

Dehue Expansion and Line Rebuilds

General Information

Proposing entity name	AEPSCT
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Yes
Company proposal ID	AEP_J
PJM Proposal ID	488
Project title	Dehue Expansion and Line Rebuilds
Project description	<p>AEP proposes to replace the existing Pine Gap station with a new 138 kV greenfield station called Tin Branch by cutting in the Logan – Sprigg No.2 via a greenfield double circuit line extension. Replace the existing Dehue station with a greenfield distribution station called Argyle by cutting in the Logan – Wyoming #1 138kV circuit via a greenfield double circuit line extension. Reconnect the 138kV customer that is served from the existing Rum Creek station to the proposed Argyle station. Retire approximately 16 miles of the Chauncey – Pine Gap 46kV line, Logan – Pine Gap 46kV line, and Bim – Logan – Sharples 46kV line from Logan to Becco. Rebuild the existing 46 kV line between Argyle station and Becco station on existing ROW. Tin Branch station will be a 138kV straight bus with two 138kV circuit breakers and a 138/12kV distribution bank. Argyle station will be a 5 breaker ring bus and contain a 138/12kV distribution bank and a 138/69-46kV transmission transformer with a breaker on the low side of the transformer. Update relay settings at Wyoming, Logan, Sprigg, Becco, and Chauncey stations.</p>
Email	nckoehler@aep.com
Project in-service date	06/2026
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No

Additional benefits

This project will address the needs reviewed with stakeholders under need number AEP-2020-AP044 in the November 20, 2020 SRRTWP Western meeting. This project will address other asset performance, condition, and risk needs on the Chauncey - Pine Gap 46kV Line, which is a 1937 vintage wood pole line with 29 open structure conditions with 59% of the structures along the line with at least one open condition. This proposal, by constructing approximately 3.5 miles of greenfield 138 kV line and two new stations, allows for the retirement of over 15 miles of deteriorating 46 kV line in very challenging territory, helping to reduce future rebuild investment required to address asset renewal needs on the 46 kV system.

Project Components

1. Tin Branch Station Construction
2. Argyle Station Construction
3. Tin Branch Line Extension
4. Argyle Line Extension
5. Becco-Argyle Rebuild
6. Remote End Relay Settings

Greenfield Substation Component

Component title	Tin Branch Station Construction
Project description	Construct a new 138/12 kV station to replace Pine Gap station. Retire Pine Gap station in its entirety
Substation name	Tin Branch
Substation description	Construct a 138kV single bus station consisting of a 138kV box bay with a distribution transformer and 12kV distribution bay. Two 138kV lines will feed this station (from Logan and Sprigg Stations), and distribution will have one 12kV feed. Install two 138 kV circuit breakers on the line exits. Install 138 kV circuit switcher for the new transformer.
Nominal voltage	AC
Nominal voltage	138/12

Transformer Information

Name	Capacity (MVA)
------	----------------

Transformer	Tin Branch Transformer 1	20	
	High Side	Low Side	Tertiary
Voltage (kV)	138	12	
Major equipment description	The substation will consist of the following major equipment: -Two 138kV, 3000A breakers -One 138kV distribution transformer high side circuit switcher -One 138/12kV distribution transformer -One 12kV, 1200A distribution breaker		
	Normal ratings	Emergency ratings	
Summer (MVA)	20.000000	20.000000	
Winter (MVA)	20.000000	20.000000	
Environmental assessment	The proposed station footprint is 180' x 150'. The current property has a house on it, and is privately owned. In general the property is fairly flat, and as located in a narrow valley near the end of Whitman Creek Road.		
Outreach plan	See attached work plan.		
Land acquisition plan	The proposed Tin Branch Station will be sited off Whitman Creek Road, approximately 1.15 miles southwest of its intersection with Madison Camp Road in Logan County, West Virginia. The tabletop analysis found there were no public lands required for this Project. The private land use is mineral processing as tabletop analysis found and was verified through the Logan County Clerk's Office classification/ assessment. The private land requirements include approximately 2 acres for the new station site/detention pond/grading. The total Project acreage is 2 acres to be purchased in fee. Station site was chosen to minimize mineral processing operations.		
Construction responsibility	AEP		
Benefits/Comments	Business confidential practices.		
Component Cost Details - In Current Year \$			
Engineering & design	Detailed cost breakdown		
Permitting / routing / siting	Detailed cost breakdown		
ROW / land acquisition	Detailed cost breakdown		

Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$5,584,378.00
Component cost (in-service year)	\$.00

Greenfield Substation Component

Component title	Argyle Station Construction
Project description	Construct a new 138/46/12 kV Argyle station to replace Dehue station. Install a 138kV ring bus using a breaker-and-a-half configuration, with an autotransformer with a 46kV feed and a distribution transformer with a 12kV distribution bay. Two 138kV lines will feed this station (from Logan and Wyoming Stations). There will also be a 46kV feed from this station to Becco Station. Distribution will have two 12kV feeds. Retire Dehue station in its entirety.
Substation name	Argyle
Substation description	Four 138kV circuit breakers operated in a ring bus arrangements. One 138/69-46kV transformer and one 46kV circuit breaker. One 138/12kV transformer and two 12 kV feeder exits.
Nominal voltage	AC
Nominal voltage	138/69/46/12

Transformer Information

	Name	Capacity (MVA)		
Transformer	Transformer 1	90		
		High Side	Low Side	Tertiary
Voltage (kV)	138	69	46	

	Name	Capacity (MVA)	
Transformer	Transformer 2	20	
	High Side	Low Side	Tertiary
Voltage (kV)	138	12	
Major equipment description	The substation will consist of the following major equipment: -Four 138kV, 3000A breakers -Two 138kV, 3000A motor operated line switches -One 138/69/46kV autotransformer -One 46kV grounding transformer -One 69kV, 3000A breaker (connected to autotransformer tertiary) -One 138/12kV distribution transformer -One 12kV, 2000A breaker (low side of distribution transformer) -Two 12kV, 1200A distribution breakers		
	Normal ratings	Emergency ratings	
Summer (MVA)	90.000000	90.000000	
Winter (MVA)	90.000000	90.000000	
Environmental assessment	The scoped station footprint is 265' x 260'. The current property has no structures on it, and is privately owned. The property is generally flat, and is located between Vocational School Road and the Guyandotte River.		
Outreach plan	See attached plan.		
Land acquisition plan	The proposed Argyle Station will be sited off Vocational Road, approximately 0.10 miles southeast of its intersection with Rum Creek Road in Logan County, West Virginia. The tabletop analysis found there were no public lands required for this Project. The private land use is residential acreage as tabletop analysis found and was verified through the Logan County Clerk's Office classification/ assessment. The private land requirements include approximately 2 acres for the new station site/detention pond/grading. The total Project acreage is 2 acres to be purchased in fee. Station site was chosen to minimize residential acreage.		
Construction responsibility	AEP		
Benefits/Comments	Business confidential practices.		
Component Cost Details - In Current Year \$			
Engineering & design	Detailed cost breakdown		

Permitting / routing / siting	Detailed cost breakdown
ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$9,996,040.00
Component cost (in-service year)	\$.00

Greenfield Transmission Line Component

Component title	Tin Branch Line Extension	
Project description	Bring the Logan - Sprigg #2 138kV circuit in and out of Tin Branch station by constructing approximately 1.75 miles of new overhead double circuit 138kV line. Double circuit T3 series lattice towers will be used along with 795,000cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD and one shield wire will be OPGW.	
Point A	Logan	
Point B	Tin Branch	
Point C	Sprigg	
	Normal ratings	Emergency ratings
Summer (MVA)	257.000000	360.000000
Winter (MVA)	325.000000	404.000000
Conductor size and type	795 ACSR	
Nominal voltage	AC	

Nominal voltage	138
Line construction type	Overhead
General route description	Line route will begin adjacent to existing twr. #132-20 and proceed in a westerly direction for approx. 0.75 miles and then turn and proceed in a NorthWest direction for approx. 1 mile to the new Tin Branch Station. The line route traverses very mountainous terrain.
Terrain description	Mountanous
Right-of-way width by segment	The proposed Tin Branch 138kV Extension Line will require the acquisition of 2 miles of transmission line of 100' (50'/50') wide ROW. The project will begin at AEP's existing Logan – Sprigg 138kV Line in Logan County, West Virginia and run in a northwesterly direction to AEP's proposed Tin Branch Station in Logan County, West Virginia. The tabletop analysis found there were no public lands required for this Project. The private land use is predominantly mineral processing that was verified through the Logan County Clerk's Offices classifications/ assessments. The private land requirements include acquiring 100' (50'/50') wide ROW in Logan County, West Virginia where the land use is predominantly mineral processing with mountainous terrain.
Electrical transmission infrastructure crossings	None
Civil infrastructure/major waterway facility crossing plan	N/A
Environmental impacts	Surveys for protected species and cultural resources will be conducted. A SWPPP permit will be required and as with all construction in mountainous terrain proper E&S controls will be required along the line route as well as the access roads
Tower characteristics	Double circuit lattice steel towers will be used
Construction responsibility	AEP
Benefits/Comments	Business confidential practices.
Component Cost Details - In Current Year \$	
Engineering & design	Detailed cost breakdown
Permitting / routing / siting	Detailed cost breakdown
ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown

Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$8,577,764.00
Component cost (in-service year)	\$.00

Greenfield Transmission Line Component

Component title	Argyle Line Extension	
Project description	Construct approximately 1.5 miles of new overhead double circuit 138kV line that will carry the Logan - Wyoming No. 1 circuit in and out of the proposed Argyle Station. Double circuit T3 series lattice towers will be used along with 795,000cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD and one shield wire will be OPGW.	
Point A	Logan	
Point B	Argyle	
Point C	Wyoming	
	Normal ratings	Emergency ratings
Summer (MVA)	257.000000	360.000000
Winter (MVA)	325.000000	404.000000
Conductor size and type	795 ACSR	
Nominal voltage	AC	
Nominal voltage	138	
Line construction type	Overhead	

General route description	Line route will begin near existing structure #122-17 and proceed in a Northeasterly direction for approx. 1.5 miles to the new Argyle Station. The line route traverses very mountainous terrain.
Terrain description	Mountanous
Right-of-way width by segment	The proposed Argyle Extension 138kV Line will require the acquisition of 2 miles of transmission line of 100' (50'/50') wide ROW. The project will begin at AEP's existing Logan – Switchback 138kV Line in Logan County, West Virginia and run in a northeasterly direction to AEP's proposed Argyle Station in Logan County, West Virginia. The tabletop analysis found there were no public lands required for this Project. The private land use is predominantly residential acreage that was verified through the Logan County Clerk's Offices classifications/assessments. The private land requirements include acquiring 100' (50'/50') wide ROW in Logan County, West Virginia where the land use is predominantly residential acreage with mountainous terrain.
Electrical transmission infrastructure crossings	None
Civil infrastructure/major waterway facility crossing plan	N/A
Environmental impacts	Surveys for protected species and cultural resources will be conducted. A SWPPP permit will be required and as with all construction in mountainous terrain proper E&S controls will be required along the line route as well as the access roads
Tower characteristics	Double circuit lattice steel towers will be used
Construction responsibility	AEP
Benefits/Comments	Business confidential practices.
Component Cost Details - In Current Year \$	
Engineering & design	Detailed cost breakdown
Permitting / routing / siting	Detailed cost breakdown
ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown

Contingency	Detailed cost breakdown
Total component cost	\$7,701,828.00
Component cost (in-service year)	\$.00

Transmission Line Upgrade Component

Component title	Becco-Argyle Rebuild
Project description	Rebuild approximately 10 miles of 46 kV line between Becco and the new Argyle substation. Retire approximately 16 miles of 46 kV line between the new Argyle substation and Chauncey station.
Impacted transmission line	Becco-Slagle-Dehue-Pine Gap-Chauncey 46 kV line
Point A	Becco
Point B	Argyle
Point C	Slagle, Dehue, Pine Gap, Chauncey
Terrain description	Mountainous

Existing Line Physical Characteristics

Operating voltage	46
Conductor size and type	4/0 ACSR 6/1, 3/0 ACSR 6/1, 1/0 Copper, 336,400cm ACSR 30/7, 4/0 Copper and 176,900cm ACSR 12/7
Hardware plan description	Existing hardware will not be reused
Tower line characteristics	Wood Pole construction, vintage 1929 to 1937 with some newer poles that have been replaced throughout its lifespan

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	69.000000	46.000000
	Normal ratings	Emergency ratings

Summer (MVA)	68.000000	95.000000
Winter (MVA)	86.000000	107.000000
Conductor size and type	795 KCM ACSR (26/7) "DRAKE"	
Shield wire size and type	7 #8 ALUMOWELD and OPGW	
Rebuild line length	9 miles	
Rebuild portion description	Rebuild approx. 9 miles of the existing Becco - Pine Gap 46kV Circuit from Becco Station to just West of Dehue Station and then leave the existing line route and proceed approx. 0.5 mile to terminate at the new Argyle Station. Primarily steel pole construction with a couple of T1 series towers and a custom pole on the new greenfield portion.	
Right of way	The Project will involve rebuilding 9 miles of the existing Becco-Pine Gap Line & leave the existing line route for 0.5 miles to the newly proposed Argyle Station for a total of 9.5 miles of transmission line at 100' (50'/50') wide ROW. The project will begin at AEP's existing Becco Station in Logan County, West Virginia and run in a northwesterly direction to AEP's proposed Argyle Station in Logan County, West Virginia. The tabletop analysis found there were no public lands required for this Project. The private land use is predominantly residential, commercial & mineral processing that were verified through the Logan County Clerk's Offices classifications/assessments. The private land requirements include acquiring 100' (50'/50') wide ROW in Logan County, West Virginia where the land use is predominantly residential, commercial & mineral processing with mountainous terrain.	
Construction responsibility	AEP	
Benefits/Comments	Business confidential practices.	
Component Cost Details - In Current Year \$		
Engineering & design	Detailed cost breakdown	
Permitting / routing / siting	Detailed cost breakdown	
ROW / land acquisition	Detailed cost breakdown	
Materials & equipment	Detailed cost breakdown	
Construction & commissioning	Detailed cost breakdown	
Construction management	Detailed cost breakdown	

Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$33,705,143.00
Component cost (in-service year)	\$.00

Substation Upgrade Component

Component title	Remote End Relay Settings
Project description	Adjust relay settings due to new line terminations and retirements at Logan, Wyoming, Sprigg, Becco, and Chauncey stations.
Substation name	Logan, Wyoming, Sprigg, Becco, Chauncey
Substation zone	205 - AEP
Substation upgrade scope	Update line relay settings on the breakers at Logan, Wyoming, Sprigg, Becco, and Chauncey stations to accommodate the new station cut ins for Tin Branch and Argyle as well as the line retirements.

Transformer Information

None	
New equipment description	N/A. Scope is to adjust relay settings only.
Substation assumptions	N/A. Scope is to adjust relay settings only.
Real-estate description	
Construction responsibility	AEP
Benefits/Comments	

Component Cost Details - In Current Year \$

Engineering & design	Detailed cost breakdown
Permitting / routing / siting	Detailed cost breakdown

ROW / land acquisition	Detailed cost breakdown
Materials & equipment	Detailed cost breakdown
Construction & commissioning	Detailed cost breakdown
Construction management	Detailed cost breakdown
Overheads & miscellaneous costs	Detailed cost breakdown
Contingency	Detailed cost breakdown
Total component cost	\$233,230.00
Component cost (in-service year)	\$.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	Status
AEP -T6	244471	05BECCO	244517	05SLAGLE	1	46	205	FERC 715 Thermal	Included
AEP-VD7	244471	05BECCO	244471	05BECCO	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VM7	244471	05BECCO	244471	05BECCO	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VM9	244482	05DEHUE	244482	05DEHUE	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VD9	244482	05DEHUE	244482	05DEHUE	0	46	205	FERC 715 Voltage Drop	Excluded
AEP -T7	244482	05DEHUE	244509	05PINE GAP	1	46	205	FERC 715 Thermal	Included
AEP -T8	244482	05DEHUE	244517	05SLAGLE	1	46	205	FERC 715 Thermal	Included
AEP-VM1	244526	05THREEFRK	244526	05THREEFRK	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VD1	244526	05THREEFRK	244526	05THREEFRK	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VD2	244520	05TONEYFRK	244520	05TONEYFRK	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VM2	244520	05TONEYFRK	244520	05TONEYFRK	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VD3	244541	05CYCLONE	244541	05CYCLONE	0	46	205	FERC 715 Voltage Drop	Excluded

FG #	From Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
AEP-VM3	244541	05CYCLONE	244541	05CYCLONE	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VM4	244505	05PARDEE SS	244505	05PARDEE SS	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VD4	244505	05PARDEE SS	244505	05PARDEE SS	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VM5	244537	05CRANEC2	244537	05CRANEC2	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VD5	244537	05CRANEC2	244537	05CRANEC2	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VD6	244481	05LATROBE	244481	05LATROBE	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VM6	244481	05LATROBE	244481	05LATROBE	0	46	205	FERC 715 Voltage Magnitude	Excluded
AEP-VD8	244517	05SLAGLE	244517	05SLAGLE	0	46	205	FERC 715 Voltage Drop	Excluded
AEP-VM8	244517	05SLAGLE	244517	05SLAGLE	0	46	205	FERC 715 Voltage Magnitude	Excluded

New Flowgates

None

Financial Information

Capital spend start date 01/2022

Construction start date 10/2024

Project Duration (In Months) 53

Additional Comments

None