

Subregional RTEP Committee - Western FirstEnergy Supplemental Projects

February 16, 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

Need Numbers: APS-2024-023, -024, -025

Process Stage: Need Meeting 2/16/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

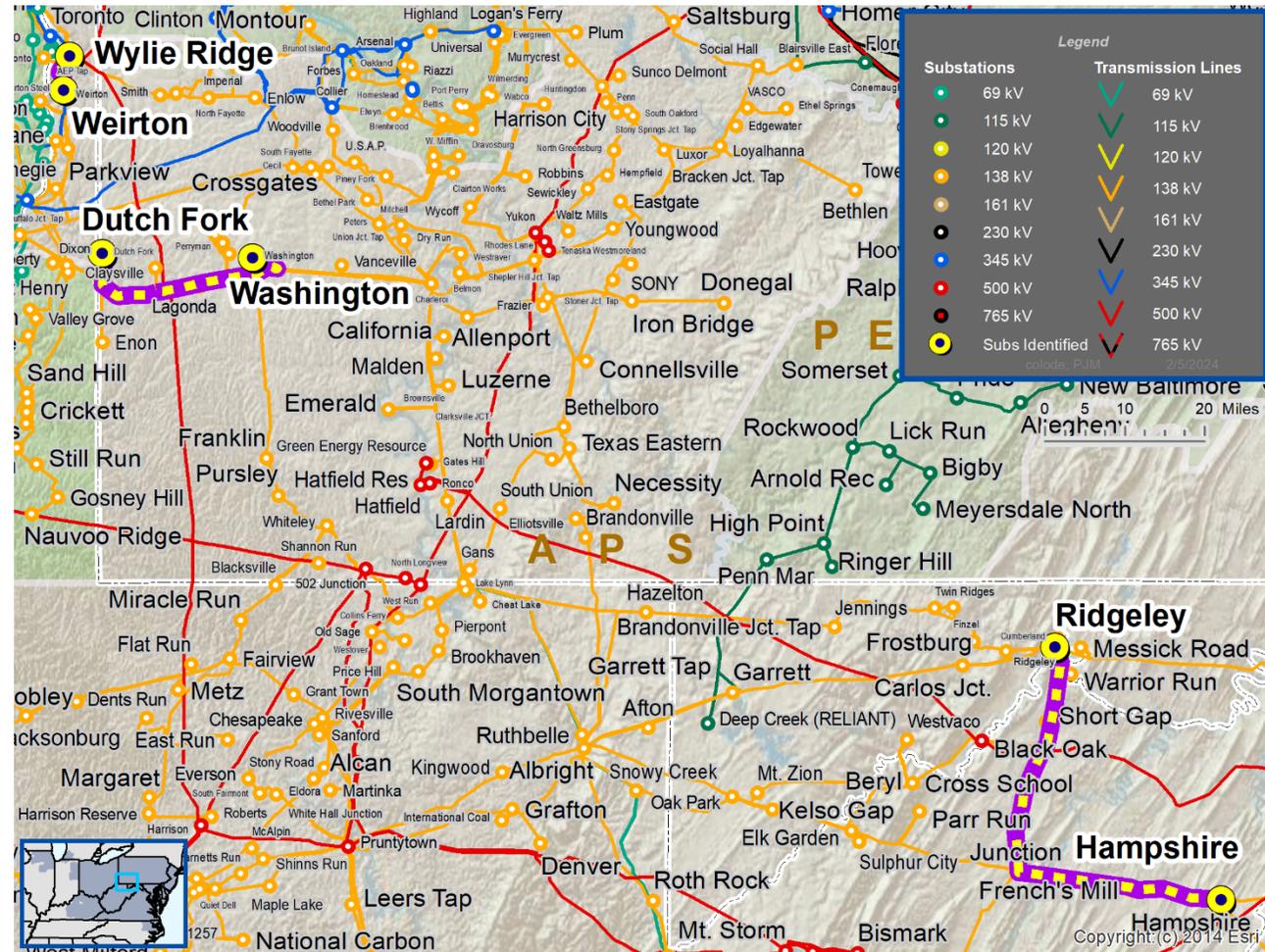
Upgrade Relay Schemes

- 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cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.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 (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
APS-2024-023	Dutch Fork – Washington 138 kV	225 / 295 / 325 / 343	297 / 365 / 345 / 441
APS-2024-024	Hampshire – Ridgeley 138 kV	141 / 182 / 172 / 217	160 / 192 / 180 / 228
APS-2024-025	Weirton – Wylie Ridge 216 138 kV	225 / 295 / 306 / 306	308 / 413 / 349 / 445

Need Number: APS-2024-026

Process Stage: Need Meeting 02/16/2024

Project Driver:

Operational Flexibility and Efficiency

Infrastructure Resilience

Specific Assumption Reference:

System Performance Projects Global Factors

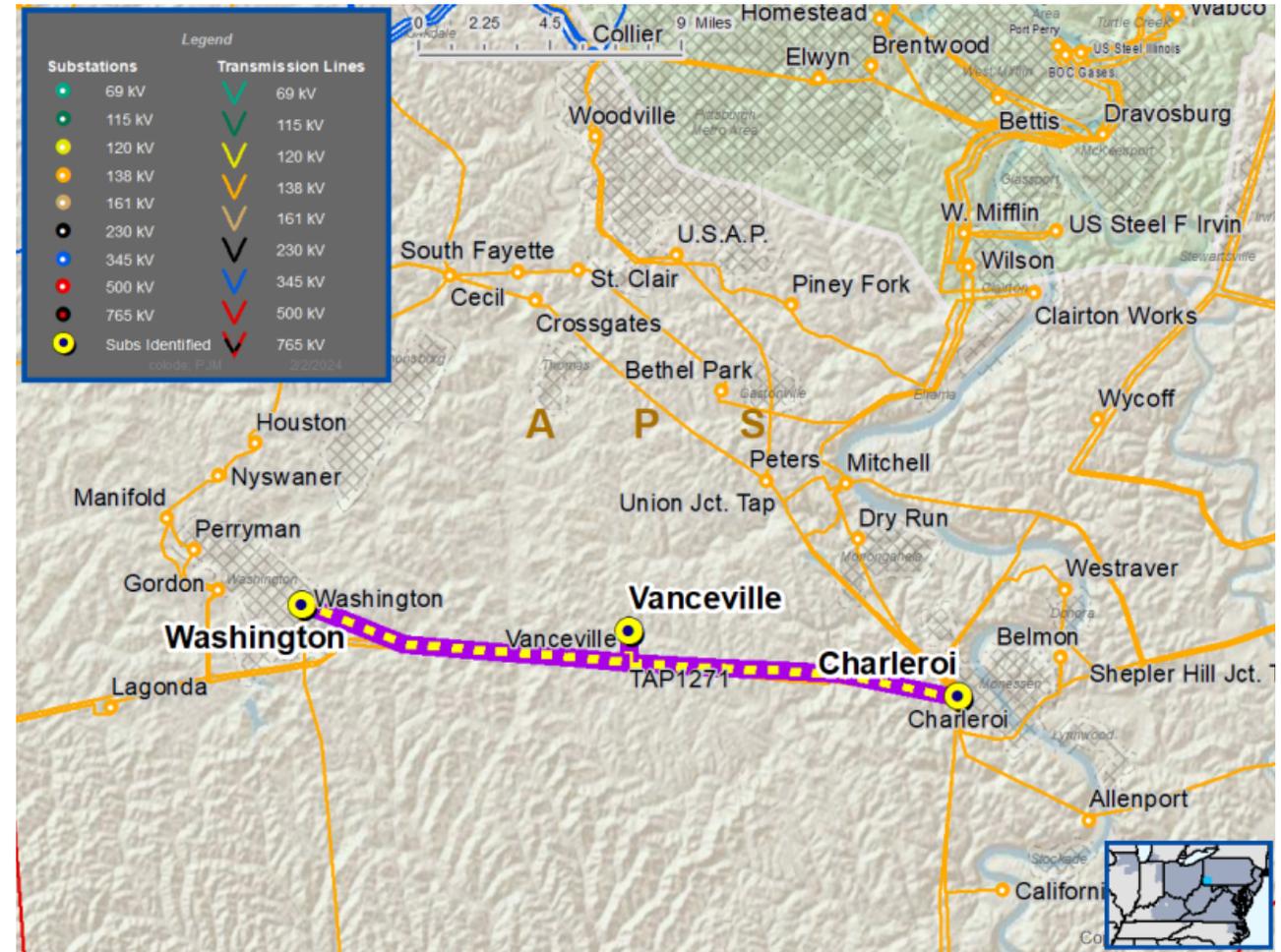
- System reliability and performance
- Substation and line equipment limits

Problem Statement:

Vanceville Substation is configured as a tap connection on the Charleroi – Washington 138 kV Line. Vanceville Substation serves approximately 16.7 MW of load and 1,374 customers, which will be out of service with an outage on the Charleroi – Washington 138 kV Line.

Transmission line ratings are limited by terminal equipment:

- Charleroi – Vanceville 138 kV Line:
 - Existing line rating: 287/287/287/287 MVA (SN/SE/WN/WE)
 - Existing conductor rating: 297/365/345/441 MVA (SN/SE/WN/WE)
- Vanceville – Washington 138 kV Line:
 - Existing line rating: 292/314/325/343 MVA (SN/SE/WN/WE)
 - Existing conductor rating: 297/365/345/441 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

Need Numbers: APS-2023-067, APS-2023-068

Process Stage: Solution Meeting 2/16/2024

Previously Presented: Need Meeting 11/17/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

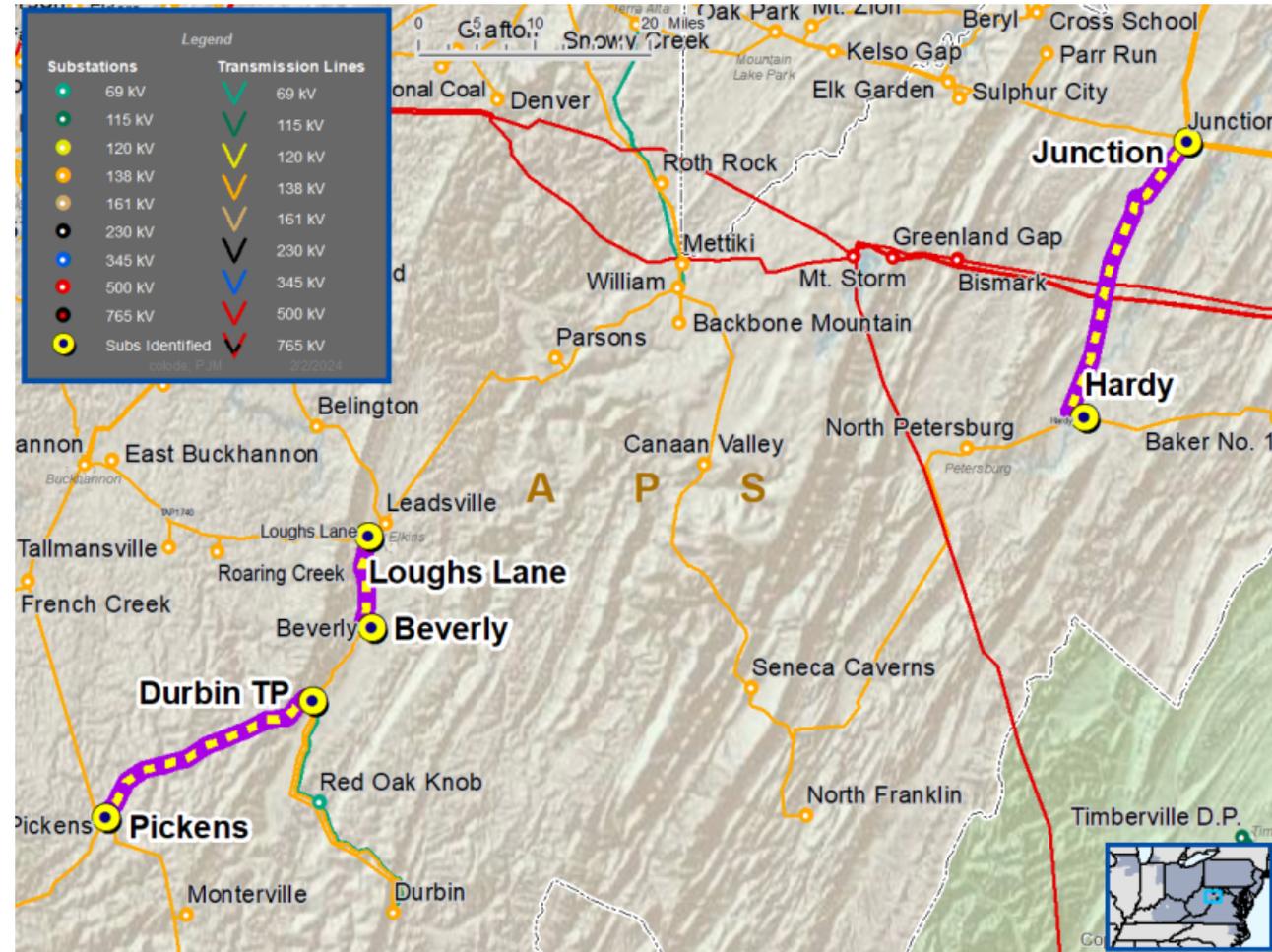
Upgrade Relay Schemes

- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
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Problem Statement:

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Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE)	Existing Conductor Rating (SN / SE)
APS-2023-067	Loughs Lane – Beverly Tap 138 kV	164 / 191 / 191 / 191	169 / 213 / 217 / 280
	Durbin Tap – Pickens 138 kV	169 / 209 / 217 / 229	169 / 213 / 217 / 280
APS-2023-068	Hardy – Junction 138 kV	159 / 191 / 179 / 226	221 / 268 / 250 / 317



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-2023-067	Loughs Lane – Beverly Tap 138 kV	169 / 213 / 217 / 280	<ul style="list-style-type: none"> At Loughs Lane Substation, replace line trap, circuit breaker, disconnect switches and relaying 	\$1.60	11/23/2024
	Durbin Tap – Pickens 138 kV	169 / 213 / 217 / 280	<ul style="list-style-type: none"> At Pickens Substation, replace line trap, circuit breaker, disconnect switches and relaying 		
APS-2023-068	Hardy – Junction 138 kV	221 / 268 / 250 / 317	<ul style="list-style-type: none"> At Hardy Substation, replace circuit breaker, disconnect switches, substation conductor and relaying At Junction Substation, replace circuit breaker, disconnect switches, substation conductor and relaying 	\$1.80	12/1/2025

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

2/6/2024 – V1 – Original version posted to pjm.com