## Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

April 11, 2025

## 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 New Customer Connection

Need Number: APS-2025-011

Process Stage: Need Meeting 04/11/2025

Project Driver: Customer Service

#### **Specific Assumption References:**

New customer connection requests will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document.

#### **Problem Statement:**

New Customer Connection – A customer requested a new 138 kV delivery point near the Rider - Weston 138 kV Line. The requested delivery point is approximately five miles from Weston Substation. The anticipated load of the new customer connection is 22 MVA.

Request In-Service Date - 12/31/2027





## APS Transmission Zone M-3 Process Finzel - Ridgeley 138 kV line

Need Number: APS-2025-014

**Process Stage:** Need Meeting 04/11/2025

Project Driver: Equipment Material Condition, Performance and Risk

#### Specific Assumption References:

System Performance Projects Global Factors

Substation/line equipment limits

System reliability and performance

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 on the Finzel - Ridgeley 138 kV Line.





## APS Transmission Zone M-3 Process Finzel - Ridgeley 138 kV line

#### Problem Statement (cont):

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cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology

The Finzel - Ridgeley 138 kV Line ratings are limited by terminal equipment.

Finzel - Frostburg 138 kV Line

- Existing Line ratings: 287 / 314 / 325 / 343 MVA (SN/SE/WN/WE)
- Existing Conductor ratings: 304 / 373 / 349 / 445 MVA (SN/SE/WN/WE)

Frostburg - Ridgeley 138 kV Line

- Existing Line ratings: 292 / 306 / 306 / 306 MVA (SN/SE/WN/WE)
- Existing Conductor ratings: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)





Need Number: APS-2025-015

Process Stage: Need Meeting 04/11/2025

Project Driver: Equipment Material Condition, Performance and Risk

#### Specific Assumption References:

System Performance Projects Global Factors

Substation/line equipment limits

System reliability and performance

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 on the Tidd (AEP) - Weirton 138 kV Line.

## APS Transmission Zone M-3 Process Tidd (AEP) - Weirton 138 kV Line





## APS Transmission Zone M-3 Process Tidd (AEP) - Weirton 138 kV Line

#### Problem Statement (Cont):

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

The Tidd (AEP) - Weirton 138 kV Line ratings are limited by terminal equipment

Tidd - Carnegie 138 kV Line

- Existing Line ratings: 187 / 240 / 247 / 270 MVA (SN/SE/WN/WE)
- Existing Conductor ratings: 187 / 240 / 247 / 285 MVA (SN/SE/WN/WE)

Carnegie - Weirton 138 kV Line

- Existing Line ratings: 221 / 268 / 250 / 306 MVA (SN/SE/WN/WE)
- Existing Conductor ratings: 221 / 268 / 250 / 317 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



## APS Transmission Zone M-3 Process Misoperation Relays

Need Number: APS-2024-104

**Process Stage:** Solution Meeting SRRTEP-W - 04/11/2025

Previously Presented: Need Meeting 12/13/2024

Project Driver: Equipment Material Condition, Performance and Risk

#### **Specific Assumption References:**

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.





#### Need Number: APS-2024-104

Process Stage: Solution Meeting SRRTEP-W - 04/11/2025

#### Problem Statement (cont):

- Transmission line ratings are limited by terminal equipment.
- Transmission Line / Substation Locations:
  - Brownsville Jct Charleroi 138 kV Line
    - Existing Line Rating MVA (SN / SE / WN / WE): 287 / 287 / 287 / 287
    - Existing Conductor Rating MVA (SN / SE / WN / WE): 297 / 365 / 345 / 441
- Transmission Line / Substation Locations:
  - Brownsville Jct Emerald 138 kV Line
    - Existing Line Rating MVA (SN / SE / WN / WE): 115 / 115 / 115 / 115
    - Existing Conductor Rating MVA (SN / SE / WN / WE): 308 / 376 / 349 / 445
- Transmission Line / Substation Locations:
  - Brownsville Jct Gates Hill 138 kV Line
    - Existing Line Rating MVA (SN / SE / WN / WE): 148 / 151 / 166 / 166
    - Existing Conductor Rating MVA (SN / SE / WN / WE): 148 / 151 / 166 / 166

### APS Transmission Zone M-3 Process Misoperation Relays





## APS Transmission Zone M-3 Process Misoperation Relays

Need Number: APS-2024-104

Process Stage: Solution Meeting SRRTEP-W - 04/11/2025

**Proposed Solution:** 

- Charleroi Substation:
  - At Charleroi Substation, replace substation conductor, line trap, surge arresters, CVT and line relaying. Estimated Cost: \$2.057 M
- Emerald Substation:
  - At Emerald Substation, replace circuit switcher towards Brownsville Junction with a circuit breaker, replace bus tie circuit breaker, disconnect switches, substation conductor, line trap, CVTs and line relaying.. Estimated Cost: \$2.057 M
- Gates Hill Substation:
  - At Gates Hill Substation, replace circuit switcher with circuit breaker, disconnect switches, line trap, line turner, COAX and line relaying. Estimated Cost: \$2.057 M

Transmission Cost Estimate: \$6.17 M

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

Projected In-Service: 07/02/2029

Project Status: Conceptual

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





## APS Transmission Zone M-3 Process New Customer Connection

Need Number: APS-2024-110

Process Stage: Solution Meeting SRRTEP-W - 04/11/2025

Previously Presented: Need Meeting 12/13/2024

Project Driver: Customer Service

#### Specific Assumption References:

New customer connection request will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document.

#### **Problem Statement:**

New customer connection – A customer has requested a new 138 kV delivery point along the Dutch Fork – Windsor 138 kV Line. The anticipated load is 20 MW. Requested in-service date is 1/15/2026.





## APS Transmission Zone M-3 Process New Customer Connection

Need Number: APS-2024-110

**Process Stage:** Solution Meeting SRRTEP-W - 04/11/2025

#### **Proposed Solution:**

- Dutch Fork Windsor 138 kV Line:
  - Customer Connection: Tap the Dutch Fork Windsor 138 kV Line at/near structure 122. Install two 1200 A SCADA controlled switches at tap location Construct approximately 0.9 miles of line to the interconnection point Install 138 kV revenue metering package Adjust relay settings at Dutch Fork and Windsor substations.



Transmission Cost Estimate: \$5.8 M

**Alternatives Considered:** No other reasonable alternatives due to the customer's proximity to the Dutch Fork - Windsor 138 kV Line.

Projected In-Service: 08/14/2026

Project Status: Conceptual

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



### APS Transmission Zone M-3 Process Fairview – Whiteley 138 kV



#### **Problem Statement:**

Line switch 1027 on the Fairview – Whiteley 138 kV Line at Blacksville No. 1 Tap is obsolete and no longer supported for repair parts.

The switch is limiting the transmission line rating. Transmission line ratings are limited by terminal equipment.





APS Transmission Zone M-3 Process Fairview – Whiteley 138 kV



Problem Statement (Cont):

Need Number: APS-2025-010

Miracle Run Tap - Blacksville No. 1 Tap 138 kV Line:

• Existing conductor ratings: 308 / 376 / 349 / 445 MVA SN/SE/WN/WE

#### **Proposed Solution:**

• Fairview - Whiteley 138 kV Line Switch:

Transmission Cost Estimate: \$1.3 M

obsolescence.

Projected In-Service: 08/21/2026

Project Status: Conceptual

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



Fairview

## 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

## 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**

04/01/2025–V1 – Original version posted to pjm.com 4/9/2025 – V2 – Corrected study model used, slide 11