11410	
Rebuild line length	8.72 Miles	

Rebuild portion description	<p>EXISTING FACILITIES TO BE REMOVED: 1. Remove fifty-two (52) existing single circuit wood 2-pole H-Frame Suspension structures as follows: a. Strs. 2054/341-345,347-354,356-357,359-364,368-376,378-379,381-387,390391,395,398,403-404,406 408,412-414,416 2. Remove thirteen (13) existing single circuit steel 2-pole H-Frame Suspension structures as follows: a. Strs. 2054/365-367,388-389,393-394,399-402,405,409 3. Remove six (6) existing single circuit wood 3-pole Running Angle structures as follows: a. Strs. 2054/346,355,358,380,392,415 4. Remove two (2) existing single circuit wood 3-pole Double Deadend structures as follows: a. Strs. 2054/377,410 5. Remove two (2) existing single circuit wood 2-pole H-frame Double Deadend structure as follows: a. Str. 2054/396, 2054/411 6. Remove two (2) existing single circuit steel 3-pole Double Deadend structures as follows: a. Strs. 2054/397,417 7.Remove one (1) existing single circuit concrete 2-pole H-Frame deadend backbone structure as follows: a. Str. 2054/418 8. Remove one (1) existing single circuit steel 2-pole H-frame double deadend structure as follows: a. Str. 2054/340A 9. Remove approx. 8.72 miles of 3-phase 2-477 ACSR (24/7) conductor from structures 2054/340A to 2054/418. 10. Remove approx. 8.72 miles of one (1) 49MM/49MM2 48 Fiber OPGW. 11. Remove approx. 8.72 miles of one (1) 3#6 Alumoweld shield wire. EXISTING FACILITIES TO BE MODIFIED: 1. Transfer existing 3-phase 2-636 conductor from existing str. 2054/340A to proposed structure 2054/340A. 2. Transfer existing 2 OPGW from existing str. 2054/340A to proposed str. 2054/340A. PERMANENT FACILITIES TO BE INSTALLED: 1. Install seventy (70) 500/230kV steel monopole double circuit tangents (15.205) on foundations. 2. Install five (5) 500/230kV steel monopole double circuit small angles (15.215) on foundations. 3. Install five (5) 500kV self-supporting heavy angle structures (15.212) on foundations. 4. Install seven (7) 230kV self-supporting heavy angle structures (15.212 w/ 230kV conductor) on foundations. 5. Install two (2) 500kV self-supporting large angle steel deadends (modified 15.212 w/ two more poles to catch the bottom two phases) on foundations. Modifications were made to reduce groundline moments. 6. Install one (1) 230kV substation backbone structure (12.905). 7. Install approx. 8.72 miles of 3-phase 2-768.2 ACSS Maumee Type 13 conductor. 8. Install approx. 8.72 miles of two (2) DNO-11410 OPGW. a. Assumes 5 OPGW splices throughout the line.</p>
Right of way	Existing Right-of-Way will be used. No new Right-of-Way required for this proposal.
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	\$70,144,974.00
Component cost (in-service year)	\$75,125,267.15

### **Substation Upgrade Component**

Component title	Profit DP Substation Relay Revision
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Hollymeade
Substation zone	363
Substation upgrade scope	Project 99-3132 at Profit DP substation provides for relay resets for the revised current rating of 230 kV Line 2054 (Charlottesville – Hollymeade).

### **Transformer Information**

None	
New equipment description	No new equipment being installed.
Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

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

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	\$19,774.00
Component cost (in-service year)	\$21,177.95

### **Substation Upgrade Component**

Component title	Barracks Rd Substation Relay Reset
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Barracks Rd
Substation zone	363
Substation upgrade scope	Substation relay reset.

### **Transformer Information**

None	
New equipment description	None.
Substation assumptions	<ol style="list-style-type: none"> <li>1. Relay Settings and protection &amp; control design will be revised as part of the SPE scope of work.</li> <li>2. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.</li> </ol>
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	\$25,904.00
Component cost (in-service year)	\$27,743.18
<b>Substation Upgrade Component</b>	
Component title	Crozet Substation Relay Reset
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Crozet
Substation zone	363
Substation upgrade scope	Substation relay reset.
<b>Transformer Information</b>	
None	
New equipment description	None.

Substation assumptions	1. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 2. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<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	\$25,904.00
Component cost (in-service year)	\$27,743.18
<b>Substation Upgrade Component</b>	
Component title	Charlottesville Substation Terminal Equipment Upgrade for Line #233 & #291 Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Charlottesville
Substation zone	363

Substation upgrade scope	Purchase and install substation material: 1. Three (3), 230kV, 4000A Double End Break Switches. 2. One (1), 230kV, 63kAIC, 4000A, SF6 Circuit Breakers. 3. Two (2), 230KV, 4000A Line Traps. 4. Approximately 1000 FT of 5 IN AL Tubular Bus and Connectors. 5. Foundations and steel structures as required. 6. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 SEL-2411 Equipment Annunciator 2. One (1), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box 4. Retire One (1) Breaker Panel Remove Substation Material: 1. Three (3), 230KV 3000A Center Break Switches 2. One (1), 230KV 50kAIC, 2000A, SF6 Circuit Breaker 3. Two (2), 230KV 3000A Line Trap
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**Transformer Information**

None

New equipment description	1. Three (3), 230kV, 4000A Double End Break Switches. 2. One (1), 230kV, 63kAIC, 4000A, SF6 Circuit Breakers. 3. Two (2), 230KV, 4000A Line Traps. 4. Approximately 1000 FT of 5 IN AL Tubular Bus and Connectors. 5. Foundations and steel structures as required. 6. One (1), 4510 - SEL-2411 Equipment Annunciator 7. One (1), 1510 – 24” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 8. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box
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Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole connections to maintain 4000A ratings. 3. Relay settings and protection & control design will be revised as part of the SPE scope of work.
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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.
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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	\$1,500,299.00
Component cost (in-service year)	\$1,606,820.23

### **Substation Upgrade Component**

Component title	Hydraulic Rd Substation Equipment Upgrade for Line #233 & #291 Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Hydraulic Rd
Substation zone	363
Substation upgrade scope	Purchase and install substation material: 1. Two (2), 230kV, 4000A 3-Phase Vertical Break Switch with vacuum interrupter attachment. 2. Two (2), Motor Operator, 10-20K IN-LB 3. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4103 – Non-Earthing Switch MOAB AC/DC Distribution Box 2. One (1), 4548 – Non-Earthing Switch MOAB Control Box Remove Substation Material: 1. Two (2), 230kV, 3000A 3-Phase Vertical Break Switch with vacuum interrupter attachment.

### **Transformer Information**

None	
New equipment description	1. Two (2), 230kV, 4000A 3-Phase Vertical Break Switch with vacuum interrupter attachment. 2. Two (2), Motor Operator, 10-20K IN-LB 3. One (1), 4103 – Non-Earthing Switch MOAB AC/DC Distribution Box 4. One (1), 4548 – Non-Earthing Switch MOAB Control Box
Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole connections to maintain 4000A ratings. 3. Relay settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
<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	\$652,322.00
Component cost (in-service year)	\$698,636.86

**Substation Upgrade Component**

Component title	Dooms Substation Terminal Equipment Upgrade for Line #233 & #291 Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Dooms
Substation zone	364
Substation upgrade scope	Purchase and install substation material: 1. One (1), 230 kV, 4000A, 63kA SF6 Circuit Breaker. 2. Two (2), 230kV, 4000A Double End Break Switch. 3. Two (2), 230KV, 4000A Line Traps. 4. Approximately 100FT of 5 IN AL Tubular Bus and Connectors. 5. Foundations and steel structures as required. 6. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 - SEL-2411 Equipment Annunciator 2. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box Remove Substation Material: 1. One (1), 230 kV, 2000A, 40kA SF6 Circuit Breaker. 2. One (1), 230KV 3000A Center Break Switch. 3. One (1), 230KV 2000A Center Break Switch. 4. Two (2), 230KV 3000A Line Traps.

## Transformer Information

None

New equipment description

1. One (1), 230 kV, 4000A, 63kA SF6 Circuit Breaker. 2. Two (2), 230kV, 4000A Double End Break Switch. 3. Two (2), 230KV, 4000A Line Traps. 4. Approximately 100FT of 5 IN AL Tubular Bus and Connectors. 5. One (1), 4510 - SEL-2411 Equipment Annunciator. 6. One (1), 4526\_A – Circuit Breaker Fiber Optic Makeup Box.

Substation assumptions

1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole connections to maintain 4000A ratings. 3. Relay settings and protection & control design will be revised as part of the SPE scope of work.

Real-estate description

Substation is not being expanded.

Construction responsibility

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

Benefits/Comments

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

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

Engineering & design

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

Permitting / routing / siting

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

ROW / land acquisition

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

Materials & equipment

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

Construction & commissioning

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

Construction management

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

Overheads & miscellaneous costs

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

Contingency

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

Total component cost

\$1,057,365.00

Component cost (in-service year)

\$1,132,437.92

## Transmission Line Upgrade Component

Component title	Line #233 (Charlottesville to Dooms) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #233
Point A	Charlottesville
Point B	Dooms
Point C	
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 400 to 2500 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross Route 29, Route 250, a railroad track, Mechums River, and both the Shenandoah National Park and the Appalachian Trail.

### Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 125°C MOT [8.55 Mi]; 1233.6 ACSS/TW/HS285 (38/19) 250°C MOT [0.17 Mi]; 2-545.6 ACAR (15/7) 90°C MOT [13.91 Mi]
Hardware plan description	New Hardware will be used for this rebuild
Tower line characteristics	Existing structures shall be removed, and new structures will be used for the rebuild.

### Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1047.000000	1047.000000
Winter (MVA)	1160.000000	1160.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Shield wire size and type	DNO-11410 48-fiber OPGW
Rebuild line length	22.64 Miles
Rebuild portion description	Approximately 170 existing double circuit structures, within 22.64 miles, will be removed as part of the rebuild. The existing structures are primarily Lattice tower structures as well as monopoles, and about 6% of them were installed within the last 15 years and could potentially be reused. The new structure configuration will consist primarily of double circuit monopole structures. Along with the line rebuild, transmission line switches will be upgraded to 4000A at all applicable connecting substations.
Right of way	Existing Right-of-Way will be Reused for the rebuild. No new Right-of-Way is required for this proposal.
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	\$54,538,135.00
Component cost (in-service year)	\$58,410,342.59



## Transmission Line Upgrade Component

Component title	Line #291 (Charlottesville to Dooms) Rebuild
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #291
Point A	Charlottesville
Point B	Dooms
Point C	
Terrain description	The project area is in the central Virginia Piedmont region with elevations ranging from approximately 400 to 2500 feet. The terrain is predominately vegetated existing right-of-way consisting of moderate slopes. The line will cross Route 29, Route 250, a railroad track, Mechums River, and both the Shenandoah National Park and the Appalachian Trail.

### Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-636 ACSR (24/7) 125°C MOT [8.55 Mi]; 1233.6 ACSS/TW/HS285 (38/19) 250°C MOT [0.17 Mi]; 2-545.6 ACAR (15/7) 90°C MOT [13.91 Mi]
Hardware plan description	New Hardware will be used for this rebuild
Tower line characteristics	Existing structures shall be removed, and new structures will be used for the rebuild.

### Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000
	Normal ratings	Emergency ratings
Summer (MVA)	1047.000000	1047.000000
Winter (MVA)	1160.000000	1160.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Shield wire size and type	DNO-11410 48-fiber OPGW
Rebuild line length	22.64 Miles
Rebuild portion description	Approximately 170 existing double circuit structures, within 22.64 miles, will be removed as part of the rebuild. The existing structures are primarily Lattice tower structures as well as monopoles, and about 6% of them were installed within the last 15 years and could potentially be reused. The new structure configuration will consist primarily of double circuit monopole structures. Along with the line rebuild, transmission line switches will be upgraded to 4000A at all applicable connecting substations.
Right of way	Existing Right-of-Way will be Reused for the rebuild. No new Right-of-Way is required for this proposal.
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	\$54,538,135.00
Component cost (in-service year)	\$58,410,342.59

## Congestion Drivers

None

## Existing Flowgates

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-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-N1-ST25	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1	Included
2022W3-GD-S169	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-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-GD-W43	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST98	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S165	314084	6SULLY	314035	6DISCOVR	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST89	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	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-S177	314197	6LDYSMITH CT	313837	6SUMMIT	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

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD_117	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Light Load Gen Deliv	Included
2022W3-GD-S2019	14041	6GLEBE	314185	6RADNOR	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1703	13393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1779	13393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1780	14901	8BATH CO	314991	8VALLEY SC	1	500	345	Summer Gen Deliv	Included
2022W3-GD-W1367	14041	6GLEBE	314185	6RADNOR	1	230	345	Winter Gen Deliv	Included
2022W3-GD-W1333	14916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST107	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST108	13752	6TAKEOFF	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST99	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1698	14290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1663	14916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S1665	14916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S83	314041	6GLEBE	314185	6RADNOR	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1783	14039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1703	14939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1705	14072	6PL VIEW	314004	6ASHBURN	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1787	14925	8PL VIEW	314072	6PL VIEW	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1708	14009	6BRADOCK	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1788	14916	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	14290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD_L3593	14041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD_L2763	14041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-W823	14041	6GLEBE	314185	6RADNOR	1	230	345	Winter Gen Deliv	Included
2022W3-GD-S1782	14991	8VALLEY SC	314926	8VALLEY	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST233	14290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1783	14734	6CASHSCORNER	314758	6GORDNVL	1	230	345	Summer Gen Deliv	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S1703	314035	6DISCOVR	313774	6LINC PRK	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST110	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S88	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST111	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S89	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST112	314009	6BRADOCK	314052	6IDYLOWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST235	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST114	314039	6GALLOWS A	314052	6IDYLOWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST115	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1712	314939	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-S3333	314010	6BEAMEAD	313743	6INTERCONN	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1653	314939	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-S2043	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1797	313746	6SOJOURNER	313822	6RUNWAY	1	230	345	Summer Gen Deliv	Included
2022W3-GD_L3603	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-N1-ST130	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	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-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-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

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S1678	13904	6GOOSECRK	314006	6ASHBURA	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT133	13904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT133	13399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST125	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST125	14068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S2103	14039	6GALLOWS A	314052	6IDYLVOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1803	14934	8SPOTSYL	314916	8MORRSVL	1	500	345	Summer Gen Deliv	Included
2022W3-GD-S1722	13399	6MARS	313805	6SHELLHORN1	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1798	13859	6BELMONT	314072	6PL VIEW	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST133	14006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST132	14035	6DISCOVR	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	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-ST173	14084	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	6IDYLVOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST150	14009	6BRADOCK	314052	6IDYLVOD	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	13399	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-S1805	13837	6SUMMIT	314138	6MINE RD	1	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-WT163	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-ST263	14010	6BEAMEAD	313743	6INTERCONNEC	1	230/230	345/345	Summer N-1 Thermal	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-N1-ST147	314068	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	313805	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	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST163	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-LLT1	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included
2022W3-GD-S2003	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-N1-LLT1	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-LLT1	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-ST36	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT163	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST38	314084	6SULLY	314035	6DISCOVR	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1738	313399	6MARS	313746	6SOJOURNER	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S2223	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-N1-ST163	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1739	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST49	314035	6DISCOVR	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST170	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST173	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST173	313743	6INTERCONNEC	313733	6NIMBUS	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST173	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1737	314004	6ASHBURN	314010	6BEAMEAD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W153	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST164	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W147	313399	6MARS	313746	6SOJOURNER	1	230	345	Winter Gen Deliv	Included
2022W3-N1-WT553	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-W1398	313440	8VINTHIL	314913	8LOUDOUN	1	500	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-WT57	314010	6BEAMEAD	313743	6INTERCONN	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST48	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT17	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-LD-ST10	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST60	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST61	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT74	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-LD-ST9	314290	6EDFERRY	313911	6TWINCREEKS	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST55	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST17	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W16	314004	6ASHBURN	314010	6BEAMEAD	1	230	345	Winter Gen Deliv	Included
2022W3-GD-W14	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-LLT3	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-LLT3	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-LLT3	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-ST66	314009	6BRADOCK	314052	6IDYLLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W99	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-ST68	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W99	242701	05LEESVI	314667	4ALTVSTA	1	138	205/345	Winter Gen Deliv	Included
2022W3-N1-WT92	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S18	313805	6SHELLHORN1	313841	6ENTERPRIS	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT94	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-W19	313805	6SHELLHORN1	314098	6GREENWAY1	1	230	345	Winter Gen Deliv	Included
2022W3-GD-W88	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST77	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W75	313399	6MARS	313805	6SHELLHORN1	1	230	345	Winter Gen Deliv	Included
2022W3-N1-ST78	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included



FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-W875	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W189	314991	8VALLEY SC	314926	8VALLEY	1	500	345	Winter Gen Deliv	Included
2022W3-N1-WT893	13399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-W76	313904	6GOOSECRK	314006	6ASHBURA	1	230	345	Winter Gen Deliv	Included
2022W3-GD-W1013	313440	8VINTHIL	314125	6VINTHIL	2	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W77	314916	8MORRSVL	313440	8VINTHIL	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W879	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W152	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W798	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Winter Gen Deliv	Included
2022W3-GD-W798	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Winter Gen Deliv	Included
2022W3-GD-S1813	314918	8NO ANNA	314911	8LADYSMITH	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT973	13904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT100	13904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1813	314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W894	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-S3843	314138	6MINE RD	314137	6FREDBRG	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W895	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W94	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W92	314006	6ASHBURA	314010	6BEAMEAD	1	230	345	Winter Gen Deliv	Included
2022W3-GD-S1820	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Summer Gen Deliv	Included
2022W3-N1-WT109	13399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT113	13399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S2123	314138	6MINE RD	314137	6FREDBRG	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S3823	314138	6MINE RD	314137	6FREDBRG	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S2363	13393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S2373	13393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-W103	314072	6PL VIEW	314004	6ASHBURN	1	230	345	Winter Gen Deliv	Included
2022W3-N1-WT123	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-W904	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-N1-ST185	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST186	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST187	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W98	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST179	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W125	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST24	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-GD-W124	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-GD-W14	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST26	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-GD-S176	314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W130	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-S168	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-S168	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-W136	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-ST19	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST19	313746	6SOJOURNER	313822	6RUNWAY	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W78	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-S176	313805	6SHELLHORN1	314098	6GREENWAY1	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S168	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-GD-S12	314290	6EDFERRY	313911	6TWINCREEKS	1	230	345	Summer Gen Deliv	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2022W3-GD-S17681	4939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S14181	4939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S17671	4939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S17681	4939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S14681	4939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S20161	4916	8MORRSVL	313440	8VINTHIL	1	500	345	Summer Gen Deliv	Included
2022W3-N1-ST2061	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST851	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST2071	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST861	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST871	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST2081	313746	6SOJOURNER	313822	6RUNWAY	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST881	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-LD-ST301	313911	6TWINCREEKS	314072	6PL VIEW	1	230/230	345/345	Load Deliverability	Included
2022W3-GD-W3191	313440	8VINTHIL	314913	8LOUDOUN	1	500	345	Winter Gen Deliv	Included
2022W3-LD-ST291	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Load Deliverability	Included
2022W3-LD-ST321	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Load Deliverability	Included
2022W3-LD-ST311	313911	6TWINCREEKS	314072	6PL VIEW	1	230/230	345/345	Load Deliverability	Included
2022W3-LD-ST331	314004	6ASHBURN	314010	6BEAMEAD	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST811	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST831	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**

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