AEP incumbent upgrades for Portfolio #4

General Information

Proposing entity name	Company confidential and proprietary information
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Company confidential and proprietary information
Company proposal ID	Company confidential and proprietary information
PJM Proposal ID	617
Project title	AEP incumbent upgrades for Portfolio #4
Project description	
Email	Company confidential and proprietary information
Project in-service date	12/2029
Tie-line impact	Yes
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	Company confidential and proprietary information

Project Components

1. Broadford 765 kV Upgrade
2. Cloverdale 765 Upgrade
3. Smith Mountain – Rock Castle Sag Study
4. Claytor - S Christiansburg - Tech Drive 138 kV Sag Study
5. Cloverdale - Jackson's Ferry 765 kV Upgrade
6. Scottsville - Bremo Sag Study

7. Buchannan – Keen Mountain 138kV Sag Study

8. Roanoke - Moseley 138kV Sag Study

9. Warrenton - Trident 230 kV

10. Yeat - OX 500 kV rebuild

11. Smith Mountain - Redeye - Candler's Mountain - Opossum Creek 138 kV Reconductor

Substation Upgrade Component

Component title	Broadford 765 kV Upgrade
Project description	Company confidential and proprietary information
Substation name	Broadford Station
Substation zone	AEP
Substation upgrade scope	Replace Jackson's Ferry CB Q2

Transformer Information

None

New equipment description	New CB Q2
Substation assumptions	The existing AC station service is assumed to be sufficient to accommodate the new substation equipment.
Real-estate description	All necessary land rights are acquired.
Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information

Component Cost Details - In Current Year $

Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information

Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$4,500,000.00
Component cost (in-service year)	$5,064,790.00

Substation Upgrade Component

Component title	Cloverdale 765 Upgrade
Project description	Company confidential and proprietary information
Substation name	Cloverdale Station
Substation zone	AEP
Substation upgrade scope	Replace Cloverdale line Trap - Phase 1

Transformer Information

None

New equipment description	New line trap
Substation assumptions	The existing AC station service is assumed to be sufficient to accommodate the new substation equipment.
Real-estate description	All necessary land rights are acquired.
Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information

Component Cost Details - In Current Year $

Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$200,000.00
Component cost (in-service year)	$225,102.00

Transmission Line Upgrade Component

Component title	Smith Mountain – Rock Castle Sag Study
Project description	Company confidential and proprietary information
Impacted transmission line	Smith Mountain – Rock Castle 138kV
Point A	Smith Mountain Station
Point B	Rock Castle Station
Point C	
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	Unknown
Hardware plan description	It is assumed no hardware could be reused

Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	409.000000	481.000000
Winter (MVA)	516.000000	572.000000
Conductor size and type	556.5 ACSR Dove Conductor	
Shield wire size and type	unknown	
Rebuild line length	9	
Rebuild portion description	No rebuild of existing facilities is anticipated at this time	
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.	
Construction responsibility	Company confidential and proprietary information	
Benefits/Comments	Company confidential and proprietary information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential and proprietary information	
Permitting / routing / siting	Company confidential and proprietary information	
ROW / land acquisition	Company confidential and proprietary information	
Materials & equipment	Company confidential and proprietary information	

Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$900,000.00
Component cost (in-service year)	$1,012,958.00

Transmission Line Upgrade Component

Component title	Claytor - S Christiansburg - Tech Drive 138 kV Sag Study
Project description	Company confidential and proprietary information
Impacted transmission line	Claytor - S Christiansburg - Tech Drive 138 kV
Point A	Claytor Station
Point B	S. Christianburg Station
Point C	Tech Drive Station
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	Unknown??
Hardware plan description	It is assumed no hardware could be reused.
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.
Proposed Line Characteristics	

	Designed	Operating

Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	167.000000	240.000000
Winter (MVA)	210.000000	271.000000
Conductor size and type	1033.5 ACSR Ortolan Conductor	
Shield wire size and type	unknown	
Rebuild line length	17.25	
Rebuild portion description	No rebuild of existing facilities is anticipated at this time MOAB “W” at Claytor station will need to be replaced.	
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.	
Construction responsibility	Company confidential and proprietary information	
Benefits/Comments	Company confidential and proprietary information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential and proprietary information	
Permitting / routing / siting	Company confidential and proprietary information	
ROW / land acquisition	Company confidential and proprietary information	
Materials & equipment	Company confidential and proprietary information	
Construction & commissioning	Company confidential and proprietary information	
Construction management	Company confidential and proprietary information	
Overheads & miscellaneous costs	Company confidential and proprietary information	
Contingency	Company confidential and proprietary information	

Total component cost	$1,400,000.00
Component cost (in-service year)	$1,575,712.00

Transmission Line Upgrade Component

Component title	Cloverdale - Jackson's Ferry 765 kV Upgrade
Project description	Company confidential and proprietary information
Impacted transmission line	Cloverdale - Jackson's Ferry 765 kV Upgrade
Point A	Cloverdale Station
Point B	Jackson's Ferry Station
Point C	
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	765
Conductor size and type	Unknown
Hardware plan description	It is assumed no hardware could be reused.
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	765.000000	765.000000
	Normal ratings	Emergency ratings
Summer (MVA)	6249.000000	6249.000000

Winter (MVA)	7987.000000	7987.000000
Conductor size and type	unknown	
Shield wire size and type	unknown	
Rebuild line length	0	
Rebuild portion description	Upgrade line traps at Jacksons Ferry Station with higher duty Upgrade circuit beakers at Cloverdale and Jackson’s Ferry with 5000A duty	
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.	
Construction responsibility	Company confidential and proprietary information	
Benefits/Comments	Company confidential and proprietary information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential and proprietary information	
Permitting / routing / siting	Company confidential and proprietary information	
ROW / land acquisition	Company confidential and proprietary information	
Materials & equipment	Company confidential and proprietary information	
Construction & commissioning	Company confidential and proprietary information	
Construction management	Company confidential and proprietary information	
Overheads & miscellaneous costs	Company confidential and proprietary information	
Contingency	Company confidential and proprietary information	
Total component cost	$5,000,000.00	
Component cost (in-service year)	$5,627,544.00	

Transmission Line Upgrade Component

Component title	Scottsville - Bremo Sag Study
Project description	Company confidential and proprietary information
Impacted transmission line	Scottsville - Bremo 138kV
Point A	Scottsville Station
Point B	Bremo Station
Point C	
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	Unknown
Hardware plan description	It is assumed no hardware could be reused
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.
Proposed Line Characteristics	

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	167.000000	245.000000
Winter (MVA)	210.000000	271.000000
Conductor size and type	unknown	
Shield wire size and type	unknown	

Rebuild line length	17.35
Rebuild portion description	No rebuild of existing facilities is anticipated at this time
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.
Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$1,735,000.00
Component cost (in-service year)	$1,952,758.00

Transmission Line Upgrade Component

Component title	Buchannan – Keen Mountain 138kV Sag Study
Project description	Company confidential and proprietary information
Impacted transmission line	Buchannan – Keen Mountain 138kV
Point A	Buchannan Station

Point B	Keen Mountain Station
Point C	
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	Unknown
Hardware plan description	It is assumed no hardware could be reused
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.
Proposed Line Characteristics	

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	250.000000	250.000000
Winter (MVA)	250.000000	250.000000

Conductor size and type	unknown
Shield wire size and type	unknown
Rebuild line length	N/A
Rebuild portion description	Sag study one span of line. Relay upgrades
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.

Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$330,000.00
Component cost (in-service year)	$371,418.00

Transmission Line Upgrade Component

Component title	Roanoke - Moseley 138kV Sag Study
Project description	Company confidential and proprietary information
Impacted transmission line	Roanoke 138kV
Point A	Roanoke Station
Point B	Moseley Station
Point C	
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts

Existing Line Physical Characteristics		
Operating voltage	138	
Conductor size and type	Unknown	
Hardware plan description	It is assumed no hardware could be reused	
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.	
Proposed Line Characteristics		
	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	167.000000	245.000000
Winter (MVA)	210.000000	271.000000
Conductor size and type	unknown	
Shield wire size and type	unknown	
Rebuild line length	17.35	
Rebuild portion description	No rebuild of existing facilities is anticipated at this time	
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.	
Construction responsibility	Company confidential and proprietary information	
Benefits/Comments	Company confidential and proprietary information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential and proprietary information	

Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$30,000.00
Component cost (in-service year)	$33,765.00

Greenfield Transmission Line Component

Component title	Warrenton - Trident 230 kV
Project description	Company confidential and proprietary information
Point A	Warrenton Station
Point B	Trident Station
Point C	

	Normal ratings	Emergency ratings
Summer (MVA)	1640.000000	1640.000000
Winter (MVA)	1728.000000	1728.000000

Conductor size and type	6-bundled 795 kcmil 26/7 "Drake" ACSS
Nominal voltage	AC
Nominal voltage	230

Line construction type	Overhead
General route description	The Warrenton–Trident 230kV line will be approximately 12 miles long and connect the existing Warrenton Substation to the planned Trident Substation. The line from Wheeler to Trident will be rebuilt. The 230kV line will exit the Warrenton Substation from the northeast then travel in a northeast direction until it reaches the Trident Substation. The line is entirely located in the state of Virginia and crosses Fauquier and Prince William Counties.
Terrain description	The topography is hilly. Land use in the area encompasses mostly residential parcels in rural Virginia. The line crosses low density developed areas, a significant amount of highly vegetated (wooded) rural land, state/county roadways, and existing utilities.
Right-of-way width by segment	The Warrenton–Trident 230kV greenfield route will be 120 feet in width and will parallel/cross existing rights-of-way to include interstates, roads, existing transmission lines/utilities, and best minimizes potential impacts to the natural and human environments.
Electrical transmission infrastructure crossings	Based on a desktop review, it does not appear that there are any significant transmission infrastructure crossings other than those typically found along areas such as major roadways.
Civil infrastructure/major waterway facility crossing plan	The Warrenton - Trident 230kV line crosses and runs parallel with multiple roadways. There do not appear to be any notable water crossings or railroads along the route.
Environmental impacts	Land use along the Bid Route corridor consists of predominately wood land use, with pockets of agricultural and residential areas. The route intersects numerous water features (i.e., Cedar Run and Kettle Run), including FEMA-mapped floodplains and/or floodway, NWI-mapped wetlands, and NHD streams (including Kettle Run and Broad Run). Based on existing aerial photography, the proposed route likely passes unmapped wetland or drainage features. Desktop studies and record reviews will be conducted for wetlands and streams, hazardous materials, and cultural resources. No major environmental impacts or concerns were identified based on a preliminary desktop review. A General Virginia Pollutant Discharge Elimination System (VPDES) Permit is required for the project, and will be administered by Loudoun County, who is delegated program authority by the Virginia Department of Environmental Quality. The VPDES permit submission will include a SWPPP, erosion and sediment control plan, stormwater management plan, and pollution prevention plan. There would be no proposed stormwater management facilities associated with the linear project and therefore the work would not represent a risk to the overall project schedule, cost, or ability to meet the identified requirements of the RFP.
Tower characteristics	This design will utilize BOLD (Breakthrough Overhead Line Design) 230kV design. This design features a monopole structure with two arched crossarm to hold two circuits. The circuit is arranged in a delta configuration.
Construction responsibility	Company confidential and proprietary information

Benefits/Comments	Company confidential and proprietary information
Component Cost Details - In Current Year $	
Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information
ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$32,456,119.00
Component cost (in-service year)	$36,529,649.00

Transmission Line Upgrade Component

Component title	Yeat - OX 500 kV rebuild
Project description	Company confidential and proprietary information
Impacted transmission line	Ox- bristers 500 kV
Point A	Yeat Station
Point B	OX Station
Point C	
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	500

Conductor size and type	Unknown
Hardware plan description	It is assumed no hardware could be reused
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	500.000000	500.000000
	Normal ratings	Emergency ratings
Summer (MVA)	3814.000000	5149.000000
Winter (MVA)	4825.000000	5848.000000

Conductor size and type	unknown
Shield wire size and type	unknown
Rebuild line length	20.0
Rebuild portion description	No rebuild of existing facilities is anticipated at this time
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades.
Construction responsibility	Company confidential and proprietary information
Benefits/Comments	Company confidential and proprietary information

Component Cost Details - In Current Year $

Engineering & design	Company confidential and proprietary information
Permitting / routing / siting	Company confidential and proprietary information

ROW / land acquisition	Company confidential and proprietary information
Materials & equipment	Company confidential and proprietary information
Construction & commissioning	Company confidential and proprietary information
Construction management	Company confidential and proprietary information
Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$80,000,000.00
Component cost (in-service year)	$90,040,705.00

Transmission Line Upgrade Component

Component title	Smith Mountain - Redeye - Candler's Mountain - Opossum Creek 138 kV Reconductor
Project description	Company confidential and proprietary information
Impacted transmission line	Smith Mountain - Redeye - Candler's Mountain - Opossum Creek 138 kV Reconductor
Point A	Smith Mountain Station
Point B	Redeye Station
Point C	Candler's Mountain Station
Terrain description	Area terrain is gently rolling, primarily crossing large agricultural tracts
Existing Line Physical Characteristics	
Operating voltage	138
Conductor size and type	Unknown
Hardware plan description	It is assumed no hardware could be reused
Tower line characteristics	The condition of the existing line is assumed to be in good working order. Structure loading at adjacent structures would remain unchanged due to proposing structure locations on cL and near existing tower locations.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	548.000000	548.000000
Winter (MVA)	548.000000	548.000000
Conductor size and type	556.5 ACSR Dove Conductor/ 795 ACSR Drake Conductor	
Shield wire size and type	unknown	
Rebuild line length	34	
Rebuild portion description	Reconductor 34 miles of Smith Mountain - Redeye - Candler's Mountain - Opossum Creek 138 kV	
Right of way	It is anticipated that the Proposed Solution would not require new ROW; however, current landowners that are crossed by the existing transmission line would need to be notified of the proposed upgrades	
Construction responsibility	Company confidential and proprietary information	
Benefits/Comments	Company confidential and proprietary information	
Component Cost Details - In Current Year $		
Engineering & design	Company confidential and proprietary information	
Permitting / routing / siting	Company confidential and proprietary information	
ROW / land acquisition	Company confidential and proprietary information	
Materials & equipment	Company confidential and proprietary information	
Construction & commissioning	Company confidential and proprietary information	
Construction management	Company confidential and proprietary information	

Overheads & miscellaneous costs	Company confidential and proprietary information
Contingency	Company confidential and proprietary information
Total component cost	$40,800,000.00
Component cost (in-service year)	$45,920,759.00

Congestion Drivers

None

Existing Flowgates

None

New Flowgates

Company confidential and proprietary information

Financial Information

Capital spend start date	02/2025
Construction start date	04/2026
Project Duration (In Months)	58

Additional Comments

None