Subregional RTEP Committee - Western
FirstEnergy Supplemental Projects

December 15, 2023

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-2023-072, APS-2023-075, APS-2023-079 to APS-2023-084, APS-2023-086, APS-2023-087

Process Stage: Need Meeting 12/15/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

System Condition Projects

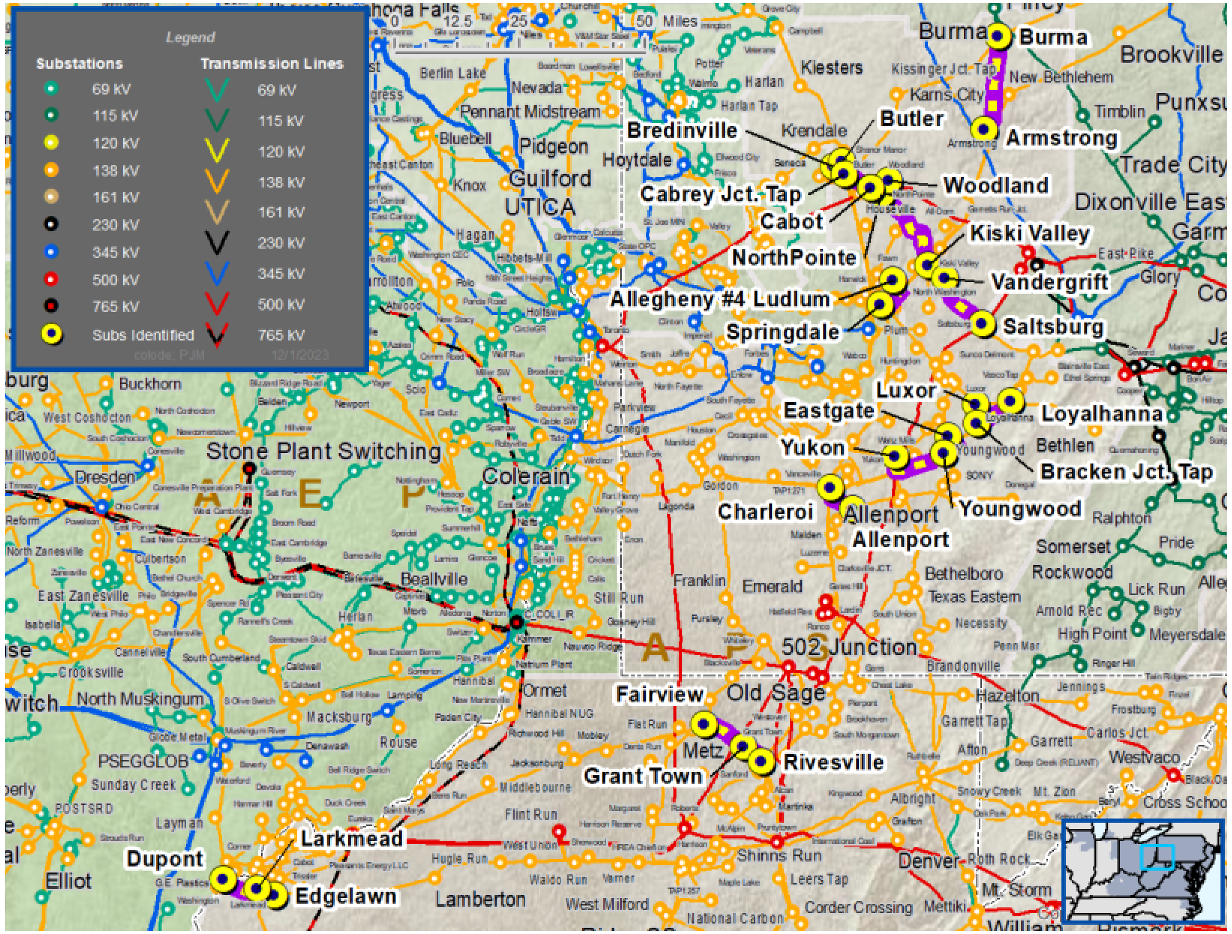
- Substation Condition Rebuild/Replacement

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cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.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 (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
APS-2023-072	Cabot – Woodland 138 kV	287 / 287 / 287 / 287	297 / 365 / 345 / 441
	Northpointe – Kiski Valley 138 kV	225 / 287 / 287 / 287	297 / 365 / 345 / 441
APS-2023-075	Butler – Cabrey JCT 138 kV	224 / 293 / 323 / 343	297 / 365 / 345 / 441
	Bredinville – Cabrey JCT 138 kV	225 / 287 / 287 / 287	297 / 365 / 345 / 441
	Cabot – Cabrey JCT 138 kV	287 / 287 / 287 / 287	297 / 365 / 345 / 441
APS-2023-079	All Ludlum 4 JCT – Springdale 138 kV	292 / 306 / 306 / 306	297 / 365 / 345 / 441
APS-2023-080	Charleroi – Allenport 138 kV	274 / 314 / 325 / 343	501 / 577 / 501 / 607
APS-2023-081	Loyalhanna – Bracken JCT 138 kV	195 / 209 / 217 / 229	308 / 376 / 349 / 445
	Luxor – Bracken JCT 138 kV	141 / 147 / 162 / 162	160 / 192 / 180 / 228
	Youngwood – Eastgate T 138 kV	265 / 314 / 325 / 343	289 / 357 / 339 / 435

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-2023-082	Saltsburg – Vandergrift 138 kV	225 / 229 / 229 / 229	237 / 301 / 306 / 398
APS-2023-083	Armstrong – Burma 138 kV	292 / 314 / 325 / 343	308 / 376 / 349 / 445
APS-2023-084	Youngwood – Yukon 138 kV	234 / 287 / 287 / 287	234 / 297 / 301 / 392
APS-2023-086	Fairview – Grant Town 138 kV	175 / 209 / 217 / 229	221 / 268 / 250 / 317
	Grant Town – Rivesville 138 kV	176 / 229 / 250 / 285	221 / 268 / 250 / 317
APS-2023-087	Dupont – Larkmead 138 kV	292 / 314 / 325 / 343	308 / 376 / 349 / 445
	Larkmead – Edgelawn 138 kV	292 / 314 / 325 / 343	308 / 376 / 349 / 445

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-2023-064 to APS-2023-066, APS-2023-069

Process Stage: Solution Meeting 12/15/2023

Previously Presented: Need Meeting 11/17/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

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System Condition Projects

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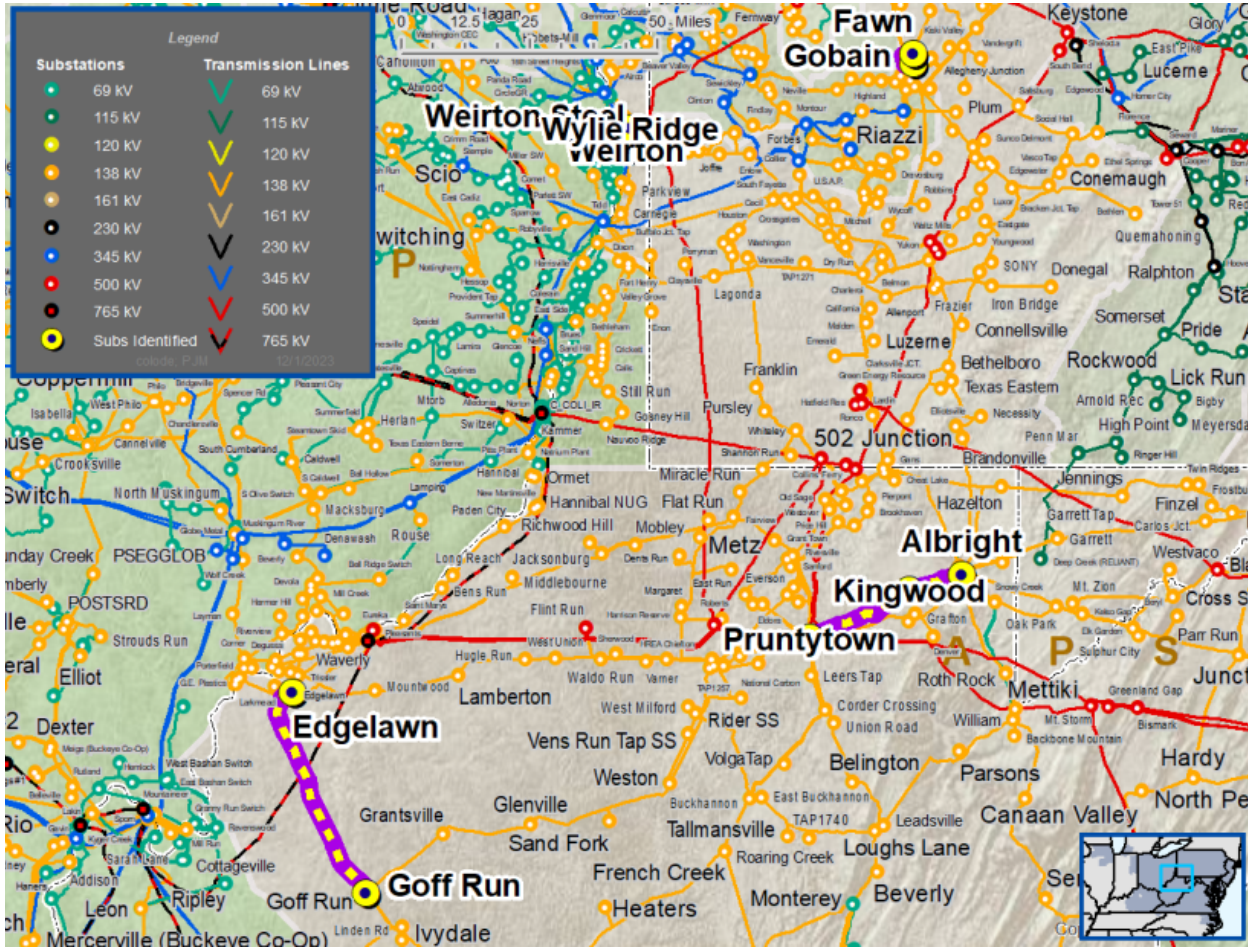

APS Transmission Zone M-3 Process
Misoperation Relay Projects

Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
APS-2023-064	Weirton – Weirton JCT 138 kV	292 / 314 / 325 / 343	308 / 376 / 349 / 445
	Weirton JCT – Wylie Ridge 138 kV	292 / 314 / 325 / 343	308 / 376 / 349 / 445
APS-2023-065	Edgelawn – Goff Run 138 kV	195 / 209 / 217 / 229	221 / 268 / 250 / 317
APS-2023-066	Albright – Kingwood 138 kV	187 / 209 / 217 / 229	221 / 268 / 250 / 317
	Kingwood – Pruntytown 138 kV	221 / 268 / 250 / 287	221 / 268 / 250 / 317
APS-2023-069	Fawn – Gobain 138 kV	287 / 287 / 287 / 287	297 / 365 / 345 / 441

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-2023-064	Weirton – Weirton JCT 138 kV	308 / 376 / 349 / 445	• At Weirton Substation, replace line trap and relaying	$1.7	06/01/2024
	Weirton JCT – Wylie Ridge 138 kV	308 / 376 / 349 / 445	• At Wylie Ridge Substation, replace circuit breaker, disconnect switches, line trap and relaying		
APS-2023-065	Edgelawn – Goff Run 138 kV	221 / 268 / 250 / 317	• At Edgelawn Substation, replace disconnect switches, line trap, substation conductor and relaying • At Goff Run Substation, replace line trap, substation conductor and relaying	$2.1	07/31/2024

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-2023-066	Albright – Kingwood 138 kV	221 / 268 / 250 / 317	• At Albright Substation, replace disconnect switches, line trap, substation conductor and relaying • At Kingwood Substation, replace disconnect switches and relaying	$3.9	10/09/2024
	Kingwood – Pruntytown 138 kV	221 / 268 / 250 / 317	• At Pruntytown Substation, replace disconnect switches, line trap, substation conductor and relaying • At Kingwood Substation, replace disconnect switches and relaying		
APS-2023-069	Fawn – Gobain 138 kV	297 / 365 / 345 / 441	• At Fawn Substation, replace circuit breaker, disconnect switches, line trap, substation conductor and relaying • At Gobain Substation, replace circuit breaker, disconnect switches, line trap, substation conductor and relaying	$3.5	10/31/2025

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

12/1/2023 – V1 – Original version posted to pjm.com