Data Center Alley Local solution - New 500 kV/230 kV Aspen-Golden & Golden-Mars lines

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	692
Project title	Data Center Alley Local solution - New 500 kV/230 kV Aspen-Golden & Golden-Mars lines
Project description	This proposal is a robust, holistic, and expandable solution to address the reliability needs in the Northern Virginia Data Center Alley (Local constraints). The proposal will include the following components: 1. Installing new double-circuit 500/230 kV lines from Golden substation to Mars substation, and from Aspen substation to Golden Substation. 2. Installing the second 500-230 kV, 1440 MVA transformer at Mars Substation. 3. Upgrading existing double-circuit 230 kV lines from Golden substation to Paragon Park substation (Lines # 2150 & 2081), as well as an existing single circuit 230 kV line from Paragon Park substation to Beco Substation (Line # 2207) to a minimum normal summer rating of 1573 MVA. Equipment at each substation will be upgraded to support the new conductor rating of 4000A. 4. Replacing overdutied breakers at Belmont, Beco, Beaumeade, Pleasant View, Shellhorn, and Discovery.
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 - Golden 500kV Line Build (99-2971)
2. Mars 500-230 kV Transformer Installation (99-3197)
3. Line #2150 (Golden to Paragon Park Circuit 1) Reconductoring (99-3188)
4. Line #2081 (Golden to Paragon Park Circuit 2) Reconductoring (99-3188)
5. Paragon Park Substation Equipment Rating Upgrade (99-3188)
6. Golden Relay Setting Upgrade Reset (99-3188)
7. Line #2207 (Paragon Park - Beco) Reconductoring (99-3200)
8. Paragon Park Substation Equipment Rating Upgrade (99-3200)
9. Beco Substation Equipment Rating Upgrade (99-3200)
10. New Mars-Lockridge -Golden 230 kV Lines Construction (99-2970)
11. New Mars-Golden 500 kV Line Construction (99-2970)
12. 500kV Line # 558 (Brambleton-Goose Creek) Cut-In to Aspen (99-2971)
13. New 500kV Line from Aspen to Goose Creek (99-2971)
14. Line #2150 (Sterling Park to Paragon Park Circuit 1) Cut-In to Golden (99-2971)
15. Line #2081 (Sterling Park to Paragon Park Circuit 2) Cut-In to Golden (99-2971)
16. New 230kV Line from Aspen - Golden (99-2971)
17. Golden Substation (99-2970)
18. Lockridge Substation (99-2970)
19. Mars Substation (99-2970)
20. Beaumeade Substation Overdutied Breaker Replacement (99-3208)
21. Beco Substation Overdutied Breaker Replacement (99-3208)
22. Belmont Substation Overdutied Breaker Replacement (99-3208)
23. Discovery Substation Overdutied Breaker Replacement (99-3208)
24. Pleasant View 230 kV Substation Overdutied Breaker Replacement (99-3208)
25. Shellhorn Substation Overdutied Breaker Replacement (99-3208)
26. New Aspen 500/230 kV Substation (99-2971)
27. New Golden 500/230 kV Substation (99-2971)
28. Brambleton Substation (99-2971)
29. Goose Creek Substation (99-2971)

30. Paragon Park Substation (99-2971)

31. Sterling Park Substation (99-2971)

32. Sycolin Creek Substation (99-2971)

Greenfield Transmission Line Component

Component title	Aspen - Golden 500kV Line Build (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Aspen
Point B	Golden
Point C	

	Normal ratings	**Emergency ratings**
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	PERMANENT FACILITIES TO BE INSTALLED: 1. Install twenty-four (24) 500/230kV engineered steel double circuit 3-pole deadend structures (15.225) on foundations. 2. Install twenty-three (23) 500/230kV engineered steel double circuit H-frame suspension structures (15.235) on foundations. 3. Install ten (10) 500/230kV engineered steel double circuit H-frame deadend structures (15.245) on foundations. 4. Install one (1) 500kV double circuit A-frame backbone structure (15.910) as follows: a. One (1) Line 5XX backbone structure inside of Aspen Substation. 5. Install approximately 8.5 miles of 3-phase Line 5XX 3-1351.5 ACSR (45/7) “Dipper” conductor from Aspen Substation to Golden Substation. 6. Install the spans of two (2) DNO-11410 OPGW as follows: a. Approximately 0.8 miles total between the new 2-pole structures and the four (4) double circuit backbone structures inside of Golden Substation. i. Assumes the installation of two (2) OPGW splices on each backbone structure. [Refer to "992971 T-Line Scope of Work" for complete description]	

Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 280 to 335 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will cross one primary road, several small streams, Goose Creek, and Broad Run.
Right-of-way width by segment	This project assumes that approximately 150 feet of new ROW width will be required for approximately 8.5 miles between Aspen Substation and Golden Substation.
Electrical transmission infrastructure crossings	To be determined in detailed design.
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of "992971 Real Estate and Permitting Summary" document attached to this submission.
Environmental impacts	Refer to section A.4 of "992971 Real Estate and Permitting Summary" document attached to this submission.
Tower characteristics	[Refer to "992971 T-Line Scope of Work" for complete description]
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$98,351,392.05
Component cost (in-service year)	$105,334,340.89

Substation Upgrade Component

Component title	Mars 500-230 kV Transformer Installation (99-3197)
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. Three (3) 500-230kV, 480MVA single-phase transformers 2. Three (3) 396kV, 318kV, MCOV lightning arresters 3. Three (3) 180kV, 144kV MCOV lightning arresters 4. Include the following within the 500 kV GIS building being installed 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. Current transformers and Potential Transformers as required. d. Gas insulated bus, connectors, gas to air bushings as required. 5. Include the following within the 230 kV GIS building being installed under 99-2972 project: a. Two (2) 230 kV, 80 kAIC, 4000 A Circuit Breakers b. Five (5), 230 kV, 4000 A, group operated disconnect switches with grounding switches as required. c. Current Transformers and potential transformers as required. d. Gas insulated bus, connectors, gas to air busing as required. Purchase and install relay material: 1. Three (3), SPR Relay Auxiliary Package OR 2. One (1), 1218 - Transformer SPR Blocking Package (Install w/ Shell Type Transformer) 3. Three (3), 7614 – Transformer Critical Low Oil Assembly 4. One (1), 1217 – 28” Dual SEL-487E Transmission Transformer Diff. Panel 5. One (1), 1514 – 28” Transmission Transformer MOAB Control Panel 6. One (1), 4515 – 3 Phase PT Makeup Box 7. One (1), 4507 – 1 Phase PT Makeup Box 8. One (1), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 9. Three (3), 1511 – 28” Single SEL-351 Transmission Breaker w/o Reclosing Panel 10. One (1) 1816 – 28” Dual SEL-787 Gas Zone Differential Panel 11. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box 12. One (1), 4542 – Transformer Makeup Box (One Box for all three single phase units) 13. One (1), 4542 – Spare Transformer Makeup Box

Transformer Information

	Name	**Capacity (MVA)**
Transformer	TX-2	1440

	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	230	

New equipment description	Purchase and install substation material: 1. Three (3) 500-230kV, 480MVA single-phase transformers 2. Three (3) 396kV, 318kV, MCOV lightning arresters 3. Three (3) 180kV, 144kV MCOV lightning arresters 4. Include the following within the 500 kV GIS building being installed 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. Current transformers and Potential Transformers as required. d. Gas insulated bus, connectors, gas to air bushings as required. 5. Include the following within the 230 kV GIS building being installed under 99-2972 project: a. Two (2) 230 kV, 80 kAIC, 4000 A Circuit Breakers b. Five (5), 230 kV, 4000 A, group operated disconnect switches with grounding switches as required. c. Current Transformers and potential transformers as required. d. Gas insulated bus, connectors, gas to air busing as required.
Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	The substation will not be expanded for this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$42,193,770.00
Component cost (in-service year)	$45,189,527.67

Transmission Line Upgrade Component

Component title	Line #2150 (Golden to Paragon Park Circuit 1) Reconductoring (99-3188)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2150 (Golden to Paragon Park Circuit 1)
Point A	Golden
Point B	Paragon Park
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 220 to 240 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will cross one secondary road.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	1192.5 ACSR (45/7)) 145°C MOT
Hardware plan description	New hardware will be used.
Tower line characteristics	Mostly galvanized steel structures built in 1980.

Proposed Line Characteristics

	Designed	**Operating**
Voltage (kV)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	

Shield wire size and type	DNO-11410 OPGW shield wire
Rebuild line length	0.5 Miles
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED (#2150): 1. Remove approximately 0.5 miles of 1192.5 ACSR conductor from 2150/183 to structure 2150/186 for Line 2150. MODIFICATIONS TO EXISTING FACILITIES (#2150): 1. Replace six (6) bundled strain assemblies [32.630] on the following structure: a. Structures 2150/183 and 2150/186. i. It is assumed 2150/183 is installed during Project 992971. ii. New strain assemblies are only required on either the ahead or the back side of the structures listed. 2. Replace six (6) I-string insulator assemblies [32.610] on the following two (2) structures: a. Structures 2150/184 and 2150/185. 3. Replace six (6) bundled jumper loop assemblies [39.227] on the following two (2) structures: a. Structures 2150/183 and 2150/186. i. It is assumed 2150/183 is installed during Project 992971. PERMANENT FACILITIES TO BE INSTALLED (#2150): 1. Install approximately 0.5 miles of 2-768.2 ACSS/TW/HS “Maumee” conductor from structure 2150/183 to 2150/186 on the Line 2150 side.
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.
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	$1,435,035.00
Component cost (in-service year)	$1,536,922.49

Transmission Line Upgrade Component

Component title	Line #2081 (Golden to Paragon Park Circuit 2) Reconductoring (99-3188)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2081
Point A	Golden
Point B	Paragon Park
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 220 to 240 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will cross one secondary road.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	1192.5 ACSR (45/7)) 145°C MOT
Hardware plan description	New hardware will be used.
Tower line characteristics	Mostly galvanized steel structures built in 1980.

Proposed Line Characteristics

	Designed	**Operating**
Voltage (kV)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	

Shield wire size and type	DNO-11410 OPGW shield wire
Rebuild line length	0.5 Miles
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove approximately 0.5 miles of 1192.5 ACSS conductor from 2081/123 to structure 2081/126 for Line 2081. MODIFICATIONS TO EXISTING FACILITIES: 1. Replace six (6) bundled strain assemblies [32.630] on the following structure: a. Structures 2081/123 (2150/183) and 2081/126 i. It is assumed 2081/123 (2150/183) is installed during Project 992971. ii. New strain assemblies are only required on either the ahead or the back side of the structures listed. 2. Replace six (6) I-string insulator assemblies [32.610] on the following two (2) structures: a. Structures 2081/124 and 2081/125. 3. Replace six (6) bundled jumper loop assemblies [39.227] on the following two (2) structures: a. Structures 2081/123 and 2081/126. i. It is assumed 2081/123 is installed during Project 992971. PERMANENT FACILITIES TO BE INSTALLED: 1. Install approximately 0.5 miles of 2-768.2 ACSS/TW/HS “Maumee” conductor from structure 2081/123 (2150/183) to 2081/126 (2150/186) on the Line 2081 side.
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.
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	$1,435,035.00
Component cost (in-service year)	$1,536,922.49

Substation Upgrade Component

Component title	Paragon Park Substation Equipment Rating Upgrade (99-3188)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Paragon Park
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. Line conductors and connectors, as per engineering standards. Purchase and install relay material: 1. No relay material is needed (Relay Resets Only).

Transformer Information

None

New equipment description	None.
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. 4. This project will need to be coordinated with 99-2971 Aspen to Golden Line extension.
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	$85,665.00
Component cost (in-service year)	$91,747.22

Substation Upgrade Component

Component title	Golden Relay Setting Upgrade Reset (99-3188)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Golden
Substation zone	366, 352
Substation upgrade scope	Purchase and install relay material: 1. Relay Resets Only (No material is needed).

Transformer Information

None

New equipment description	None.
Substation assumptions	1. The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work. 3. This project will need to be coordinated with 99-2971 Aspen to Golden Line extension.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

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

Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$21,889.00
Component cost (in-service year)	$23,443.00

Transmission Line Upgrade Component

Component title	Line #2207 (Paragon Park - Beco) Reconductoring (99-3200)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line # 2207
Point A	Paragon Park
Point B	Beco
Point C	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 210 to 250 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line crosses Broad Run.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	1192.5 ACSR (45/7)) 145°C MOT
Hardware plan description	Hardware will be replaced.

Tower line characteristics	Existing structures are galvanized steel mostly built within the last 20 years.

Proposed Line Characteristics

	Designed	**Operating**
Voltage (kV)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Shield wire size and type	None. Reusing existing Shield wire.
Rebuild line length	0.93 miles
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove approximately 0.16 miles of 1192.5 ACSR conductor from 2207/186D to structure 2207/188 (2206/128). 2. Remove approximately 0.77 miles of 2-636 ACSR “Rook” conductor from 2207/188 (2206/128) to structure 2207/196. MODIFICATIONS TO EXISTING FACILITIES: 1. Replace six (6) bundled strain assemblies [32.630] on the following three (3) structures: a. Structures 2207/188 (2206/128), 2207/191 (2143/9), and 2207/194 (2143/12) 2. Replace three (3) bundled strain assemblies [32.630] on the following two (2) structures: a. Structures 2207/186D and 2207/195 (2143/13) 3. Replace three (3) bundled crossing strain assemblies [32.338] on the following two (2) structures: a. Structures 2207/195 (2143/13) and 2207/196 4. Replace three (3) I-string insulator assemblies [32.610] on the following five (5) structures: a. Structures 2207/187 (2206/127), 2207/189 (2143/7), 2207/190 (2143/8), 2207/192 (2143/10), and 2207/193 (2143/11) 5. Replace three (3) bundled jumper loop assemblies [39.227] on the following five (5) structures: a. Structures 2207/186D, 2207/188 (2206/128), 2207/191 (2143/9), 2207/194 (2143/12), and 2207/195 (2143/13) PERMANENT FACILITIES TO BE INSTALLED: 1. Install approximately 0.93 miles of 2-768.2 ACSS/TW/HS “Maumee” conductor from structure 2207/186D to structure 2207/196.
Right of way	No new or additional right of way is required to complete this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$3,359,088.00
Component cost (in-service year)	$3,597,583.25

Substation Upgrade Component

Component title	Paragon Park Substation Equipment Rating Upgrade (99-3200)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Paragon Park
Substation zone	352
Substation upgrade scope	Install substation material: 1. Line conductors and connectors, as per engineering standards. Relay Scope: 1. Relay Resets Only.

Transformer Information

None

New equipment description	None.

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	The substation will not be expanded for this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$96,482.00
Component cost (in-service year)	$103,332.22

Substation Upgrade Component

Component title	Beco Substation Equipment Rating Upgrade (99-3200)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Beco
Substation zone	352

Substation upgrade scope	Remove substation material: 1. Two (2) 230 kV, 50 kAIC, 3000 A, SF6 Circuit Breakers. 2. Four (4) 230 kV, 3000A, 3-Phase Center Break Switches. Install substation material: 1. Four (4) 230 kV, 4000A, 3-Phase Double End Break Switches 2. Two (2) 230 kV, 63 kAIC, 4000 A, SF6 Circuit Breakers 3. Approximately 200 FT of 5 IN Tubular Bus and Connectors 4. Conductors, connectors, conduit, control cable, and grounding materials as per engineering standards. Install relay material: 1. Two (2) 4510 – SEL-2411 Equipment Annunciator 2. Two (2) 4514 – Circuit Breaker C.T. Makeup Box 3. Two (2) 4526_A – Circuit Breaker Fiber Optic Makeup Box

Transformer Information

None

New equipment description	1. Two (2) 4510 – SEL-2411 Equipment Annunciator 2. Two (2) 4514 – Circuit Breaker C.T. Makeup Box 3. Two (2) 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	The substation will not be expanded for this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

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

Total component cost	$1,864,724.00
Component cost (in-service year)	$1,997,119.40

Greenfield Transmission Line Component

Component title	New Mars-Lockridge -Golden 230 kV Lines Construction (99-2970)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Mars
Point B	Lockridge
Point C	Golden

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

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT
Nominal voltage	AC
Nominal voltage	230
Line construction type	Overhead
General route description	Refer to KMZ file for route description.
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 220 to 320 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will cross four primary roads, several small streams, and Broad Run.
Right-of-way width by segment	It is assumed that the new 500/230kV circuits will require 150 feet of new ROW width for approximately 8.3 miles between Mars and Golden Substations. There are a few locations throughout the alignment where the new circuits parallel existing circuits. In those locations, it is assumed that the new circuits will require 150 feet of ROW in addition to the existing ROW width.

Electrical transmission infrastructure crossings	Refer to "992970_Conceptual Scope of Work" for more information.
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 992970 Real Estate and Permitting Summary.
Environmental impacts	Refer to section A.4 of 992970 Real Estate and Permitting Summary.
Tower characteristics	PERMANENT FACILITIES TO BE INSTALLED: 1. Install one (1) 230kV steel single circuit deadend monopole structure (12.425) on a foundation. 2. Install three (3) 230kV single circuit heavy duty steel backbone structures (12.901) as follows: a. One (1) 230kV backbone structure inside of Mars Substation. b. Two (2) 230kV backbone structures inside of Lockridge Substation. 3. Install thirty-two (32) 500/230kV steel double circuit 3-pole deadend structures (15.225) on foundations. 4. Install twenty-six (26) 500/230kV steel double circuit H-frame suspension structures (15.235) on foundations. 5. Install one (1) 500/230kV steel double circuit H-frame deadend structures (15.245) on a foundation. 6. Install 3-phase 2-768.2 ACSS/TW/HS “Maumee” conductor as follows: a. Approximately 5.2 miles of Line 2XXX from Mars Substation to Lockridge Substation. b. Approximately 2.9 miles of Line 2XX1 from Lockridge Substation to Golden Substation. 7. Install approximately 0.1 miles of one (1) 7#7 Alumoweld shield wire for Line 2XX1 outside of Golden Substation where Line 2XX1 is not underbuilt with Line 5XX 8. Install approximately 0.1 miles of one (1) DNO-11410 OPGW for Line 2XX1 outside of Golden Substation where Line 2XX1 is not underbuilt with Line 5XX. [Lines 2095, 2137 and 2218 will be modified to accommodate crossings of the new 500/230 kV double circuit line. Refer to attached 992970_Scope for complete description]
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Total component cost	$76,515,547.87
Component cost (in-service year)	$81,948,151.75

Greenfield Transmission Line Component

Component title	New Mars-Golden 500 kV Line Construction (99-2970)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Mars
Point B	Golden
Point C	

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

Conductor size and type	3-1351.5 ACSR (45/7) 110°C MOT
Nominal voltage	AC
Nominal voltage	500
Line construction type	Overhead
General route description	Refer to KMZ file.
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 220 to 320 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will cross four primary roads, several small streams, and Broad Run.
Right-of-way width by segment	It is assumed that the new 500/230kV circuits will require 150 feet of new ROW width for approximately 8.3 miles between Mars and Golden Substations. There are a few locations throughout the alignment where the new circuits parallel existing circuits. In those locations, it is assumed that the new circuits will require 150 feet of ROW in addition to the existing ROW width.

Electrical transmission infrastructure crossings	Refer to "992970_Conceptual Scope of Work".
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 992970 Real Estate and Permitting Summary.
Environmental impacts	Refer to section A.4 of 992970 Real Estate and Permitting Summary.
Tower characteristics	PERMANENT FACILITIES TO BE INSTALLED: 1. Install one (1) 500kV steel single circuit deadend monopole structure (15.212) on a foundation. 2. Install thirty-two (32) 500/230kV steel double circuit 3-pole deadend structures (15.225) on foundations. 3. Install twenty-six (26) 500/230kV steel double circuit H-frame suspension structures (15.235) on foundations. 4. Install one (1) 500/230kV steel double circuit H-frame deadend structures (15.245) on a foundation. 5. Install one (1) 500kV single circuit A-frame backbone structure (15.900) inside of Mars Substation. 6. Install approximately 8.3 miles of 3-phase 3-1351.5 ACSR (45/7) “Dipper” conductor from Mars Substation to Golden Substation. 7. Install approximately 8.3 miles of two (2) DNO-10100 OPGW between Mars and Golden Substation. [Lines 2095, 2137 and 2218 will be modified to accommodate crossings of the new 500/230 kV double circuit line. Refer to attached 992970_Scope for complete description]
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$142,100,303.00
Component cost (in-service year)	$152,189,425.00

Transmission Line Upgrade Component

Component title	500kV Line # 558 (Brambleton-Goose Creek) Cut-In to Aspen (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	558
Point A	Brambleton
Point B	Aspen
Point C	Goose Creek
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 280 to 335 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	500
Conductor size and type	3-1351 ACSR (45/7) 110°C MOT [7.86 Miles]
Hardware plan description	New hardware will be used.
Tower line characteristics	Existing Structures will be removed and new structures will be used.

Proposed Line Characteristics

	Designed	**Operating**
Voltage (kV)	500.000000	500.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351 ACSR (45/7) 110°C MOT [7.72 Miles] & 3-1351 ACSR (45/7) 110°C MOT [0.06 Miles]	

Shield wire size and type	N/A
Rebuild line length	N/A
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) existing Line 558 single circuit steel 3-pole deadend structure as follows: a. Structure 558/1856. i. This structure has not been installed yet but is to be installed as part of project 992934. MODIFICATIONS TO EXISTING FACILITIES: 1. Transfer the existing 500kV conductor and shield wire from the back side of structure 558/1856 to the new single circuit A-frame structure 5X2/2 inside of Aspen Substation. 2. Transfer the existing 500kV conductor and shield wire from the ahead side of structure 558/1856 to the new double circuit A-frame structure 558/1856B inside of Aspen Substation. PERMANENT FACILITIES TO BE INSTALLED: 1. Install one (1) 500kV single circuit A-frame backbone structure (15.900) as follows: a. One (1) Line 5X2 backbone structure inside of Aspen Substation. 2. Install one (1) 500kV double circuit A-frame backbone structure (15.910) as follows: a. One (1) Line 558 backbone structure inside of Aspen Substation. [Refer to 992971 Preliminary Scoping Summary complete description]
Right of way	No new or additional right of way is required to complete this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$10,927,932.47
Component cost (in-service year)	$11,703,815.65

Greenfield Transmission Line Component

Component title	New 500kV Line from Aspen to Goose Creek (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Aspen
Point B	Goose Creek
Point C	

	Normal ratings	**Emergency ratings**
Summer (MVA)	4357.000000	4357.000000
Winter (MVA)	5155.000000	5155.000000
Conductor size and type	3-1351 ACSR (45/7) 110°C MOT [0.2 Miles]	
Nominal voltage	AC	
Nominal voltage	500	
Line construction type	Overhead	
General route description	Refer to KMZ file.	
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 280 to 335 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.	
Right-of-way width by segment	Refer to 992971 Real Estate and Permitting Summary.	
Electrical transmission infrastructure crossings	To be determined in detailed design.	
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of 992971 Real Estate and Permitting Summary.	
Environmental impacts	Refer to section A.4 of 992971 Real Estate and Permitting Summary.	

Tower characteristics	PERMANENT FACILITIES TO BE INSTALLED: 1. Install one (1) 500kV engineered steel single circuit monopole deadend structure (15.212) on a foundation. 2. Install one (1) 500kV engineered steel single circuit H-frame deadend structure (15.240) on foundations. 3. Install one (1) 500kV single circuit A-frame backbone structure (15.900) as follows: a. One (1) Line 5X1 backbone structure inside of Aspen Substation. 4. Install approximately 0.2 miles of 3-phase Line 5X1 3-1351.5 ACSR (45/7) “Dipper” conductor from the existing backbone structure inside of Goose Creek Substation (Str. 505/1) to the new single circuit A-frame backbone structure inside of Aspen Substation. 5. Install approximately 0.2 miles of two (2) DNO-10100 OPGW from the existing backbone structure inside of Goose Creek Substation (Str. 505/1) to the new single circuit A-frame backbone structure (Line 5X1) inside of Aspen Substation. [Refer to 992971 Preliminary Scoping Summary complete description]
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$21,855,864.90
Component cost (in-service year)	$23,407,631.31

Transmission Line Upgrade Component

Component title	Line #2150 (Sterling Park to Paragon Park Circuit 1) Cut-In to Golden (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Impacted transmission line	Line #2150 (Golden to Paragon Park Circuit 1)
Point A	Sterling Park
Point B	Golden
Point C	Paragon Park
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 220 to 240 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT [0.09 Miles]; 1192.5 ACSR (45/7) 145°C MOT [1.88 Miles]; 1033.5 ACSS (45/7) 180°C MOT [0.03 Miles]
Hardware plan description	New hardware will be used for line rebuild.
Tower line characteristics	New structures will be used.

Proposed Line Characteristics

	Designed	**Operating**
Voltage (kV)	230.000000	230.000000
	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000

Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT [0.20 Miles] for new extensions to Golden Substation from each end
Shield wire size and type	N/A
Rebuild line length	N/A

Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) existing Line 2081/2150 double circuit steel tower structure as follows: a. Structure 2081/123 (2150/183) MODIFICATIONS TO EXISTING FACILITIES: 1. Transfer the existing 230kV Line 2150 single (1) 1192.5 ACSR conductor from the ahead side of existing structure 2081/123 (2150/183) to the ahead side of the new double circuit 2-pole structure 2081/123 (2150/183). 2. Transfer the existing 230kV Line 2150 single (1) 1192.5 ACSR conductor from the back side of existing structure 2081/123 (2150/183) to the back side of the new double circuit 2-pole structure 2XX1/123 (2XX2/183). 3. Transfer existing one (1) 3#6 Alumoweld shield wire from the ahead side of existing structure 2081/123 (2150/183) to the ahead side of the new double circuit 2-pole structure 2081/123 (2150/183). 4. Transfer existing one (1) 3#6 Alumoweld shield wire from the back side of existing structure 2081/123 (2150/183) to the back side of the new double circuit 2-pole structure 2XX1/123 (2XX2/183). 5. Cut the existing 95/47MM2 OPGW at existing structure 2081/123 (2150/183). Use the cut OPGW wire length to install fiber splices as follows: a. One (1) OPGW splice on existing structure 2081/122 (2150/182). b. One (1) OPGW splice on existing structure 2081/124 (2150/184). PERMANENT FACILITIES TO BE INSTALLED: 1. Install approximately 0.2 miles of 3-Phase Line 2150 2-768.2 ACSS/TW/HS “Maumee” conductor from Golden Substation to new structure 2081/123 (2150/183). 2. Install approximately 0.2 miles of 3-Phase Line 2XX2 2-768.2 ACSS/TW/HS “Maumee” conductor from new structure 2XX1/123 (2XX2/183) to Golden Substation. 3. Install the spans one (1) DNO-11410 OPGW as follows: a. Approximately 0.1 miles between existing structure 2081/122 (2150/182) and new structure 2XX1/123 (2XX2/183). i. Assumes the installation of two (2) OPGW splices on new structure 2XX1/123 (2XX2/183). b. Approximately 0.1 miles between new structure 2081/123 (2150/183) and existing structure 2081/124 (2150/184). i. Assumes the installation of two (2) OPGW splices on new structure 2081/123 (2150/183). [Refer to 992971 Preliminary Scoping Summary complete description]
Right of way	No new or additional right of way is required to complete this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$16,391,898.68
Component cost (in-service year)	$17,555,723.48

Transmission Line Upgrade Component

Component title	Line #2081 (Sterling Park to Paragon Park Circuit 2) Cut-In to Golden (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Impacted transmission line	Line #2081 (Golden to Paragon Park Circuit 2)
Point A	Sterling Park
Point B	Golden
Point C	Paragon Park
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 220 to 240 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes.

Existing Line Physical Characteristics

Operating voltage	230
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT [0.09 Miles]; 1192.5 ACSR (45/7) 145°C MOT [1.96 Miles]; 1233.6 ACSS/TW/HS285 (45/7) 180°C MOT [0.01 Miles]
Hardware plan description	New hardware will be used.
Tower line characteristics	New structures will be used.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	230.000000	230.000000

	Normal ratings	Emergency ratings
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT [0.20 Miles] for new extensions to Golden Substation from each end	
Shield wire size and type	N/A	
Rebuild line length	N/A	
Rebuild portion description	EXISTING FACILITIES TO BE REMOVED: 1. Remove one (1) existing Line 2081/2150 double circuit steel tower structure as follows: a. Structure 2081/123 (2150/183) MODIFICATIONS TO EXISTING FACILITIES: 1. Transfer the existing 230kV Line 2081 single (1) 1192.5 ACSS conductor from the ahead side of existing structure 2081/123 (2150/183) to the ahead side of the new double circuit 2-pole structure 2081/123 (2150/183). 2. Transfer the existing 230kV Line 2081 single (1) 1192.5 ACSS conductor from the back side of existing structure 2081/123 (2150/183) to the back side of the new double circuit 2-pole structure 2XX1/123 (2XX2/183). 3. Transfer existing one (1) 3#6 Alumoweld shield wire from the ahead side of existing structure 2081/123 (2150/183) to the ahead side of the new double circuit 2-pole structure 2081/123 (2150/183). 4. Transfer existing one (1) 3#6 Alumoweld shield wire from the back side of existing structure 2081/123 (2150/183) to the back side of the new double circuit 2-pole structure 2XX1/123 (2XX2/183). 5. Cut the existing 95/47MM2 OPGW at existing structure 2081/123 (2150/183). Use the cut OPGW wire length to install fiber splices as follows: a. One (1) OPGW splice on existing structure 2081/122 (2150/182). b. One (1) OPGW splice on existing structure 2081/124 (2150/184). PERMANENT FACILITIES TO BE INSTALLED: 1. Install approximately 0.2 miles of 3-Phase Line 2081 2-768.2 ACSS/TW/HS “Maumee” conductor from Golden Substation to new structure 2081/123 (2150/183). 2. Install approximately 0.2 miles of 3-Phase Line 2XX1 2-768.2 ACSS/TW/HS “Maumee” conductor from new structure 2XX1/123 (2XX2/183) to Golden Substation. 3. Install the spans one (1) DNO-11410 OPGW as follows: a. Approximately 0.1 miles between existing structure 2081/122 (2150/182) and new structure 2XX1/123 (2XX2/183). i. Assumes the installation of two (2) OPGW splices on new structure 2XX1/123 (2XX2/183). b. Approximately 0.1 miles between new structure 2081/123 (2150/183) and existing structure 2081/124 (2150/184). i. Assumes the installation of two (2) OPGW splices on new structure 2081/123 (2150/183). [Refer to 992971 Preliminary Scoping Summary complete description]	
Right of way	No new or additional right of way is required to complete this project.	
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.	
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.	

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$16,391,898.68
Component cost (in-service year)	$17,555,723.48

Greenfield Transmission Line Component

Component title	New 230kV Line from Aspen - Golden (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Point A	Aspen
Point B	Golden
Point C	

	Normal ratings	**Emergency ratings**
Summer (MVA)	1573.000000	1573.000000
Winter (MVA)	1648.000000	1648.000000
Conductor size and type	2-768.2 ACSS/TW/HS (20/7) 250°C MOT	

Nominal voltage	AC
Nominal voltage	500
Line construction type	Overhead
General route description	Refer to KMZ file.
Terrain description	The project area is in the northern Virginia Piedmont region with elevations ranging from approximately 280 to 335 feet. The terrain is predominately vegetated existing right-of-way and urban development consisting of moderate slopes. The line will cross one primary road, several small streams, Goose Creek, and Broad Run.
Right-of-way width by segment	This project assumes that approximately 150 feet of new ROW width will be required for approximately 8.5 miles between Aspen Substation and Golden Substation.
Electrical transmission infrastructure crossings	To be determined in detailed design.
Civil infrastructure/major waterway facility crossing plan	Refer to section A.5 of "992971 Real Estate and Permitting Summary" document attached to this submission.
Environmental impacts	Refer to section A.4 of "992971 Real Estate and Permitting Summary" document attached to this submission.

Tower characteristics	PERMANENT FACILITIES TO BE INSTALLED: 1. Install two (2) 230kV engineered steel single circuit H-frame deadend structures (12.166) on foundations. 2. Install two (2) 230kV engineered steel double circuit 2-pole structures (12.235) on foundations. 3. Install one (1) 230kV engineered steel single circuit monopole deadend structure with staggered arms (12.415) on a foundation. 4. Install one (1) 230kV engineered steel single circuit monopole deadend structure (12.426) on a foundation. 5. Install one (1) 230kV single circuit heavy duty backbone structure (12.901) inside of Aspen Substation. 6. Install four (4) 230kV double circuit backbone structures (12.903) inside of Golden Substation. 7. Install twenty-four (24) 500/230kV engineered steel double circuit 3-pole deadend structures (15.225) on foundations. 8. Install twenty-three (23) 500/230kV engineered steel double circuit H-frame suspension structures (15.235) on foundations. 9. Install ten (10) 500/230kV engineered steel double circuit H-frame deadend structures (15.245) on foundations. 10. Install one (1) 500kV engineered steel single circuit H-frame deadend structure (15.240) on foundations. 11. Install approximately 8.5 miles of 3-phase Line 2XX 2-768.2 ACSS/TW/HS “Maumee” conductor from Aspen Substation to Golden Substation. 12. Install approximately 8.5 miles of two (2) DNO-10100 OPGW from Aspen Substation to Golden Substation. 13. Install the spans of one (1) 7#7 Alumoweld shield wire as follows: a. Approximately 0.3 miles near Golden Substation, shielding the new 230kV circuit 2XX where it is not underbuilt on the 500/230kV structures. 14. Install the spans of two (2) 7#7 Alumoweld shield wire as follows: a. Approximately 0.1 miles near Aspen Substation, shielding the new 230kV circuit 2XX before it is underbuilt on the 500/230kV structures. [Refer to 992971 Scope of Work for complete description]
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Total component cost	$54,639,662.27
Component cost (in-service year)	$58,519,078.27

Substation Upgrade Component

Component title	Golden Substation (99-2970)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Golden
Substation zone	366,352
Substation upgrade scope	Purchase and install substation material: 1. Two (2) GIS 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Five (5) GIS 500 kV, 5000A, Group Operated Disconnect Switches w/grounding switches as required. 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters 4. Three (3), 500kV, Relay Accuracy CCVT's 5. Two (2) GIS 230kV, 80 kAIC, 4000A, Circuit Breakers 6. Five (5) GIS 230 kV, 4000A, Group Operated Disconnect Switches w/grounding switches as required. 7. Gas Insulated Bus, connectors, gas to air bushings as required 8. Conductor, connectors, insulators, conduit, control cable, foundations, steel structures and grounding connections as per engineering standards Purchase and install relay material: 1. Four (4), 4510 - SEL-2411 Equipment Annunciator (Engineering Time only) 2. Four (4), 1510 – 28" Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2), 1515 – SEL 351 500 kV Breaker Reclosing Panel (Use with 1510) 4. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box 5. One (1), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel 7. Two (2), 4200 – Transmission Line C.T. Makeup Box 8. Two (2), 4506 – 3 Phase CCVT Potential Makeup Box 9. Two (2), 1816 – 28" Dual SEL-787 Gas Zone Differential Panel 10. Two (2), 5203 – Traveling Wave Fault Locator Panel

Transformer Information

None

New equipment description	1. Two (2) GIS 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Five (5) GIS 500 kV, 5000A, Group Operated Disconnect Switches w/grounding switches as required. 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters 4. Three (3), 500kV, Relay Accuracy CCVT's 5. Two (2) GIS 230kV, 80 kAIC, 4000A, Circuit Breakers 6. Five (5) GIS 230 kV, 4000A, Group Operated Disconnect Switches w/grounding switches as required.

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	The substation will not be expanded for this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$20,240,832.00
Component cost (in-service year)	$21,677,931.07

Substation Upgrade Component

Component title	Lockridge Substation (99-2970)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Lockridge
Substation zone	352

Substation upgrade scope	Purchase and install substation material: 1. Two (2), 230kV, 63 kAIC, 4000A, SF6 Circuit Breakers 2. Four (4), 230 kV, 4000A, Double End Break Disconnect Switches 3. Six (6), 180 kV MO (S), 144 kV MCOV Station Class Surge Arresters 4. Six (6), 230 kV, Coupling Capacitor Voltage Transformers, Relay Accuracy 5. Approximately 200 FT of 5 IN Tubular Bus and Connectors 6. Minor site preparation and grading work; gravel and equipment access road as required 7. Conductor, connectors, insulators, conduit, control cable, foundations, steel structures and grounding connections as per engineering standards Purchase and install relay material: 1. Two (2) 4510 - SEL-2411 Equipment Annunciator 2. Two (2), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box 4. Two (2), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel 5. Two (2), 4506 – 3 Phase CCVT Potential Makeup Box 6. Two (2), 5203 – Traveling Wave Fault Locator Panel

Transformer Information

None

New equipment description	1. Two (2), 230kV, 63 kAIC, 4000A, SF6 Circuit Breakers 2. Four (4), 230 kV, 4000A, Double End Break Disconnect Switches 3. Six (6), 180 kV MO (S), 144 kV MCOV Station Class Surge Arresters 4. Six (6), 230 kV, Coupling Capacitor Voltage Transformers, Relay Accuracy
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	The substation will not be expanded for this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

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

Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$2,262,917.00
Component cost (in-service year)	$2,423,584.11

Substation Upgrade Component

Component title	Mars Substation (99-2970)
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. Two (2) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Five (5) 500 kV, 5000A, Group Operated Disconnect Switches w/grounding switches as required 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters 4. Six (6), 500kV, Relay Accuracy CCVT's 5. One (1), 500 kV Backbone structure (by Transmission) 6. Two (2) 230kV, 63 kAIC, 4000A, Circuit Breakers 7. Five (5) 230 kV, 4000A, Group Operated Disconnect Switches w/grounding switches as required 8. Six (6), Current Transformers, 2000:5 9. Three (3), 180kV, 144kV MCOV Station Class Surge Arresters 10. Three (3), 230kV, CCVT's, Relay Accuracy 11. One (1), 230 kV Backbone structures (by Transmission) 12. One thousand two hundred (1200) ft of 500KV gas insulated bus 13. Two thousand (2000) ft of 230KV gas insulated bus 14. Gas Insulated Bus, connectors, gas to air bushings as required 15. Foundations and steel structures as required 16. Conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards Purchase and install relay material: 1. Four (4), 4510 - SEL-2411 Equipment Annunciator (Engineering Time only) 2. Four (4), 1510 – 28" Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2), 1515 – SEL 351 500 kV Breaker Reclosing Panel (Use with 1510) 4. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box 5. One (1), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel 7. Two (2), 4200 – Transmission Line C.T. Makeup Box 8. Two (2), 4506 – 3 Phase CCVT Potential Makeup Box 9. Two (2), 1816 – 28" Dual SEL-787 Gas Zone Differential Panel 10. Two (2), 5203 – Traveling Wave Fault Locator Panel

Transformer Information

None

New equipment description	1. Two (2) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 2. Five (5) 500 kV, 5000A, Group Operated Disconnect Switches w/grounding switches as required 3. Three (3) 396 kV, 318 kV MCOV Station Class Surge Arresters 4. Six (6), 500kV, Relay Accuracy CCVT's 5. One (1), 500 kV Backbone structure (by Transmission) 6. Two (2) 230kV, 63 kAIC, 4000A, Circuit Breakers 7. Five (5) 230 kV, 4000A, Group Operated Disconnect Switches w/grounding switches as required 8. Six (6), Current Transformers, 2000:5 9. Three (3), 180kV, 144kV MCOV Station Class Surge Arresters 10. Three (3), 230kV, CCVT's, Relay Accuracy
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	The substation will not be expanded for this project.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$20,240,832.00
Component cost (in-service year)	$21,677,931.07

Substation Upgrade Component

Component title	Beaumeade Substation Overdutied Breaker Replacement (99-3208)
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. Seven (7), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Seven (7), 4510 – SEL-2411 Breaker Annunciator. 2. Seven (7), 4526_A – Circuit Breaker Fiber Optic Makeup Box. Retire substation material: 1. Five (5), 230kV, 63kAIC, 3000A, SF6 Circuit Breakers. 2. Two (2), 230kV, 63kAIC, 4000A, SF6 Circuit Breakers.

Transformer Information

None

New equipment description	1. Seven (7), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Seven (7), 4510 – SEL-2411 Breaker Annunciator. 4. Seven (7), 4526_A – Circuit Breaker Fiber Optic Makeup Box.
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

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

Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$3,031,203.60
Component cost (in-service year)	$3,246,419.48

Substation Upgrade Component

Component title	Beco Substation Overdutied Breaker Replacement (99-3208)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Beco
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4510 – SEL-2411 Breaker Annunciator. 2. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box. Retire substation material: 1. Four (4), 230kV, 50kAIC, 3000A, SF6 Circuit Breakers.

Transformer Information

None

New equipment description	1. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Four (4), 4510 – SEL-2411 Breaker Annunciator. 4. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box.
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$1,805,782.70
Component cost (in-service year)	$1,933,993.49

Substation Upgrade Component

Component title	Belmont Substation Overdutied Breaker Replacement (99-3208)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Belmont
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4510 – SEL-2411 Breaker Annunciator. 2. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box. Retire substation material: 1. Three (3), 230kV, 63kAIC, 3000A, SF6 Circuit Breakers. 2. One (1), 230kV, 63kAIC, 4000A, SF6 Circuit Breakers.

Transformer Information

None

New equipment description	1. Four (4), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Four (4), 4510 – SEL-2411 Breaker Annunciator. 4. Four (4), 4526_A – Circuit Breaker Fiber Optic Makeup Box.
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$1,895,732.70
Component cost (in-service year)	$2,030,329.94

Substation Upgrade Component

Component title	Discovery Substation Overdutied Breaker Replacement (99-3208)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Substation name	Discovery
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 230kV, 80kAIC, 4000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 – SEL-2411 Breaker Annunciator. 2. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box. Retire substation material: 1. One (1), 230kV, 40kAIC, 3000A, SF6 Circuit Breaker.

Transformer Information

None

New equipment description	1. One (1), 230kV, 80kAIC, 4000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. One (1), 4510 – SEL-2411 Breaker Annunciator. 4. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box.
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

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

Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$489,649.10
Component cost (in-service year)	$524,414.08

Substation Upgrade Component

Component title	Pleasant View 230 kV Substation Overdutied Breaker Replacement (99-3208)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Pleasant View
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. One (1), 230kV, 80kAIC, 4000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. One (1), 4510 – SEL-2411 Breaker Annunciator. 2. One (1) 4521 – Synchronous Breaker Monitor 3. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box. Retire substation material: 1. One (1), 230kV, 63kAIC, 3000A, SF6 Circuit Breaker.

Transformer Information

None

New equipment description	1. One (1), 230kV, 80kAIC, 4000A, SF6 Circuit Breaker. 2. Foundations and steel structures as required. 3. One (1), 4510 – SEL-2411 Breaker Annunciator. 4. One (1) 4521 – Synchronous Breaker Monitor 5. One (1), 4526_A – Circuit Breaker Fiber Optic Makeup Box.
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$506,956.40
Component cost (in-service year)	$542,949.98

Substation Upgrade Component

Component title	Shellhorn Substation Overdutied Breaker Replacement (99-3208)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Shellhorn
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Al bus, conductor, connectors, conduit, control cable, and grounding material as necessary per engineering standards. Purchase and install relay material: 1. Four (4), 4510 – SEL-2411 Breaker Annunciator. 2. Two (2), 4521 – Synchronous Breaker Monitor 3. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box. Retire substation material: 1. Two (2), 230kV, 50kAIC, 3000A, SF6 Circuit Breakers.

Transformer Information

None

New equipment description	1. Two (2), 230kV, 80kAIC, 4000A, SF6 Circuit Breakers. 2. Foundations and steel structures as required. 3. Four (4), 4510 – SEL-2411 Breaker Annunciator. 4. Two (2), 4521 – Synchronous Breaker Monitor 5. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box.
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Component Cost Details - In Current Year $	
Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$933,073.60
Component cost (in-service year)	$999,322.15

Greenfield Substation Component

Component title	New Aspen 500/230 kV Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Aspen

Substation description	The 500 kV side of the Substation is designed with eight ultimate rows of a double breaker double bus GIS Switchgear Building with two future 500 kV Capacitor Banks, but only five rows will be installed under this project. One 500-230 kV, 1440 MVA Transformer Bank (four 480 MVA 1-phase units including a spare) will be installed under this project with the provision for the second Transformer Bank in the future. The 230 kV side of the Substation is designed with four rows of a breaker and a half GIS Switchgear Building, but only four breakers will be installed under this project. Coordination with project 99-3178 is required.
Nominal voltage	AC
Nominal voltage	500/230

Transformer Information

	Name	**Capacity (MVA)**
Transformer	TX-1	1440

	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	230	

Major equipment description	Refer to "99-2971 Aspen Scope of Work" document for detailed description of major equipment.

	Normal ratings	**Emergency ratings**
Summer (MVA)	1440.000000	1440.000000
Winter (MVA)	1440.000000	1440.000000

Environmental assessment	Refer to section A.4 of 992971 Real Estate and Permitting Summary
Outreach plan	Dominion is in process of filing CPCN (Certificate of Public Convenience and Necessity) application to SCC (Station Commission Corporation). Additionally, the new substation site plan permits will be filed to Loudoun County.
Land acquisition plan	Aspen substation to will be built on already acquired land.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$195,131,358.00
Component cost (in-service year)	$208,985,684.42

Greenfield Substation Component

Component title	New Golden 500/230 kV Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Golden
Substation description	The 500 kV side of the Substation is designed with six ultimate rows of a double breaker double bus GIS Switchgear, but only three rows will be installed under this project. Two 500-230 kV, 1440 MVA Transformer Bank (seven 480 MVA 1-phase units including a spare) will be installed under this project with the provision for the third Transformer Bank in the future. The 230 kV side of the Substation is designed with five rows of a breaker and a half GIS Switchgear Building, but only eleven breakers will be installed under this project.
Nominal voltage	AC
Nominal voltage	500/230

Transformer Information

	Name		Capacity (MVA)
Transformer	TX-1		1440
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	230	
	Name		**Capacity (MVA)**
Transformer	TX-2		1440
	High Side	**Low Side**	**Tertiary**
Voltage (kV)	500	230	

Major equipment description	Refer to "99-2971 Golden Scope of Work" document for detailed description of major equipment.

	Normal ratings	Emergency ratings
Summer (MVA)	1440.000000	1440.000000
Winter (MVA)	1440.000000	1440.000000

Environmental assessment	Refer to section A.4 of 992971 Real Estate and Permitting Summary.
Outreach plan	Dominion is in process of filing CPCN (Certificate of Public Convenience and Necessity) application to SCC (Station Commission Corporation). Additionally, the new substation site plan permits will be filed to Loudoun County. Dominion is in process to acquire the property required for the Substation.
Land acquisition plan	Refer to section A.2 of 992971 Real Estate and Permitting Summary
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	$315,684,462.00
Component cost (in-service year)	$338,098,058.80

Substation Upgrade Component

Component title	Brambleton Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Brambleton
Substation zone	366
Substation upgrade scope	Purchase and install substation material: 1. None. Purchase and install relay material: 1. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 2. One (1), Panel Retirement (Panel 3) Retire substation material: 1. One (1), 500kV, 4000A Wave Trap.

Transformer Information

None

New equipment description	1. One (1), 1340 – 28” Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables)
Substation assumptions	The scope of work depicted on the drawings assumes 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	$230,165.00
Component cost (in-service year)	$246,506.72

Substation Upgrade Component

Component title	Goose Creek Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Goose Creek
Substation zone	366,352

Substation upgrade scope	Purchase and install substation material: 1. Three (3), 500kV, Relay Accuracy CCVT's 2. Three (3), 396 kV, 318 kV, MCOV Lightning Arresters 3. Three (3) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 4. Four (4) 500 kV, 5000A, Group Operated Double End Break Switches (re-use existing switch and steel; demolish existing foundation) 5. Approximately 1000' of 6" Sch 80 Al Tube Bus. 6. Conductor, connectors, insulators, conduit, control cable, foundations, steel structures and grounding connections as per engineering standards 7. Approximately 450 FT of Cable trough along with three road crossing sections 8. Three spans of shield wires (by Transmission) Purchase and install relay material: 1. Three (3), 4510 – SEL-2411 Breaker Annunciator. 2. One (1), 1510 – 28" Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Three (3), 4535 – 500kV GE Circuit Breaker Condition Monitor or 4536 – 500kV Axion Circuit Breaker Condition Monitor. 4. Three (3), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 5. Two (2), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 6. One (1), 4506 – 3Ø CCVT Potential Makeup Box 7. One (1), Panel Retirement (Panel 2) Retire substation material: 1. Two (2) 500 kV, 63kAIC, 4000A, SF6 Circuit Breakers. 2. Four (4) 500 kV, 4000A, Group Operated Double End Break Switches. 3. One (1), 500kV, 4000A Wave Trap.

Transformer Information

None

New equipment description	1.Three (3), 500kV, Relay Accuracy CCVT's 2. Three (3), 396 kV, 318 kV, MCOV Lightning Arresters 3. Three (3) 500 kV, 63kAIC, 5000A, SF6 Circuit Breakers 4. Four (4) 500 kV, 5000A, Group Operated Double End Break Switches (re-use existing switch and steel; demolish existing foundation) 5. Three (3), 4510 – SEL-2411 Breaker Annunciator. 6. One (1), 1510 – 28" Dual SEL-351 Transmission Breaker w/ Reclosing Panel 7. Three (3), 4535 – 500kV GE Circuit Breaker Condition Monitor or 4536 – 500kV Axion Circuit Breaker Condition Monitor. 8. Three (3), 4526_D – C.B. w/ BCM Fiber Optic Makeup Box. 9. Two (2), 1340 – 28" Dual SEL-411L DCB/Fiber, CD/Fiber Line Panel (500kV w/ 2 Fiber Cables) 10. One (1), 4506 – 3Ø CCVT Potential Makeup Box 11. One (1), Panel Retirement (Panel 2)
Substation assumptions	1. The scope of work depicted on the drawings assumes no overlap with other designs and construction activities, except if mentioned in this Project Summary. 2. 4-hole pad connections must be replaced with 6-hole connections to maintain 5000A ratings. 3. Relay Settings and protection & control design will be revised as part of the SPE scope of work.
Real-estate description	Substation is not being expanded.
Construction responsibility	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Benefits/Comments	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.

Component Cost Details - In Current Year $

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

Permitting / routing / siting	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Total component cost	$5,853,741.00
Component cost (in-service year)	$6,269,356.61

Substation Upgrade Component

Component title	Paragon Park Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Paragon Park
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. None. Purchase and install relay material: 1. Two (2), 1340 – 28” Dual SEL-411L CD/Fiber Line Panel 2. Two (2), Panel Retirement (Panel 6 & 10)

Transformer Information

None

New equipment description	1. Two (2), 1340 – 28” Dual SEL-411L CD/Fiber Line Panel
Substation assumptions	The scope of work depicted on the drawings assumes 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	$303,164.00
Component cost (in-service year)	$324,688.64

Substation Upgrade Component

Component title	Sterling Park Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Sterling Park
Substation zone	352
Substation upgrade scope	Purchase and install substation material: 1. None. Purchase and install relay material: 1. Two (2), 1340 – 28” Dual SEL-411L CD/Fiber Line Panel 2. Two (2), Panel Retirement (Panel 6 & 8)

Transformer Information

None

New equipment description	1. Two (2), 1340 – 28” Dual SEL-411L CD/Fiber Line Panel

Substation assumptions	The scope of work depicted on the drawings assumes 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	$303,164.00
Component cost (in-service year)	$324,688.64

Substation Upgrade Component

Component title	Sycolin Creek Substation (99-2971)
Project description	The redacted information is proprietary to the Company; therefore, it is privileged and confidential.
Substation name	Sycolin Park
Substation zone	352

Substation upgrade scope	Purchase and install substation material: 1. Six (6), 230 kV, Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Six (6), 180 kV MO (S), 144 kV MCOV Station Class Surge Arresters 3. Two (2), 230kV, 63 kAIC, 4000A, SF6 Circuit Breakers 4. Four (4), 230 kV, 4000A, Double End Break Disconnect Switches 5. Conductor, connectors, insulators, conduit, control cable, foundations, steel structures and grounding connections as per engineering standards Purchase and install relay material: 1. Two (2) 4510 - SEL-2411 Equipment Annunciator 2. Two (2), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 3. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box 4. Two (2), 1340 – 28” Dual SEL-411L CD/Fiber Line Panel 5. Two (2), 4506 – 3 Phase CCVT Potential Makeup Box

Transformer Information

None

New equipment description	1. Six (6), 230 kV, Coupling Capacitor Voltage Transformers, Relay Accuracy 2. Six (6), 180 kV MO (S), 144 kV MCOV Station Class Surge Arresters 3. Two (2), 230kV, 63 kAIC, 4000A, SF6 Circuit Breakers 4. Four (4), 230 kV, 4000A, Double End Break Disconnect Switches 5. Two (2) 4510 - SEL-2411 Equipment Annunciator 6. Two (2), 1510 – 28” Dual SEL-351 Transmission Breaker w/ Reclosing Panel 7. Two (2), 4526_A – Circuit Breaker Fiber Optic Makeup Box 8. Two (2), 1340 – 28” Dual SEL-411L CD/Fiber Line Panel 9. Two (2), 4506 – 3 Phase CCVT Potential Makeup Box
Substation assumptions	The scope of work depicted on the drawings assumes 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	$1,869,949.00
Component cost (in-service year)	$2,002,715.38

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-W124	313399	6MARS	313805	6SHELLHORN1	1	230	345	Winter Gen Deliv	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-GD-S169	314006	6ASHBURA	314010	6BEAMEAD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W129	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST253	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1	Included
2022W3-N1-WT74	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST254	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1	Included
2022W3-N1-ST98	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST175	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST54	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST55	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST176	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	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-ST213	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST215	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W49	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	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-GD_L310	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-S1708	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S2019	314041	6GLEBE	314185	6RADNOR	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1703	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S1779	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-W136	314041	6GLEBE	314185	6RADNOR	1	230	345	Winter Gen Deliv	Included
2022W3-N1-LLT31	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-LLT32	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-ST107	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST108	313752	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-N1-ST66	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST100	313393	8MARS	313399	6MARS	1	500/230	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-S83	314041	6GLEBE	314185	6RADNOR	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1784	314039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S1704	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-N1-WT92	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1706	314009	6BRADOCK	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W57	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-WT94	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1811	313805	6SHELLHORN1	313841	6ENTERPRIS	1	230	345	Summer Gen Deliv	Included
2022W3-GD_L359	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-W192	313805	6SHELLHORN1	314098	6GREENWAY1	1	230	345	Winter Gen Deliv	Included
2022W3-N1-ST119	313393	8MARS	313399	6MARS	1	500/230	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_L276	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-W880	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W829	314041	6GLEBE	314185	6RADNOR	1	230	345	Winter Gen Deliv	Included
2022W3-GD-S1703	314035	6DISCOVR	313774	6LINC PRK	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST77	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST110	313399	6MARS	313746	6SOJOURNER	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-ST113	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT89	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST112	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W875	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST114	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W879	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	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-W60	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-S333	314010	6BEAMEAD	313743	6INTERCONNEC	1	230	345	Summer Gen Deliv	Included
2022W3-GD-S165	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S2041	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD_L360	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-W1371	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-WT148	313752	6TAKEOFF	313774	6LINC PRK	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST120	313393	8MARS	313399	6MARS	1	500/230	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-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-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-ST123	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT134	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST124	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1817	314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST125	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST126	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W894	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-W895	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-S2103	314039	6GALLOWS A	314052	6IDYLWOD	1	230	345	Summer Gen Deliv	Included
2022W3-GD-W94	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Winter Gen Deliv	Included
2022W3-GD-S1722	313399	6MARS	313805	6SHELLHORN1	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST141	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST131	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT109	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST132	314035	6DISCOVR	313774	6LINC PRK	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W92	314006	6ASHBURA	314010	6BEAMEAD	1	230	345	Winter Gen Deliv	Included
2022W3-N1-WT110	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT142	313399	6MARS	313746	6SOJOURNER	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST137	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST138	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S2363	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD_L269	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-GD-S2373	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD_L309	314820	6BALLSTN	314120	6CLRNDNC	1	230/230	345/345	Light Load Gen Deliv	Included
2022W3-N1-ST143	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-W103	314072	6PL VIEW	314004	6ASHBURN	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-WT127	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST150	314009	6BRADOCK	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST151	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT163	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST31	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S180	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-GD-S172	313815	6SPRINGH	314079	6RESTON	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT168	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT40	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Winter N-1 Thermal	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-N1-ST142	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT153	314006	6ASHBURA	314010	6BEAMEAD	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST143	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST144	314925	8PL VIEW	314072	6PL VIEW	1	500/230	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-N1-ST147	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST26	314010	6BEAMEAD	313743	6INTERCONNEC	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-ST181	314925	8PL VIEW	314072	6PL VIEW	1	500/230	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-ST182	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT13	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Winter N-1 Thermal	Included
2022W3-LD-ST24	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-LD-ST26	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-N1-ST163	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1763	314068	6OX	314039	6GALLOWS A	1	230	345	Summer Gen Deliv	Included
2022W3-LD-ST25	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-N1-WT17	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1683	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-N1-ST162	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT18	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1683	313399	6MARS	313805	6SHELLHORN1	1	230	345	Summer Gen Deliv	Included
2022W3-N1-ST163	314072	6PL VIEW	314004	6ASHBURN	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-LD-ST27	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Load Deliverability	Included
2022W3-N1-WT52	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-WT19	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-LLT12	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-LLT12	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-LLT12	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Light Load N-1	Included
2022W3-N1-ST198	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST154	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST34	314925	8PL VIEW	314072	6PL VIEW	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-LD-ST23	313904	6GOOSECRK	314006	6ASHBURA	1	230/230	345/345	Load Deliverability	Included
2022W3-N1-ST191	314009	6BRADOCK	314052	6IDYLWOD	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-WT48	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S1738	313399	6MARS	313746	6SOJOURNER	1	230	345	Summer Gen Deliv	Included
2022W3-N1-WT24	314041	6GLEBE	314185	6RADNOR	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-GD-S2223	313393	8MARS	313399	6MARS	1	500/230	345	Summer Gen Deliv	Included
2022W3-N1-WT25	314041	6GLEBE	314185	6RADNOR	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-N1-ST169	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1765	313805	6SHELLHORN1	314098	6GREENWAY1	1	230	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-GD-S1766	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-N1-ST171	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1418	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-N1-ST172	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-GD-S1767	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345	Summer Gen Deliv	Included
2022W3-N1-ST174	314039	6GALLOWS A	314052	6IDYLWOD	1	230/230	345/345	Summer N-1 Thermal	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-GD-W159	313393	8MARS	313399	6MARS	1	500/230	345	Winter Gen Deliv	Included
2022W3-N1-ST85	313399	6MARS	313805	6SHELLHORN1	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST206	313399	6MARS	313746	6SOJOURNER	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-ST43	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	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-ST44	313393	8MARS	313399	6MARS	1	500/230	345/345	Summer N-1 Thermal	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-N1-ST45	314939	8GOOSE CREEK	313904	6GOOSECRK	1	500/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-WT57	314010	6BEAMEAD	313743	6INTERCONNEC	1	230/230	345/345	Winter N-1 Thermal	Included
2022W3-N1-ST81	314068	6OX	314039	6GALLOWS A	1	230/230	345/345	Summer N-1 Thermal	Included
2022W3-N1-ST48	314006	6ASHBURA	314010	6BEAMEAD	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	12/2024
Construction start date	12/2025
Project Duration (In Months)	36

Additional Comments

NA