Joshua Falls - Durandal & Durandal Station

General Information

Proposing entity name	Company specific info not to be shared for public view.
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Company specific info not to be shared for public view.
Company proposal ID	Company specific info not to be shared for public view.
PJM Proposal ID	991
Project title	Joshua Falls - Durandal & Durandal Station
Project description	Construct Joshua Falls - Durandal 765kV greenfield line, 765/500kV Durandal greenfield Station, and incumbent upgrades and cut-ins to accommodate the new assets. Construction Responsibility for two components of this project will be assigned to Valley Link Transmission Virgini, LLC. Please see attached Executive Abstract for additional detail.
Email	Company specific info not to be shared for public view.
Project in-service date	12/2029
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	Yes
Additional benefits	Company specific info not to be shared for public view.

Project Components

1. Joshua Falls - Durandal 765kV line
2. Durandal 500kV cut-ins
3. Joshua Falls Station upgrade
4. Durandal greenfield Substation

Greenfield Transmission Line Component

Component title	Joshua Falls - Durandal 765kV line	
Project description	Company specific info not to be shared for public view.	
Point A	Joshua Falls Station	
Point B	Durandal Station	
Point C		
	Normal ratings	Emergency ratings
Summer (MVA)	5300.000000	5300.000000
Winter (MVA)	5300.000000	5300.000000
Conductor size and type	6-bundle 795 kcmil ACSR Tern	
Nominal voltage	AC	
Nominal voltage	765	
Line construction type	Overhead	
General route description	The Proposing Entity assessed environmental and land use constraints and opportunities within an area that included the existing Joshua Falls substation and the greenfield Durandal substation as the two endpoints. The evaluation resulted in the Bid Route of approximately 55.6-miles of greenfield line through four counties (Campbell, Appomattox, Prince Edward, and Charlotte) in Virginia. The 765kV line exits the existing Joshua Falls Substation from the south, then travels in a predominantly southeast direction until it reaches the greenfield Durandal substation from the west, paralleling 40.0 miles of existing transmission line. No habitable structures are present within the proposed ROW. Overall, the Route selected is the most direct route between the two existing substations and has the least overall impact on land use and environmental resources based on the Proposing Entity's qualitative review. The Route significantly reduces the number of new access roads, enhancing overall constructability impacts.	
Terrain description	The topography along the Joshua Falls–Durandal 765kV line is relatively hilly. Land use in the area encompasses mostly agricultural and residential parcels in rural Virginia. The line crosses low density developed areas, a significant amount of highly vegetated (wooded) rural land, state/county highways, railroads, streams, and existing utilities.	

Right-of-way width by segment	The Joshua Falls–Durandal 765kV greenfield route ROW will be 200 feet in width and will parallel/cross existing rights-of-way to include interstates, roads, railroads, existing transmission lines/utilities, existing pipelines and best minimizes potential impacts to the natural and human environments.
Electrical transmission infrastructure crossings	36.995, -78.5721, 37.2316, -78.7487, 37.3816, -78.9648
Civil infrastructure/major waterway facility crossing plan	The greenfield Joshua Falls-Durandal 765kV line greenfield route crosses & runs parallel with multiple railroads, numerous water facilities, and large underground pipelines. The route does not cross any notable waterways; however, the southern terminus is located approximately 0.6-mile east of the Roanoke River, and the northern terminus is located approximately 0.4-mile southeast of the James River. The four Norfolk Southern railroad crossings are located at latitude/longitude 37.1187, -78.6238; 37.2031, -78.6612; 37.228, -78.6864; and 37.3579, -78.8991. The transmission line runs parallel with one pipeline for a short distance in Charlotte County and crosses over several pipelines.
Environmental impacts	Land use along the Bid Route corridor is a predominantly rural agricultural landscape with pockets of residential development. The route intersects FEMA-mapped floodplains and/or floodways, and NWI-mapped wetlands primarily adjacent to streams and low-lying areas. The route also crosses named and unnamed streams in various locations. Based on existing aerial photography, the proposed route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agency criteria as needed. Desktop studies and record reviews for the station parcel and line route will be conducted for wetlands and streams, hazardous materials, and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations and the station is sited to maximize avoidance of sensitive resources. For example, poles will be placed outside of or span wetlands, streams, and floodplains to the greatest extent possible. Existing access and roads will be utilized to access pole locations. If necessary, temporary access roads to pole locations will be identified and field surveyed for environmental and cultural resources and will be adjusted to avoid or minimize impacts.
Tower characteristics	This 765kV line utilizes a combination of self-supporting and guyed-V lattice towers. All 765kV construction will be horizontally configured. Guyed-V suspension towers will be supported by a center grillage and four bridge-strand anchors. Self-supporting suspension towers, running-corner suspension towers, and tension structures will utilize concrete drilled piers to support foundation loads. Self-supporting suspension structures will be used to the extent possible as an effort to keep electrical infrastructure compatible with agricultural use, whereas guyed-V suspension towers will be utilized in steeper terrain where access for concrete trucks is difficult, or impractical.
Construction responsibility	Company specific info not to be shared for public view.
Benefits/Comments	Company specific info not to be shared for public view.

Component Cost Details - In Current Year $

Engineering & design	Company specific info not to be shared for public view.
Permitting / routing / siting	Company specific info not to be shared for public view.
ROW / land acquisition	Company specific info not to be shared for public view.
Materials & equipment	Company specific info not to be shared for public view.
Construction & commissioning	Company specific info not to be shared for public view.
Construction management	Company specific info not to be shared for public view.
Overheads & miscellaneous costs	Company specific info not to be shared for public view.
Contingency	Company specific info not to be shared for public view.
Total component cost	$297,690,507.96
Component cost (in-service year)	$335,053,289.00

Greenfield Transmission Line Component

Component title	Durandal 500kV cut-ins
Project description	Company specific info not to be shared for public view.
Point A	Clover
Point B	Rawlings
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	3464.000000	3464.000000
Winter (MVA)	3983.000000	4018.000000

Conductor size and type	The new cut-ins will be constructed using a conductor bundle to meet/exceed the SN/SE/WN/WE ratings stated above.

Nominal voltage	AC
Nominal voltage	500
Line construction type	Overhead
General route description	The 500 kV extension will be approximately 0.35 miles in length between the proposed Durandal Substation in Charlotte County, Virginia to Dominion's existing Clover - Rawlings 500kV line.
Terrain description	The topography for the 500 kV extension is rolling hills through rural forested land in Charlotte County, Virginia.
Right-of-way width by segment	The ROW for the 500kV cut-ins will be 175 feet in width.
Electrical transmission infrastructure crossings	N/A
Civil infrastructure/major waterway facility crossing plan	The transmission line will not cross or impact civil infrastructure/major waterway crossings.
Environmental impacts	The tie-ins lines have undergone a robust siting analysis and the proposed cost includes costs for Environmental studies and permits.
Tower characteristics	The new 500kV cut-in lines for Durandal will be constructed using a mixture of galvanized steel 3-pole deadend structures and galvanized tubular steel H-Frame structures. All structures will be supported by concrete pier foundations.
Construction responsibility	Company specific info not to be shared for public view.
Benefits/Comments	Company specific info not to be shared for public view.
Component Cost Details - In Current Year $	
Engineering & design	Company specific info not to be shared for public view.
Permitting / routing / siting	Company specific info not to be shared for public view.
ROW / land acquisition	Company specific info not to be shared for public view.
Materials & equipment	Company specific info not to be shared for public view.
Construction & commissioning	Company specific info not to be shared for public view.
Construction management	Company specific info not to be shared for public view.

Overheads & miscellaneous costs	Company specific info not to be shared for public view.
Contingency	Company specific info not to be shared for public view.
Total component cost	$4,300,000.00
Component cost (in-service year)	$4,839,688.00

Substation Upgrade Component

Component title	Joshua Falls Station upgrade
Project description	Company specific info not to be shared for public view.
Substation name	Joshua Falls Substation
Substation zone	APCo (AEP)
Substation upgrade scope	Create a new 765kV line position at AEP Joshua Falls Substation. The new line position will include 3-50MVar single-phase 765kV reactors to interconnect the new Joshua Falls - Durandal 765kV line. 3-765kV circuit breakers will be added to the existing 765kV ring bus at Joshua Falls.

Transformer Information

None

New equipment description	Create a new 765kV line position by adding 3-765kV, 5000A, 63kA line circuit breakers; 1-765kV, 3000A, 50kA reactor circuit breaker; 6-765kV, 5000A single-phase disc. switches; 6-765kV, 4000A single-phase disc. switches; 1-set of 3-765kV CCVTs; 4-sets of 3-765kV arresters; 3-765kV, 50MVar single-phase line reactors with arresters; and associated bus jumpers, bus tubing & dampening cables, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, and equipment grounding. Install associated relay equipment in the existing control house.
Substation assumptions	It is assumed that all necessary outages will be available, the existing AC, DC, & telecom. systems will accommodate the new equipment, the existing control house has space for the new relay equipment, ground grid resistivity test data are available, ground grid upgrades will not be needed, the existing cable trench has space for the new control cables, soil boring logs and geotechnical report are available, additional station stone will not be needed, and space will be available to install the equipment outlined in this description.
Real-estate description	All necessary land rights are acquired.

Construction responsibility	Company specific info not to be shared for public view.
Benefits/Comments	Company specific info not to be shared for public view.
Component Cost Details - In Current Year $	
Engineering & design	Company specific info not to be shared for public view.
Permitting / routing / siting	Company specific info not to be shared for public view.
ROW / land acquisition	Company specific info not to be shared for public view.
Materials & equipment	Company specific info not to be shared for public view.
Construction & commissioning	Company specific info not to be shared for public view.
Construction management	Company specific info not to be shared for public view.
Overheads & miscellaneous costs	Company specific info not to be shared for public view.
Contingency	Company specific info not to be shared for public view.
Total component cost	$25,254,254.80
Component cost (in-service year)	$28,423,886.00

Greenfield Substation Component

Component title	Durandal greenfield Substation
Project description	Company specific info not to be shared for public view.
Substation name	Durandal Substation
Substation description	Construct a 765/500kV greenfield substation. The substation will include a four (4) circuit breaker 765kV ring bus design (one (1) circuit breaker installed initially) that will interconnect a new 765kV Joshua Falls - Durandal line with 3-50MVar single-phase reactors; a 765/500kV, 2250MVA transformer bank (3-750MVA single-phase units); and a four (4) circuit breaker 500kV ring bus design (three (3) circuit breakers installed initially) that will interconnect the existing Clover - Rawlings 500kV line.
Nominal voltage	AC

Nominal voltage	765/500

Transformer Information

	Name	Capacity (MVA)
Transformer	Transformer bank 1	2250

	High Side	Low Side	Tertiary
Voltage (kV)	765	500	13.8

Major equipment description	Major equipment at Durandal Substation will consist of: 1-765kV, 4000A, 50kA line circuit breaker; 1-765kV, 3000A, 50kA reactor circuit breaker; 15-765kV, 4000A single-phase disc. switches; 2-sets of 3-765kV CCVTs; 2-sets of 3-765kV arresters; 3-765/500kV, 750MVA single-phase transformers with arresters; 3-765kV, 50MVar single-phase line reactors with arresters; 3-500kV, 4000A, 63kA circuit breakers; 21-500kV, 4000A single-phase disc. switches; 3-sets of 3-500kV line CCVTs; 1-500kV, 5000A line trap; 1-line tuner; 6-sets of 3-500kV arresters; AC power system; 125VDC batteries & chargers and associated DC power system; and associated bus jumpers, bus tubing & dampening cables, strain bus, insulators, steel structures, foundations, yard lighting, control cables, conduits, cable trench, ground grid, and equipment/fence grounding. Install associated relay equipment in a new 16ft x 60ft control house. The station will be established on property roughly located at GPS coordinates (36.866397, -78.527936). Site development will include grading, access road, security fencing, gates, and station stone. It is assumed that property will be available for purchase, wetland mitigation will not be needed, and all necessary permits will be available. It is assumed that all necessary outages will be available.

	Normal ratings	Emergency ratings
Summer (MVA)	2280.000000	2620.000000
Winter (MVA)	2647.000000	2920.000000

Environmental assessment	Land use for the new Durandal Substation is flat rural landscape in the vicinity of the existing Clover Power Station. The substation will lie adjacent and outside FEMA-mapped floodplains and/or floodways, and NWI-mapped wetlands primarily adjacent to streams and low-lying areas. Based on existing aerial photography, the proposed greenfield Durandal Substation route likely has unmapped wetland or drainage features. The timing of construction will be executed in accordance with state and federal agencies' criteria as needed. Desktop studies and record reviews for the station and line route will be conducted for wetlands and streams, hazardous materials, and cultural resources. Following field studies, data will be digitized and provided to engineering so that pole locations and the station is sited to maximize avoidance of sensitive resources. For example, poles will be placed outside of or span wetlands, streams, and floodplains to the greatest extent possible. Existing access and roads will be utilized to access pole locations. If necessary, temporary access roads to pole locations will be identified and field surveyed for environmental and cultural resources and will be adjusted to avoid or minimize impacts.
Outreach plan	Public outreach is a critical component to the Proposing Entity’s siting process, so efforts will include properly informing the public; federal, state, and local agencies; local governments; and other key stakeholders on the need for, and benefits of, this Project. The Proposing Entity’s approach to public outreach is to be always candid and transparent, and to offer a variety of tools and means for directly impacted parties to engage with our staff. The Proposing Entity will provide development updates to local government officials, key stakeholders, and impacted parties as the Project progresses. Public outreach also will involve collecting information about landowner properties and communicating with directly affected landowners during the final siting process.
Land acquisition plan	The proposed Durandal substation will be 65 acres in size and located on undeveloped agricultural land in rural Charlotte County, Virginia. The proposed station will be purchased in fee.
Construction responsibility	Company specific info not to be shared for public view.
Benefits/Comments	Company specific info not to be shared for public view.
Component Cost Details - In Current Year $	
Engineering & design	Company specific info not to be shared for public view.
Permitting / routing / siting	Company specific info not to be shared for public view.
ROW / land acquisition	Company specific info not to be shared for public view.
Materials & equipment	Company specific info not to be shared for public view.
Construction & commissioning	Company specific info not to be shared for public view.
Construction management	Company specific info not to be shared for public view.

Overheads & miscellaneous costs	Company specific info not to be shared for public view.
Contingency	Company specific info not to be shared for public view.
Total component cost	$135,102,025.89
Component cost (in-service year)	$152,058,520.00

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
2025W1-ME1	290234	05MUSEVILLE	242802	05SMITHMTN	1	138	205	Market Efficiency	Included

New Flowgates

Company specific info not to be shared for public view.

Financial Information

Capital spend start date	12/2025
Construction start date	11/2028
Project Duration (In Months)	48

Cost Containment Commitment

Cost cap (in current year)	Company specific info not to be shared for public view.
Cost cap (in-service year)	Company specific info not to be shared for public view.

Components covered by cost containment

1. Joshua Falls - Durandal 765kV line - Transource
2. Durandal greenfield Substation - Transource

Cost elements covered by cost containment

Engineering & design	Yes
Permitting / routing / siting	No
ROW / land acquisition	No
Materials & equipment	No
Construction & commissioning	No
Construction management	No
Overheads & miscellaneous costs	No
Taxes	No
AFUDC	No
Escalation	No
Additional Information	Company specific info not to be shared for public view.
Is the proposer offering a binding cap on ROE?	Yes
Would this ROE cap apply to the determination of AFUDC?	Yes
Would the proposer seek to increase the proposed ROE if FERC finds that a higher ROE would not be unreasonable?	No
Is the proposer offering a Debt to Equity Ratio cap?	Company specific info not to be shared for public view.

Additional Comments

Please reach out with any questions/clarifications necessary. Thank you.