

Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

May 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: ME-2024-008

Process Stage: Need Meeting – 05/16/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

The Carlisle Pike – Gardners 115 kV 976 Line was constructed approximately 69 years ago. The original poles were replaced in 1970. The conductor is original to the 1955 construction. The Met-Ed portion of this line is approximately 13 miles long with 96 wood H-frame transmission line structures.

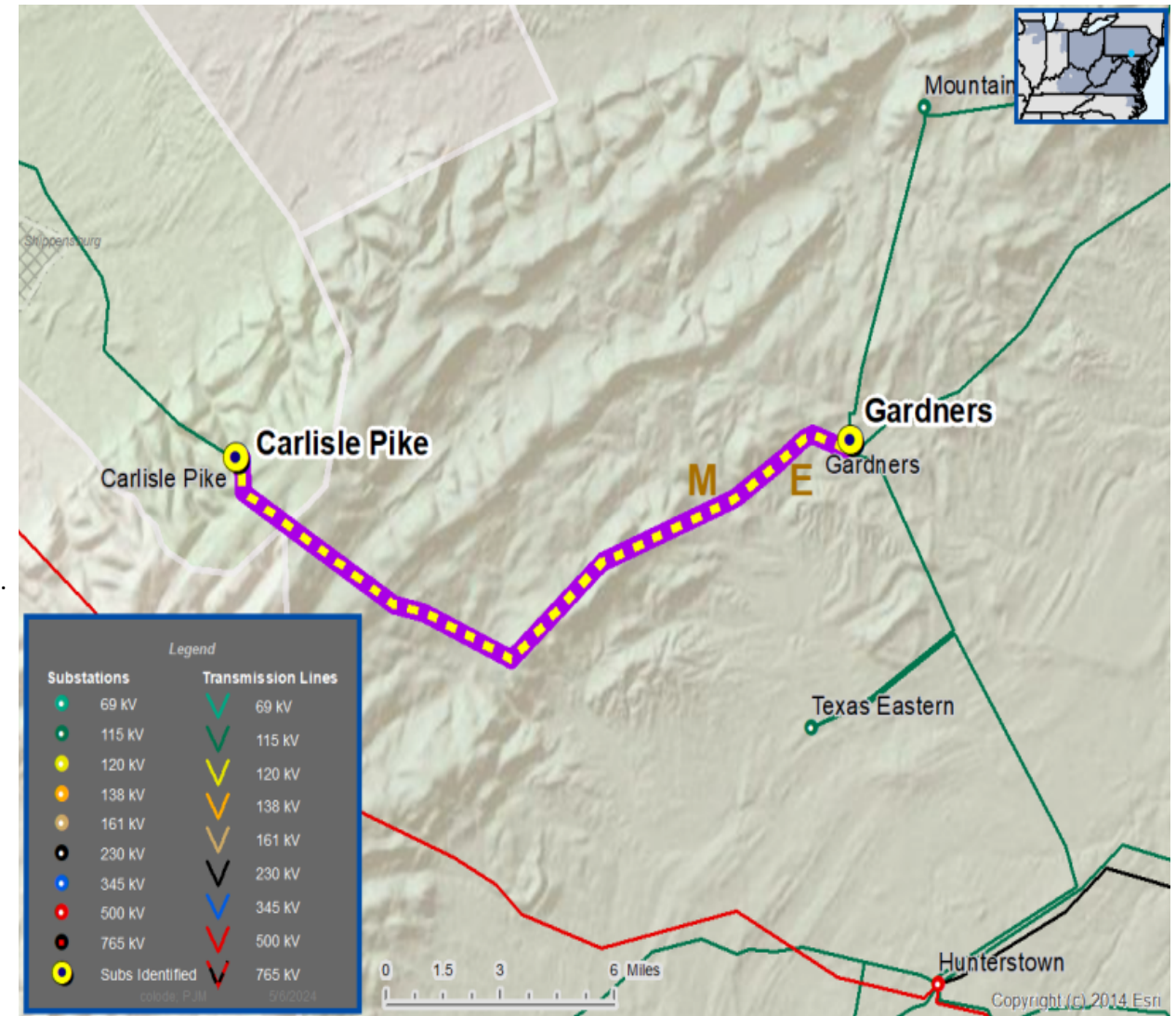
The Met-Ed portion of this line is exhibiting deterioration. Inspection findings include:

- Six structures are Phase-Raised.
- 26 structures failed sound test.
- 39 structures are 54 years old.

There have been three unscheduled sustained outages in the last five years, two attributed to line equipment.

The line is limited by terminal equipment.

- Existing Transmission Line Ratings:
 - 86 / 110 / 122 / 137 MVA (SN/SE/WN/WE)



Met-Ed Transmission Zone M-3 Process North Temple – Allentown Cement 69 kV Line Customer Connection

Need Number: ME-2024-010

Process Stage: Need Meeting – 5/16/2024

Project Driver(s):

Customer Service

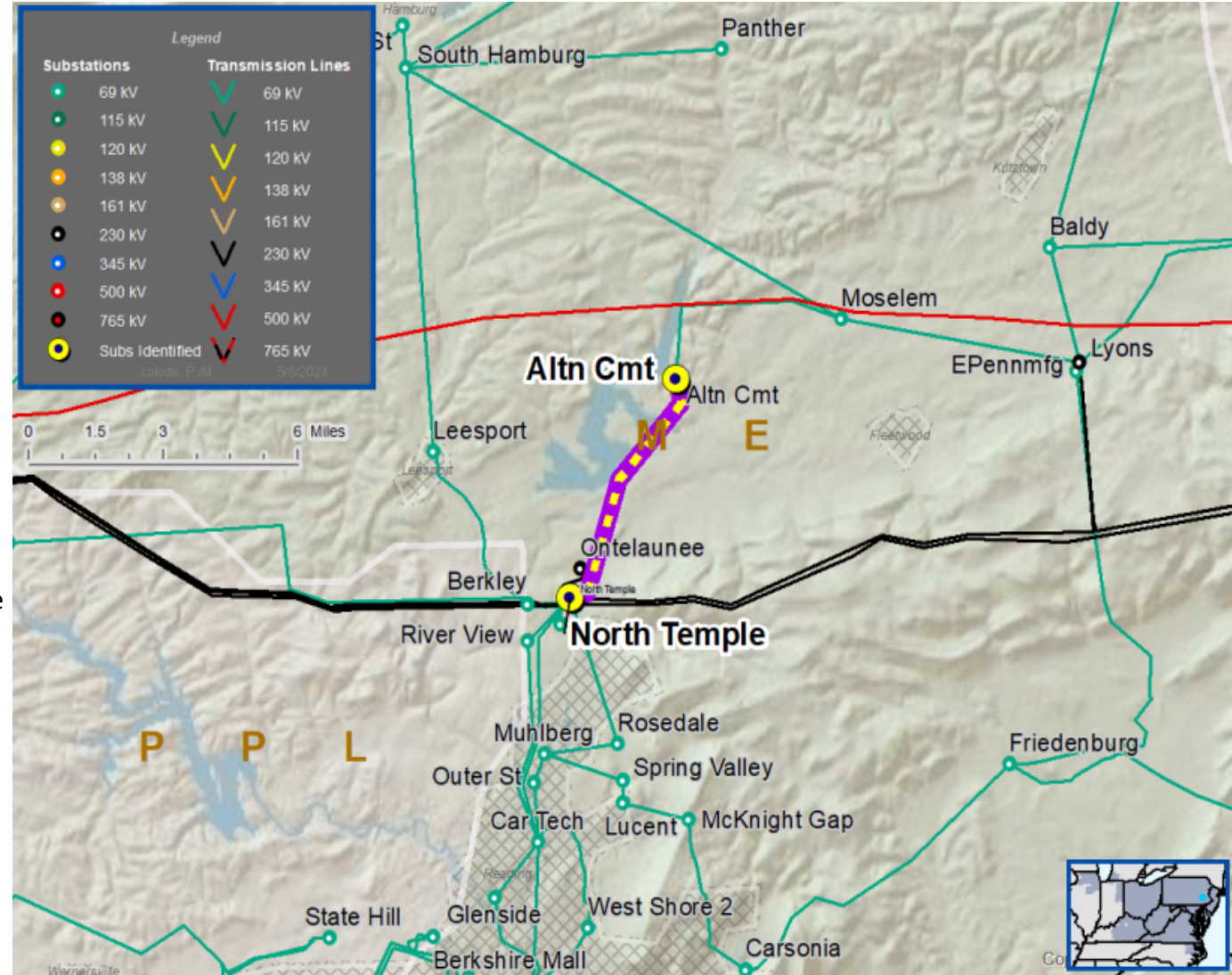
Specific Assumption Reference(s)

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 – Met-Ed distribution requested 69 kV service for a load of approximately 13 MVA near the North Temple – Allentown Cement 69 kV Line. The service request location is approximately three miles from North Temple Substation.

Requested in-service date is 12/1/2026



Met-Ed Transmission Zone M-3 Process Hunterstown – North Hanover 115 kV Line Customer Connection

Need Number: ME-2024-011

Process Stage: Need Meeting – 5/16/2024

Project Driver(s):

Customer Service

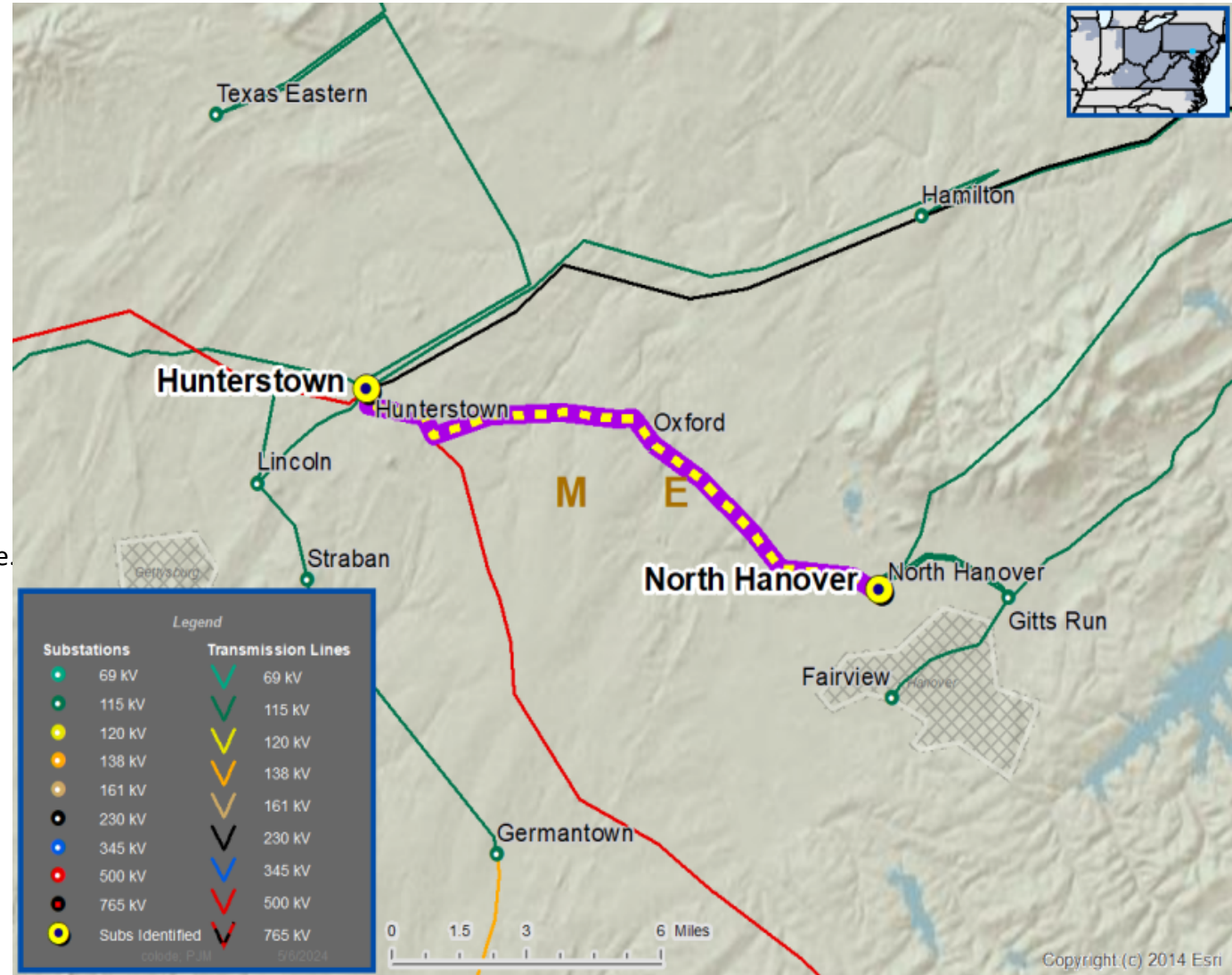
Specific Assumption Reference(s)

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 – Met-Ed distribution requested 115 kV service for load of approximately 22 MVA near the Hunterstown – North Hanover 115 kV Line. The service request location is approximately two miles from North Hanover Substation.

Requested in-service date is 1/11/2027



Need Number: ME-2024-012

Process Stage: Need Meeting – 5/16/2024

Project Driver:

Operational Flexibility and Efficiency

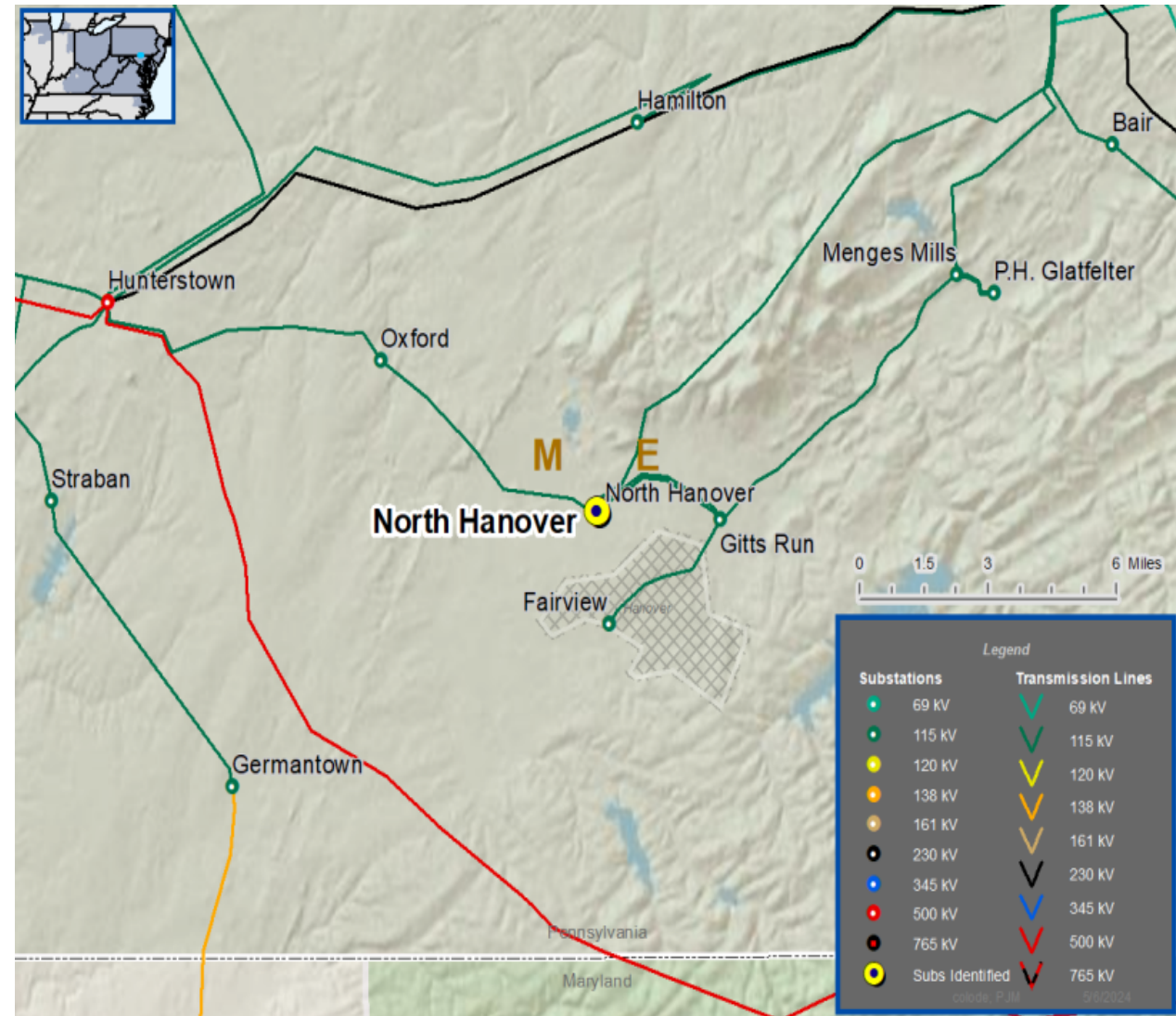
Specific Assumption Reference:

System Performance Projects

- Add/Expand Bus Configuration
- Load at risk in planning and operational scenarios
- Reduce the amount of exposed potential local load loss during contingency conditions
- Eliminate simultaneous outages to multiple networked elements

Problem Statement:

North Hanover Substation is in a straight bus configuration with terminals to three distribution transformers and four 115 kV transmission lines. The substation serves approximately 59 MW and 7,500 customers. A bus fault or faulted breaker would result in an outage to the entire substation.



Need Number: ME-2024-013

Process Stage: Need Meeting – 05/16/2024

Project Driver:

Operational Flexibility and Efficiency

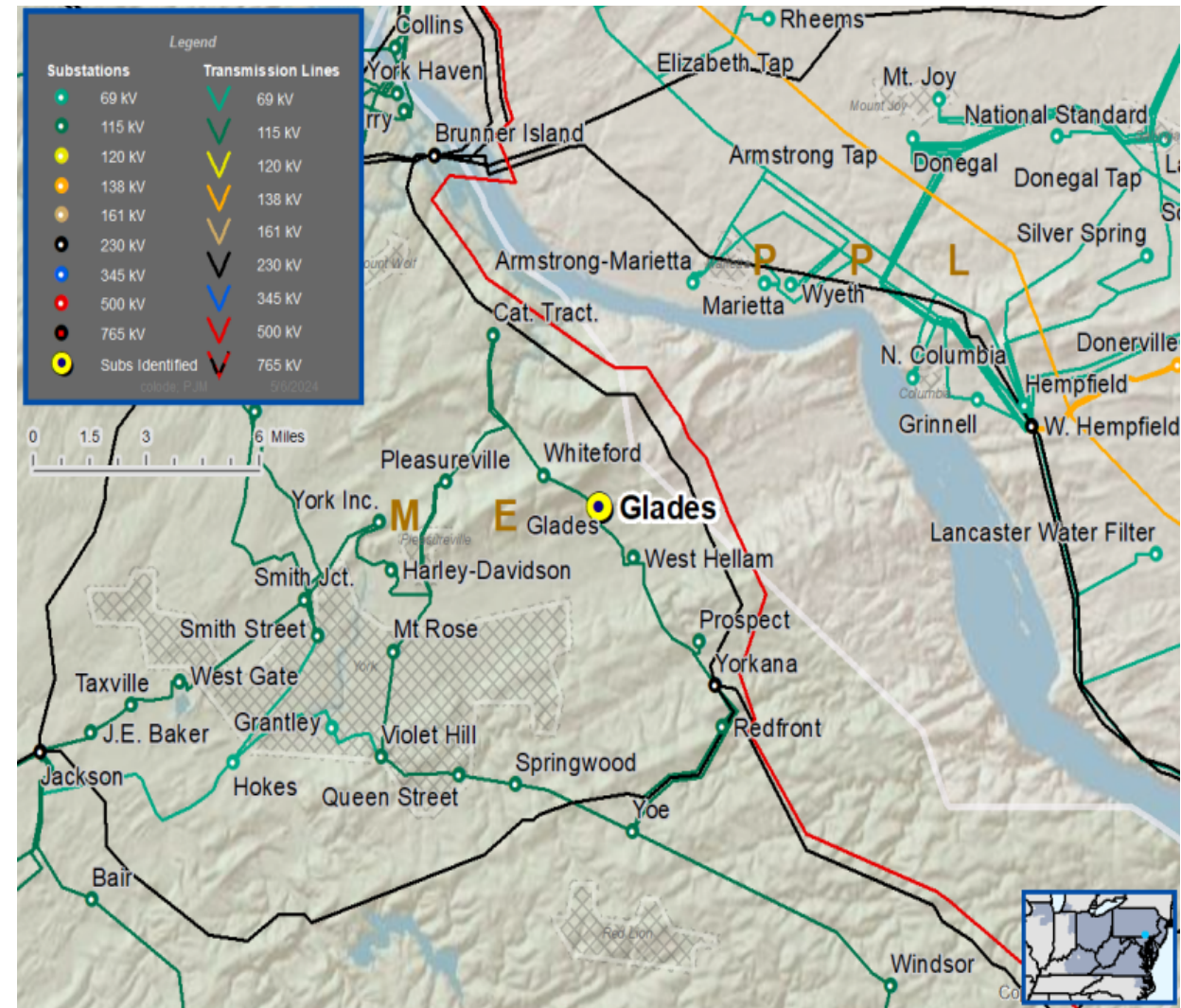
Specific Assumption Reference:

System Performance Projects

- Add/Expand Bus Configuration
- Load at risk in planning and operational scenarios
- Reduce the amount of exposed potential local load loss during contingency conditions
- Eliminate simultaneous outages to multiple networked elements

Problem Statement:

A breaker fault (98732) or stuck breaker at Glades Substation would result in loss of both the Caterpillar Tractor – Glades 115 kV 987 line and Glades – Yorkana 115 kV 972 115 kV line. This would interrupt service to Glades, Whiteford, West Hellam and Prospect substations and result in the loss of 83 MW of load to approximately 2,700 customers.



Need Number: ME-2024-014

Process Stage: Needs Meeting – 5/16/2024

Project Driver:

Operational Flexibility and Efficiency

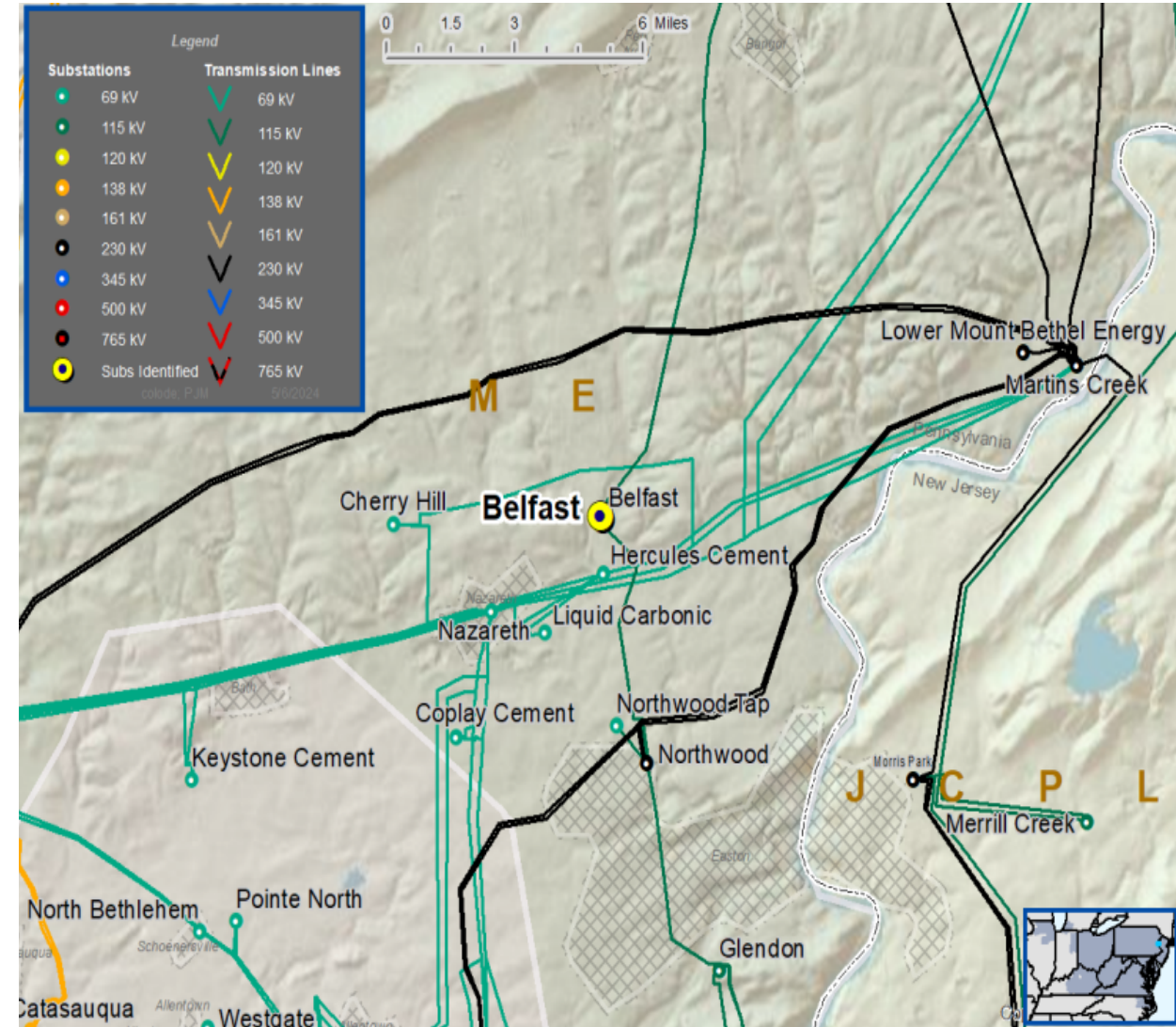
Specific Assumption Reference:

System Performance Projects

- Add/Expand Bus Configuration
- Load at risk in planning and operational scenarios
- Reduce the amount of exposed potential local load loss during contingency conditions
- Eliminate simultaneous outages to multiple networked elements

Problem Statement:

Belfast Substation serves approximately 78 MW of load and 12,100 customers. A transformer fault, bus fault, or stuck breaker would result in a complete outage of the substation.



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: ME-2024-001

Process Stage: Solution Meeting 05/16/2024

Previously Presented: Need Meeting 01/18/2024

Project Driver:

Operational Flexibility and Efficiency

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

System Performance Projects

- Add/Replace Transformers

End of Life Criteria

- Transformers at or beyond expected service life
- Outdated or obsolete technology and equipment

Problem Statement:

The #1 115-69 kV Transformer at Smith Street Substation is 59 years old and is approaching end of life. The transformer has experienced multiple fan failures, low pressure alarms and oil leaks that have been difficult to repair due to the condition of the transformer.

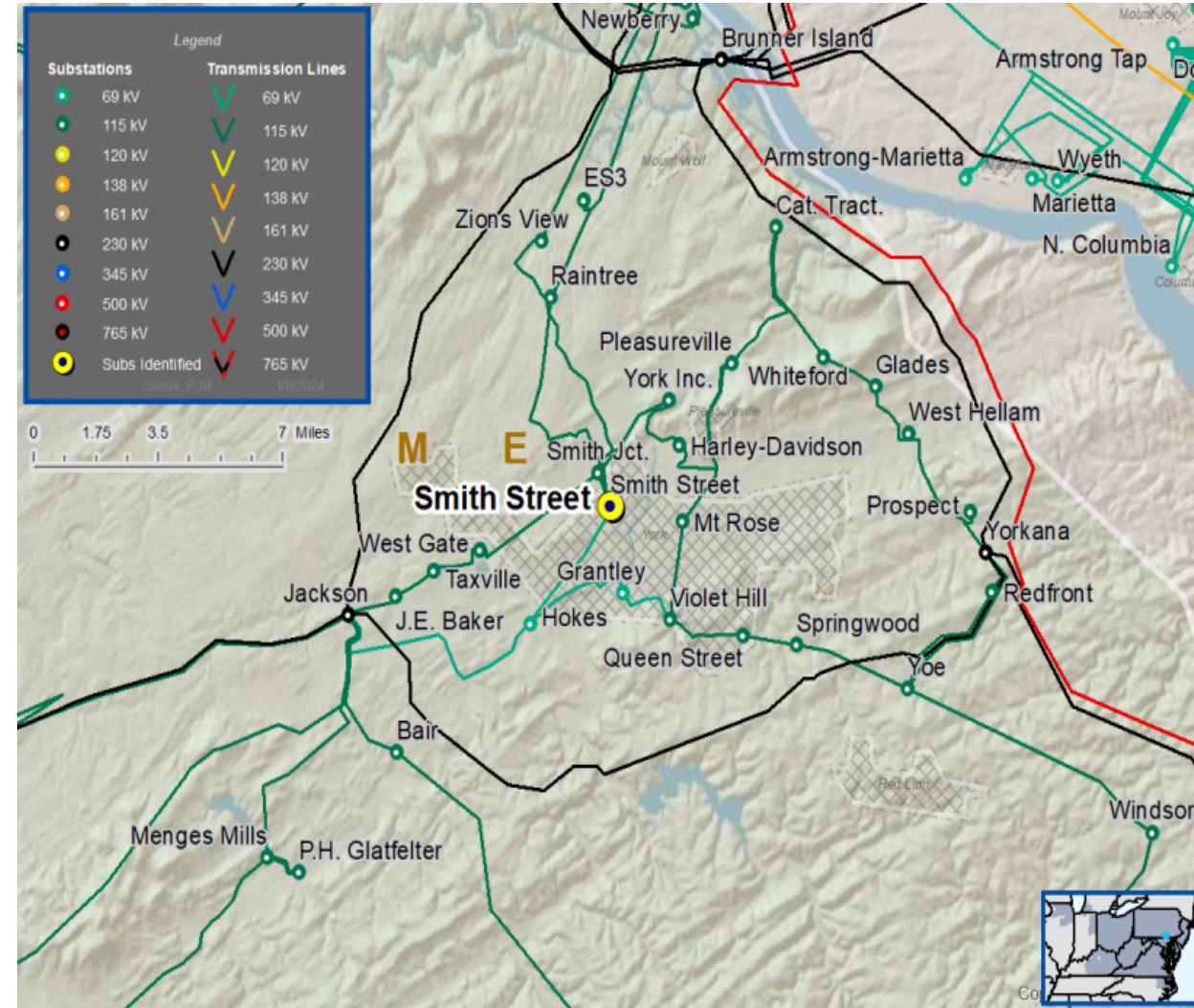
Existing #1 transformer ratings:

- 30/33/39/41 MVA (SN/SLTE/WN/WLTE)

The #3A 115-69-13.2 kV Transformer at Smith Street Substation is 73 years old and is approaching end of life. The transformer has experienced multiple oil leaks that have been difficult to repair due to the condition of the transformer.

Existing #3A transformer ratings:

- 65/72/88/94 MVA (SN/SLTE/WN/WLTE)



Need Number: ME-2024-001

Process Stage: Solution Meeting – 05/16/2024

Proposed Solution:

- At Willis Road Substation (refer to ME-2023-002):
 - Install a new No. 1 115-69 kV 125 MVA transformer and associated relaying
- At Smith Street:
 - Retire No. 1 and No. 3A 115-69 kV transformers

Transformer Ratings:

Before Proposed Solution:

- 30/33/39/41 MVA (SN/SLTE/WN/WLTE)

After Proposed Solution:

- 140/185/182/222 MVA (SN/STE/WN/WTE)

Alternatives Considered:

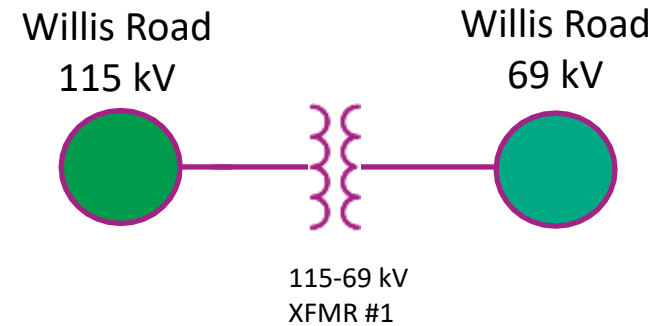
- Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$6.6M

Projected In-Service: 6/1/2026

Status: Conceptual

Model: 2023 RTEP model for 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

5/6/2024 – V1 – Original version posted to pjm.com