Subregional RTEP Committee – Mid-Atlantic
FirstEnergy Supplemental Projects

March 14, 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

Penelec Transmission Zone M-3 Process
Spangler Substation

Need Number: PN-2024-003

Process Stage: Need Meeting 03/14/2024

Project Driver:

Operational Flexibility and Efficiency

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

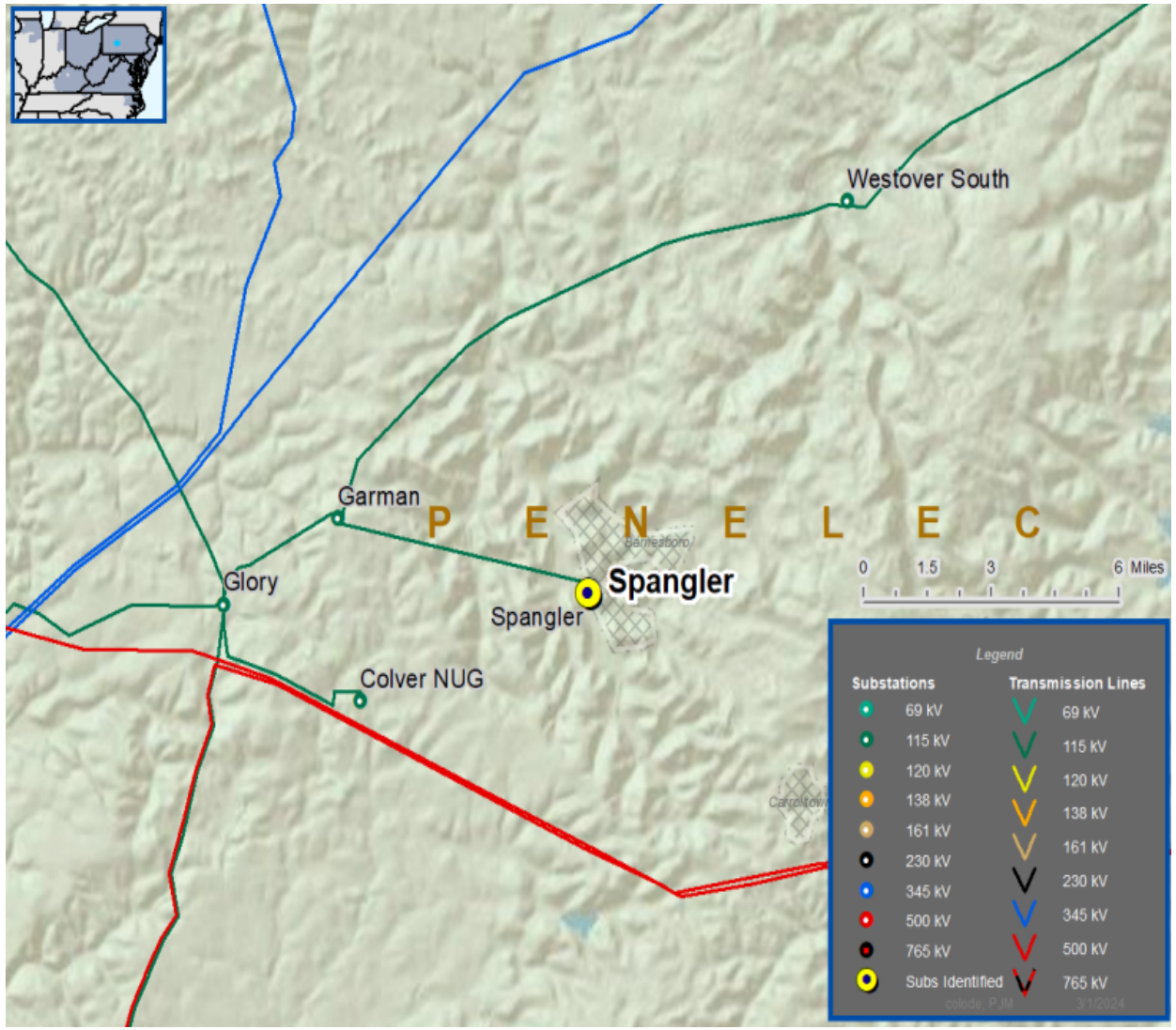
- System reliability and performance
- Substation and line equipment limits

System Performance

- Criticality, impact on reliability, customer outages
- Reliability of non-bulk electric system (Non-BES) Facilities
- Load at risk and customers impacted

Problem Statement:

- Spangler Substation is currently configured as a 46 kV straight bus where bus faults and/or breaker failures result in the interruption of the entire substation.
- Spangler Substation serves approximately 27 MW of load and 2,600 customers. The existing Spangler No. 2 115-46 kV Transformer is 48 years old. The transformer has required corrective maintenance for moisture due to leaks, consists of obsolete parts not supported by the OEM, and is limited by terminal equipment.
- Existing Spangler No. 2 115-46 kV Transformer Ratings:
  - 34 / 44 / 49 / 55 MVA (SN/SSTE/WN/WSTE)



Penelec Transmission Zone M-3 Process
Eagle Valley – Philipsburg 115 kV Line

Need Number: PN-2024-004

Process Stage: Need Meeting 03/14/2024

Project Driver:

Operational Flexibility and Efficiency

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

System Performance Global Factors

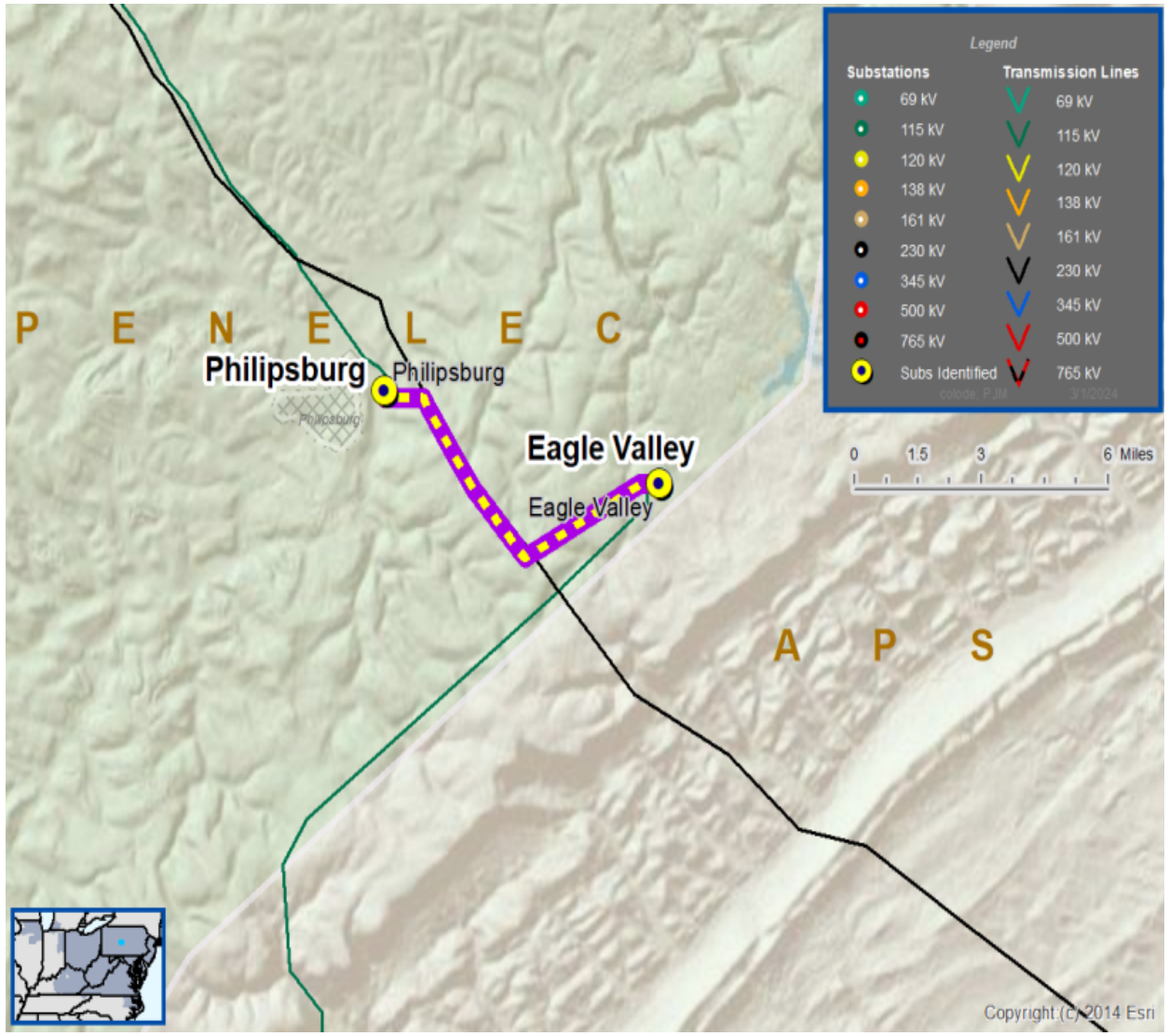
- Past system reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

- The Eagle Valley – Philipsburg 115 kV Line was constructed 68 years ago. The line is approximately 11.9 miles long with 98 wooden H-frame structures.
- Recent inspections have identified that the line is exhibiting deterioration to its poles, arms, braces and attachment hardware.
  - 50 structures failed inspection due to deteriorated condition of wood poles and hardware.
  - 80 structures are 45 years or older.
- Since 2019, the Eagle Valley – Philipsburg 115 kV Line experienced one unscheduled outage due to a broken cross arm.
- The line is limited by terminal equipment.
- Existing Eagle Valley – Philipsburg 115 kV Line Ratings:
  - 137 / 174 / 171 / 190 MVA (SN/SE/WN/WE)



Penelec Transmission Zone M-3 Process
Altoona — Hollidaysburg 46 kV AH Line

Need Number: PN-2024-005

Process Stage: Need Meeting 03/14/2024

Project Driver:
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:
System Performance Projects Global Factors

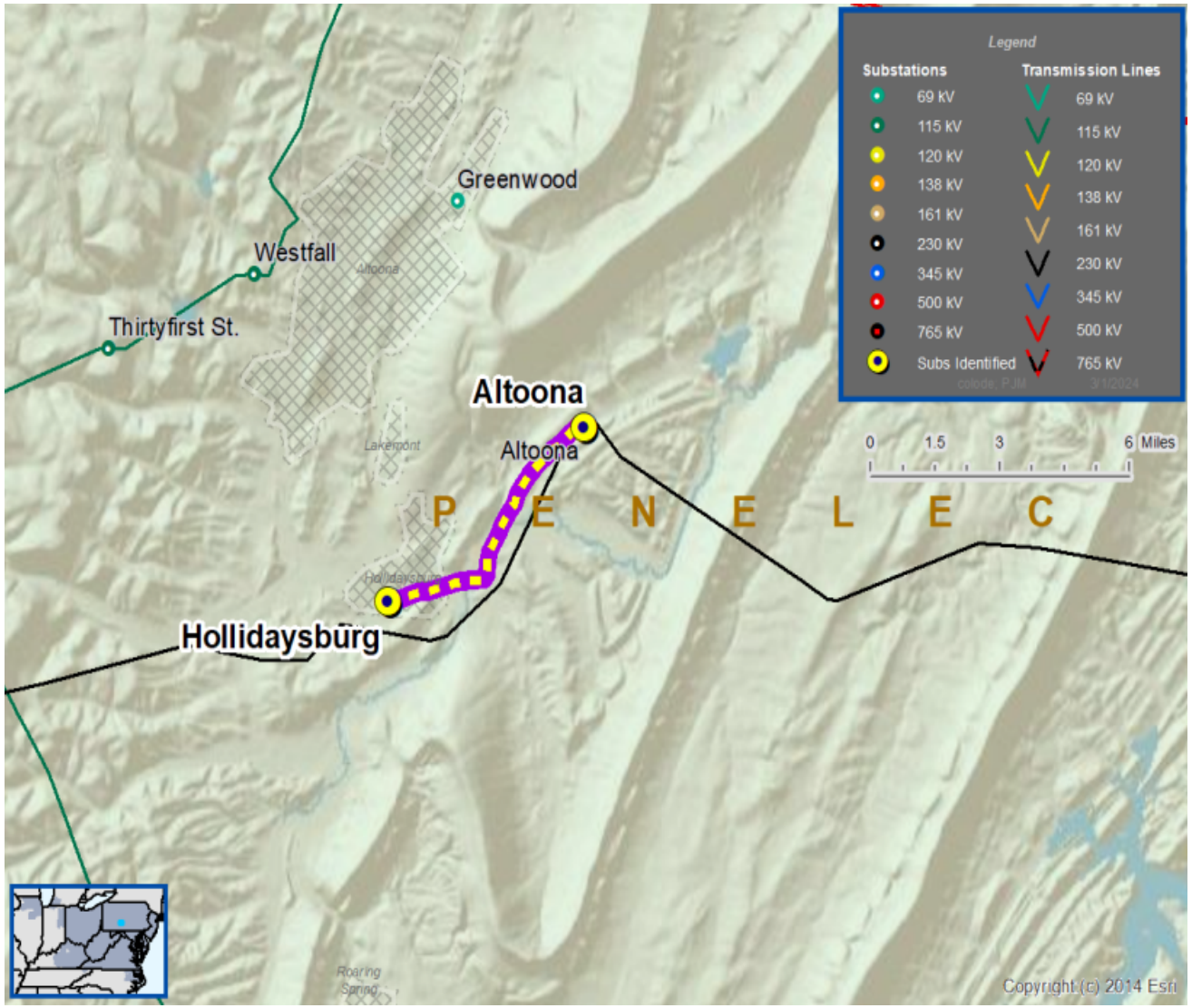
- System reliability and performance
- Substation/line equipment limit

Upgrade Relay Schemes

- Obsolete and difficult to repair communication equipment
- Communication technology upgrades

Problem Statement:

- The Altoona - Hollidaysburg 46 kV AH Line has vintage electromechanical relays for overcurrent protection that have directional tripping.
- The relays limit the line and cause an operation monitoring issue.
- Existing line rating is limited on the Altoona – AH-26 Tap 46 kV Line:
  - 53 / 55 / 55 / 55 MVA (SN/SE/WN/WE)



Penelec Transmission Zone M-3 Process
Claysburg – Summit 115 kV Line

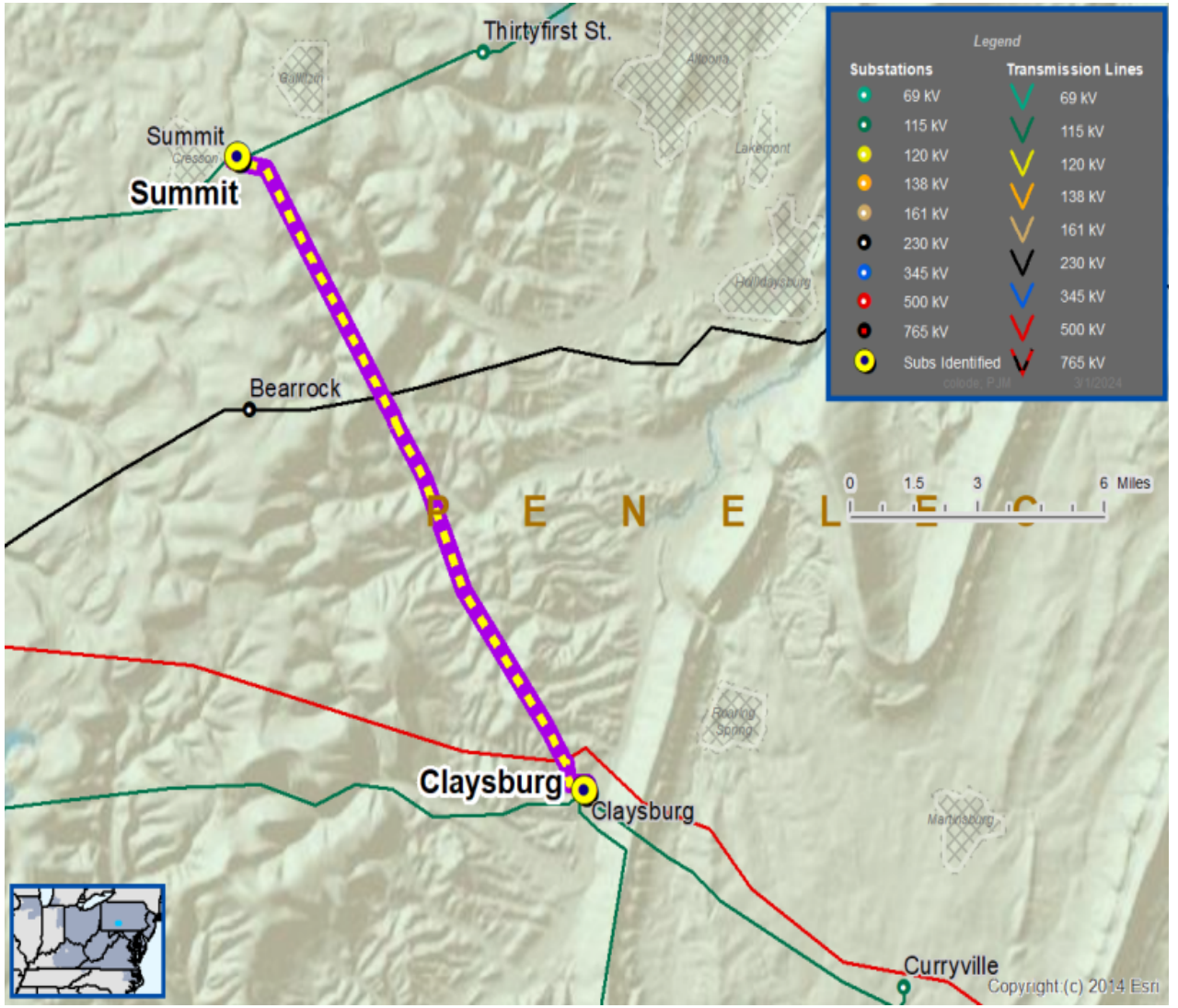
Need Number: PN-2024-008
Process Stage: Need Meeting 03/15/2024

Project Driver:
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
System Performance Global Factors
- Past system reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement
- Age/condition of wood pole transmission line structures

Problem Statement
- The Claysburg – Summit 115 kV Line was constructed 65 years ago. The line is approximately 11.8 miles long with mostly wooden H-frame structures.
- Since 2008, there have been 44 repairs to deteriorated insulators, crossarms, conductor strands, braces, and wood poles.
- The Claysburg – Summit 115 kV Line experienced 21 unscheduled outages in the last 12 years.
- The line is limited by terminal equipment.
- Existing Claysburg – Summit 115 kV Line ratings:
  - 146 / 174 / 181 / 190 MVA (SN/SE/WN/WE)



APS Transmission Zone M-3 Process
Grand Point – Roxbury 138 kV Line

Need Numbers: APS-2024-028, PN-2024-012

Process Stage: Need Meeting 03/14/2024

Project Driver:
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:
System Performance Global Factors

- Past system reliability/performance

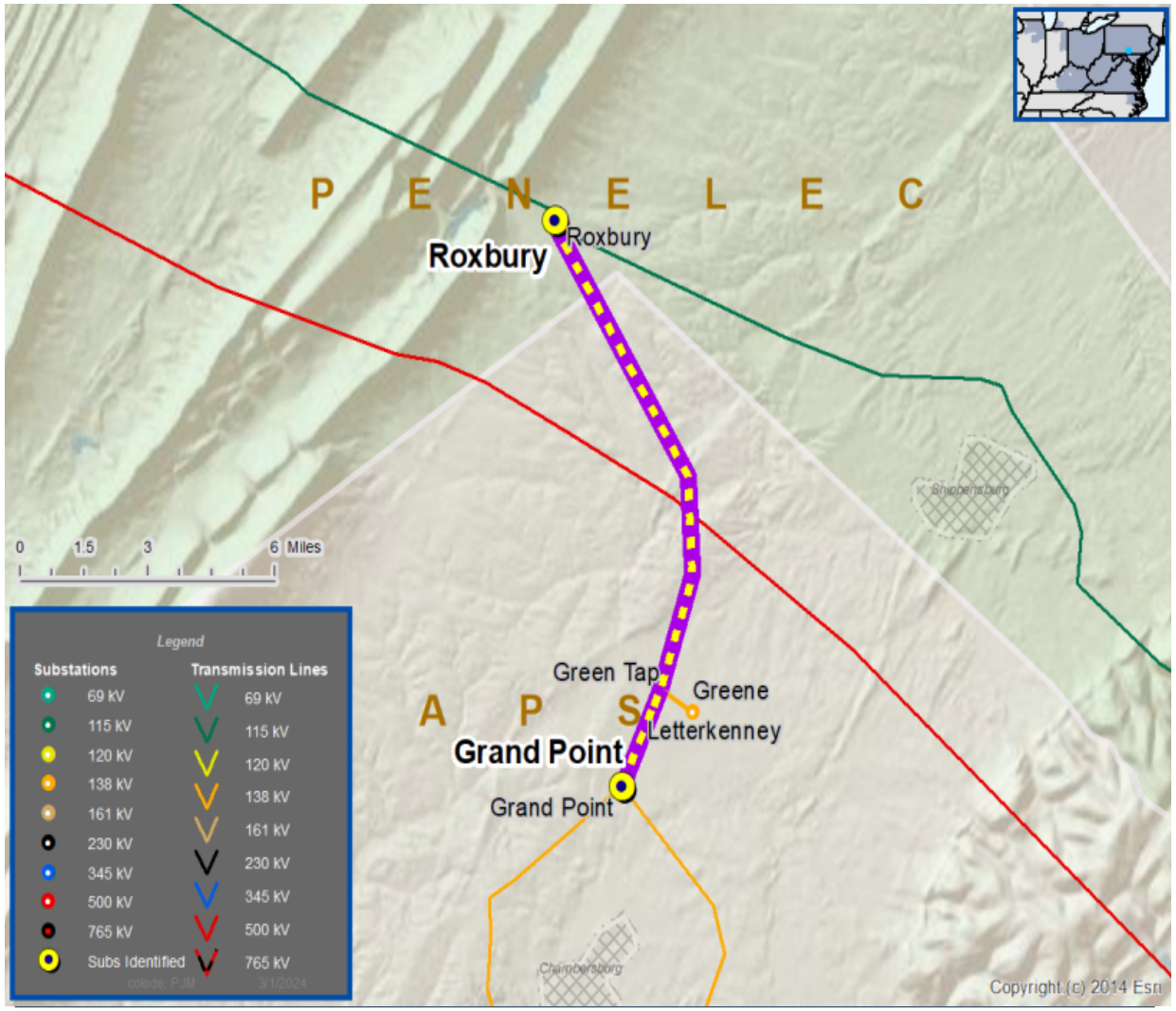
Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

- The Grand Point – Roxbury 138 kV Line was constructed in 1960. The line is approximately 14 miles long with 109 wood pole structures.
- Recent inspections have indicated that 87 structures are exhibiting deterioration. Inspection findings include woodpecker damage, top rot, groundline decay and cracking.
- Since 2014, the line has had eight unscheduled outages.

- Existing Grand Point – Letterkenny 138 kV Line Rating:
  - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- Existing Letterkenny – Greene Tap 138 kV Line Rating:
  - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- Existing Greene Tap – Roxbury 138 kV Line Rating:
  - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)



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

Penelec Transmission Zone M-3 Process
Altoona — Hollidaysburg 46 kV ALH Line

Need Number: PN-2023-034

Process Stage: Solution Meeting 03/14/2024

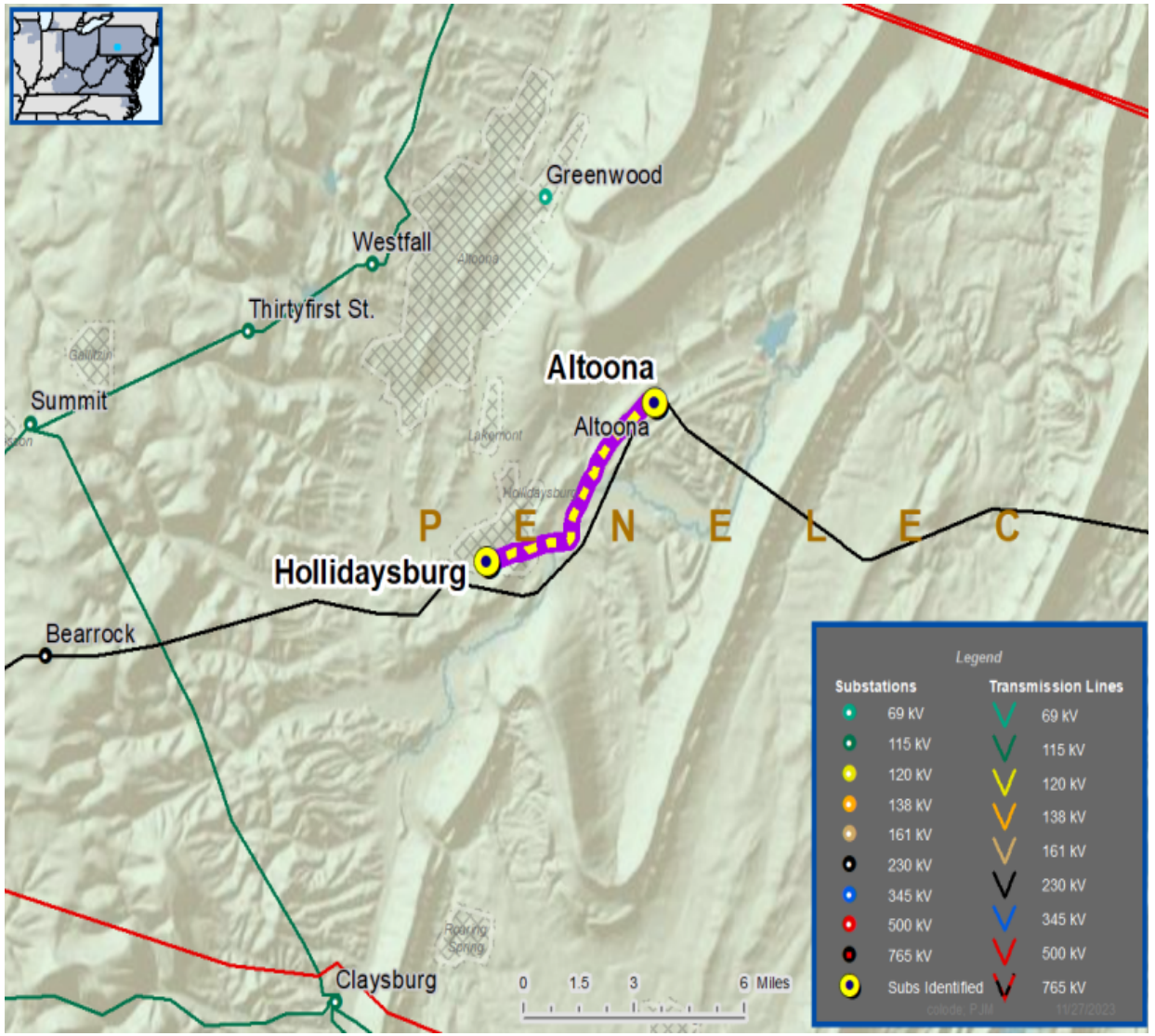
Previously Presented: Need Meeting 12/13/2023

Project Driver:
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:
System Performance Projects Global Factors
- System reliability and performance
- Substation/line equipment limit

Upgrade Relay Schemes
- Obsolete and difficult to repair communication equipment
- Communication technology upgrades

Problem Statement:
- The Altoona - Hollidaysburg 46 kV Line has old electromechanical relays for overcurrent protection that have directional tripping.
- The relays limit the line and cause an operation monitoring issue.
- Existing line rating 40/40 - 40/40 MVA (SN /SE – WN/ WE)



Penelec Transmission Zone M-3 Process
Altoona — Hollidaysburg 46 kV ALH Line

Need Number: PN-2023-034
Process Stage: Solution Meeting 03/14/2024

Proposed Solution:

- Replace relaying at Altoona and Hollidaysburg substations
- Replace disconnect switches and substation conductor at Altoona and Hollidaysburg substations

Transmission Line Ratings:

Altoona – Hollidaysburg 46 kV ALH Line

- Before Proposed Solution:
  - 40 / 40 / 40 / 40 MVA (SN/SE/WN/WE)
- After Proposed Solution:
  - 81 / 98 / 91 / 116 MVA (SN/SE/WN/WE)

Alternatives Considered:

- Maintain existing condition with directional relays limiting the capacity of the line.

Estimated Project Cost: $1.5M
Projected In-Service: 12/31/2026
Project Status: Conceptual
Model: 2023 RTEP model 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	


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

3/04/2024 – V1 – Original version posted to pjm.com
3/07/2024 – V2 – Added FE Logo on slide deck