Transmission Expansion Advisory Committee FirstEnergy Supplemental Projects

August 6th, 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

APS Transmission Zone M-3 Process
Pruntytown No. 3 500/138 kV Transformer

Need Number: APS-2024-071

Process Stage: Need Meeting – 08/06/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

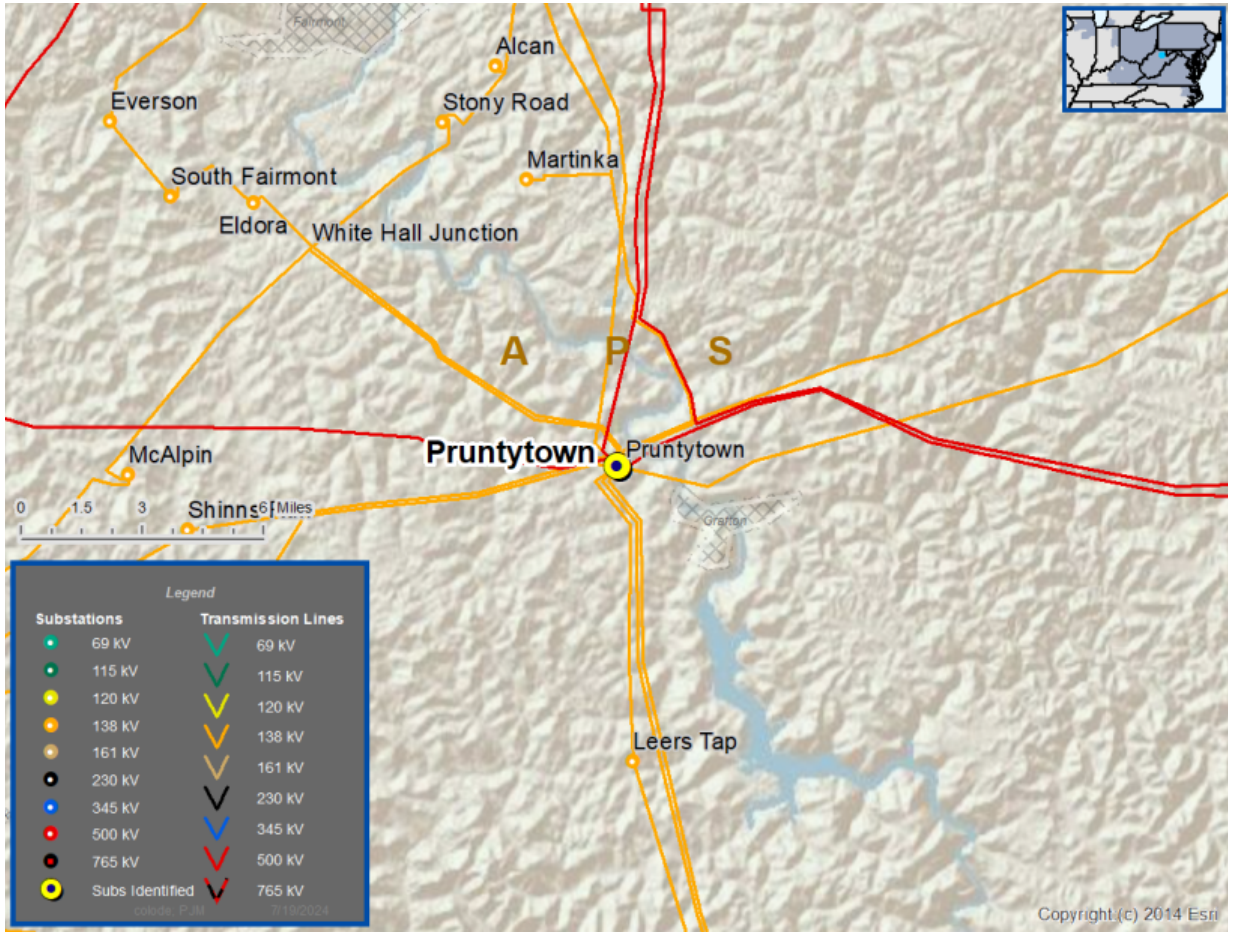
- System reliability and performance
- Add/Replace Transformers
- Past System Reliability/Performance

Problem Statement:

- The Pruntytown No. 3 500/138 kV Transformer is approximately 48 years old and is approaching end of life.
- The transformer has experienced an increase in moisture content.
- The transformer parts and relaying are obsolete.
- The transformer and relaying equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.

Existing transformer ratings:

- 470 / 488 MVA SN/SLTE
- 553 / 570 MVA WN/WLTE



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

APS Transmission Zone M-3 Process Misoperation Relay Projects

Need Numbers: APS-2024-057, APS-2024-058

Process Stage: Solution Meeting 08/06/2024

Previously Presented: Need Meeting 06/04/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

System Condition Projects

- Substation Condition Rebuild/Replacement

Upgrade Relay Schemes

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

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.

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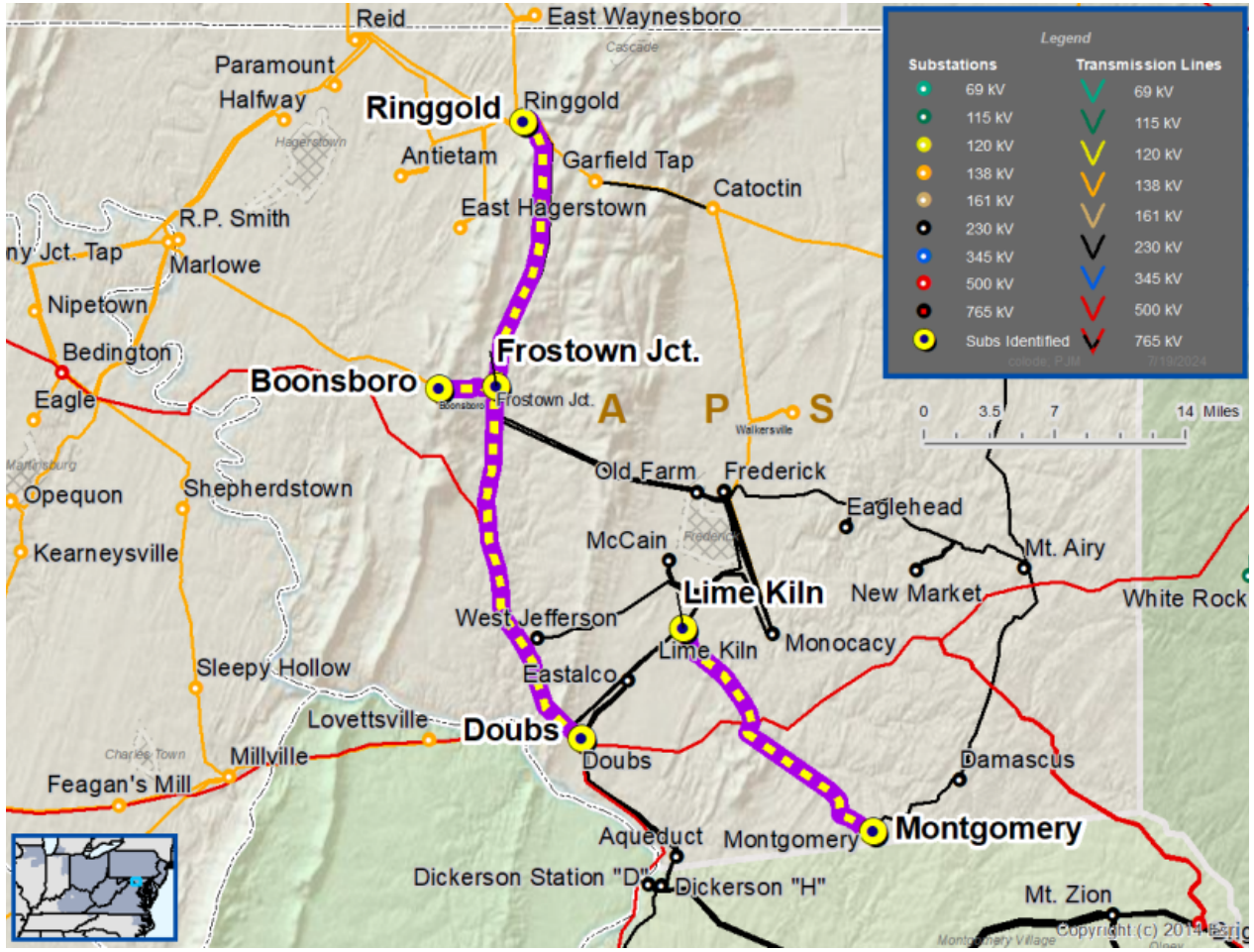

APS Transmission Zone M-3 Process
Misoperation Relay Projects

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN /WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-057	Doubs – Frostown Junction 230 kV Line	617 / 698 / 699 / 762	617 / 754 / 699 / 894
	Frostown Junction – Ringgold 230 kV Line	324 / 349 / 361 / 381	617 / 754 / 699 / 894
APS-2024-058	Lime Kiln – Montgomery 230 kV Line	548 / 688 / 699 / 804	617 / 754 / 699 / 894

APS Transmission Zone M-3 Process
Misoperation Relay Projects

Proposed Solution:

Need #	Transmission Line / Substation Locations	New MVA Line Rating (SN / SE / WN / WE)	Scope of Work	Estimated Cost ($ M)	Target ISD
APS-2024-057	Doubs – Frostown Junction 230 kV Line	617 / 754 / 699 / 894	• At Doubs, replace line trap, substation conductor and relaying	$6.30	12/31/2026
	Frostown Junction – Ringgold 230 kV Line	617 / 754 / 699 / 894	• At Ringgold, replace line trap, disconnect switches, substation conductor and relaying		
APS-2024-058	Lime Kiln – Montgomery 230 kV Line	617 / 754 / 699 / 894	• At Lime Kiln, replace CVT on bus, substation conductor and relaying • At Montgomery, replace CVT on bus, disconnect switches, substation conductor and relaying	$9.20	10/31/2026

Alternatives Considered: Maintain equipment in existing condition with elevated risk of equipment misoperation.

Project Status: Engineering

Model: 2023 RTEP model for 2028 Summer (50/50)

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

07/26/2024– V1 – Original version posted to pjm.com