

# Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

September 20, 2024

# 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

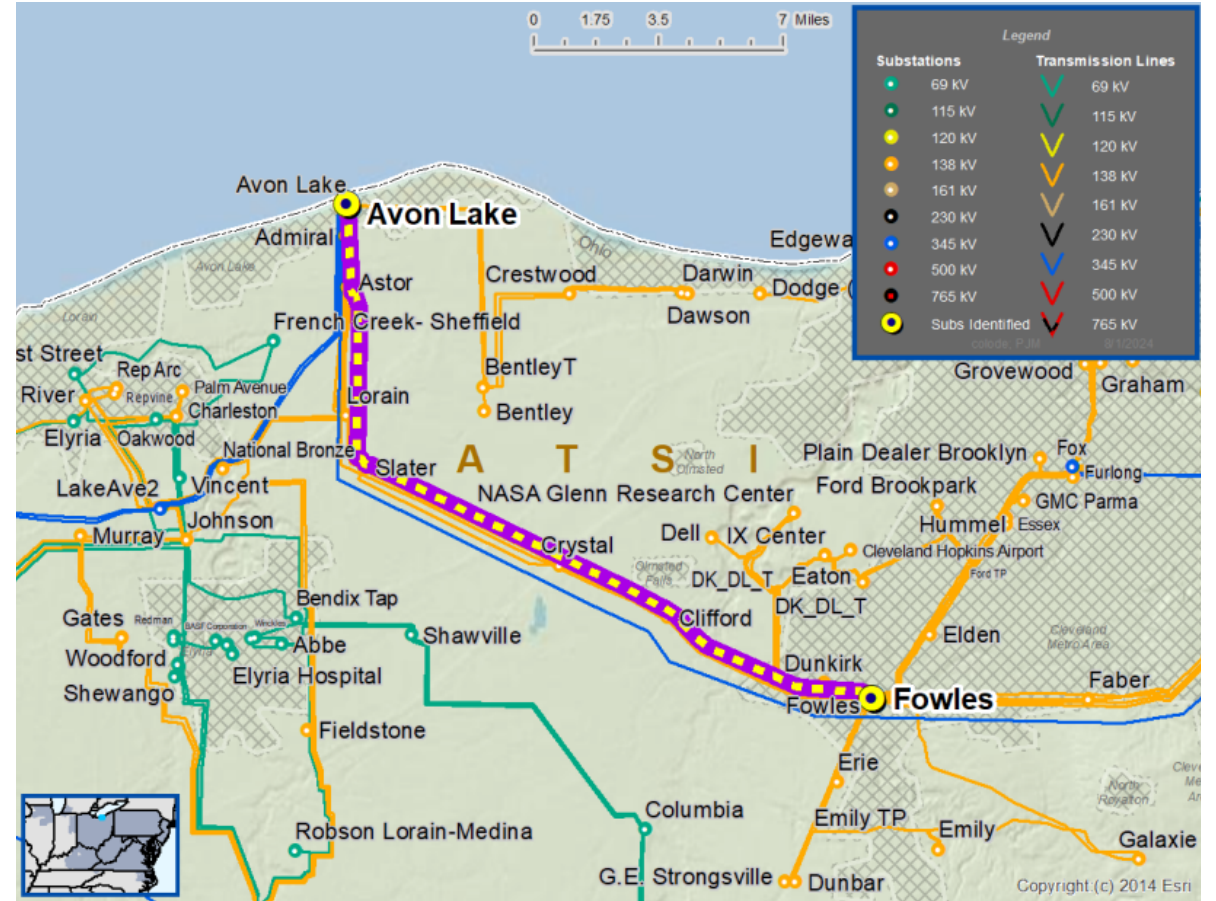
**Need Number:** ATSI-2024-048  
**Process Stage:** Solution Meeting – 09/20/2024  
**Previously Presented:** Need Meeting – 08/16/2024

**Project Driver:**  
*Customer Service*

**Specific Assumption Reference:**  
 Customer request will be evaluated per FirstEnergy’s “Requirements for Transmission Connected Facilities” document and “Transmission Planning Criteria” document.

**Problem Statement:**  
 New Customer Connection – A customer has requested to expand an existing 138 kV delivery point near the Avon – Fowles Q1 138 kV Line. The anticipated load addition at the customer connection is 28 MVA. The request is near Bentley Substation, approximately four miles from Avon Substation.

Requested in-service date is 5/15/2026





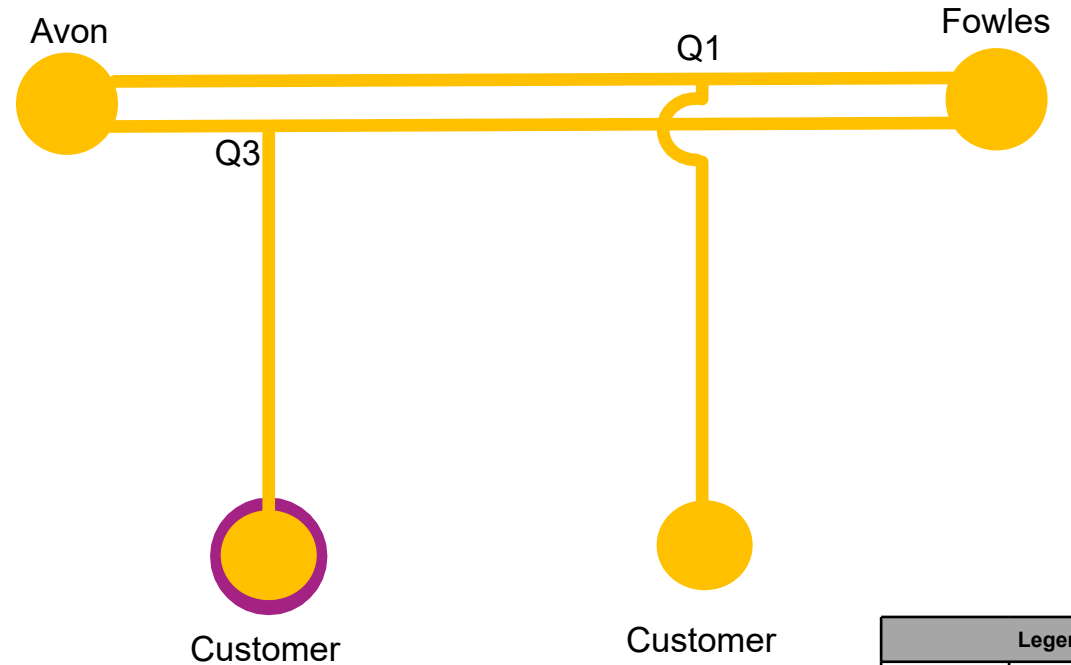
# ATSI Transmission Zone M-3 Process Avon – Fowles Q1 138 kV Customer

**Need Number:** ATSI-2024-048  
**Process Stage:** Solution Meeting – 09/20/2024

**Proposed Solution:**  
▪ Install revenue metering

**Alternatives Considered:**  
▪ No feasible alternatives to meet customer’s request near the Avon – Fowles Q1 & Q3 138 kV lines

**Estimated Project Cost:** \$0.10M  
**Projected In-Service:** 05/14/2026  
**Status:** Engineering  
**Model:** 2023 RTEP model for the 2028 Summer (50/50)



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

**Need Number:** ATSI-2023-009  
**Process Stage:** Solution Meeting – 09/20/2024  
**Previously Presented:** Need Meeting – 04/21/2023

**Supplemental Project Driver(s):**  
*Operational Flexibility and Efficiency*  
*Equipment Material Condition, Performance and Risk*  
*Infrastructure Resilience*

**Specific Assumption Reference(s):**

**Global Considerations**

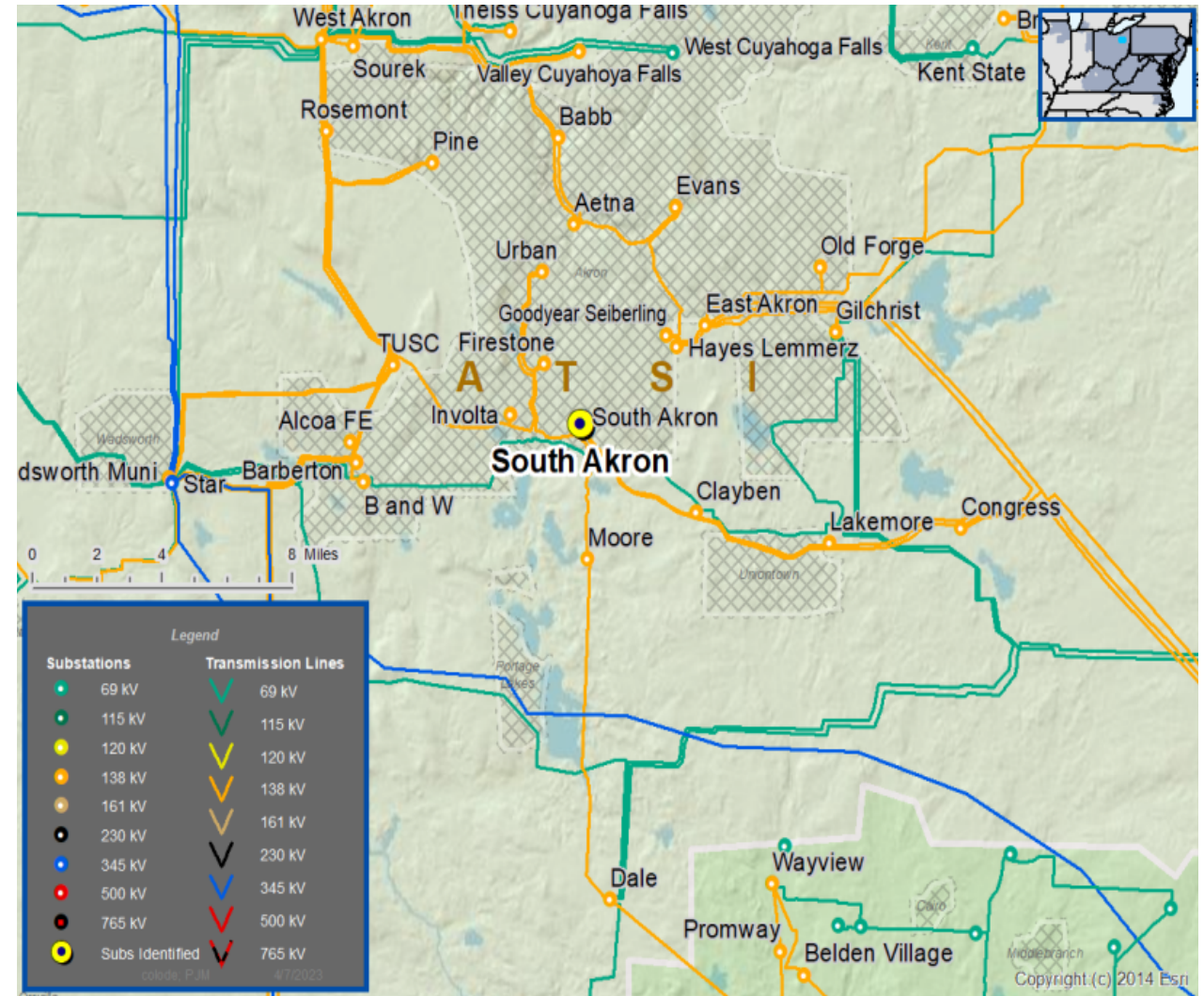
- System reliability and performance
- Load at risk in planning and operational scenarios

**Substation Condition Rebuild/Replacement**

- Increasing negative trend in maintenance findings and/or costs.
- Expected service life (at or beyond) or obsolescence

**Add/Expand Bus Configuration**

- Loss of substation bus adversely impacts transmission system performance
- Eliminate simultaneous outages to multiple networked elements under N-1 analysis
- Capability to perform system maintenance



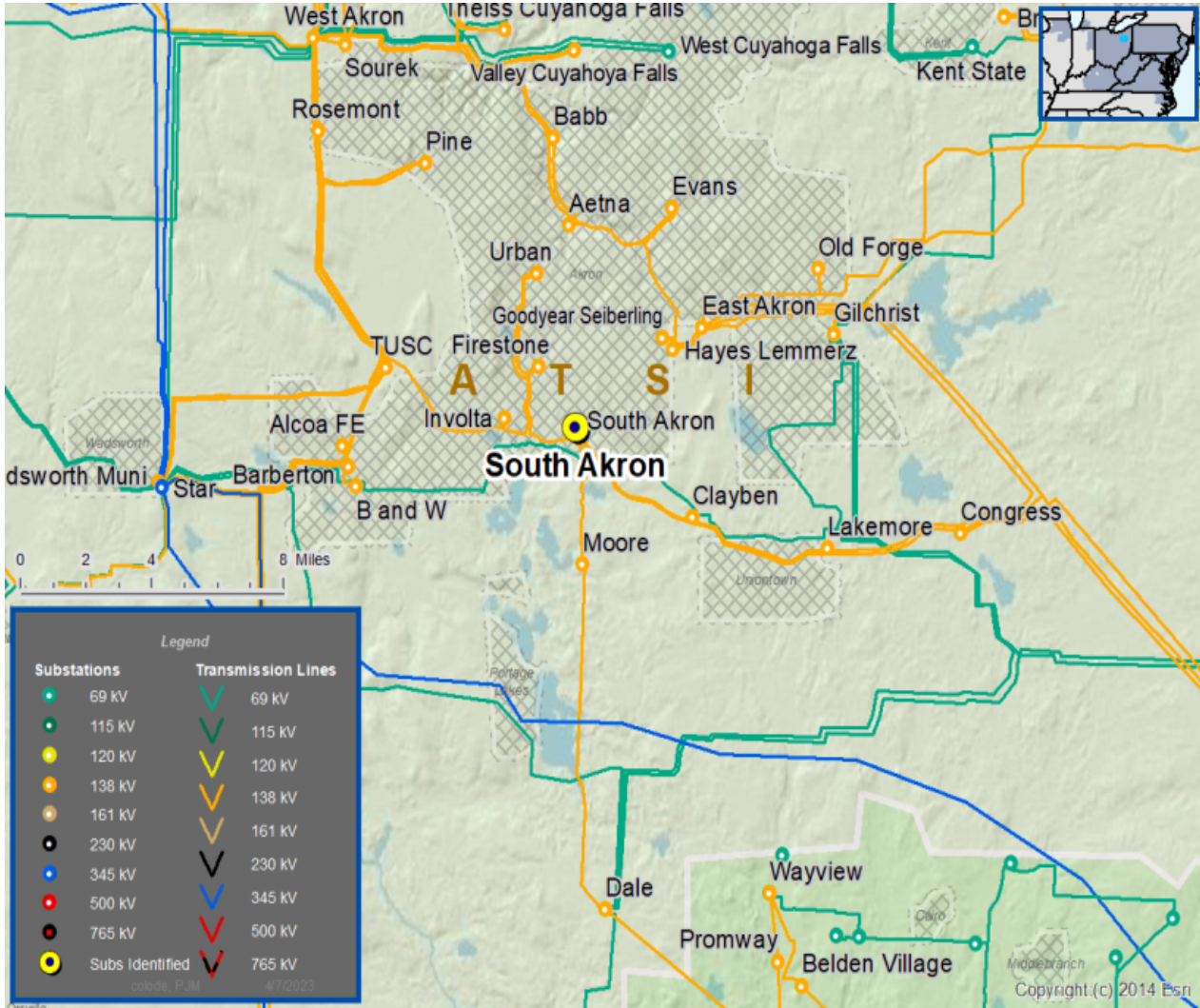
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**Need Number:** ATSI-2023-009  
**Process Stage:** Solution Meeting – 09/20/2024  
**Previously Presented:** Need Meeting – 04/21/2023

**Problem Statement**

- An N-1 bus outage at South Akron Substation results in the loss of approximately 55 MW and 17,000 customers.
- An N-1 bus outage at South Akron Substation results in several 23 kV sub-transmission lines overloaded beyond the summer emergency rating.
- The South Akron 138 kV bus protection consists of a non-redundant electromechanical (PVD) scheme
- 138 kV Breaker B-30 is 66 years old with increasing maintenance concerns; compressor issues, deteriorated operating mechanisms and increasing maintenance trends.
- 138 kV Breaker B-1 has a pneumatic mechanism
  - Manufacture date is 1952
  - Several corrective maintenance and preventive issues (magnetic loader failed, valve for pneumatic mechanism failed, replaced 52Y relay) and expected reoccurring failure
- 138 kV breaker B-10 has a pneumatic mechanism
  - Manufacture date is 1951
  - Several corrective maintenance and preventive issues (high ductor reading, high resistance on contact, air compressor for pneumatic mechanism failed, lower control valve failed for air charged to trip breaker) and anticipated reoccurring failures

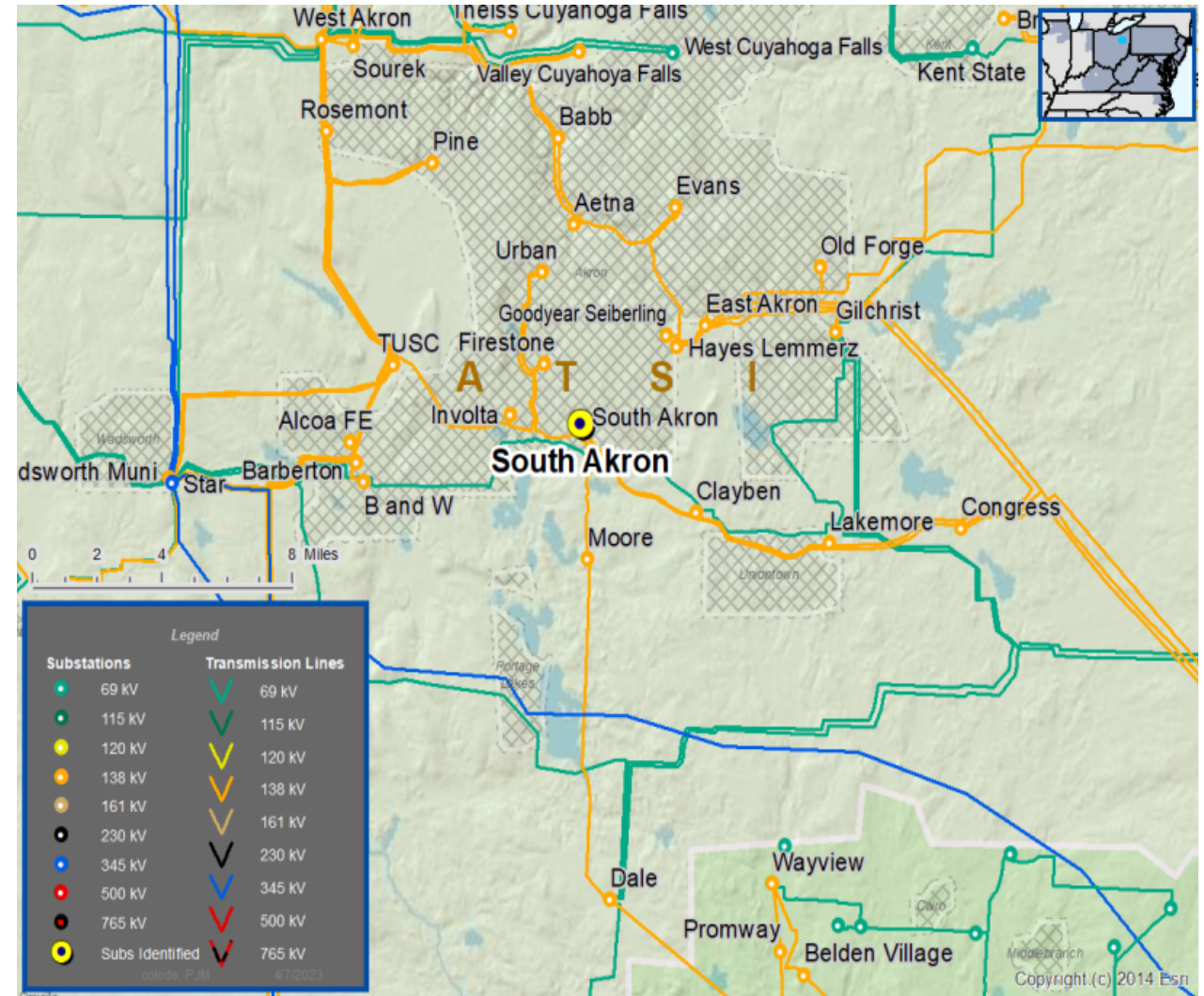


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**Need Number:** ATSI-2023-009  
**Process Stage:** Solution Meeting – 09/20/2024  
**Previously Presented:** Need Meeting – 04/21/2023

**Problem Statement**

- Since 2017, the South Akron 138 kV lines have experienced the following unscheduled outages:
  - The Dale-South Akron 138 kV line has one momentary and one sustained outage.
  - The Firestone-South Akron 138 kV line has one sustained outage.
  - The Lakemore-South Akron 138 kV line has one sustained outage.
  - The South Akron-Toronto 138 kV has five momentary and two sustained outages.

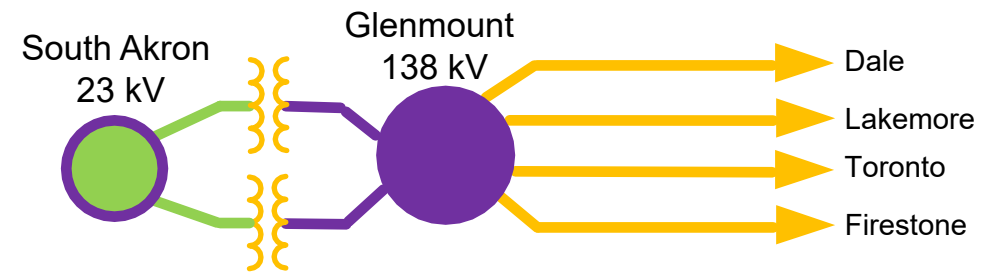


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**Need Number:** ATSI-2023-009  
**Process Stage:** Solution Meeting – 09/20/2024  
**Previously Presented:** Need Meeting – 04/21/2023

**Proposed Solution:**

- Install new 138 kV breaker-and-a-half substation (Glenmount) adjacent to South Akron substation on existing FE property
  - Install (11) new 138 kV breakers and associated equipment, including a new control house.
  - Install (1) 138 kV capacitor switcher and capacitor bank.
  - Re-terminate the existing 138 kV lines into the new switching station. The new lines will be the Glenmount-Firestone 138 kV Line, Glenmount-Toronto 138 kV Line, Glenmount-Lakemore 138 kV Line, and the Glenmount-Dale 138 kV Line (lines were previously connected to South Akron Substation).
  - Install two new 138 kV lines from Glenmount switching station to South Akron Substation (approximately 0.2 miles each)
- Remove existing transmission equipment at South Akron Substation (breakers and associated equipment, capacitor bank, etc.)
- Modify relay settings at four remote end substations (Dale Substation, Lakemore Substation, Toronto Substation, and Firestone Substation)
- Install new MPLS equipment for SCADA transport at Glenmount switching station
- Install ADSS from existing South Akron Substation to Glenmount switching station



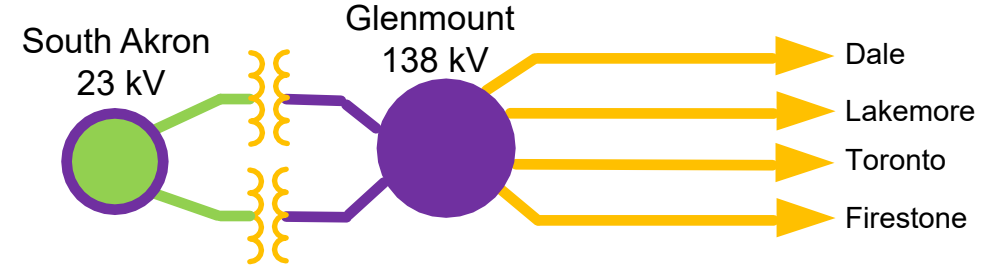
Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	



**Need Number:** ATSI-2023-009  
**Process Stage:** Solution Meeting – 09/20/2024  
**Previously Presented:** Need Meeting – 04/21/2023

**Transmission Line Ratings:**

- Glenmount (previously South Akron) 138 kV-South Akron 23 kV TR1:
  - Before Proposed Solution: 55/69/72/83 MVA (SN/SE/WN/WE)
  - After Proposed Solution: 74/80/93/98 MVA (SN/SE/WN/WE)
- Glenmount (previously South Akron) 138 kV-South Akron 23 kV TR3:
  - Before Proposed Solution: 79/85/96/96 MVA (SN/SE/WN/WE)
  - After Proposed Solution: 79/85/99/105 MVA (SN/SE/WN/WE)
- Glenmount (previously South Akron)-Dale 138 kV Line (Glenmount-Moore 138 kV Branch):
  - Before Proposed Solution: 225/282/263/333 MVA (SN/SE/WN/WE)
  - After Proposed Solution: 233/282/263/333 MVA (SN/SE/WN/WE)
- Glenmount (previously South Akron)-Firestone 138 kV Line:
  - Before Proposed Solution: 225/282/263/333 MVA (SN/SE/WN/WE)
  - After Proposed Solution: 233/282/263/333 MVA (SN/SE/WN/WE)



**Alternatives Considered:**

- Maintain the existing configuration and increased reliability risk

**Estimated Project Cost:** \$23.54 M

**Projected In-Service:** 12/31/2027

**Status:** Pre-Engineering

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

9/X/2024– V1 – Original version posted to pjm.com