Western Sub Regional RTEP:
AEP Supplemental Projects

July 18, 2025

Changes to the Existing Supplemental Projects

AEP Transmission Zone: Supplemental S2167 Scope Change

S2167: Posted in 2020 Local Plan. Need Number: AEP-2018-IM002, AEP-2019-IM035, AEP-2019-IM025, AEP-2019-IM046. Solution Meetings all on 12/18/2019.

Reason For Change:

During detailed engineering and design for the proposed work at Niles station, it was determined that the proposed station work could not be completed as proposed without the use of multiple mobiles or skids and would leave all customers served from the station on long radials for extended periods of time under the various required outages. The only vehicle access to the station is surrounded by water on both sides, is prone to flooding, and can be extremely dangerous in adverse weather conditions. At Swanson station, Distribution has requested the station be rebuilt in the clear to due to outage risks associated with aging asset conditions installed in the 1950s and 1970s. Swanson has 34.6MVA of load that is non-recoverable and non-transferrable to neighboring stations in the event of equipment loss or for outage recovery. This update is provided to change the scope of Niles station to rebuild in the clear as FourFlag station and to rebuild Swanson on existing property at the site in the clear.

Selected Solution:

At Kenzie Creek station, install a 138/69kV XFR, 3 138kV breakers, 5 69kV breakers and a 14.4Mvar cap bank to allow for the retirement of Pokagon's 69 kV transmission yard.

Estimated Cost: $12M

At Pokagon station, retire the 69kV voltage class and re-organize this station as a 138/12kV station only.

Estimated Cost: $2M

At Lake Street station, install a new 69/12kV load delivery point, replace XFR 1 with a 50MVA bank, and replace 34.5kV CB "H" and 69kV Breaker "A". Replace and take ownership of 34.5kV CB G.

Estimated Cost: $7.8M

~~At Niles station, replace 69kV breakers "B" and "A". Replace XFR 2 and the breaker toward the City of Niles~~ Retire Niles station.

Estimated Cost: ~~$6.2M~~ $1.7M

Build the new FourFlag station to replace Niles consisting of 5 69kV circuit breakers configured in a ring bus. Install a 14.4 MVAR cap bank. Install a new 69/34.5kV transformer with high side circuit switcher and 2 new 34.5kV breakers toward the City of Niles and Bertrand. Install distribution equipment.

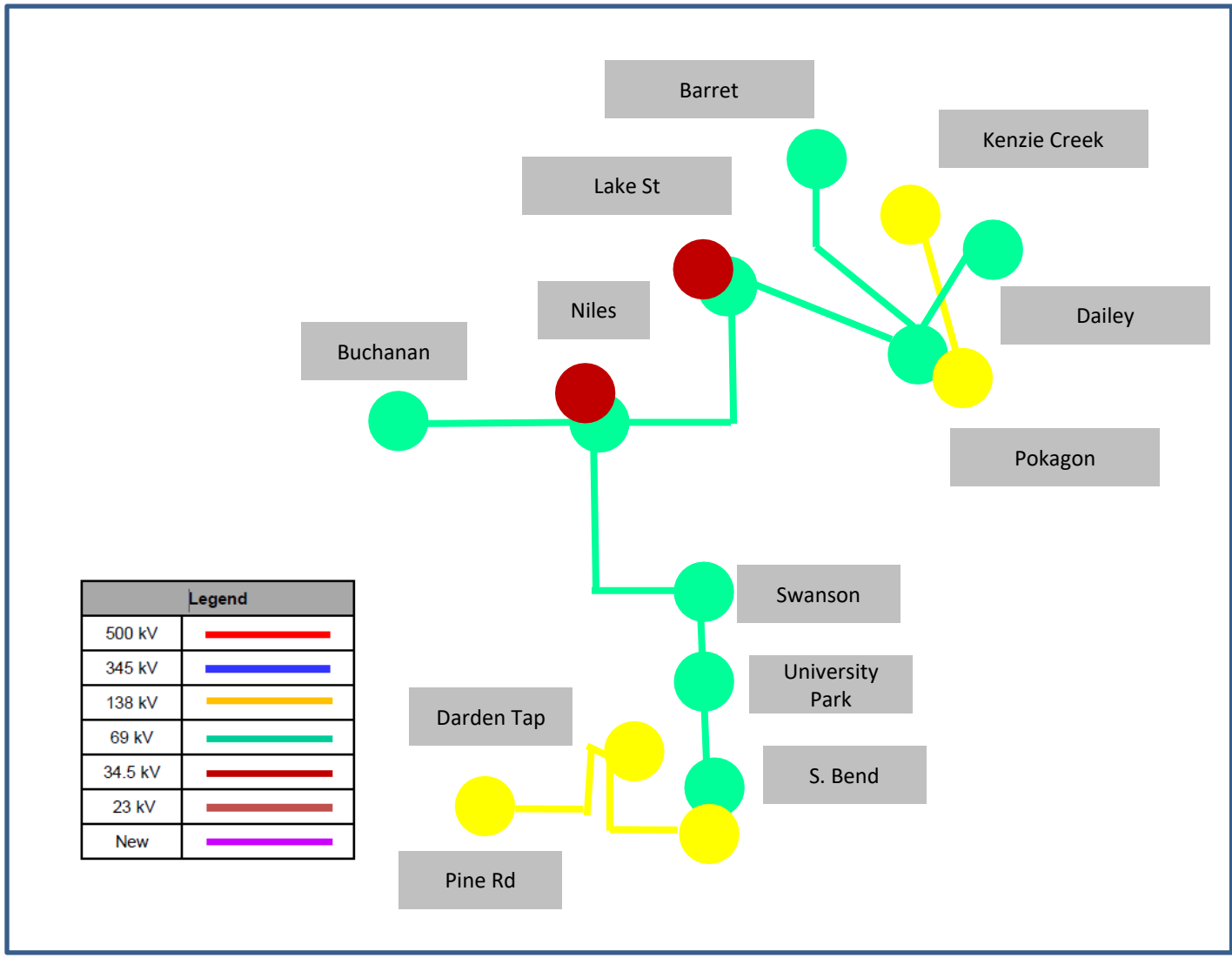
Estimated Cost: $17.9M

Route the Dailey, Barret and Lake St 69kV lines into Kenzie Creek station.

Estimated Cost: $2.8

Build the new 138/69/34kV Boundary station to serve the new 34.5kV distribution load and to separate the Swanson and University Park load form the network.

Estimated Cost: $13.6M



AEP Transmission Zone: Supplemental S2167 Scope Change

S2167: Posted in 2020 Local Plan. Need Number: AEP-2018-IM002, AEP-2019-IM035, AEP-2019-IM025, AEP-2019-IM046. Solution Meetings all on 12/18/2019.

Selected Solution:

Route the Mayflower 69kV, Lake Street 69kV, South Bend 69kV, and City of Niles 34.5kV lines into FourFlag station.

Estimated Cost: **$8.5M**

Build the ~2 mile 138kV double ckt Boundary Extension

Cost: $4.4M

Rebuild the Pokagon – Niles 69kV line as the ~9.3 mile Kenzie – ~~Niles~~ FourFlag 69kV line.

Cost: $22.8M

Rebuild the ~11.8 mile South Bend – Niles 69kV line as the South Bend – Boundary – ~~Niles~~ FourFlag 69kV line

Cost: $26.6M

~~Install a 69kV bus tie CB at Swanson station to separate the 4 Moabs in series.~~ Rebuild Swanson in the clear. **Cost: ~~$2.1M~~ $2.6M**

Replace the switch pole for University Park. The new PoP Switch pole will be called "Peppermint Switch".

Cost: $1M

Install a 34.5kV circuit breaker at South Side Station (owned by City of Niles) to coordinate with the new breakers at FourFlag.

Estimated Cost: $2.1M

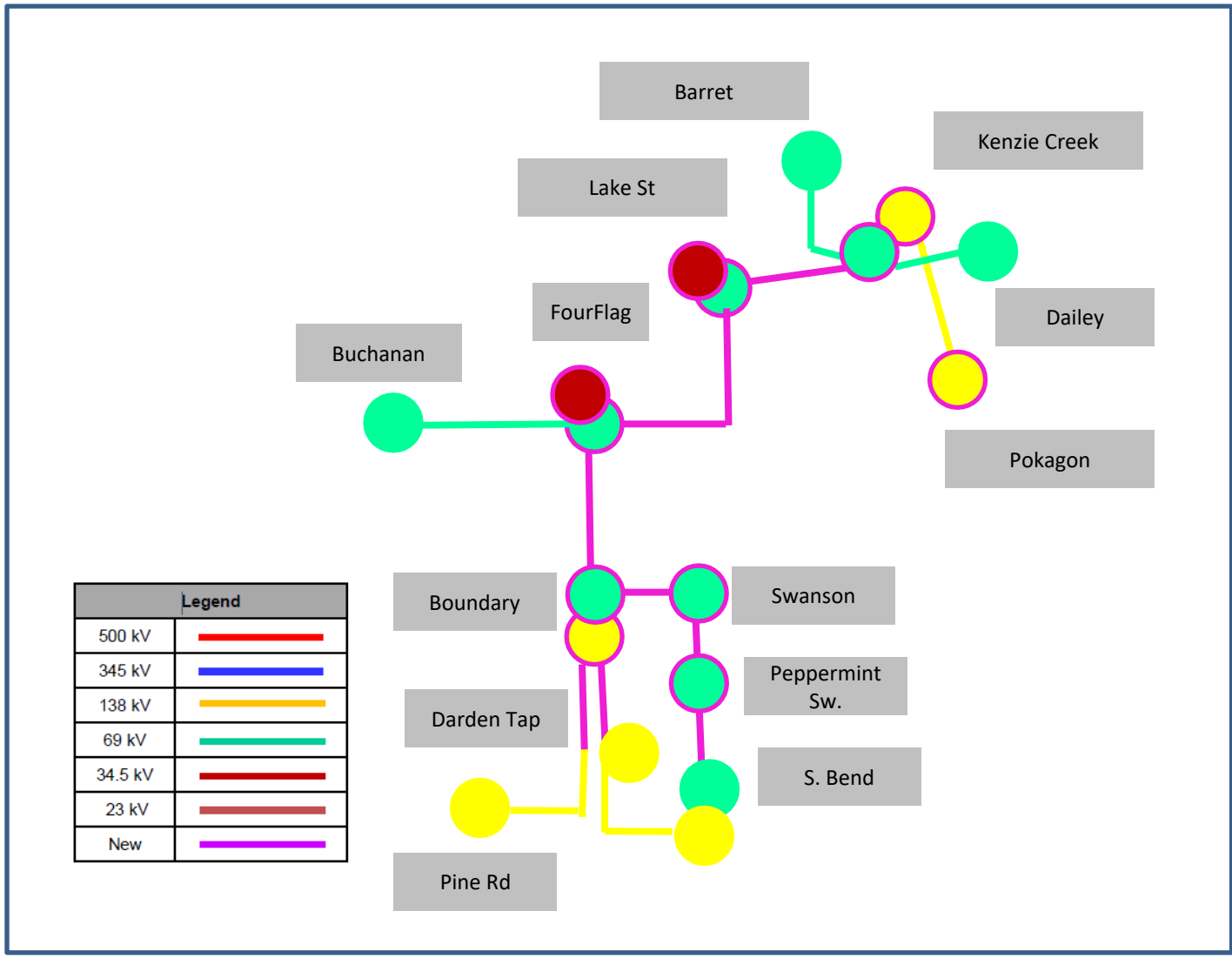
Estimated Cost: ~~$101.3M~~ $125.8M

Projected In-Service: ~~06/01/2022~~ 3/13/2026

Supplemental Project ID: S2167

Project Status: Scoping

Model: 2024 RTEP



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
Windsor, OH

Need Number: AEP-2025-OH004

Process Stage: Need Meeting 07/18/2025

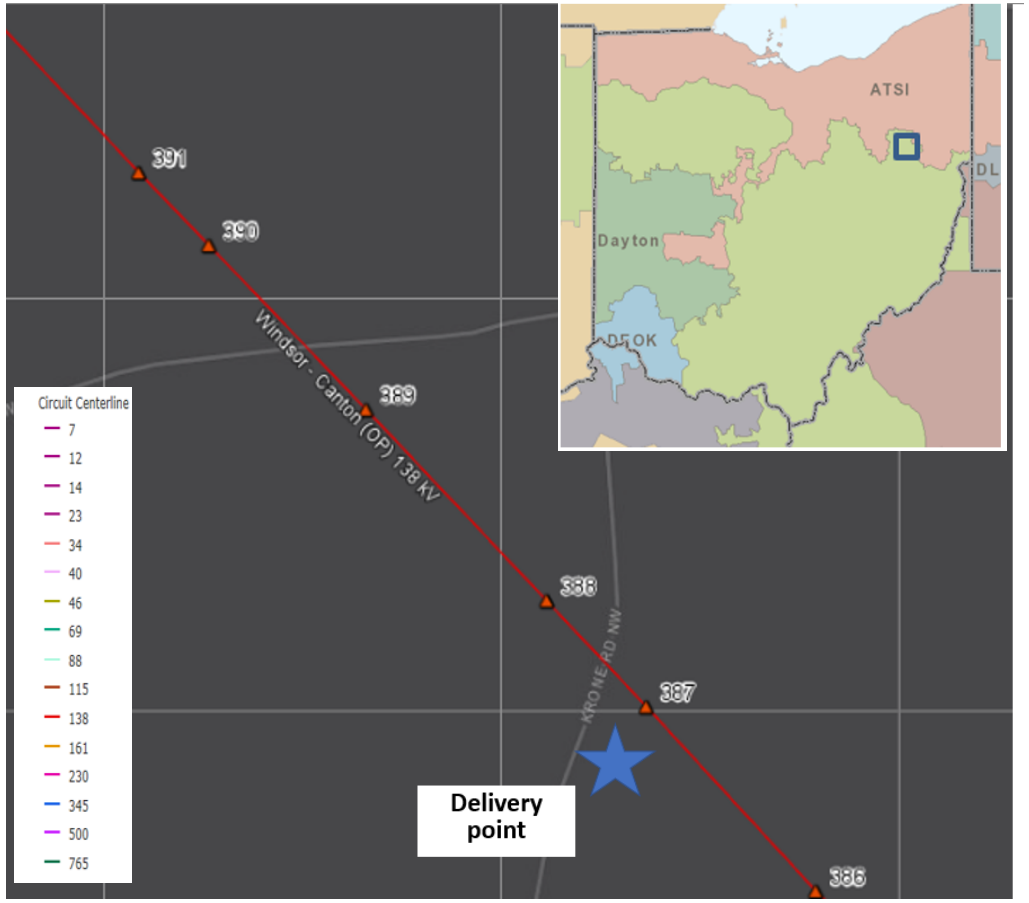
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

A customer has requested a new 138 kV delivery point in Malvern, Ohio. The anticipated load is 20 MW and delivery is requested by 02/18/2027.



AEP Transmission Zone M-3 Process
South Canton, OH/Torrey, OH

Need Number: AEP-2025-OH007

Process Stage: Need Meeting 07/18/2025

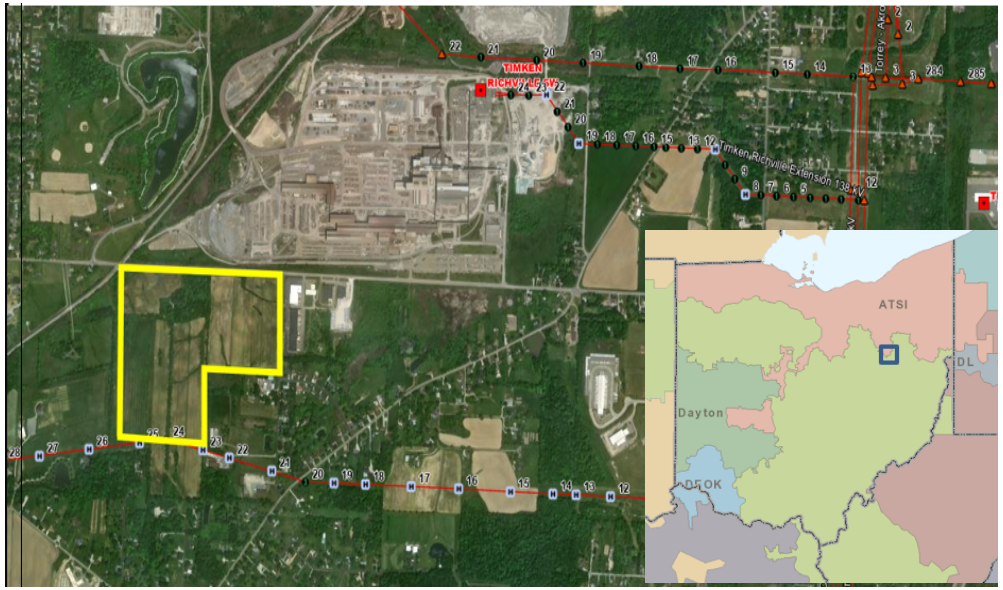
Project Driver: Customer Service

Specific Assumption References:

AEP Connection Requirements for the AEP Transmission System (AEP Assumptions Slide 13)

Problem Statement:

A new customer has requested 138 kV service to a site located near the South Canton - Torrey 138 kV line asset. The anticipated load is 255 MW and has a requested in-service date of 10/13/2027.



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

Need Number: AEP-2025-OH009

Process Stage: Need Meeting 07/18/2025

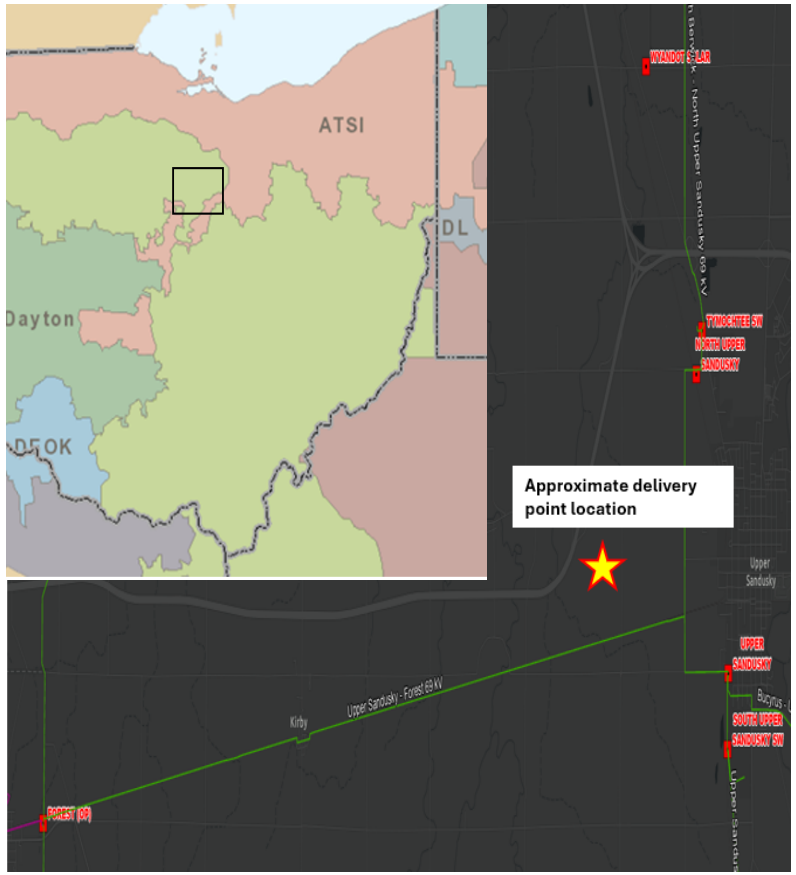
Project Driver: Customer Service

Specific Assumption References:

AEP Guidelines for Transmission Owner Identified Needs (slide 13).

Problem Statement:

A customer has requested a new delivery point near the Forest-Upper Sandusky 69kV line near Upper Sandusky, OH. The projected demand at the delivery point is 13.5MW and the requested in-service date is July 2026.



AEP Transmission Zone M-3 Process
Pickaway County, OH

Need Number: AEP-2025-OH010

Process Stage: Need Meeting 07/18/2025

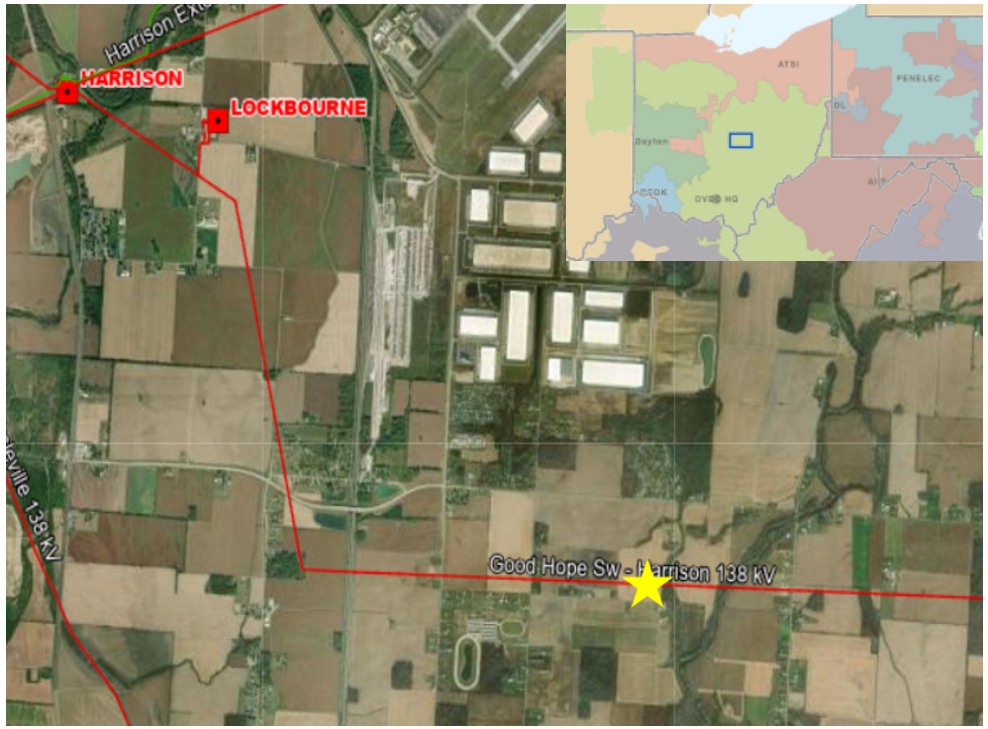
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

A customer has requested 138 kV transmission delivery to a site in Pickaway County, OH. The site is North of the AEP owned Lockbourne – Good Hope SW 138 kV section of the Lockbourne – Lemaster 138 kV circuit. An initial demand of 12.1MW by 02/2026 has been requested.



AEP Transmission Zone M-3 Process
East Leipsic, OH

Need Number: AEP-2025-OH011

Process Stage: Need Meeting 07/18/2025

Project Driver: Equipment Condition/Performance/Risk, Operational Flexibility and Efficiency

Specific Assumption References:

AEP Guidelines for Transmission Owner Identified Needs (AEP Assumptions Slide 13 and 14)

Problem Statement:

Station: East Leipsic 138kV

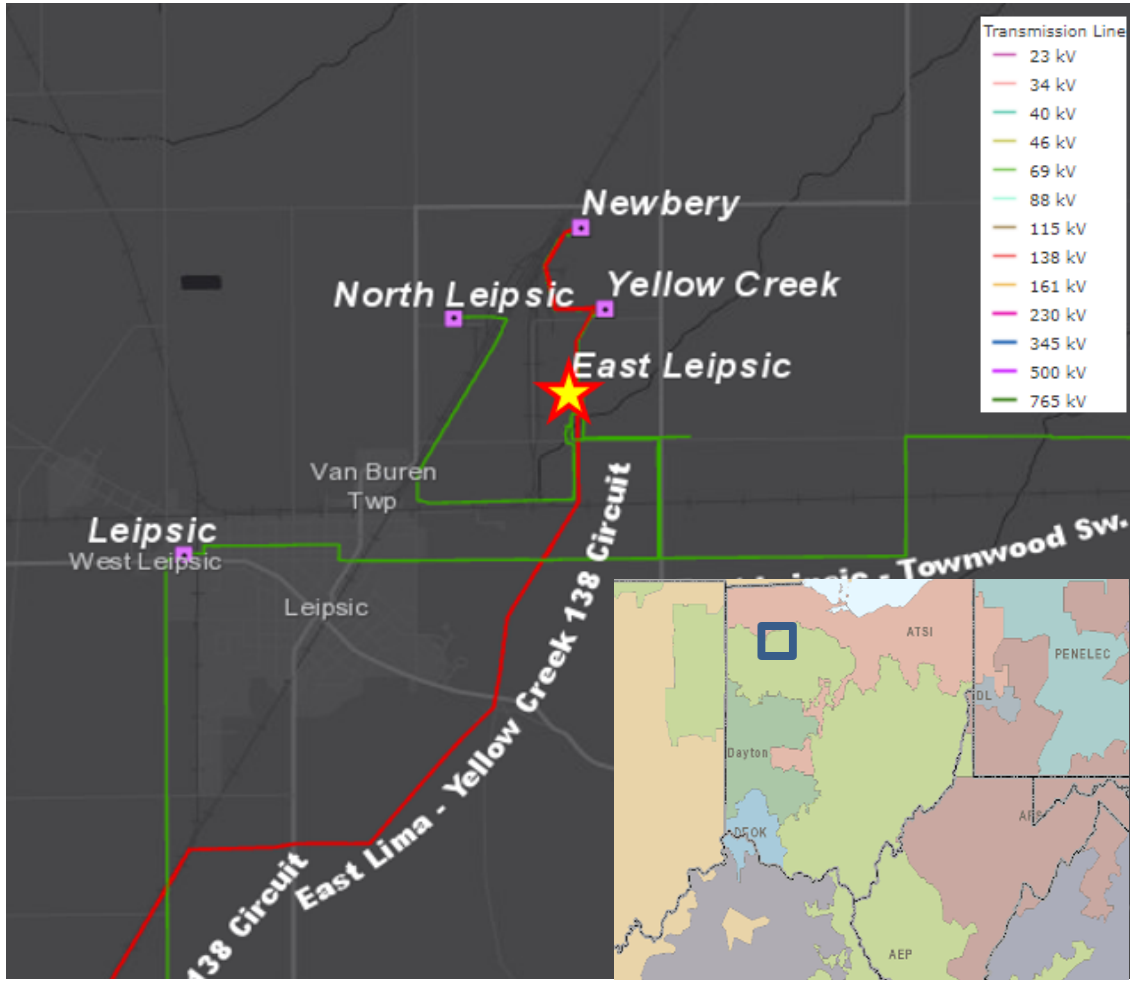
Transformer: Transformer 3 is a 1959 vintage 138/69kV unit. The transformer has elevated levels of carbon monoxide, carbon dioxide, methane and ethane indicating excessive decomposition of the paper insulating material which impacts the unit's ability to withstand future short circuit or through fault events.

Circuit Switcher AA: Circuit switcher AA is a Mark V SF6 type switcher. These switchers have had numerous documented malfunctions across the AEP fleet and spare/replacement parts are not readily available.

Relays: Currently, 40 of the 47 relays (85% of all station relays) are in need of replacement. 27 of these are of the electromechanical type and 4 of these are of the static type which have significant limitations with regards to spare part availability and fault data collection and retention. 9 relays are microprocessor type outside of their life expectancy.

Operational Flexibility:

Due to lack of appropriate sectionalizing, transformers 3, 4, and the 69kV bus are in the same zone of protection. Overlapping and combined zones of protection present challenges in coordinating relay settings correctly and can lead to over-tripping or misoperations.



AEP Transmission Zone M-3 Process
Hannibal, WV

Need Number: AEP-2025-OH012

Process Stage: Need Meeting 07/18/2025

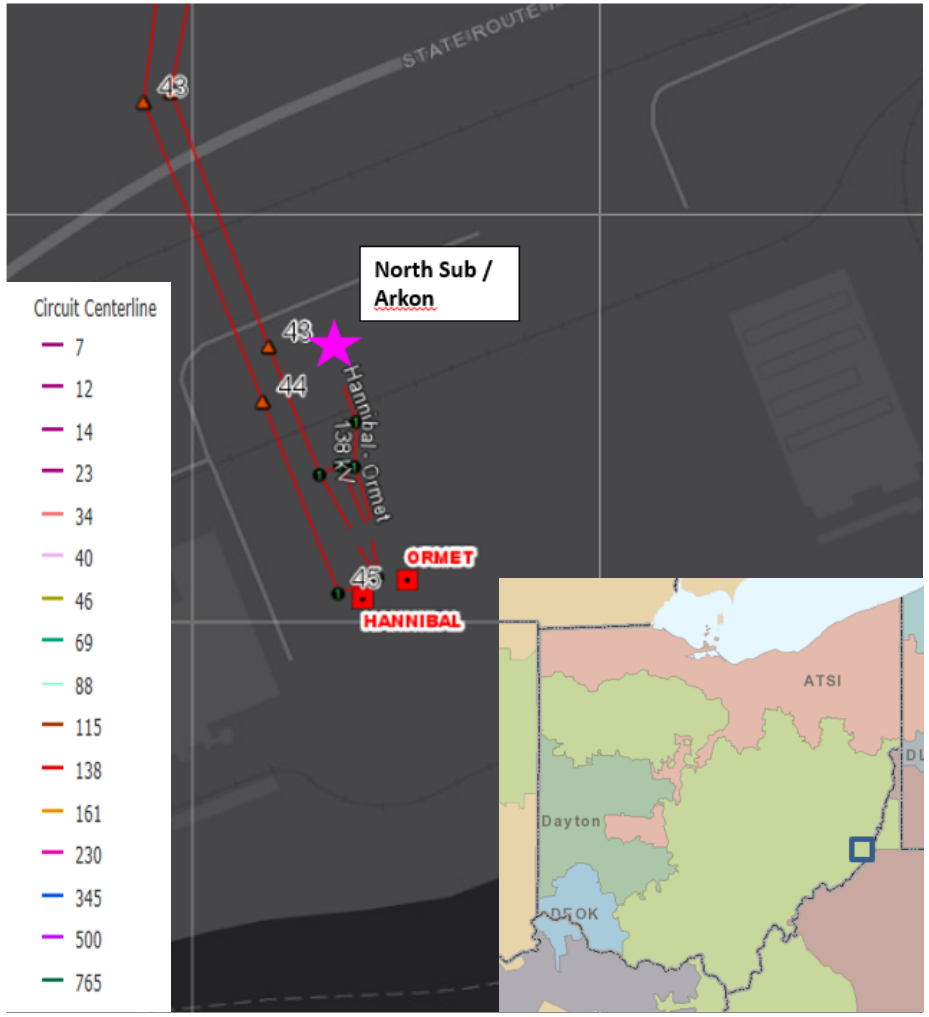
Project Driver: Customer Service

Specific Assumption References:

AEP Connection Requirements for the AEP Transmission System (AEP Assumptions Slide 13)

Problem Statement:

A customer planned to be served out of Hannibal 138kV substation has requested a new load addition of 304 MW. The total anticipated load to be served at the site is 570 MW. The customer has requested service by 5/9/2027.



AEP Transmission Zone M-3 Process
Cleveland, IN

Need Number: AEP-2025-IM006

Process Stage: 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.

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

Need Number: AEP-2024-IM011

Process Stage: Solution Meeting SRRTEP-W - 07/18/2025

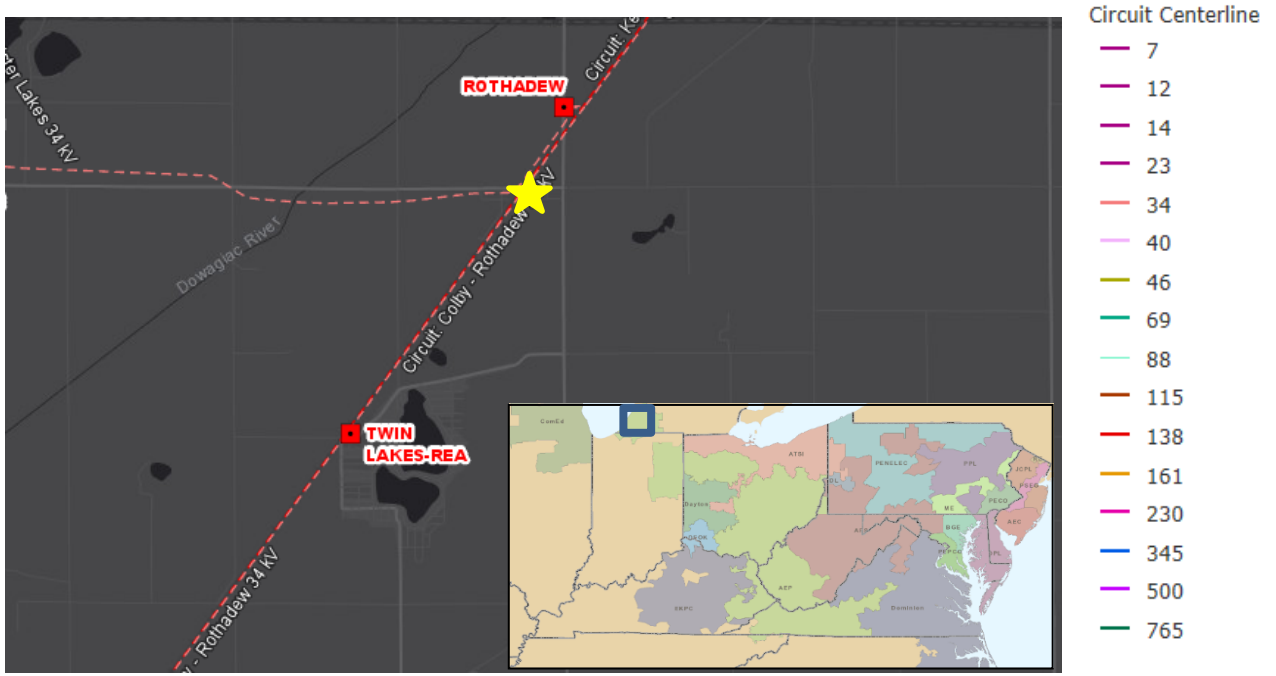
Previously Presented: Need Meeting 04/19/2024

Project Driver: Customer Service

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

Problem Statement:

Wolverine Power Supply Cooperative, Inc. has requested a new 138kV delivery point in Dowagiac, Michigan by December 1st, 2025. Anticipated load is approximately 5.14 MVA.

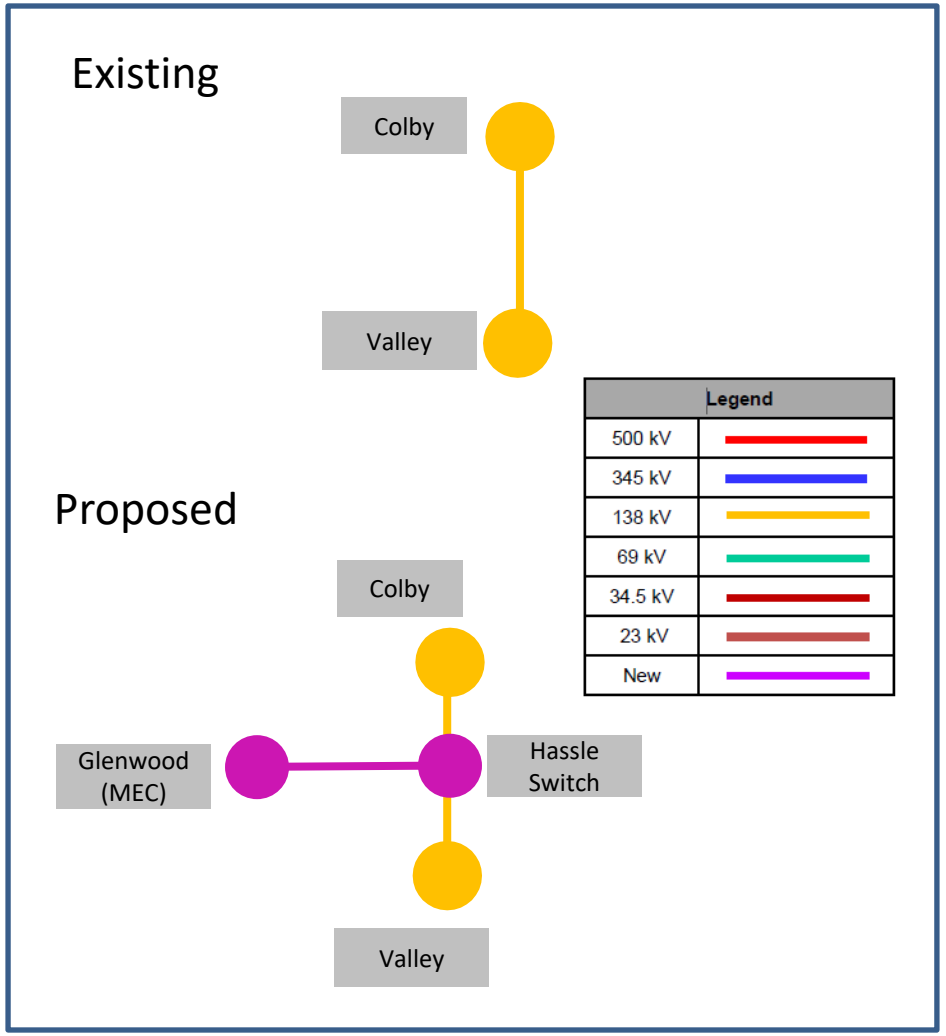


AEP Transmission Zone M-3 Process
Dowagiac, MI

Need number(s): AEP-2024-IM011
Process Stage: Solution Meeting SRRTEP-W - 07/18/2025

Proposed Solution:
Hassle Switch 138kV: Cut into the Kenzie Creek - Valley 138kV line and install a new 138kV phase over phase switch to serve approximately 5.14 MVA of new load. AEP will own the first span to the structure inside the customer's station. Fiber will be installed on the new line and metering will be installed on the low side of the transformer.. Estimated Cost: $3.719 M
Transmission Cost Estimate: $3.719 M
Alternatives Considered:
Considering the location of the customer request and availability of land for the switch, no other viable alternatives were identified.

Projected In-Service: 12/01/2025
Project Status: Engineering



AEP Transmission Zone M-3 Process
Jefferson County, Ohio

Need Number: AEP-2022-OH017

Process Stage: Solution Meeting SRRTEP-W - 07/18/2025

Previously Presented: Need Meeting 01/21/2022

Project Driver: Equipment Condition/Performance/Risk

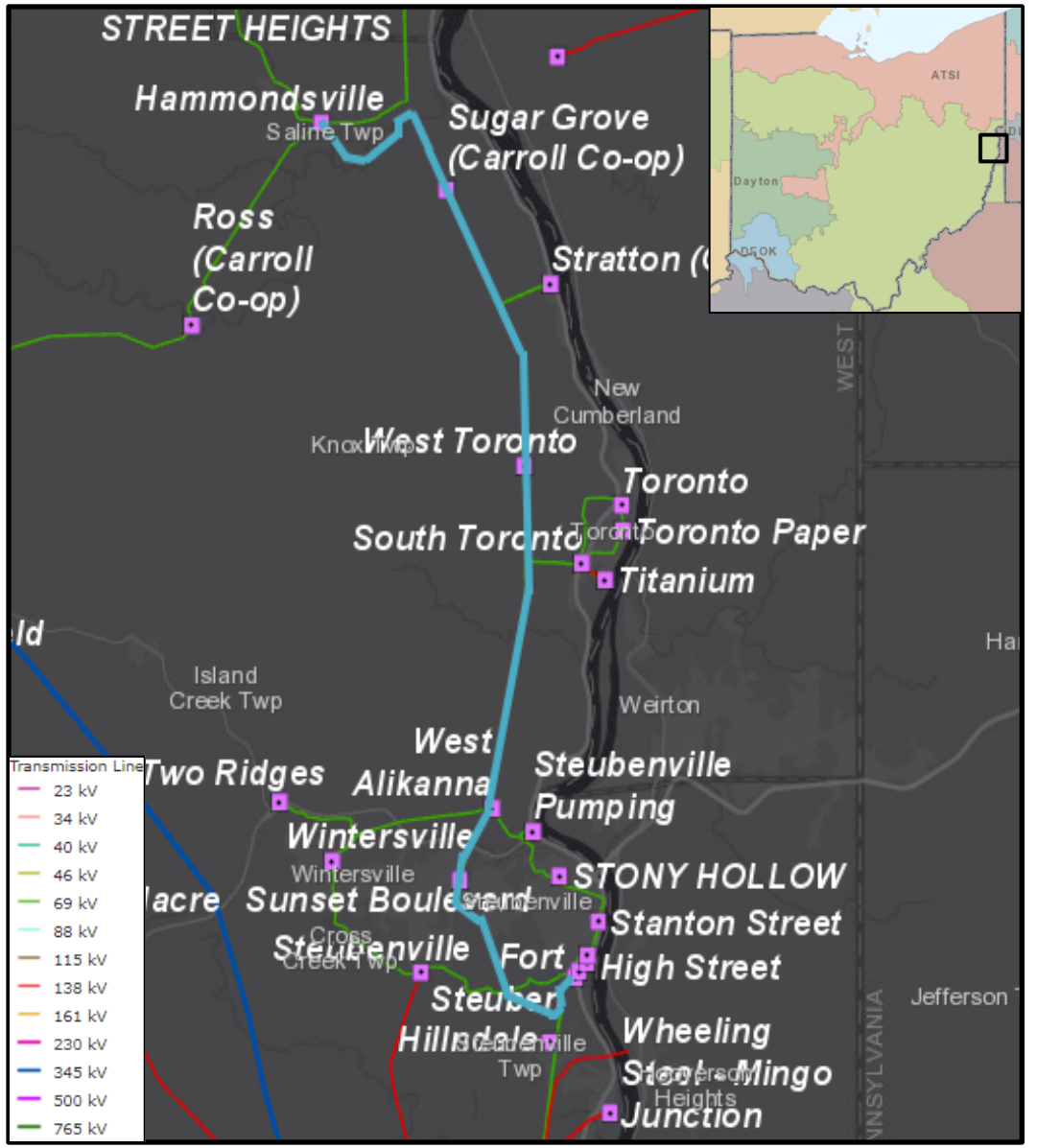
Specific Assumption References:

AEP Guidelines for Transmission Owner Identified Needs (AEP Assumptions Slide 13); AEP Presentation on Pre-1930s Lines

Problem Statement:

Fort Steuben – Hammondsville 69kV Transmission Line

- Length: 20.76 Miles
- Total Structure Count: 222
    - Structure Types: 71% 1928 Steel Lattice, 23% 1950-1969 Wood Pole, 6% 1970-2014 Wood Pole and 2 Steel Poles
    - Conductor Types: 45% 1964 #1 Copper 3, 44% 1964 1/0 Copperweld 7, 6% 1964 336 CM ACSR 18/1 Merlin, 2% 338,000 CM ACSR 29/7 (338AC) The remaining conductors make ~2% of the line 4/0 COPPER 7 (40COP), 795,000 CM ACSR 26/7 (Drake), 1/0 Copperweld 7 (10C), & #1 COPPER 3 (#1COP)
- Outage History (5-year)
    - Momentary Outages 29
    - Permanent Outages 11
    - Total CMI 3.89 Million (39.1 MVA of peak load impacted)
- Open Conditions: Currently, there are 99 structures with at least one open condition, which relates to 44.6% of the structures on the line. There are currently 9 structure based open conditions consisting of bent horizontal brace and lacing, insect damage, twisted leg, leaning traverse pole, rot top and woodpecker holes. There are currently 7 conductor based open conditions consisting of broken strands, damaged conductors and improper installation. There are currently 5 ground lead wire based open conditions consisting of broken wires, floating OPGW, corroded shield wire and disconnected structure ground. There are currently 74 hardware open conditions consisting of broken armor rod strands, looses guys, rusted hardware, broken/burnt/loose/rusty insulators, broken molding structure, bent step bolt and worn U-bolt.
- Pre 1930's Steel Lattice Conditions: design doesn't account for ice/wind loadings, conductor steel core strength has diminished, inadequate lightening protection, significant wear/corrosion of hardware and insulators, loss of galvanizing and corresponding strength of steel lattice members, and weakened foundations and tower legs.



AEP Transmission Zone M-3 Process
Jefferson County, Ohio

Need number(s): AEP-2022-OH017

Process Stage: Solution Meeting SRRTEP-W - 07/18/2025

Proposed Solution:

Ft Steuben - Hammondsville 69kV rebuild: Rebuild ~0.95-mile section from structure #9 to structure #17 of the line asset as double circuit with 556 ACSR. Additionally, rebuild 18.5-mile section from structure #17 to Hammondsville as single circuit with 556 ACSR.. Estimated Cost: $82.743 M

Croxton Switch: Install Croxton Switch as a new 69 kV phase over phase switch to replace the existing switch as part of the line rebuild as the existing pole will be retired with the line work.. Estimated Cost: $1.418 M

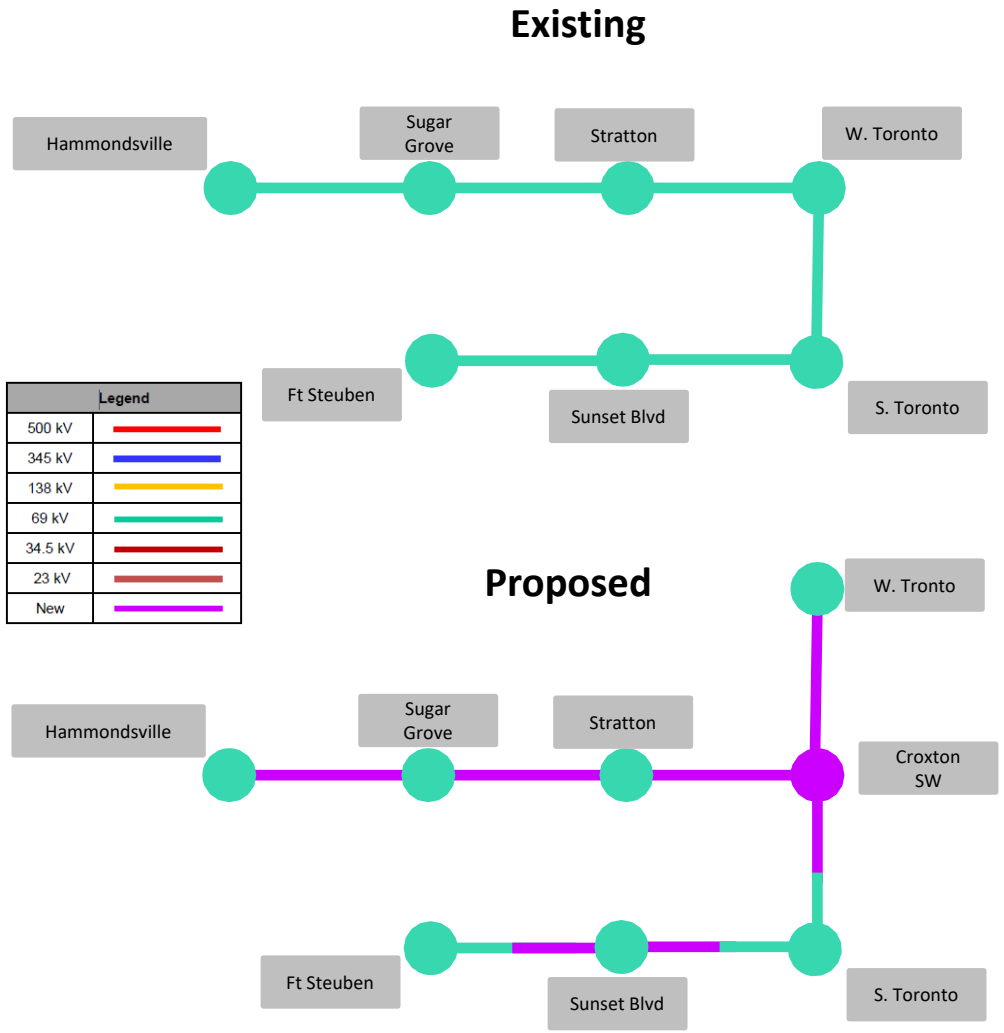
Transmission Cost Estimate: $84.162 M

Alternatives Considered:

Consideration was given to rebuild the line as 138 kV up to Holt Sw but operated at 69 kV. This option could provide more 138 kV support to the sub transmission network in the future but would require multiple customer owned stations to be converted. A total of ~28.8 miles of new 138 kV transmission line would be required in addition to the necessary station work. Total estimated cost of 126.8M.

Projected In-Service: 03/16/2029

Project Status: Scoping



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

07/08/2025– V1 – Original version posted to pjm.com