Submission of Supplemental Projects for Inclusion in the Local Plan

APS Transmission Zone M-3 Process
New Customer Connection

Need Number: APS-2024-110

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Previously Presented: Solution Meeting SRRTEP-W - 04/11/2025

Need Meeting 12/13/2024

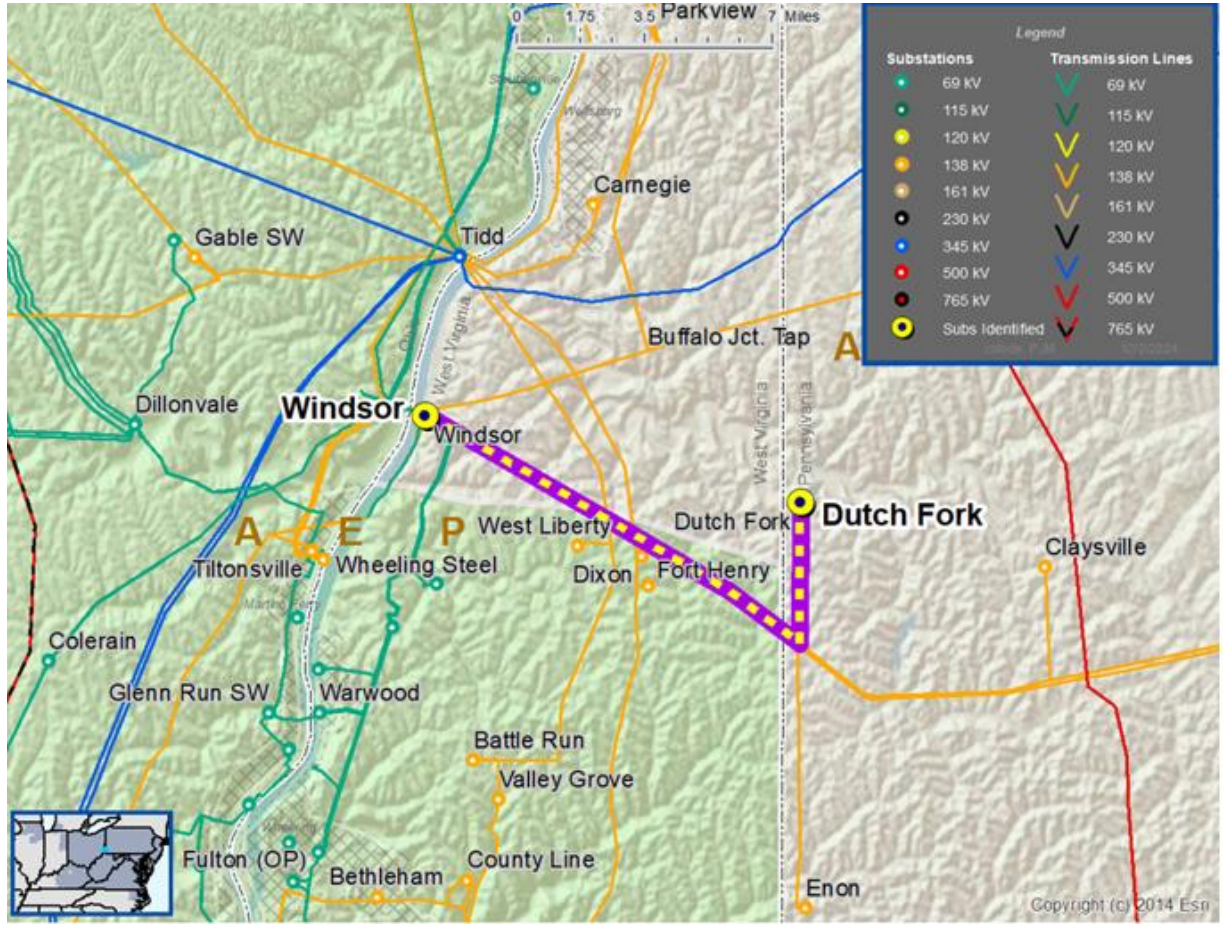
Project Driver: Customer Service

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.



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APS Transmission Zone M-3 Process
New Customer Connection

Need Number: APS-2024-110

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

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

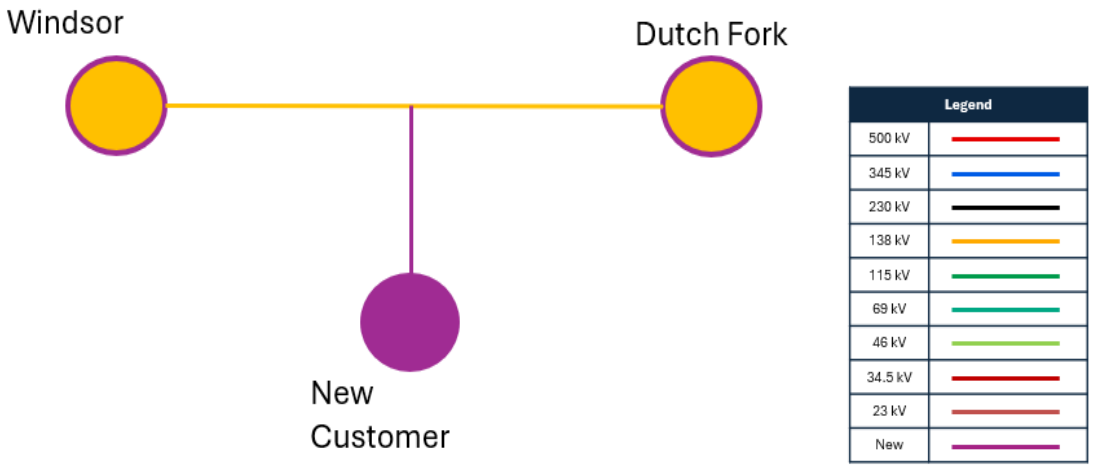
Alternatives Considered: No other reasonable alternatives due to the customer's proximity to the Dutch Fork - Windsor 138 kV Line.

Projected In-Service: 08/14/2026

Project Status: Conceptual

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

Supplemental Number: s3755.1



APS Transmission Zone M-3 Process
New Customer Connection

Need Number: APS-2024-110

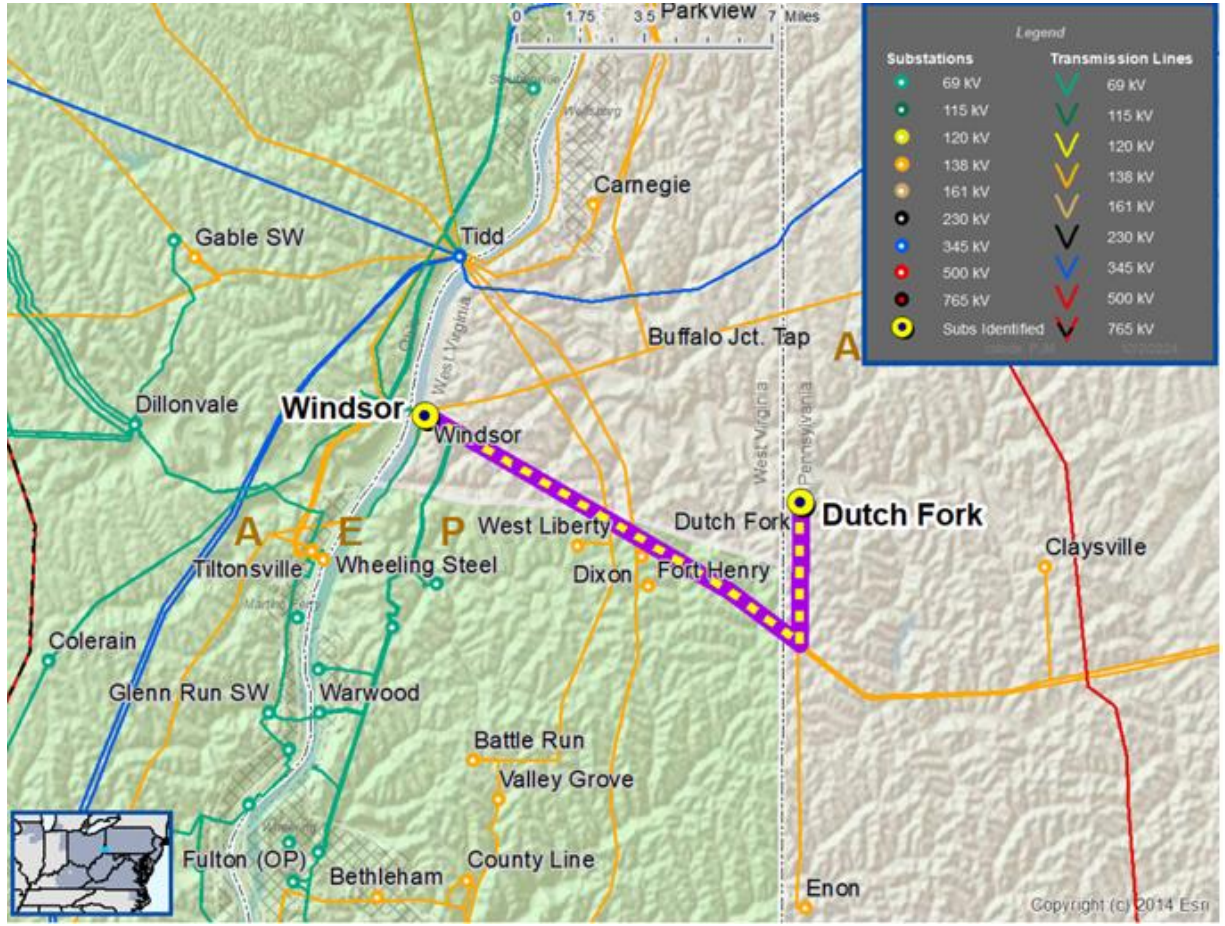
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Previously Presented: Need Meeting – 12/13/2024
Solution Meeting – 04/11/2025

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.



APS Transmission Zone M-3 Process
New Customer Connection

Need Number: APS-2024-110

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

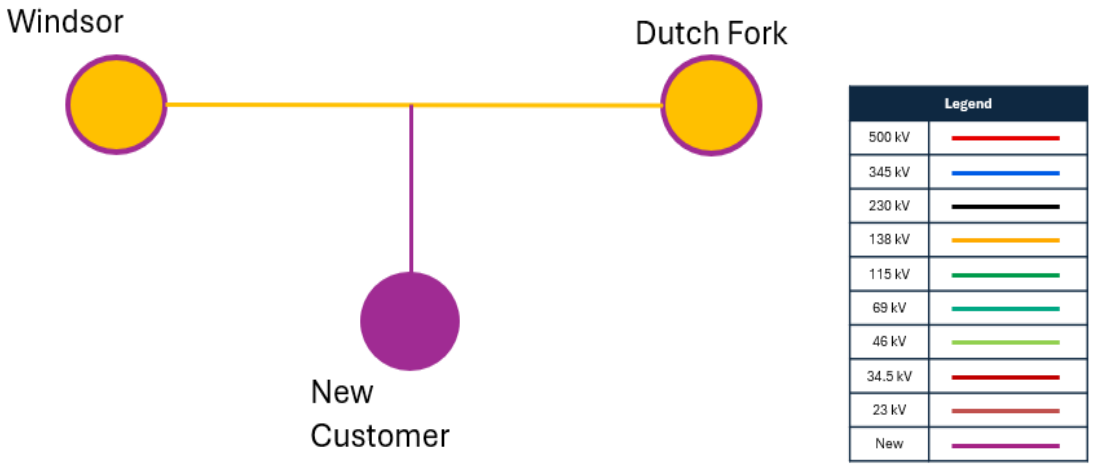
Dutch Fork - Windsor 138 kV Line:

- 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.

Estimated Project Cost: $5.8 M

Projected In-Service: 08/14/2026

Supplemental Project ID: s3755.1



APS Transmission Zone M-3 Process
Leadsville – Loughs Lane 138 kV Misoperation Relays

Need Number: APS-2024-112

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Previously Presented: Need Meeting – 12/13/2024

Solution Meeting – 08/15/2025

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

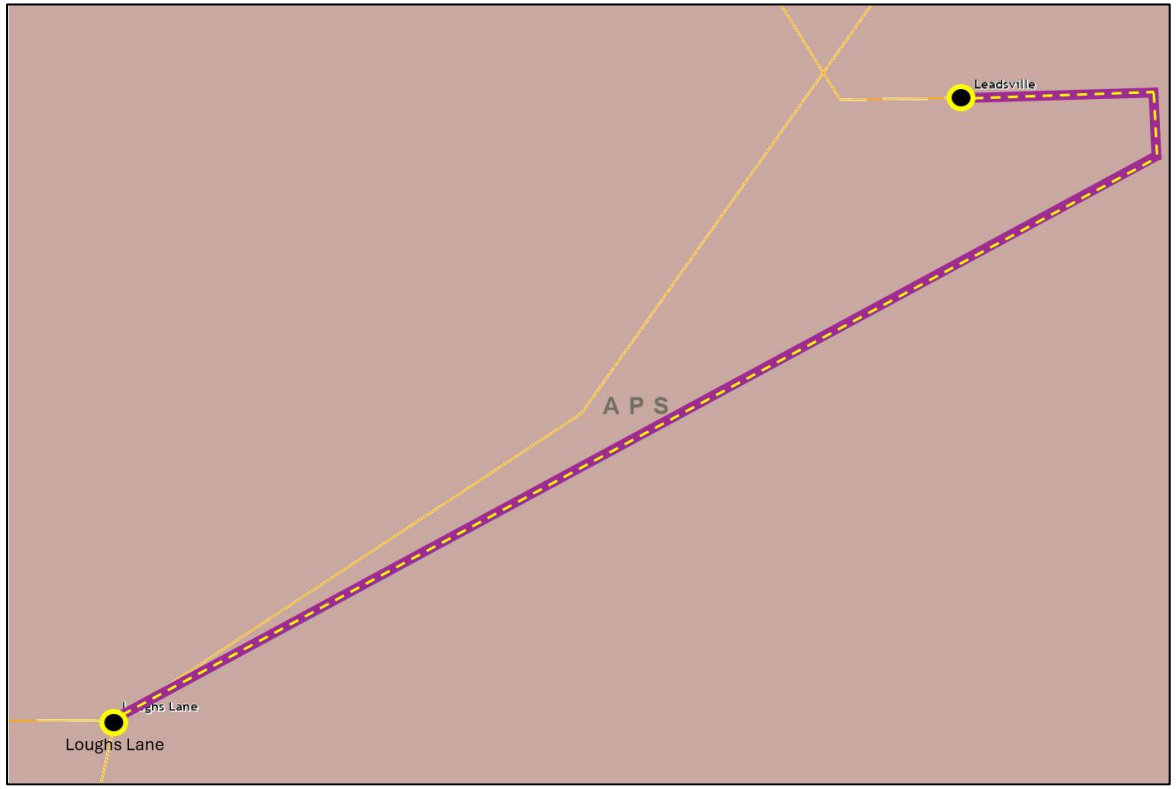
- Substation Condition Rebuild/Replacement

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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APS Transmission Zone M-3 Process
Leadsville – Loughs Lane 138 kV Misoperation Relays

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-112	Leadsville – Loughs Lane 138 kV Line	169 / 213 / 217 / 229	169 / 213 / 217 / 280

APS Transmission Zone M-3 Process
Leadsville – Loughs Lane 138 kV Misoperation Relays

Need Number: APS-2024-112

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

- Replace 138 kV relaying at Leadsville Substation
- Replace 138 kV circuit breaker, line tuner and coax, CVT, and relaying at Loughs Lane Substation

Transmission Line Ratings:

- Leadsville – Loughs Lane 138 kV Line:
  - Before Proposed Solution: 169 / 213 / 217 / 229 MVA (SN / SE / WN / WE)
  - After Proposed Solution: 169 / 213 / 217 / 280 MVA (SN / SE / WN / WE)

Estimated Project Cost: $2.30M

Projected In-Service: 9/28/2029

Supplemental Project ID: s3770.1

Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

APS Transmission Zone M-3 Process
Weirton - Wylie Ridge 138 kV Misoperation Relays

Need Number: APS-2024-025
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026
Previously Presented: Need Meeting – 02/16/2024
Solution Meeting – 08/15/2025

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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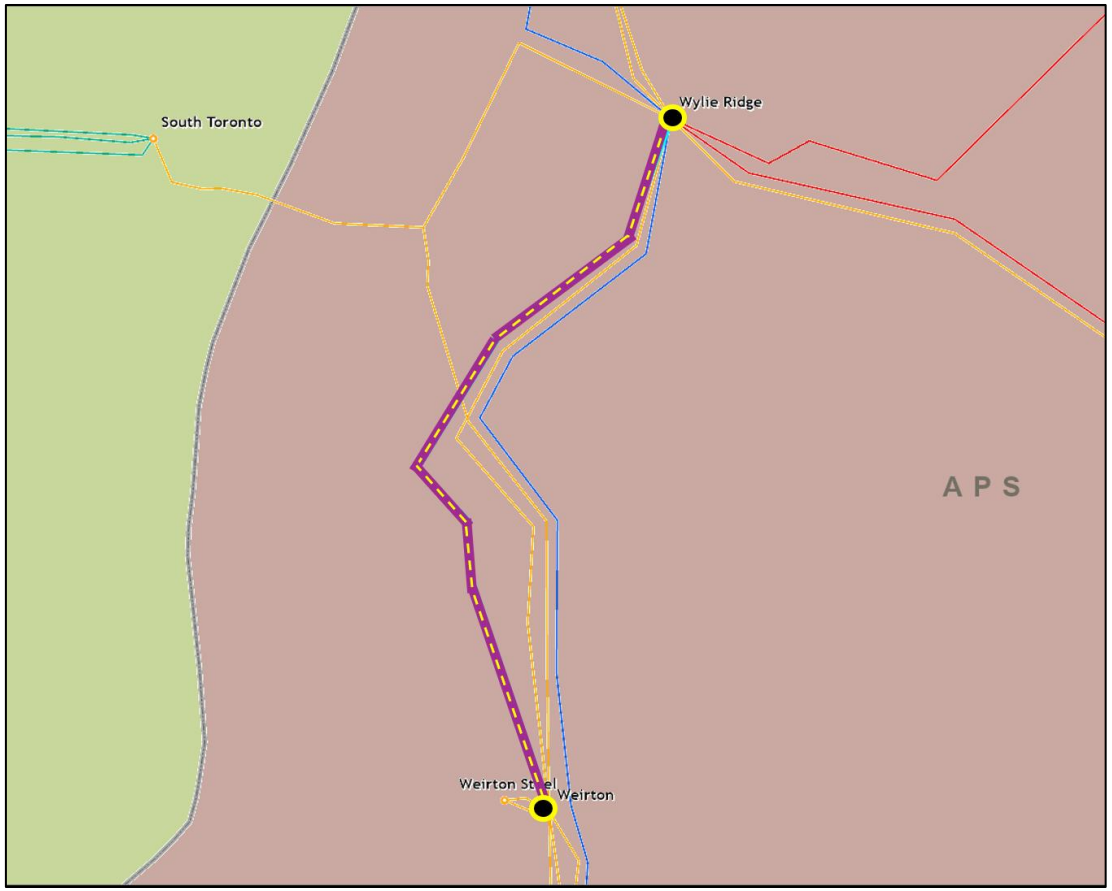


APS Transmission Zone M-3 Process
Weirton - Wylie Ridge 138 kV Misoperation Relays

Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
APS-2024-025	Weirton – Wylie Ridge 138 kV No. 2 Line	225 / 295 / 306 / 306	308 / 376 / 349 / 445

APS Transmission Zone M-3 Process
Weirton - Wylie Ridge 138 kV Misoperation Relays

Need Number: APS-2024-025
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

- Replace 138 kV disconnect switches, line trap, substation conductor, line tuners, CCVT, and relaying at Weirton Substation.
- Replace 138 kV circuit breakers, disconnect switches, line trap, substation conductor, CCVT, and relaying at Wylie Ridge Substation.

Transmission Line Ratings:

- Weirton – Wylie Ridge 138 kV No. 2 Line:
  - Before Proposed Solution: 225 / 295 / 306 / 306 MVA (SN / SE / WN / WE)
  - After Proposed Solution: 308 / 376 / 349 / 445 MVA (SN / SE / WN / WE)

Estimated Project Cost: $4.50M
Projected In-Service: 07/20/2029
Supplemental Project ID: s3771.1

Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

APS Transmission Zone M-3 Process
Rider – Weston 138 kV Line: Customer Connection

Need Number: APS-2025-011

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Previously Presented: Need Meeting – 4/11/2025
Solution Meeting – 08/15/2025

Project Driver(s):

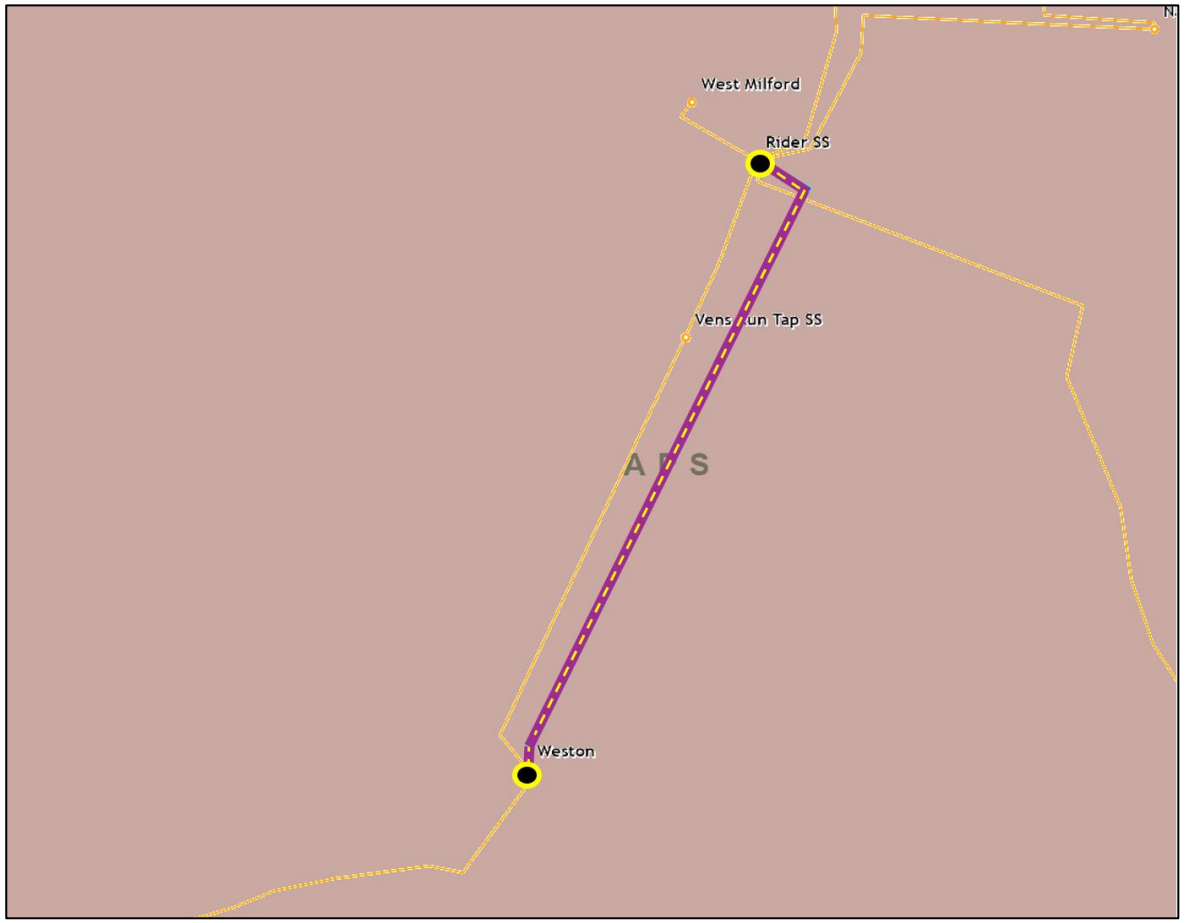
Customer Service

Specific Assumption Reference(s):

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 requested a new 138 kV delivery point near the Rider - Weston 138 kV Line. The requested delivery point is approximately 4.58 miles from Weston Substation. The anticipated load of the new customer connection is 22.4 MVA.



APS Transmission Zone M-3 Process
Rider – Weston 138 kV Line: Customer Connection

Need Number: APS-2025-011

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

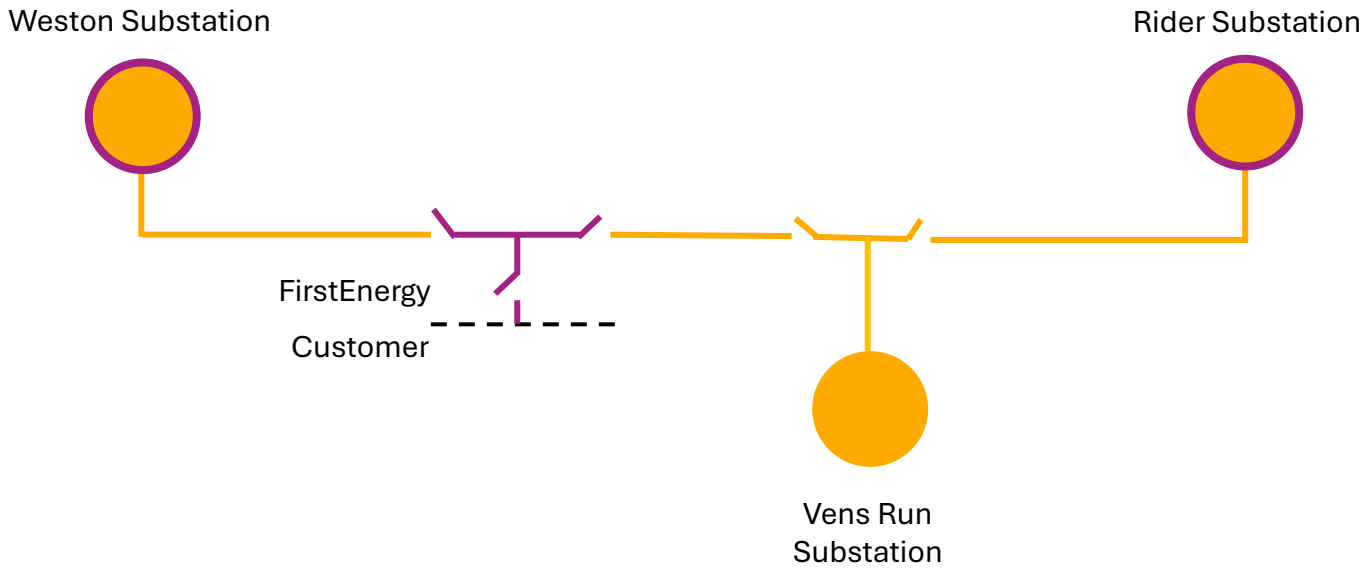
138 kV Transmission Line Tap

- Install two main-line SCADA controlled switches
- Install one tap SCADA controlled switch
- Construct 0.1 miles of 138 kV line extension
- Adjust relay settings at Rider and Weston substations
- Install revenue metering

Estimated Project Cost: $0.92 M

Projected In-Service: 4/29/2028

Supplemental Project ID: s3772.1



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

APS Transmission Zone M-3 Process
Gore - Hampshire 138 kV Line

Need Number: APS-2024-029
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026
Previously Presented: Need Meeting – 03/15/2024
Solution Meeting – 08/15/2025

Project Driver:

- *Equipment Material Condition, Performance and Risk*

Specific Assumption Reference:

System Performance Global Factors

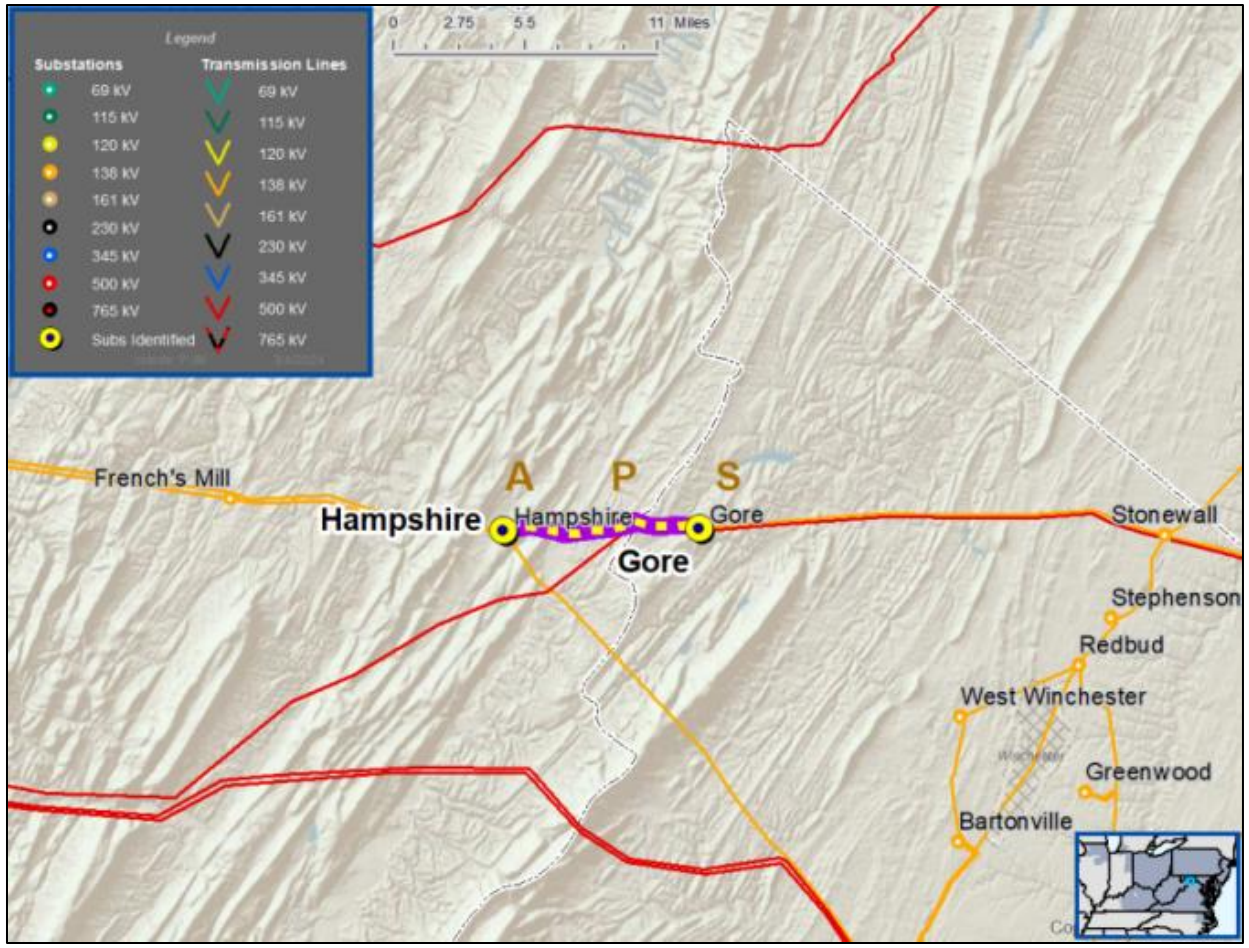
- Past system reliability/performance

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

- The Gore – Hampshire 138 kV Line was constructed in 1956. The line is approximately 6.4 miles long with 51 wood pole structures.
- Recent inspections have indicated that the 49 (96% of total) structures are exhibiting deterioration. Inspection findings include decay, sound test failure, phase raisers and woodpecker damage.
- Since 2014, the line has had one unplanned outage.
- Existing Gore – Hampshire 138 kV line and conductor rating:
  - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)



APS Transmission Zone M-3 Process
Gore - Hampshire 138 kV Line

Need Number: APS-2024-029
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

- Rebuild Gore – Hampshire 138 kV Line approximately 6.4 miles and install new conductor
- At Gore Substation, replace substation conductor and disconnect switches.
- At Hampshire Substation, replace substation conductor.

Transmission Line Ratings:

Gore – Hampshire 138 kV Line

- Before Proposed Solution: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- After Proposed Solution: 448 / 516 / 448 / 543 MVA (SN/SE/WN/WE)

Estimated Project Cost: $23.12M

Projected In-Service: 12/29/2028

Supplemental Project ID: 3773.1

Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	

APS Transmission Zone M-3 Process
Kammer Substation

Need Number: APS-2025-020
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026
Previously Presented: Need Meeting – 08/05/2025
Solution Meeting – 09/09/2025

Supplemental Project Driver(s):
Equipment Condition/Performance/Risk

Specific Assumption Reference(s):
System Performance Projects 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

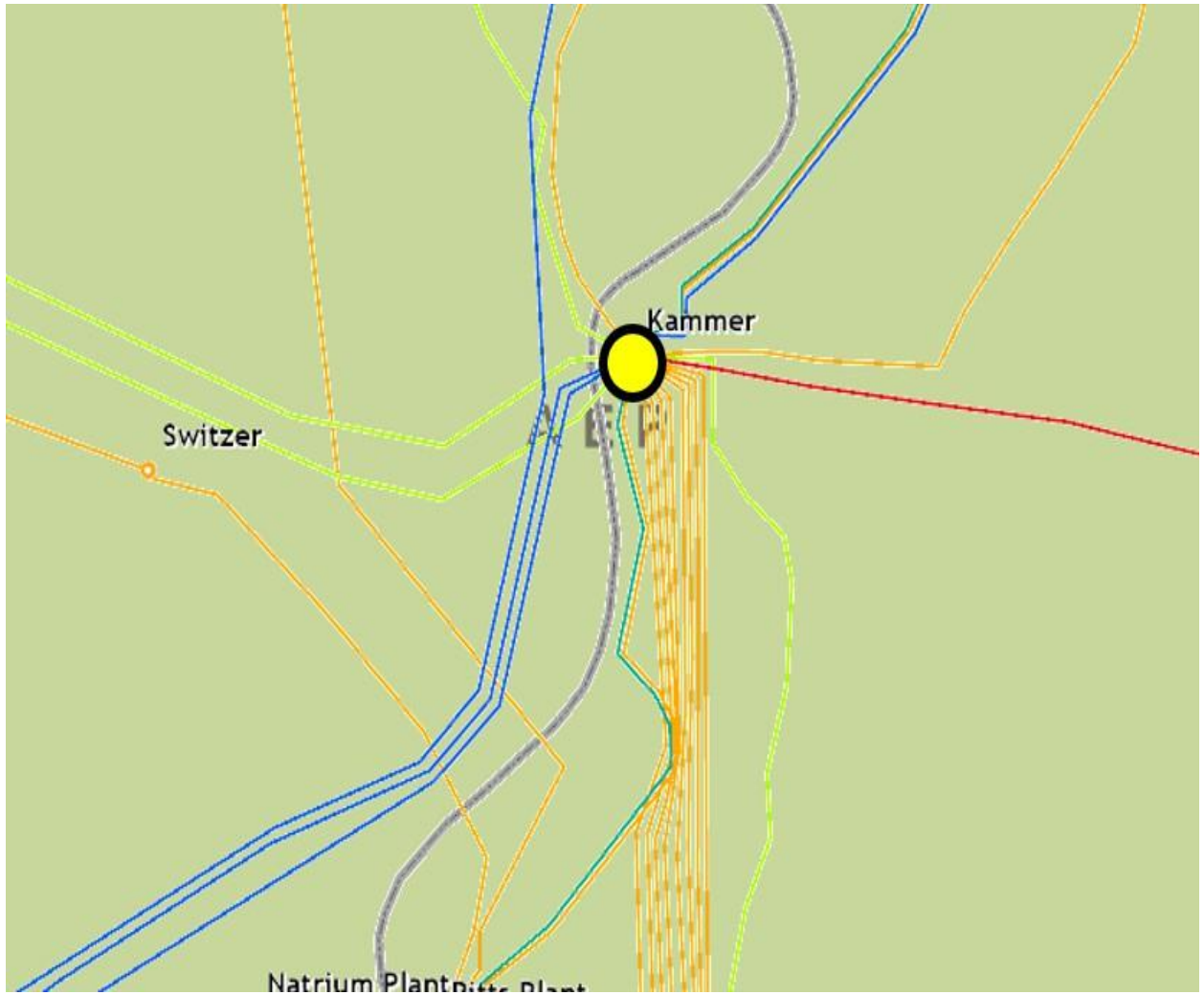
Problem Statement

The existing Kammer Substation is owned by AEP. FirstEnergy owns the Kammer No. 200 765/500 kV Transformer and its associated equipment.

Critical Infrastructure Protection (CIP) and PRC-005 compliance requires implementing and maintaining a physical security plan to protect Bulk Electric System (BES) cyber systems and associated electronic equipment. Additionally, the low side of the Kammer No. 200 765/500 kV Transformer is connected to the Kammer – 502 Junction 500 kV Line through a disconnect switch, resulting in the need to direct transfer trip breakers at 502 Junction Substation upon various fault scenarios.

Existing Kammer No. 200 765/500 kV Transformer circuit ratings:

- 2987 / 3792 / 3604 / 4140 MVA (SN/SE/WN/WE)



APS Transmission Zone M-3 Process
Kammer Substation

Need Number: APS-2025-020
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

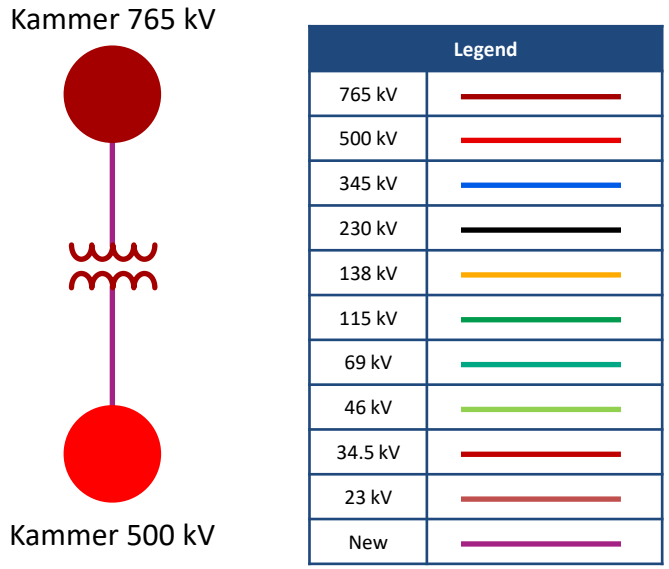
Construct a new FirstEnergy owned control building at Kammer Substation to house all relaying for FirstEnergy assets.

- Install prefabricated control enclosure with new relaying
- Replace 765 kV disconnect switch on the high side of the Kammer No. 200 765/500 kV transformer with a 765 kV SCADA controlled switch.
- Replace 500 kV disconnect switch on the low side of the Kammer No. 200 765/500 kV transformer with a 500 kV circuit breaker

Kammer No. 200 765/500 kV Transformer Ratings:

- No change in ratings

Estimated Project Cost: $9.25 M
Projected In-Service: 8/15/2030
Supplemental Project ID: s3776.1



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

Need Number: APS-2024-095

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Previous Stage: Need Meeting – 11/15/2024
Solution Meeting – 9/19/2025

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.

Continued on the next slide…

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: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

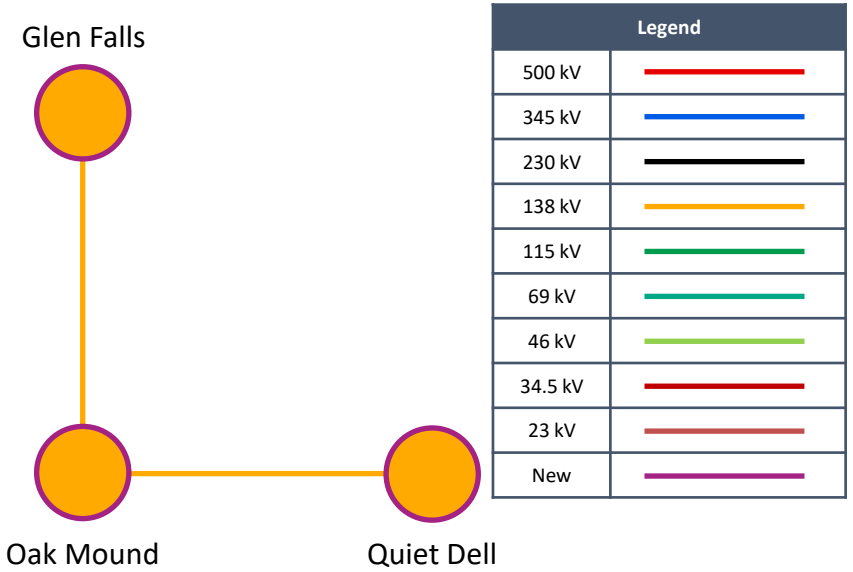
Selected Solution:

- 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



Estimated Project Cost: $13.35M

Projected In-Service: 6/16/2028

Supplemental Project ID: s3777.1

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

Need Number: APS-2024-089

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Previously Stage: Need Meeting – 10/18/2024
Solution Meeting – 09/19/2025

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

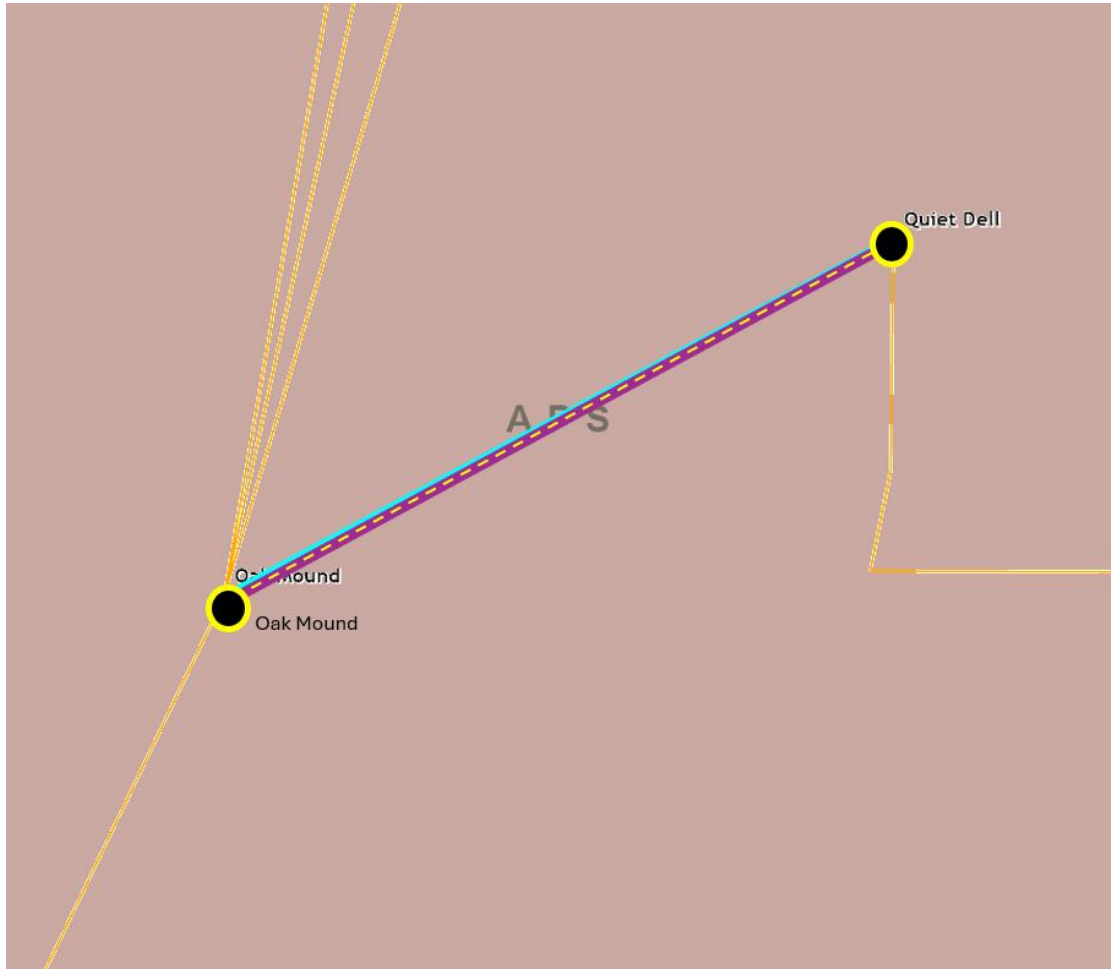
- Substation Condition Rebuild/Replacement

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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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: Submission of Supplemental Projects for Inclusion in the Local Plan - 03/02/2026

Selected Solution:

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

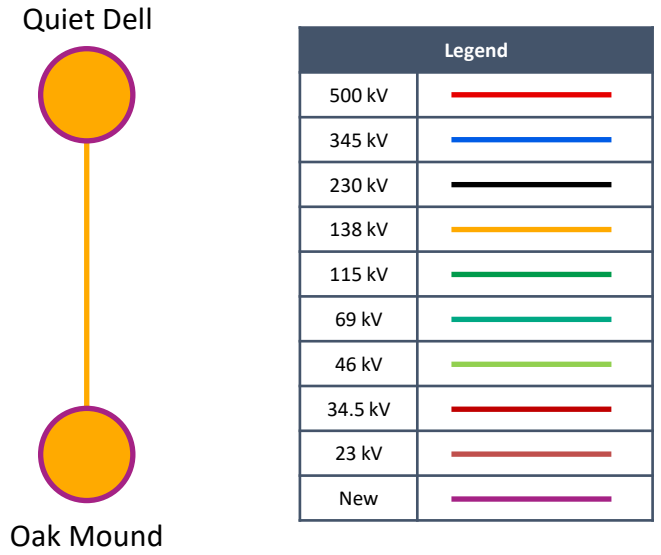
Oak Mound – Quiet Dell 138 kV Line Ratings:

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

Estimated Project Cost: $2.63M

Projected In-Service: 6/16/2028

Supplemental Project ID: s3778.1



Revision History

03/02/2026 – V1 – Original Slides posted