



# Subregional RTEP Committee – Western FirstEnergy Supplemental Projects



## Submission of Supplemental Projects for Inclusion in the Local Plan



## ATSI Transmission Zone M-3 Process Crossland – Sharon 138 kV Z-112 Line Customer Connection

**Need Number:** ATSI-2025-013  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting – 04/11/2025  
Solution Meeting – 07/18/2025

**Supplemental Project Driver(s):**  
*Customer Service*

**Specific Assumption Reference(s):**

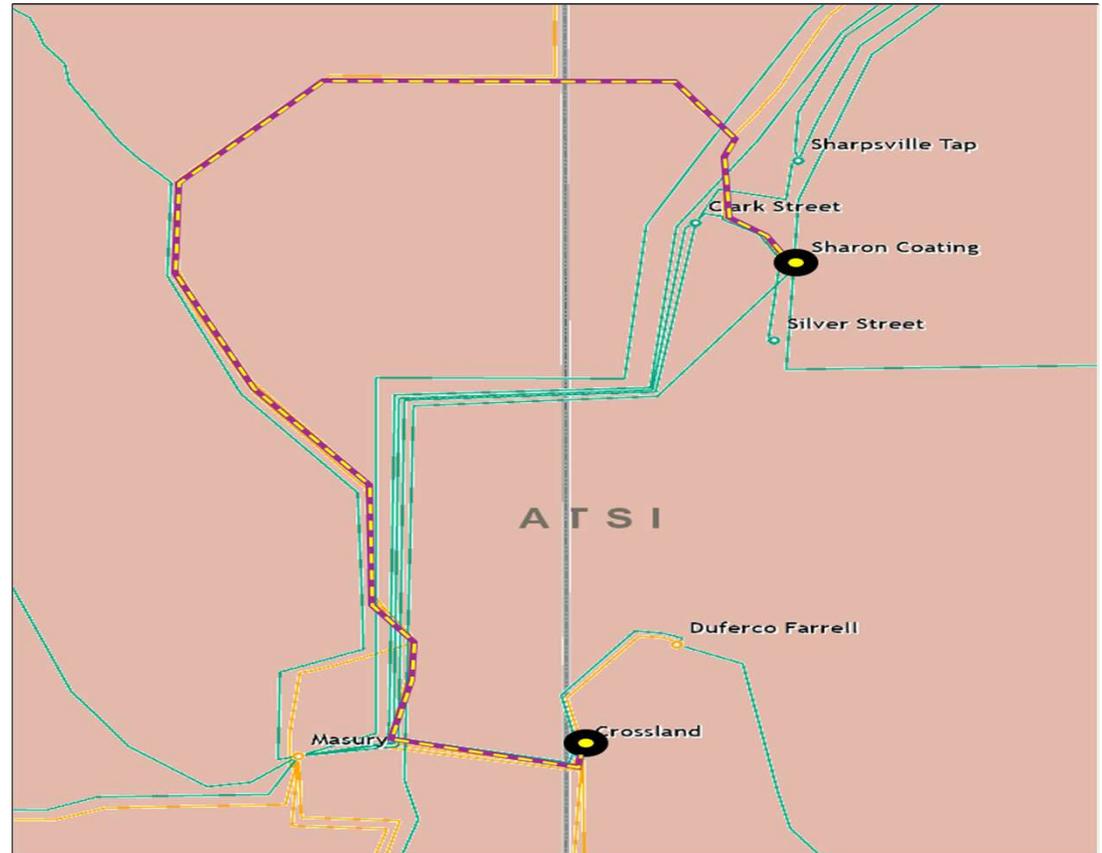
- New customer connection request will be evaluated based on FirstEnergy's "Requirements for Transmission Connected Facilities" document and FirstEnergy's "Transmission Planning Criteria" document

**Problem Statement**

- New Customer Connection – A customer requested a new 138 kV delivery point near the Crossland - Sharon 138 kV Z-112 Line. The anticipated load of the new customer connection is 80 MVA. The request is approximately 6 miles from Crossland Substation.

**Requested In-Service Date:**

June 11, 2027





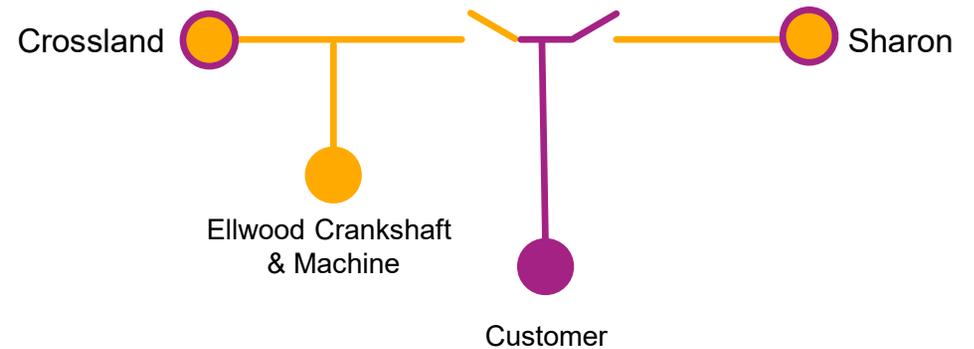
## ATSI Transmission Zone M-3 Process Crossland – Sharon 138 kV Z-112 Line Customer Connection

**Need Number:** ATSI-2025-013  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026

**Selected Solution:**

- Install one main-line switch and one tap switch
- Construct approximately 200 feet of transmission line
- Adjust relay settings at Crossland and Sharon substations
- Install revenue metering

**Estimated Project Costs:** \$0.9M  
**Project In-Service Date:** 6/11/2027  
**Supplemental ID:** s3768.1



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 Homer – Wellington 69 kV Line Customer Connection

**Need Number:** ATSI-2025-014  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting – 04/11/2025  
Solution Meeting – 07/18/2025

**Supplemental Project Driver(s):**  
*Customer Service*

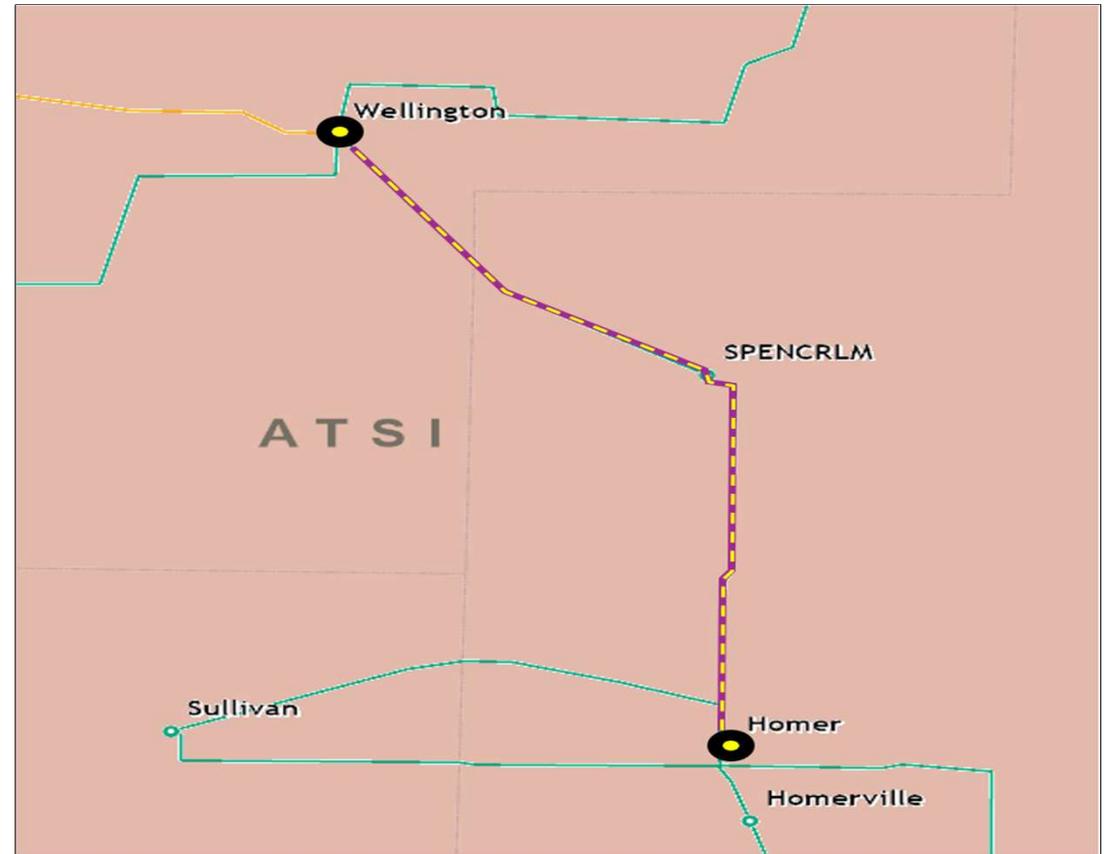
**Specific Assumption Reference(s):**

- 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 69 kV delivery point near the Homer – Wellington 69 kV Line. The anticipated load of the new customer connection is 6.5 MVA. The request is approximately 5.8 miles from Homer Substation.

**Requested In-Service Date:**  
March 14, 2026





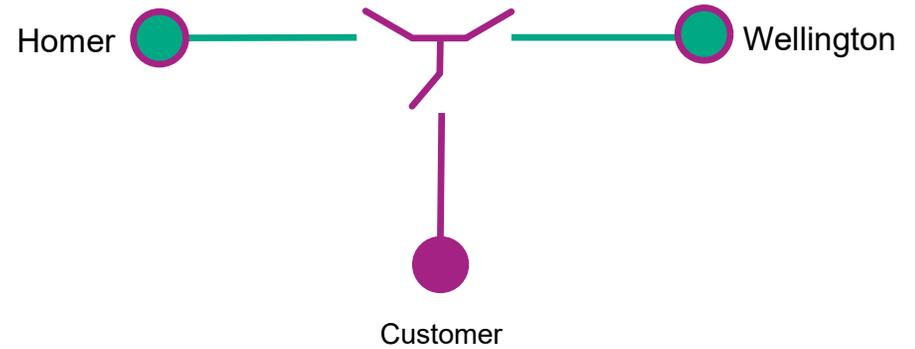
**Need Number:** ATSI-2025-014  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026

**Selected Solution:**

- Install two main-line switches and one tap switch
- Construct approximately 0.1 miles of 69 kV transmission line
- Adjust relay settings at Homer and Wellington substations
- Install revenue metering

**Estimated Project Costs:** \$0.9M  
**Project In-Service Date:** 3/15/2026  
**Supplemental ID:** s3769.1

## ATSI Transmission Zone M-3 Process Homer – Wellington 69 kV Line Customer Connection



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 Carlisle-Lorain 138 kV Line Relay Misoperation

**Need Number:** ATSI-2024-078  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting - 12/13/2024  
 Solution Meeting - 08/15/2025

**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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ATSI Transmission Zone M-3 Process  
Carlisle-Lorain 138 kV Misoperation Relays

Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
ATSI-2024-078	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



**Need Number:** ATSI-2024-078  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026

**Selected 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

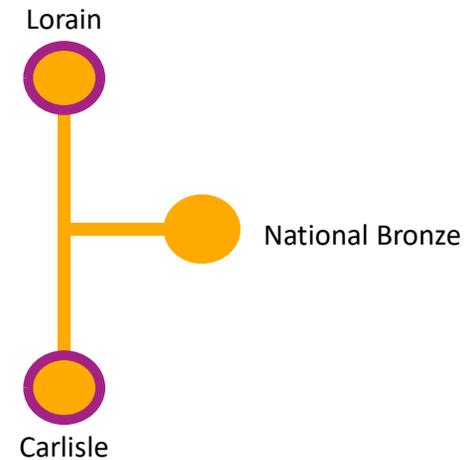
- Existing Line Rating 224 / 293 / 309 / 316 MVA (SN/SE/WN/SE)
- New Line Rating 273 / 332 / 309 / 393 MVA (SN/SE/WN/SE)

**Estimated Project Cost:** \$3.58M

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

**Supplemental ID:** s3774.1

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



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 Ivanhoe – Packard 138 kV Customer

**Need Number:** ATSI-2024-047

**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026

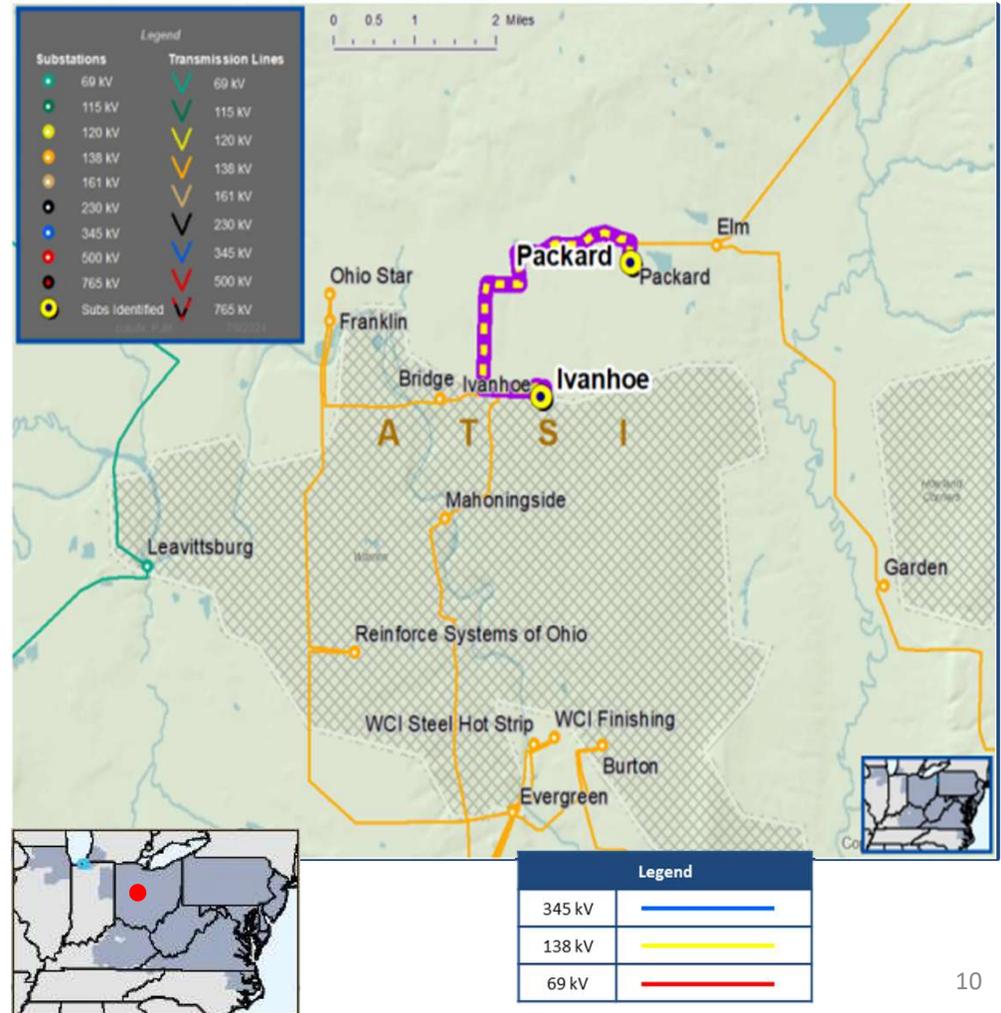
**Previously Presented:** Need Meeting – 7/19/2024  
Solution Meeting – 8/15/2025

**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





**Need Number:** ATSI-2024-047  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026

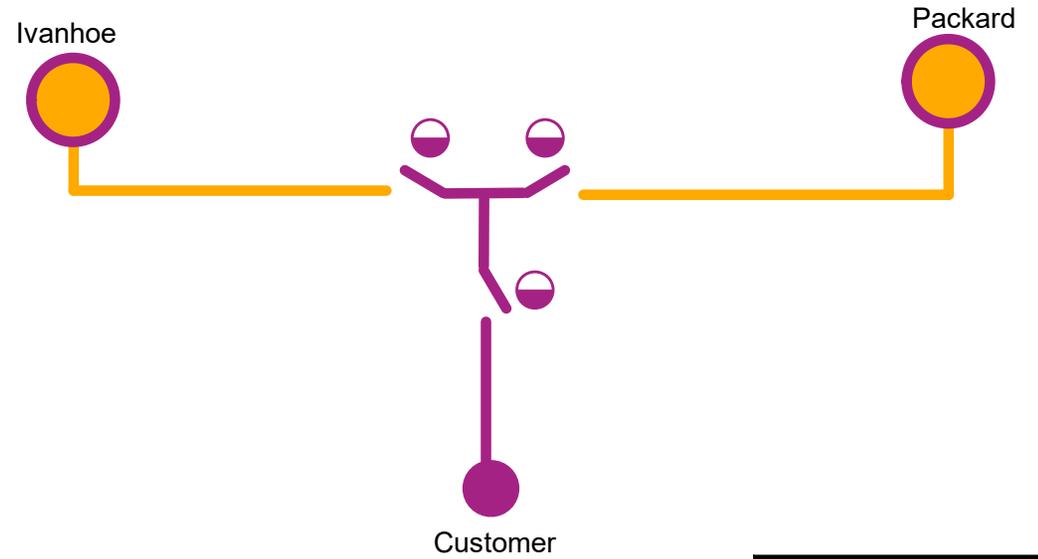
**Selected Solution:**

**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.

**Estimated Project Cost:** \$1.92M  
**Projected In-Service:** 7/28/2028  
**Supplemental ID:** s3775.1

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



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 Tusc Substation

**Need Number:** ATSI-2023-011  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting – 6/16/2023  
 Solutions Meeting – 09/19/2025

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

**Specific Assumption Reference(s):**

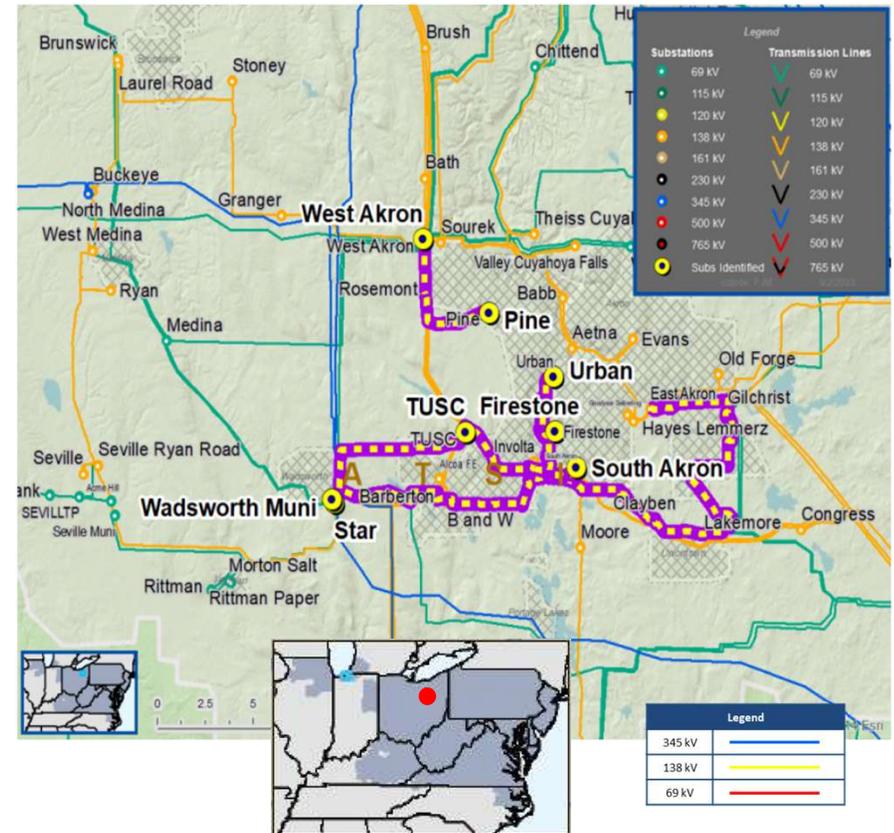
Global Considerations

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

Add/Expand Bus Configuration

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

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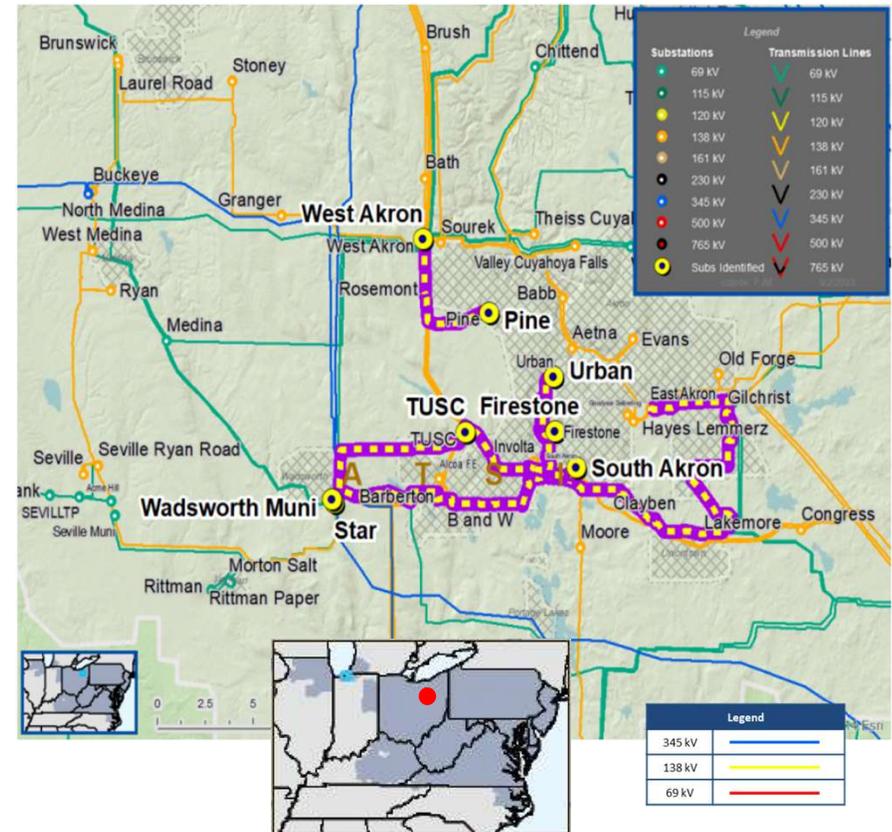


## ATSI Transmission Zone M-3 Process Tusc Substation

**Need Number:** ATSI-2023-011  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting – 6/16/2023  
 Solutions Meeting – 09/19/2025

### Problem Statement:

- An N-1-1 outage will result in approximately 29,100 customers at risk and cause a consequential load loss of approximately 119 MW.
- An N-1-1 outage will result in approximately 9,360 customers at risk and cause a consequential load loss of approximately 38 MW and cause a backfeed condition from the Akron 23 kV system.
- Since 2014, the following lines have a combined total of seven momentary outages and six sustained outages:
  - Star - Urban 138 kV Line experienced three outages: 1 momentary. 2 sustained
  - Star - Wadsworth 138 kV Line experienced two outages: 1 momentary. 1 sustained
  - Pine - West Akron 138 kV Line experienced one outage: 0 momentary. 1 sustained
  - Star – Tusc 138 kV Line experienced no outages
  - Firestone - South Akron 138 kV Line experienced one outage: 0 momentary, 1 sustained
  - Firestone - Urban 138 kV Line experienced six outages: 5 momentary, 1 sustained





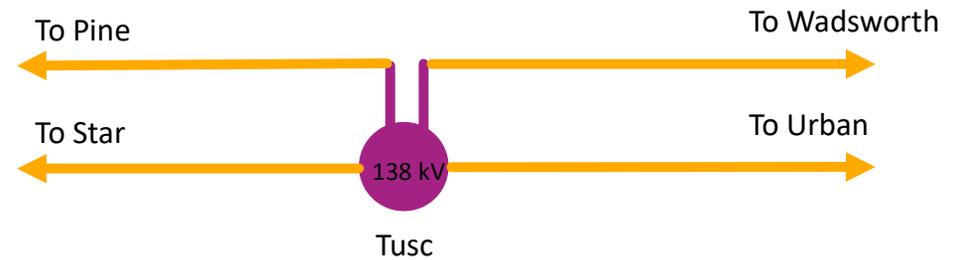
## ATSI Transmission Zone M-3 Process Tusc Substation

**Need Number:** ATSI-2023-011  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026

**Selected Solution:**

- Expand the existing 138 kV bus at Tusc Substation from a four-breaker ring bus into a six-breaker ring bus.
- Loop the Pine-Wadsworth 138 kV Line in/out of the Tusc Substation ring bus
- The project will split the Pine-Wadsworth 138 kV Line to create the following two lines:
  - Tusc - Wadsworth 138 kV Line (~8 miles)
  - Pine - Tusc 138 kV Line (~7 miles)
- Adjust relays at the terminal ends.

**Estimated Project Cost:** \$16.72M  
**Projected IS Date:** 12/31/2027  
**Supplemental ID:** s3779.1



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



**Need Number:** ATSI-2025-021  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting – 07/18/2025  
Solution Meeting – 09/19/2025

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

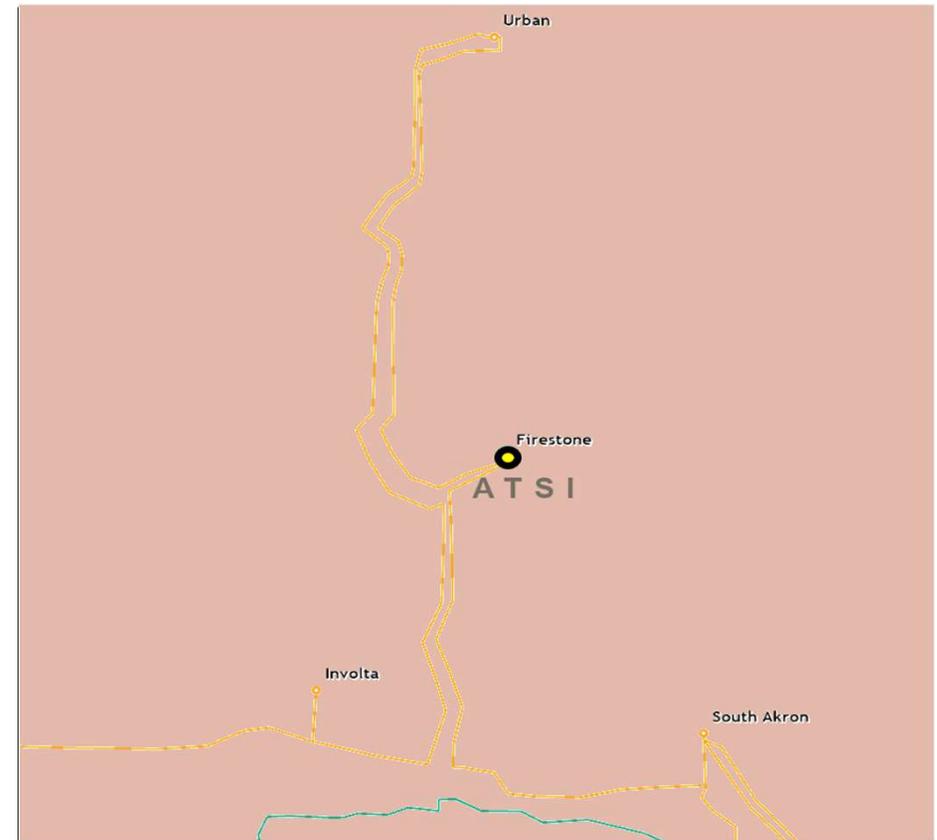
**Specific Assumption Reference(s):**

System Performance Global Factors

- Load at risk in planning and operational scenarios
- Substation/line equipment limits
- 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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## ATSI Transmission Zone M-3 Process Firestone Substation



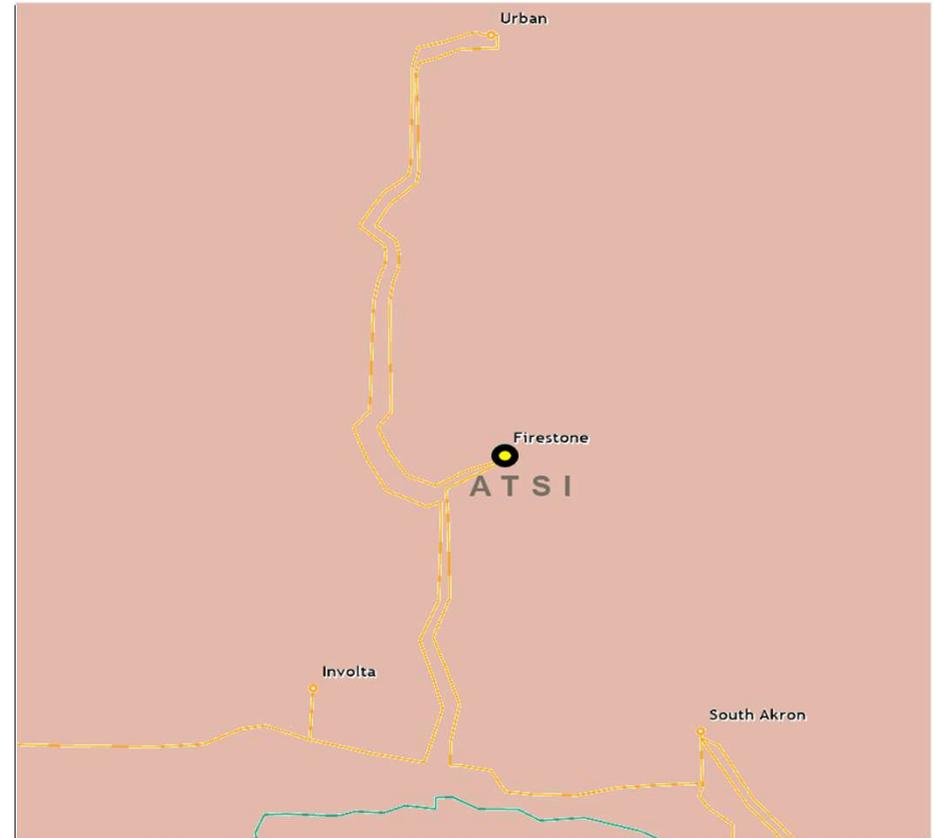


**Need Number:** ATSI-2025-021  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan – 03/02/2026  
**Previously Presented:** Need Meeting – 07/18/2025  
Solution Meeting – 09/19/2025

**Problem Statement:**

- Firestone Substation’s 138 kV bus is a partial ring bus configuration with three breakers and two normally open switches.
  - With the current configuration, breaker maintenance on the transformer tie circuit breaker will interrupt the network path on the South Akron – Urban 138 kV Line. This interruption of the South Akron-Urban 138 kV Line results in a single ten-mile-long radial feed to Urban Substation.

## ATSI Transmission Zone M-3 Process Firestone Substation





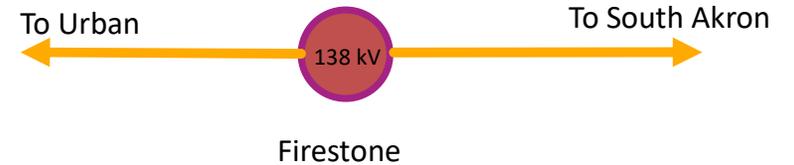
**Need Number:** ATSI-2025-021  
**Process Stage:** Submission of Supplemental Projects for Inclusion in the Local Plan

**Selected Solution:**

- Convert the Firestone three-breaker ring bus into a four-breaker ring bus by installing an additional circuit breaker to the existing substation layout.

**Estimated Project Cost:** \$0.3M  
**Projected IS Date:** 2/16/2026  
**Supplemental ID:** s3780.1

## ATSI Transmission Zone M-3 Process Firestone Substation



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



## Revision History

03/02/2026 – V1 – Original Slides posted

03/04/2026 – V2 – Correction of Need Number in slides 15, 16, & 17 from ATSI-2024-021 to ATSI-2025-021.