Subregional RTEP Committee - Western FirstEnergy Supplemental Projects

June 13, 2025

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-2024-098 to APS-2024-100, APS-2025-015

Process Stage: Solution Meeting 6/13/2025

Previously Presented: Need Meeting 12/13/2024, 4/11/2025

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

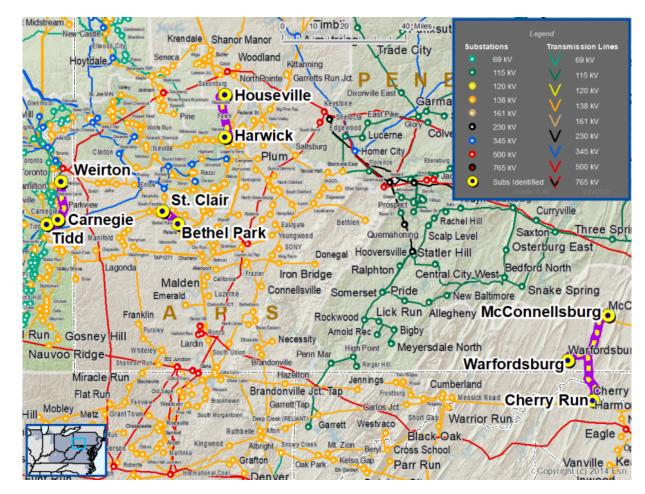
Upgrade Relay Schemes

- 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cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.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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| Need # | Transmission Line / Substation Locations | Existing Line Rating (SN / SE / WN / WE) | Existing Conductor Rating (SN / SE / WN / WE) |
|--------------|---|--|---|
| APS-2024-098 | Bethel Park – St Clair 138 kV Line | 292 / 306 / 306 / 306 | 308 / 376 / 349 / 445 |
| ADS 2024 000 | Cherry Run – Warfordsburg 138 kV Line | 299 / 360 / 349 / 422 | 308 / 376 / 349 / 445 |
| APS-2024-099 | Warfordsburg – McConnellsburg 138 kV Line | 299 / 358 / 349 / 410 | 308 / 376 / 349 / 445 |
| APS-2024-100 | Harwick – Houseville 138 kV Line | 284 / 287 / 287 / 287 | 284 / 351 / 336 / 432 |
| | Tidd - Carnegie 138 kV Line | 187 / 240 / 247 / 270 | 221 / 268 / 250 / 317 |
| APS-2025-015 | Carnegie - Weirton 138 kV Line | 221 / 268 / 250 / 306 | 221 / 268 / 250 / 317 |



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- 098 | Bethel Park – St Clair 138 kV Line | 308 / 376 / 349 / 445 | At Bethel Park Substation, replace circuit breaker, disconnect switches, line turner and coax, CCVT, substation conductor, metering, line trap and relaying At St Clair Substation, replace circuit breaker, disconnect switches, line turner and coax, CCVT, substation and bus conductors, line trap and relaying | \$4.5 | 7/27/2029 |
| | Cherry Run – Warfordsburg 138 kV Line | 308 / 376 / 349 / 445 | • At Cherry Run Substation, replace circuit breaker, disconnect switches, line turner and coax, CVT, substation conductor and relaying | | |
| APS-2024- 099 | Warfordsburg – McConnellsburg 138 kV Line | 308 / 376 / 349 / 445 | At Warfordsburg Substation, replace disconnect switches, and relaying At McConnellsburg Substation, replace circuit breaker, disconnect switches, line turner, CCVT, substation conductor and relaying | \$2.5 | 7/13/2029 |



Proposed Solution:

| Need # | Transmission Line / Substation Locations | New MVA Line Rating (SN / SE / WN / WE) | Scope of Work | Estimated Cost (\$ M) | Target ISD |
|--------------|---|--|--|--------------------------|------------|
| APS-2024-100 | Harwick – Houseville 138 kV Line | 284 / 351 / 336 / 432 | At Harwick Substation, replace circuit breaker, disconnect switches, line trap, line turner and coax, substation and bus conductors and relaying At Houseville Substation, replace disconnect switches, line trap, line turner and coax, CVT, substation conductor and relaying | \$3.4 | 12/31/2027 |
| APS-2025-015 | Tidd - Carnegie 138 kV Line* | 221 / 268 / 250 / 317 | At Carnegie Substation, replace disconnect switches, CVTs and relaying | \$1.9 | 12/31/2029 |
| | Carnegie - Weirton 138 kV Line | 221 / 268 / 250 / 317 | At Weirton Substation, replace wave trap, substation conductor, line turner and coax, CVT and relaying | ΥΤ.9 | |

*This is a tie line with AEP. The ratings shown are reflective of FirstEnergy ratings only.

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

Project Status: Conceptual

Model: 2024 RTEP model for 2029 Summer (50/50)

Appendix

High Level M-3 Meeting Schedule

| Activity | Timing |
|---|------------------------------------|
| Posting of TO Assumptions Meeting information | 20 days before Assumptions Meeting |
| Stakeholder comments | 10 days after Assumptions Meeting |

Needs

Solutions

Submission of Supplemental Projects & Local Plan

| Activity | Timing |
|--|------------------------------|
| TOs and Stakeholders Post Needs Meeting slides | 10 days before Needs Meeting |
| Stakeholder comments | 10 days after Needs Meeting |

| Activity | Timing |
|--|----------------------------------|
| TOs and Stakeholders Post Solutions Meeting slides | 10 days before Solutions Meeting |
| Stakeholder comments | 10 days after Solutions Meeting |

| 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

06/03/2025–V1 – Original version posted to pjm.com