Subregional RTEP Committee - Mid-Atlantic
FirstEnergy Supplemental Projects

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

Met-Ed Transmission Zone M-3 Process
Birdsboro – Birdsboro Extrusions 69 kV Line

Need Number: ME-2023-011

Process State: Needs Meeting 11/16/2023

Project Driver:

Increased System Reliability

Specific Assumption Reference:

System Performance Projects

Add/Expand Bus Configuration

- Accommodate Future Transmission Facilities

Build New Transmission Line

- Network Radial Lines
- Contingency constrained facilities

Automatic Sectionalizing Schemes

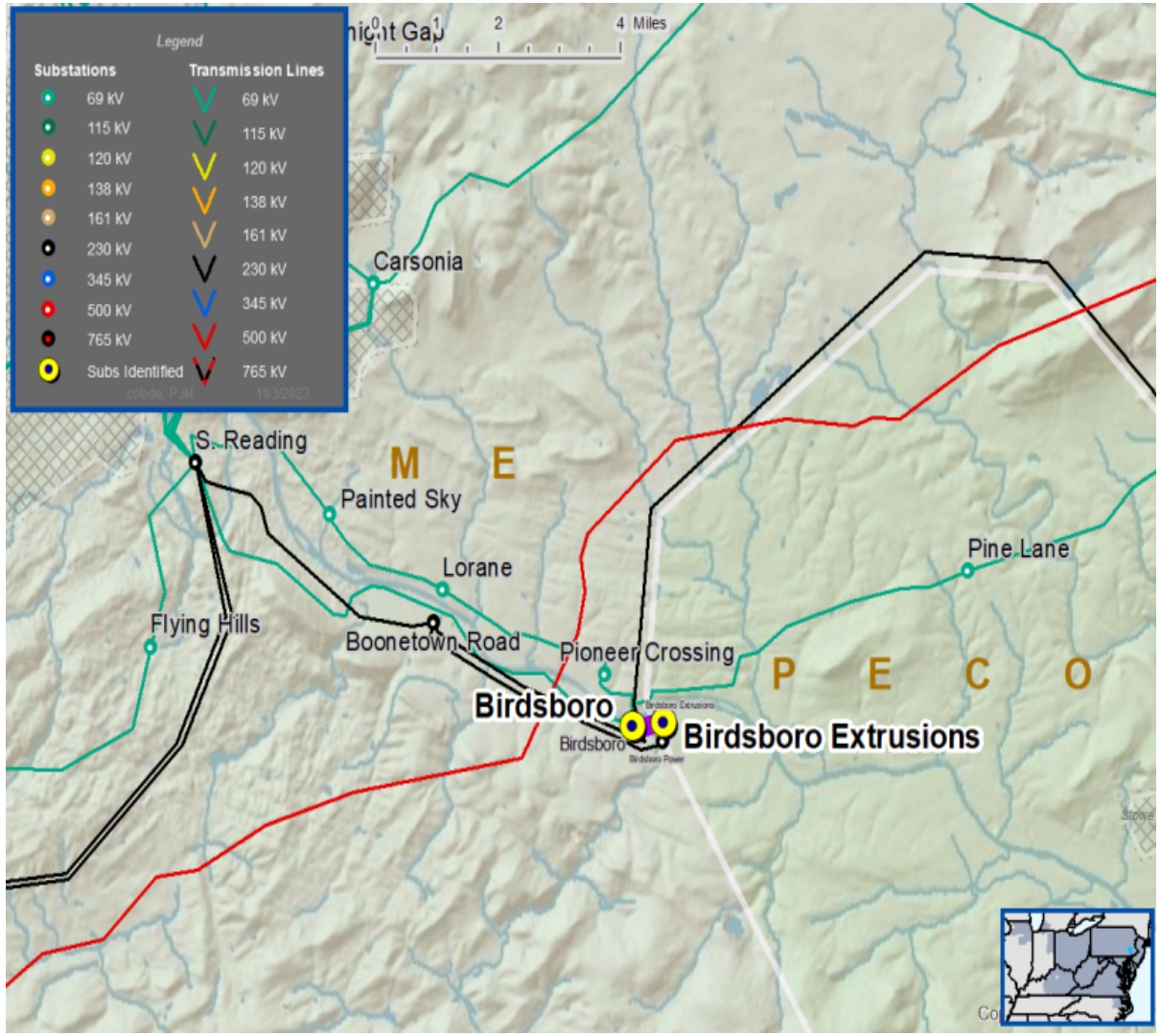
Problem Statement:

An N-1-1 contingency can lead to an overload of the Birdsboro – Birdsboro Extrusions 69 kV line up to 111%.

Enhanced reliability analysis on non-BES facilities to account for common mode and/or N-1-1 potential low voltage and/or overloaded equipment (conductor or terminal equipment) conditions.

Existing 69 kV line rating between Birdsboro and Birdsboro Extrusions is 71/90 MVA (SN/SE).

Existing 69 kV conductor rating between Birdsboro and Birdsboro Extrusions is 74/90 MVA (SN/SE).



Met-Ed Transmission Zone M-3 Process
Cleona Substation

Need Number: ME-2023-013

Process Stage: Needs Meeting 11/16/2023

Project Driver:

Operational Flexibility and Efficiency

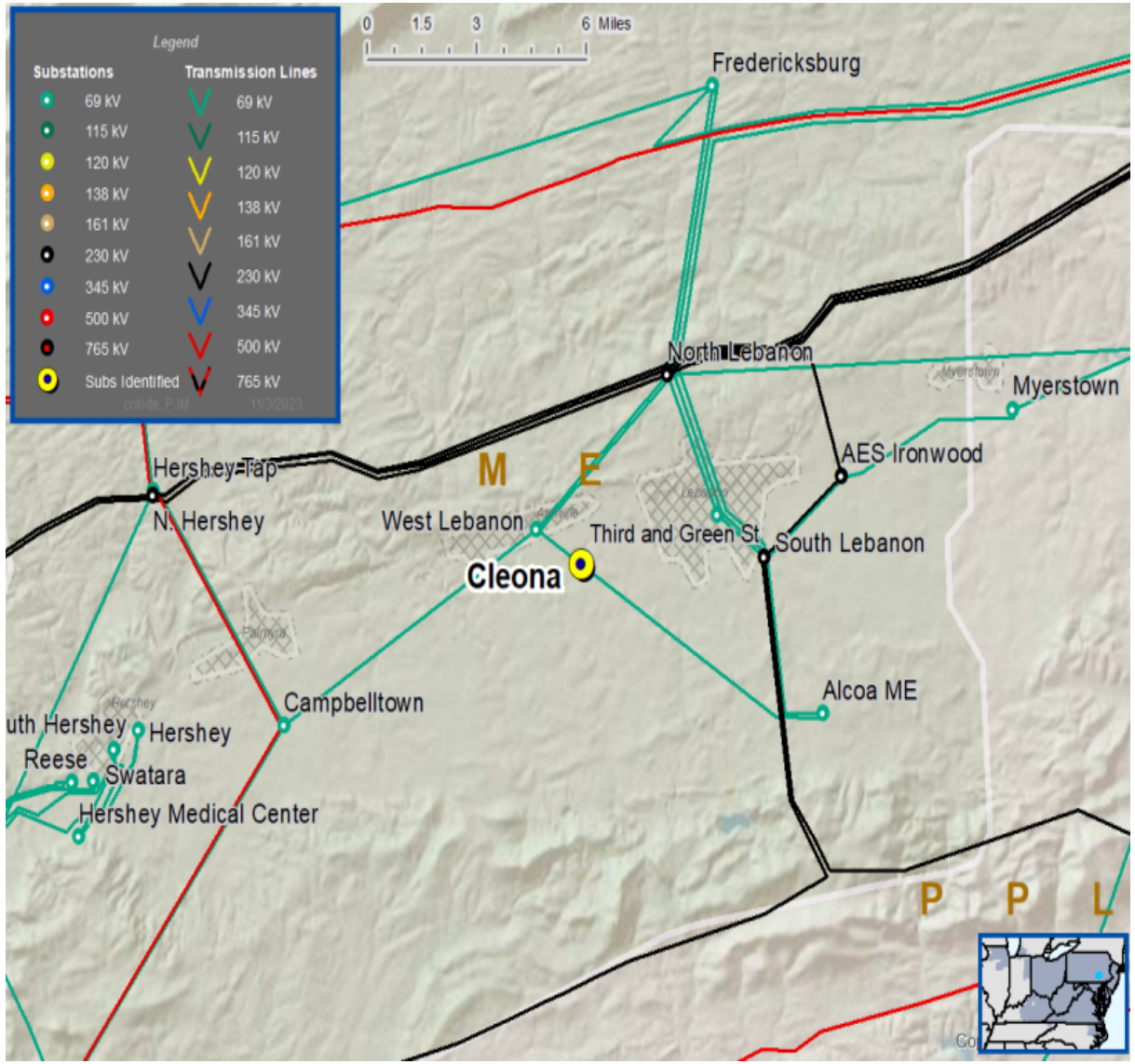
Specific Assumption Reference:

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 fault on the North Lebanon – West Lebanon 69 kV Line, a fault on the 69 kV bus at Cleona Substation, or a fault on the Cleona No. 1 transformer results in the loss of Cleona Substation. Cleona Substation serves 2,080 customers and approximately 11 MW.



Met-Ed Transmission Zone M-3 Process
Mountain Substation

Need Number: ME-2023-017

Process Stage: Needs Meeting 11/16/2023

Project Driver:

Operational Flexibility and Efficiency

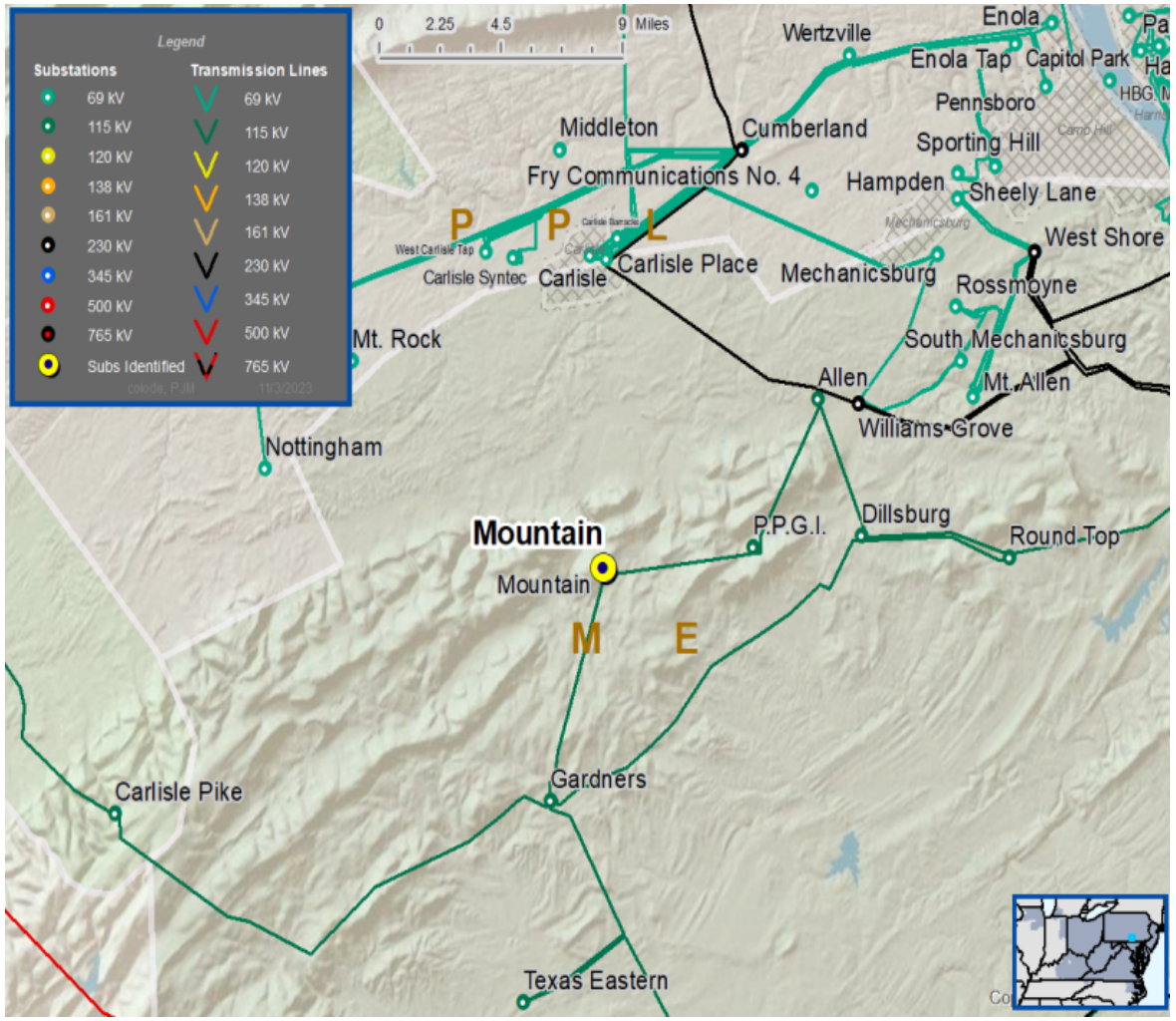
Specific Assumption Reference:

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:

Mountain Substation can outaged from a fault on the 115 kV bus, a fault on the No. 1 or No. 2 115-13.2 kV transformers, a fault on the Mountain CT transformer, or a stuck breaker on the PPGI or Gardners 115 kV line exits. Mountain Substation serves 7,320 customers and approximately 31.8 MW.



Met-Ed Transmission Zone M-3 Process
Round Top Substation

Need Number: ME-2023-020

Process Stage: Needs Meeting 11/16/2023

Project Driver:

Operational Flexibility and Efficiency

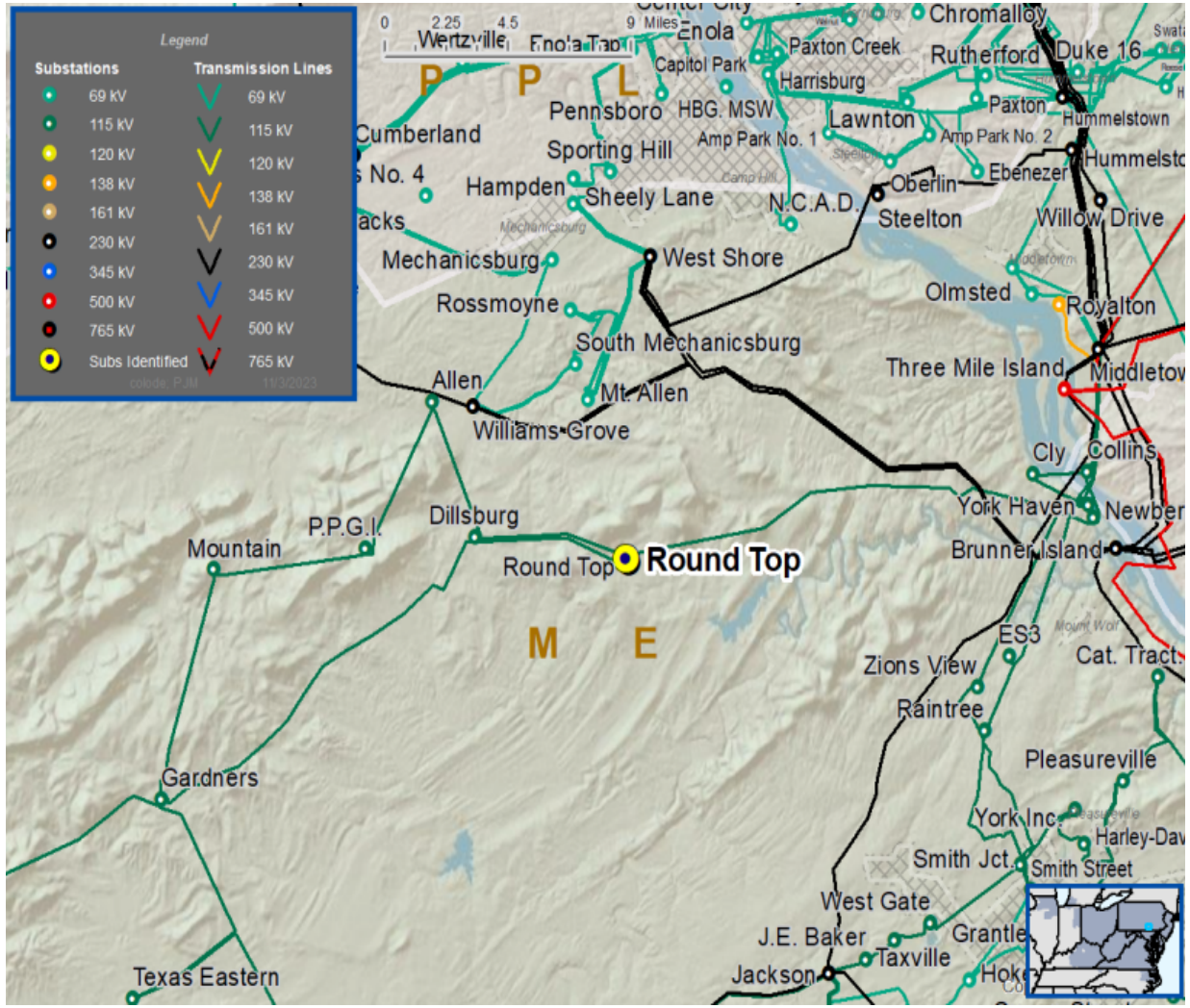
Specific Assumption Reference:

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:

Round Top Substation can be outaged from a fault on the 115 kV bus, a fault on the No. 1 or No. 2 115-13.2 kV transformers, or a stuck breaker on the Allen, Newberry, or Dillsburg 115 kV line exits. Round Top Substation serves 2,540 customers and approximately 18.8 MW.



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

Met-Ed Transmission Zone M-3 Process
Hokes Ring Bus

Need Number: ME-2023-003

Process Stage: Solution Meeting – 11/16/2023

Process Stage: Needs Meeting 4/20/2023

Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

System Performance Projects

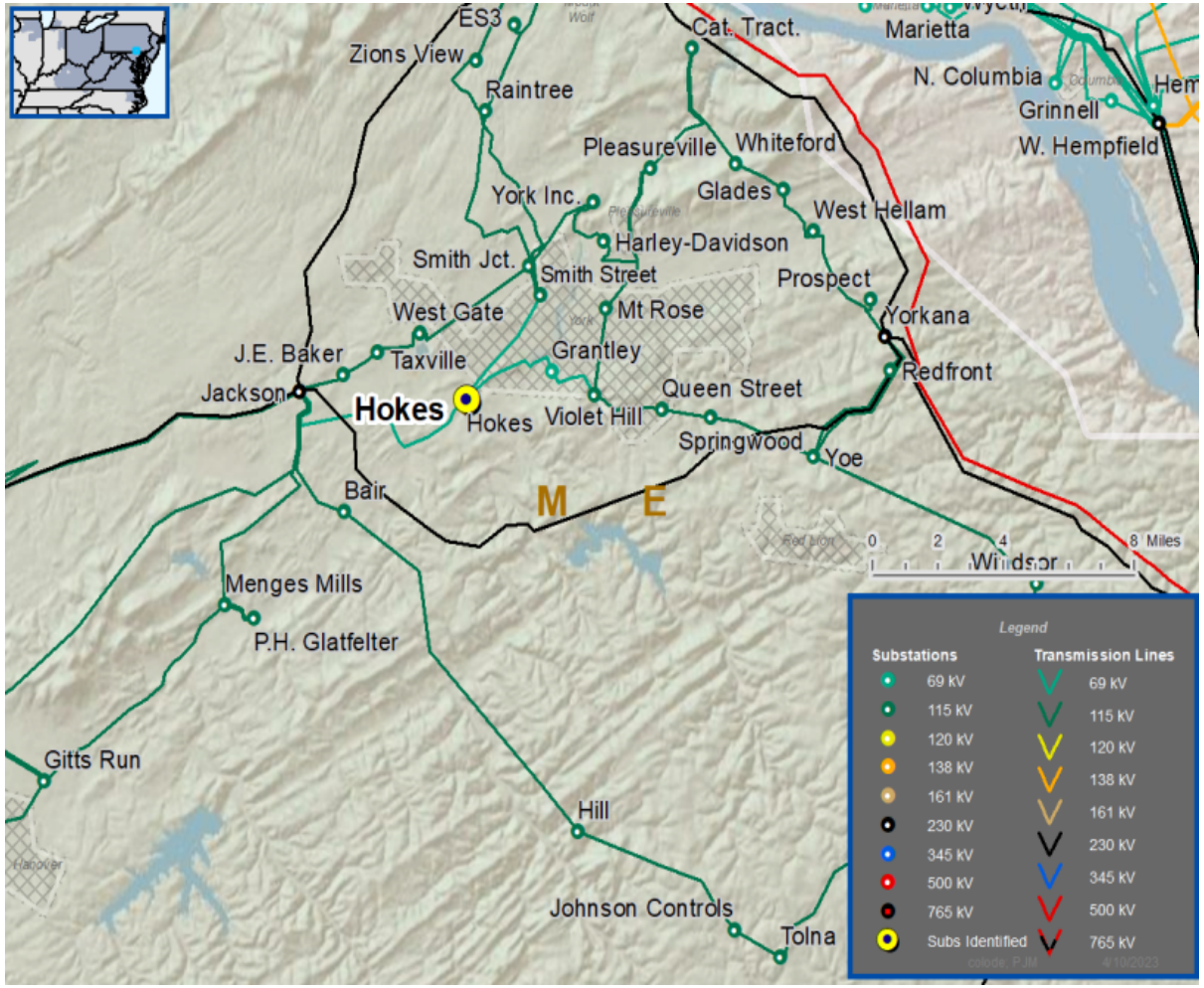
- Add/Expand Bus Configuration
- Load at risk in planning and operational scenarios
- Reduce the amount of exposed potential local load loss during contingency conditions
- Eliminate simultaneous outages to multiple networked elements

Problem Statement:

The loss of Hokes Substation results in the loss of approximately 23 MW of load and approximately 2650 customers.

Substation consists of:

- Three 69 kV transmission lines
- Two 69-13.2 kV distribution transformers



Met-Ed Transmission Zone M-3 Process
Hokes Ring Bus

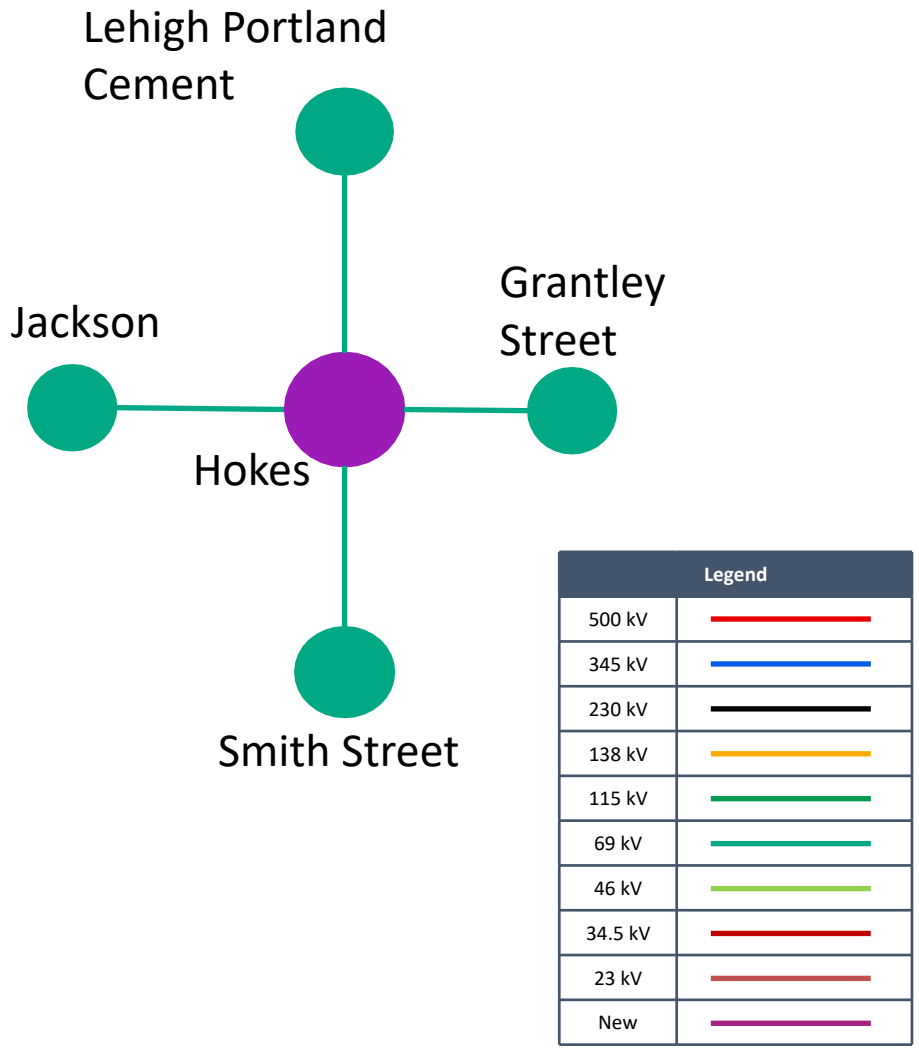
Need Number: ME-2023-003
Process Stage: Solution Meeting – 11/16/2023
Previously Presented: Need Meeting – 4/20/2023
Proposed Solution:

- Convert Hokes Substation into a six-breaker ring bus
- Upgrade terminal equipment to transmission line ratings and adjust relay settings

Transmission Line Ratings:

- Hokes – Lehigh Portland Cement 69 kV Line
  - Before Proposed Solution: 50 / 50 MVA (SN/SE)
  - After Proposed Solution: 53 / 64 MVA (SN/SE)
- Hokes – Smith Street 69 kV Line
  - Before Proposed Solution: 43 / 44 MVA (SN/SE)
  - After Proposed Solution: 139 / 169 MVA (SN/SE)
- Hokes – Jackson 69 kV Line
  - Before Proposed Solution: 51 / 62 MVA (SN/SE)
  - After Proposed Solution: 139 / 169 MVA (SN/SE)
- Hokes – Violet Hill 69 kV Line
  - Before Proposed Solution: 51 / 66 MVA (SN/SE)
  - After Proposed Solution: 74 / 90 MVA (SN/SE)

Alternatives Considered:
Maintain existing configuration and elevated risk to customer reliability and adverse impact on the 69 kV network
Estimated Project Cost: $24.1M
Projected In-Service: 6/1/2025
Status: Conceptual
Model: 2023 RTEP model for 2028 Summer (50/50)



Met-Ed Transmission Zone M-3 Process
North Lebanon – Fredericksburg 69 kV Line

Need Number: ME-2023-007

Process Stage: Solution Meeting 11/16/2023

Previously Presented: Need Meeting 05/18/2023

Project Driver:

Performance and Risk, Operational Flexibility and Efficiency

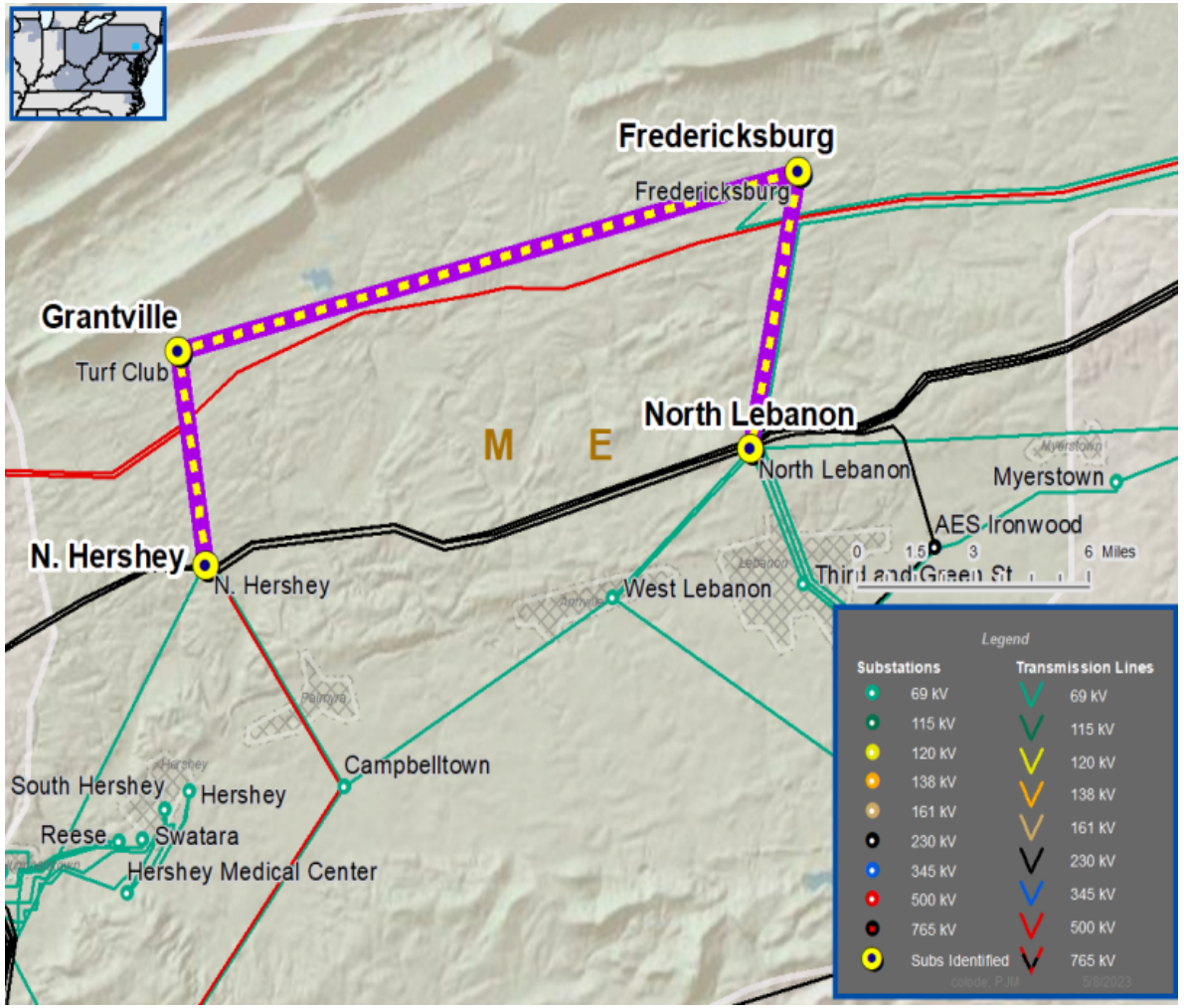
Specific Assumption Reference:

System Performance Projects

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

Problem Statement:

A N-1-1 outage of the North Hershey – Grantville 69 kV and North Lebanon – Fredericksburg 69 kV lines can lead to a potential voltage collapse resulting in a loss of service to 80 MW of load and 10,600 customers.



Met-Ed Transmission Zone M-3 Process
North Lebanon – Fredericksburg 69 kV Line

Need Number: ME-2023-007

Process Stage: Solution Meeting 11/16/2023

Proposed Solution:

Rebuild North Lebanon – Fredericksburg 73 69 kV Line as double circuit.

At North Lebanon Substation

- Add 69 kV breaker
- Replace limiting terminal equipment

At Fredericksburg Substation

- Add 69 kV breaker

Transmission Line Ratings:

- North Lebanon-Fredericksburg 69 kV Line
  - Before Proposed Solution: 82/103 MVA (SN/SE)
  - After Proposed Solution: 139/169 MVA (SN/SE)

Alternatives Considered:

- Operate transmission lines as-is with potential voltage collapse placing customers and load at risk

Estimated Project Cost: $13.6 M

Projected In-Service: 12/31/2026

Project Status: Engineering

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

Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

Met-Ed Transmission Zone M-3 Process
Northkill – Rehrersburg 69 kV Line

Need Number: ME-2023-008

Process Stage: Solution Meeting 11/16/2023

Previously Presented: Need Meeting 06/15/2023

Project Driver:

System Performance Projects

Specific Assumption Reference:

Add/Expand Bus Configuration

- Accommodate Future Transmission Facilities

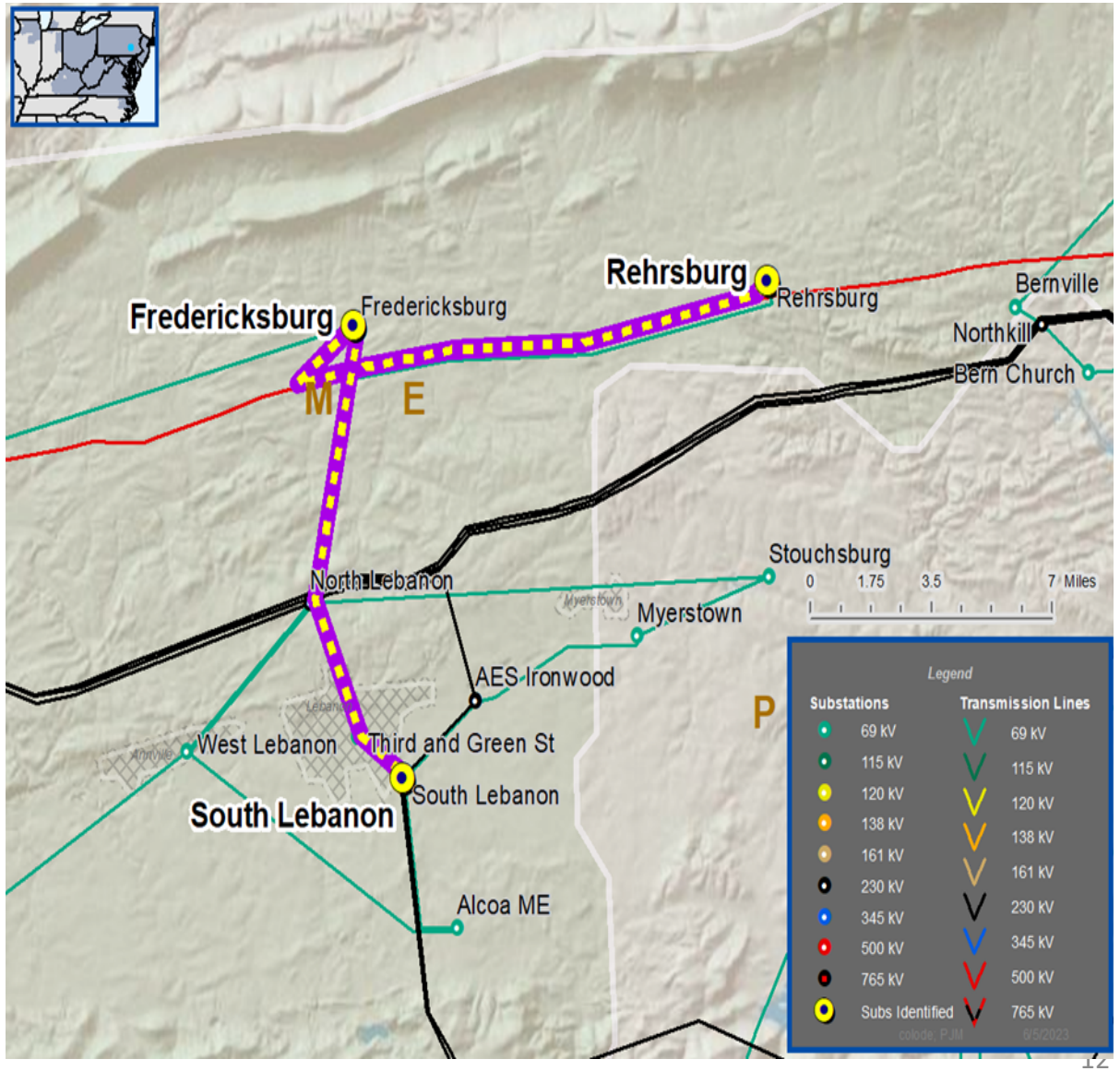
Build New Transmission Line

- Network Radial Lines
- Contingency constrained facilities

Automatic Sectionalizing Schemes

Problem Statement:

The Rehrersburg Substation is fed radially off the Frystown – South Lebanon 69 kV Line. An N-1 outage of this line forces an outage of Rehrersburg Substation, causing a loss of 10.1 MW and 1,230 customers.



Met-Ed Transmission Zone M-3 Process
Northkill – Rehrersburg 69 kV Line

Need Number: ME-2023-008

Process State: Solution Meeting 11/16/2023

Previously Presented: Need Meeting 06/15/2023

Proposed Solution:

- Construct new 69 kV line from Structure #37 on the S. Lebanon –Frystown/Rehrersburg 83 69 kV Line to the Northkill Substation (Approximately 8.9 miles).
- Create a new line terminal and add a fourth 69 kV breaker at Northkill Substation.
- Install two (2) sets of 69 kV disconnect switches with SCADA control and Auto-Transfer Scheme.
- Install 1 set of 69 kV disconnect switches with SCADA control on the tap to Rehrersburg Substation.
- Rebuild the Bernville-Northkill 845 69 kV Line (0.84 mi) to double circuit construction.
- New line will share ~0.94 miles of common structure with newly rebuilt 825 line

Tranmission Line Ratings:

- Rehrersburg T– South Lebanon 69 kV Line
  - Before Proposed Solution: 55 / 56 MVA (SN/SE)
  - After Proposed Solution: 74 / 90 MVA (SN/SE)
- Rehrersburg T– Frystown 69 kV Line
  - Before Proposed Solution: 55 / 56 MVA (SN/SE)
  - After Proposed Solution: 74 / 90 MVA (SN/SE

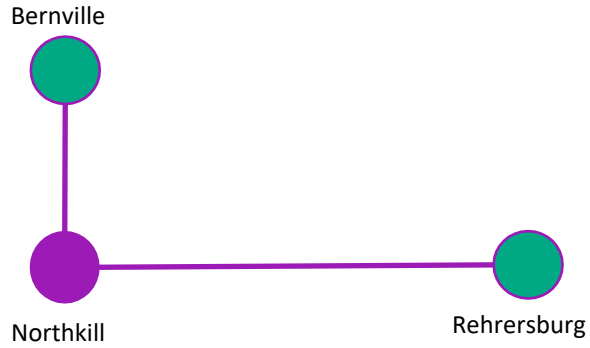
Alternatives Considered:

- Maintain single radial line to Rehrersburg Substation compromising reliability to customers

Estimated Project Cost: $24.13M

Projected In-Service: 12/01/2026

Project Status: Engineering



Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	


Planning
Community

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

10/9/2023 – V1 – Original version posted to pjm.com