

Transmission Expansion Advisory Committee –FirstEnergy (Penelec) Supplemental Projects

May 12, 2020

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: PN-2020-001

Process Stage: Need Meeting 5/12/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

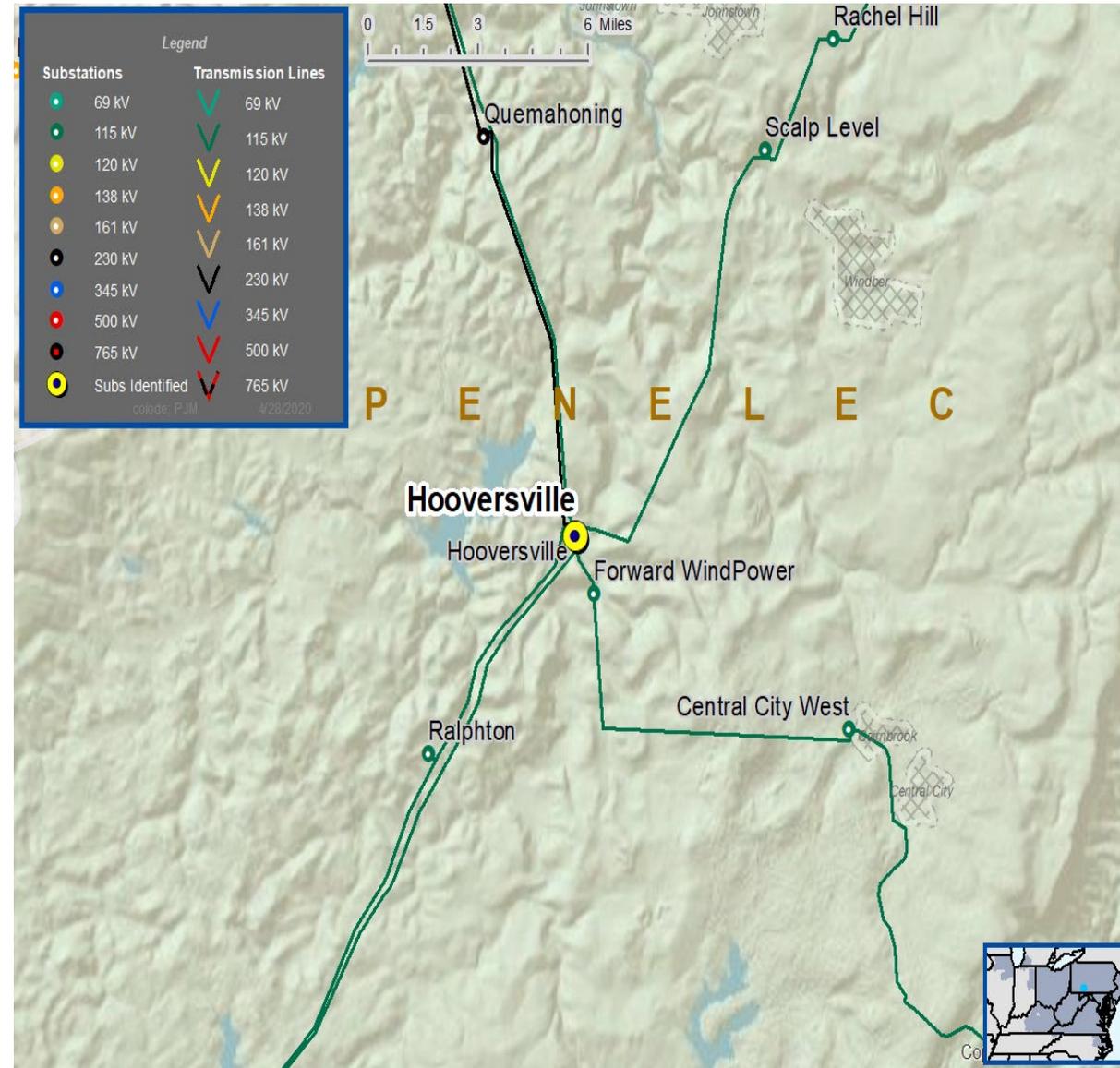
Substation Condition Rebuild/Replacement

Problem Statement:

Hooversville #3 230/115 kV Transformer

- Transformer has increased failure probability due to:
 - Transformer is 43 years old.
 - Type “U” bushings
 - High level heating gases and moisture
 - Obsolete parts
 - Nitrogen and oil leaks

Transformer circuit rating is the existing transformer rating of 245/306 MVA (SN/SE).



Need Number: PN-2020-002

Process Stage: Need Meeting 5/12/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

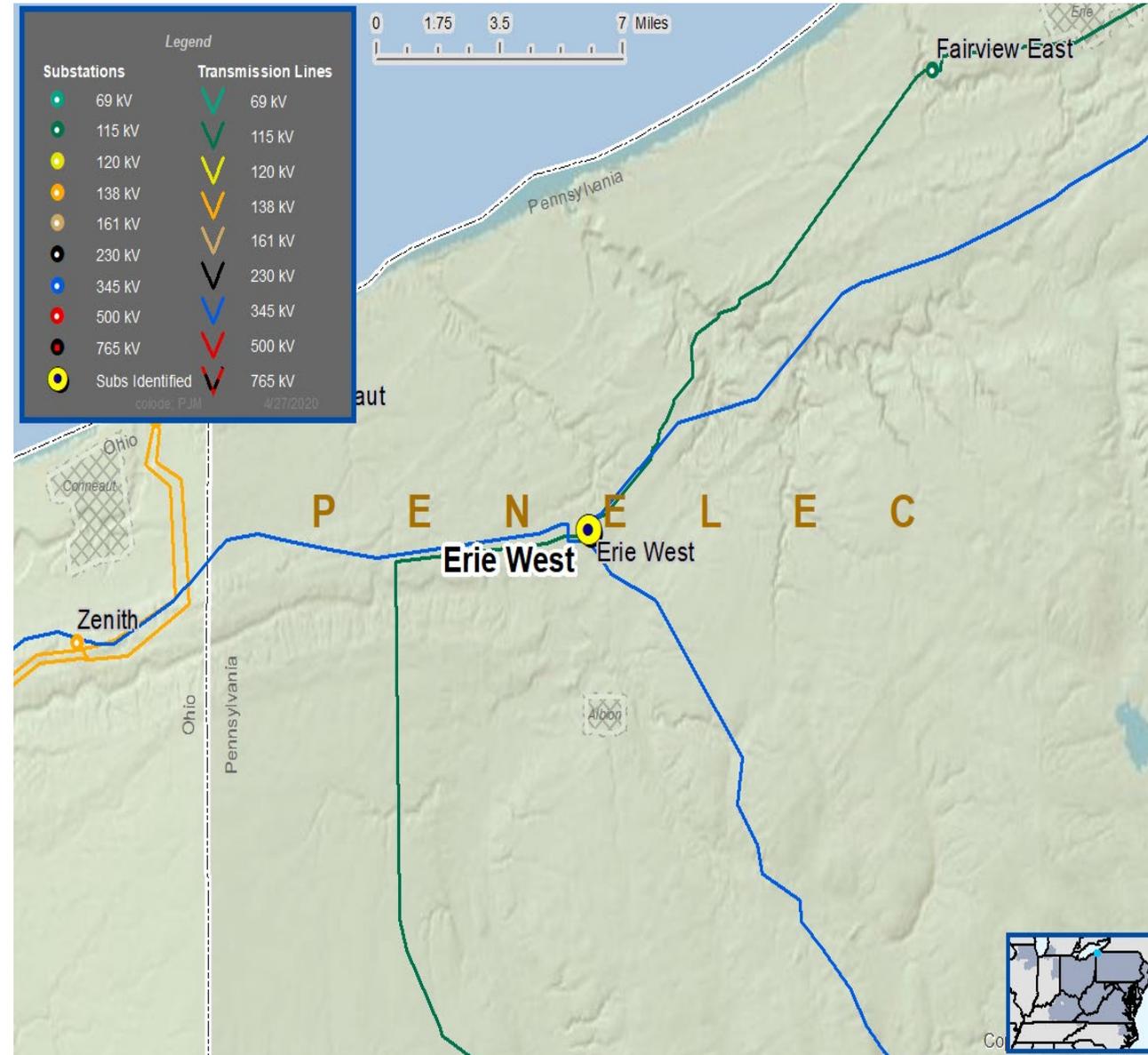
Substation Condition Rebuild/Replacement

Problem Statement:

Erie West #1 345/115 kV Transformer

- Transformer has increased failure probability due to:
 - Transformer is 47 years old.
 - High level heating gases and moisture
 - HV bushings have significant deterioration
 - Obsolete parts
 - Nitrogen and oil leaks

Transformer circuit rating is the existing transformer rating of 266/333 MVA (SN/SE).



Need Number: PN-2020-005

Process Stage: Needs Meeting 5/12/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Operational Flexibility and Efficiency

Specific Assumption Reference:

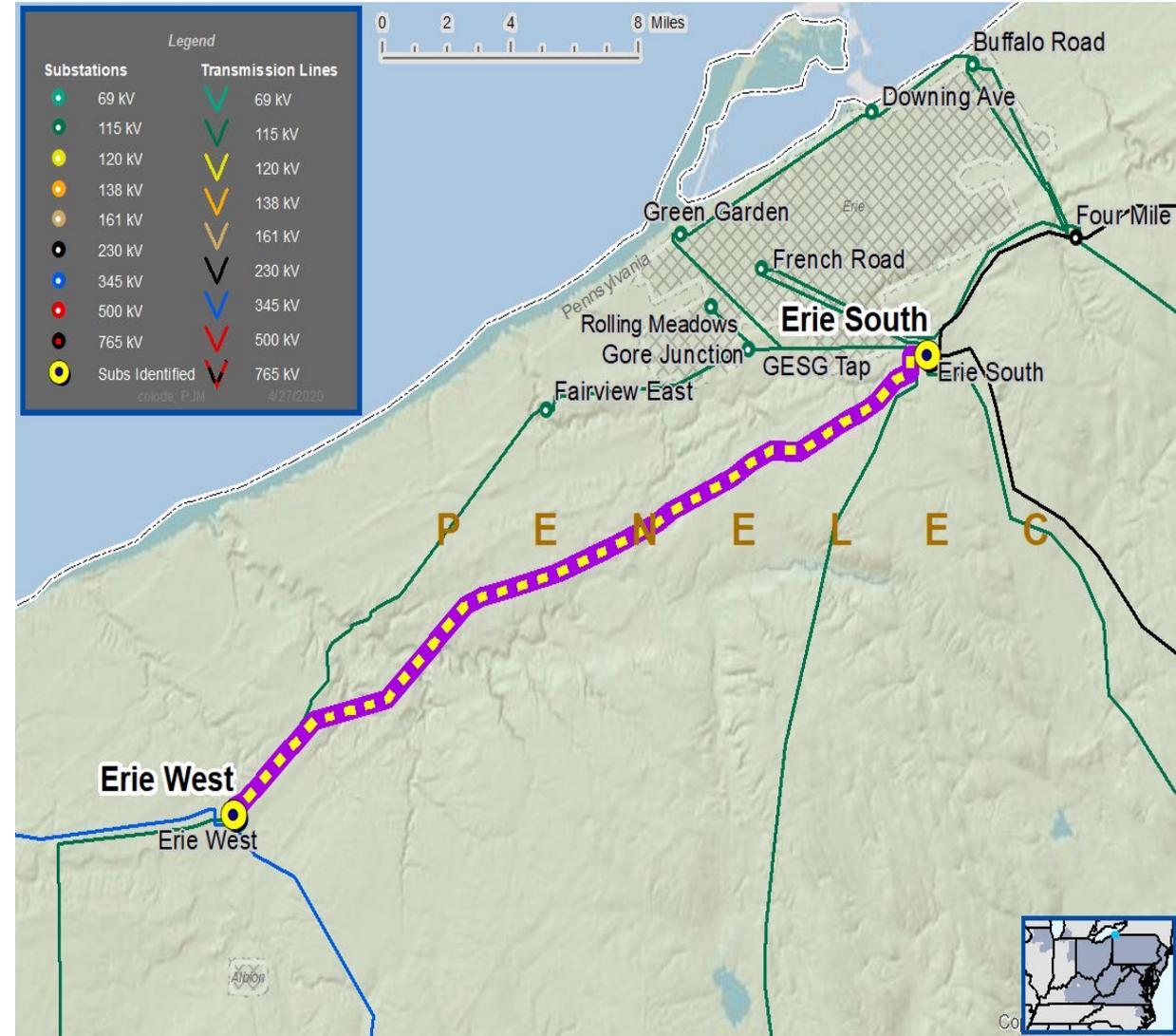
System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

Upgrade Relay Schemes

- Relay schemes that have a history of misoperation
- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
- Communication technology upgrades
- Bus protection schemes

Continued on next slide...



Problem Statement:

- FirstEnergy has identified protection schemes using a certain vintage of relays and communication equipment that have a history of misoperation.
- Proper operation of the protection scheme requires all the separate components perform adequately during a fault.
- In many cases the protection equipment cannot be repaired due to a lack of replacement part and available expertise in the outdated technology.
- Transmission line ratings are limited by terminal equipment.

Need Number	Transmission Line / Substation Locations	Existing Line Rating (SN / SE)	Existing Conductor Rating (SN / SE)	Limiting Terminal Equipment
PN-2020-005	Erie South – Erie West 345 kV Line	1222/1385	1639/1999	Line Traps, Line Relaying, Substation Conductor, Line Drop

Need Number: PN-2020-007

Process Stage: Need Meeting 05/12/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

Substation Condition Rebuild/Replacement

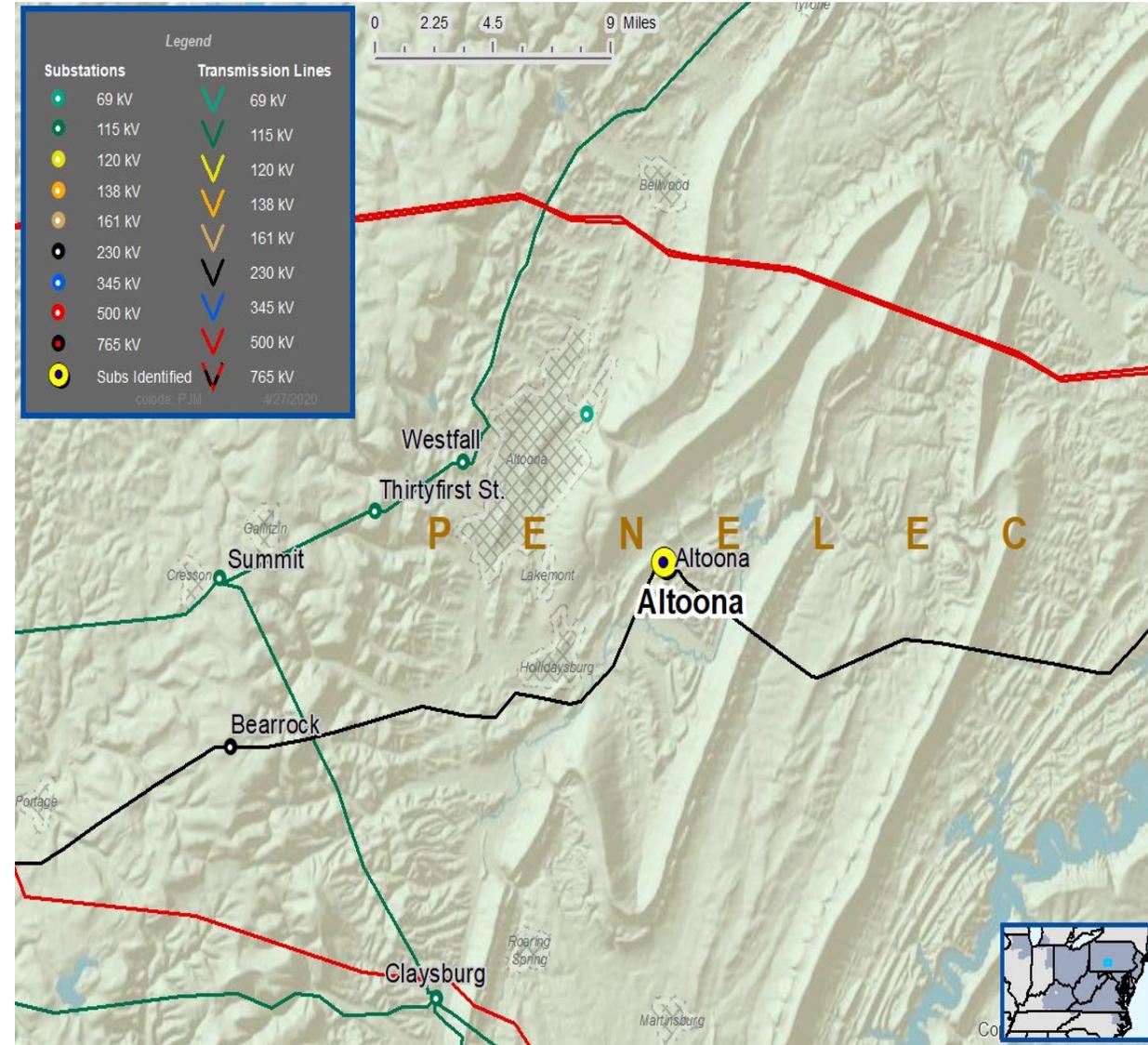
System Performance Projects Global Factors

Problem Statement:

Altoona #1 230-46 kV Transformer

- Transformer has increased failure probability due to:
 - Transformer is 55 years old
 - Poor oil quality in LTC
 - Nitrogen leaks in tank
 - Bushing H3 oil leaks

Transformer circuit rating is 89/97 MVA (SN/SE) and the existing transformer rating is 90/97 MVA (SN/SE). (substation conductor)



Need Number: PN-2020-008

Process Stage: Need Meeting 05/12/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

Substation Condition Rebuild/Replacement

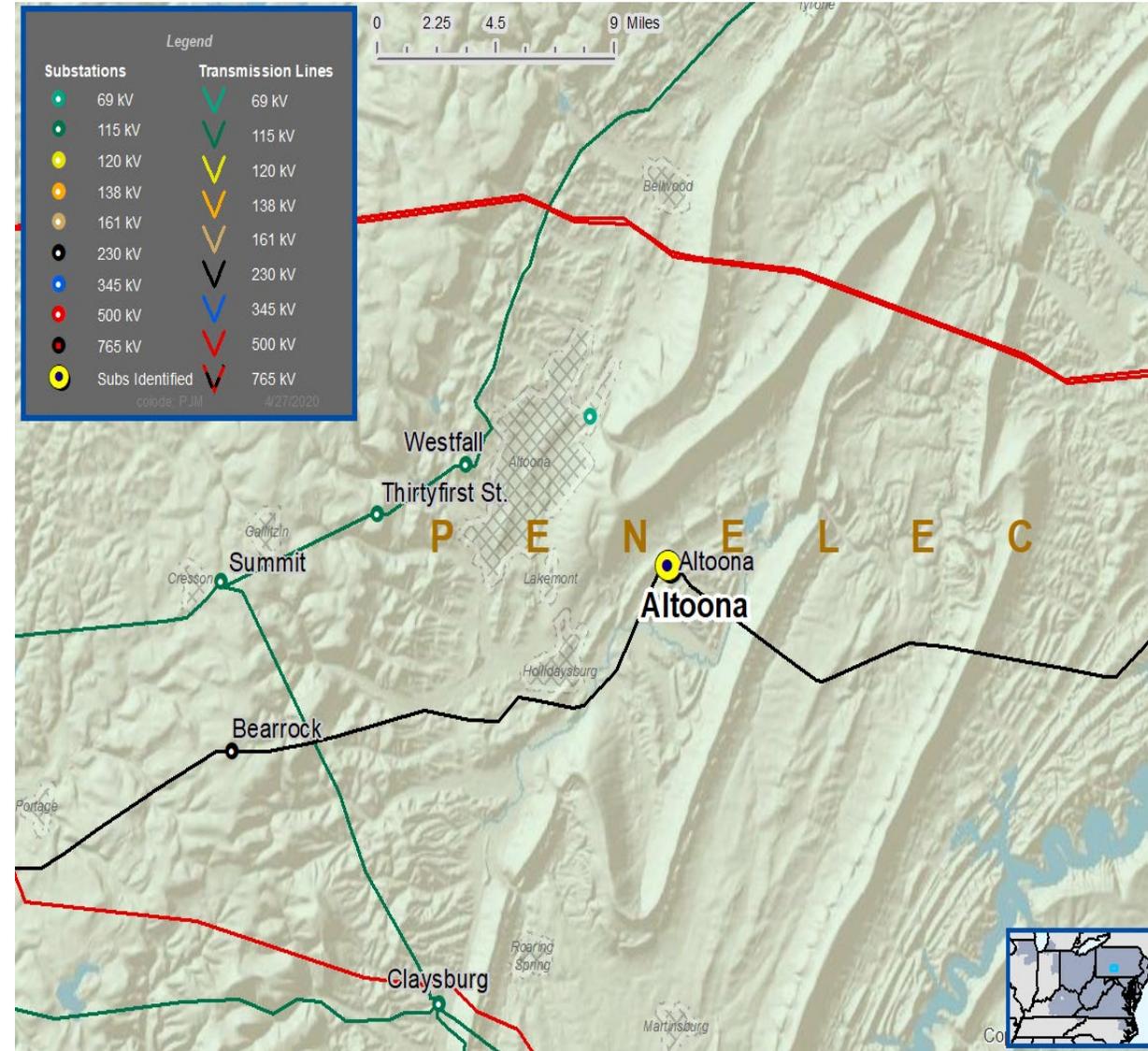
System Performance Projects Global Factors

Problem Statement:

Altoona #2 230-46 kV Transformer

- Transformer has increased failure probability due to:
 - Transformer is 47 years old
 - Nitrogen leak in tank
 - LTC oil leak
 - Pump flanges are leaking
 - SCADA alarms are not functional

Transformer circuit rating is 89/97 MVA (SN/SE) and the existing transformer rating is 91/97 MVA (SN/SE). (substation conductor)



Questions?



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

4/29/2020 – V1 – Original version posted to pjm.com