

Sub Regional RTEP Committee: Western AEP Supplemental Projects

March 18, 2022

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-2021-AP027

Process Stage: Solutions Meeting 3/18/2022

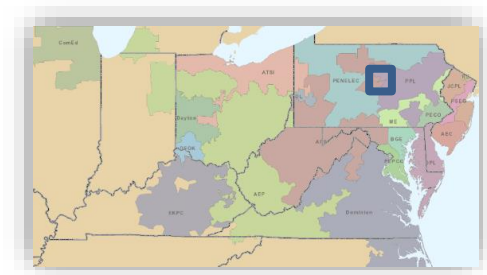
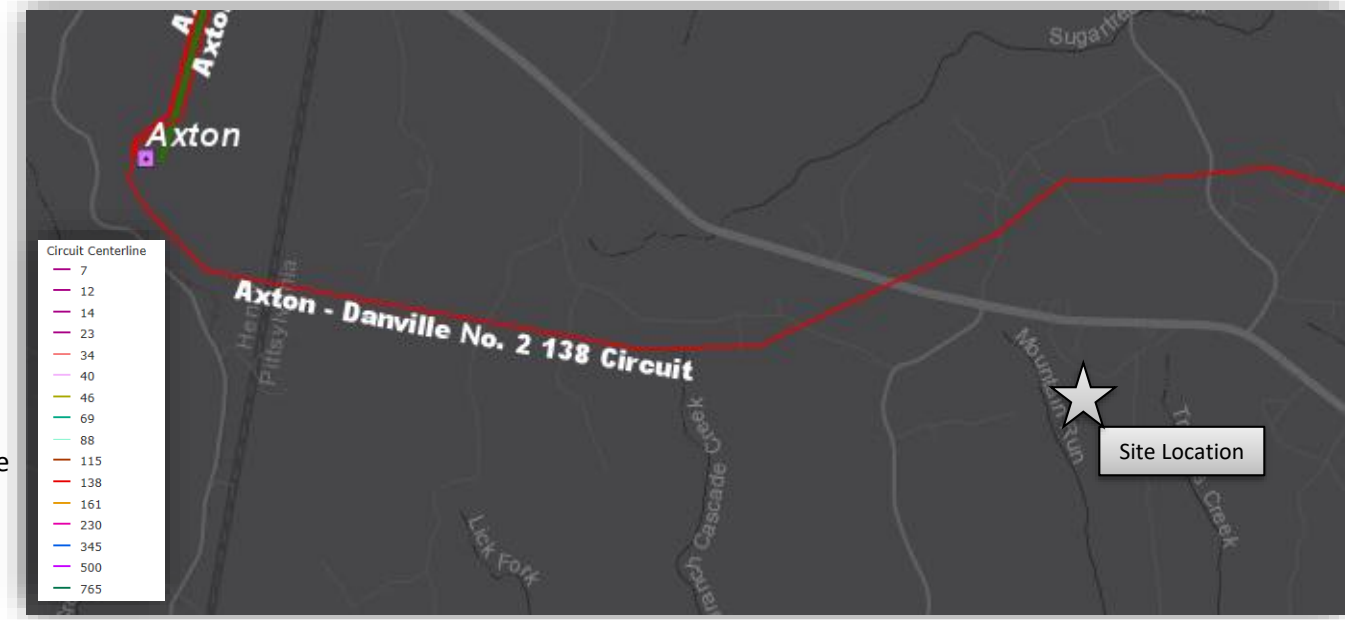
Previously Presented: Needs Meeting 7/16/2021

Supplemental Project Driver: Customer Service

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

Problem Statement:

- The City of Danville has requested a new delivery point to feed their West Fork station. The new delivery point will support the City's networked 69 kV system.



Need Number(s): AEP-2021-AP027

Process Stage: Solutions Meeting 3/18/2022

Proposed Solution:

- Establish new 138 kV Brosville station consisting of 2-138 kV, 3000 A, 40 kA circuit breakers and 138 kV revenue metering. **Estimated Cost: \$5.27 M**
- Install 1.66 miles of greenfield double circuit 138 kV transmission line that will run from the new Brosville Station to the new tap structure being installed on the Axton- Danville No.2 138 kV transmission line. Acquire associated ROW for new double circuit 138 kV line. **Estimated Cost: \$5.95 M**
- Install a tap structure to accommodate the new greenfield transmission line on the Axton-Danville #2 circuit. Acquire associated ROW for new structure as needed. **Estimated Cost: \$0.84 M**
- Berry Hill & Danville remote end relay setting changes and fiber extension to Brosville. **Estimated Cost: \$0.25 M**

Total Estimated Transmission Cost: \$12.31 M

Ancillary Benefits:

Establishing a new delivery point for the City of Danville will provide the reliability and redundancy needed by supporting the three existing delivery points during outage scenarios. Specifically, the Brantley and Rocksprings delivery points cannot support the City’s entire load during an outage of the Riverside delivery point. The addition of the proposed Brosville Station will address this issue.

The City of Danville’s total peak load is approximately 225 MW, of which ~80 MW is estimated to be served by the new delivery point during peak months and ~50 MW during spring/fall months. The City of Danville serves approximately 15 schools, the only Danville, Virginia hospital, 3 nursing homes and 2 industrial parks.

Alternatives Considered:

Obligation to serve, no viable alternative.

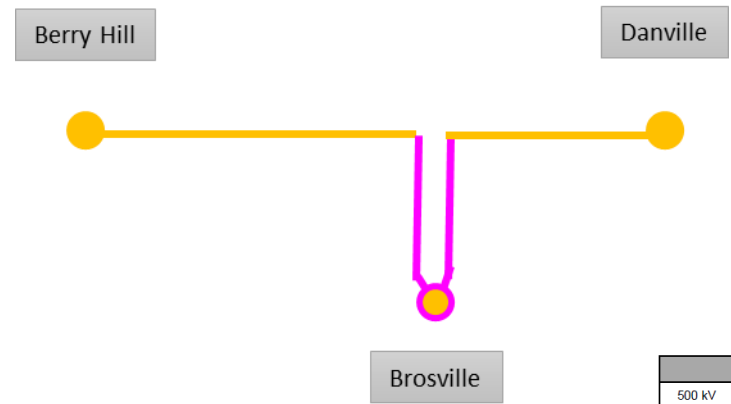
Projected In-Service: 9/1/2023

Project Status: Scoping

Existing



Proposed



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

Need Number: AEP-2021-IM029

Process Stage: Solution Meeting 3/18/2022

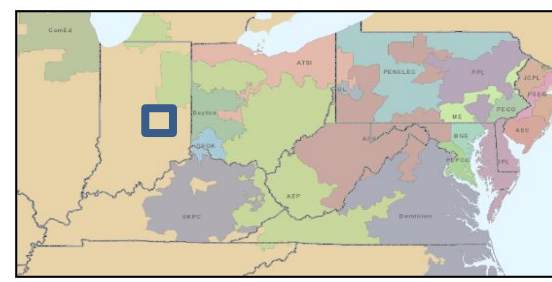
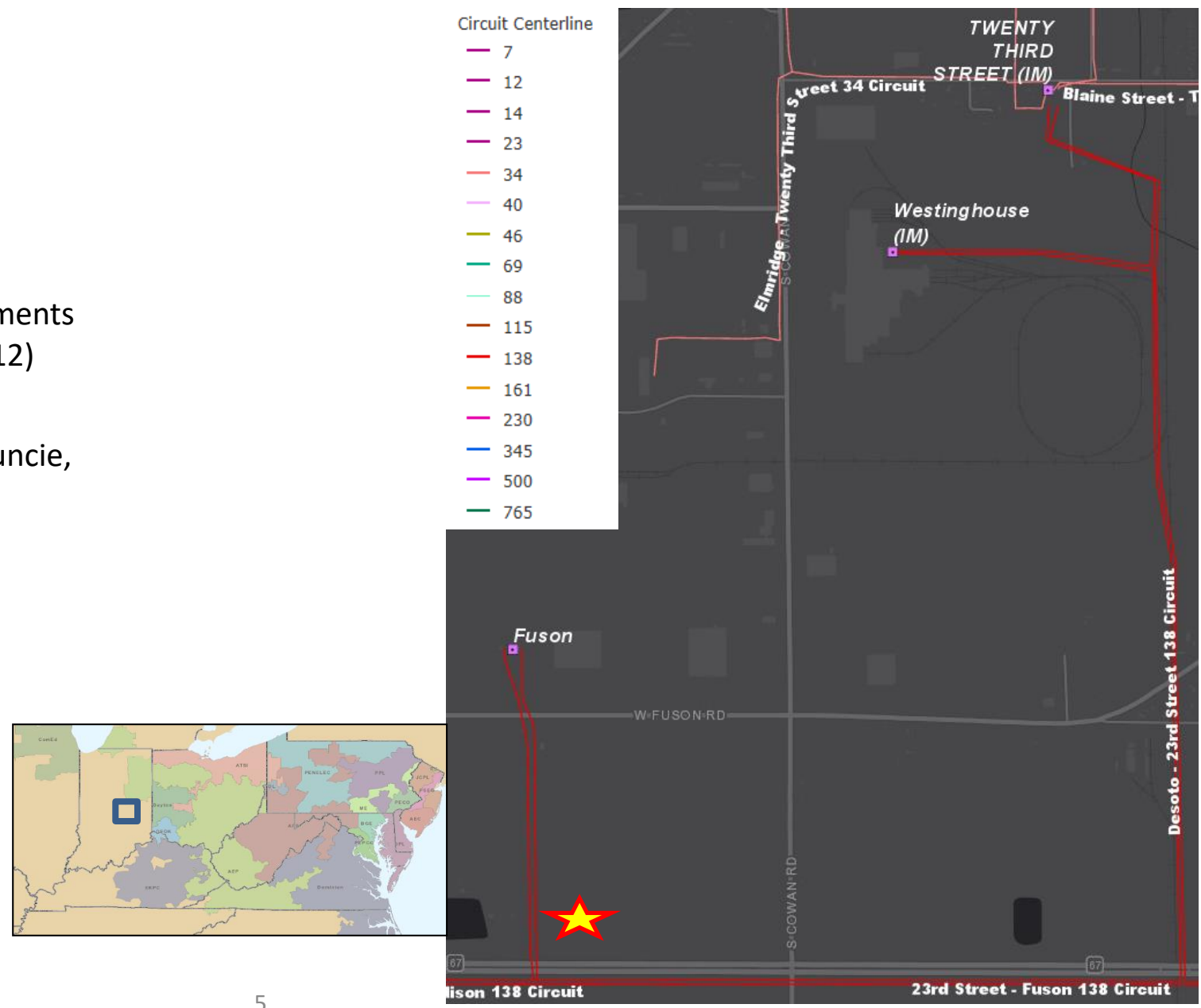
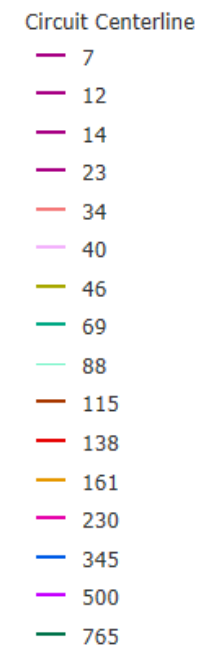
Previously Presented: Needs Meeting 08/16/2021

Project Driver: Customer Service

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

Problem Statement:

A customer has requested new transmission service in Muncie, Indiana by March 2022. Anticipated load is 16.16 MVA.



Need Number: AEP-2021-IM029

Process Stage: Solution Meeting 3/18/2022

Proposed Solution:

Cowan 138 kV: Install a new 138 kV four circuit breaker ring bus, 2-138 kV revenue metering, fiber and relaying.

Estimated Cost: \$7 M

Cowan 138 kV North Extension and Right of way: Install ~0.1 mi of 138 kV single circuit with the conductor size 795 ACSR 26/7 Drake. **Estimated Cost: \$0.45 M**

Cowan 138 kV South Extension and Right of way: Install ~0.1 mi of 138 kV single circuit with the conductor size 795 ACSR 26/7 Drake. **Estimated Cost: \$0.45 M**

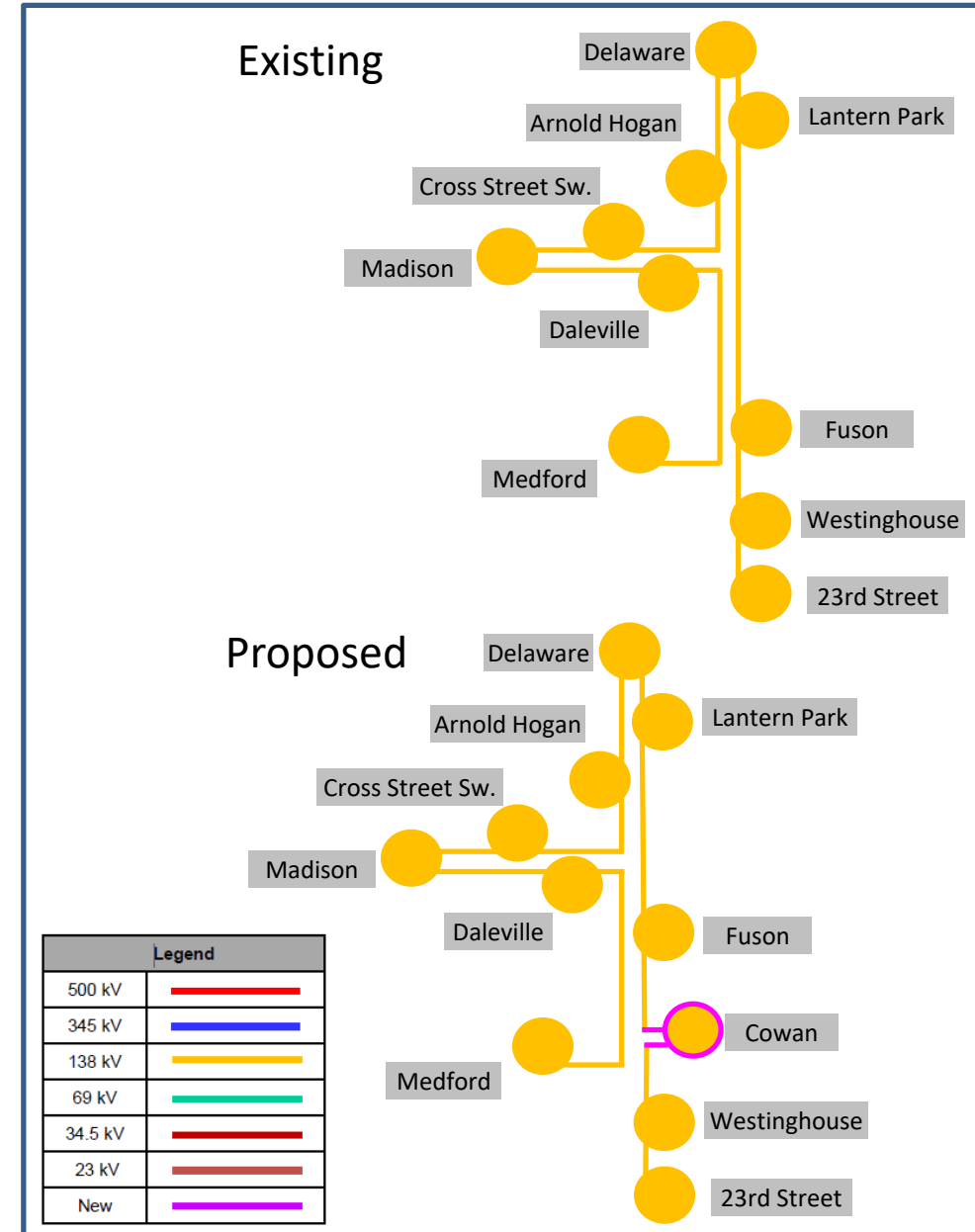
Fuson - 23rd Street 138 kV: Replace two structures with dead end structures on the Fuson – 23rd Street 138 kV circuit to connect the Cowan North Extension and Cowan South Extension. **Estimated Cost: \$0.66 M**

23rd Street relay upgrades. **Estimated Cost: \$0.3 M**

Fuson relay upgrades. **Estimated Cost: \$0.21 M**

Total Estimated Transmission Cost: \$9.07 M

Ancillary Benefits: A ring bus is proposed to serve the two required feeds for the customer. Breakers are also required here to eliminate having more than four automated switches on the circuit. Further, the load to be served (metal processing plant) at Cowan station is extremely sensitive to momentary outages where any momentary outage results in lost product and cleanup costs for any event. A ring bus will eliminate maintenance outages to the customer that would be needed in a straight bus arrangement.



Need Number: AEP-2021-IM029

Process Stage: Solution Meeting 3/18/2022

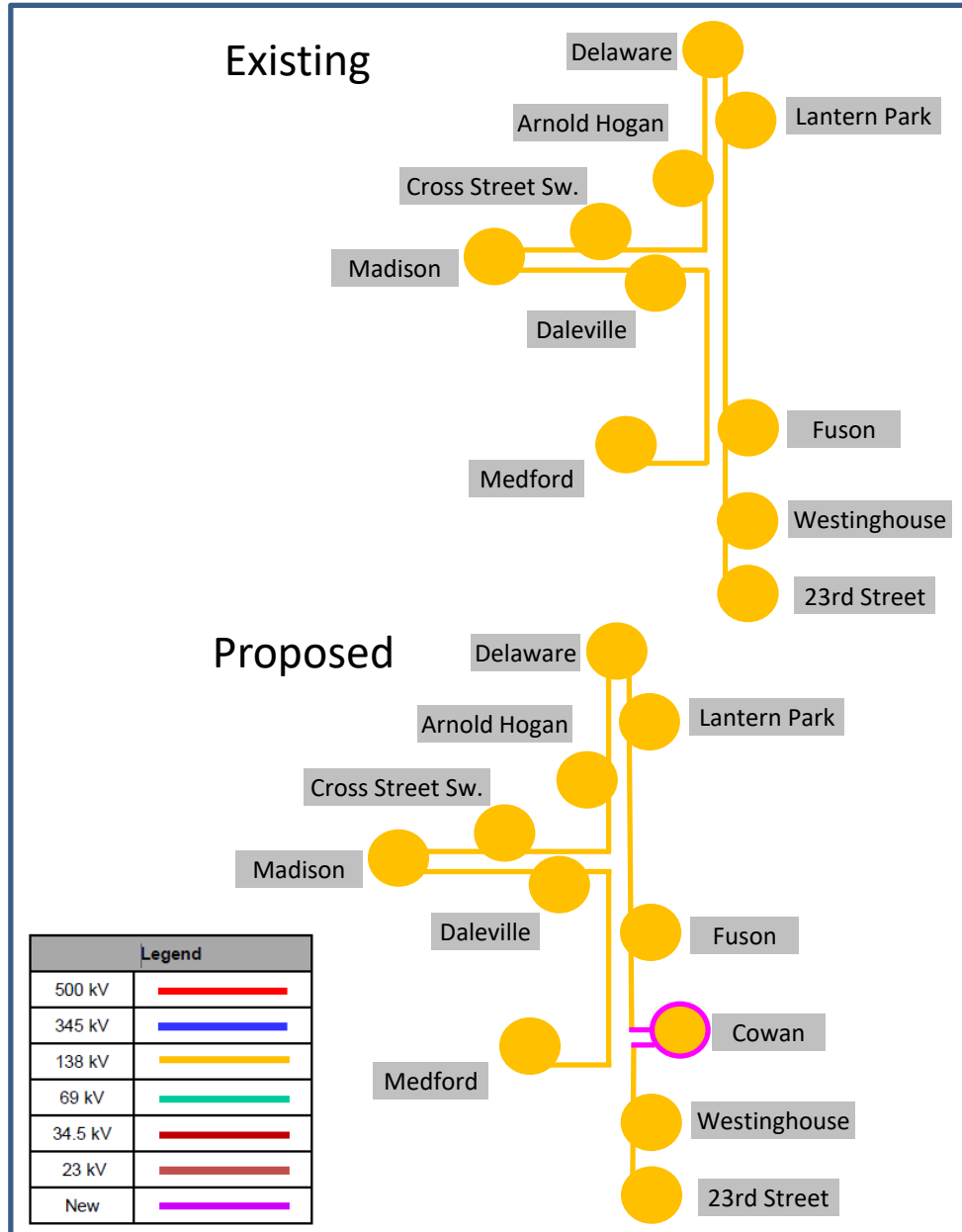
Alternative considered:

Connect the new Cowan station to the south circuit Medford – Madison 138 kV circuit via 2-138 kV single circuit lines ~0.19 mile and a 4- 138 kV ring bus. This option was not selected as it would require crossing the north circuit Fuson – 23rd Street 138 kV circuit and State Road 67. **Estimated Cost: \$9.17 M**

Another alternative connecting to Fuson station, was not selected as it would require Fuson station to be rebuilt with six breakers in a ring, require multiple outages to customers already served from Fuson, and it would require longer 138 kV lines to connect to the customer station. **Estimated Cost: \$10M**

Projected In-Service: 9/22/2022

Project Status: Scoping



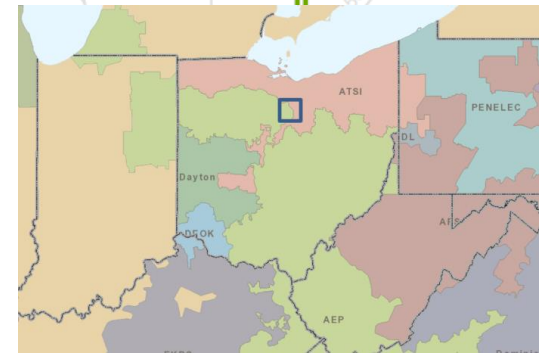
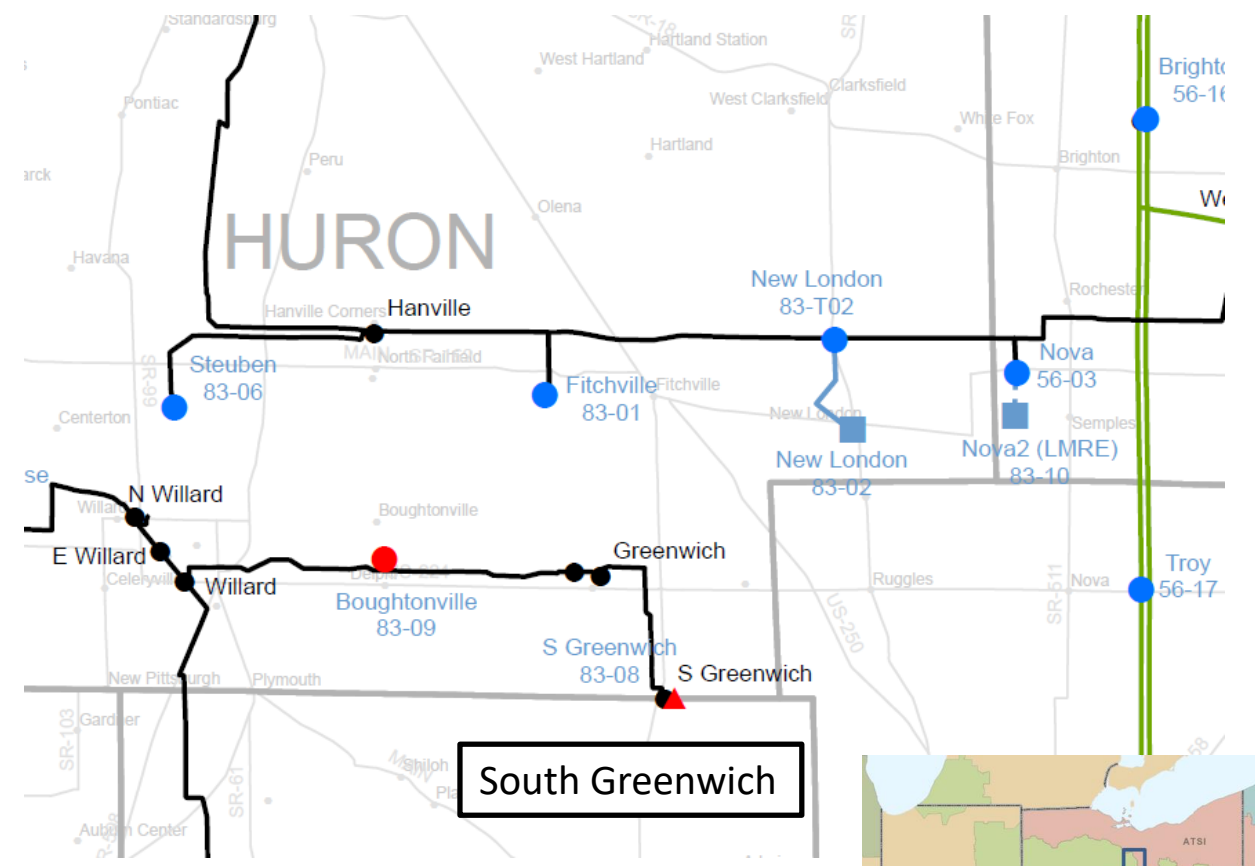
Problem Statement:
 South Greenwich-Willard (vintage 1964)

- Length: 15.22 Miles
- Original Construction Type: Wood
- Original Conductor Type: 4/0 ACSR 6/1 (Penguin)
- Momentary/Permanent Outages: 13 in the past 5 years
- Number of open conditions: 77

Open conditions include: Damaged Insulator, Structure, Guy Wire, Ground
 • Lead Wire, & Shield Wire

Radial service severely restricts the ability to perform routine maintenance and restoration activities. The maintenance of radial transmission lines often requires costly temporary facilities or other labor-intensive measures involving energized work because a maintenance outage to such radial loads is generally not feasible.

AEP Transmission Zone M-3 Process Huron County, Ohio



Need Number: AEP-2019-OH034

Process Stage: Solutions Meeting 3/18/2022

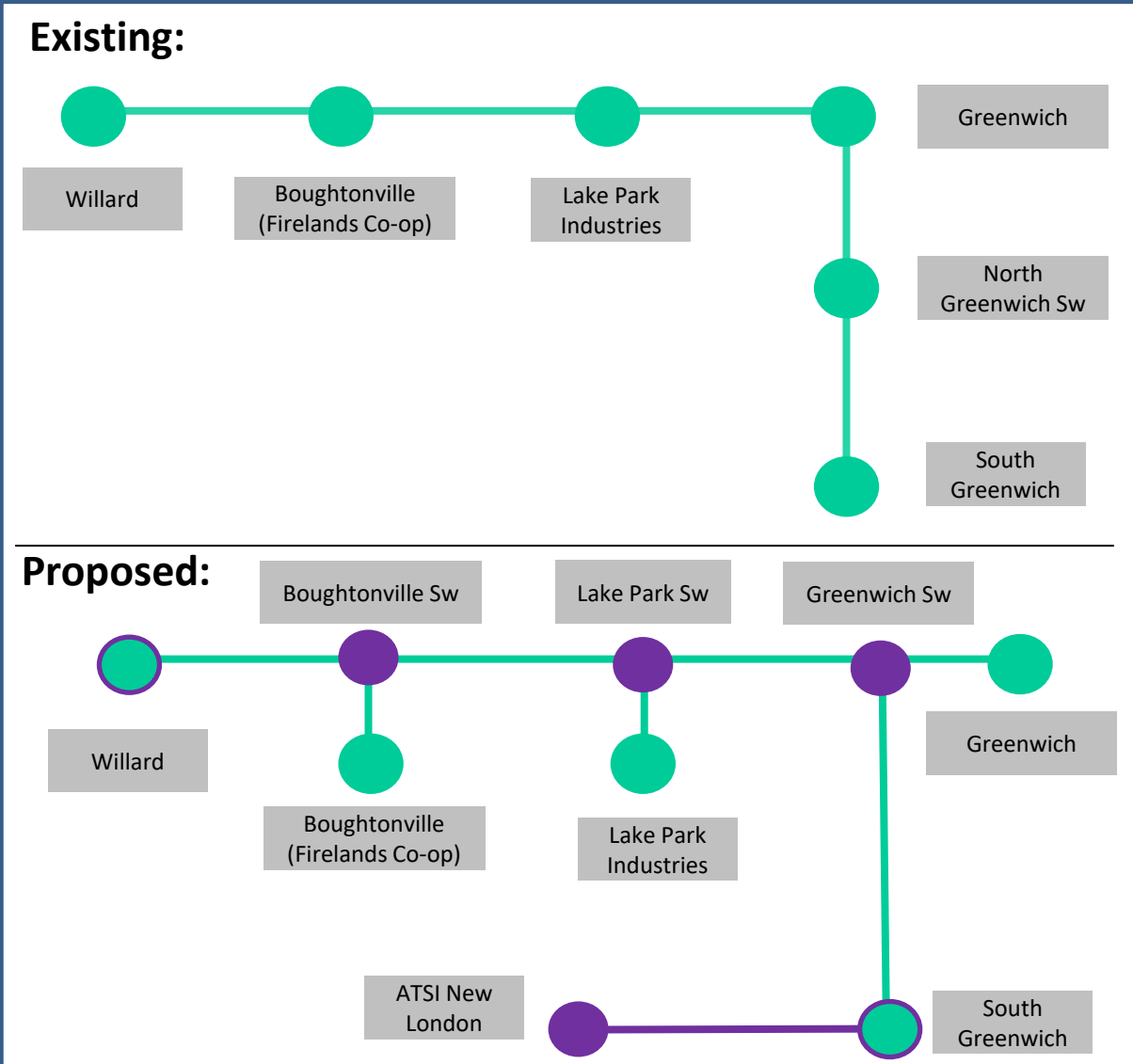
Proposed Solution:

AEP Scope:

- Install a new 3-way POP Switch (Boughtonville Sw) and 69 kV metering to address the hard tap to Firelands' Boughtonville station. **\$0.75 M**
- Install a new 3-way POP Switch (Lake Park Sw) and 69 kV metering to address the hard tap to Lake Park Industries. **\$0.76 M**
- Install a new 3-way POP Switch (Greenwich Sw) to address the hard tap to the Village of Greenwich's Greenwich station **\$0.6 M**
- Remove North Greenwich Switch. **\$0.07 M**
- Construct ~ 10.4 miles of new 69 kV line between South Greenwich and ATSI's New London delivery point using 556 ACSR conductor to give the existing radial line looped transmission service . **\$18.0 M**
- Install a box bay and two new 69 kV 3000A 40kA breaker at South Greenwich to accommodate the new line to New London (ATSI) . **\$3 M**
- Remove the existing 69kV bypass line at Willard station. **\$0.32 M**

Cost estimate: \$23.5 M

Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	



ATSI Transmission Zone M-3 Process New London 69 kV Project

Need Number: AEP-2019-OH034

Process Stage: Solution Meeting 3/18/2022

Proposed Solution:

ATSI Scope:

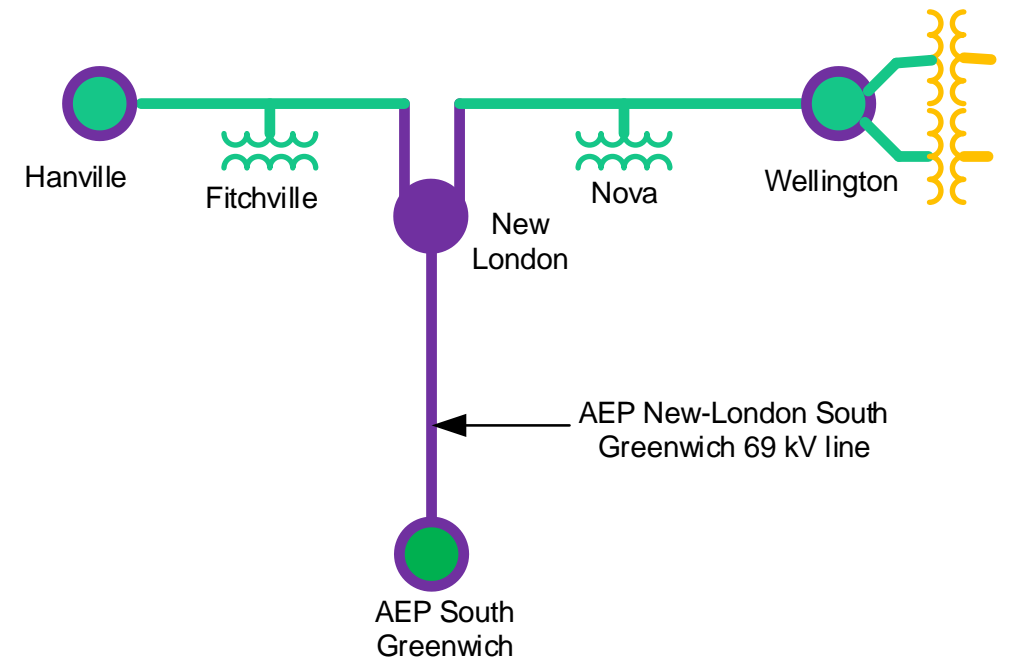
- Build a new four breaker 69 kV ring bus substation adjacent to the Fireland’s New London distribution substation
- Acquire the Fireland 69 kV tap (~2 miles) and rebuild as a double circuit into the new ring bus and loop in/out the Hanville-Wellington 69 kV line.
- Serve the Firelands New London distribution substation from the new ring bus substation.
- Transfer the existing Firelands New London revenue metering from the existing location (line) into the Firelands New London distribution substation at the transformer high side within the zone of protection.
- Install new 69 kV tie line revenue metering equipment at the new ring bus substation exit to South Greenwich (AEP)
- Upgrade/adjust relaying at Hanville and Wellington
- Upgrade terminal equipment at Wellington

Transmission Line Ratings:

- Hanville-New London 69 kV Line
 - Before Proposed Solution: N/A
 - After Proposed Solution: 100 MVA SN / 121 MVA SE
- New London-Wellington 69 kV Line
 - Before Proposed Solution: N/A
 - After Proposed Solution: 100 MVA SN / 121 MVA SE
- New London-South Greenwich (AEP) 69 kV line
 - Before Proposed Solution: N/A
 - After Proposed Solution: (AEP) 102 MVA SN / (AEP) 142 MVA SE

Estimated ATSI Project Cost: \$10.0M

Status: Conceptual



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

AEP Transmission Zone M-3 Process Huron County, Ohio

Need Number: AEP-2019-OH034

Process Stage: Solutions Meeting 3/18/2022

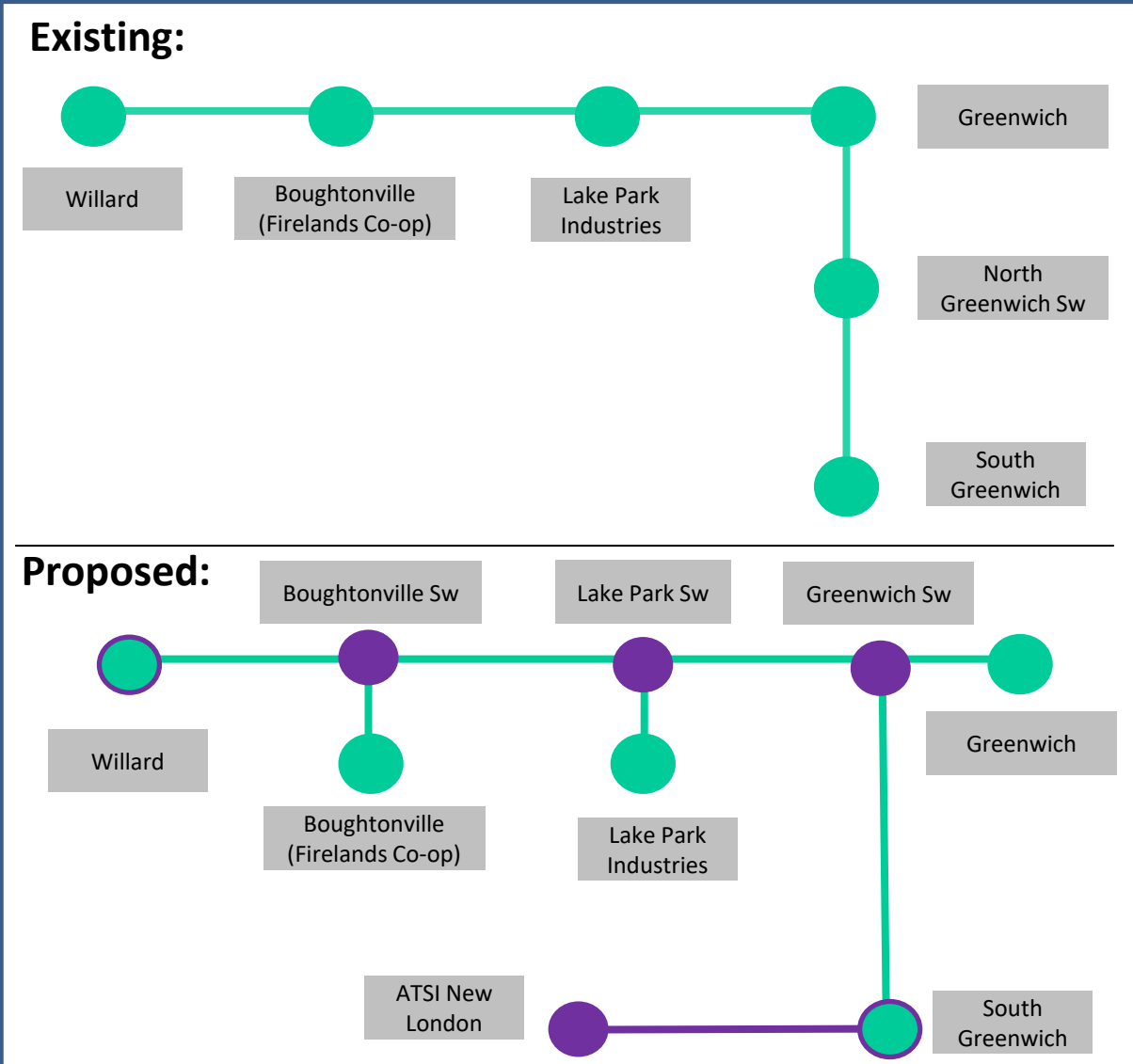
Proposed Solution:

Alternatives Considered:

- Construct a new 15 mile 69kV line connecting South Greenwich to Howard station and replace all customer hard taps with switches. This alternative was not chose due to the extra mileage of 69 kV line that would be required.
- Construct a new 12 mile 69kV line connecting South Greenwich to Willard station and replace all customer hard taps with switches. If Willard station has an outage, all of the customers along the original radial line will be out of service.

Projected In-Service: 9/3/2025

Project Status: Scoping



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

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

3/8/2022 – V1 – Original version posted to pjm.com