

Western Sub Regional RTEP: AEP Supplemental Projects

November 14, 2025

Needs

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

AEP Transmission Zone M-3 Process Studebaker, IN

Need Number: AEP-2025-IM012

Process Stage: Need Meeting 11/14/2025

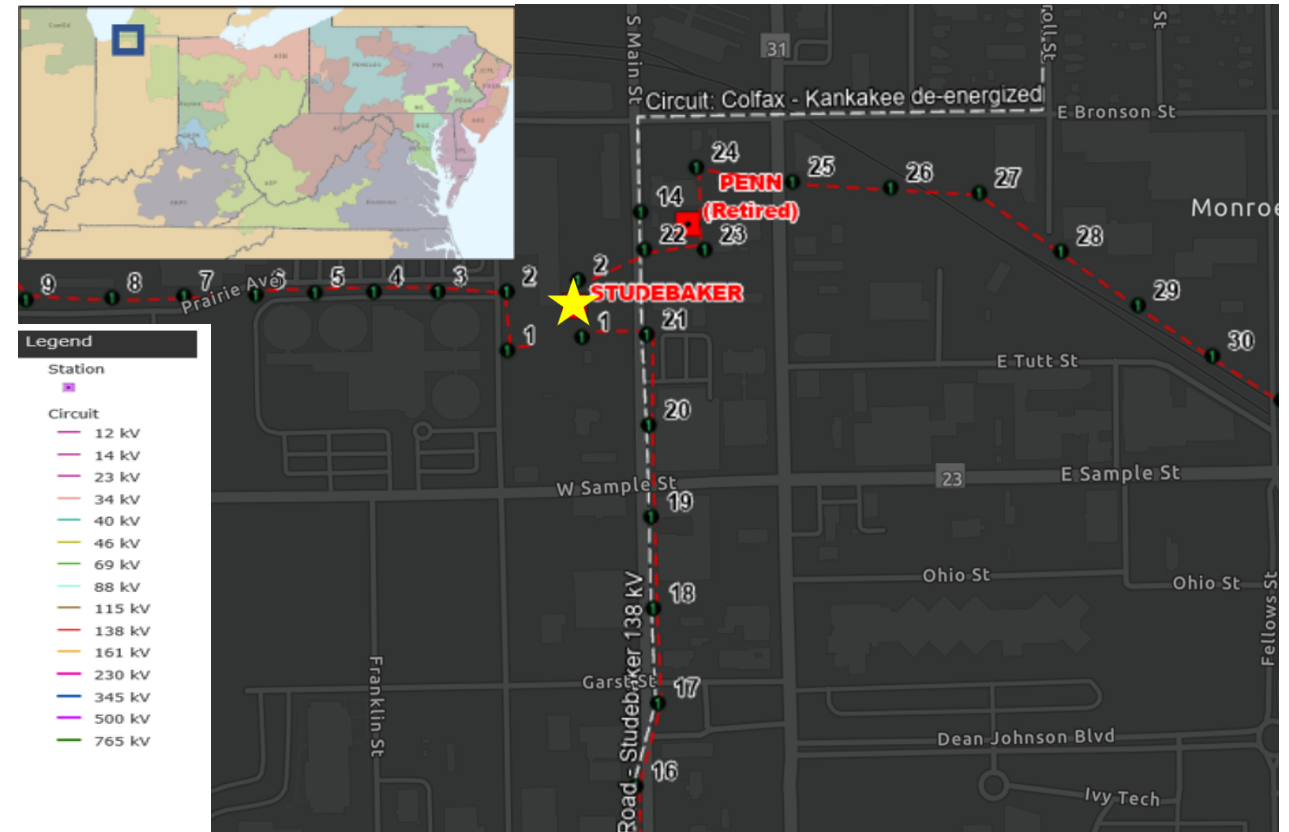
Project Driver: Customer Service

Specific Assumption References:

AEP Connection Requirements for the AEP Transmission System
(AEP Assumptions Slide 12)

Problem Statement:

I&M Distribution is requesting upgrades at their Studebaker station to address reliability violations for load at risk and asset performance/material/risk. There are also overlapping zones of protection on the Transmission through path which present challenges to protection zones and schemes. These challenges can lead to over-tripping of protection zones and unnecessary outages to the equipment in the station.



Need Number: AEP-2025-AP006

Process Stage: Need Meeting 11/14/2025

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

AEP Assumptions Slide 13

Problem Statement:

Line Name: Big Sandy - Thelma 138kV circuit (The Big Sandy – Thelma 138kV asset stops at structure 191-79 and combines with the West Huntington – Big Sandy 138kV asset. The West Huntington – Big Sandy 138kV asset becomes a double circuit asset before entering Big Sandy station from structure 191-79.)

Original Install Date (Age): 1963

Length of Line: ~25.5 mi

Total structure count: 127

Original Line Construction Type: Wood and Lattice Aluminum

Conductor Type: 636,000 ACSR

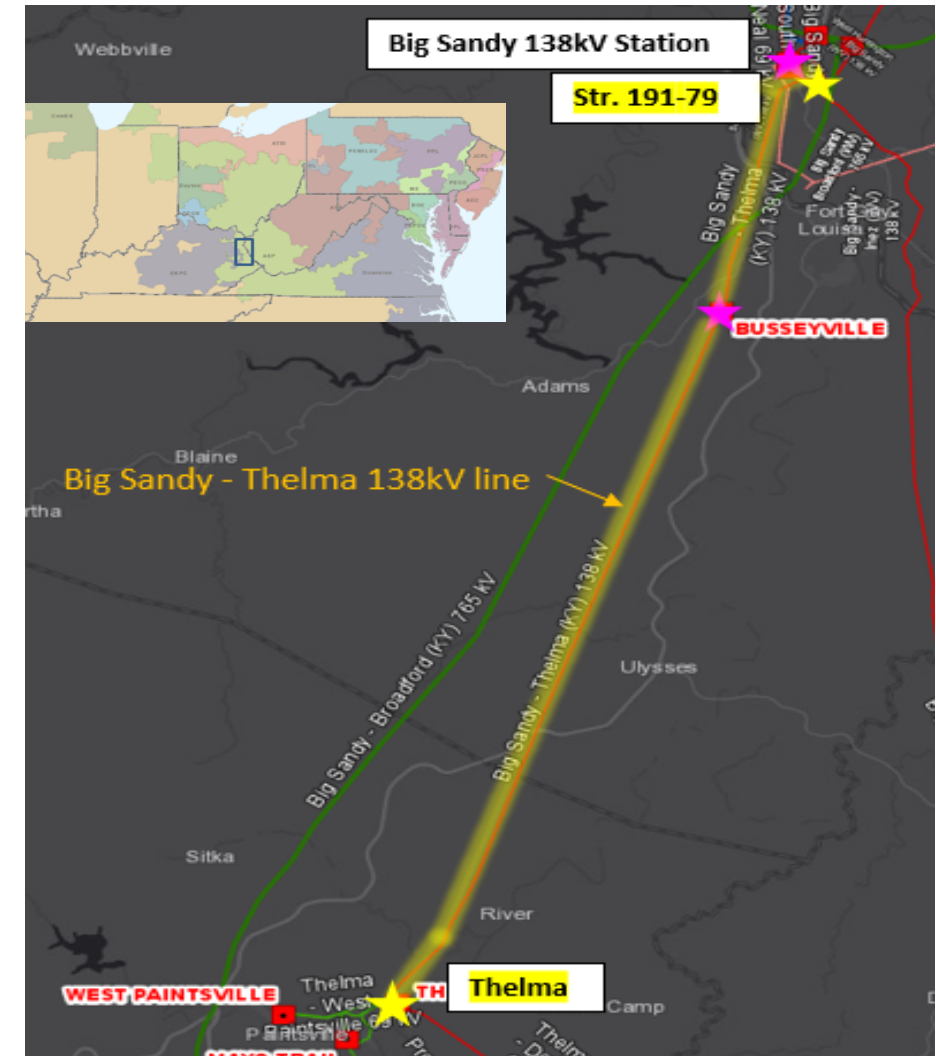
Momentary/Permanent Outages: 5 Momentary and 5 Permanent outages on the Big Sandy – Thelma circuit causing 3.4M minutes of CMI.

The line asset serves 33 MVA of peak load at Busseyville station.

Line conditions:

- The structures on the Big Sandy - Thelma 138kV line fail to meet NESC Grade B loading criteria, fail to meet current AEP structural strength requirements, and fail to meet the current ASCE structural strength requirements.
- 112 of 127 structures or 88% of the structures are 1963 wood vintage structures and 11 of 127 are 1963 lattice vintage structures.
- There are 199 open structural conditions impacting poles, crossarms, X-braces, and knee / vee braces mainly including woodpecker holes, rot, bowing, and broken conditions. There are 137 open conditions related to broken or missing ground lead wires or missing ground rods. There are 95 structures with at least one open condition, which relates to 75% of the structures on the line.
- The structures are grounded utilizing the butt wrap method. The current grounding system and poor shielding angle do not meet current AEP and industry accepted criteria, making the line susceptible to momentary and permanent outages, affecting customer reliability.
- The inadequate grounding limits the available path to ground during any type of line fault, increasing the intensity the conductor and related hardware have to withstand during the fault. The reduced electrical strength of the insulators could lead to electrical damage to structures and hardware during a fault if the insulator were to fail from elevated electrical stresses.

AEP Transmission Zone M-3 Process Thelma, KY/Big Sandy, KY/Busseyville, KY



SRTEP-Western – AEP Supplemental 11/14/2025

Solutions

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

AEP Transmission Zone M-3 Process German, IN

Need Number: AEP-2025-IM002

Process Stage: Solution Meeting SRRTWP-W - 11/14/2025

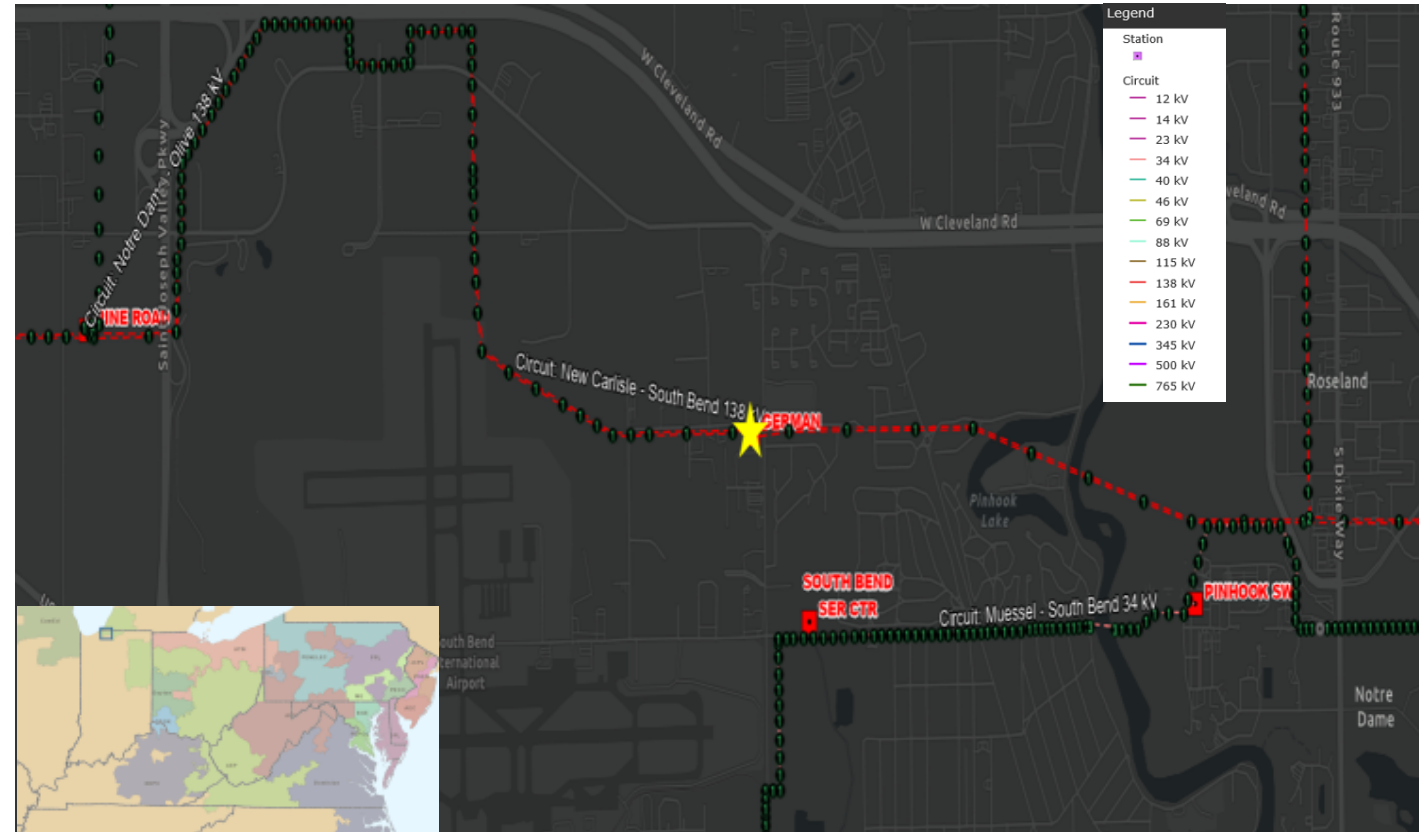
Previously Presented: Need Meeting 02/14/2025

Supplemental Project Driver: Equipment
Condition/Performance/Risk

Specific Assumption Reference: AEP Connection Requirements
for the AEP Transmission System (AEP Assumptions Slide 12)

Problem Statement:

I&M Distribution is requesting upgrades to T1 at German station due to its condition, performance, and risk. Transformer T1 at German station is a 1970s vintage transformer and has developed oil leaks at the low side bushing and radiators. Elevated levels of CO₂ and Ethylene indicate excessive decomposition of the paper insulating materials, which impairs the unit's ability to withstand through fault events.



AEP Transmission Zone M-3 Process German, IN/Olive, IN/Notre Dame, IN

Need number(s): AEP-2025-IM002

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Proposed Solution:

German Station: Install 138kV bus tie, replace 138kV MOAB Y facing Notre Dame, and replace distribution bank T1..
Estimated Cost: \$2.406 M

Olive Remote End: Protection and controls settings updates at Olive station.. Estimated Cost: \$0.122 M

Notre Dame Remote End: Protection and controls settings updates at Notre Dame station. Estimated Cost: \$0.143 M

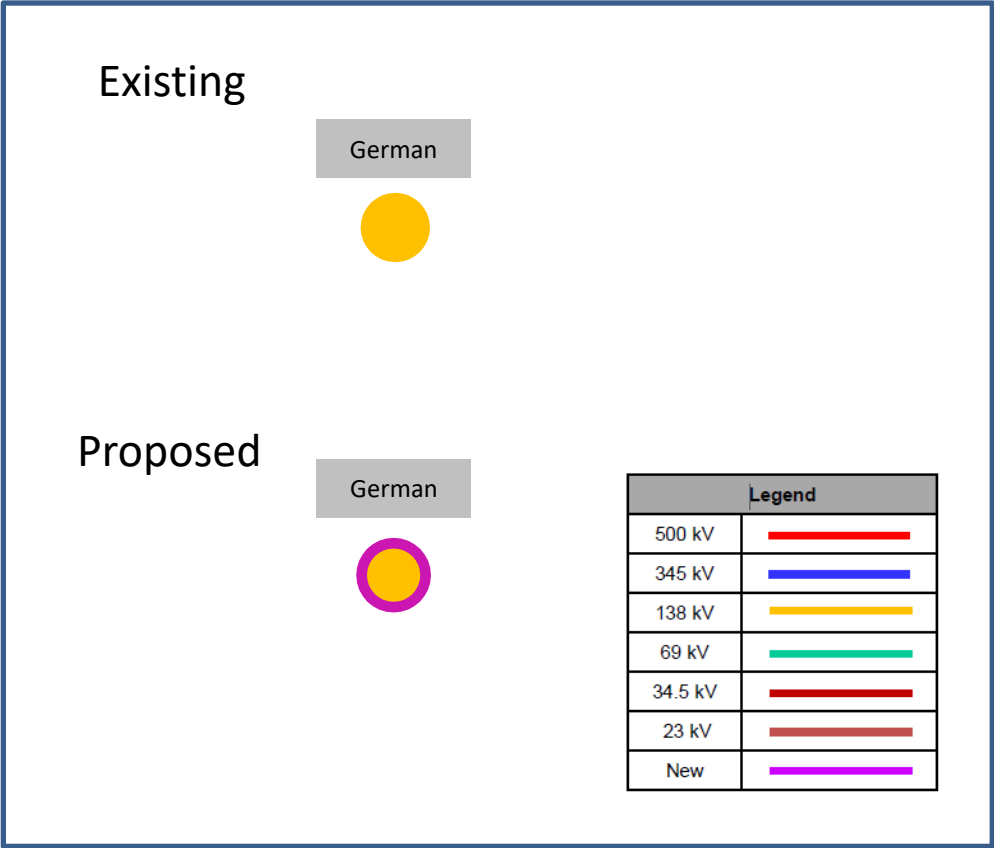
Transmission Cost Estimate: \$2.672 M

Alternatives Considered:

Construct a greenfield breaker and a half station, incorporating the 138kV Darden Tap and add distribution facilities. Avoided as cost prohibitive. Estimated cost: \$20M

Projected In-Service: 09/29/2028

Project Status: Scoping



AEP Transmission Zone M-3 Process Helium Switch, OH/Forest3, OH/Upper Sandusky, OH

Need number(s): AEP-2025-OH009

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Proposed Solution:

Helium Switch: Build a 3-way Auto-sectionalizing POP switch on the Upper Sandusky – Forest 69kV circuit and upgrade remote end relay settings at Forest and Upper Sandusky stations. install metering equipment for the customer.. Estimated Cost: \$1.54 M

Upper Sandusky - Forest (OP) 69kV Cut In: Cut-in to Upper-Sandusky - Forest (OP) 69kV line to install Helium Switch to serve the customer. Estimated Cost: \$1.325 M

Helium Switch Extension 69kV line: Install ~1.0 mile of greenfield 69kV transmission line and fiber to serve the customer facility.. Estimated Cost: \$2.036 M

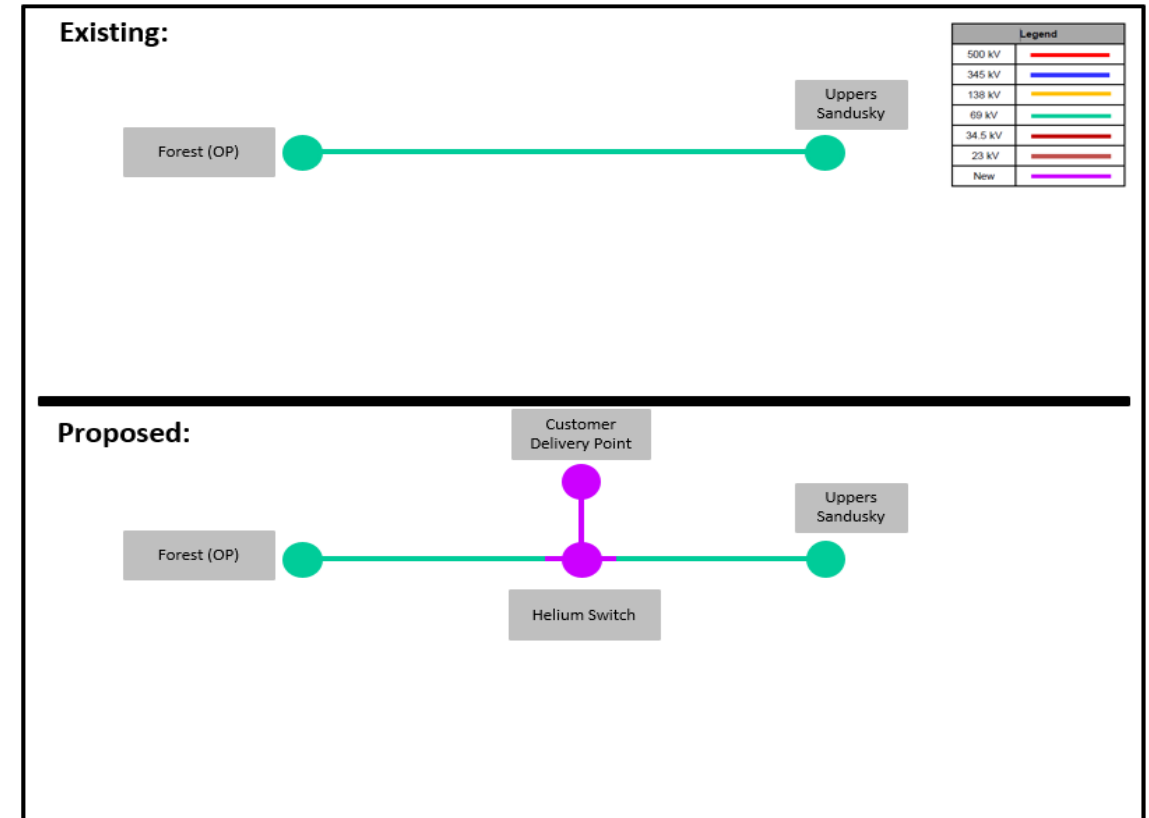
Transmission Cost Estimate: \$4.901 M

Alternatives Considered:

Rebuild Upper Sandusky station in in the clear as a breaker and a half with 4 strings with 12 circuit breakers to accommodate all lines with the new customer feed and AEP distribution. From the new Upper Sandusky station to the customer ~0.5 miles of greenfield 69kV line will be built. Does not meet the customer's ISD requirement and is more expensive than the proposed solution. Estimated cost: \$30M

Projected In-Service: 07/01/2026

Project Status: Engineering



AEP Transmission Zone M-3 Process East Tiffin, OH/Mousey Switch, OH

Need Number: AEP-2025-OH024

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Previously Presented: Need Meeting 10/17/2025

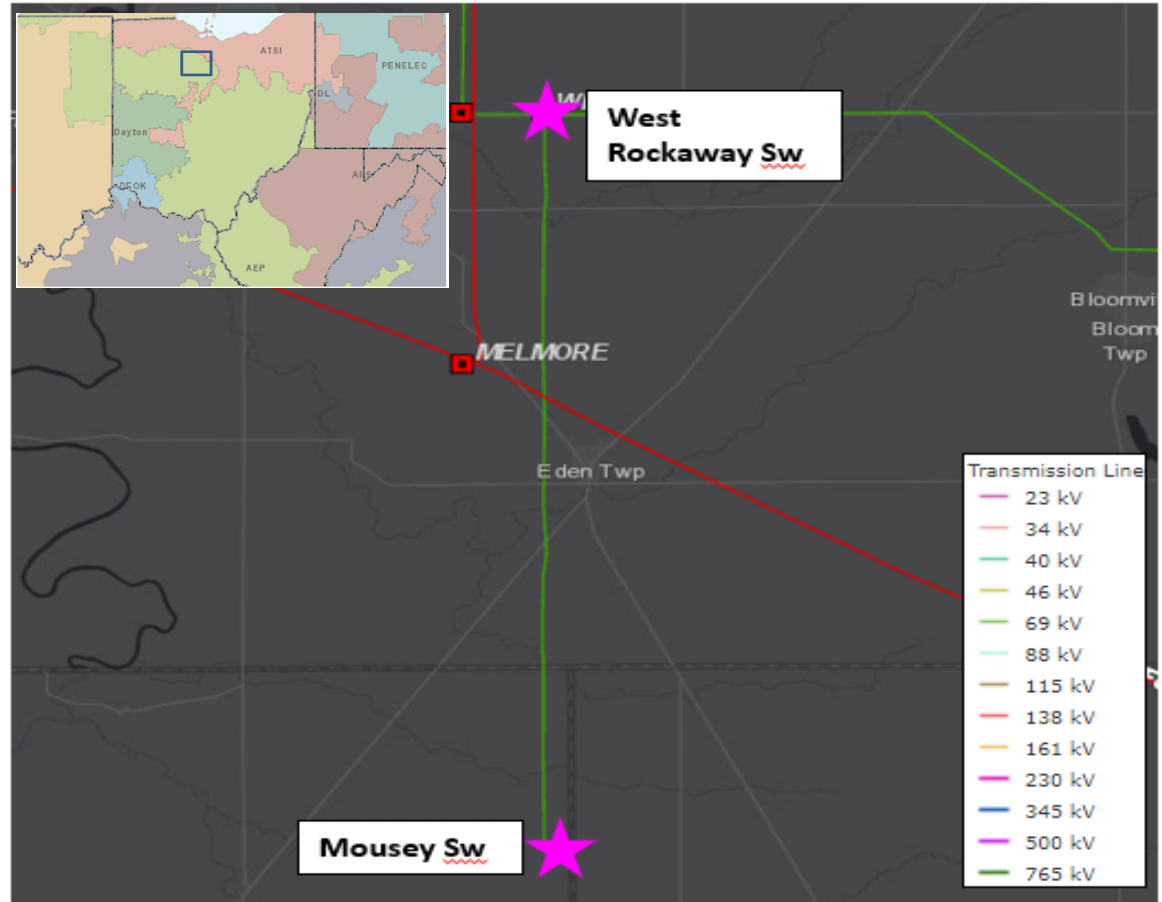
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

AEP Guidelines for Transmission Owner Identified Needs (AEP Assumptions Slide 13)

Problem Statement:

The West Rockaway - North Central Co-op 69kV line is 8 miles long and primarily consists of wood pole structures with vertical insulators, originally installed in 1960 with 1/0 ACSR 6/1 conductor. Currently, there are 13 structures with at least one open condition, which relates to 12.5% of the structures on the circuit. Of these structures, there are 14 structure based open conditions, and 9 ground lead wire related open conditions. There have also been 13 momentary and 9 permanent outages since 2017 which has resulted in an average outage duration of 57.38 hours.



AEP Transmission Zone M-3 Process East Tiffin, OH/Mousey Switch, OH

Need number(s): AEP-2025-OH024

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Proposed Solution:

East Tiffin (Structure 1) - Mousey Switch 69 kV Install: Rebuild the ~8-mile 69 kV single circuit line utilizing 556 ACSR conductor between Structure 1 and Mousey Switch. Component includes Install / Removal and ROW expansion of existing easements. Estimated Cost: \$19.174 M

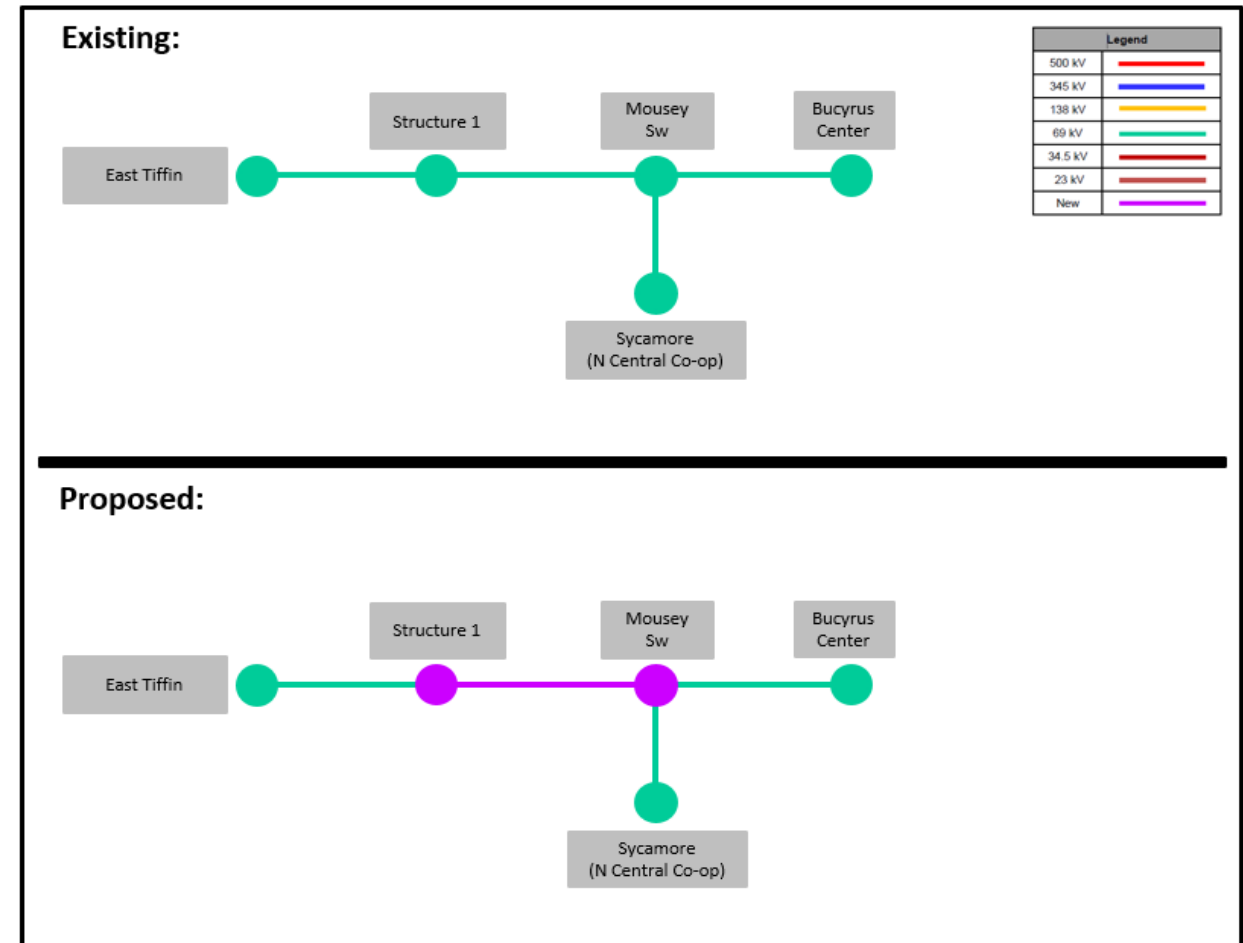
Transmission Cost Estimate: \$19.174 M

Alternatives Considered:

Retire the line asset, this would continue to leave the N. Central Co-op on a radial circuit, and the radial circuit would have more exposure because it is a ~13.0-mile 69kV line.

Projected In-Service: 05/01/2027

Project Status: Engineering



AEP Transmission Zone M-3 Process Cleveland, IN

Need Number: AEP-2025-IM006

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Previously Presented: Need Meeting 07/18/2025

Project Driver: Customer Service

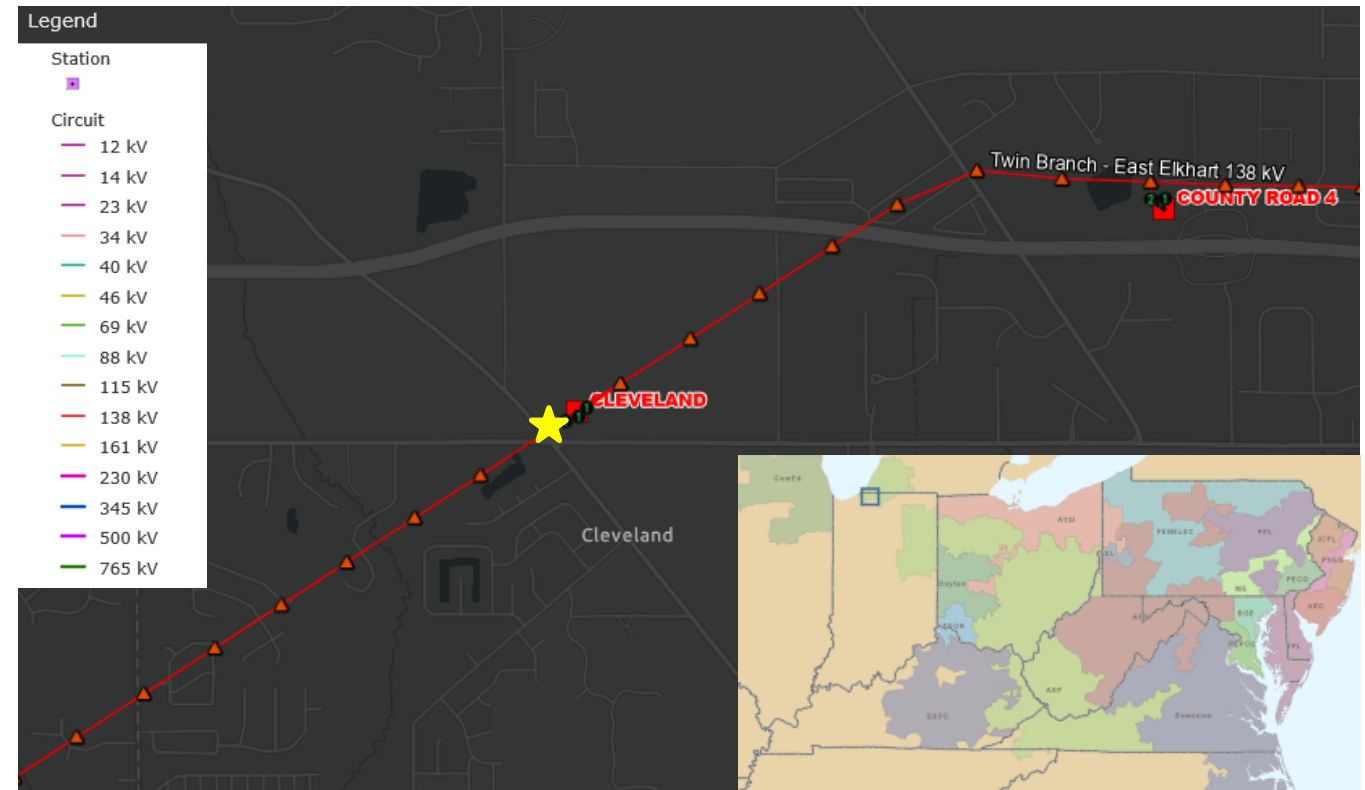
Specific Assumption References:

AEP Connection Requirements for the AEP Transmission System (AEP Assumptions Slide 12)

Problem Statement:

I&M Distribution is requesting an additional feed and equipment upgrades to be installed at I&M's Cleveland 138kV station to help address asset performance/material/risk and customer reliability. These upgrades will drive changes on the Transmission through path to address overlapping zones of protection with the added transformer.

Since 2020, Cleveland 138kV station has experienced 2.18 million customer minutes of interruption caused by station equipment. The load served from Cleveland station is non-transferable and cannot be picked up from other sources in the event of an outage.



AEP Transmission Zone M-3 Process Cleveland, IN/Capital Ave, IN/East Elkhart, IN

Need number(s): AEP-2025-IM006

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Proposed Solution:

Cleveland Station: Rebuild the existing Cleveland station with a 138kV bus tie breaker and MOABS on the line exits out of the station. Install two 138/13.09 30MVA distribution banks and associated distribution equipment.. Estimated Cost: \$3.809 M

Cleveland Station 138kV Entrance Spans: Install 0.2 miles of 138kV line into the new Cleveland station structure location. Estimated Cost: \$2.309 M

Capital Avenue Remote End: Protection and controls upgrades at Capital Avenue station. Estimated Cost: \$0.404 M

East Elkhart Remote End: Protection and controls upgrades at East Elkhart station.. Estimated Cost: \$0.544 M

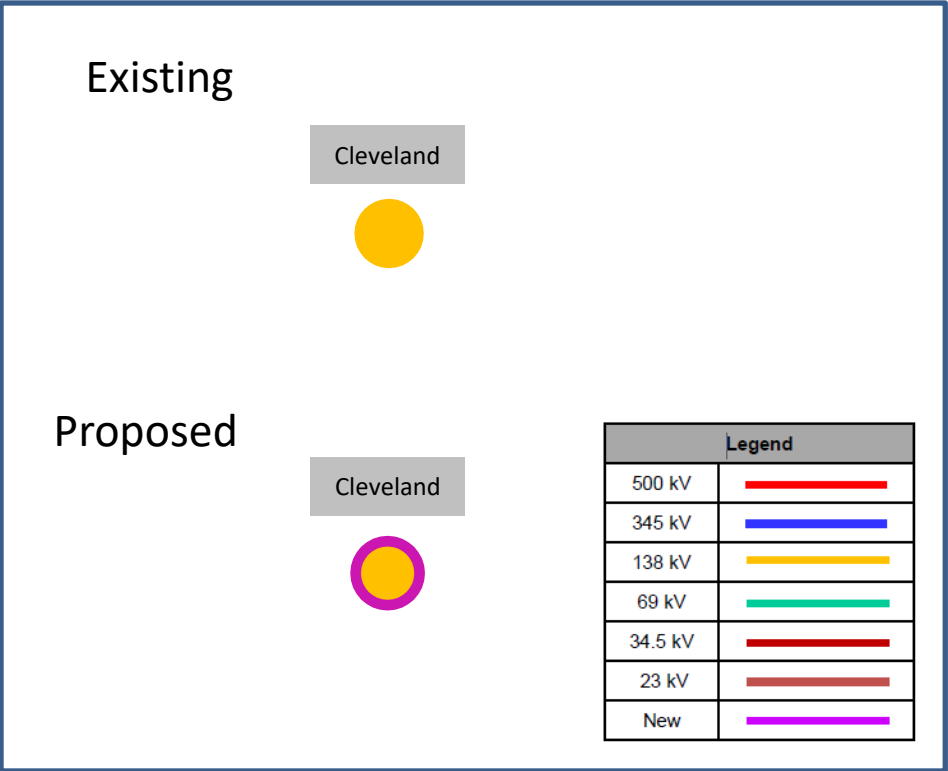
Transmission Cost Estimate: \$7.067 M

Alternatives Considered:

Construct a greenfield station away from the existing Cleveland site. This option was not pursued to eliminate risks associated with real estate acquisition, siting activities, and additional cost. There is space available in the existing station to complete the proposed work. Estimated cost: \$25M

Projected In-Service: 12/31/2030

Project Status: Scoping



AEP Transmission Zone M-3 Process Abert, VA

Need Number: AEP-2025-AP007

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Previously Presented: Need Meeting 10/17/2025

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

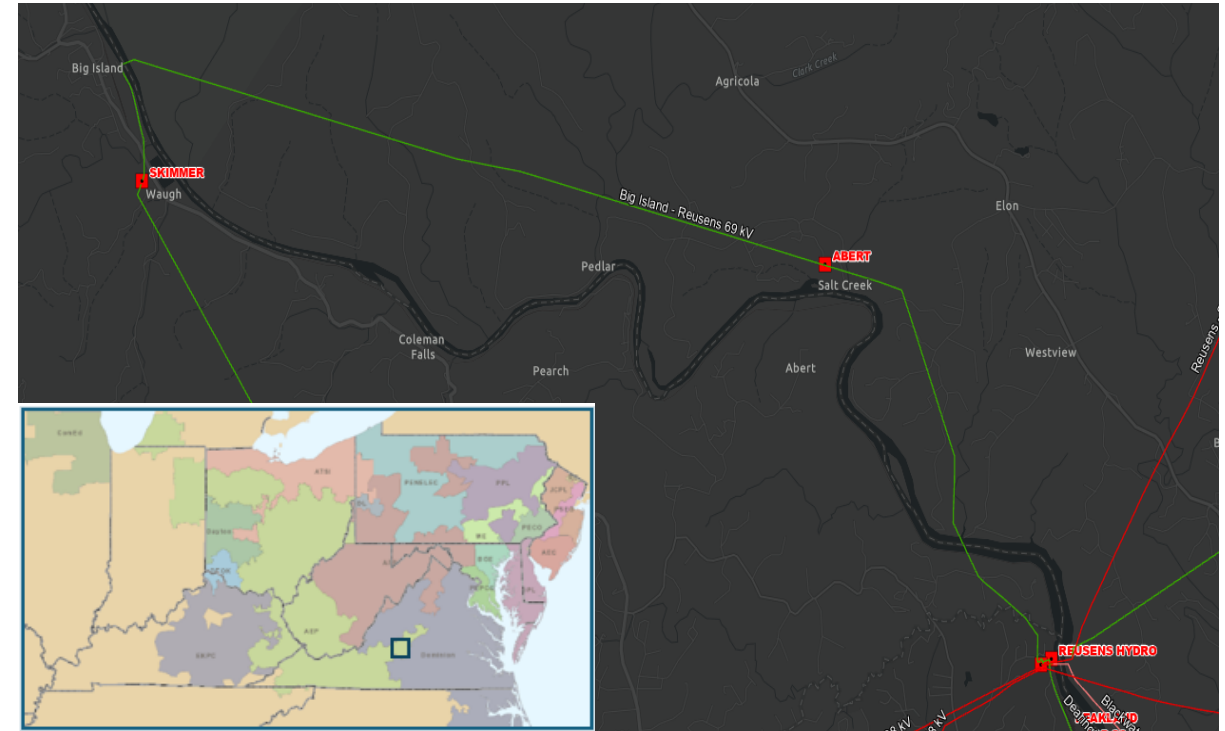
AEP Guidelines for Transmission Owner Identified Needs (AEP Assumption Slide 12)

Problem Statement:

Abert Station:

69 kV Cap Bank Circuit Switcher AA is a 2030-69 type, SF6 filled switcher that is 1989 vintage. This switcher is in poor health, and this family of switchers is prone to malfunction. Performing maintenance on the capacitor bank can be difficult due to the limited access around the associated equipment. The 69 kV capacitor bank is also physically close to the 12kV Bay which complicates maintenance activities and outages.

The 69kV MOABs W, and Y switches and motor mechanisms are obsolete and there is no ability to procure spare parts. These MOABs are installed as a guyed wood pole within the station yard which limits access for maintenance and work within the station yard.



AEP Transmission Zone M-3 Process Abert, VA

Need number(s): AEP-2025-AP007

Process Stage: Solution Meeting SRRTEP-W - 11/14/2025

Proposed Solution:

Abert Station Work: Install new 69 kV circuit switcher on the 69 kV capacitor bank at Abert Station. Relocate 69 kV Capacitor bank at Abert Station to create room for the installation of the new capacitor bank circuit switcher. The 69 kV POP Switch will be replaced with a 69 kV Box Bay. Station will be expanded to accommodate the new location of the circuit switcher and capacitor bank. Relaying will be updated the old EM relaying will be retired.. Estimated Cost: \$3.4 M

Transmission Cost Estimate: \$3.4 M

Alternatives Considered:

Rebuilding Abert station in the clear to accommodate the upgrades. This alternative was cost prohibitive; therefore, it was not chosen. Estimated cost: \$15M

Projected In-Service: 11/16/2029

Project Status: Scoping



Bubble diagram Not Applicable for switch replacement

Appendix

High Level M-3 Meeting Schedule

Assumptions

Activity	Timing
Posting of TO Assumptions Meeting information	20 days before Assumptions Meeting
Stakeholder comments	10 days after Assumptions Meeting

Needs

Activity	Timing
TOs and Stakeholders Post Needs Meeting slides	10 days before Needs Meeting
Stakeholder comments	10 days after Needs Meeting

Solutions

Activity	Timing
TOs and Stakeholders Post Solutions Meeting slides	10 days before Solutions Meeting
Stakeholder comments	10 days after Solutions Meeting

Submission of Supplemental Projects & Local Plan

Activity	Timing
Do No Harm (DNH) analysis for selected solution	Prior to posting selected solution
Post selected solution(s)	Following completion of DNH analysis
Stakeholder comments	10 days prior to Local Plan Submission for integration into RTEP
Local Plan submitted to PJM for integration into RTEP	Following review and consideration of comments received after posting of selected solutions

Revision History

11/04/2025– V1 – Original version posted to pjm.com