Subregional RTEP Committee – Western
FirstEnergy Supplemental Projects

Submission of Supplemental Projects for Inclusion in the Local Plan

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

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

Supplemental Project Driver(s):

Customer Service

Specific Assumption Reference(s):

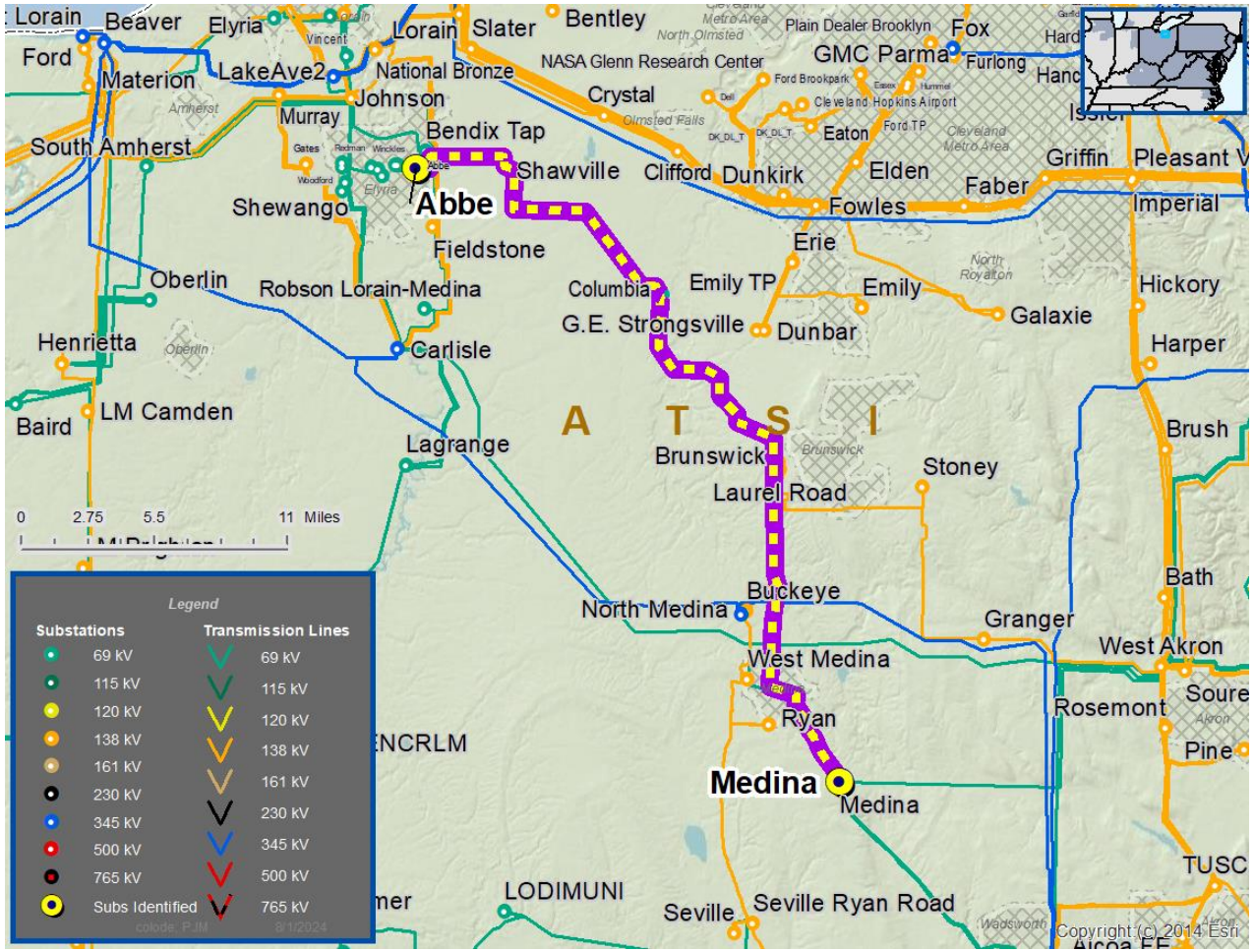
New customer connection request will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document.

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, 2024



ATSI Transmission Zone M-3 Process
Abbe – Medina 69 kV Line Customer Connection - s2056 Scope Change

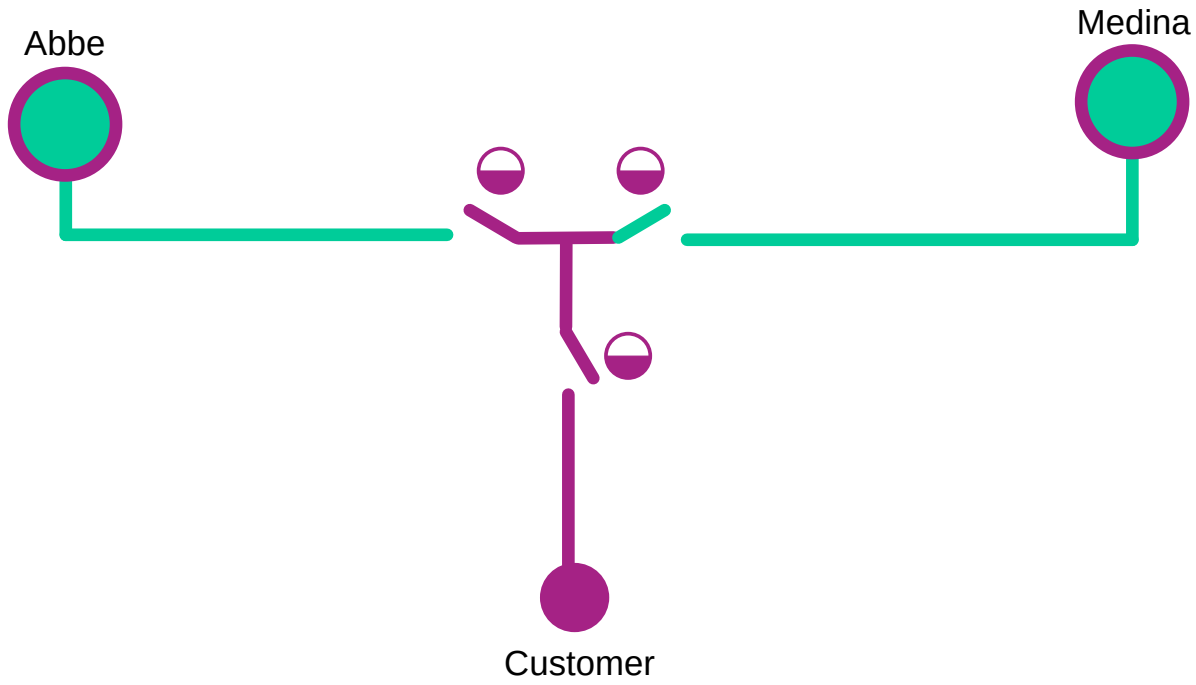
Need Number: ATSI-2019-056 (s2056)

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan – 3/7/2025

Selected Solution:

138 kV Transmission Line Tap

- Tap the Abbe-Medina 69 kV line approximately 11.1 miles from Medina substation and build one 69 kV span to the proposed customer substation
- Install one (1) 69 kV in-line switches with SCADA control on either side of the new tap connection
- 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.



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

Estimated Project Cost: $0.9 M

Projected In-Service: 12/31/2024

Supplemental ID: s2056

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

Need Number: ATSI-2022-013

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Previously Presented: Need Meeting – 05/19/2022
Solution Meeting – 06/14/2024

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

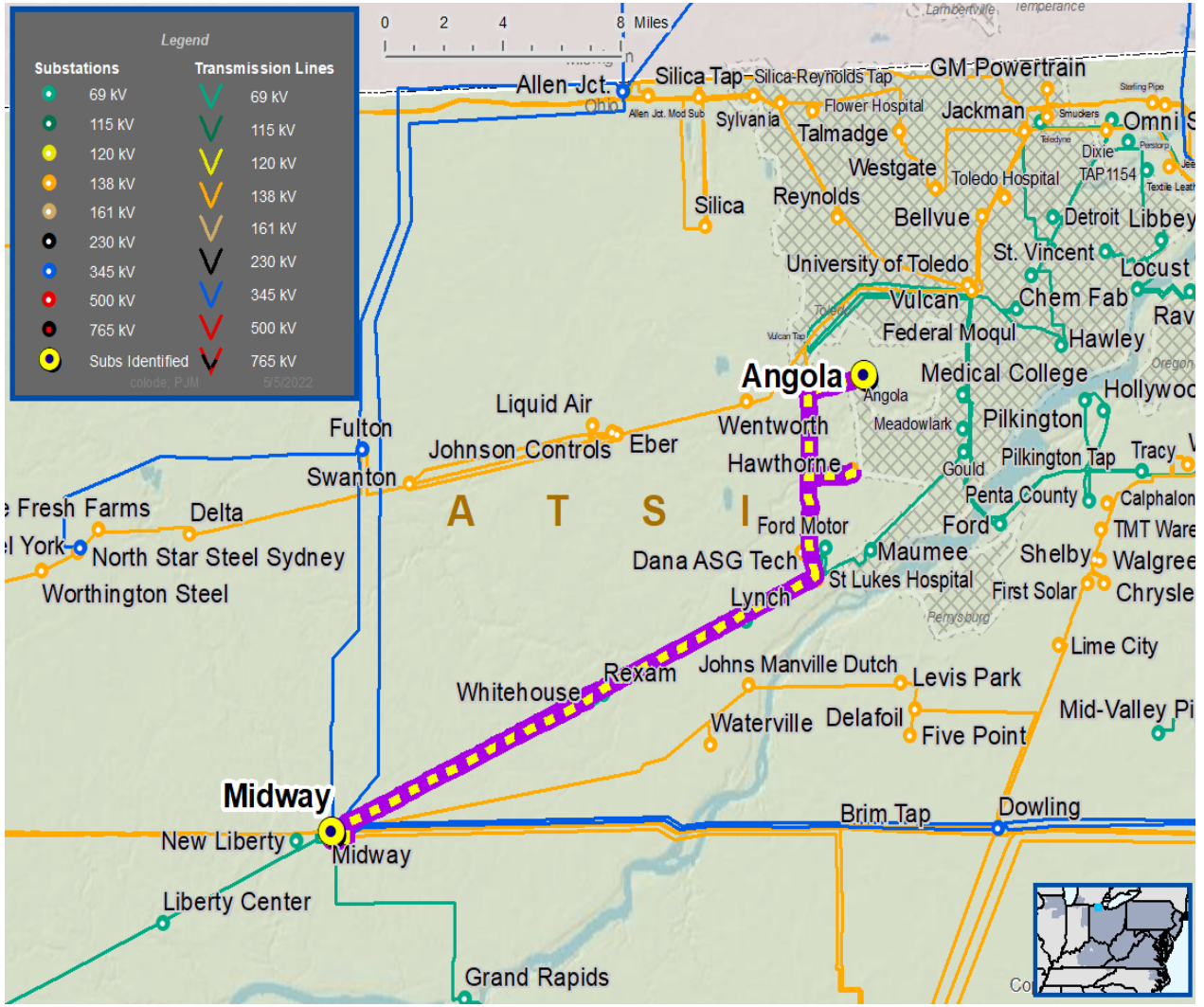
Add/Expand Bus Configuration

- 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

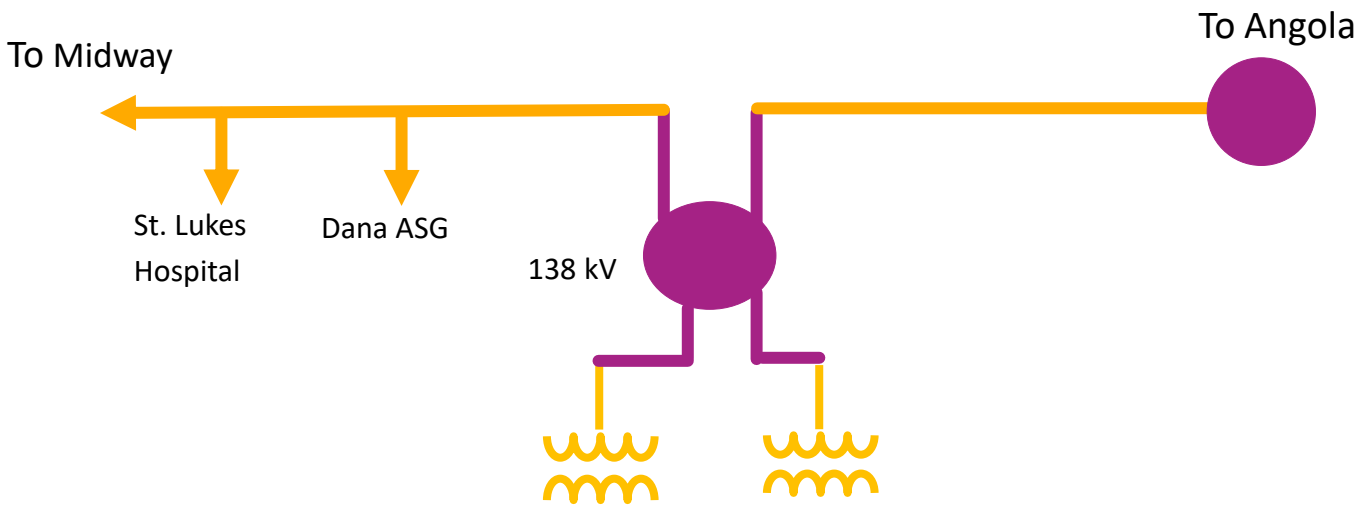
Need Number: ATSI-2022-013
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Selected Solution:

Expand Hawthorne Station into a ring bus configuration

- Build a four breaker 138 kV ring bus.

Estimated Project Cost: $11.6M
Projected In-Service: 3/14/2028
Supplemental Project ID: s3543.1



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

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

Need Number: ATSI-2024-039

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan – 3/7/2025

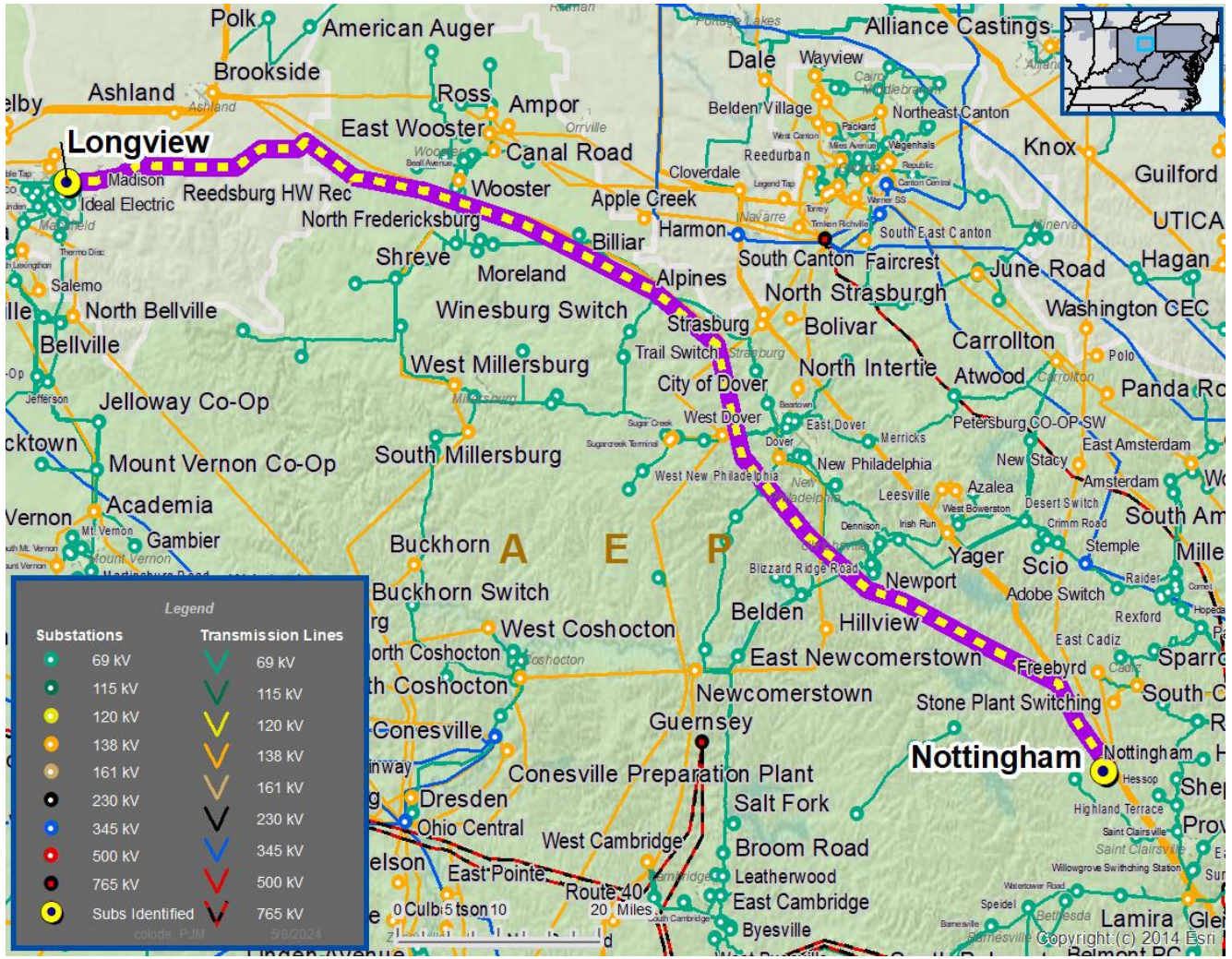
Previously Presented: Need Meeting – 05/17/2024
Solution Meeting – 08/16/2024

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



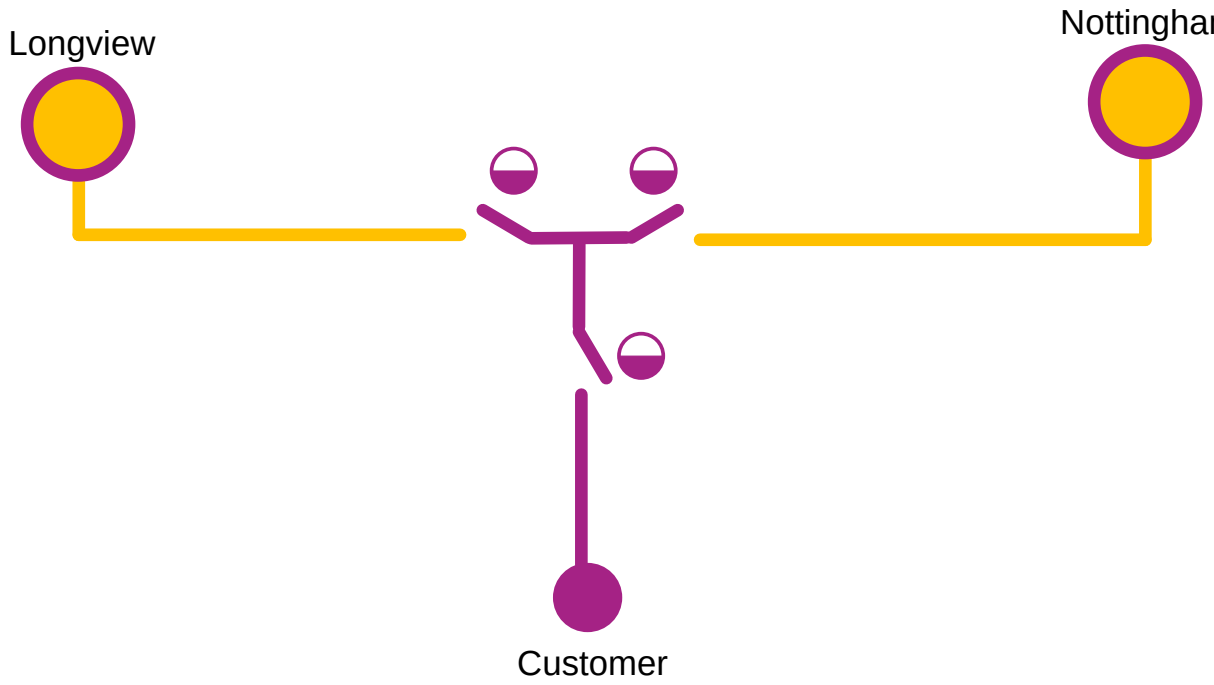
ATSI Transmission Zone M-3 Process
Longview – Nottingham 138 kV Line Customer Connection

Need Number: ATSI-2024-039
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Selected 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 substations.
- Install revenue metering.



Estimated Project Cost: $1.5 M
Projected In-Service: 12/31/2027
Supplemental Project ID: s3544.1

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

ATSI Transmission Zone M-3 Process
Glenmount 138 kV Substation

Need Number: ATSI-2023-009

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Previously Presented: Need Meeting – 04/21/2023
Solution Meeting – 09/20/2024

Supplemental Project Driver(s):

Operational Flexibility and Efficiency

Equipment Material Condition, Performance and Risk

Infrastructure Resilience

Specific Assumption Reference(s):

Global Considerations

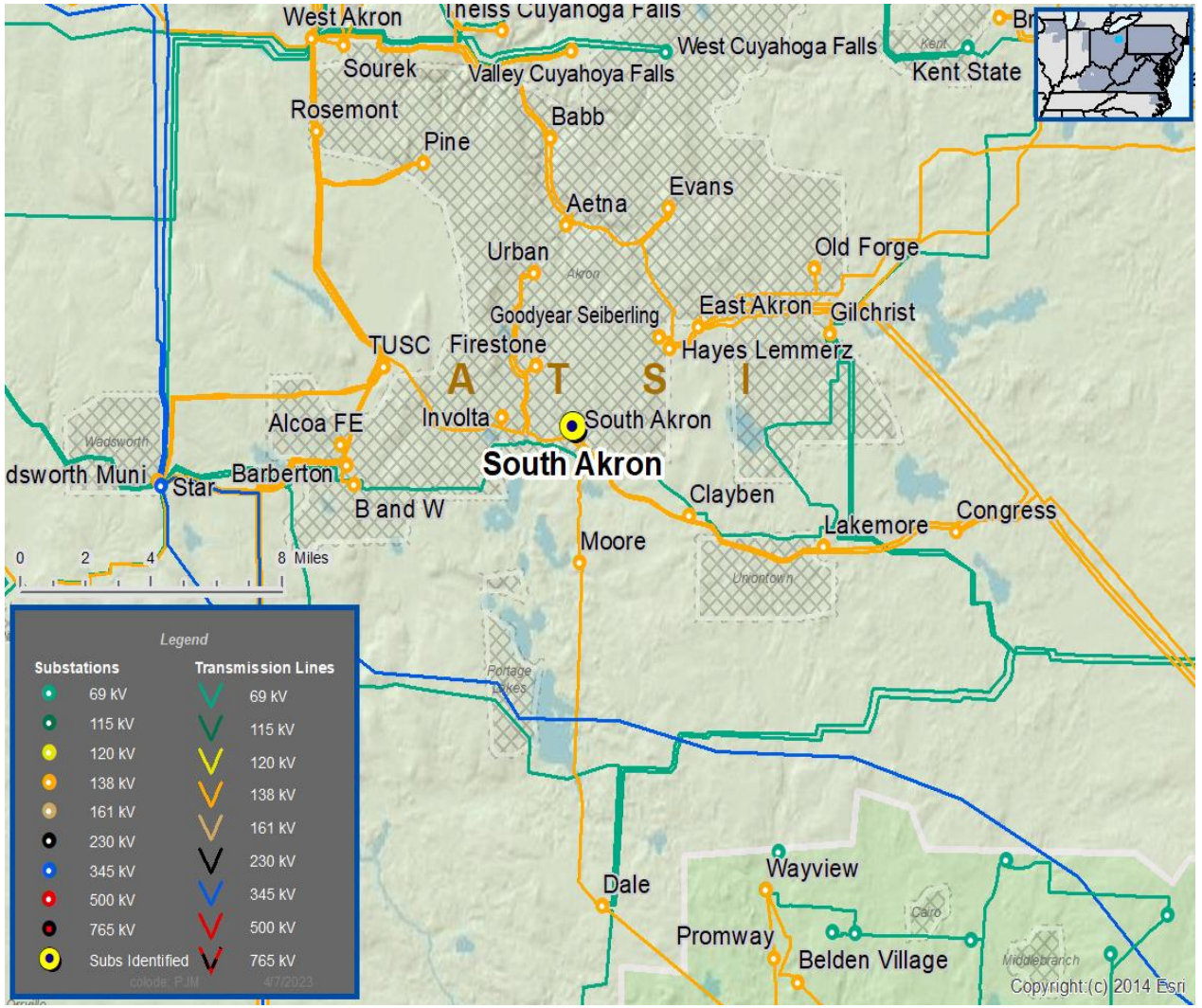
- System reliability and performance
- Load at risk in planning and operational scenarios

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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ATSI Transmission Zone M-3 Process
Glenmount 138 kV Substation

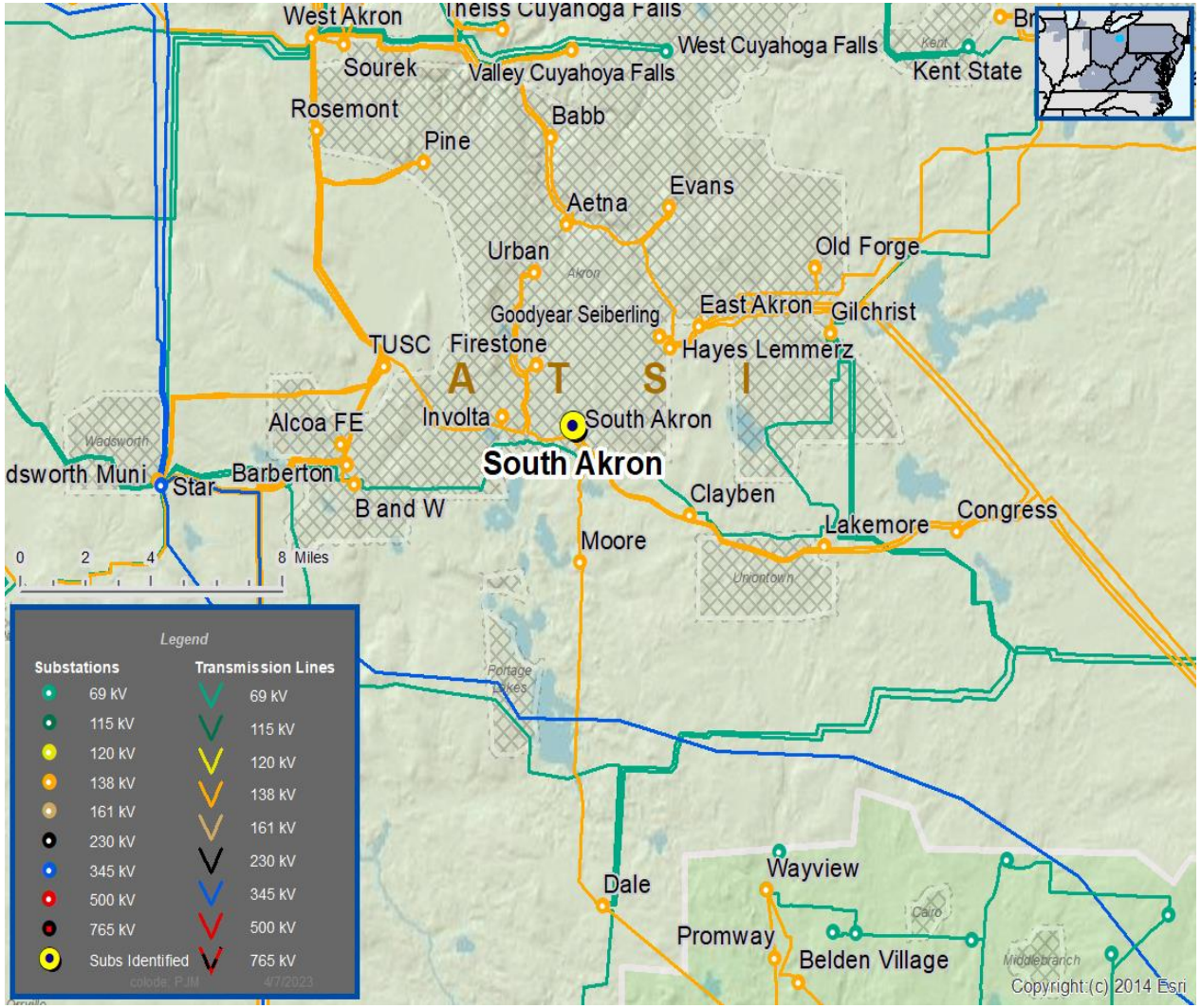
Need Number: ATSI-2023-009

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Previously Presented: Need Meeting – 04/21/2023
Solution Meeting – 09/20/2024

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 sub-transmission 23 kV 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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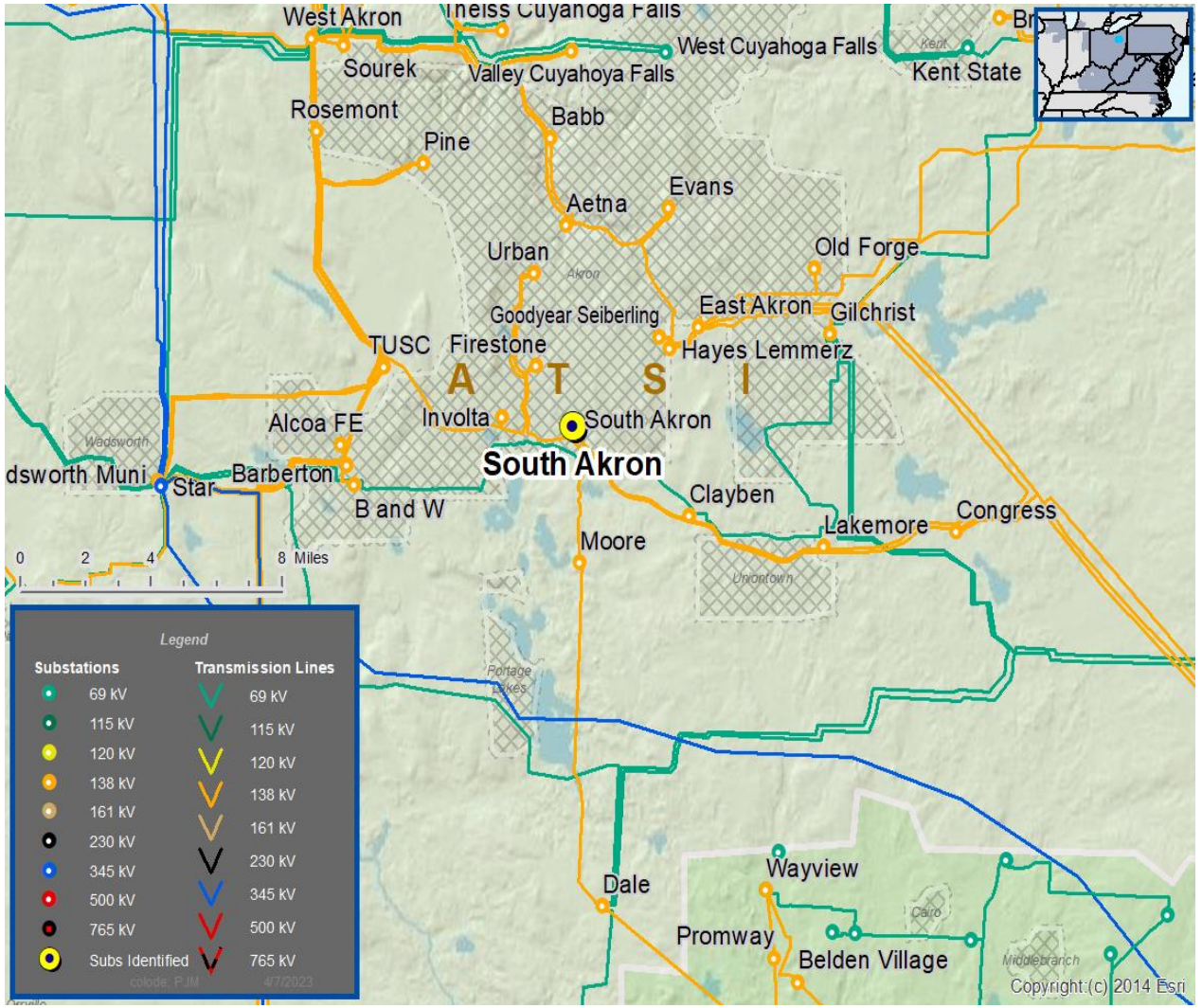
ATSI Transmission Zone M-3 Process
Glenmount 138 kV Substation

Need Number: ATSI-2023-009
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025
Previously Presented: Need Meeting – 04/21/2023
Solution Meeting – 09/20/2024

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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ATSI Transmission Zone M-3 Process
Glenmount 138 kV Substation

Need Number: ATSI-2023-009

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Selected Solution:

- Install new 138 kV BAAH substation (Glenmount) adjacent to South Akron substation on existing FE property
  - Install (11) new 138 kV breakers, (23) GOAB switches, (4) Motor Operated Line Switches, (6) Sets of CCVTs (4) A frames, (2) SSVTs, (1) control house w/ (21) relay panels, (1) 138kV Cap Switcher & Cap Bank, (3) 138kV free standing CTs
  - Re-terminate the Glenmount-Firestone 138 kV Line, Glenmount-Toronto 138 kV Line, Glenmount-Lakemore 138 kV Line, and the Glenmount-Dale 138 kV Line (previously connected to South Akron).
  - Install (2) new 138kV T Lines from Glenmount to South Akron using 795 kcmil ACSR conductor (0.2 miles each)
  - Add fencing, ground grid, stormwater detention pond (~ 143,000 ft2)
- Modify South Akron substation
  - Replace (2) Breakers
  - Remove (4) 138kV breakers & associated equipment
  - Demo (1) 138kV Cap Bank
- Replace previous equipment noted to be “relocated” from South Akron (breakers, cap switcher & bank, auxiliary equipment) to reduce construction constraints within outages
- Modify (4) incoming 138kV T Lines to South Akron, temporarily, to open space for construction of new substation
- Update relay settings at (4) Remote Ends
- Install new MPLS Equipment for SCADA Transport at Glenmount
- Run ADSS from Existing South Akron to Glenmount

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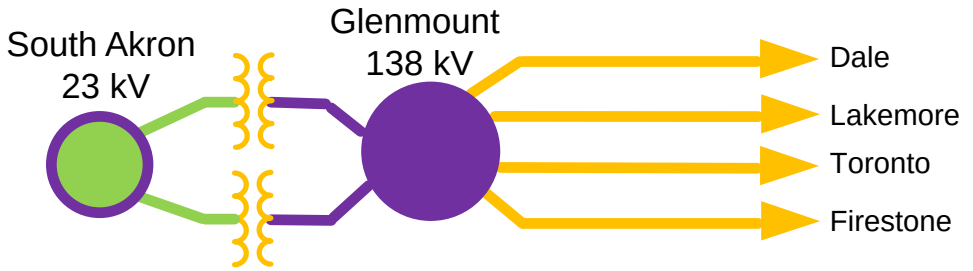


Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

ATSI Transmission Zone M-3 Process
Glenmount 138 kV Substation

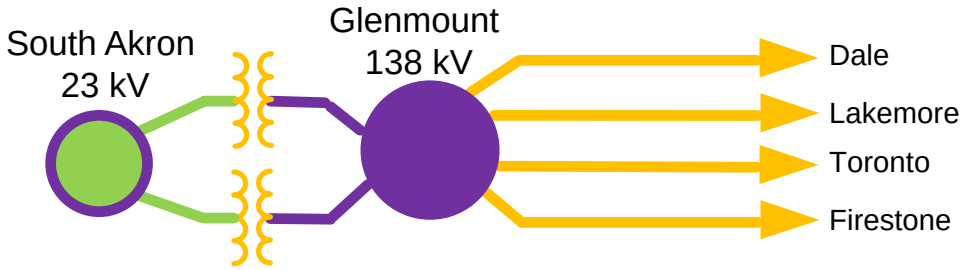
Need Number: ATSI-2023-009
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Selected Solution (continued)…

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)

Estimated Project Cost: $23.54 M
Projected In-Service: 12/31/2027
Supplemental Project ID: s3546.1



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: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

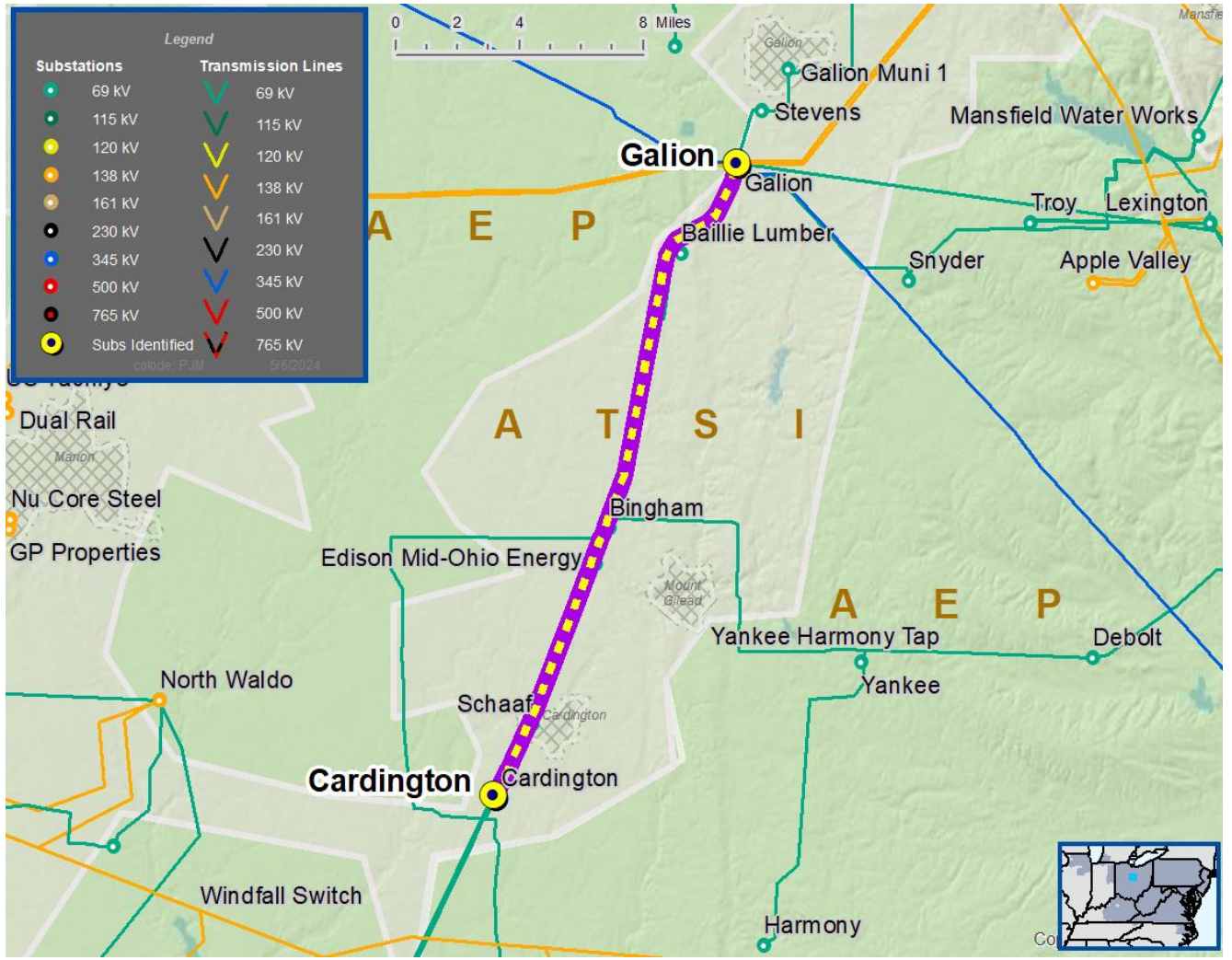
Previously Presented: Need Meeting – 05/17/2024
Solution Meeting – 08/16/2024

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



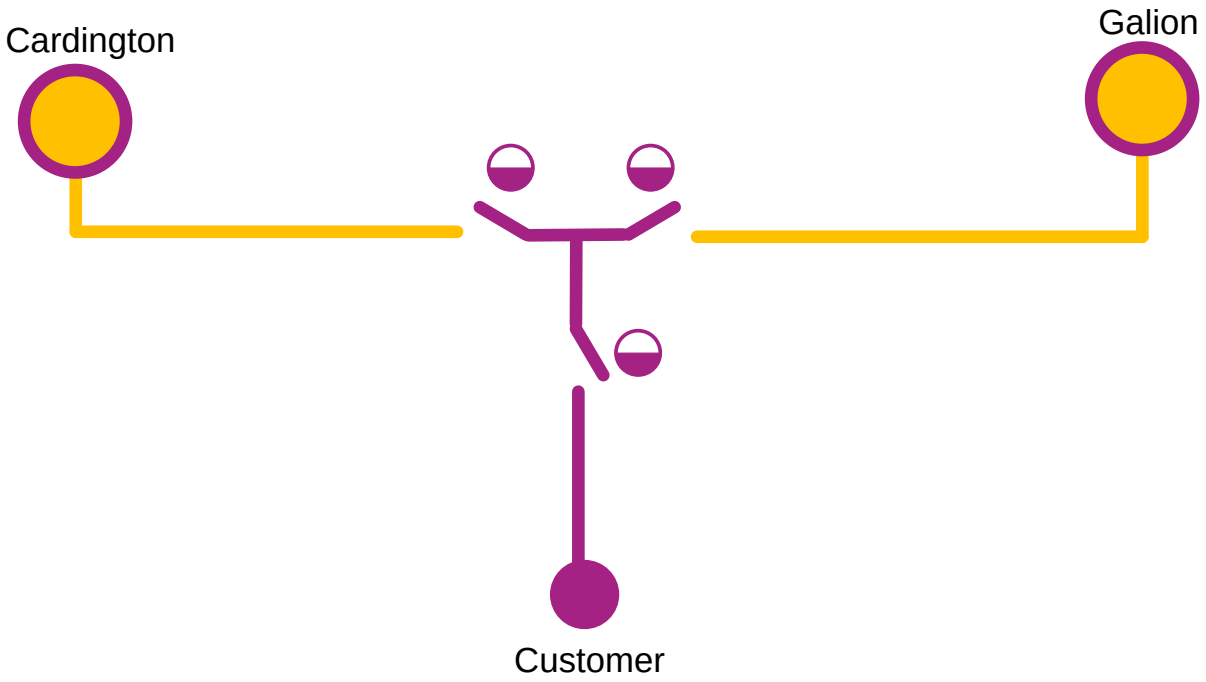
ATSI Transmission Zone M-3 Process
Cardington (Galion) 138 kV Line Customer Connection

Need Number: ATSI-2024-040
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 3/7/2025

Selected 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 at Cardington Substation
- Adjust relay settings at Galion substations.
- Install revenue metering.



Estimated Project Cost: $2.8 M
Projected In-Service: 12/31/2027
Supplemental Project ID: s3545.1

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

ATSI Transmission Zone M-3 Process
Gilchrist – Star 69 kV Line

s3359.1: Originally presented in 10/14/2022 and 10/18/2024 SRRTEP Western meetings
Changes are marked in red

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

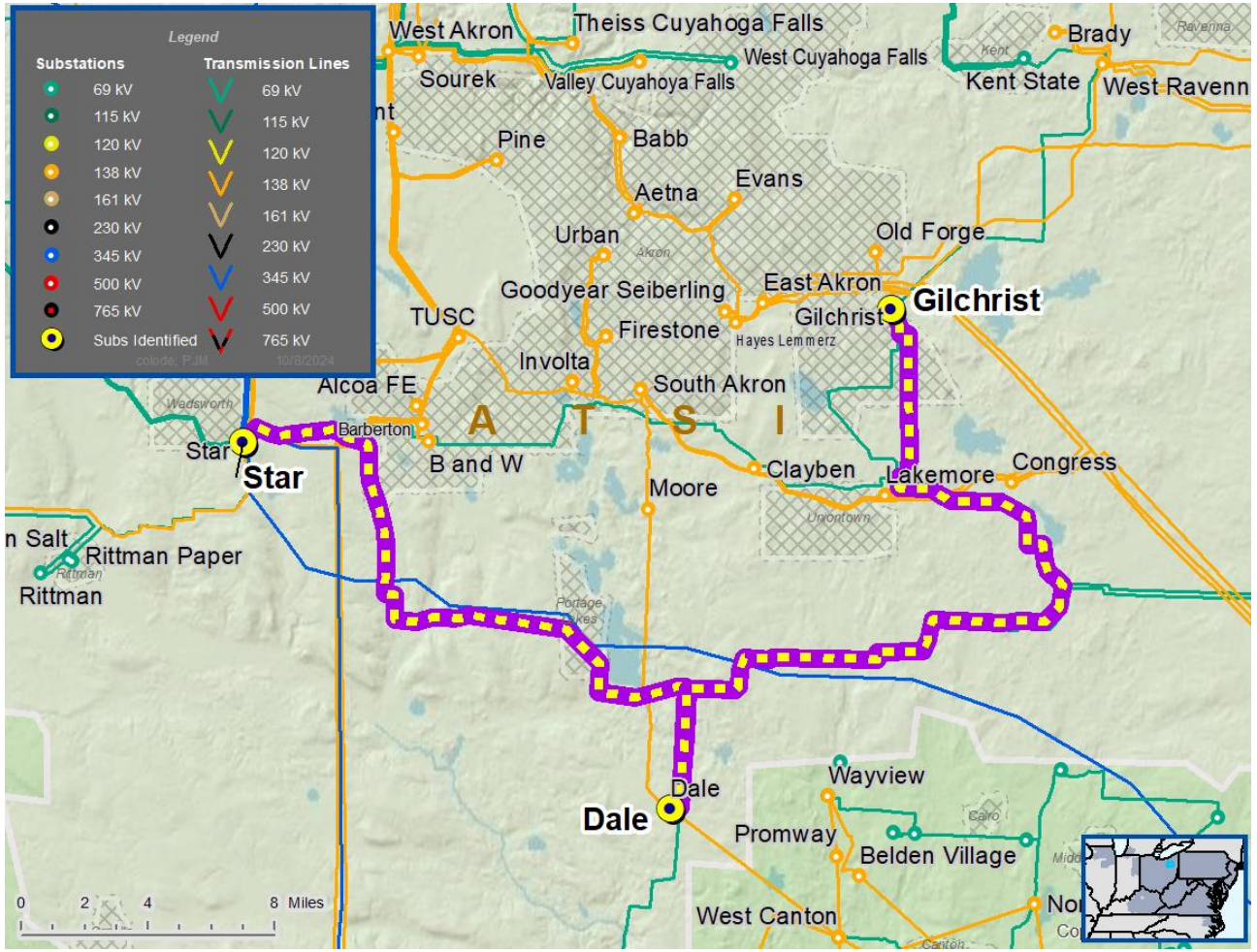
Specific Assumption Reference(s)

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:
The Gilchrist – Star 69 kV Line is approximately 25 miles in length.
The Dale – Star 69 kV Line shares structures with the Gilchrist – Star 69 kV Line for approximately 3.3 miles.

- Line survey in 2020 showed a structure reject rate of 89% (413 of 461). The primary reasons for reject were wood pole deterioration, woodpecker holes, ground system damage, and decay damage.
- Since 2017, there has been a total of eight (8) momentary and six (6) sustained unscheduled outages on the line.
- Transmission line switches are obsolete and limiting the transmission line rating.



ATSI Transmission Zone M-3 Process
Gilchrist – Star 69 kV Line

Need Number: ATSI-2022-028 (s3359.1)

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan – 3/7/2025

Proposed Solution:

Gilchrist – Star 69 kV Line

- Rebuild the Gilchrist – Star 69 kV Line with new conductor.
- Replace A-42, A-87, A-86, A-38 switches with new switches equipped with SCADA Control & Motor Operation.

Dale – Star 69 kV Line

- Rebuild the 3.3 mile Dale – Star 69 kV Line section that is double circuited with the Gilchrist-Star 69 kV Line with new conductor. This includes the Star – Martin 69 kV Line and part of the Martin – Marathon Tap 69 kV Line section.

~~Gilchrist~~

- ~~Replace 69 kV breaker B23~~

Transmission Line Ratings:

Gilchrist – McKnights 69 kV Line

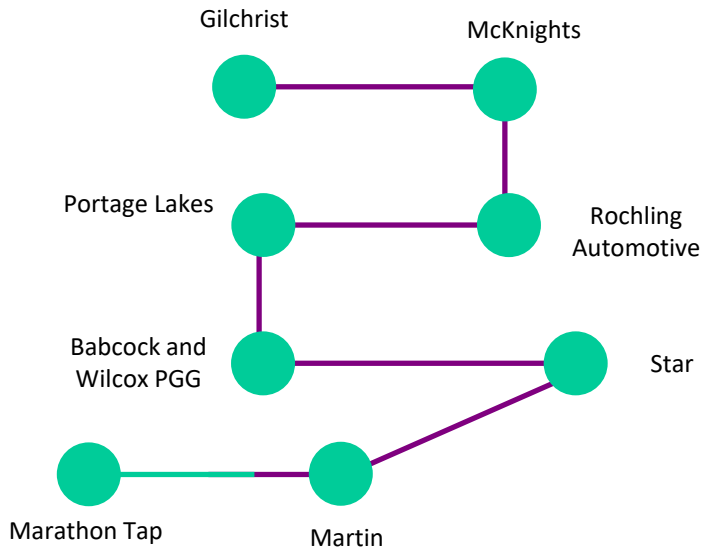
- Before Proposed Solution: 80 / 96 / 90 / 114 MVA (SN/SE/WN/WE)
- After Proposed Solution: 111 / 134 / 125 / 159 MVA (SN/SE/WN/WE)

McKnights – Rochling Automotive 69 kV Line

- Before Proposed Solution: 80 / 96 / 90 / 114 MVA (SN/SE/WN/WE)
- After Proposed Solution: 111 / 134 / 125 / 159 MVA (SN/SE/WN/WE)

Rochling Automotive – Portage Lakes 69 kV Line

- Before Proposed Solution: 74 / 76 / 83 / 83 MVA (SN/SE/WN/WE)
- After Proposed Solution: 111 / 134 / 125 / 159 MVA (SN/SE/WN/WE)



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

ATSI Transmission Zone M-3 Process
Gilchrist – Star 69 kV Line

Need Number: ATSI-2022-028 (s3359.1)

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan – 3/7/2025

Transmission Line Ratings:

Portage Lakes – Babcock and Wilcox PGG 69 kV Line

- Before Proposed Solution: 74 / 76 / 83 / 83 MVA (SN/SE/WN/WE)
- After Proposed Solution: 111 / 134 / 125 / 159 MVA (SN/SE/WN/WE)

Babcock and Wilcox PGG – Star 69 kV Line

- Before Proposed Solution: 74 / 76 / 83 / 83 MVA (SN/SE/WN/WE)
- After Proposed Solution: 111 / 134 / 125 / 159 MVA (SN/SE/WN/WE)

Martin – Star 69 kV Line

- Before Proposed Solution: 71 / 91 / 87 / 111 MVA (SN/SE/WN/WE)
- After Proposed Solution: 71 / 91 / 87 / 111 MVA (SN/SE/WN/WE)

Martin – Marathon Tap 69 kV Line

- Before Proposed Solution: 45 / 54 / 51 / 65 MVA (SN/SE/WN/WE)
- After Proposed Solution: 45 / 54 / 51 / 65 MVA (SN/SE/WN/WE)

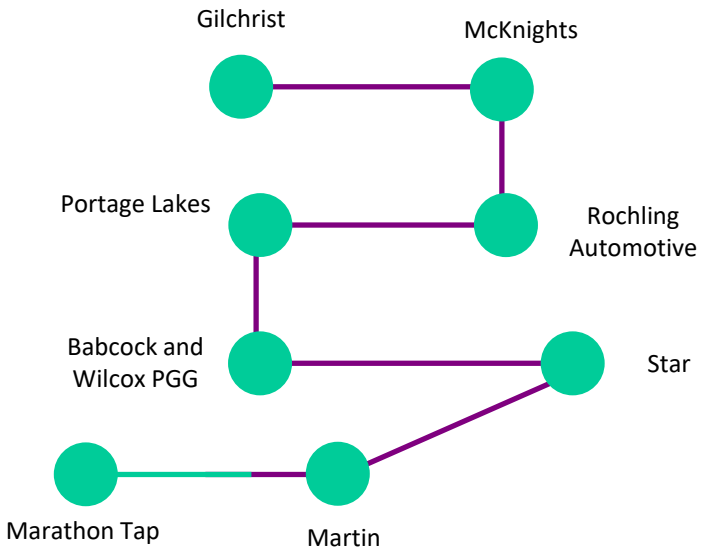
Alternatives Considered:

- Maintain existing condition and elevated risk of failure.

Estimated Project Cost: ~~$97.7 M~~ $71.7 M

Projected In-Service: 12/1/2027

Supplemental ID: s3359.1



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

ATSI Transmission Zone M-3 Process
Beaver No. 1 345/138 kV Transformer

s1757: Originally presented in 09/28/2018 and 10/26/2018 SRRTEP Western meetings
Changes are marked in red

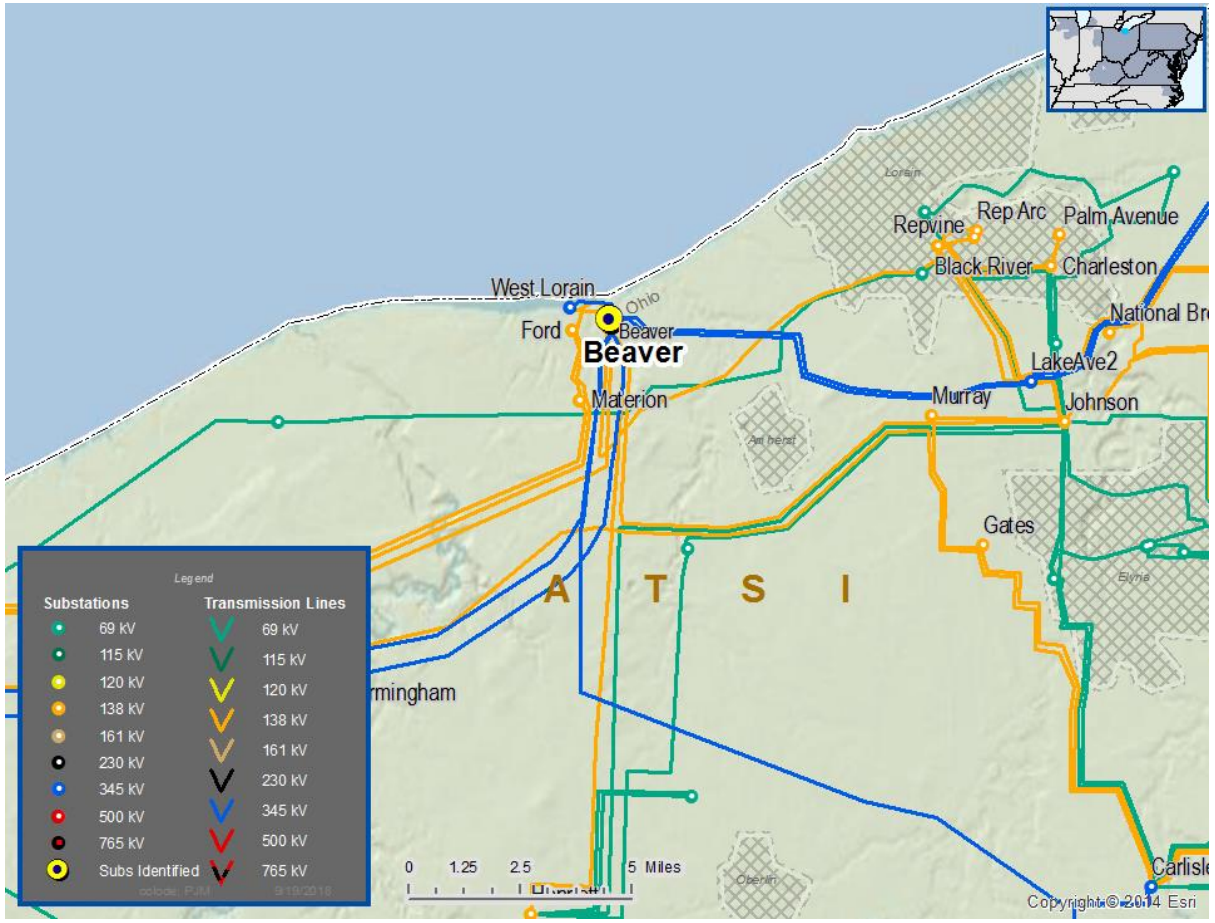
Supplemental Project Driver(s):
Equipment Material Condition, Performance and Risk

Specific Assumption Reference(s)
Substation Condition Rebuild / Replacement
- Power Transformers and Load Tap Changers (LTC)

Problem Statement
Beaver 345 / 138 / 13.2 kV 392 MVA #1 Transformer
- Oil Pump issues and maintenance
- Increased failure probability
- Aging/deteriorating bushings

The problem statement for Beaver # 2 345/138 kV transformer has been removed from this Need/Solution and is being addressed under need ATSI-2024-033

~~Beaver 345 / 138 / 13.2 kV 392 MVA #2 Transformer~~
~~- Oil Pump issues and maintenance~~
~~- Increased failure probability~~
~~- Aging/deteriorating bushings~~



ATSI Transmission Zone M-3 Process
Beaver No. 1 345/138 kV Transformer

Need Number: ATSI-2018-004 (s1757)

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan – 3/7/2025

Proposed Solution:

Beaver #1 ~~and Beaver #2~~ 345/138 kV Transformer Replacement

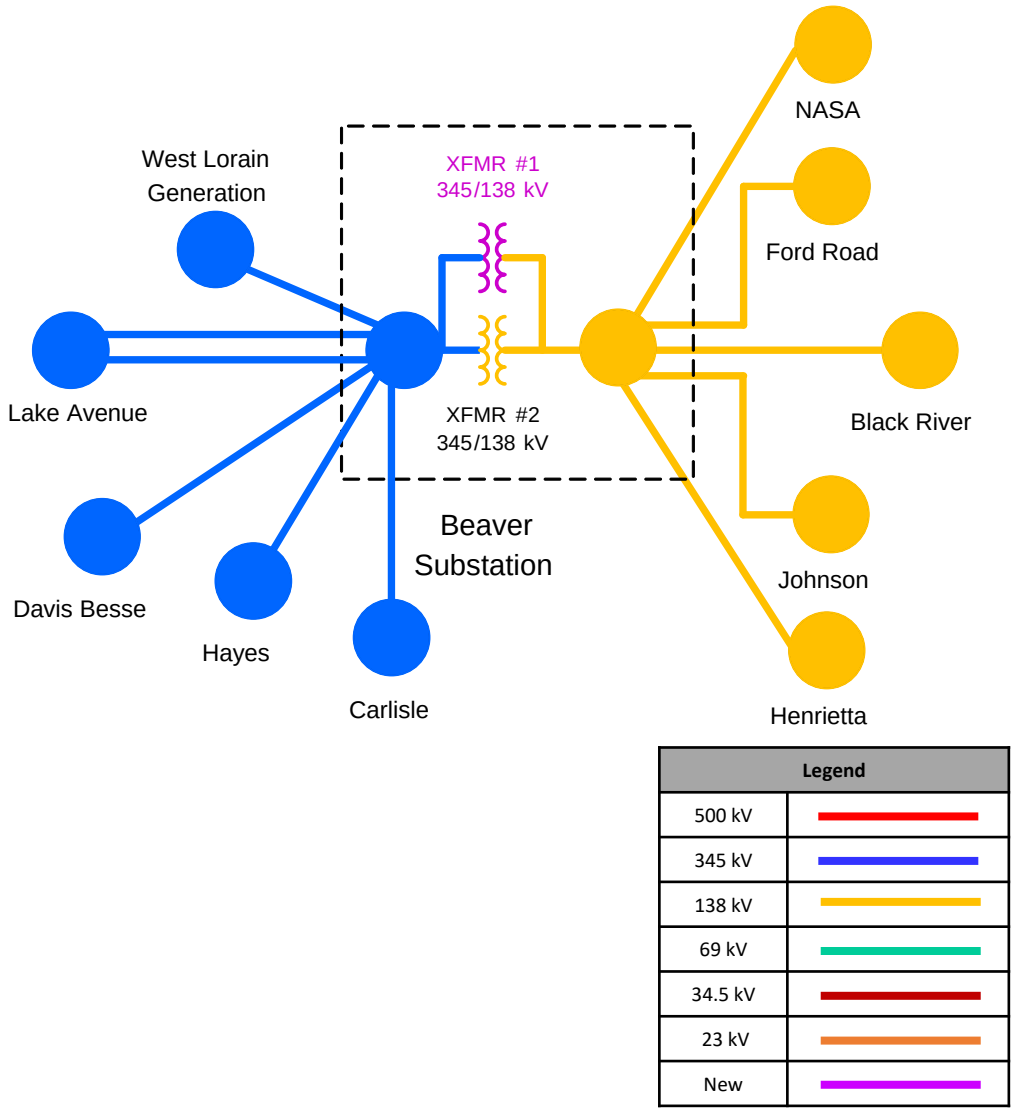
- Replace existing Beaver #1 345/138/13.2 kV transformer (350 MVA) with new 345/138/13.2 kV transformer (448 MVA)
- ~~Replace existing Beaver #2 345/138/13.2 kV transformer (350 MVA) with new 345/138 kV transformer (448 MVA)~~
- ~~Install new 138/13.2 kV transformer (14MVA) and breaker for power to station service at Beaver~~
- ~~Install new 138/13.2 kV transformer (14MVA) and breaker for power to station service at West Lorain Generation~~

Beaver Substation – Terminal equipment to be replaced include:

- Replace disconnect switches, VT's, CCVT's, and associated relaying.

Transformer Circuit Ratings:

- Beaver #1 345/138 kV Transformer:
  - Before Proposed Solution: 498 / 642 / 606 / 702 MVA (SN/SE/WN/WE)
  - After Proposed Solution: 577 / 700 / 682 / 777 MVA (SN/SE/WN/WE)



ATSI Transmission Zone M-3 Process
Beaver No. 1 345/138 kV Transformer

Need Number: ATSI-2018-004 (s1757)

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan – 3/7/2025

Alternatives Considered:

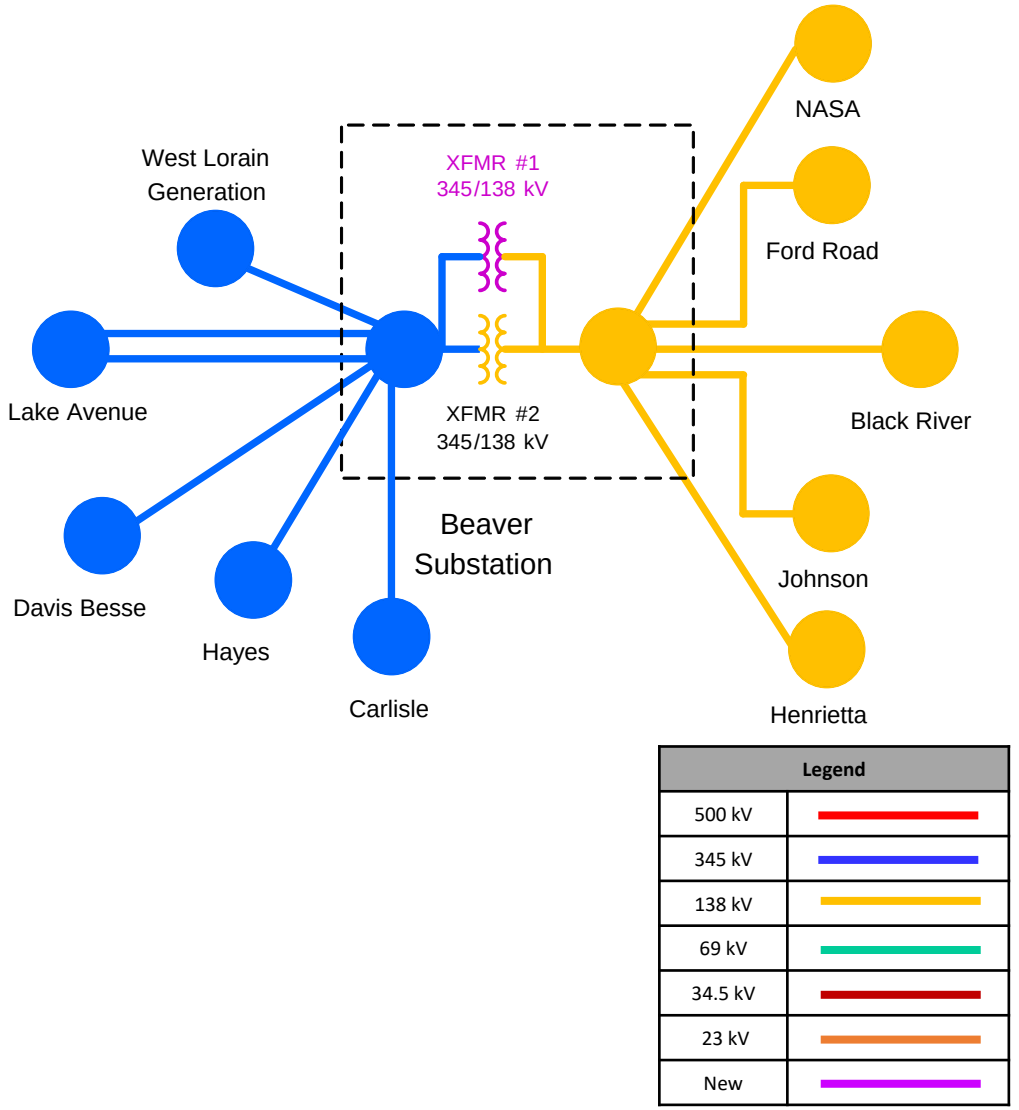
- Maintain existing condition and elevated risk of failure

Estimated Project Cost: ~~$12.7M~~ 10.0 M

Projected IS Date: ~~12/31/2021~~ 4/23/2029

Status: ~~Conceptual~~ Engineering

Supplemental ID: s1757



ATSI Transmission Zone M-3 Process
Campbellsport-Ravenna No.1 69 kV Line

Need Number: ATSI-2023-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 4/7/2025

Previously Presented: Need Meeting – 04/21/2023

Solution Meeting – 1/17/2025

Supplemental Project Driver(s):

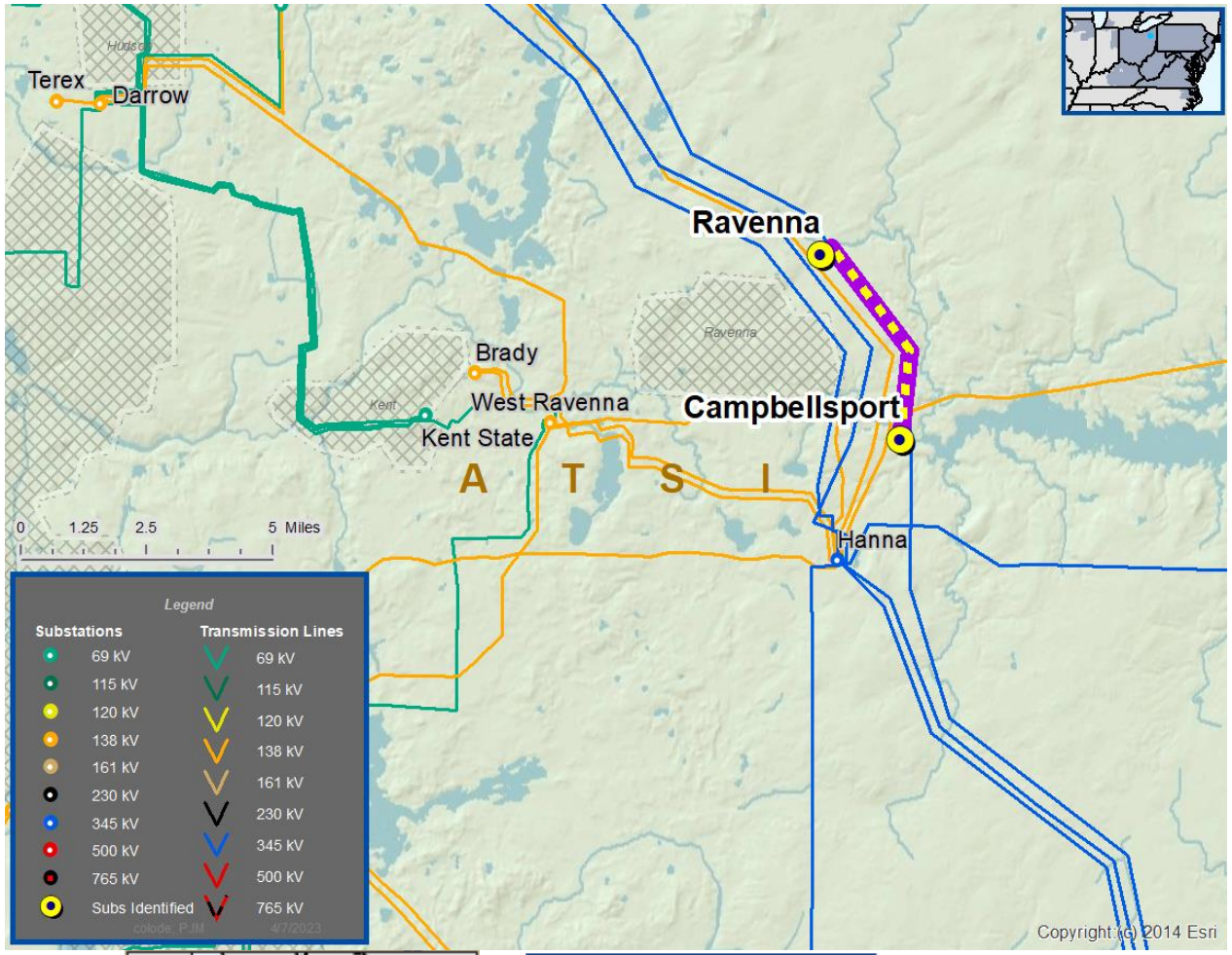
Equipment Material Condition, Performance and Risk

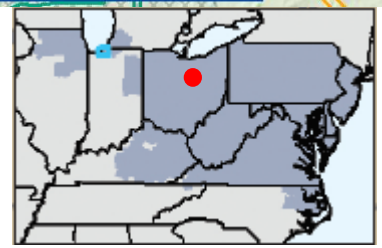
Specific Assumption Reference(s)

- Substation / Line equipment limits
- System reliability and performance
- Reliability of Non-Bulk Electric System (Non-BES) Facilities
- Transmission line with high loading

Problem Statement:

- Campbellsport - Ravenna #1 69 kV Line is 10.77 miles, and a section of the line approximately 2.8 miles has high loading (95% of Summer Emergency rating) using the 2021 RTEP 2026 Summer peak case for an N-1-1 outage.
- FE Transmission System Operations identified a potential real-time overload on the Campbellsport – Ravenna #1 69 kV Line and issued two PCLLRW's in two consecutive days 6/28/2021 & 6/29/2021 for the same N-1-1 outage noted above.





Legend	
345 kV	
138 kV	
69 kV	

ATSI Transmission Zone M-3 Process
Campbellsport-Ravenna No.1 69 kV Line

Need Number: ATSI-2023-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 4/7/2025

Previously Presented: Need Meeting – 04/21/2023

Solution Meeting – 01/17/2025

Selected Solution:

Campbellsport – Ravenna No.1 69 kV Line Reconductor

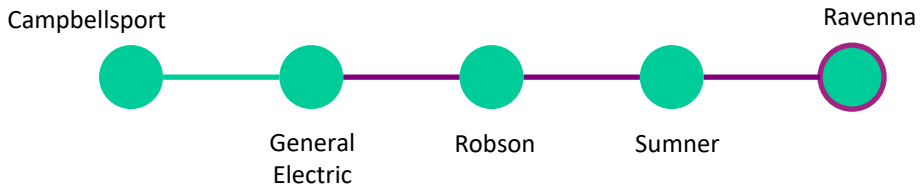
- Reconductor approximately 2.8 miles of the Campbellsport - Ravenna No.1 69 kV Line using 556 kcmil 26/7 ACSR conductor.
- Upgrade A-115 switch with new 1200A units with SCADA control.
- Install vacuum bottle on A-408 switch.
- Install new 1200A switch with vacuum bottle and SCADA control at the Robson tap.

Ravenna Substation:

- Adjust relay settings.
- Upgrade D-15, and D-16 switches with new 1200A units with whips.
- Upgrade the SCCIR 477 kcmil ACSR substation conductor with 605 kcmil ACSR conductor.

Sumner Substation:

- Upgrade A-9, A-10 and A-44 switches with new 1200A units with whips.
- Upgrade the SCCIR 477 kcmil ACSR substation conductor with 605 kcmil ACSR conductor.
- Install new 1200A switch with vacuum bottle and SCADA control.



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

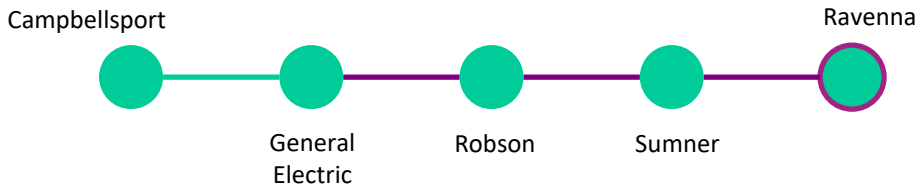
ATSI Transmission Zone M-3 Process
Campbellsport-Ravenna No.1 69 kV Line

Need Number: ATSI-2023-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 4/7/2025

Previously Presented: Need Meeting – 04/21/2023

Solution Meeting – 01/17/2025



Transmission Line Ratings:

Ravenna - Sumner Tap
- Old rating 82MVA/SN, 92MVA/SE & 92MVA/WN, 92MVA/WE
- New rating 100MVA/SN, 121MVA/SE & 113MVA/WN, 143MVA/SE

Sumner Tap – Sumner
- Old rating 45MVA/SN, 54MVA/SE & 51MVA/WN, 65MVA/WE
- New rating 111MVA/SN, 134MVA/SE & 125MVA/WN, 159MVA/SE

Sumner Tap - Robinson Hospital Tap
- Old rating 45MVA/SN, 54MVA/SE & 51MVA/WN, 65MVA/WE
- New rating 111MVA/SN, 134MVA/SE & 125MVA/WN, 159MVA/SE

Robinson Hospital Tap – General Electric Tap
- Old rating 45MVA/SN, 54MVA/SE & 51MVA/WN, 65MVA/WE
- New rating 111MVA/SN, 134MVA/SE & 125MVA/WN, 159MVA/SE

Estimated Project Cost: $6.7 M
Projected In-Service: 12/31/2025
Supplemental ID: s3576.1

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

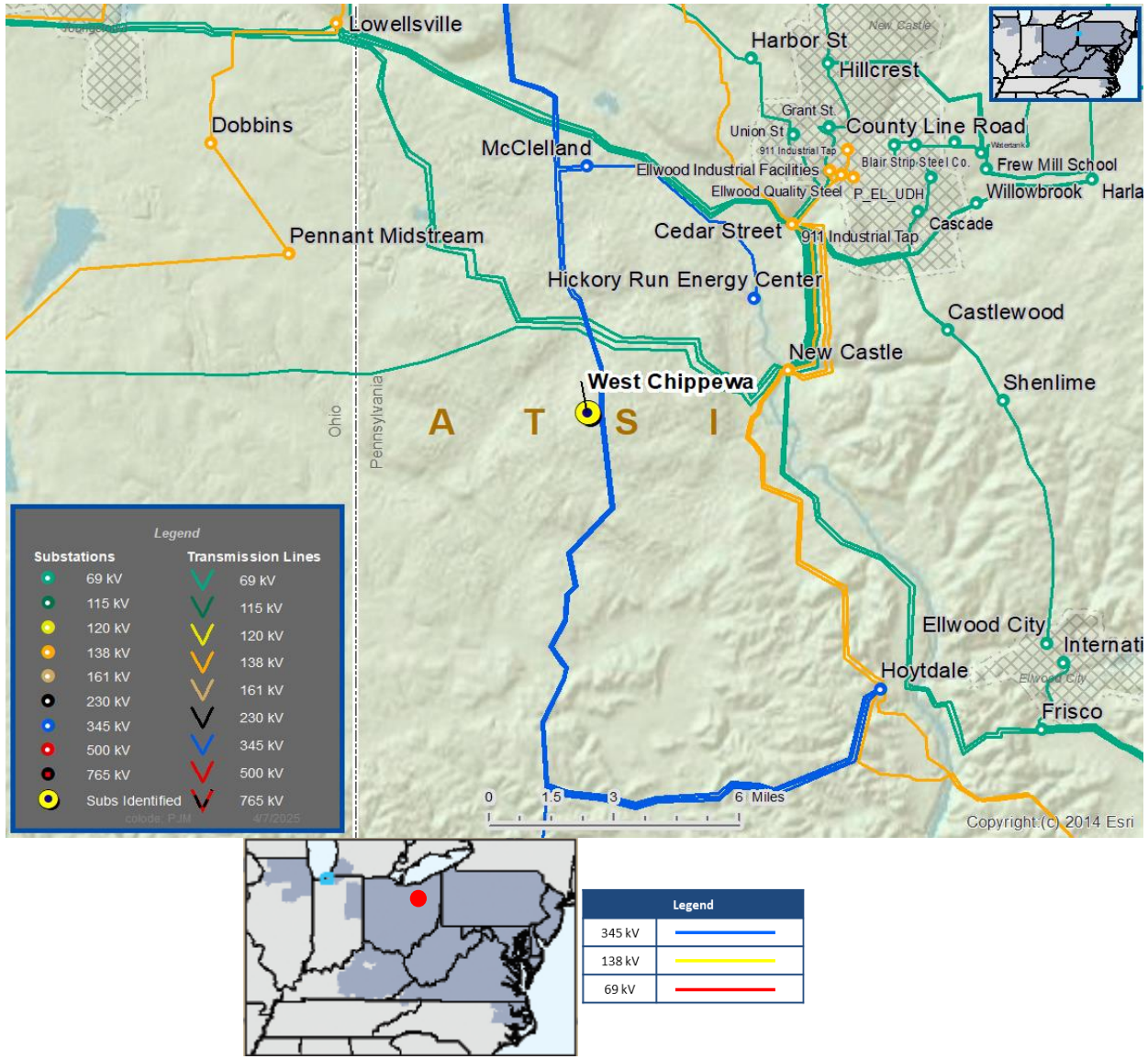
ATSI Transmission Zone M-3 Process
West Chippewa 69 kV Substation

s1717: Originally presented in 08/31/2018 and 9/28/2018 SRRTEP Western meetings

Problem Statement (Scope and Need/Drivers):

Operational Flexibility and Efficiency

- Improve operational flexibility during maintenance and restoration efforts.
- Improve reliability to customers; circuit line exposure is approximately 24 miles.
- Reduce amount of potential local load loss (Approximately 36 MWs) under (P1) contingency conditions.
  - *Loss of the New Castle-State Line 69 kV line.*



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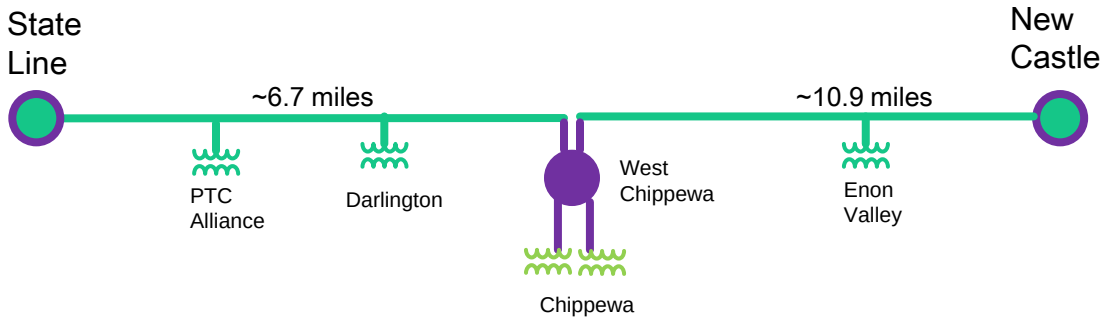
ATSI Transmission Zone M-3 Process
West Chippewa 69 kV Substation

Need Number: (s1717)
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 4/7/2025

Selected Solution:

West Chippewa 69 kV Ring Bus

- Construct a 5-breaker ring bus at West Chippewa substation
- Loop the State Line – New Castle 69 kV line in/out of the new West Chippawa 69 kV ring bus substation
  - Construct a new 69 kV line from the West Chippewa tap (Structure 163) into new ring bus (~0.1 mi) as a double circuit.
  - The project splits the State Line – New Castle 69 kV Line and creates the following two lines:
    - State Line – West Chippewa 69 kV Line
    - New Castle – West Chippewa 69 kV Line
- Install one 15.6 MVAR cap at West Chippewa
- Construct a new 69 kV line from West Chippawa 69 kV ring bus into the existing Chippewa substation (~2.7 mi).
- Rebuild the existing 69 kV line from West Chippawa 69 kV ring bus into the existing Chippewa substation (~2.7 mi).
- Install (3) 69 kV SCADA controlled switches outside of Chippewa substation.
- Reconfigure and re-terminate at Chippewa substation as necessary to accommodate the new 69 kV line and new switches.
- Revise relay settings at New Castle & State Line substations.



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

ATSI Transmission Zone M-3 Process
West Chippewa 69 kV Substation

Need Number: (s1717)

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 4/7/2025

Transmission Line/Branch Ratings:

Enon Valley T - West Chippewa 69 kV Branch: 100/121/113/143 MVA (SN/SE/WN/WE)

Darlington - West Chippewa 69 kV Branch: 100/121/113/143 MVA (SN/SE/WN/WE)

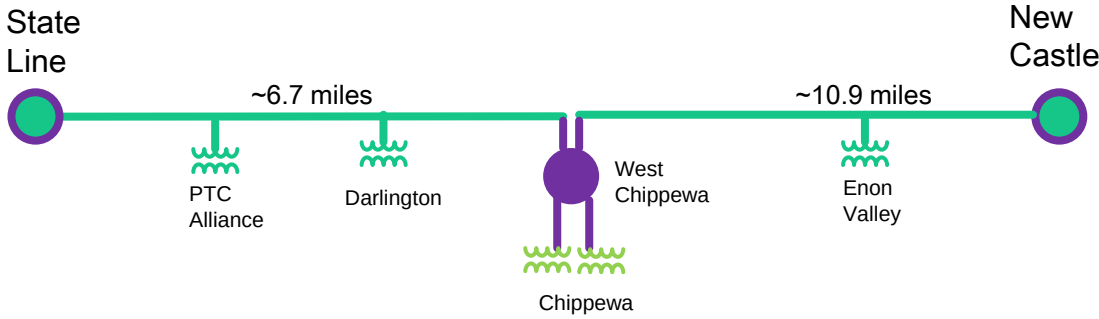
Chippewa– West Chippewa #1 69 kV Line: 80/96/90/114 MVA (SN/SE/WN/WE)

Chippewa– West Chippewa #2 69 kV Line: 80/96/90/114 MVA (SN/SE/WN/WE)

Estimated Project Cost: $34 M

Projected IS Date: 12/31/2025

Supplemental ID: s1717



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

Revision History

3/7/2025 – V1 – Original Slides posted.

4/7/2025 – V2 – Added s3576.1 and s1717 (represent)