

Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

August 15, 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

Need Number: PN-2020-004, APS-2020-003

Process Stage: Solution Meeting – 08/15/2024

Previously Presented: Need Meeting – 04/16/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

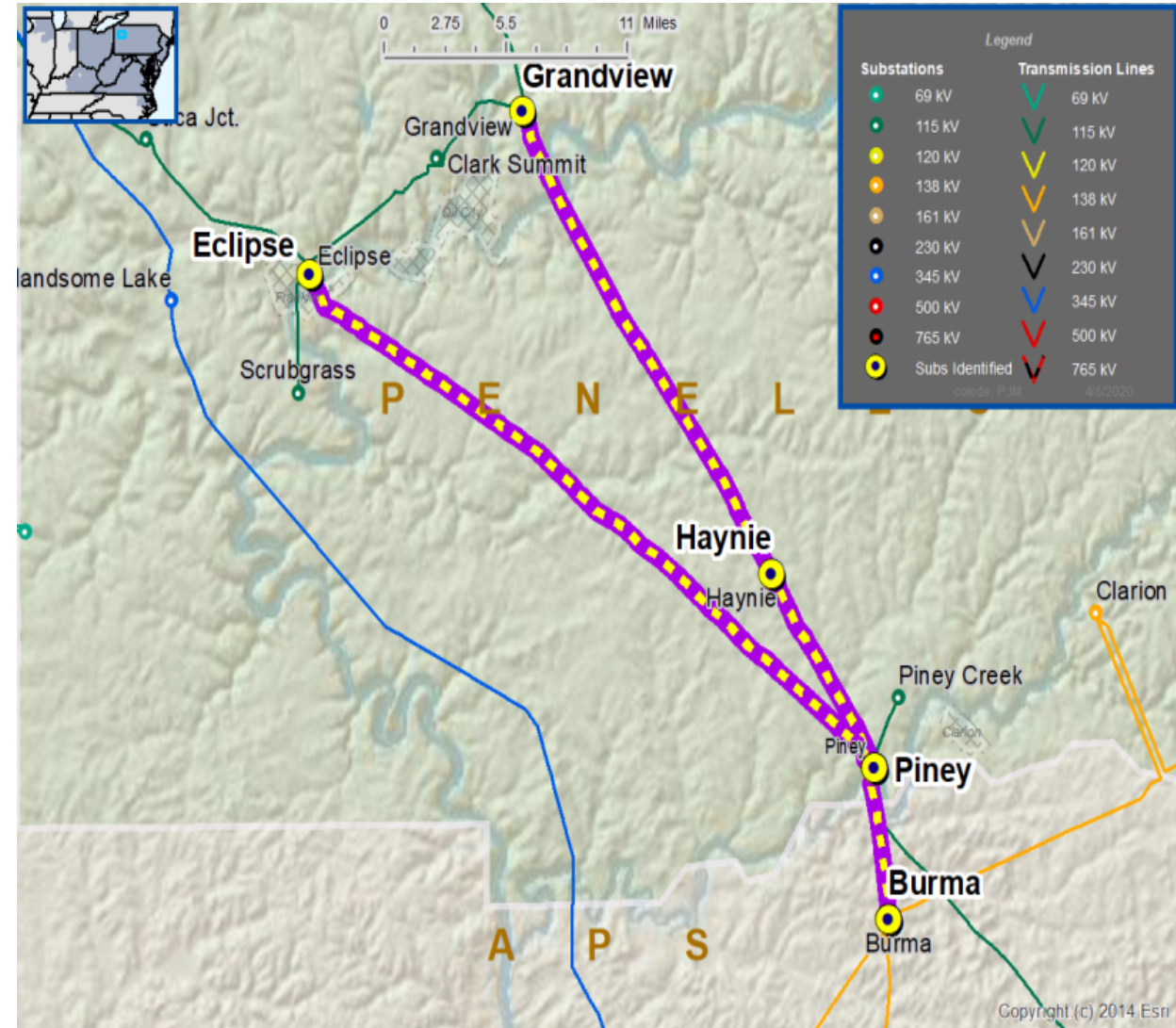
System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

Upgrade Relay Schemes

- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
- Communication technology upgrades

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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cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.
- Transmission line ratings are limited by terminal equipment.

Need Number	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE/ WN / WE)	Existing Conductor Rating MVA (SN / SE/ WN / WE)
PN-2020-004	Grandview – Haynie 115 kV Line Haynie – Piney 115 kV Line	147 / 190 / 181 / 190 147 / 190 / 181 / 190	202 / 245 / 228 / 290 202 / 245 / 228 / 290
PN-2020-004 APS-2020-003	Burma – Piney 115 kV Line	221 / 262 / 263 / 286	232 / 282 / 263 / 334
PN-2020-004	Eclipse – Piney 115 kV Line	162 / 174 / 181 / 190	232 / 282 / 263 / 334

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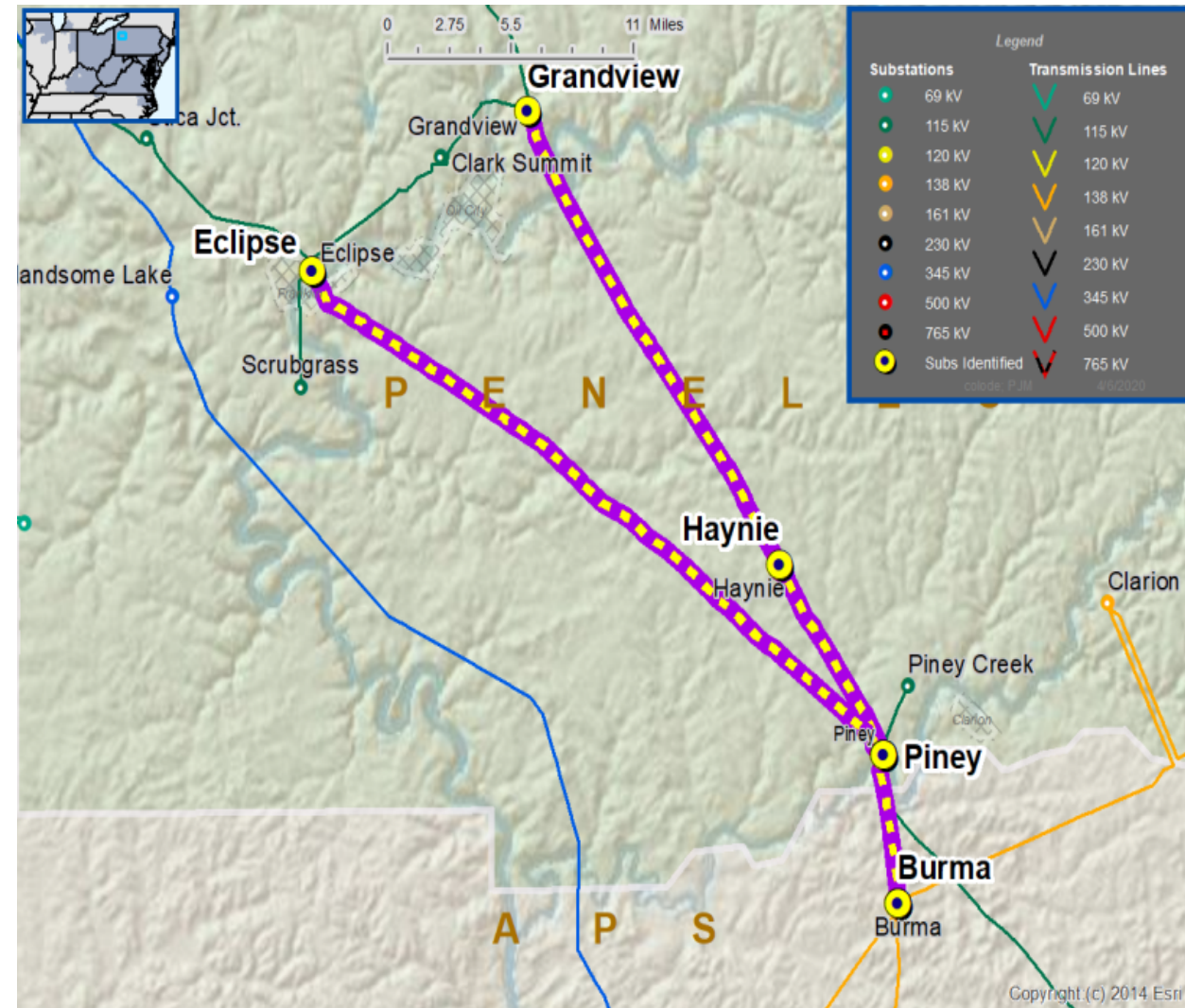
Problem Statement (Continued):

Piney Substation (Multiple System Condition Issues Identified):

- Burma 115 kV Terminal:
 - Breaker is experiencing oil leaks, foundation needs to be repaired, and oil containment needs replaced
 - Breaker disconnect switches are heavily worn
- Grandview 115 kV Terminal:
 - Breaker is experiencing oil leaks, foundation needs to be repaired, and oil containment needs replaced
 - Breaker disconnect switches are heavily worn
- Timblin 115 kV Terminal:
 - Breaker is experiencing oil leaks, foundation needs to be repaired, and oil containment needs replaced
 - Breaker disconnect switches are heavily worn
 - The existing line rating is the existing conductor rating of 178/214 MVA (SN/SE)
- Eclipse 115 kV Terminal:
 - Infrared inspection revealed hot spots on switches
- 115 kV bus tie breaker:
 - Breaker is experiencing oil leaks, foundation needs to be repaired, and oil containment needs replaced
 - Breaker disconnect switches are heavily worn
- No. 3 Transformer 115 kV Terminal:
 - Breaker is experiencing oil leaks, foundation needs to be repaired, and oil containment needs replaced
 - Breaker disconnect switches are heavily worn
- No. 4 Transformer 115 kV Terminal:
 - Breaker is experiencing oil leaks, foundation needs to be repaired, and oil containment needs replaced
 - Breaker disconnect switches are heavily worn

Grandview Substation:

- Piney 115 kV Terminal:
 - Breaker is experiencing SF6 gas leaks, replacement parts have been discontinued and AC alarm is failed
 - Breaker disconnect switches are heavily worn



Proposed Solution:

Need Number	Transmission Line / Substation Locations	New MVA Line Rating (SN/SE/WN/WE)	Scope of Work
PN-2020-004 APS-2020-003	Piney – Burma 115 kV Line	232 / 282 / 263 / 334	At Piney Substation, on the Burma Line Terminal: <ul style="list-style-type: none"> ▪ Replace the circuit breaker, line trap, substation conductor, relays and associated disconnect switches.
	Piney – Haynie 115 kV Line Haynie– Grandview 115 kV Line	202 / 245 / 228 / 290	At Piney, on the Grandview/Haynie Line Terminal: <ul style="list-style-type: none"> ▪ Replace the circuit breaker, line trap, substation conductor, relays and associated disconnect switches. At Grandview Substation, on the Piney/Haynie Line Terminal: <ul style="list-style-type: none"> ▪ Replace the line trap, substation conductor, relays and associated disconnect switches.
	Piney – Timblin 115 kV Line	178 / 214 / 200 / 254	At Piney Substation, on the Timblin Line Terminal: <ul style="list-style-type: none"> ▪ Replace circuit breaker and associated disconnect switches.
	Piney – Eclipse 115 kV Line	232 / 282 / 263 / 334	At Piney Substation, on the Eclipse Line Terminal: <ul style="list-style-type: none"> ▪ Replace line trap, substation conductor, disconnect switches and relays. At Eclipse Substation, on the Piney Line Terminal: <ul style="list-style-type: none"> ▪ Replace line trap, substation conductor and relays.
	Piney Substation	N/A	At Piney Substation: <ul style="list-style-type: none"> ▪ Replace 115 kV bus tie breaker, 115 kV No. 3 Transformer Breaker, 115 kV No. 4 Transformer Breaker, relays and associated disconnect switches. ▪ Construct a new control building to house new equipment

Alternatives Considered:

- Maintain existing condition with elevated risk of equipment failure and relay misoperation.

Estimated Project Cost: \$11.4M

Projected In-Service: 01/12/2026

Project Status: Engineering

Model: 2023 Series 2028 RTEP Summer (50/50)



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

08/05/2024 – V1 – Original version posted to pjm.com