Waxpool Loop - Shellhorn Option

General Information

Proposing entity name	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	883
Project title	Waxpool Loop - Shellhorn Option
Project description	Extend a new 230kV line from Shellhorn Substation to a structure near Farmwell Substation and cut into existing Line #2149 (Roundtable-Waxpool) creating a new Line #9251 (Shellhorn to Waxpool) on new right of way. Terminate existing Line #2149 (Roundtable-Waxpool) into Farmwell Substation creating Line #2149 (Farmwell-Roundtable). Relocate the termination of existing Line #2190 (Cumulus-Farmwell) to a new terminal location within Farmwell Substation. See the Additional Comments of the Transmission Line Upgrade Component section for overall ratings.
Project in-service date	12/2025
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. 230kV line extension from Shellhorn to Farmwell and line terminal rearra...
2. Farmwell Substation - 230kV terminations
3. Shellhorn Substation - 230kV termination
4. Waxpool Substation - Relay resets and documentation
5. Roundtable Substation - Relay resets and documentation
6. Cumulus Substation - Relay resets

Greenfield Transmission Line Component

Component title	230kV line extension from Shellhorn to Farmwell and line terminal rearrangement	
Point A	Shellhorn (Line #9251), Farmwell (Line #2149), and Cumulus (Line #2190)	
Point B	Waxpool (Line #9251), Roundtable (Line #2149), and Farmwell (#2190)	
Point C		
	Normal ratings	**Emergency ratings**
Summer (MVA)	1047.000000	1047.000000
Winter (MVA)	1160.000000	1160.000000
Conductor size and type	2-768 ACSS/TW 250 Deg C (New Line Conductor (#9251 and #2190)	
Nominal voltage	AC	
Nominal voltage	230 kV	
Line construction type	Overhead	
General route description	The new right-of-way route will start at Shellhorn Substation, traverses 0.35 mile northwest to the north side of Loudoun County Parkway, turns northeast 0.75 mile along Loudoun County Parkway, turns north 0.4 mile at UUNET Dr to Farmwell Substation. Proposal D3 includes: 1.) Extending a 230kV Line from Shellhorn Substation adjacent to Farmwell Substation. The new line will take over a portion of Line 2149 (Roundtable-Waxpool) creating a new Line 9251 (Shellhorn-Waxpool). 2.) At Farmwell substation terminate existing Line 2149 (Roundtable-Waxpool) creating Line 2149(Farmwell-Roundtable). 3.) At Farmwell the terminal location for Line 2190(Cumulus-Farmwell) will be rearranged.	
Terrain description	The area is predominately urban with minimal changes in elevations. The areas that are forested will ultimately be developed in the future. The zoning is Planned Development Office Park.	
Right-of-way width by segment	Shellhorn to Farmwell is approximately 1.5 miles in length. The first segment from Farmwell extending approximately 0.4 mile south to Loudoun County Parkway would expand the existing 100’ ROW an additional 40’ for a total 140' ROW width. The second segment consists of .75 mile of new ROW, with an 80’ width. The third segment from Loudon County Parkway to Shellhorn is approximately 0.3 mile and would extend the existing ROW width an additional 80’.	

Electrical transmission infrastructure crossings	None
Civil infrastructure/major waterway facility crossing plan	The proposed line crosses Loudoun County Parkway
Environmental impacts	Please review section A.4 Assessment of Potential Environmental Impacts in the attached Waxpool Area Proposal D3 Real Estate and Permitting document attached in the supporting documents below.
Tower characteristics	230kV single circuit mono-pole structures and 230kV double circuit mono-pole structures
Construction responsibility	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Additional 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	$39,584,915.00
Component cost (in-service year)	$42,395,444.00

Substation Upgrade Component

Component title	Farmwell Substation - 230kV terminations
Substation name	Farmwell Substation
Substation zone	352

Substation upgrade scope	The Farmwell Substation scope of work includes addition of a 230 kV Circuit Breaker, Disconnect Switch, CCVT's, arresters, and relay materials to create the new line terminal. The existing Line #2190 (Cumulus-Farmwell) will be relocated to the new line position (opposite side of the backbone) and Line #2149 (Farmwell-Roundtable) will terminate on the existing Line #2190 (Cumulus-Farmwell) line position.

Transformer Information

None

New equipment description	Purchase and install: 1. One (1), 230kV, 63kAIC, 4000A SF6 Circuit Breaker. 2. One (1), 230 kV, 4000A, center break disconnect switch. 3. Three (3), 230kV CCVT's. 4. Three (3), 180kV, 144kV MCOV Surge Arresters. 5. Conductor, connectors, conduits, control cables, foundations, steel structures, grounding material and relay material as per engineering standards
Substation assumptions	Farmwell substation is planned for an ultimate 230kV six-breaker ring bus. The station has adequate terminal location position for Proposal D3. Farmwell terminal equipment will be rated higher than the line conductor.
Real-estate description	Farmwell Substation will not be expanded as part of Proposal D3.
Construction responsibility	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Additional 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	$785,282.00

Component cost (in-service year)	$841,037.00

Substation Upgrade Component

Component title	Shellhorn Substation - 230kV termination
Substation name	Shellhorn Substation
Substation zone	352
Substation upgrade scope	The Shellhorn Road Substation scope of work includes addition of a 230 kV Circuit Breaker, Disconnect Switch, CCVT's, arresters, and relay material to create the new line terminal. The new Line #9251(Shellhorn to Waxpool).

Transformer Information

None

New equipment description	Purchase and install: 1. One (1), 230kV, 63kAIC, 4000A SF6 Circuit Breaker. 2. One (1), 230 kV, 4000A, center break disconnect switch. 3. Three (3), 230kV CCVT's. 4. Three (3), 180kV, 144kV MCOV Surge Arresters. 5. Conductor, connectors, conduits, control cables, foundations, steel structures, grounding material, and relay material as per engineering standards
Substation assumptions	Shellhorn substation is planned for an ultimate three strings of breaker and a half scheme. The station has adequate terminal locations for Proposal D3. Shellhorn Substation terminal equipment will be rated higher than the line conductor.
Real-estate description	Shellhorn Substation will not be expanded as part of Proposal D3.
Construction responsibility	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Additional 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	$777,776.00
Component cost (in-service year)	$832,998.00

Substation Upgrade Component

Component title	Waxpool Substation - Relay resets and documentation
Substation name	Waxpool substation
Substation zone	352
Substation upgrade scope	Drawing updates, coordination study, relay resets, and field support necessary for line number destination change from Line #2149 (Roundtable to Waxpool) to Line #9251(Shellhorn to Waxpool).

Transformer Information

None

New equipment description	No new substation equipment required for this proposal.
Substation assumptions	No additional relay material will be needed for this proposal. Waxpool terminal equipment will be rated higher than the line conductor.
Real-estate description	The substation will not be expanded for this proposal.
Construction responsibility	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Additional 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	$24,446.00
Component cost (in-service year)	$26,182.00

Substation Upgrade Component

Component title	Roundtable Substation - Relay resets and documentation
Substation name	Roundtable substation
Substation zone	352
Substation upgrade scope	Drawing updates, coordination study, relay resets, and field support necessary for the Line #2149 destination change to Farmwell Substation. New Line #2149 (Farmwell to Roundtable).

Transformer Information

None

New equipment description	No new equipment required for this proposal.
Substation assumptions	No additional relay material will be needed for this proposal. Roundtable terminal equipment will be rated higher than the line conductor.
Real-estate description	The substation will not be expanded for this proposal.
Construction responsibility	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Additional 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	$20,330.00
Component cost (in-service year)	$21,773.00

Substation Upgrade Component

Component title	Cumulus Substation - Relay resets
Substation name	Cumulus Substation
Substation zone	352
Substation upgrade scope	System Protection Engineering Coordination Study and System Protection Technician relay resets.

Transformer Information

None

New equipment description	No new equipment required for this proposal.
Substation assumptions	No additional relay material will be needed for this proposal.
Real-estate description	The substation will not be expanded for this proposal.
Construction responsibility	The redacted information is proprietary to the Company, therefore it is privileged and confidential.

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

Component Cost Details - In Current Year $

Engineering & design	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Permitting / routing / siting	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
ROW / land acquisition	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Materials & equipment	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Construction & commissioning	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Construction management	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Overheads & miscellaneous costs	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Contingency	The redacted information is proprietary to the Company, therefore it is privileged and confidential.
Total component cost	$9,978.00
Component cost (in-service year)	$10,686.00

Congestion Drivers

None

Existing Flowgates

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type
N2-SLD8	313721	6BUTTERMILK	313729	6CUMULUS	1	230	345	N-1-1 Load Drop (summer)
N2-WLD4	313721	6BUTTERMILK	313729	6CUMULUS	1	230	345	N-1-1 Load Drop (winter)

New Flowgates

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

Financial Information

Capital spend start date	01/2023
Construction start date	06/2025
Project Duration (In Months)	35

Additional comments

None.