Trabue-Hilliard-Davidson 138kV Conversion

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_S
PJM Proposal ID	940
Project title	Trabue-Hilliard-Davidson 138kV Conversion
Project description	Rebuild the Davidson-Hilliard-Trabue 69kV line to 138kV (9.64 miles). Install 1-138kV breaker at Trabue 138kV station. Convert Hilliard 69kV station to 138kV.
Email	jmperez@aep.com
Project in-service date	05/2030
Tie-line impact	No
Interregional project	No
Is the proposer offering a binding cap on capital costs?	No
Additional benefits	This proposal will address the thermal overloads as well as the non-competitive voltage violations in this area.

Project Components

1. Hilliard-Davidson
2. Hilliard-Trabue
3. Hilliard 138kV Conversion
4. Trabue 138kV Station
5. Davidson 138kV Station

Transmission Line Upgrade Component

Component title	Hilliard-Davidson
Project description	Rebuild approximately 5 miles of existing 69kV line between Hilliard and Davidson stations to 138kV.
Impacted transmission line	Hilliard-Davidson 69kV Line
Point A	Hilliard Station
Point B	Davidson Station
Point C	
Terrain description	Flat/urban with some industrial areas.
Existing Line Physical Characteristics	
Operating voltage	69
Conductor size and type	336 KCM ACSR
Hardware plan description	Hardware will be replaced
Tower line characteristics	Single pole wood structures
Proposed Line Characteristics	

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	335.000000	392.000000
Winter (MVA)	424.000000	466.000000
Conductor size and type	795 ACSS Drake	

Shield wire size and type	OPGW
Rebuild line length	5 miles
Rebuild portion description	5 miles will be rebuilt using single circuit steel poles and 795 ACSS Drake Conductor
Right of way	Expanded right of way of 100' width was assumed for this proposal, requiring supplemental or new easements to rebuild the existing 69 kV line.
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	$30,332,116.57
Component cost (in-service year)	$30,332,116.57

Transmission Line Upgrade Component

Component title	Hilliard-Trabue
Project description	Rebuild and convert existing 69kV line section between Hilliard and Trabue to 138kV (approximately 5 miles).
Impacted transmission line	Hilliard-Trabue 138kV

Point A	Hilliard 138kV Station
Point B	Trabue 138kV Station
Point C	
Terrain description	Flat/urban
Existing Line Physical Characteristics	
Operating voltage	69
Conductor size and type	336 KCM ACSR Merlin
Hardware plan description	Hardware will be replaced as necessary.
Tower line characteristics	Hilliard-Trabue 69kV section was originally built in 1968 and has a mix of wood and steel pole structures. The section from structure 51 to Trabue was built in 1997 but was not constructed to 138kV standards.

Proposed Line Characteristics

	Designed	Operating
Voltage (kV)	138.000000	138.000000
	Normal ratings	Emergency ratings
Summer (MVA)	335.000000	392.000000
Winter (MVA)	424.000000	466.000000

Conductor size and type	795 ACSS Drake
Shield wire size and type	OPGW
Rebuild line length	5 miles
Rebuild portion description	Approximately 5 miles from Hilliard to Trabue station will be rebuilt using single circuit steel poles and 795 ACSS Drake conductor. The line will be built and operated at 138kV.

Right of way	Expanded right of way of 100' width was assumed for this proposal, requiring supplemental or new easements to rebuild the existing 69 kV line.
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	$30,332,116.57
Component cost (in-service year)	$30,332,116.57

Substation Upgrade Component

Component title	Hilliard 138kV Conversion
Project description	Convert Hilliard 69kV station to 138kV by retiring the existing 69kV equipment, installing 4-138kV breakers in ring-bus configuration, and 2-138/13kV 50MVA transformers.
Substation name	Hilliard 138kV
Substation zone	205
Substation upgrade scope	Convert Hilliard 69kV station to 138kV by retiring the existing 69kV equipment, installing 4-138kV breakers in ring-bus configuration and 2-138/13kV 50MVA transformers.

Transformer Information

	Name		Capacity (MVA)
Transformer	Hilliard 138/13kV TRF #1		50
	High Side	Low Side	Tertiary
Voltage (kV)	138	13	

	Name		Capacity (MVA)
Transformer	Hilliard 138/13kV TRF #2		50
	High Side	Low Side	Tertiary
Voltage (kV)	138	13	

New equipment description	4- 138kV, 3000A 63kA Circuit Breakers 2-138/13kV 50 MVA Transformers
Substation assumptions	Adjacent station property may be needed and can be acquired. There is ROW needed for new 138kV Tline routes and 138kV Tie Lines back to existing Hilliard station Existing 69kV control house will have adequate space for relaying panels for 138kV/13.8kV conversion. All excavation of cable trench will be hand dug. Cable trench is adequate.
Real-estate description	New property will need to be acquired for Hilliard. There is a property north west of the existing substation that it is assumed can be acquired.
Construction responsibility	AEP
Benefits/Comments	The total cost for this component does not include new Distribution banks driven by conversion to 138 kV. The final solution associated with the Distribution banks will be discussed with the Distribution team and those costs will not end up as Transmission.
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	$15,803,922.30
Component cost (in-service year)	$15,803,922.00

Substation Upgrade Component

Component title	Trabue 138kV Station
Project description	Install new 138kV takeoff structure to accommodate new 138kV circuit breaker for new Hilliard 138kV line entry.
Substation name	Trabue 138kV
Substation zone	205
Substation upgrade scope	Install new 138kV takeoff structure to accommodate new 138kV circuit breaker for new Hilliard 138kV line entry.

Transformer Information

None

New equipment description	1-138kV circuit breaker, 3000A, 63kA
Substation assumptions	- Station property can be expanded to the north of the station. The station original laid out did not allow for a third 138kV Line of the station. Third line position is taken up by 138kV Capacitor bank. - DICM expansion needed for additional relaying panels. - All excavation of cable trench will be hand dug. - Cable Trench extended to DICM additional. - PCE has sufficient bus potentials. No additional bus CCVT’s needed. - Line relaying will use Fiber. - There will be enough space between 138kV Cap Bank and Roberts Line to add 138kV line exit
Real-estate description	Station fence will need to be expanded to the North of the existing site to accommodate, however it is all within AEP owned property.

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	$2,073,083.98
Component cost (in-service year)	$2,073,083.98

Substation Upgrade Component

Component title	Davidson 138kV Station
Project description	Add new 138kV takeoff structure at Davidson for new 138kV line to Hilliard.
Substation name	Davidson 138kV
Substation zone	205
Substation upgrade scope	Install new 138kV takeoff structure at Davidson to accept new 138kV line from Hilliard.

Transformer Information

None

New equipment description	N/A

Substation assumptions	- DICM will have adequate space for additional relaying panels. - All excavation of cable trench will be hand dug. - Cable Trench is adequate for addition cables. - PCE has sufficient bus potentials. No additional bus CCVT’s needed.
Real-estate description	No expansion necessary.
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	$721,230.86
Component cost (in-service year)	$721,230.86

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-AEP-VM85	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Magnitude	Excluded

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2025W1-N11-WVM243582	243582	05TRABUE1	243582	05TRABUE1	N/A	138	205	N-1-1 Voltage Magnitude	Included
2025W1-AEP-VM87	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM86	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VD126	290344	05NAUTILUS2	290344	05NAUTILUS2	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD125	290344	05NAUTILUS2	290344	05NAUTILUS2	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD124	290174	05HILLIARD2	290174	05HILLIARD2	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD123	290174	05HILLIARD2	290174	05HILLIARD2	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD122	247854	05JEFFRS IND	247854	05JEFFRS IND	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-N11-SVD243582	243582	05TRABUE1	243582	05TRABUE1	N/A	138	205	N-1-1 Voltage Drop	Included
2025W1-AEP-VD57	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VM94	247841	05NAUTILUS1	247841	05NAUTILUS1	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM93	247841	05NAUTILUS1	247841	05NAUTILUS1	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM92	247841	05NAUTILUS1	247841	05NAUTILUS1	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM91	247841	05NAUTILUS1	247841	05NAUTILUS1	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM90	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM89	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VD60	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD59	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VM97	290344	05NAUTILUS2	290344	05NAUTILUS2	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VD58	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VM88	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-N11-WVD243582	243582	05TRABUE1	243582	05TRABUE1	N/A	138	205	N-1-1 Voltage Drop	Included
2025W1-AEP-VD108	246588	05HILLIARD1	246588	05HILLIARD1	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD107	246588	05HILLIARD1	246588	05HILLIARD1	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VM100	290344	05NAUTILUS2	290344	05NAUTILUS2	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM99	290344	05NAUTILUS2	290344	05NAUTILUS2	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VM98	290344	05NAUTILUS2	290344	05NAUTILUS2	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-N11-WVD290364	290364	05TRABUE2	290364	05TRABUE2	N/A	138	205	N-1-1 Voltage Drop	Included

FG #	Fr Bus No.	From Bus Name	To Bus No.	To Bus Name	CKT	Voltage	TO Zone	Analysis type	Status
2025W1-AEP-VD121	247854	05JEFFRS IND	247854	05JEFFRS IND	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD120	247841	05NAUTILUS1	247841	05NAUTILUS1	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-N11-WVM290364	290364	05TRABUE2	290364	05TRABUE2	N/A	138	205	N-1-1 Voltage Magnitude	Included
2025W1-AEP-VD119	247841	05NAUTILUS1	247841	05NAUTILUS1	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD118	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VD117	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VM111	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VD116	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-T19	246588	05HILLIARD1	288638	05DAVIDS	1	69	205	FERC 715 Thermal	Included
2025W1-AEP-VM110	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-T14	246588	05HILLIARD1	288638	05DAVIDS	1	69	205	FERC 715 Thermal	Included
2025W1-AEP-VD115	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-VM109	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VD114	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-T13	246687	05TRABUE	290174	05HILLIARD2	1	69	205	FERC 715 Thermal	Included
2025W1-AEP-VM108	247093	05BLAIR	247093	05BLAIR	N/A	69	205	FERC 715 Voltage Magnitude	Excluded
2025W1-AEP-VD113	246687	05TRABUE	246687	05TRABUE	N/A	69	205	FERC 715 Voltage Drop	Excluded
2025W1-AEP-T12	246687	05TRABUE	290174	05HILLIARD2	1	69	205	FERC 715 Thermal	Included
2025W1-AEP-T18	246588	05HILLIARD1	288638	05DAVIDS	1	69	205	FERC 715 Thermal	Included
2025W1-AEP-T17	246588	05HILLIARD1	288638	05DAVIDS	1	69	205	FERC 715 Thermal	Included
2025W1-AEP-T16	246588	05HILLIARD1	288638	05DAVIDS	1	69	205	FERC 715 Thermal	Included
2025W1-N11-SVD290364	290364	05TRABUE2	290364	05TRABUE2	N/A	138	205	N-1-1 Voltage Drop	Included
2025W1-AEP-T15	246588	05HILLIARD1	288638	05DAVIDS	1	69	205	FERC 715 Thermal	Included

New Flowgates

None

Financial Information

Capital spend start date	03/2026
Construction start date	06/2028
Project Duration (In Months)	50

Additional Comments

None