Subregional RTEP Committee – Western
FirstEnergy Supplemental Projects

April 19, 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

ATSI Transmission Zone M-3 Process
Cloverdale – Dale No. 2 69 kV Line Customer Connection

Need Number: ATSI-2024-023
Process Stage: Solution Meeting – 04/19/2024
Previously Presented: Need Meeting – 03/15/2024

Supplemental Project Driver(s):
Customer Service

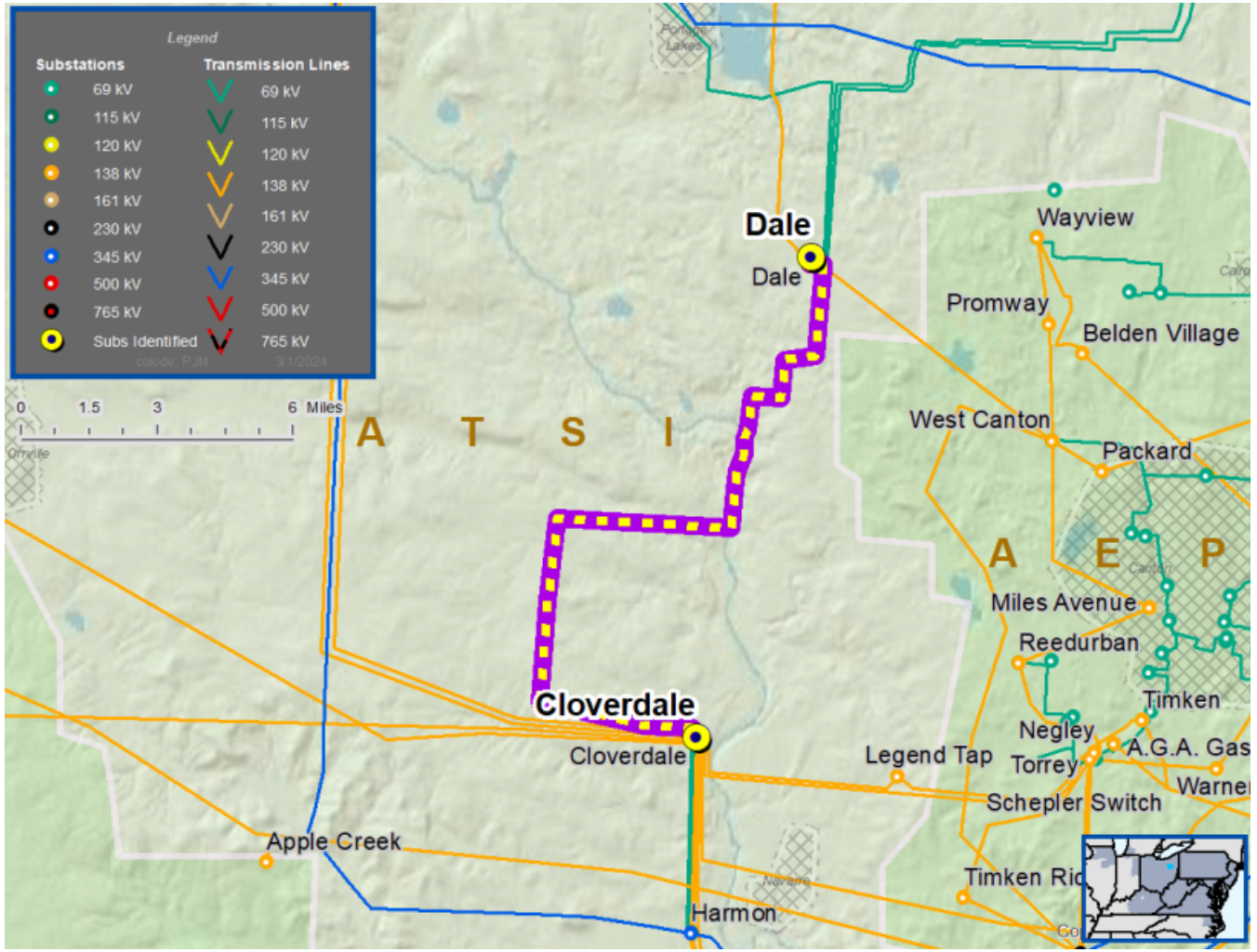
Specific Assumption Reference(s):

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 – A customer requested 69 kV service for approximately 21 MVA of load near the Cloverdale – Dale No. 2 69 kV Line. The customer location is approximately 1.2 miles from Cloverdale Substation.

Requested in-service date is April 2, 2022.



ATSI Transmission Zone M-3 Process
Cloverdale – Dale No.2 69 kV Line Customer Connection

Need Number: ATSI-2024-023

Process Stage: Solution Meeting – 04/19/2024

Proposed Solution:

- Install two main-line SCADA controlled switches
- Install one tap-line SCADA controlled switch
- Construct approximately 150 feet of 69 kV line to the customer substation
- Revise relay settings at Cloverdale and Dale substations

Alternatives considered:

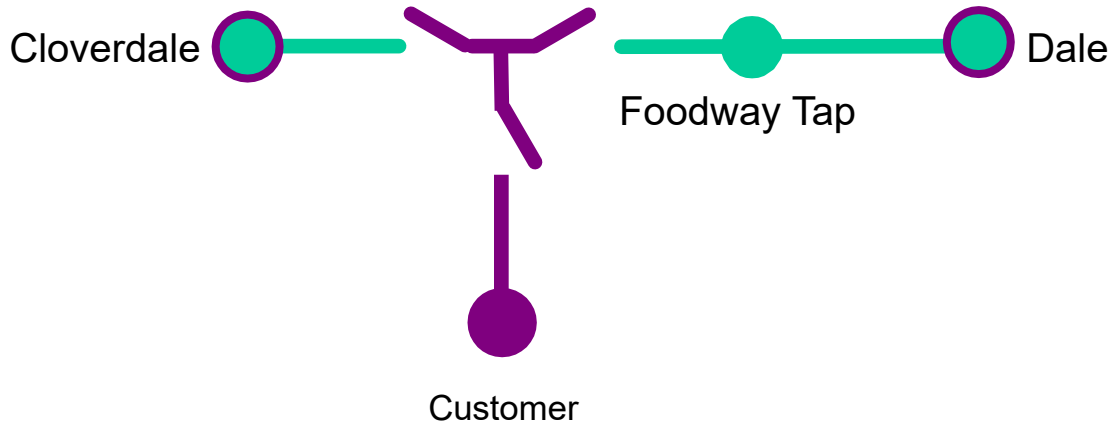
- No feasible alternatives to meet customer's request due to the proximity to Cloverdale – Dale No. 2 69 kV Line.

Estimated Project Cost: $0.63 M

Projected In-Service Date: 2/7/2025

Status: Engineering

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
London – Tangy 138 kV Line Customer Connection

Need Number: ATSI-2024-028
Process Stage: Solution Meeting – 4/19/2024
Previously Presented: Need Meeting – 02/16/2024

Supplemental Project Driver(s):
Customer Service

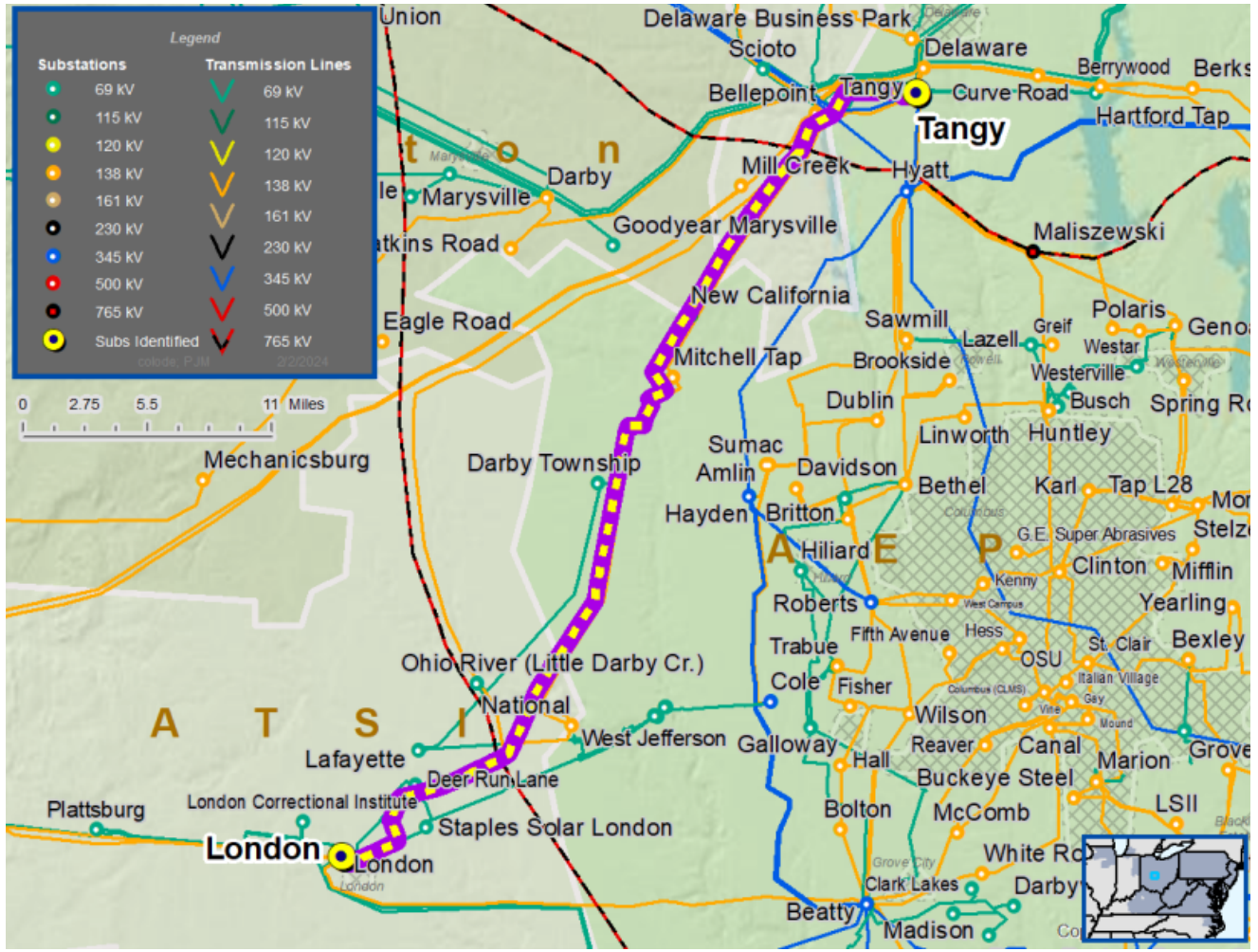
Specific Assumption Reference(s):

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 – Customer is requesting a temporary connection on the London – Tangy 138 kV Line for approximately 8 months. The anticipated load of the new customer connection is 30 MVA.

Requested in-service date is 6/1/2024.



ATSI Transmission Zone M-3 Process
London – Tangy 138 kV Line Customer Connection

Need Number: ATSI-2024-028

Process Stage: Solution Meeting – 4/19/2024

Proposed Solution:

- Install two main-line switches
- Construct approximately 0.1 miles of 138 kV line to the customer substation
- Adjust relay settings at London and Tangy substations

Alternatives considered:

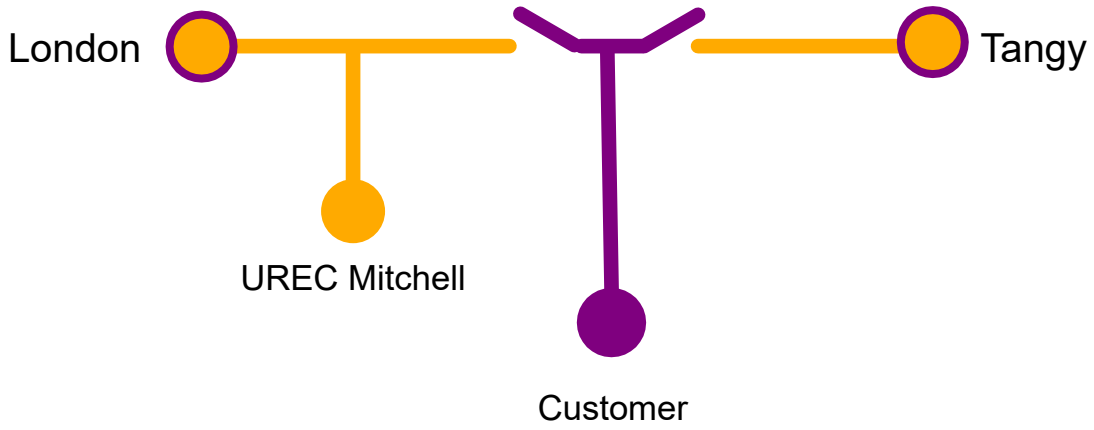
- No feasible alternatives to meet customer's request due to the proximity to London – Tangy 138 kV Line .

Estimated Project Cost: $0.00 M (Fully Reimbursable by Customer)

Project In-Service Date: 5/24/2024

Status: Construction

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



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

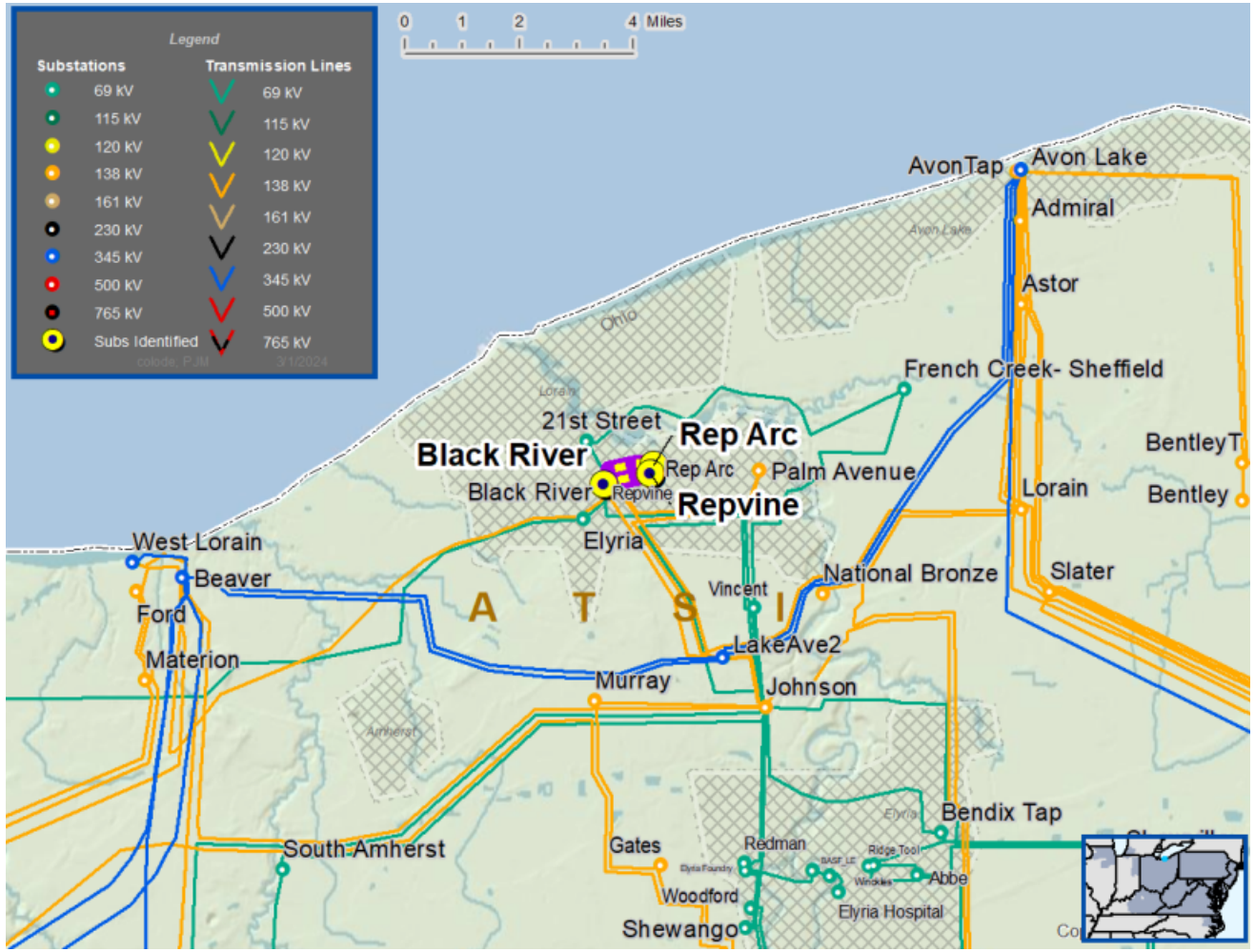
ATSI Transmission Zone M-3 Process
Lorain, Ohio

Need Number: ATSI-2024-029
Process Stage: Solution Meeting – 04/19/2024
Previously Presented: Need Meeting – 03/15/2024

Supplemental Project Driver(s):
Operational Flexibility and Efficiency

Specific Assumption Reference(s):
System Performance Global Factors
- System reliability and performance

Problem Statement:
- The existing Black River - Republic Arc 138 kV Line and Black River - Republic Vine 138 kV Line are networked through customer owned substations.
- Since the customer substations are in the transmission network path, transmission flow through customer owned equipment is possible.
- The existing customer substation, Republic Arc, has minimal load.
- The existing customer substation, Republic Vine, is operational but loads are lower than historical levels.



ATSI Transmission Zone M-3 Process
Lorain, Ohio

Need Number: ATSI-2024-029

Process Stage: Solution Meeting – 04/19/2024

Proposed Solution:

- Cut open the Republic Arc - Republic Vine 138 kV Line and install a normally open switch.
- Adjust protection setting at Black River, Republic Arc, and Republic Vine substations.

Alternatives Considered:

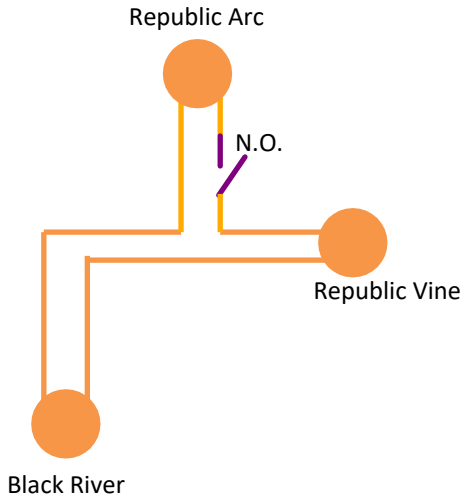
- Maintain existing condition and risk of transmission flow through customer owned equipment.

Estimated Project Cost: $0.40 M

Project In-Service Date: 6/2/2025

Status: Engineering

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
Evergreen – Highland No. 3 138 kV Line Customer Connection

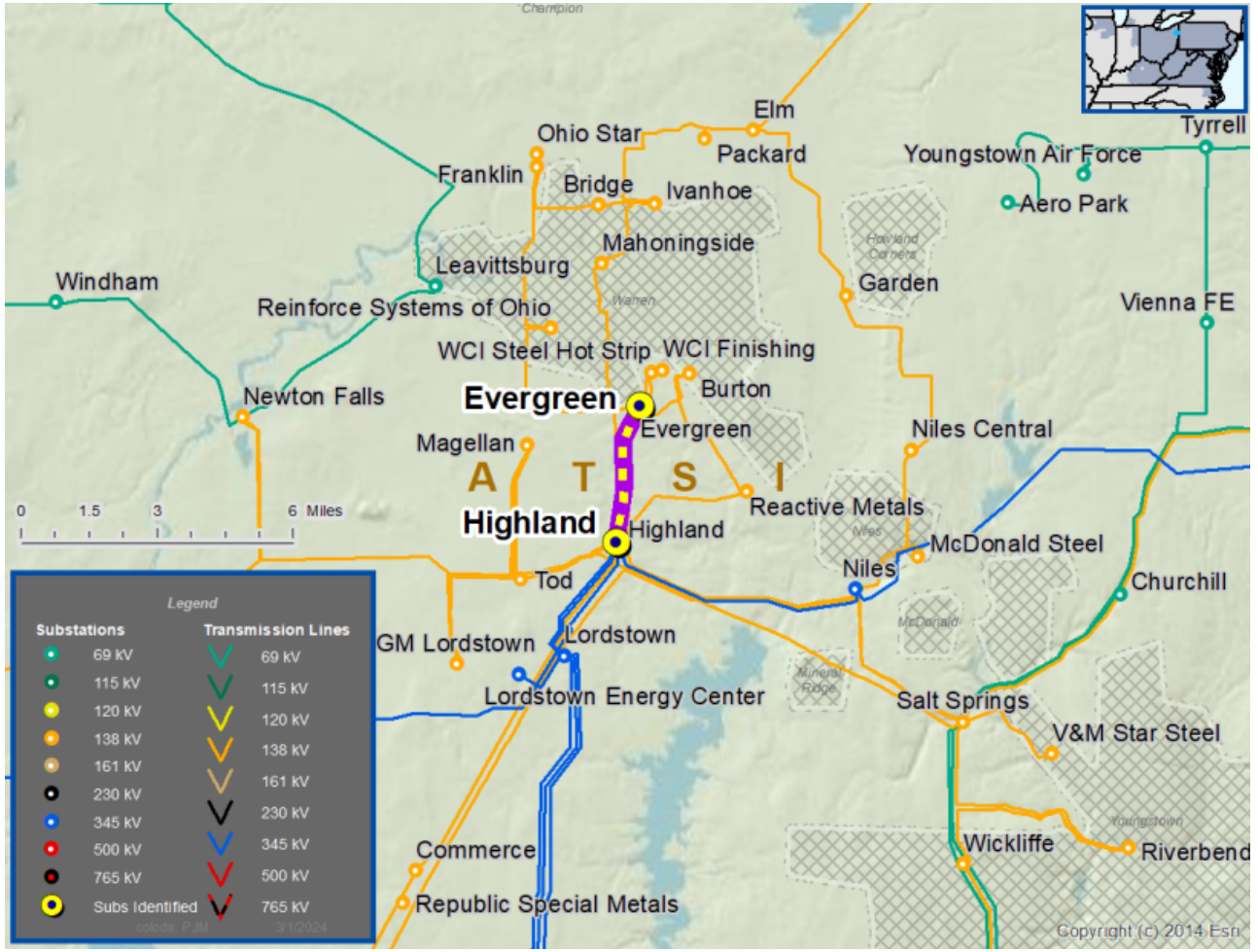
Need Number: ATSI-2024-030
Process Stage: Solution Meeting – 04/19/2024
Previously Presented: Need Meeting – 03/15/2024

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 – A customer requested 138 kV service for approximately 17 MVA of initial load near the Evergreen – Highland No. 3 138 kV Line. The customer location is approximately 1.1 miles from Evergreen Substation.

Requested in-service date is June 20, 2025.



ATSI Transmission Zone M-3 Process
Evergreen – Highland No. 3 138 kV Line Customer Connection

Need Number: ATSI-2024-030

Process Stage: Solution Meeting – 04/19/2024

Proposed Solution:

- Install one main-line SCADA controlled switch
- Install one tap-line SCADA controlled switch
- Construct approximately 0.2 miles of 138 kV line to the customer substation
- Revise relay settings at Evergreen and Highland substations

Alternatives Considered:

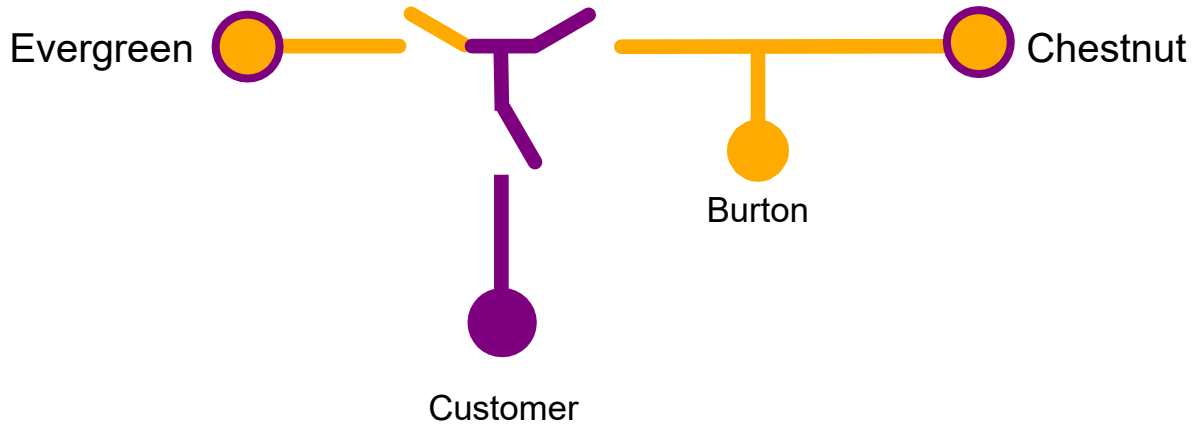
- No feasible alternatives to meet customer's request due to proximity to Evergreen – Highland No. 3 138 kV Line.

Estimated Project Cost: $1.40 M

Projected In-Service Date: 5/1/2025

Status: Engineering

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

ATSI Transmission Zone M-3 Process
Ellsworth Substation – s1952 Scope Change

s1952: Originally presented in 01/14/2019 and 03/25/2029 SRRTEP Western meetings

Changes are marked in red

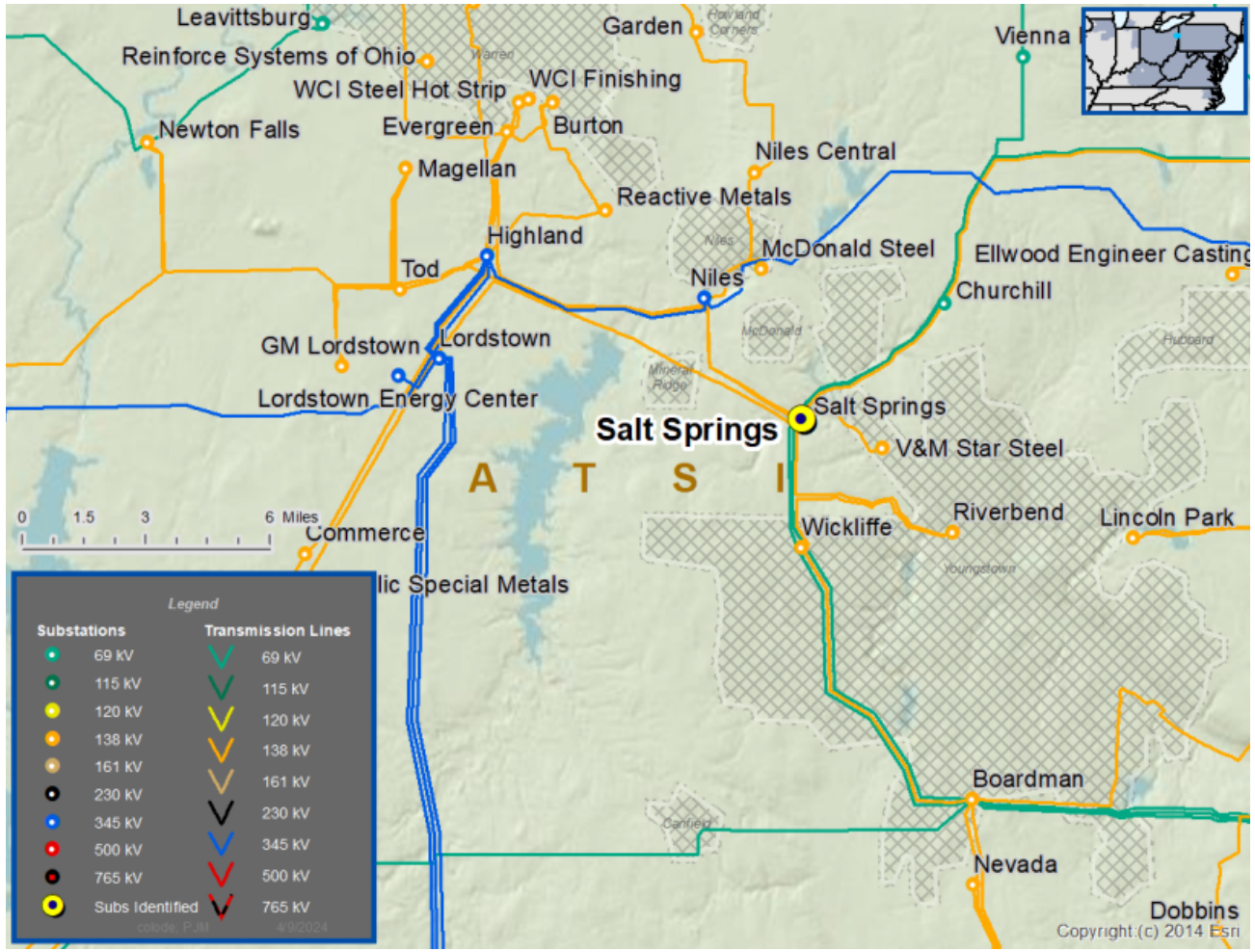
Project Driver(s):
Operational Flexibility and Efficiency
Infrastructure Resilience

Specific Assumption Reference(s)
Global Considerations

- System reliability and performance
- Reliability of Non-Bulk Electric System (Non-BES) facilities
- Load and risk in planning and operational scenarios

Problem Statement
Kimberly 69 kV Area
The Kimberly 69 kV substation is served from a 3.6-mile radial transmission line from Salt Springs 138 / 69 kV substation with 19 MW and 5,500 customers at risk.

Additionally, the contingency loss of the nearby Berlin Lake-Boardman 69 kV line results in the loss of approximately 46 MW and 12,500 customers at four (4) transmission service points.



ATSI Transmission Zone M-3 Process
Ellsworth Substation – s1952 Scope Change

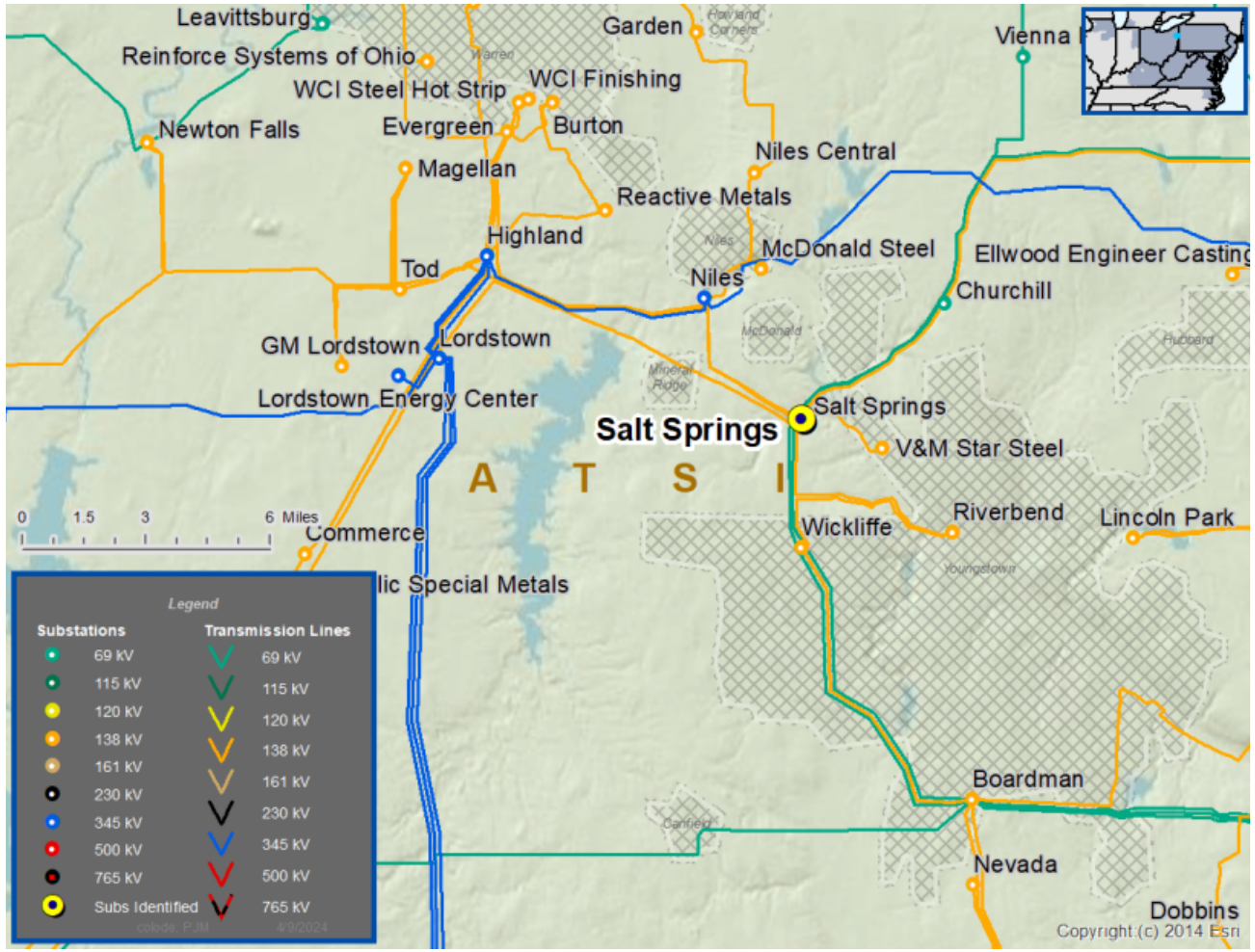
Potential Solution:

~~*Weldon 69 kV Ring Bus and Line Build* **Estimated Cost: $17.4M**~~

- ~~Construct a new four (4) breaker ring bus (Weldon Substation) outside the existing Canfield Steel substation.~~
- ~~Network the new four (4) breaker ring bus by completing the following:~~
  - ~~Loop the existing Canfield Steel radial 69 kV circuit into the new Weldon substation~~
  - ~~Loop the existing Berlin Lake-Boardman 69 kV line into new Weldon substation by constructing roughly 0.6 miles 69 kV line adjacent to existing Canfield Steel 69 kV radial circuit~~
  - ~~Build new Weldon-Kimberly 69 kV line (approximately 6.4 miles).~~
- ~~Install new line exit switch and SCADA to the line exits at Kimberly.~~
- ~~Install auto-sectionalizing scheme at Canfield substation.~~

Reason for Revision:

Initially, a new four breaker ring bus was proposed to be constructed outside the existing Canfield Steel Substation (Weldon Substation). This option was not selected due to the inability to acquire land to build the new substation.



ATSI Transmission Zone M-3 Process
Ellsworth Substation – s1952 Scope Change

Proposed Solution:

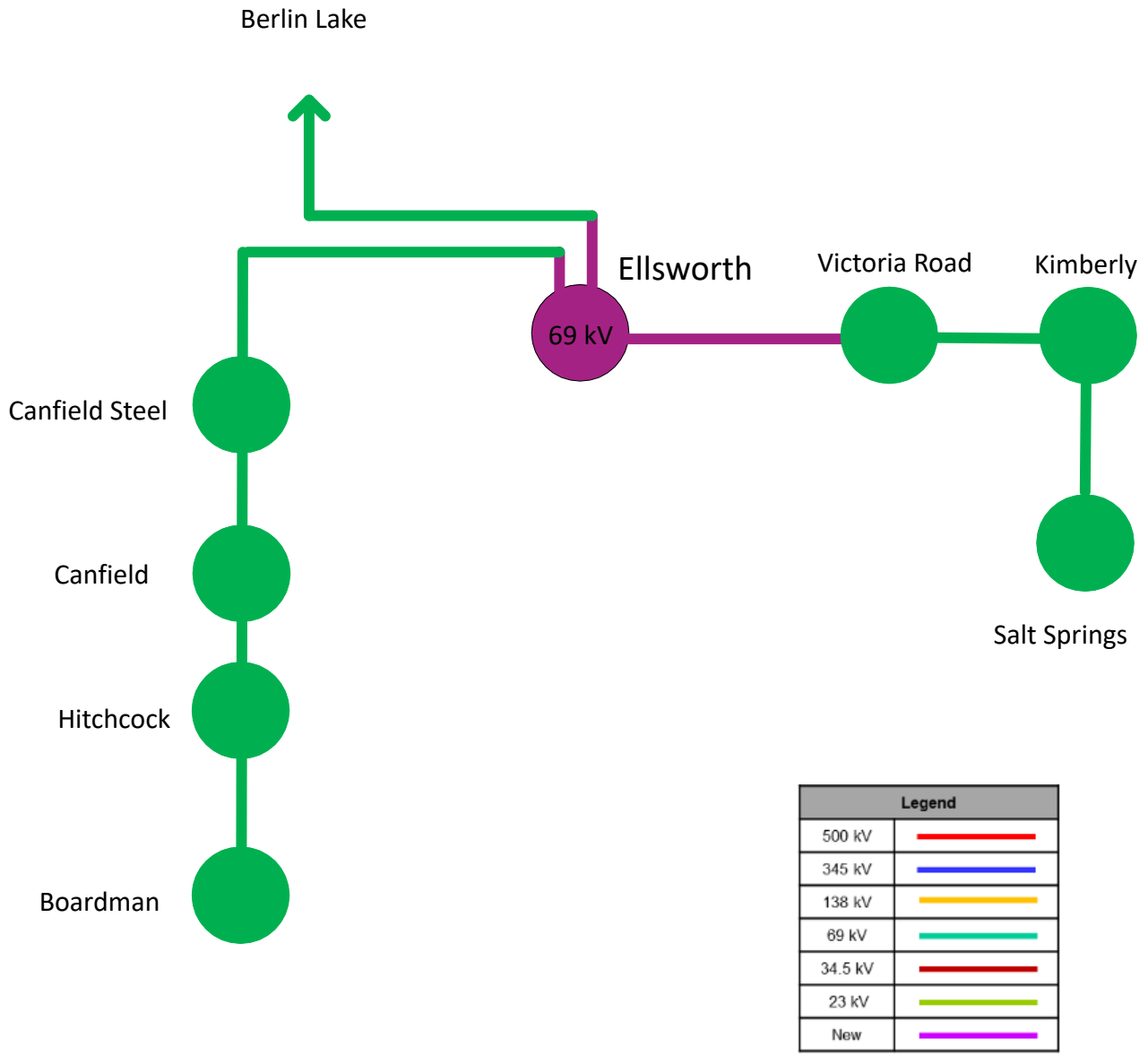
- At Ellsworth
  - Expand and reconfigure existing Ellsworth Substation to a new 69 kV four-breaker ring bus substation
  - Install associated line relaying and control
- Loop in the existing Berlin Lake – Boardman 69 kV Line into Ellsworth Substation creating two new circuits:
  - Berlin Lake – Ellsworth 69 kV Line (5.1 circuit miles)
  - Boardman – Ellsworth 69 kV Line (11.9 circuit miles)
- At Kimberly
  - Install two 69 kV SCADA controlled switches
- At Victoria Road
  - Install a 69 kV SCADA controlled switch

Transmission Line Ratings:

Berlin Lake – Ellsworth 69 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 80 / 96 / 90 / 114 MVA (SN/SE/WN/WE)

Boardman – Ellsworth 69 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 80 / 96 / 90 / 114 MVA (SN/SE/WN/WE)

Estimated Project Cost: $27 M



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ATSI Transmission Zone M-3 Process
Ellsworth Substation – s1952 Scope Change

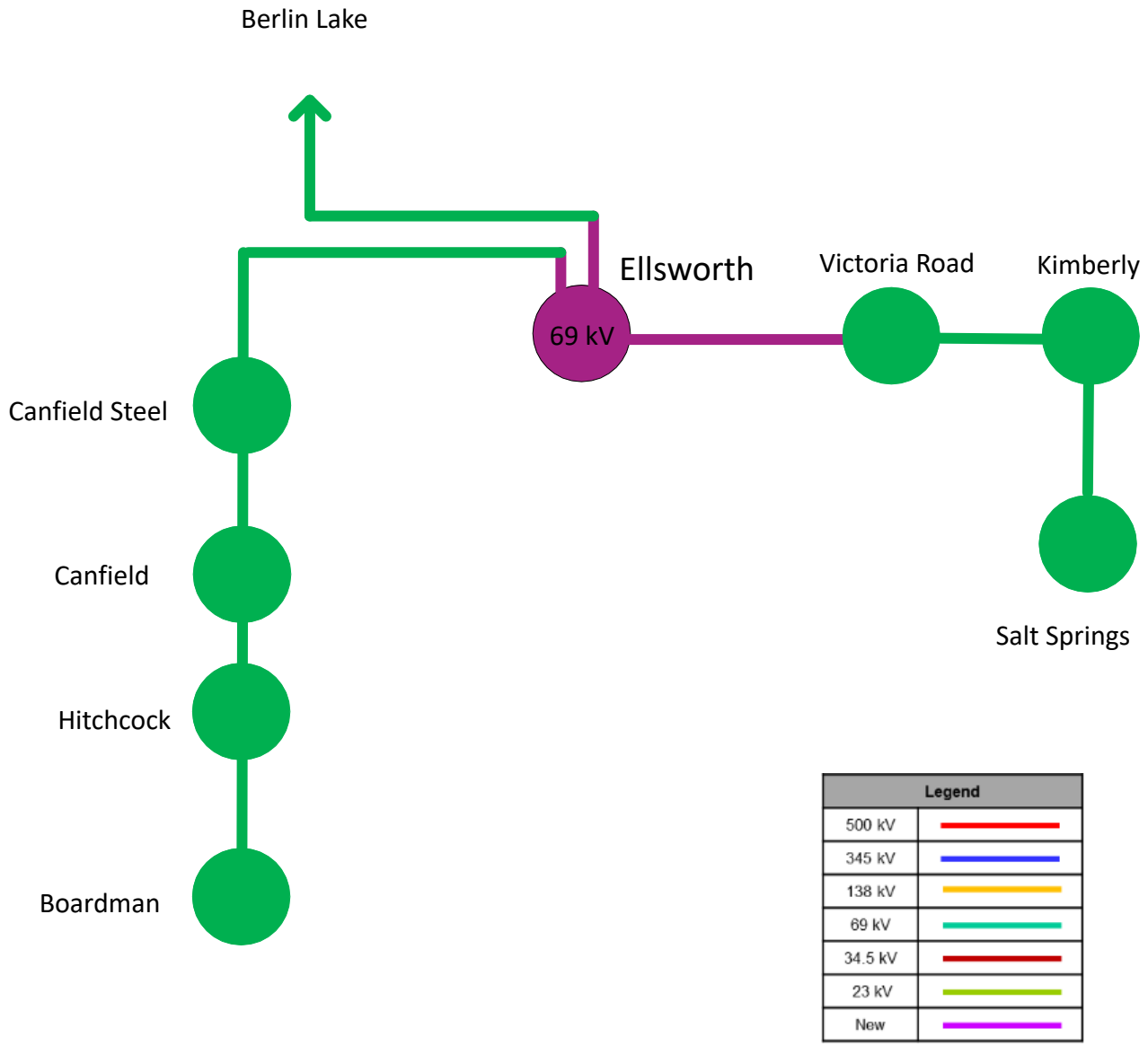
Alternatives Considered:

- ~~Install ring bus at Canfield substation (Space constrained)~~
- ~~Network Kimberly substation by building a new 69 kV line from Kimberly to Salt Springs substation~~

1. Install ring bus at Canfield Steel Substation (space constrained).
2. Construct a new 69 kV substation outside Canfield Steel Substation with new line loop. (previously proposed Weldon Substation and line build). This option was not selected due to the inability to acquire land to build the new substation. **Estimated Cost: $17.4M**
3. Reconfigure existing Kimberly Substation to a ring bus configuration. Build a new 69 kV line from Salt Springs Substation to Kimberly Substation. This option was not selected due to land and environmental constraints.

Project IS Date: ~~6/1/2023~~ 9/18/2026

Status: Pre-Engineering



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

04/09/2024– V1 – Original version posted to pjm.com

04/16/2024 – V2 – Corrected need date for ATSI-2024-023 and ATSI-2024-030