

# Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

August 16, 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

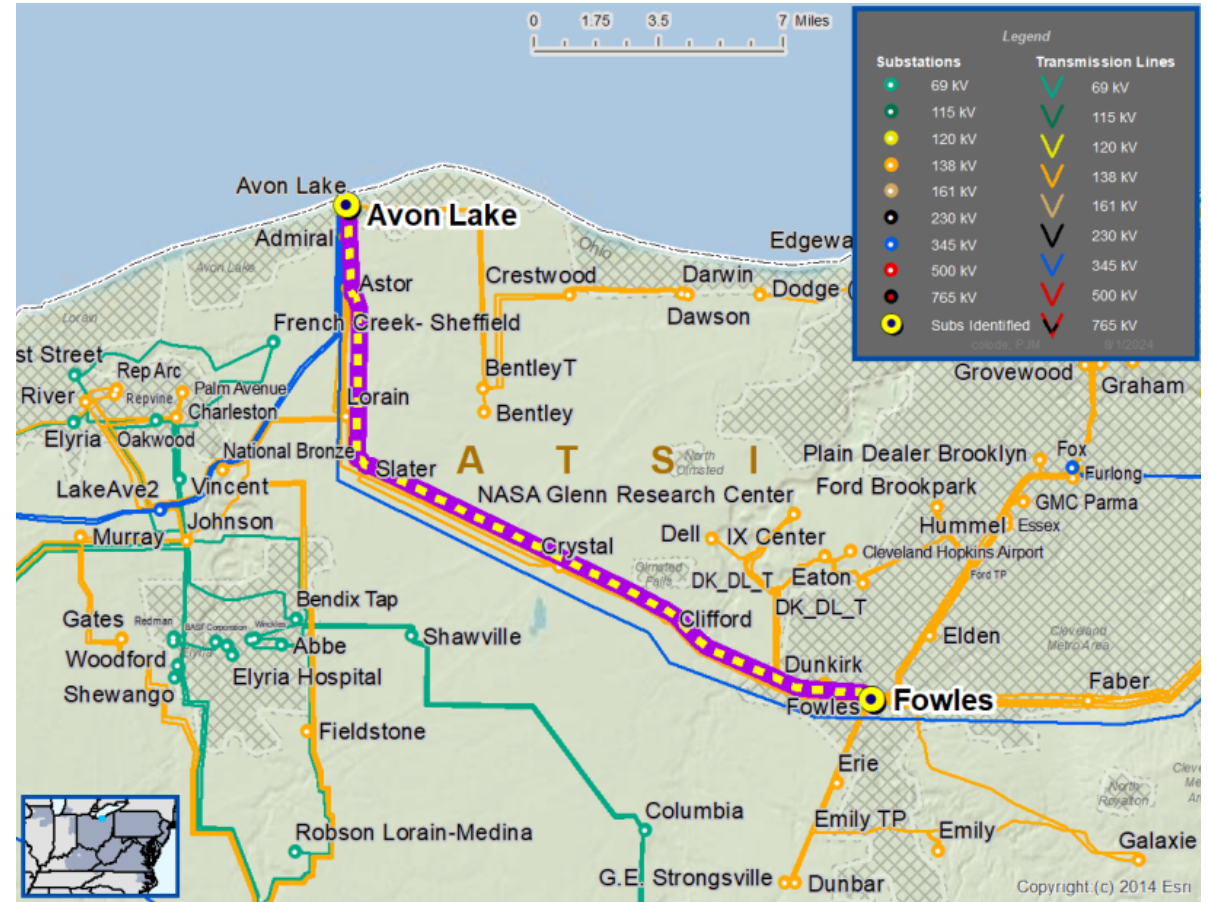
**Need Number:** ATSI-2024-048  
**Process Stage:** Need Meeting – 8/16/2024

**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



**Need Number:** ATSI-2024-058  
**Process Stage:** Need Meeting – 8/16/2024

**Supplemental Project Driver(s):**  
*Equipment Material Condition, Performance and Risk*

**Specific Assumption Reference(s)**

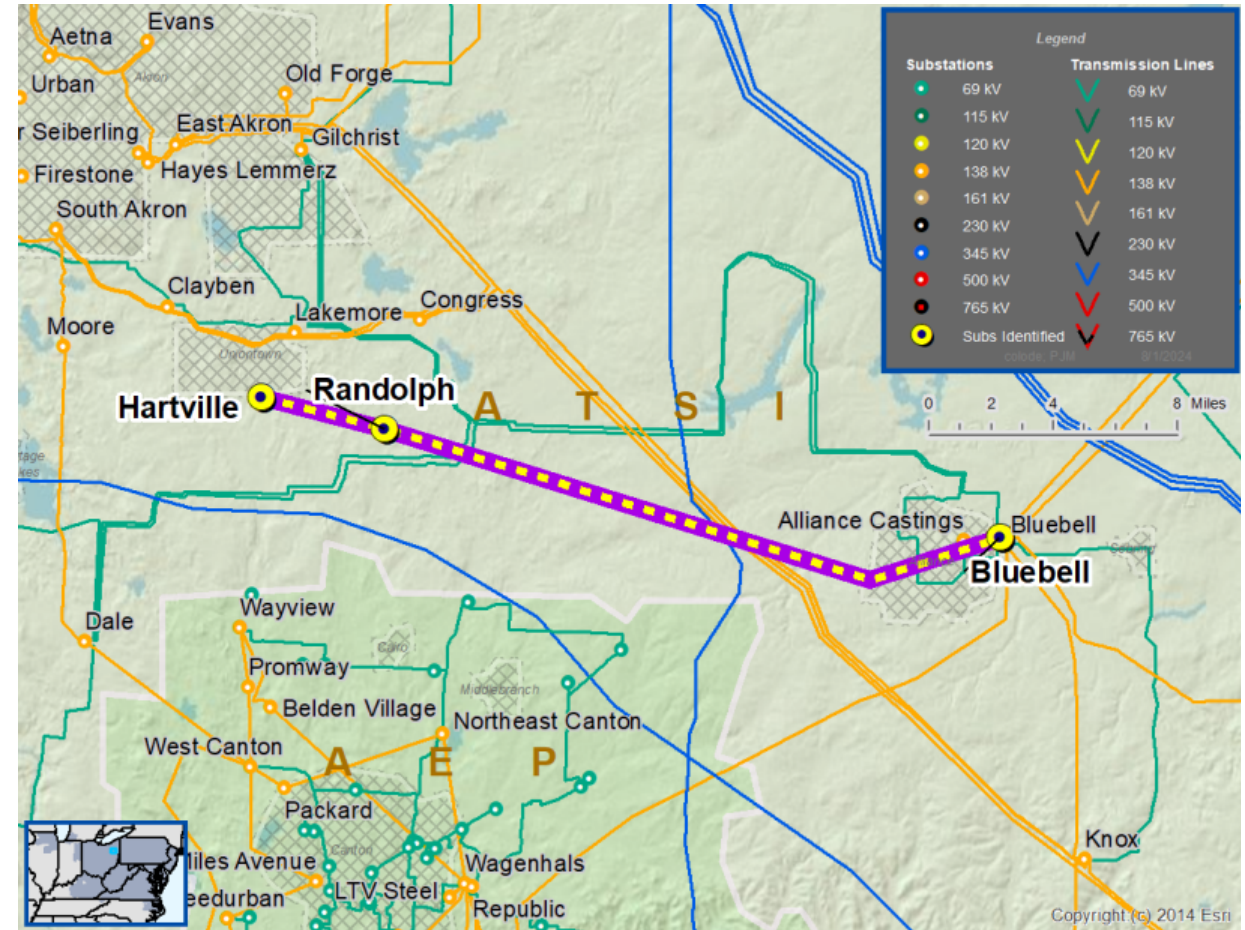
System Performance Projects Global Factors

- System reliability/performance
  - Substation/Line equipment limits
- Line Condition Rebuild/Replacement
- Age/condition of wood pole transmission line structures

**Problem Statement:**

- The Bluebell – Hartville 69 kV Line was constructed approximately 50 years ago and is approaching end of life. It is approximately 29 miles long with 480 wood pole transmission line structures.
- Per recent inspections, the line is exhibiting deterioration. Inspection findings include:
  - 110 poles failed inspection due to woodpecker damage.
  - 400 poles failed inspection due to decay.
- Since 2019, the Bluebell – Hartville 69 kV Line had six unscheduled sustained outages.

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# ATSI Transmission Zone M-3 Process Bluebell – Hartville 69 kV Line

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE )	Existing Conductor Rating MVA (SN / SE / WN / WE)
ATSI-2024-058	Bluebell – Bluebell Tap 69 kV Line	76 / 90 / 87 / 100	76 / 92 / 87 / 111
	Randolph – Hartville 69 kV Line	51 / 66 / 73 / 76	58 / 73 / 76 / 98



**Need Number:** ATSI-2024-059  
**Process Stage:** Need Meeting – 8/16/2024

**Supplemental Project Driver(s):**  
*Equipment Material Condition, Performance and Risk*

**Specific Assumption Reference(s)**

System Performance Projects Global Factors

- System reliability/performance
- Substation/Line equipment limits

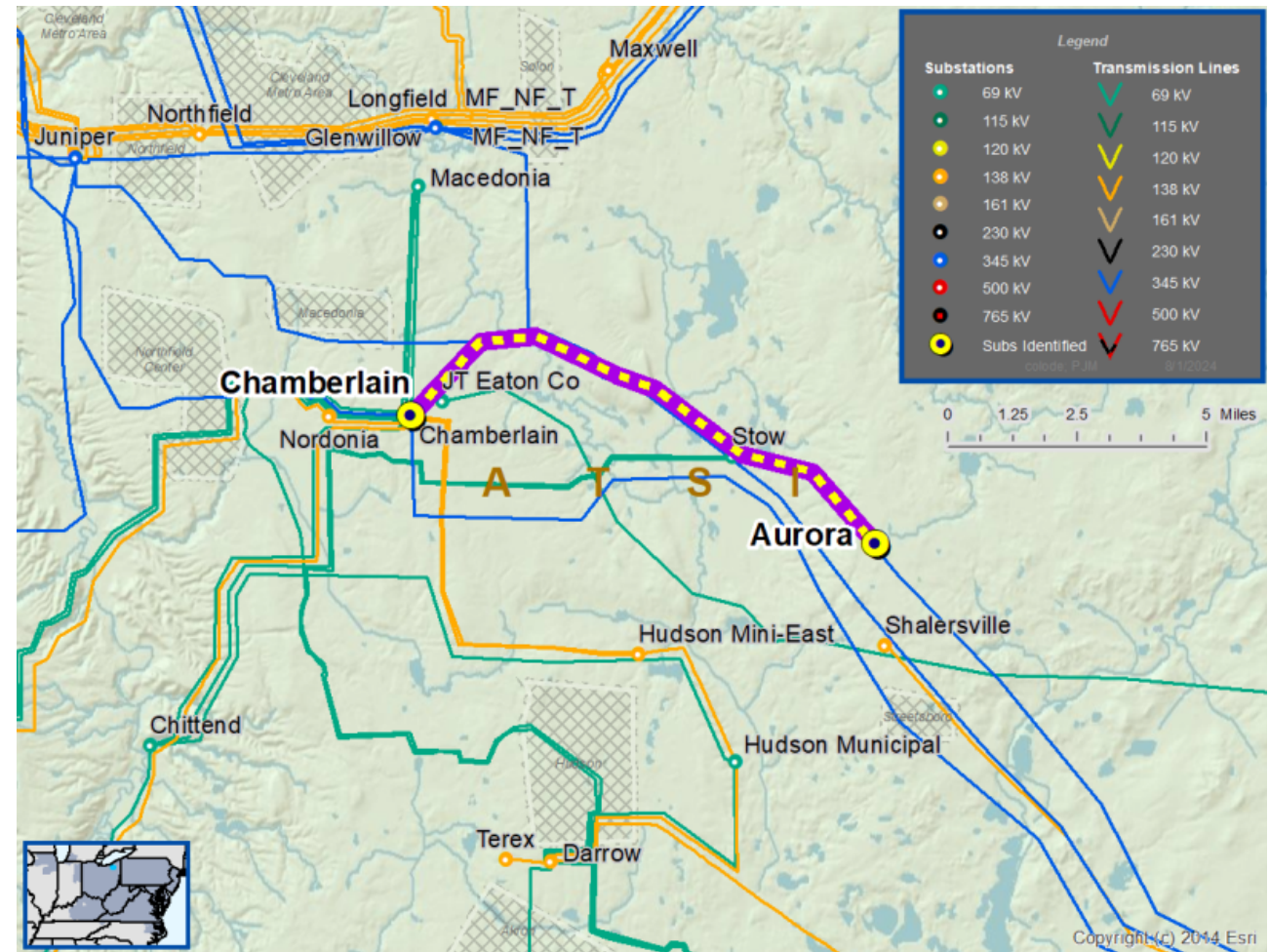
Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

**Problem Statement:**

- The Aurora – Chamberlin No. 1 69 kV Line was constructed approximately 73 years ago and is approaching end of life. It is approximately 22 miles long with 352 wood pole structures.
- From Structure #14 to Aurora Substation:
  - There are 69 wood pole structures.
  - A 2024 assessment deemed 18 structures to have failed inspection.
- A two-pole structure is located within Sunny Lake.
- Since 2019, the Aurora – Chamberlin No. 1 69 kV Line had four unscheduled sustained outages.

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# ATSI Transmission Zone M-3 Process Aurora – Chamberlin No. 1 69 kV Line

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE )	Existing Conductor Rating MVA (SN / SE / WN / WE)
ATSI-2024-059	Aurora – Cantex Tap 69 kV Line	47 / 56 / 53 / 67	47 / 56 / 53 / 67

**Need Number:** ATSI-2024-061  
**Process Stage:** Need Meeting – 08/16/2024

**Supplemental Project Driver(s):**  
*Equipment Material Condition, Performance and Risk*

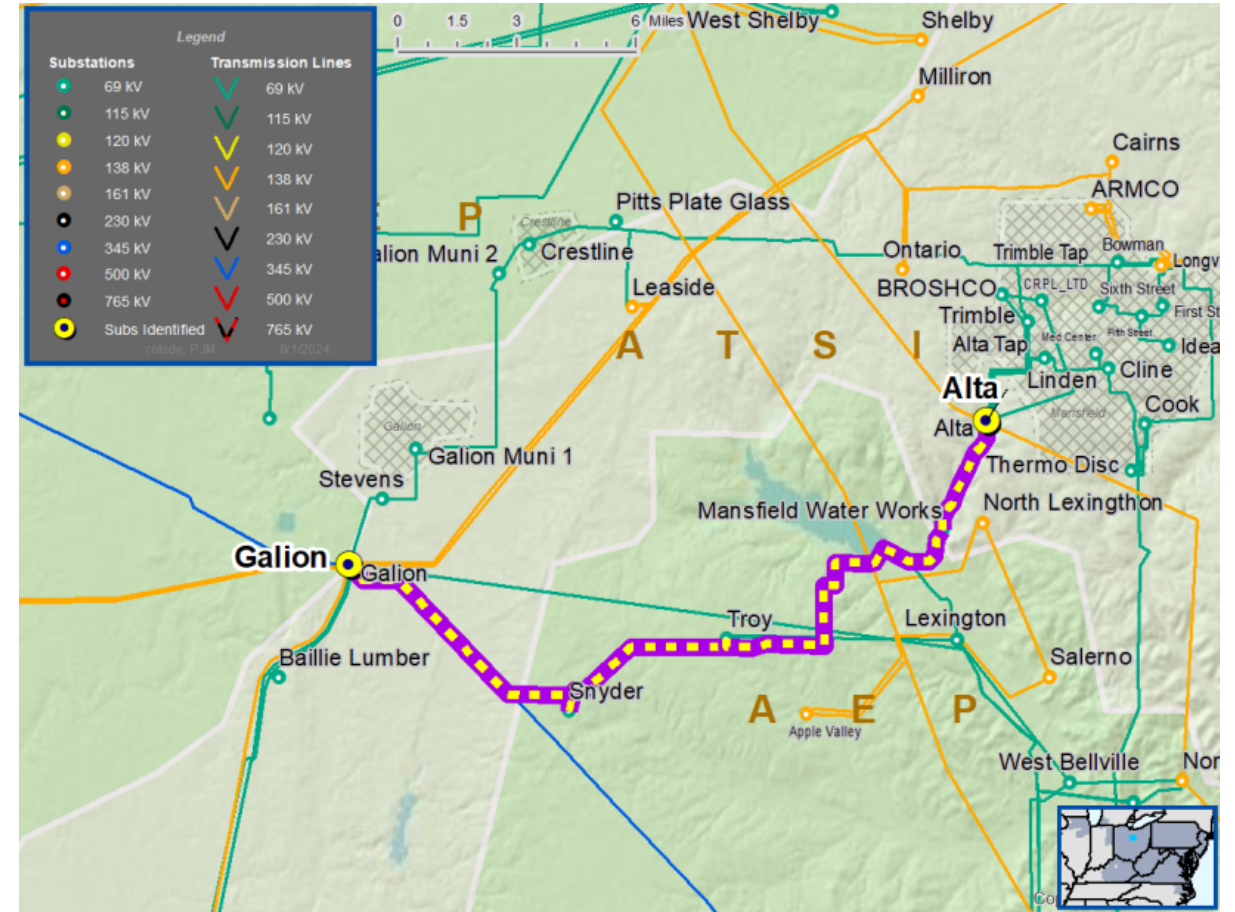
**Specific Assumption Reference(s):**  
 System Performance Projects Global Factors

- System reliability/performance
  - Substation/Line equipment limits
- Line Condition Rebuild/Replacement
- Age/condition of wood pole transmission line structures

**Problem Statement**

- The Alta – Galion 69 kV Line was constructed in 1959 and is approaching end of life. The line is approximately 13 miles in length and constructed with 294 wood pole structures.
- Per recent inspections, the line is exhibiting deterioration. Inspection findings include:
  - 91 poles failed inspection due to cracking, decay, and/or woodpecker damage.
  - 9 poles have flashed, cracked or broken insulators.
- Since 2019, there have been 13 unscheduled sustained outages on this line with three insulator failures.

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# ATSI Transmission Zone M-3 Process Alta – Galion 69 kV Line

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE )	Existing Conductor Rating MVA (SN / SE / WN / WE)
ATSI-2024-061	Snyder Tap – Galion 69 kV Line	72 / 72 / 72 / 72	80 / 96 / 90 / 114

**Need Number:** ATSI-2024-067  
**Process Stage:** Need Meeting – 8/16/2024

**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

- Substation Condition Rebuild/Replacement

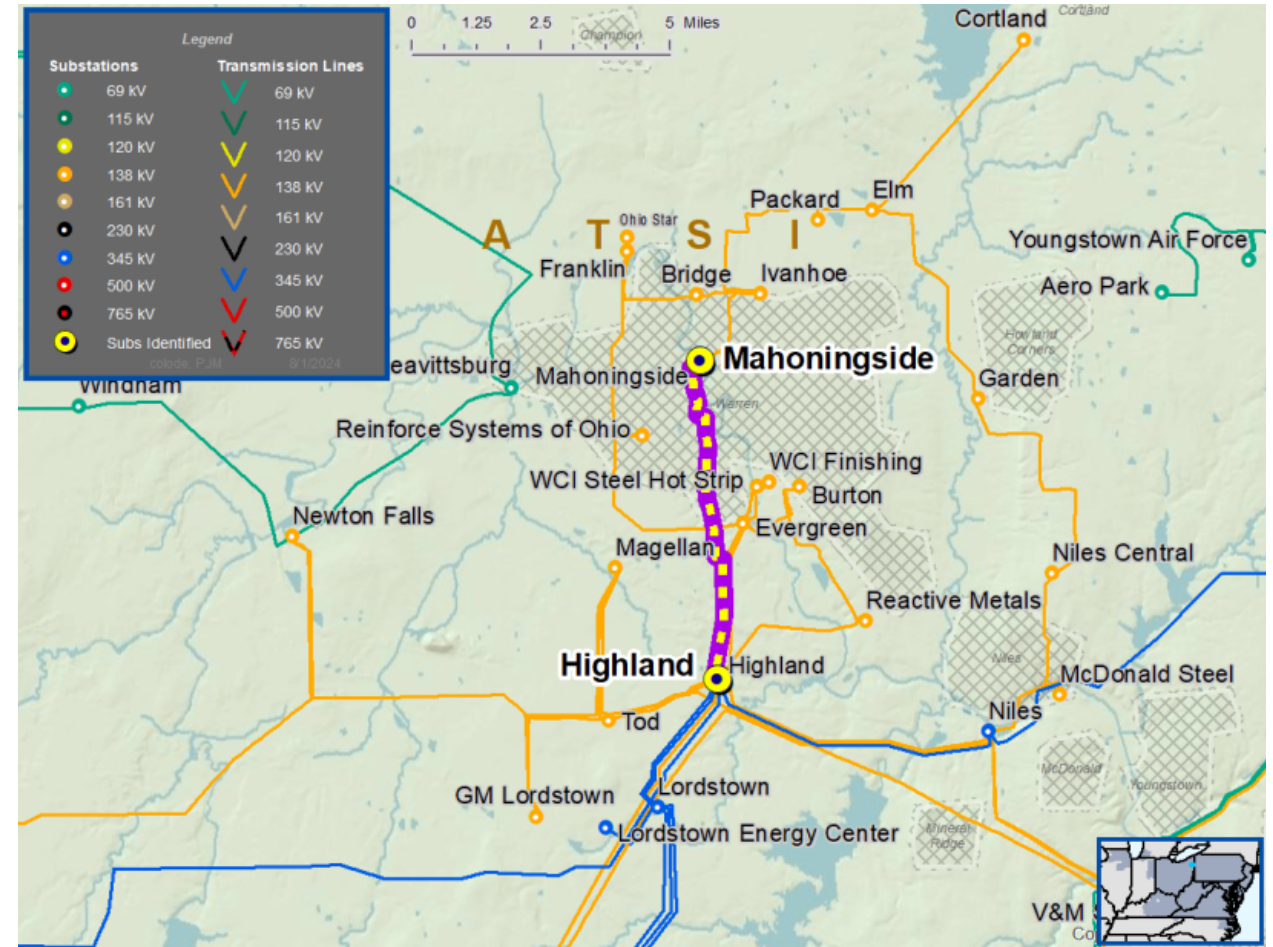
Upgrade Relay Schemes

- 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.
- The existing control building at Highland Substation is congested. There is not sufficient space for additional panel upgrades.
- Transmission line ratings are limited by terminal equipment.

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Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
ATSI-2024-067	Highland – Mahoningside 138 kV Line	200 / 236 / 226 / 236	200 / 242 / 226 / 286

# 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-2022-013  
**Process Stage:** Solution Meeting – 08/16/2024  
**Previously Presented:** Need Meeting – 05/19/2022

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

**Specific Assumption Reference(s):**

Global Considerations

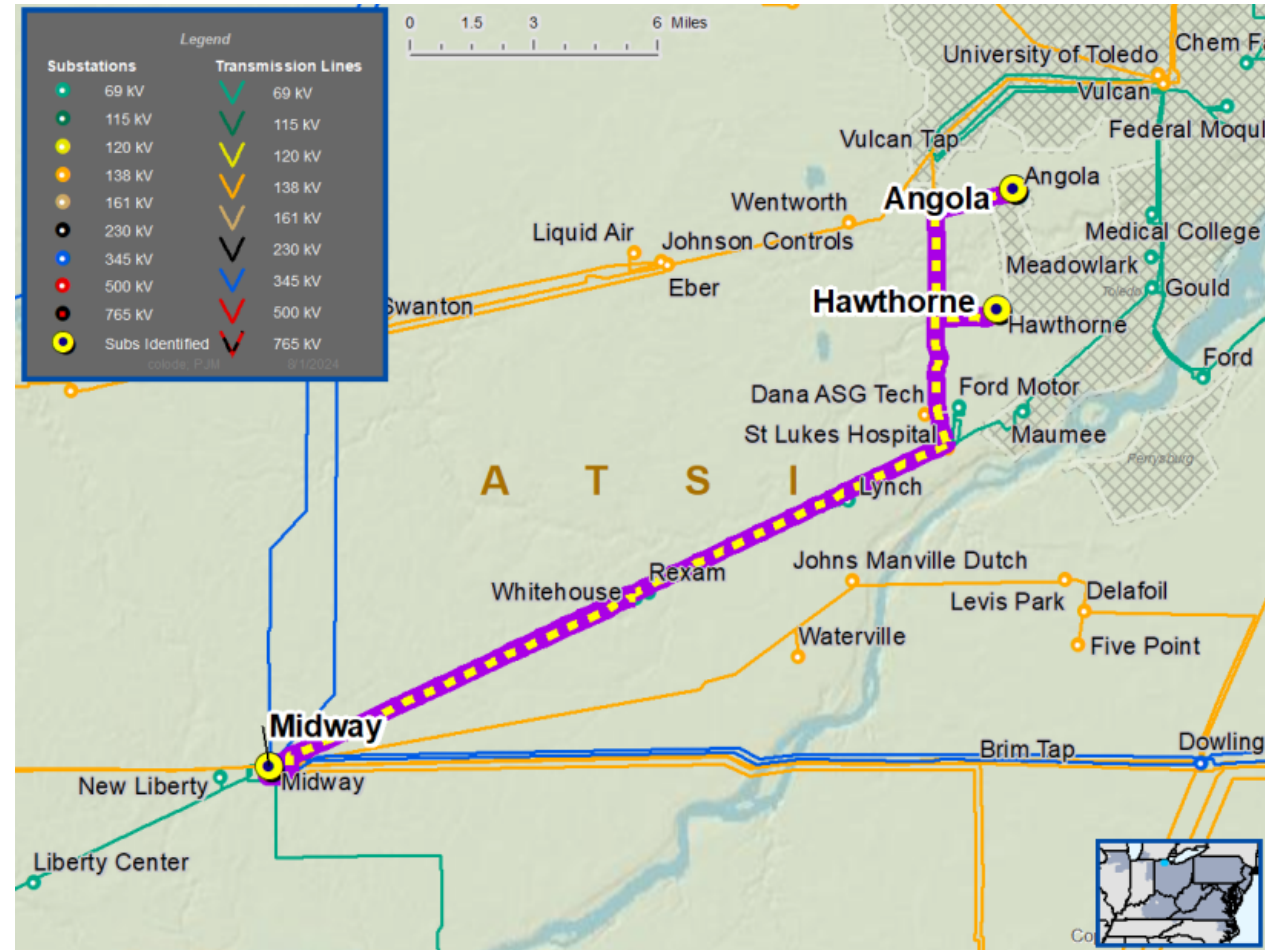
- System reliability and performance
- Load at risk in planning and operational scenarios
- Load and/or customers at risk on single transmission lines
- Substation/line equipment limits

Add/Expand Bus Configuration

- Loss of substation bus adversely impacts transmission system performance

**Problem Statement:**

The loss of the Angola-Midway 138 kV Line results in the loss of approximately 38.5 MW and 7,400 customers at three delivery points.  
 Since 2017, the Angola-Midway 138 kV Line has experienced four unscheduled outages: two sustained and two momentary.







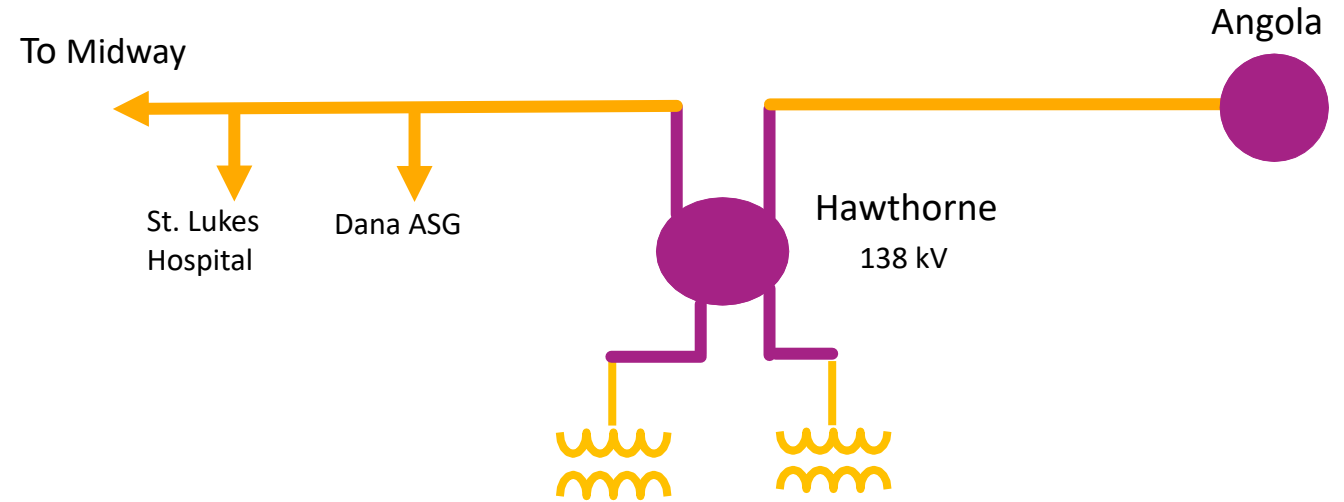
# ATSI Transmission Zone M-3 Process Angola – Midway 138 kV Line

**Need Number:** ATSI-2022-013  
**Process Stage:** Solution Meeting – 08/16/2024

**Proposed Solution:**  
 Expand Hawthorne Station into a ring bus configuration  
 ▪ Build a four breaker 138 kV ring bus.

**Alternatives Considered:**  
 ▪ Expand Angola substation into a five (5) breaker 138 kV ring bus substation, build approximately 2.3 miles of new 138 kV circuit from Angola Substation to Angola tap on Angola – Eber – Vulcan 138 kV Line.

**Estimated Project Cost:** \$11.6M  
**Projected In-Service:** 3/14/2028  
**Status:** Conceptual  
**Model:** 2023 RTEP model for 2028 Summer (50/50)



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

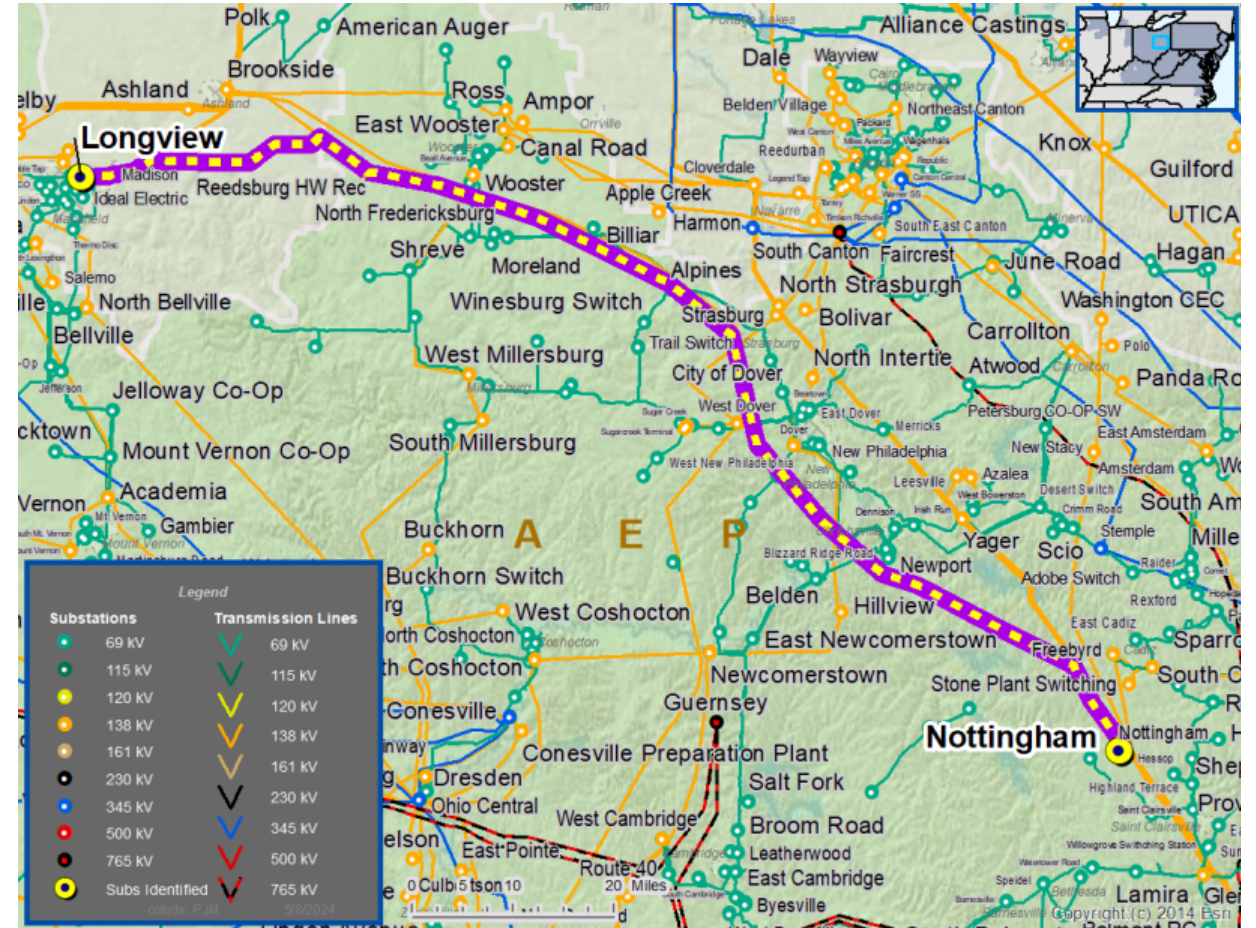
**Need Number:** ATSI-2024-039  
**Process Stage:** Solution Meeting – 08/16/2024  
**Previously Presented:** Need Meeting – 05/17/2024

**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**  
 New Customer Connection – Ohio Edison Distribution has requested a new 138 kV delivery point near the Longview – Nottingham 138 kV Line. The anticipated load of the new customer connection is 6 MVA.

**Requested In-Service Date:**  
 June 1, 2026





# ATSI Transmission Zone M-3 Process Longview – Nottingham 138 kV Line Customer Connection

**Need Number:** ATSI-2024-039  
**Process Stage:** Solution Meeting – 08/16/2024

**Proposed Solution:**

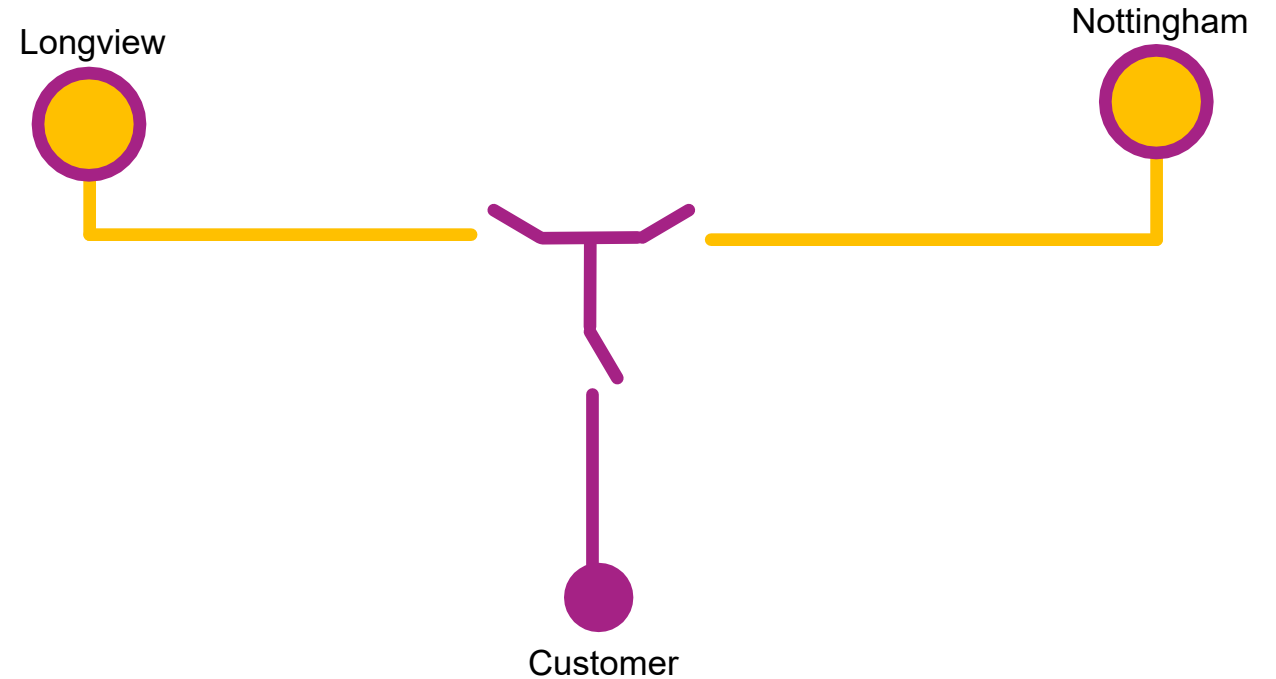
**138 kV Transmission Line Tap**

- Install two main-line SCADA controlled switches.
- Install one tap-line SCADA controlled switch.
- Construct 0.1 miles of 138 kV line extension.
- Adjust relay settings at Longview and Nottingham substations.
- Install revenue metering.

**Alternatives Considered:**

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

**Estimated Project Cost:** \$1.3 M  
**Projected In-Service:** 12/31/2027  
**Status:** Conceptual  
**Model:** 2023 RTEP model for 2028 Summer (50/50)



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

# ATSI Transmission Zone M-3 Process Cardington (Galion) 138 kV Line Customer Connection

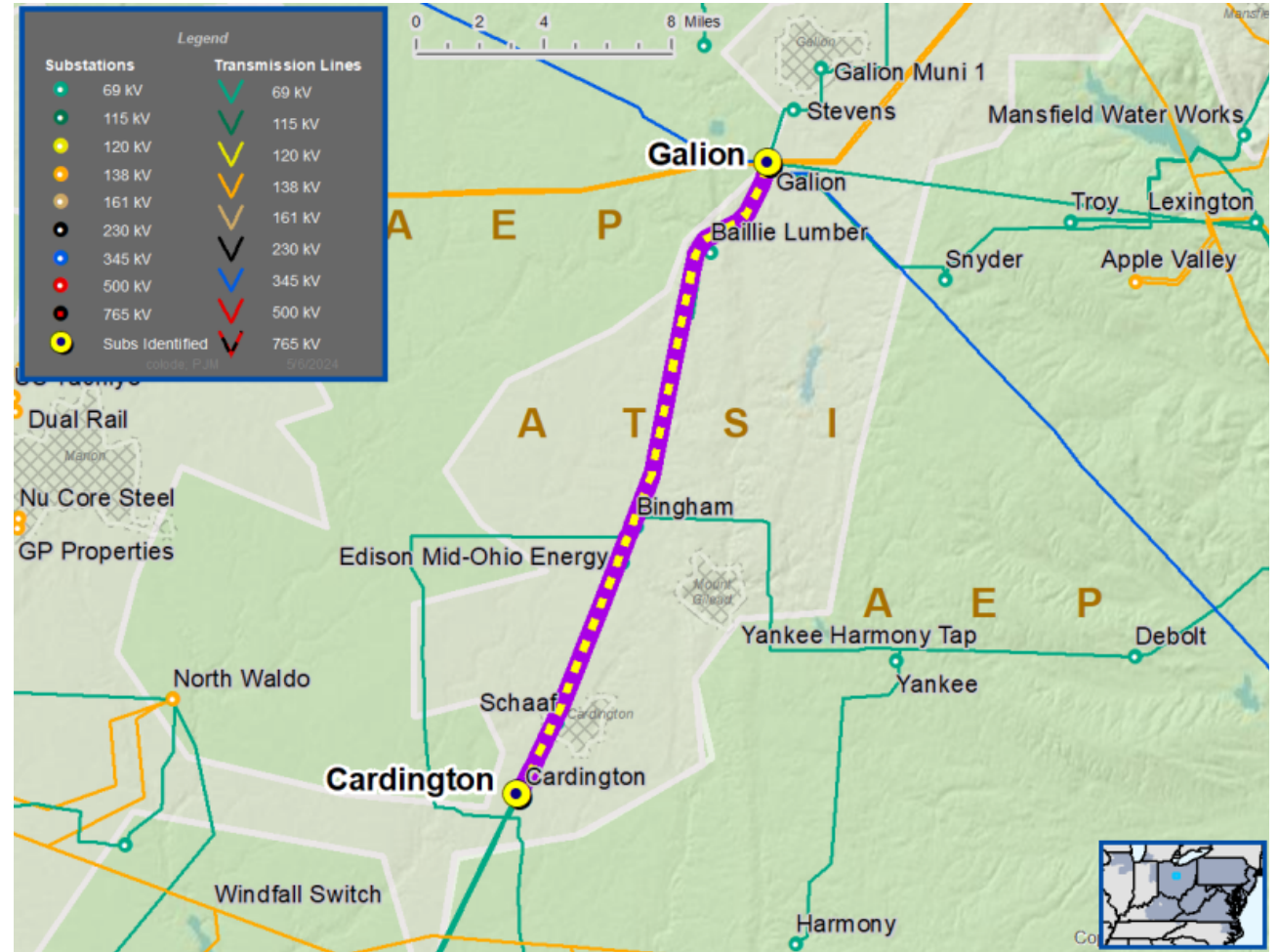
**Need Number:** ATSI-2024-040  
**Process Stage:** Solution Meeting – 08/16/2024  
**Previously Presented:** Need Meeting – 05/17/2024

**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**  
 New Customer Connection – Ohio Edison Distribution has requested a new 138 kV delivery point near the Cardington (Galion) 138 kV Line. The anticipated load of the new customer connection is 6 MVA.

**Requested In-Service Date:**  
 June 1, 2026





# ATSI Transmission Zone M-3 Process Cardington (Galion) 138 kV Line Customer Connection

**Need Number:** ATSI-2024-040  
**Process Stage:** Solution Meeting – 08/16/2024

**Proposed Solution:**

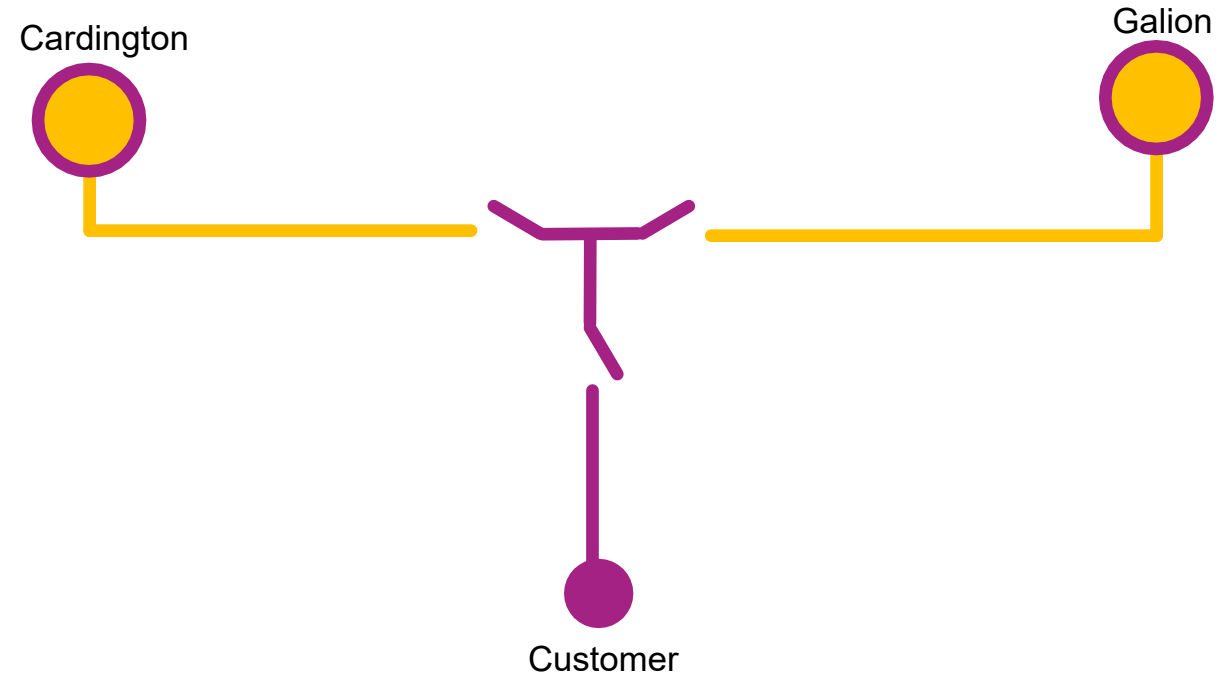
**138 kV Transmission Line Tap**

- Install two main-line SCADA controlled switches.
- Install one tap-line SCADA controlled switch.
- Construct 0.1 miles of 138 kV line extension.
- Install one breaker and associated equipment at Cardington Substation
- Adjust relay settings at Galion Substation.
- Install revenue metering.

**Alternatives Considered:**

- No reasonable alternatives to meet the customer’s request near the Cardington (Galion) 138 kV Line

**Estimated Project Cost:** \$2.8 M  
**Projected In-Service:** 12/31/2027  
**Status:** Conceptual  
**Model:** 2023 RTEP model for 2028 Summer (50/50)



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



# Changes to the Existing Projects

## Abbe – Medina 69 kV Line Customer Connection - s2056 Scope Change

s2056: Originally presented in 05/20/2019 and 7/24/2019 SRRTEP Western meetings

Changes are marked in red

**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.

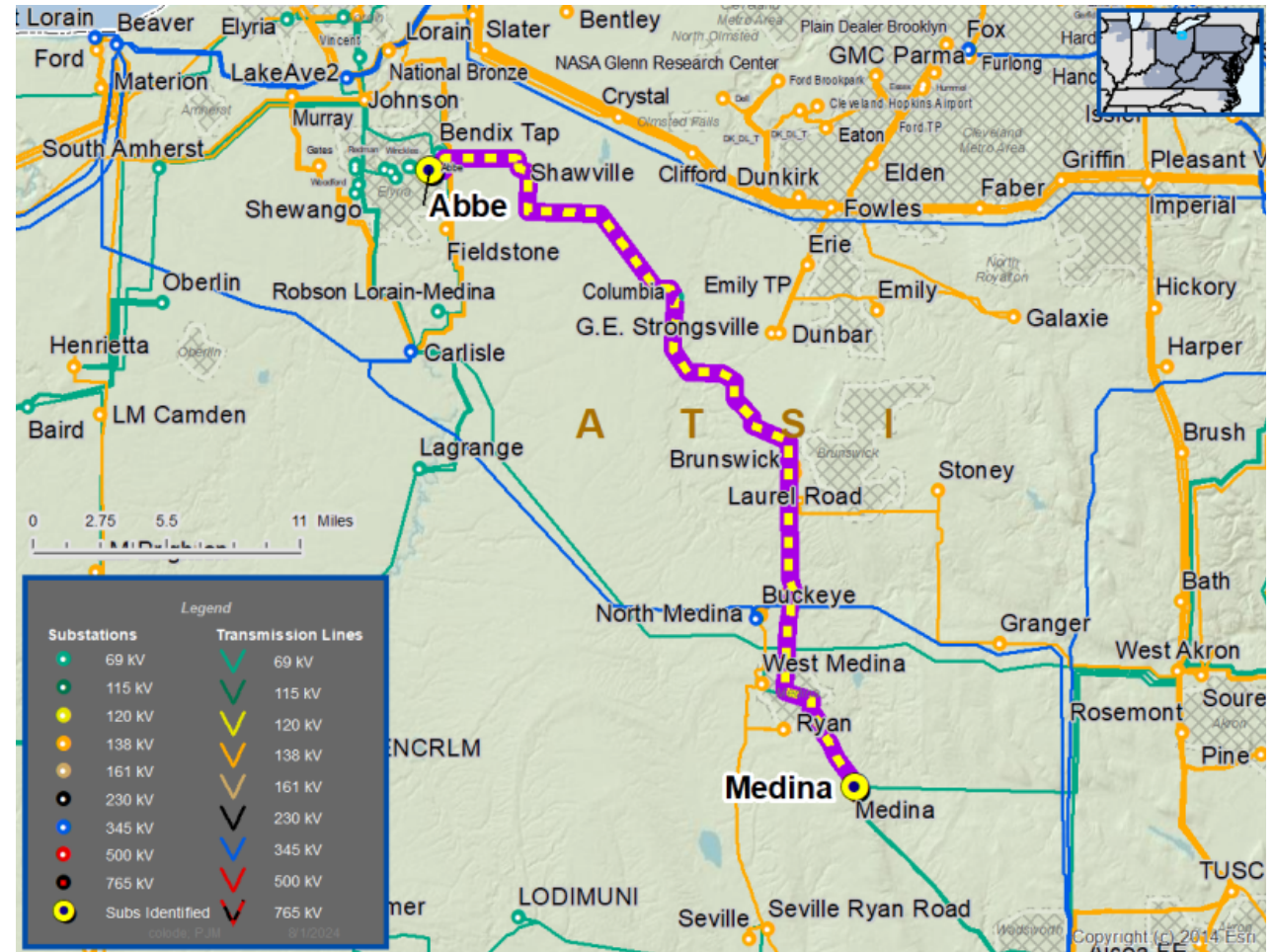
**Problem Statement**

New Customer Connection – Ohio Edison Distribution has requested a new 69 kV delivery point near the Abbe – Medina 69 kV Line. The anticipated load of the new customer connection is 11.2 MVA.

**Requested In-Service Date:**

~~December 31, 2020~~

December 31, 2024



# ATSI Transmission Zone M-3 Process

## Abbe – Medina 69 kV Line Customer Connection - s2056 Scope Change

**Need Number:** ATSI-2019-056 (s2056)  
**Process Stage:** Re-Present Solution Meeting – 08/16/2024

*Reason for Scope Change:* Ohio Edison unable to secure property for the new facility. Through community engagement, Ohio Edison was able to secure a property approximately 0.2 miles from the originally presented customer location.

**Proposed Solution:**

**138 kV Transmission Line Tap**

- Tap the Abbe-Medina 69 kV line approximately ~~10.9~~ 11.1 miles from Medina substation and build one 69 kV span to the proposed customer substation
- Install ~~two (2)~~ one (1) 69 kV in-line switches with SCADA control on either side of the new tap connection
- ~~Remove switch A-259 from structure # 24 at Marks road south of the proposed customer substation~~ Install SCADA capabilities to existing main-line switch
- Install one tap-line SCADA controlled switch.
- Adjust relay settings at Abbe and Medina substations.
- Install revenue metering.

**Alternatives Considered:**

- No feasible alternatives to meet the customer’s request near the Abbe – Medina 69 kV Line

**Estimated Project Cost:** ~~\$1.4 M~~

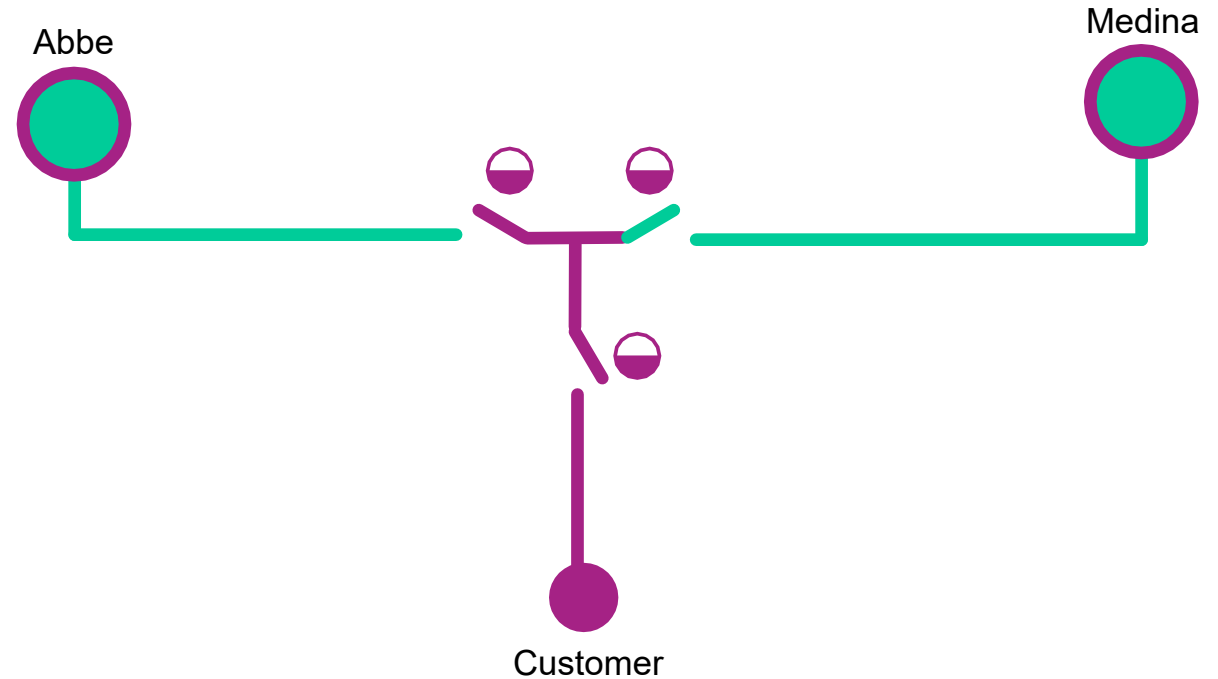
\$0.9 M

**Projected In-Service:** ~~12/31/2020~~

12/31/2024

**Status:** Project Development

**Model:** 2022 RTEP model for the 2027 Summer (50/50)



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

08/06/2024– V1 – Original version posted to pjm.com