

Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

January 19, 2024

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

Need Numbers: ATSI-2024-002

Process Stage: Need Meeting 01/19/2024

Project Driver:

Equipment Condition

Specific Assumption Reference:

Global Considerations

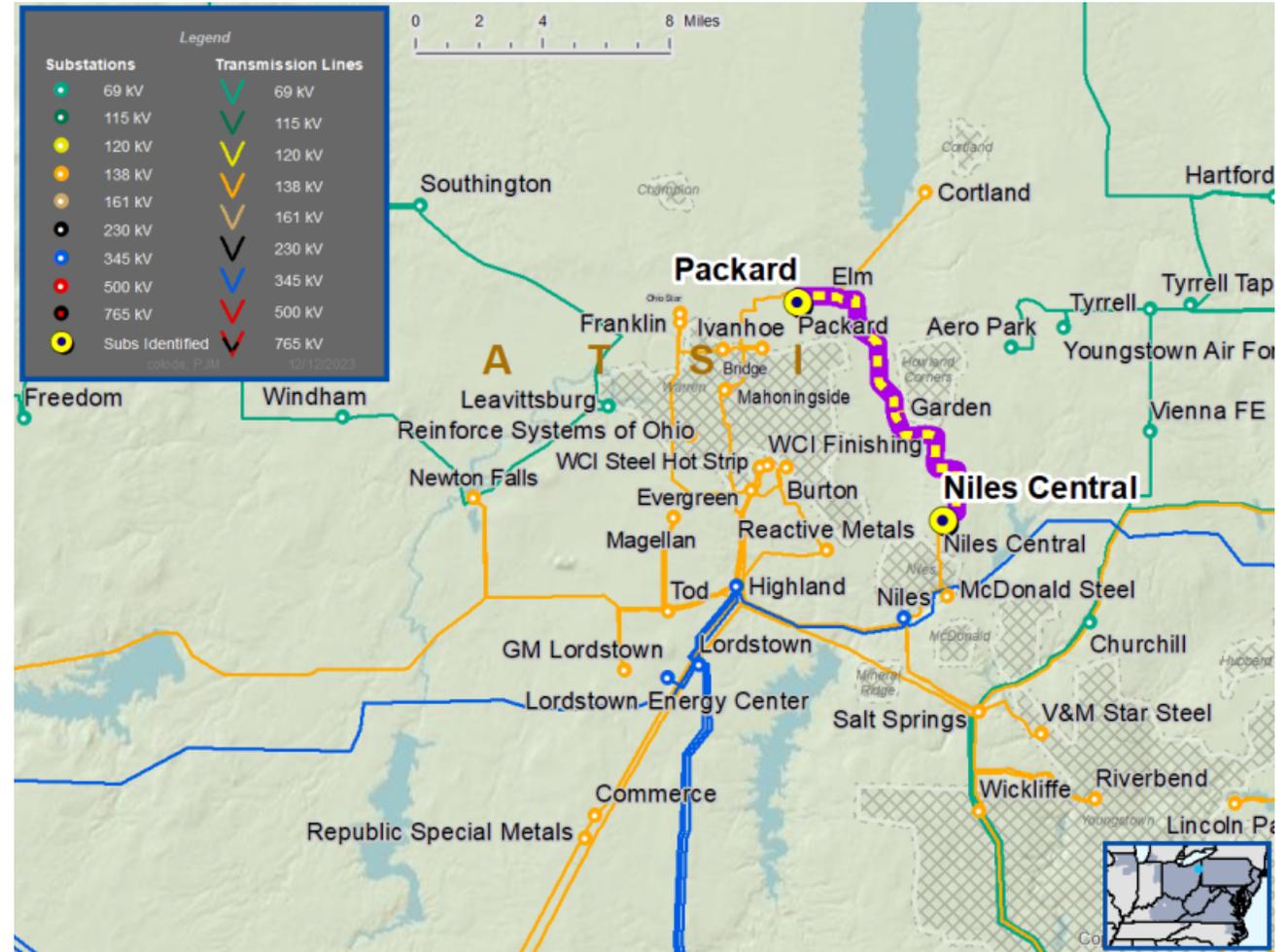
- Past system reliability and performance

Line Condition Rebuild/Replacement

- Transmission Steel Tower, Wood & Steel Poles
- Transmission Line Hardware
- Transmission Line Conductor

Problem Statement:

- The Niles Central – Packard line was built in mid 1950s. A 42 of the 83 wood pole structures failed inspection due to decay.
- Since 2005, Niles Central – Packard 138 kV Line has experienced 10 outages. Five of the outage were due to failed line equipment and the other five were weather-related. The last five outage have occurred since 2020 including three in 2023.
- The Niles Central – Packard main line section is 8.9 miles long and the tap to Cortland is an additional 3.9 miles.
- A line fault will cause approximately 53 MW consequential loss of load with approximately 16,000 customers at risk.



Need Numbers: ATSI-2024-004

Process Stage: Need Meeting 01/19/2024

Project Driver:

Equipment Material Condition, Performance and Risk

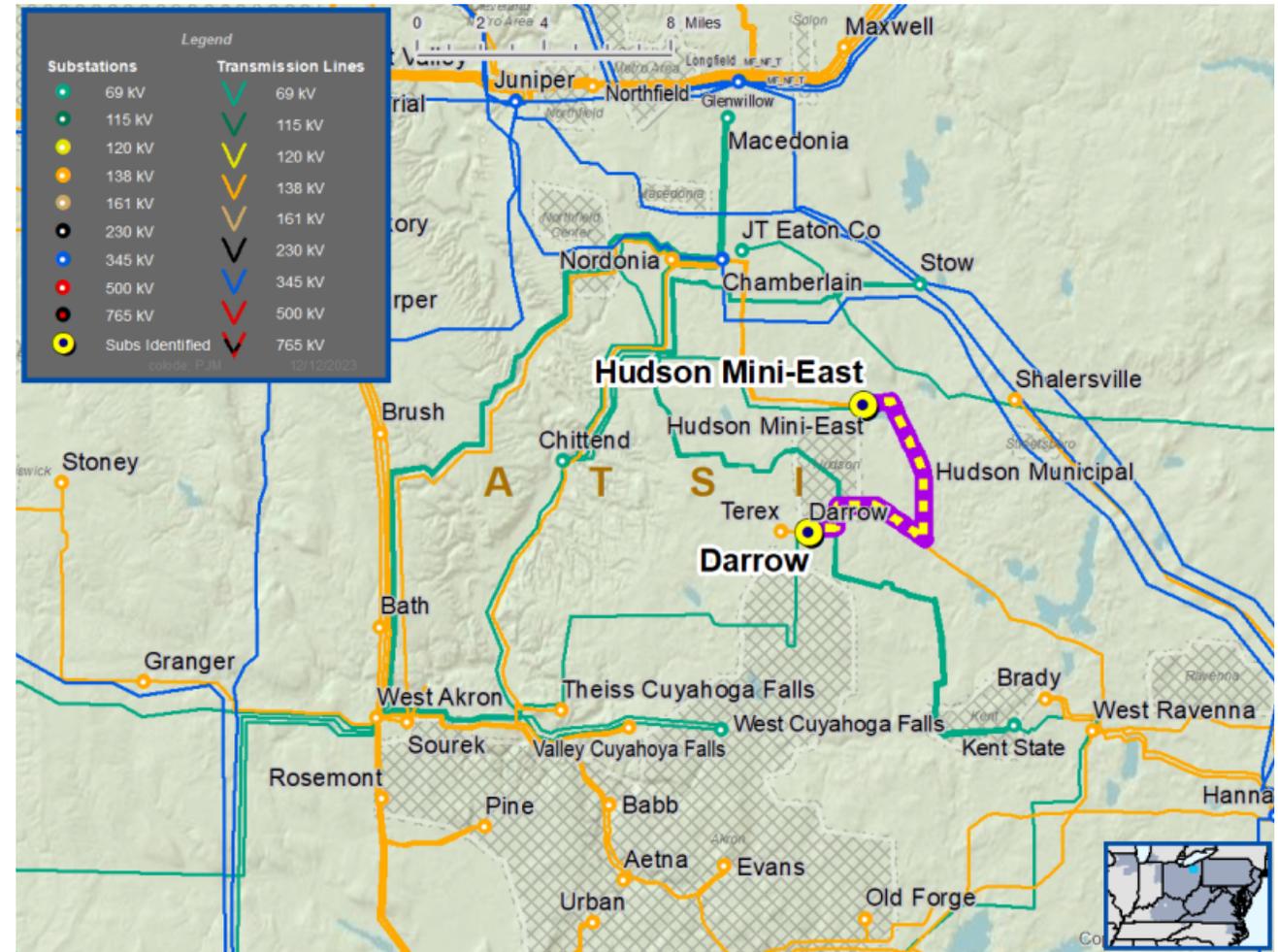
Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits
- Upgrade Relay Schemes
- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
- Communication technology upgrades

Problem Statement:

- FirstEnergy has identified protection schemes using a certain vintage of relays and communication equipment that have a history of misoperation.
- Proper operation of the protection scheme requires all the separate components perform adequately during a fault.
- In many cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.
- Transmission line ratings are limited by terminal equipment.



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ATSI Transmission Zone M-3 Process Darrow – Hudson East 138 kV Misoperation Relays

Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
ATSI-2024-004	Darrow – Hudson East 138 kV Line	191 / 191 / 191 / 191	200 / 242 / 226 / 286

Need Number: ATSI-2024-005
Process Stage: Need Meeting – 01/19/2024

Supplemental Project Driver(s):
Customer Service

Specific Assumption Reference(s):
 New customer connection request will be evaluated per FirstEnergy’s “Requirements for Transmission Connected Facilities” document and “Transmission Planning Criteria” document.

Problem Statement

Customer Connection – A customer has requested a new 69 kV delivery point from the Abbe – Medina 69 kV Line. The Customer is separating from a shared revenue metering point and is requesting a new delivery point along the same transmission line. The load of the customer connection is 3.1 MVA.

Requested In-Service Date:
 March 31, 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 Numbers: ATSI-2020-044

Process Stage: Solution Meeting 01/19/2024

Previously Presented: Need Meeting 11/20/2020

Project Driver:

Equipment Material Condition, Performance and Risk

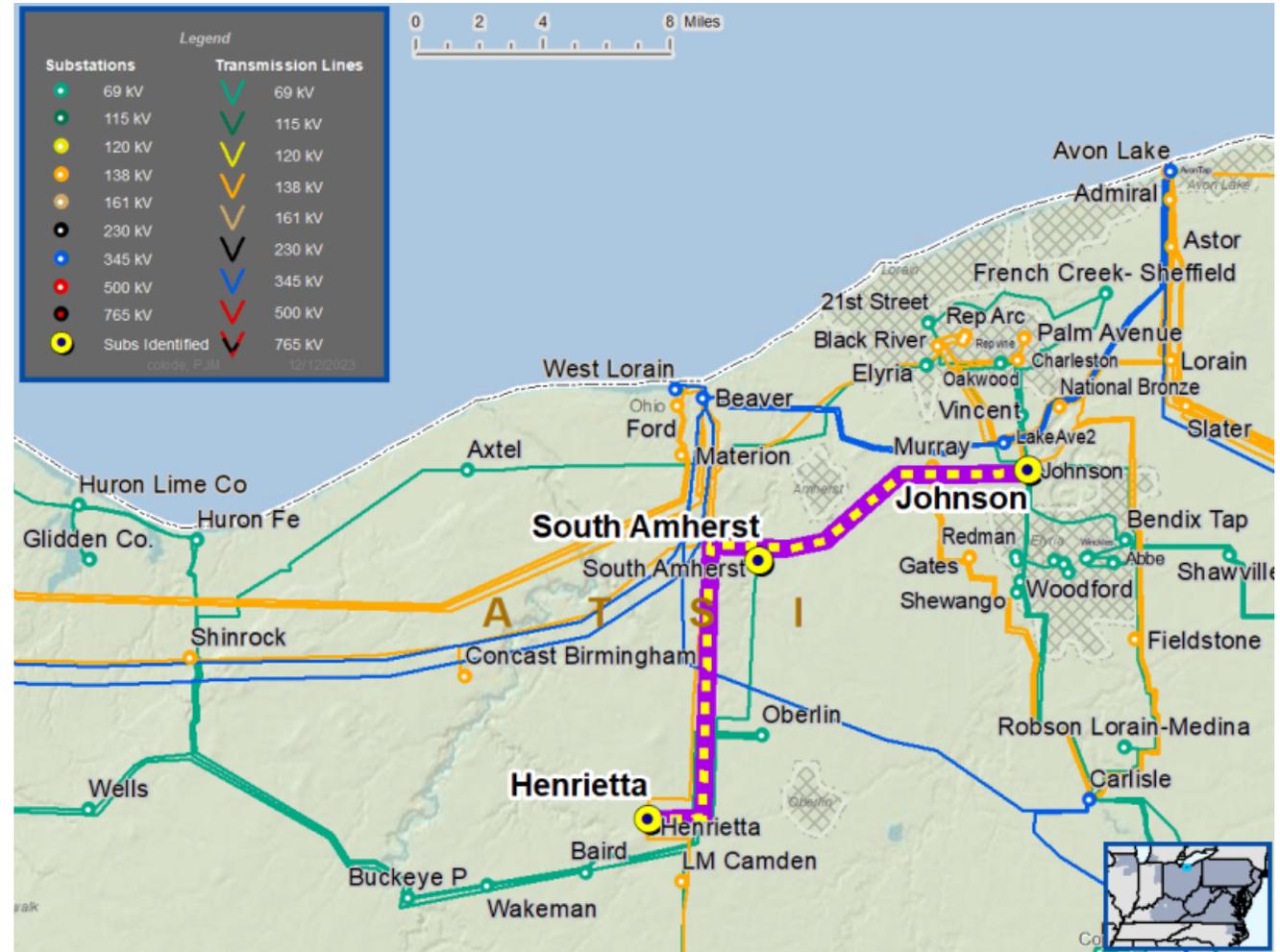
Specific Assumption Reference:

Line Condition Rebuild / Replacement

- Aged or deteriorated transmission line structures
- Negatively impact customer outage frequency and/or durations
- Demonstrate an increasing trend in maintenance findings and/or costs
- Transmission line ratings are limited by terminal equipment

Problem Statement:

- Henrietta-Johnson 69 kV Transmission Line is approximately 16 miles in length.
- Line survey in 2020 showed a structure reject rate of 43% (93 of 218). The primary reasons for reject were wood pole deterioration, woodpecker holes, ground system damage, and decay damage.
- Worst performing transmission circuit in ATSI.
- Growing trend in unscheduled interruptions with 20 equipment failure caused outages in the past 5 years which have historically impacted approximately 9,200 customers. The majority of outage causes are related to Failed AC Circuit Equipment (conductor, crossarm, static wire, insulator, etc.).
- Transmission line switches are obsolete and limiting the transmission line rating.



Need Numbers: ATSI-2020-044

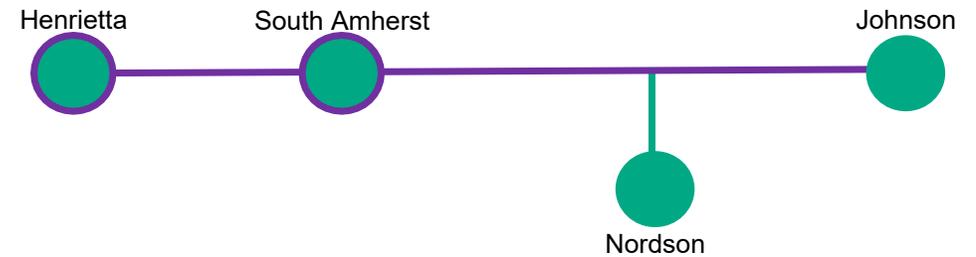
Process Stage: Solution Meeting 1/19/2024

Previously Presented: Need Meeting 11/20/2020

Proposed Solution:

Henrietta – Johnson 69 kV Line

- Replace wood structures and rebuild 12.1 miles of line with new conductor.
- Reconductor 1 mile of line on steel structures.
- Replace (2) 600 A switches with 1200 switches at South Amherst.
- Replace limiting substation conductor at Henrietta



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

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Need Numbers: ATSI-2020-044

Process Stage: Solution Meeting 1/19/2024

Previously Presented: Need Meeting 11/20/2020

Transmission Line Ratings:

Need #	Transmission Line / Substation Locations	Existing Circuit Ratings (SN/ SE / SLD / WN / WE / WLD)	New Circuit Ratings (SN / SE / SLD / WN / WE / WLD)
ATSI-2020-044	Henrietta – South Amherst 69 kV Line Section	80 / 96 / 108 / 90 / 114 / 123	111 / 134 / 151 / 125 / 159 / 171
	South Amherst – Nordson Tap 138 kV Line Section	45 / 54 / 60 / 51 / 65 / 69	111 / 134 / 151 / 125 / 159 / 171
	Nordson Tap – Johnson 138 kV Line Section	80 / 96 / 108 / 90 / 114 / 123	111 / 134 / 151 / 125 / 159 / 171

Alternatives Considered:

- Maintain existing condition and elevated risk of failure.

Estimated Project Cost: \$18M

Projected In-Service: 12/31/2025

Status: Project Development

Need Numbers: ATSI-2023-027

Process Stage: Solution Meeting 01/19/2024

Previously Presented: Need Meeting 11/17/2023

Project Driver:

Equipment Material Condition, Performance and Risk

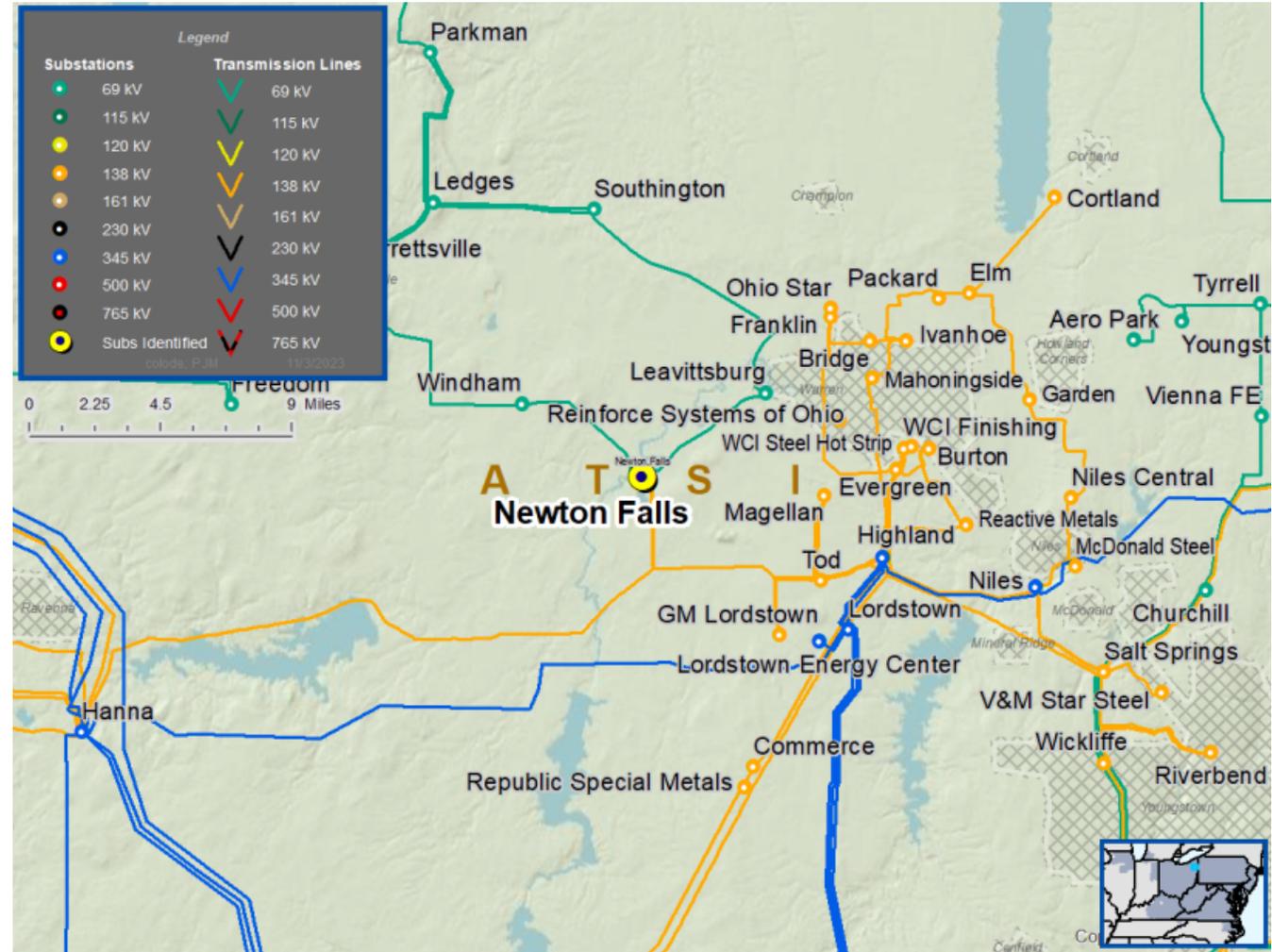
Specific Assumption Reference:

System Performance Projects Global Factors

- Substation/line equipment limits
- Substation Condition Rebuild/Replacement
 - Circuit breakers and other fault interrupting devices

Problem Statement:

- The 69 kV Oil Circuit Breaker B-30, associated disconnect switches and protective relaying at Newton Falls is aging with increasing maintenance concerns. The equipment is 48 years old.
- Transmission line ratings are limited by terminal equipment.



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Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
ATSI-2023-027	Newton Falls – NF Muni Tap 69 kV Line Section	76 / 92 / 87 / 93	76 / 92 / 87 / 111

Need Numbers: ATSI-2023-027

Process Stage: Solution Meeting 01/19/2024

Previously Presented: Need Meeting 11/17/2023

Proposed Solution:

At Newton Falls Substation

- For Garrettsville South 69 kV Line, replace circuit breaker B30.
- Replace (2) associated disconnect switches.
- Replace associated relaying with microprocessor relays.

Transmission Line Ratings:

Existing Ratings (SN/SE/SLD/WN/WE/WLD): 76/92/103/87/93/103 MVA

New Ratings (SN/SE/SLD/WN/WE/WLD): 76/92/104/87/111/120 MVA

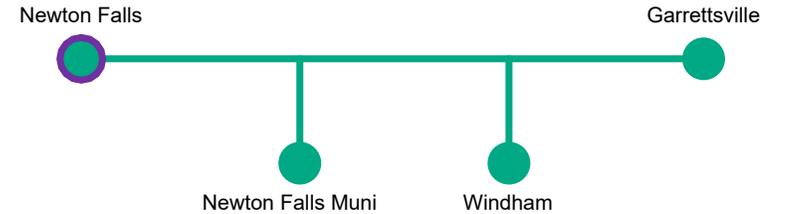
Alternatives Considered:

- Maintain existing condition and elevated risk of failure.

Estimated Project Cost: \$1.0M

Projected In-Service: 02/02/2024

Status: Construction



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

12/19/2024– V1 – Original version posted to pjm.com

1/9/2024– V2 – Revised solution dates