

Hayes 2nd Transformer Addition

General Information

Proposing entity name	Information is considered confidential and proprietary.
Does the entity who is submitting this proposal intend to be the Designated Entity for this proposed project?	Information is considered confidential and proprietary.
Company proposal ID	Information is considered confidential and proprietary.
PJM Proposal ID	549
Project title	Hayes 2nd Transformer Addition
Project description	Install a second 345/138 kV transformer at Hayes, 448 MVA nameplate rating. Add one 345 kV circuit breaker (3000A) to provide transformer high side connection between breaker B-18 and the new breaker. Connect the new transformer low side to the 138 kV bus. Add one 138 kV circuit breaker (3000A) at Hayes 138 kV substation between B-42 and the new breaker. Relocate the existing 138 kV No. 1 capacitor bank between B-42 and the new breaker. Protection Per FE standard.
Email	Information is considered confidential and proprietary.
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	Information is considered confidential and proprietary.

Project Components

1. Hayes 2nd Transformer Addition

Substation Upgrade Component

Component title	Hayes 2nd Transformer Addition
Project description	Information is considered confidential and proprietary.
Substation name	Hayes
Substation zone	ATSI
Substation upgrade scope	Install second 345/138 kV, 448 MVA transformer at Hayes substation

Transformer Information

	Name	Capacity (MVA)		
Transformer	Hayes No. 2 345/138 kV Transformer	448		
		High Side	Low Side	Tertiary
Voltage (kV)		345	138	

New equipment description

-Install (1) 345/138 kV, 448 MVA transformer (future No. 2 TR on one-line). -Install (1) 345 kV, 3000 A SF6 breaker (future B 15 on one-line) between existing breaker B18 and the Beaver 345 kV line exit. -Install (1) 345 kV manual disconnect switch (future D 17 on one-line), including steel structure. -Install (1) 345 kV MOAB switch, including steel structure. -Install (1) 138 kV MOAB switch, including steel structure. -Install (1) 138 kV, 3000 A SF6 breaker (future D 39 on one-line) between existing breaker B42 and the 138 kV West Bus. -Install (1) 138 kV manual disconnect switch (future D 41 on one-line), including steel structure. -Install (3) 138 kV CCVT/s for relocated No 1 Capacitor Bank. -Install one lot of 345 kV & 138 kV conductor, rigid bus, insulators, and bus supports as required. -Transformer circuit conductor to be rated at least 621/740/747/869MVA SN/SSTE/WN/WSTE based upon similar transformer rating. -Install (1) SEL-587 (87T), (1) 487E (87OA), (1) SEL-351A (51G), (1) SEL-587Z (87TH) with associated LORs, (1) SEL-587Z (87TL) with associated LORs. -Re-purpose (1) existing SEL-587Z currently used for 138 kV East Bus primary protection as the No 1 transformer 87TL relay and install (1) additional LOR and include the new 138kV breaker. -Re-purpose (1) existing SEL-487E currently used for 138 kV East Bus backup protection as the No 1 transformer 87OA relay and install (1) additional LOR and include the new 138kV breaker. -Replace (1) SEL-551 with a new (1) SEL-351A (51G) for No 1 transformer -Install (2) SEL-501 relays and associated LORs for new 345 kV and 138 kV circuit breakers. -Reuse existing relays for 138 kV No 1 Capacitor Bank and associated circuit switcher. Move the zone of protection (CTs and trips) to incorporate the new 138 kV circuit breaker and breaker B42. -New dual SEL587Z Cap Bank Protection Panel for 138 kV Cap Bank. -Rewire (1) SEL-421 Move the zone of protection (CTs and trips) for the existing Beaver 345 kV line exit to incorporate the new 345 kV breaker instead of breaker B18. -Modify existing 138 kV West Bus protection scheme to incorporate new 138 kV circuit breaker instead of breaker B42. -Modify breaker failure relaying schemes as required for existing 345 kV breakers B12 and B18, and for all existing 138 kV East Bus and West Bus breakers. -Addition of (1) new fiber circuit between Control House and new transformer as required for transformer DRMCC monitor. A standard pre-terminated fiber design will be utilized.

Substation assumptions

-Existing AC & DC station service is adequate for the proposed upgrades. -Existing SCADA RTU is adequate for the addition of new analog/status/control points as required for the proposed upgrades. -Existing Comm processor conforms to FE standard (RTAC) and is adequate for the addition of new relays. -Existing Control House has available space for new relay panels as required for the proposed upgrades. -Existing 138 kV No 1 Capacitor bank, including manual disconnect switch, circuit switcher, free-standing CTs, and all associated steel structures will be relocated and reused. -Existing lightning protection system is adequate for the proposed upgrades. -Existing ground grid is adequate for the proposed upgrades. -Modifications to existing SCADA RTU as required for the addition of (1) 345/138 kV transformer, (1) 345 kV circuit breaker, (1) 138 kV circuit breaker, (1) 345 kV MOAB switch, (1) 138 kV MOAB switch, and all associated relaying.

Real-estate description

No substation fence expansion required

Construction responsibility

Information is considered confidential and proprietary.

Benefits/Comments

Information is considered confidential and proprietary.

Component Cost Details - In Current Year \$

Engineering & design	Information is considered confidential and proprietary.
Permitting / routing / siting	Information is considered confidential and proprietary.
ROW / land acquisition	Information is considered confidential and proprietary.
Materials & equipment	Information is considered confidential and proprietary.
Construction & commissioning	Information is considered confidential and proprietary.
Construction management	Information is considered confidential and proprietary.
Overheads & miscellaneous costs	Information is considered confidential and proprietary.
Contingency	Information is considered confidential and proprietary.
Total component cost	\$7,595,610.85
Component cost (in-service year)	\$8,709,615.59

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
GD-S712	239289	02HAYES	239290	02HAYES	1	345/138	202	Summer Gen Deliv	Included

New Flowgates

None

Financial Information

Capital spend start date 08/2024

Construction start date

01/2026

Project Duration (In Months)

22

Additional Comments

None