

Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

August 15, 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

Need Numbers: ATSI-2025-022

Process Stage: Need Meeting – 08/15/2025

Project Driver:

System Reliability and Performance

Operational Flexibility and Efficiency

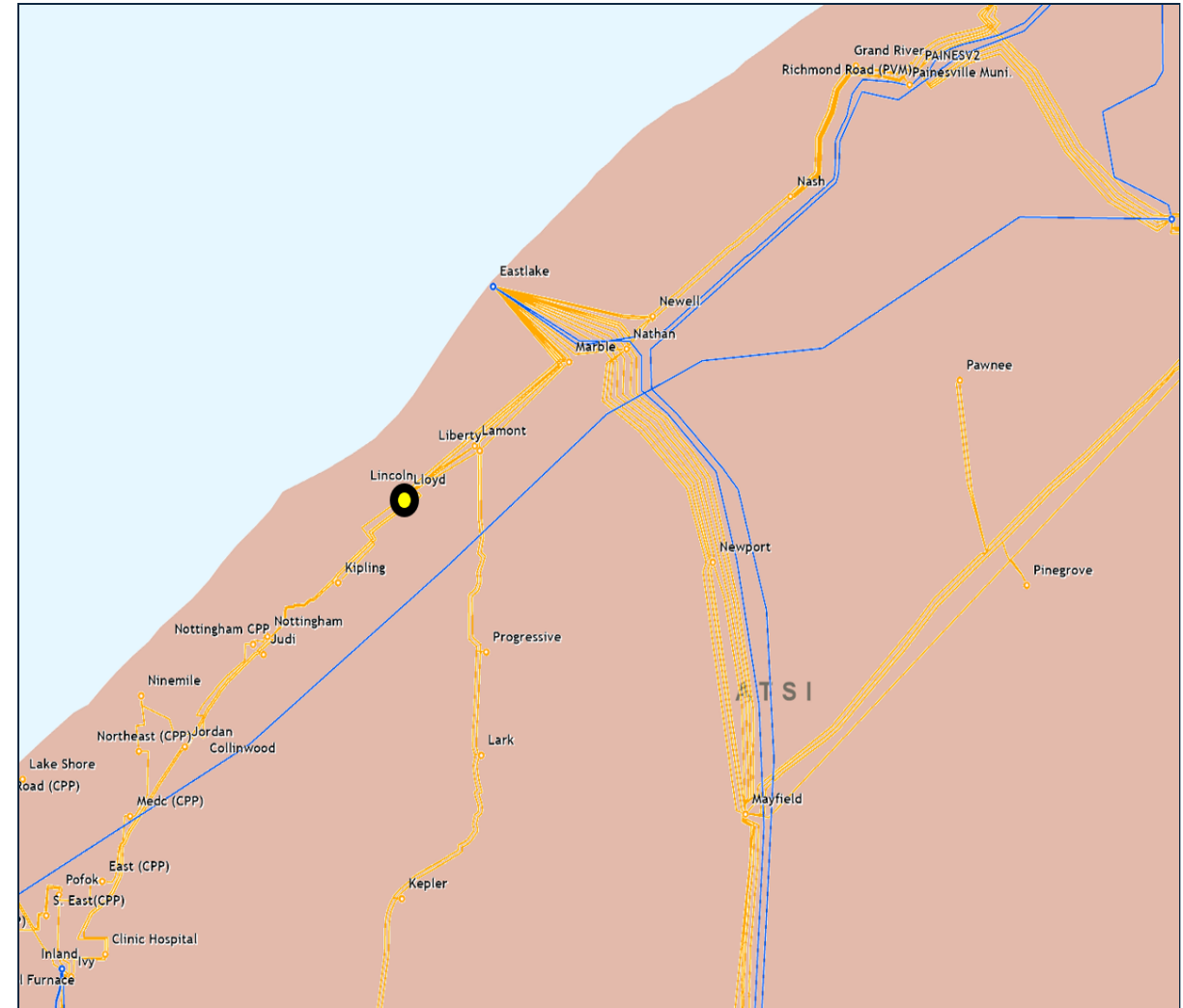
Specific Assumption Reference:

System Performance Global Factors

- Past system reliability/performance
- Load at risk and/or Customers affected
- Network Radial Lines
- Add/Expand Bus Configuration

Problem Statement:

- Significant operational flexibility challenges in the Wickliffe, Ohio and surrounding area due to large loads served from radial lines (approximately 100 MW and greater than 21,000 customers served from three terminal radial lines, which are radial taps that are directly connected to the main transmission line without any breakers or switches to isolate them in case of a fault).
- A total of approximately 50,000 customers and 250 MW of load are served in the area north of the I-271 corridor and Lakeland Parkway (Lincoln, Marble, Kipling, and Lamont/Liberty substations).
- PJM has issued 21 PCLLRWs associated with the Lloyd Substation in the last three years.
- Ground grid at Lloyd Substation requires replacement due to age and deteriorated condition.



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

ATSI Transmission Zone M-3 Process Carlisle-Lorain 138 kV Line Relay Misoperation

Need Number: ATSI-2024-078
Process Stage: Solution Meeting - 08/15/2025
Previously Presented: Need Meeting - 12/13/2024

Supplemental Project Driver(s):

Equipment Material Condition, Performance and Risk

Specific Assumption Reference(s):

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits
- System Condition Projects

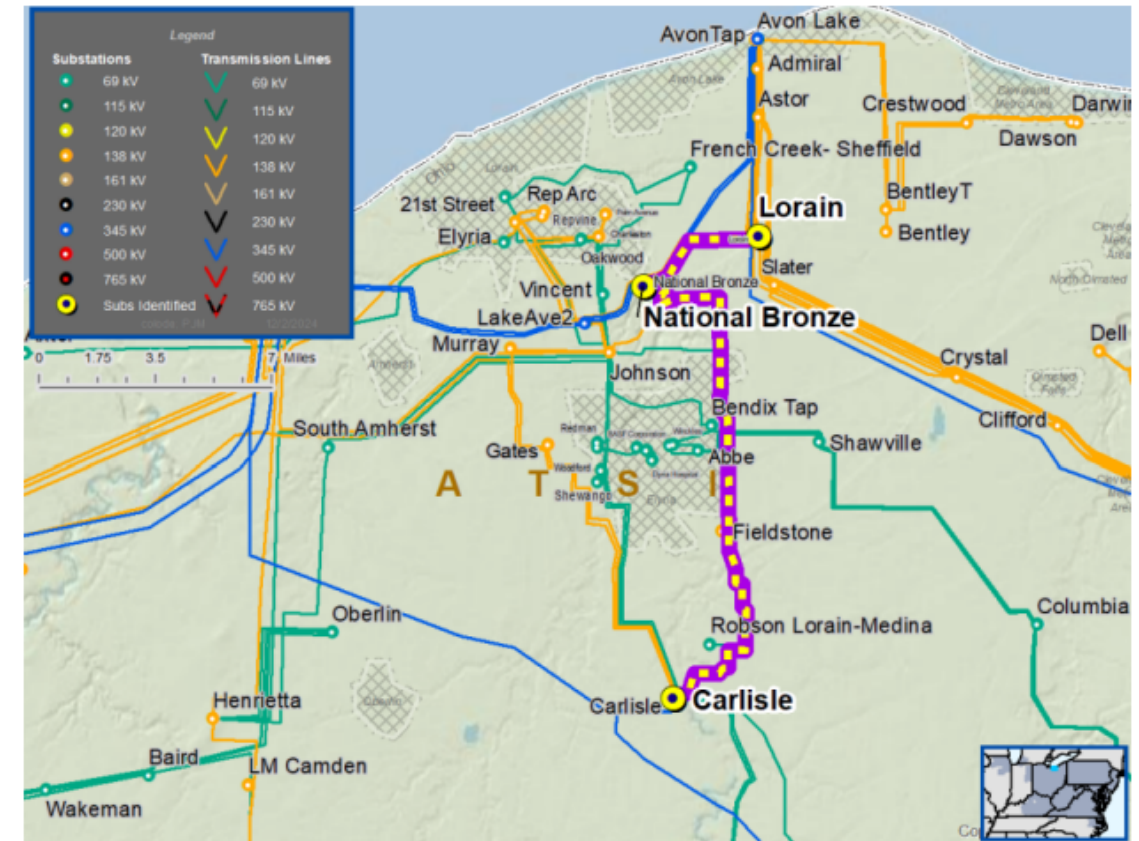
Upgrade Relay Schemes

- 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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Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
ATSI-2024-078	Carlisle- National Bronze Tap 138 kV Line	233 / 282 / 263 / 333	233 / 282 / 263 / 333
	National Bronze Tap- Lorain 138 kV Line	224 / 293 / 309 / 316	273 / 332 / 309 / 316



ATSI Transmission Zone M-3 Process Carlisle-Lorain 138 kV Line Relay Misoperation

Need Number: ATSI-2024-078
Process Stage: Solution Meeting - 08/15/2025

Proposed Solution:

Carlisle Substation

- Replace line relays, CCVTs, line arresters, line trap and disconnect switches.

Lorain Substation

- Replace line relays, CCVT, wave trap, and disconnect switches.

Transmission Line Ratings:

Carlisle-National Bronze Tap 138 kV Line

- Existing Line Rating 233 / 282 / 263 / 333 MVA (SN/SE/WN/SE)
- New Line Rating 233 / 282 / 263 / 333 MVA (SN/SE/WN/SE)

National Bronze Tap-Lorain 138 kV Line

- Existing Line Rating 224 / 293 / 309 / 316 MVA (SN/SE/WN/SE)
- New Line Rating 273 / 332 / 309 / 393 MVA (SN/SE/WN/SE)

Alternatives Considered:

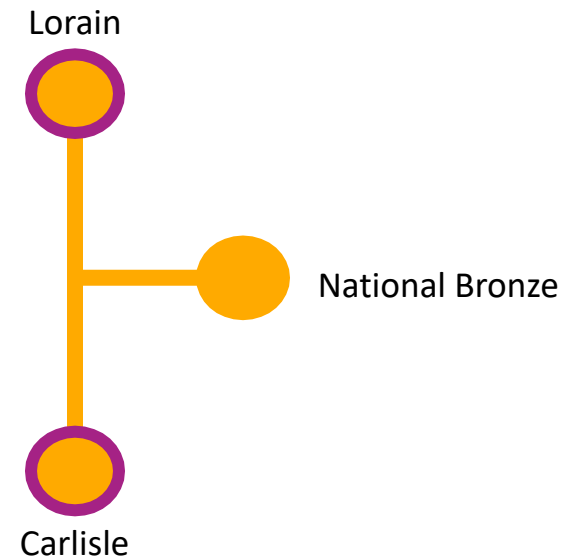
Maintain line in existing condition with obsolete relays and increasing risk to reliability.

Estimated Project Cost: \$3.58M

Projected In-Service: 12/31/2027

Project Status: Conceptual

Model: 2024 RTEP model for 2029 Summer (50/50)



Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

Need Number: ATSI-2024-047
Process Stage: Solution Meeting – 8/15/2025
Previously Presented: Need Meeting – 7/19/2024

Supplemental Project Driver(s):
Customer Service

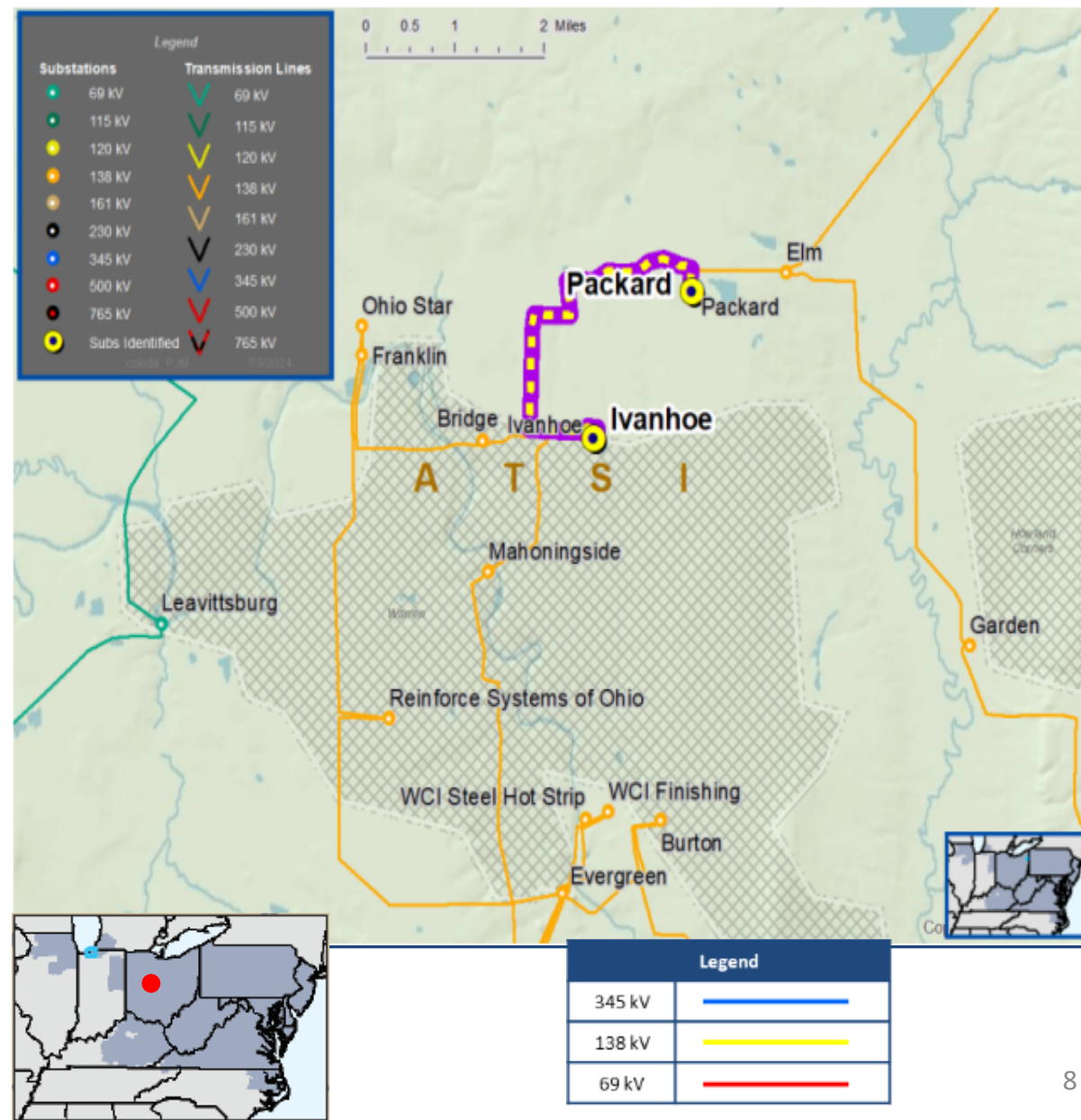
Specific Assumption Reference(s):

Customer connection 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 a new 138 kV delivery point near the Ivanhoe – Packard 138 kV Line. The anticipated load of the new customer connection is approximately 10 MVA. The requested delivery point location is approximately one mile from Packard Substation

Requested in-service date is 12/31/2025





ATSI Transmission Zone M-3 Process Ivanhoe – Packard 138 kV Customer

Need Number: ATSI-2024-047
Process Stage: Solution Meeting – 8/15/2025
Previously Presented: Need Meeting – 7/19/2024

Proposed Solution:

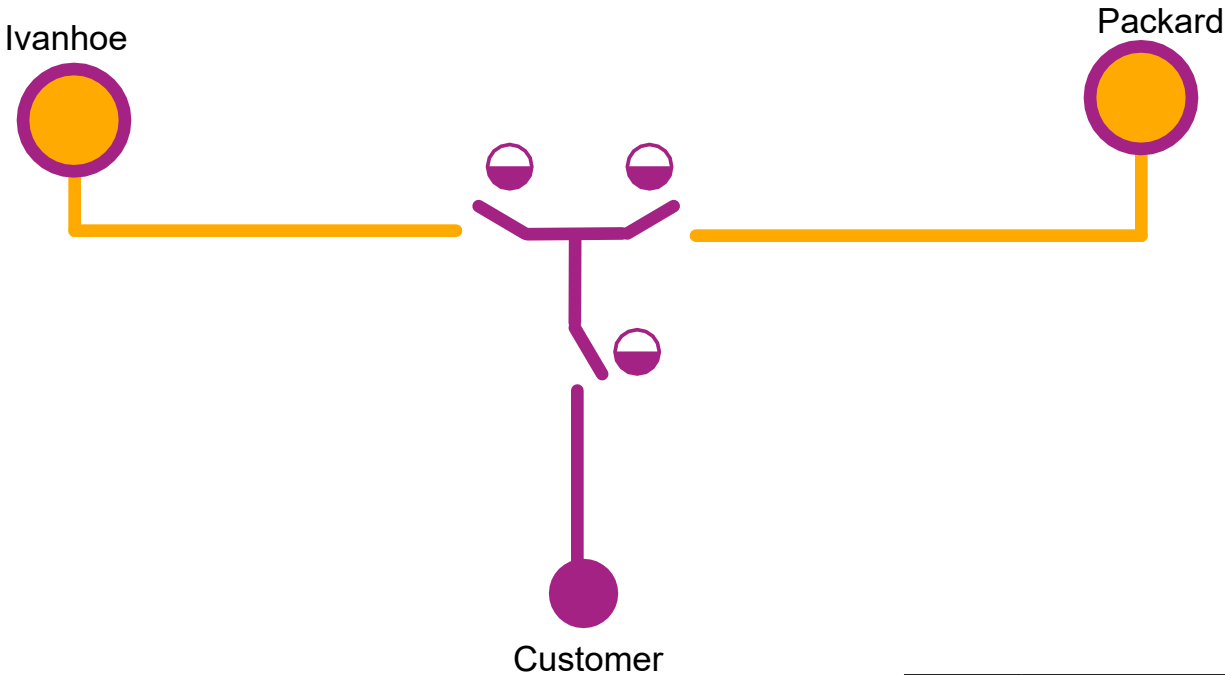
138 kV Transmission Line Tap

- Install two main-line SCADA controlled switches.
- Install one tap-line SCADA controlled switch.
- Construct 0.2 miles of 138 kV line extension.
- Adjust relay settings at Ivanhoe and Packard substations.
- Install revenue metering.

Alternatives Considered:

- No reasonable alternatives to meet the customer’s request near the Ivanhoe – Packard 138 kV Line.

Estimated Project Cost: \$1.92M
Projected In-Service: 7/28/2028
Status: Project Development
Model: 2025 RTEP model for the 2030 Summer (50/50)



Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

ATSI Transmission Zone M-3 Process Niles Substation Customer Connection

Need Number: ATSI-2025-019
Process Stage: Solution Meeting – 08/15/2025
Previously Presented: Need Meeting – 07/18/2025

Supplemental Project Driver(s):
Customer Service

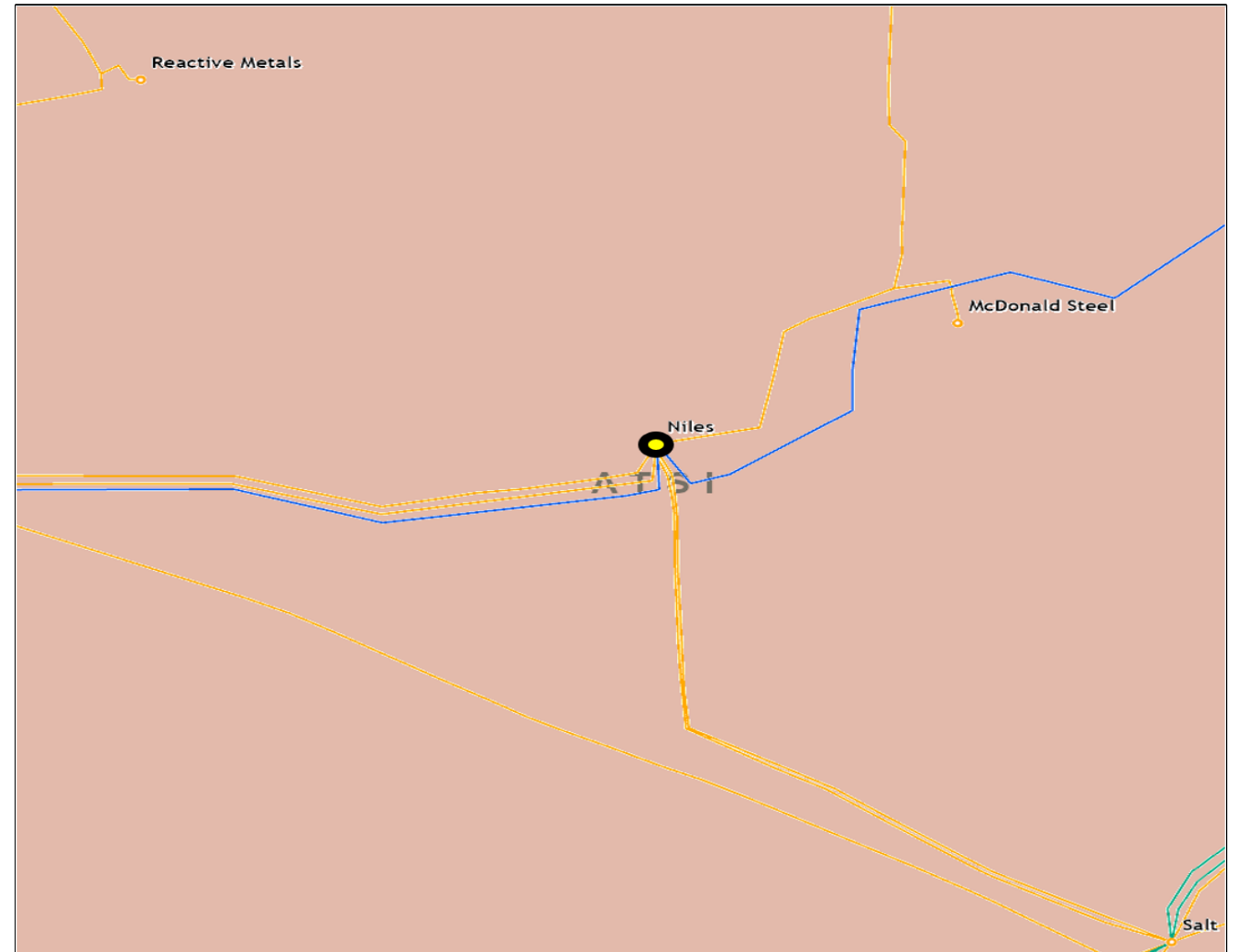
Specific Assumption Reference(s):

- New customer connection request will be evaluated based on FirstEnergy's "Requirements for Transmission Connected Facilities" document and FirstEnergy's "Transmission Planning Criteria" document

Problem Statement

- New Customer Connection – A customer requested a new 138 kV delivery point near the Niles Substation. The anticipated load of the new customer connection is 300 MVA. The request is approximately 200 feet from Niles Substation.

Requested In-Service Date:
 July 27, 2029





ATSI Transmission Zone M-3 Process Niles Substation Customer Connection

Need Number: ATSI-2025-019
Process Stage: Solution Meeting – 08/15/2025
Previously Presented: Need Meeting – 07/18/2025

Proposed Solution:

- Install one 138 kV breaker at Niles Substation
- Build a single span from Niles Substation to the POI with Customer
- Adjust relay settings at Niles Substation
- Install revenue metering

Alternatives considered:

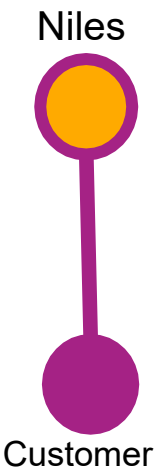
- No reasonable alternatives to meet customer’s request due to the proximity to Niles Substation.

Estimated Project Costs: \$0.09M

Project In-Service Date: 8/8/2029

Status: Conceptual

Model: 2023 RTEP model for the 2028 Summer (50/50)



Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 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

8/05/2025– V1 – Original version posted to pjm.com