Subregional RTEP Committee - Western
FirstEnergy Supplemental Projects

September 19, 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
Bethel Park, PA

Need Number: APS-2025-026

Process Stage: Need Meeting 09/19/2025

Supplemental Project Driver(s):

Equipment Material Condition, Performance and Risk

Specific Assumption Reference(s)

Substation Condition Rebuild/Replacement

- Age/condition of substation equipment
- Circuit breakers and other fault interrupting devices

System Performance Projects Global Factors

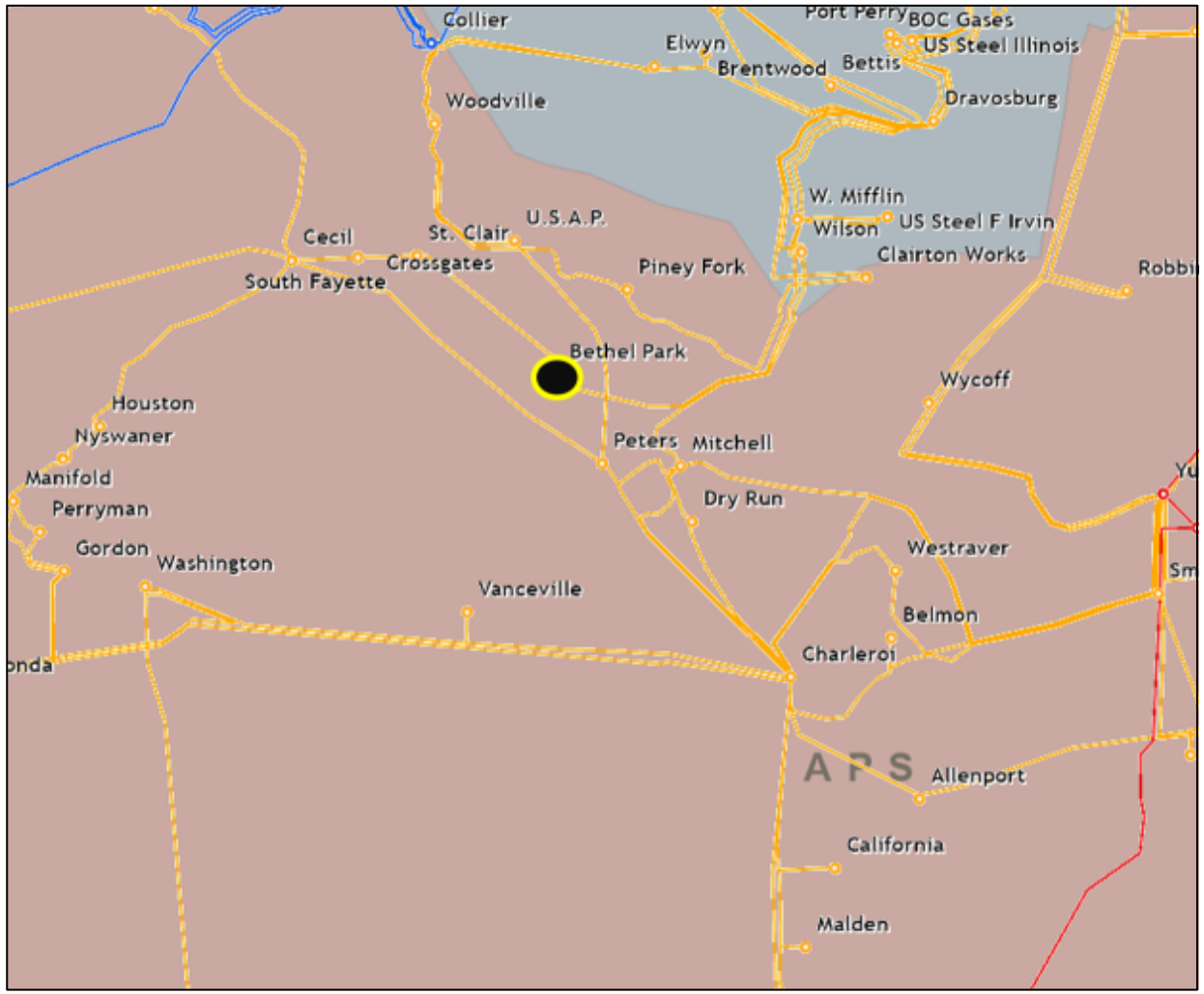
- System reliability and performance
- Substation/line equipment limits

Problem Statement:

- At Bethel Park Substation, the 138 kV breaker on the St. Clair line terminal was manufactured in 1956 and is approaching end of life. It continues to have hydraulic system problems due to air penetrating the pumps causing the motors to run excessively.
- Transmission line ratings are limited by terminal equipment.

  Existing line ratings: 292 / 306 / 306 / 306 MVA (SN/SE/WN/WE)

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



APS Transmission Zone M-3 Process
Kiski Valley, PA/North Washington, PA

Need Number: APS-2025-027

Process Stage: Need Meeting 09/19/2025

Supplemental Project Driver(s):

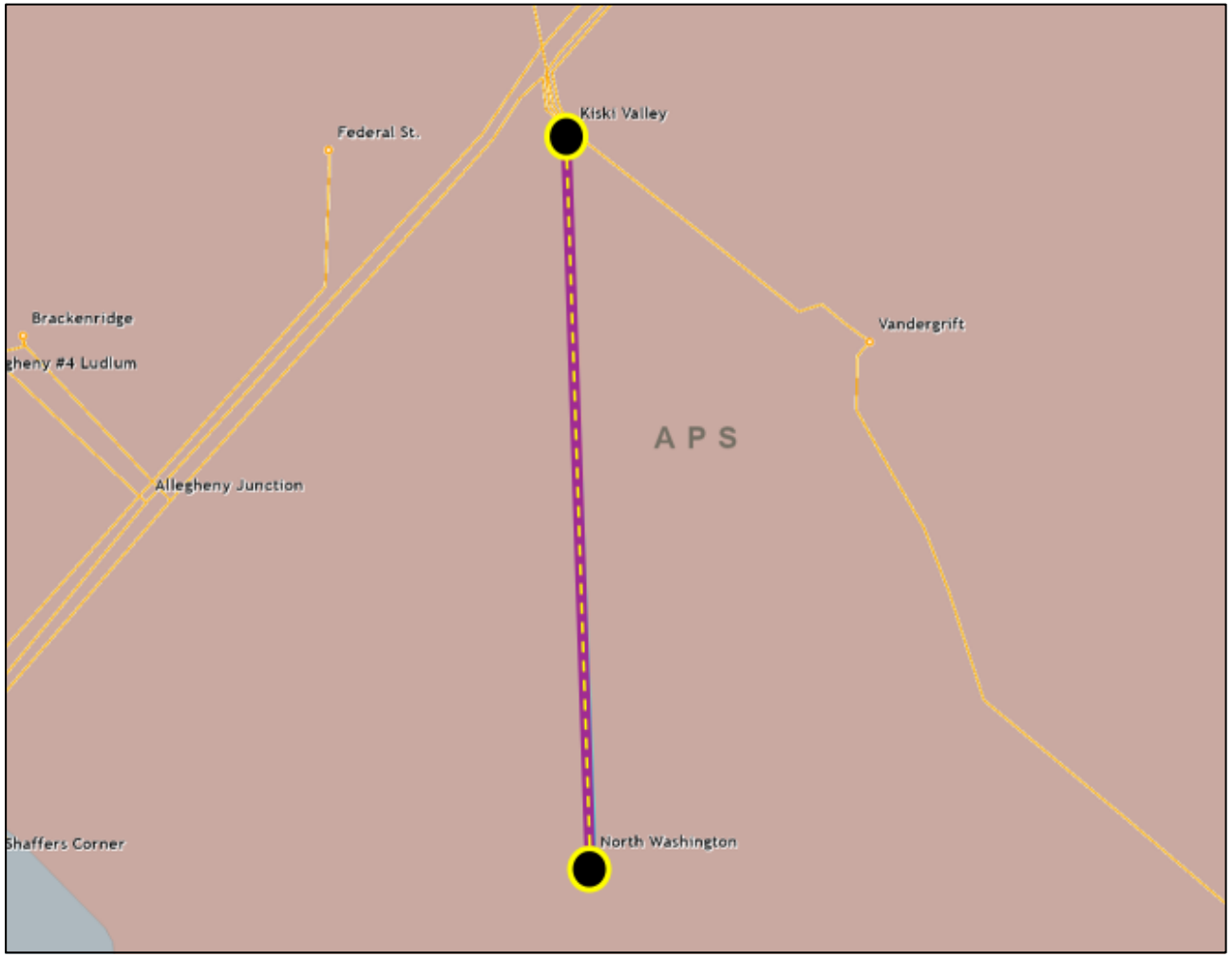
Customer Service, Other

Specific Assumption Reference(s)

FE's Requirements for Transmission Connected Facilities and FE's Transmission Planning Criteria documents

Problem Statement:

- New Customer Connection: A new customer has requested a 138 kV delivery point near the existing Kiski Valley - North Washington 138 kV Line.
- The requested load is 9.9 MW with a requested in-service date of 6/9/2027. The delivery point is adjacent to North Washington Substation.



APS Transmission Zone M-3 Process
Price Hill, WV

Need Number: APS-2025-028

Process Stage: Need Meeting 09/19/2025

Supplemental Project Driver(s):

Operational Flexibility and Efficiency

Specific Assumption Reference(s)

System Performance Global Factors

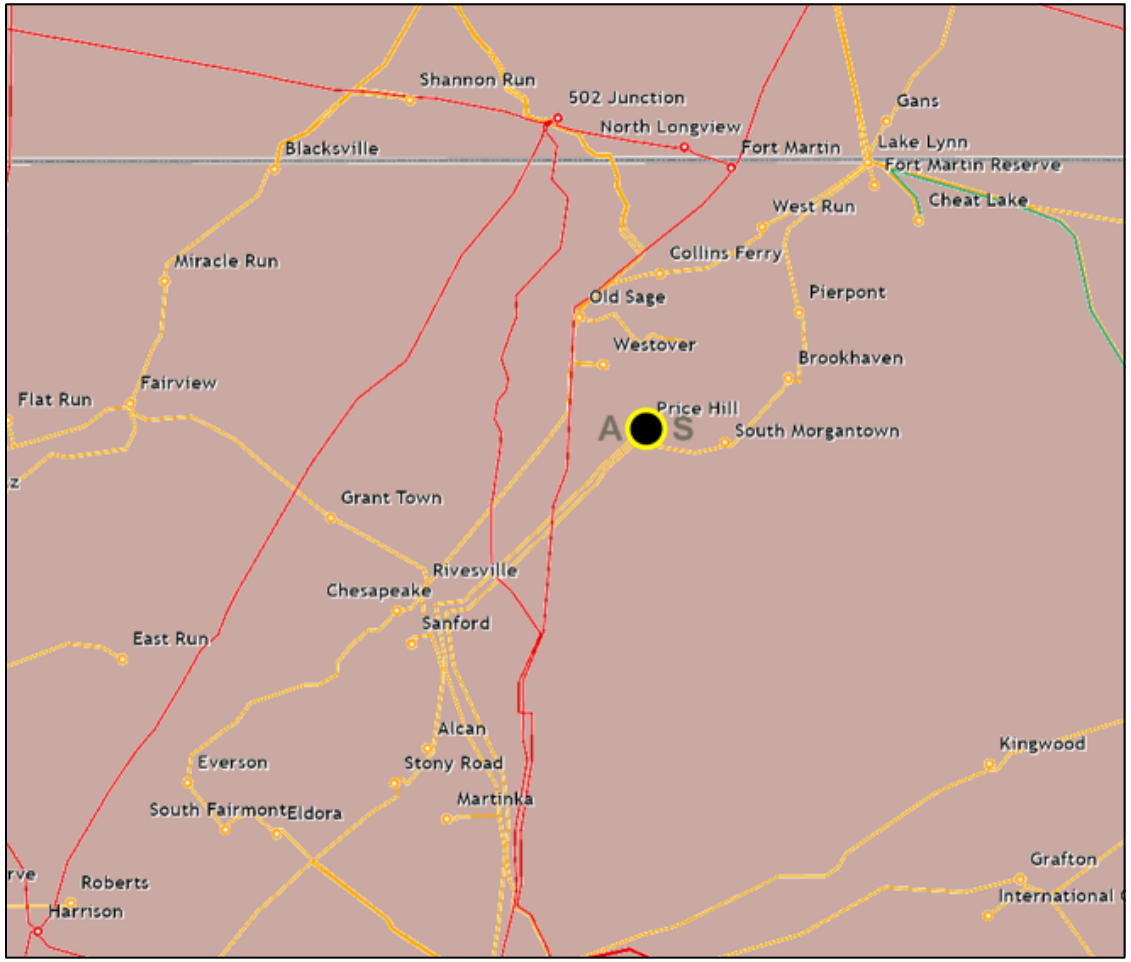
- Substation/line equipment limits

Problem Statement:

- During a field inspection, a limiting substation conductor was identified on the South Morgantown - Price Hill 138 kV Line at Price Hill Substation. The substation conductor limits the capacity of the transmission line.

Existing Ratings: 224/293/323/343 MVA (SN/SE/WN/WE)

Transmission Line Ratings: 308/376/349/445 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
Oak Mound Control Building and Breakers

Need Number: APS-2024-095

Process Stage: Solution Meeting – 9/19/2025

Previous Stage: Need Meeting – 11/15/2024

Supplemental Project Driver(s):

Equipment Material Condition, Performance and Risk

Specific Assumption Reference(s)

System Performance Global Factors

- System reliability and performance
- Substation/line equipment limits

Substation Condition Rebuild/Replacement

- Age/condition of substation equipment
- Circuit breakers and other fault interrupting devices

Problem Statement:

- The existing control building at Oak Mound Substation is congested. There is not sufficient space for additional panel upgrades.
- The existing 138 kV breakers are approaching end of life:
  - Breaker 3 (bus tie) is approximately 38 years old.
  - Breaker 2 (Waldo Run No. 2) is approximately 42 years old.
  - Breaker 4 (Oak Mound) is approximately 55 years old.
- Replacement parts are difficult to source leading to non-standard repairs.
- Transmission lines are limited by terminal equipment.

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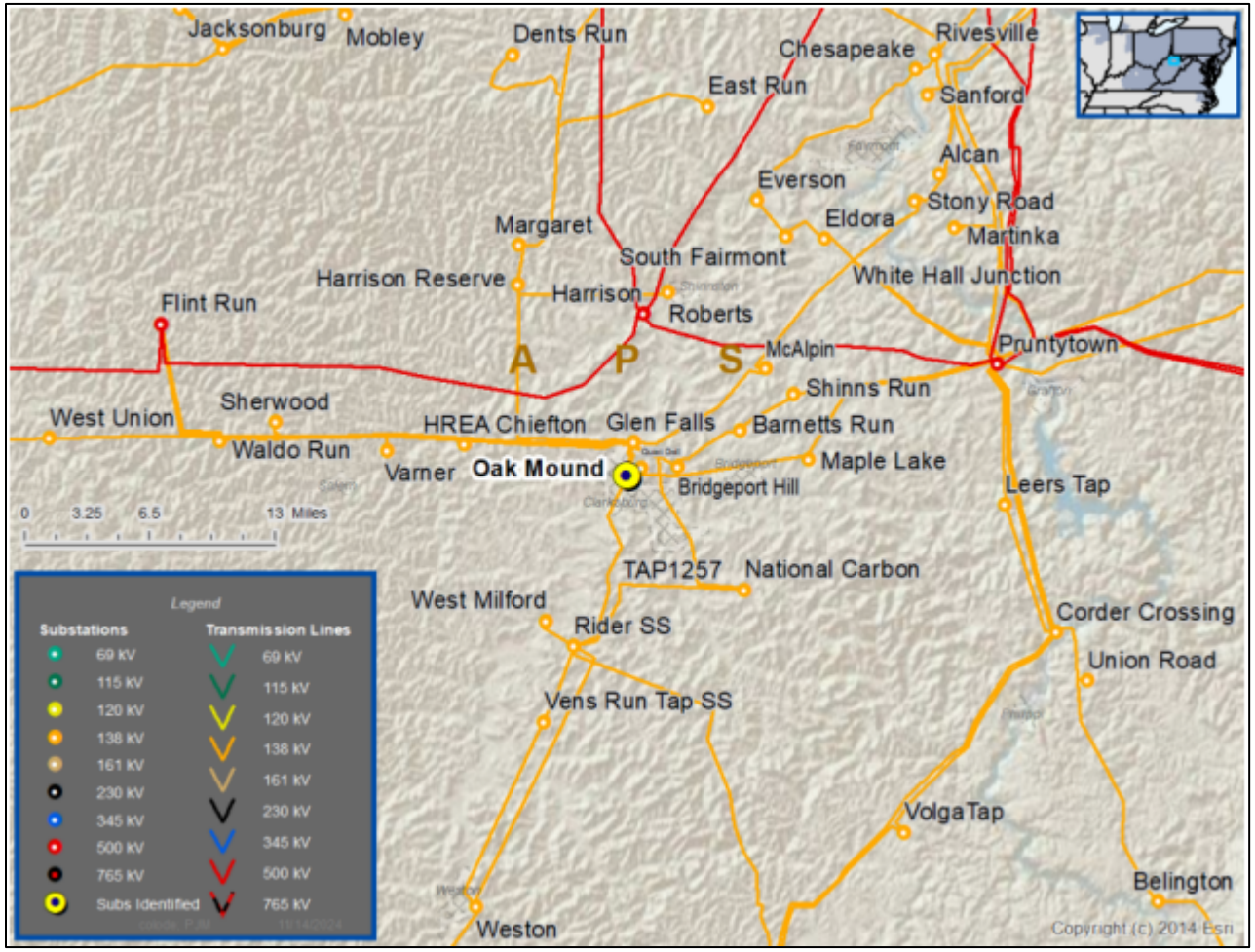


APS Transmission Zone M-3 Process
Oak Mound Control Building and Breakers

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-095	Oak Mound – Quiet Dell 138 kV Line*	292 / 306 / 306 / 306	308 / 376 / 349 / 445
	Oak Mound – Waldo Run No. 1 138 kV Line	278 / 339 / 315 / 401	278 / 339 / 315 / 401
	Oak Mound – Waldo Run No. 2 138 kV Line	278 / 339 / 315 / 401	278 / 339 / 315 / 401
	Oak Mound – Rider 138 kV Line	309 / 376 / 349 / 445	309 / 376 / 349 / 445
	Oak Mound – Glen Falls 138 kV Line	160 / 192 / 180 / 228	160 / 192 / 180 / 228

*Refer to APS-2024-089

APS Transmission Zone M-3 Process
Oak Mound Control Building and Breakers

Need Number: APS-2024-095

Process Stage: Solution Meeting – 09/19/2025

Proposed Solution:

- At Oak Mound Substation*: Install one prefabricated control building, surge arresters, CTs, circuit breakers, disconnect switches, substation conductor, line trap, line tuner, CVT and relaying.
- At Quiet Dell Substation*: Install surge arresters.
- At Glen Falls Substation: Replace circuit breaker, line trap/CCVT, line tuner and relaying.

Oak Mound – Quiet Dell 138 kV Line Ratings*:

- Before Proposed Solution: 292/306/306/306 MVA (SN/SE/WN/WE)
- After Proposed Solution: 308/376/349/445 MVA (SN/SE/WN/WE)

*Refer to APS-2024-089

Alternatives Considered:

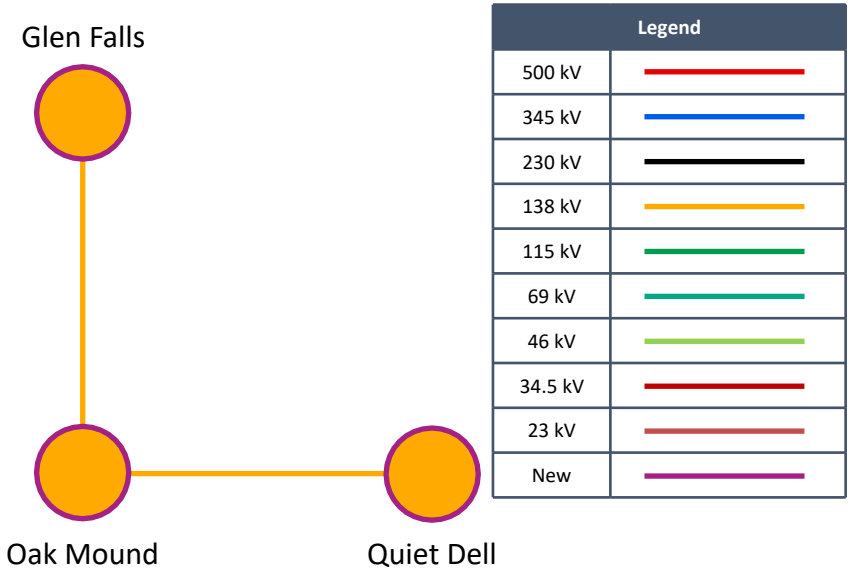
Maintain equipment in existing condition with elevated risk of failure due to aging breakers.

Estimated Project Cost: $13.35M

Projected In-Service: 6/16/2028

Project Status: Conceptual

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



APS Transmission Zone M-3 Process
Misoperation Relays: Oak Mound - Quiet Dell 138 kV Line

Need Numbers: APS-2024-089

Process Stage: Solution Meeting – 09/19/2025

Previously Stage: Need Meeting – 10/18/2024

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

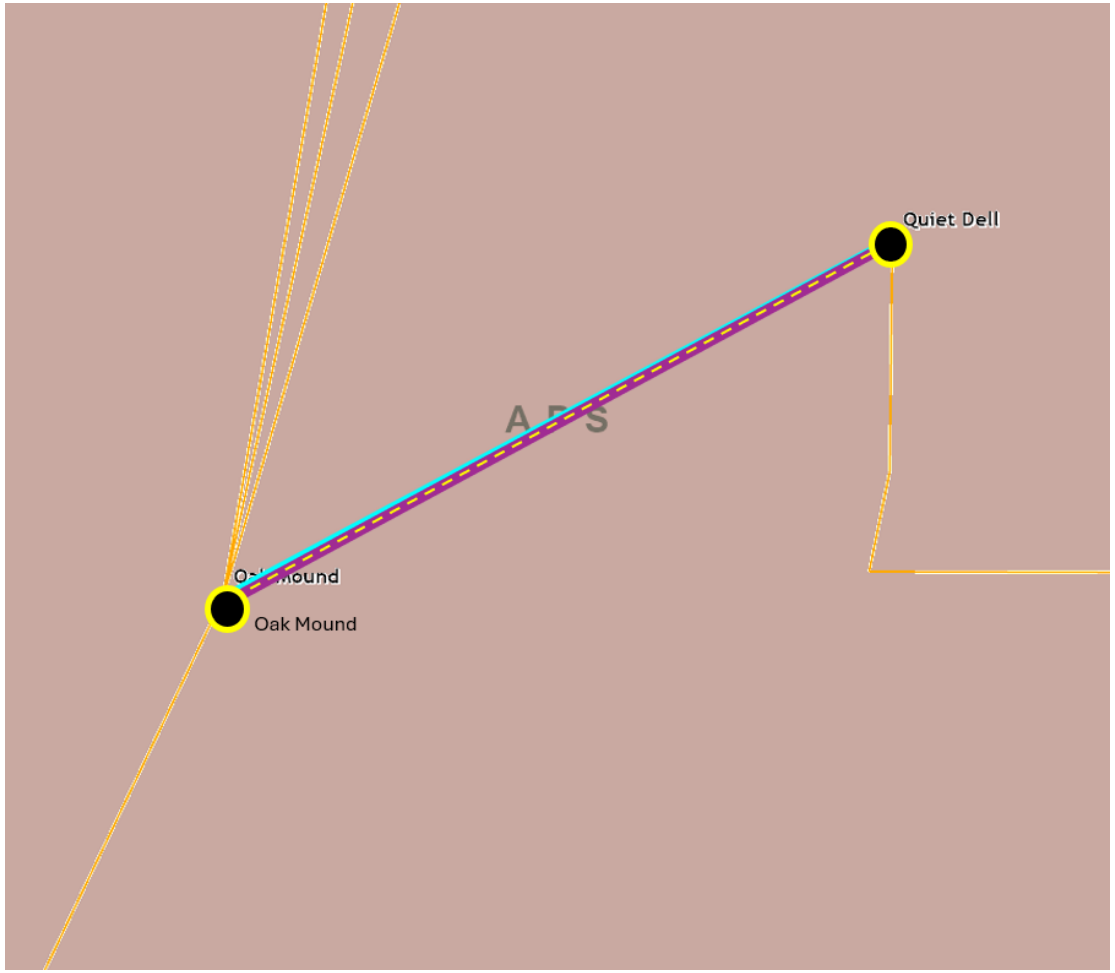
- Substation Condition Rebuild/Replacement

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 Relays: Oak Mound - Quiet Dell 138 kV Line

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-089	Oak Mound – Quiet Dell 138 kV Line	292 / 306 / 306 / 306	308 / 376 / 349 / 445

APS Transmission Zone M-3 Process
Misoperation Relays: Oak Mound - Quiet Dell 138 kV Line

Need Number: APS-2024-089

Process Stage: Solution Meeting – 09/19/2025

Proposed Solution:

- At Oak Mound Substation: Replace relaying.
- At Quiet Dell Substation: Replace disconnect switches, wave trap, line turner and coax, CVT and relaying.

Oak Mound – Quiet Dell 138 kV Line Ratings:

- Before Proposed Solution: 292/306/306/306 MVA (SN/SE/WN/WE)
- After Proposed Solution: 308/376/349/445 MVA (SN/SE/WN/WE)

Alternatives Considered:

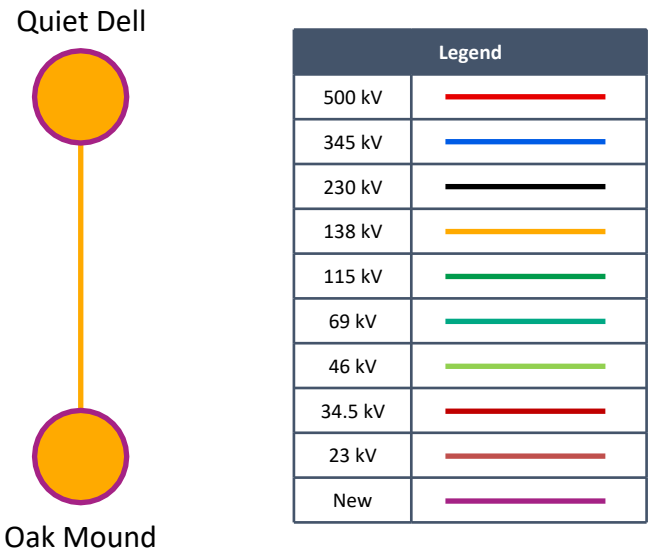
Maintain equipment in existing condition with elevated risk of misoperation.

Estimated Project Cost: $2.63M

Projected In-Service: 6/16/2028

Project Status: Conceptual

Model: 2024 RTEP model for 2029 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

9/08/2025– V1 – Original version posted to pjm.com