

Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

APS Transmission Zone

October 16, 2026

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 Number: APS-2026-014

Process Stage: Need Meeting 10/16/2026

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

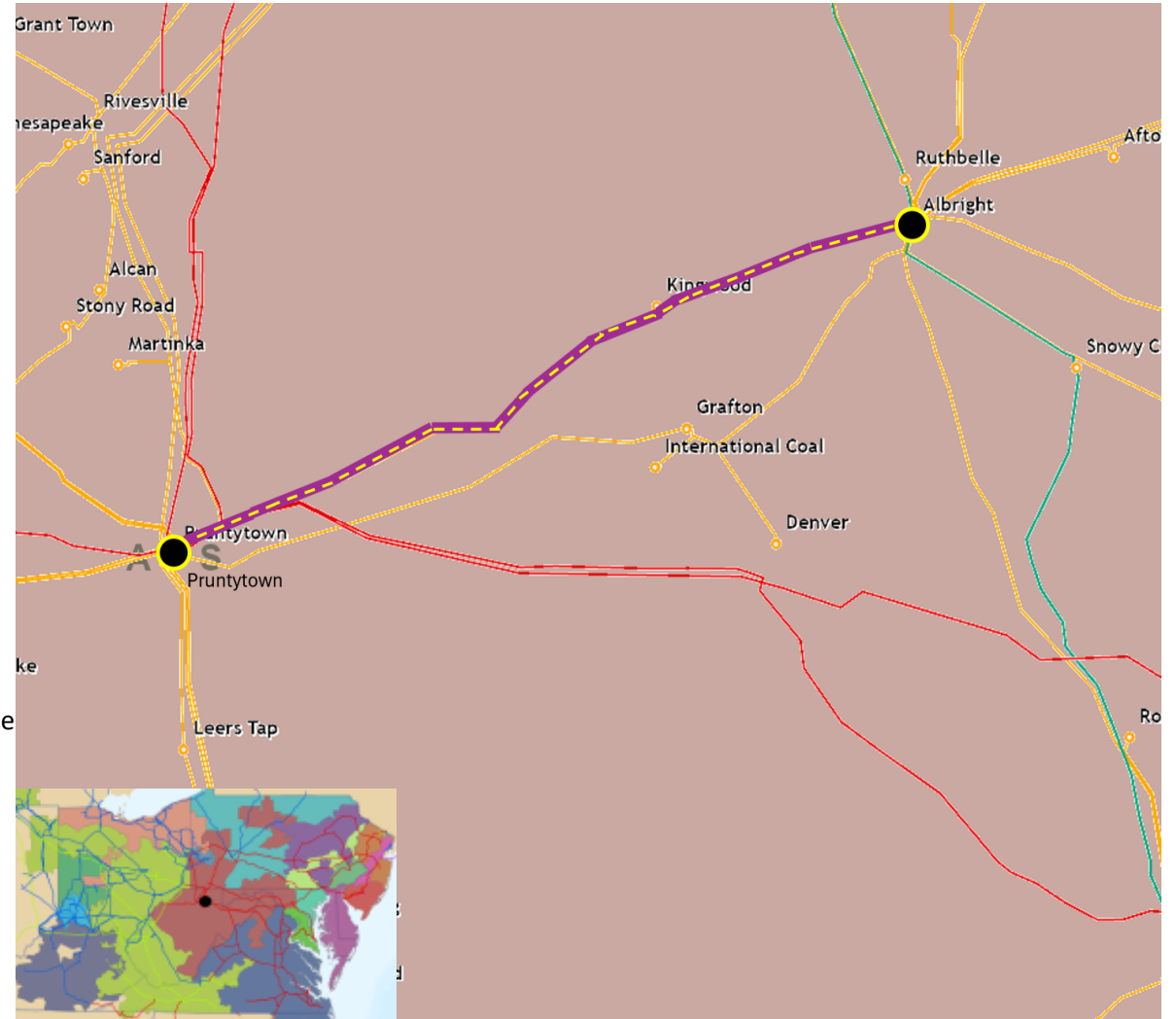
The Albright - Pruntytown 138 kV Line was constructed approximately 50 years ago and is approaching end of life. It is 25.9 miles long with 141 existing wood and 26 existing steel structures. Of the 141 existing wood structures, 106 (75%) were installed in 1976 and are approximately 50 years old.

The Kingwood - Pruntytown 138 kV Line section of the Albright - Pruntytown 138 kV Line is approximately 19 miles and consists of 137 wood and 11 steel structures.

Per recent inspections, the line is exhibiting deterioration resulting in increased maintenance costs. Inspection findings include:

- 11 structures are Phase-Raised.
- 93 structures require repairs due to deterioration.
- 137 structures require replacement due to deterioration.
- 4 structures require repairs to insulators and related hardware, indicating that components are reaching end of life.
- 12 structures require repairs due to active rotten crossarm conditions, indicating that components are reaching end of life.

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Need Number: APS-2026-014

Process Stage: Need Meeting 10/16/2026

Problem Statement (CONT'):

- 2022, 2025 and 2026 inspections resulted in 112, 78, and 22 priority conditions, respectively. 2024 groundline inspection resulted in 15 structures failing to meet acceptable wood pole condition criteria at the groundline.
- 245 priority maintenance conditions recorded since 2011, of which 215 occurrences have been recorded since 2022 and all included woodpecker holes, rot, and cracking.
- Since 2021, the line has had seven unscheduled sustained outages.

Albright - Kingwood T 138 kV Line:

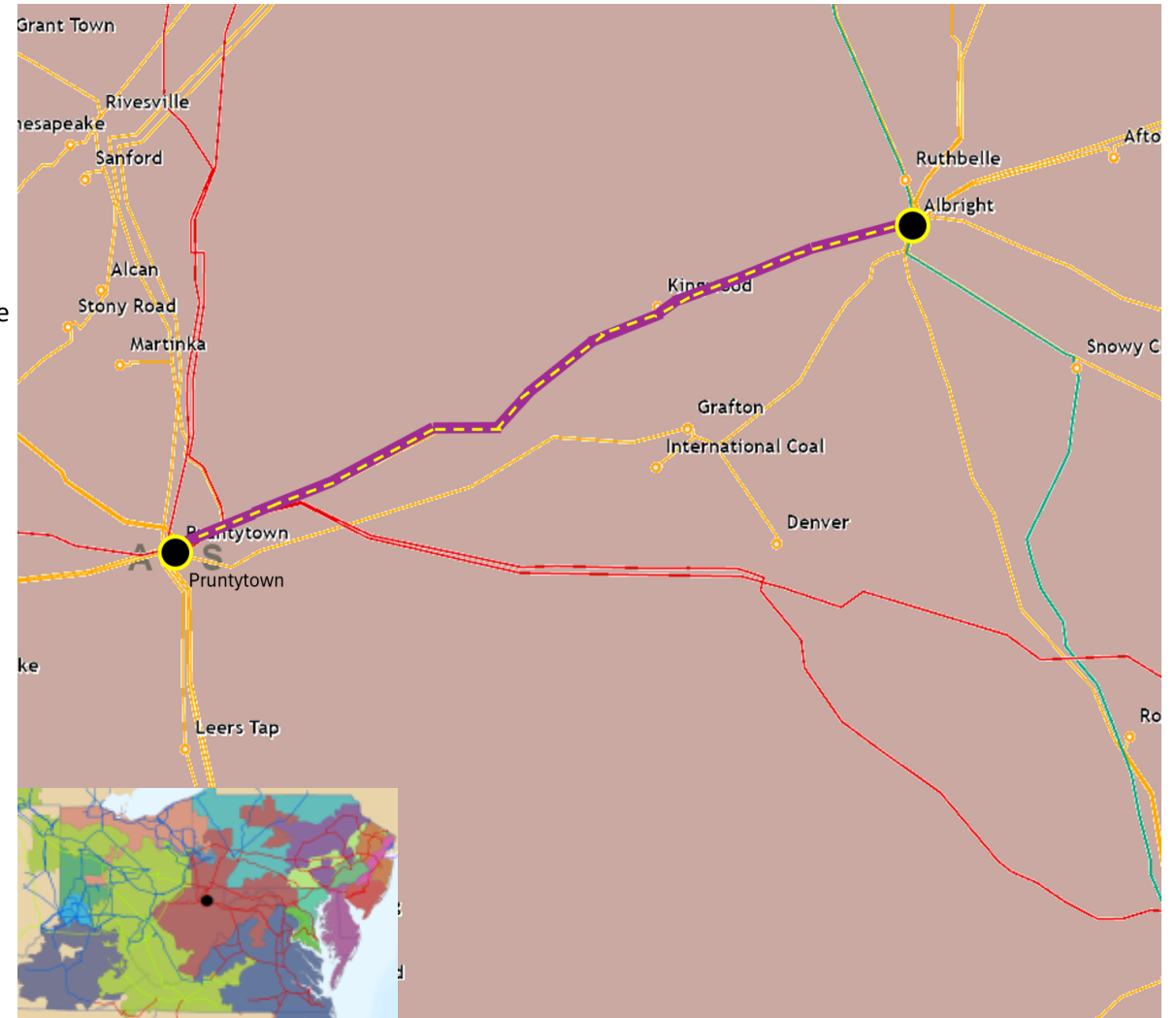
Existing Line Rating: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)

Kingwood T - Pruntytown T 138 kV Line:

Existing Line Rating: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)



Need Number: APS-2026-074
Process Stage: Need Meeting 10/16/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

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.

Seneca Caverns - North Franklin 138 kV Line:

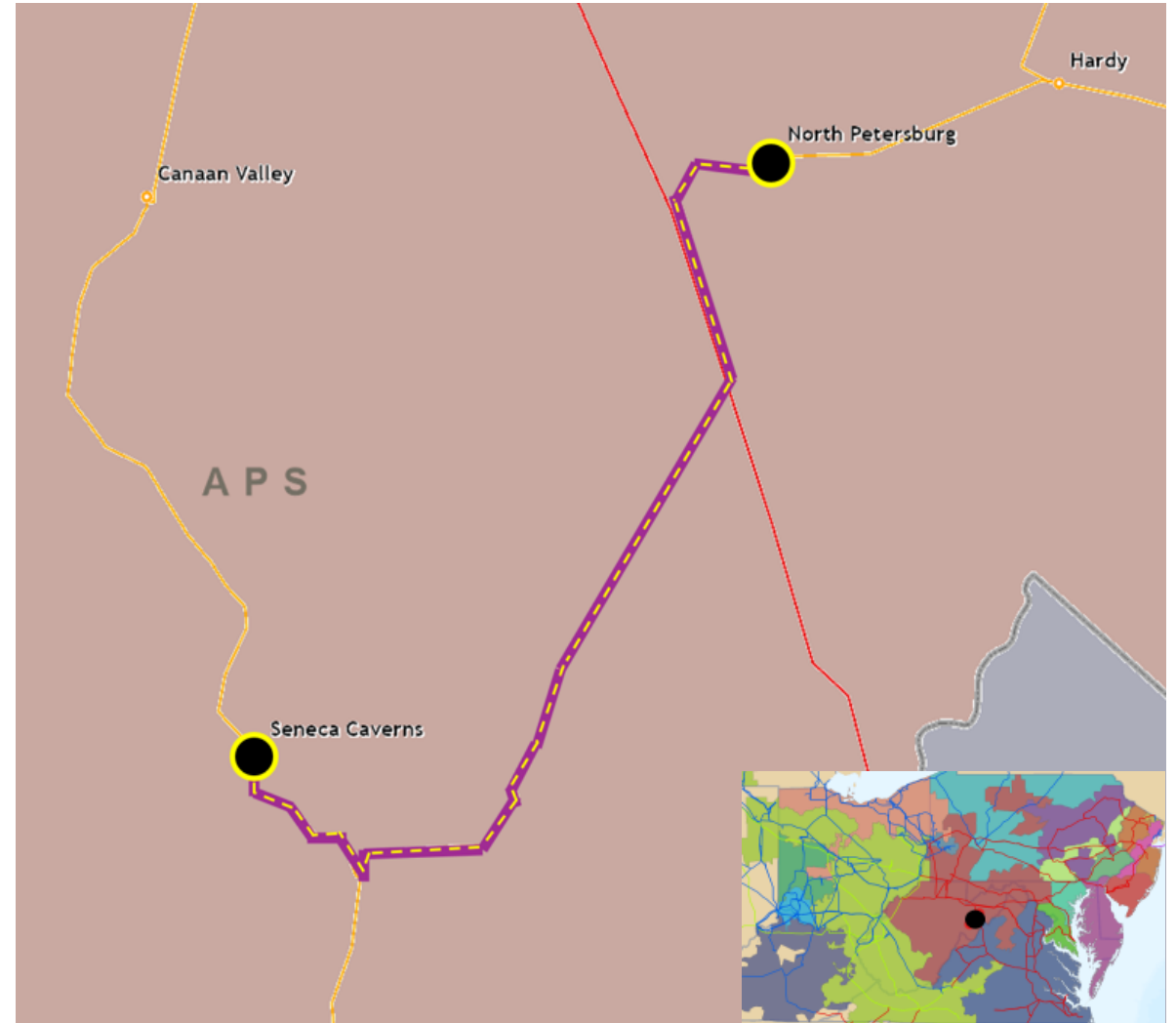
Existing Line Rating: 229 / 229 / 229 / 229 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

North Franklin - North Petersburg 138 kV Line:

Existing Line Rating: 229 / 229 / 229 / 229 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)



Need Number: APS-2026-073
Process Stage: Need Meeting 10/16/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

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.

Cecil - Crossgates 138 kV Line:

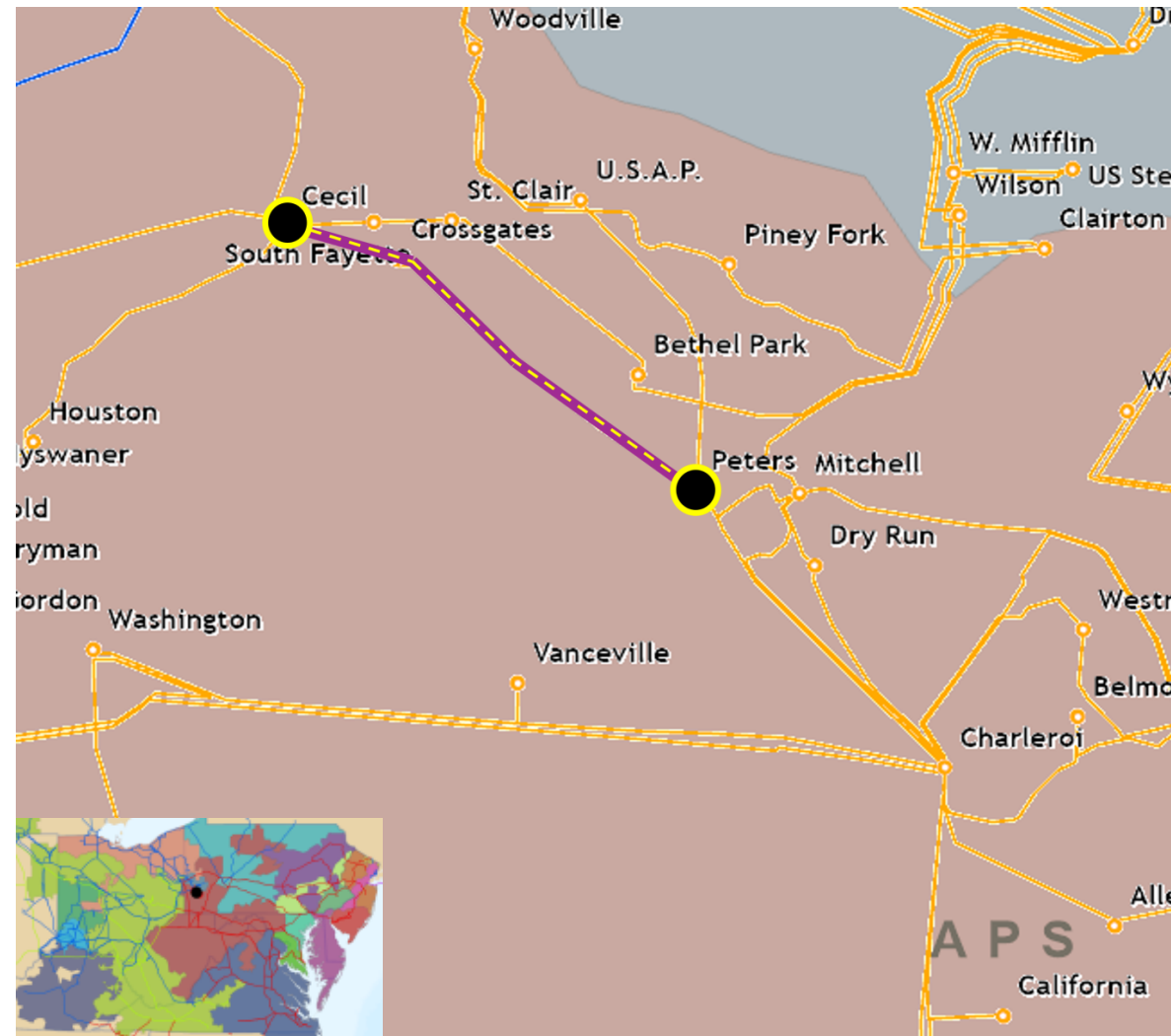
Existing Line Rating: 258 / 314 / 316 / 343 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Crossgates - Peters 138 kV Line:

Existing Line Rating: 258 / 314 / 316 / 343 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)



Need Number: APS-2026-053
Process Stage: Need Meeting 10/16/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

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.

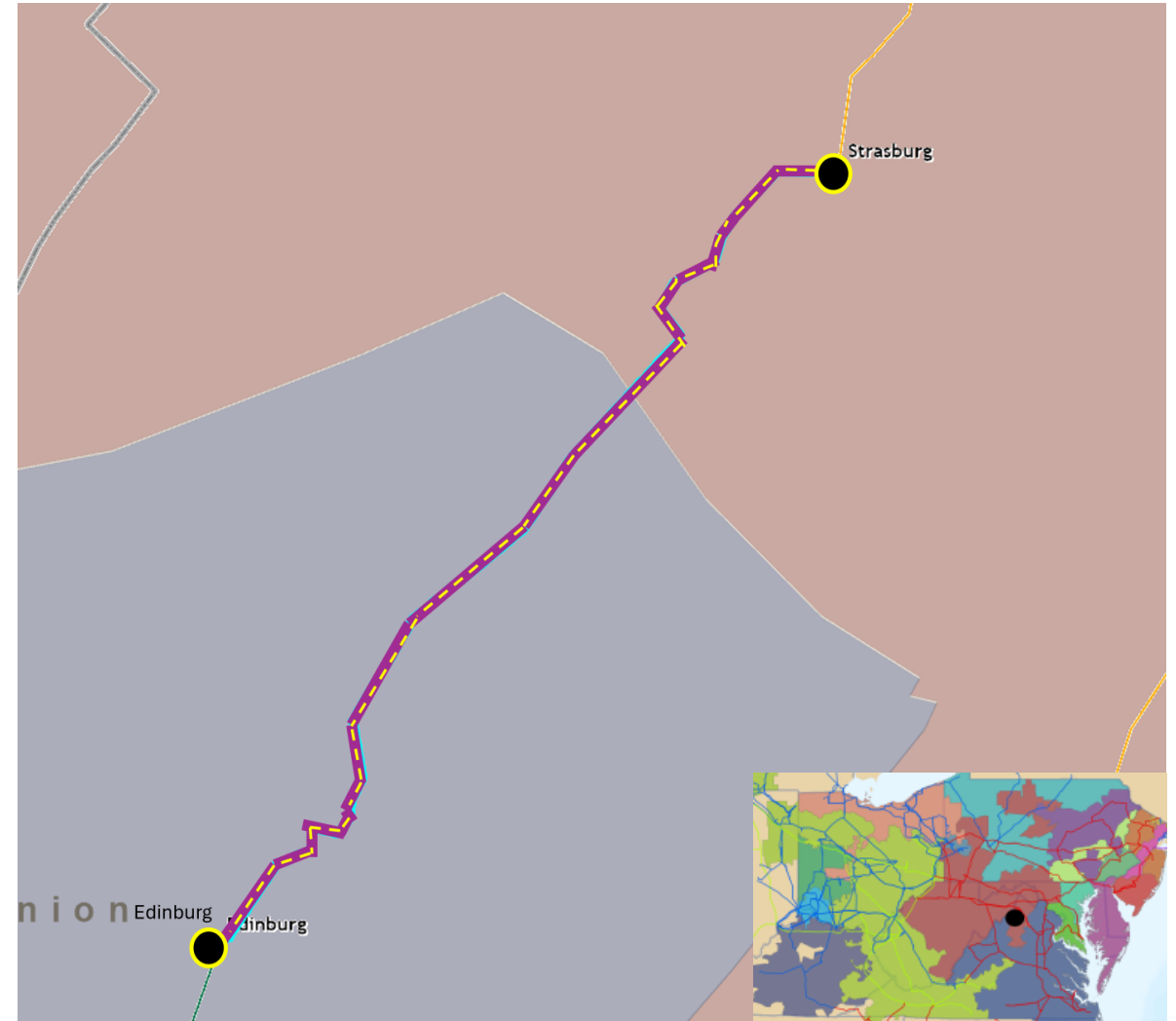
In many cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.

Transmission line ratings are limited by terminal equipment.

Edinburg - Strasburg 138 kV Line:

Existing Line Rating: 287 / 306 / 325 / 343 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 436 / 527 / 493 / 624 MVA (SN/SE/WN/WE)



Need Number: APS-2026-023
Process Stage: Need Meeting 10/16/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

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.

Black Oak - Short Gap 138 kV Line:

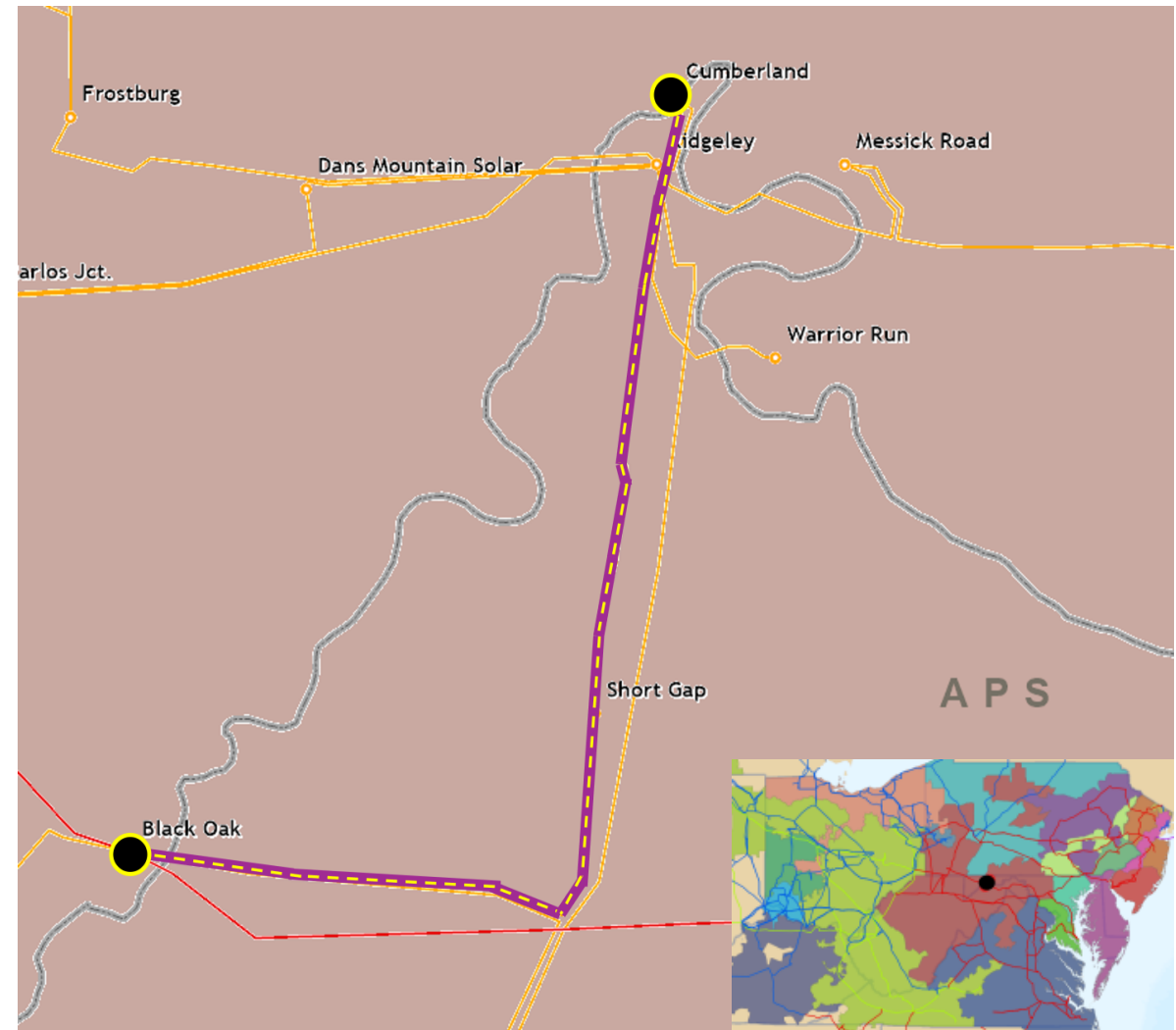
Existing Line Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Short Gap - Cumberland 138 kV Line:

Existing Line Rating: 299 / 360 / 349 / 422 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)



Need Number: APS-2026-051
Process Stage: Need Meeting 10/16/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance
- Substation/line equipment limits

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.

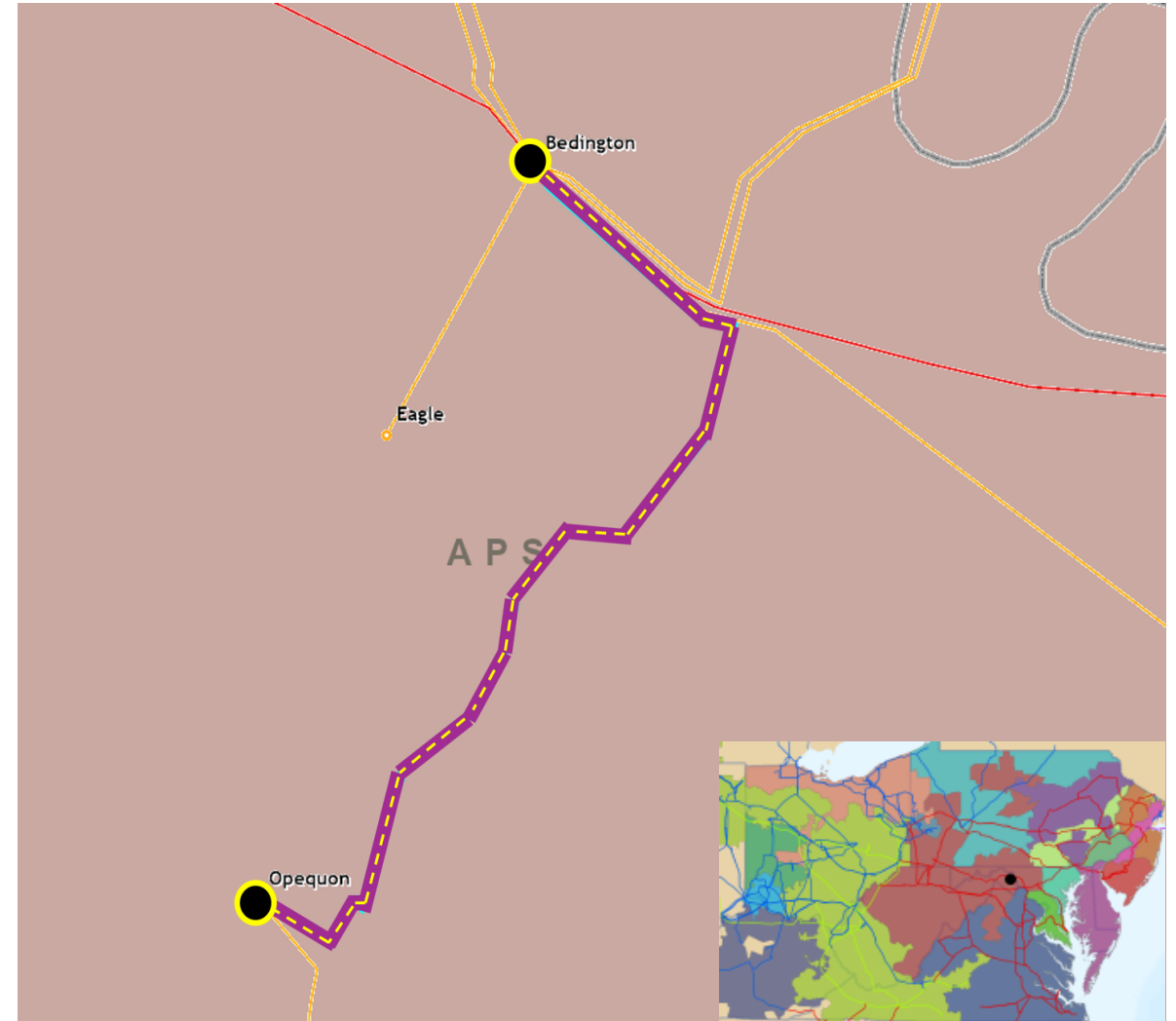
In many cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.

Transmission line ratings are limited by terminal equipment.

Bedington - Opequon 138 kV Line:

Existing Line Rating: 292 / 314 / 325 / 343 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)



Need Number: APS-2026-078
Process Stage: Need Meeting 10/16/2026
Project Driver: Customer Service

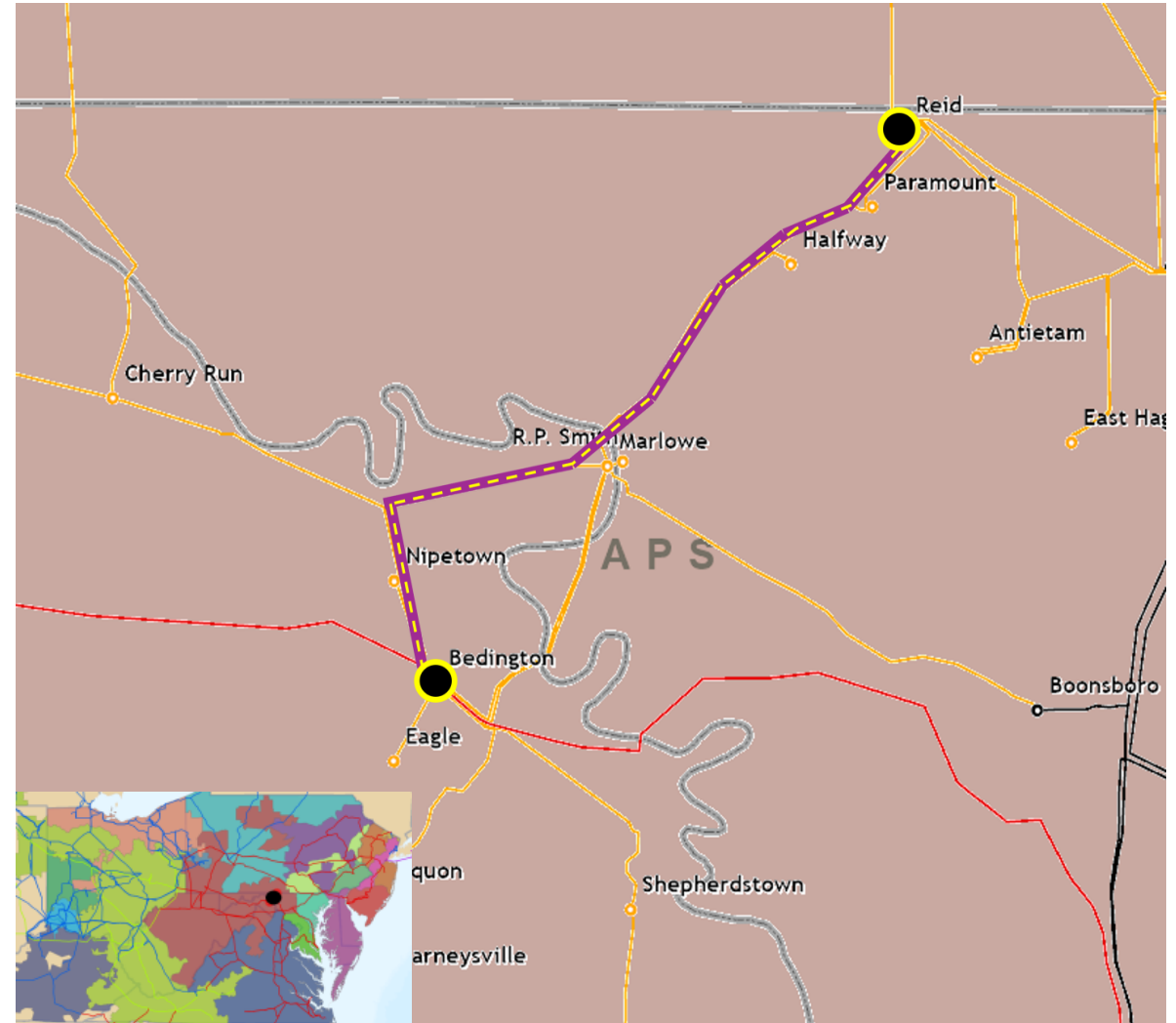
Specific Assumption References:

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 new customer requested 138 kV service for load of approximately 200 MW near the Bedington - Reid 138 kV Line. The request is approximately six miles from Reid Substation.

Requested in-service date is 1/1/2028.



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 Number: APS-2026-012
Process Stage: Solution Meeting 10/16/2026
Previously Presented: Need Meeting 04/15/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

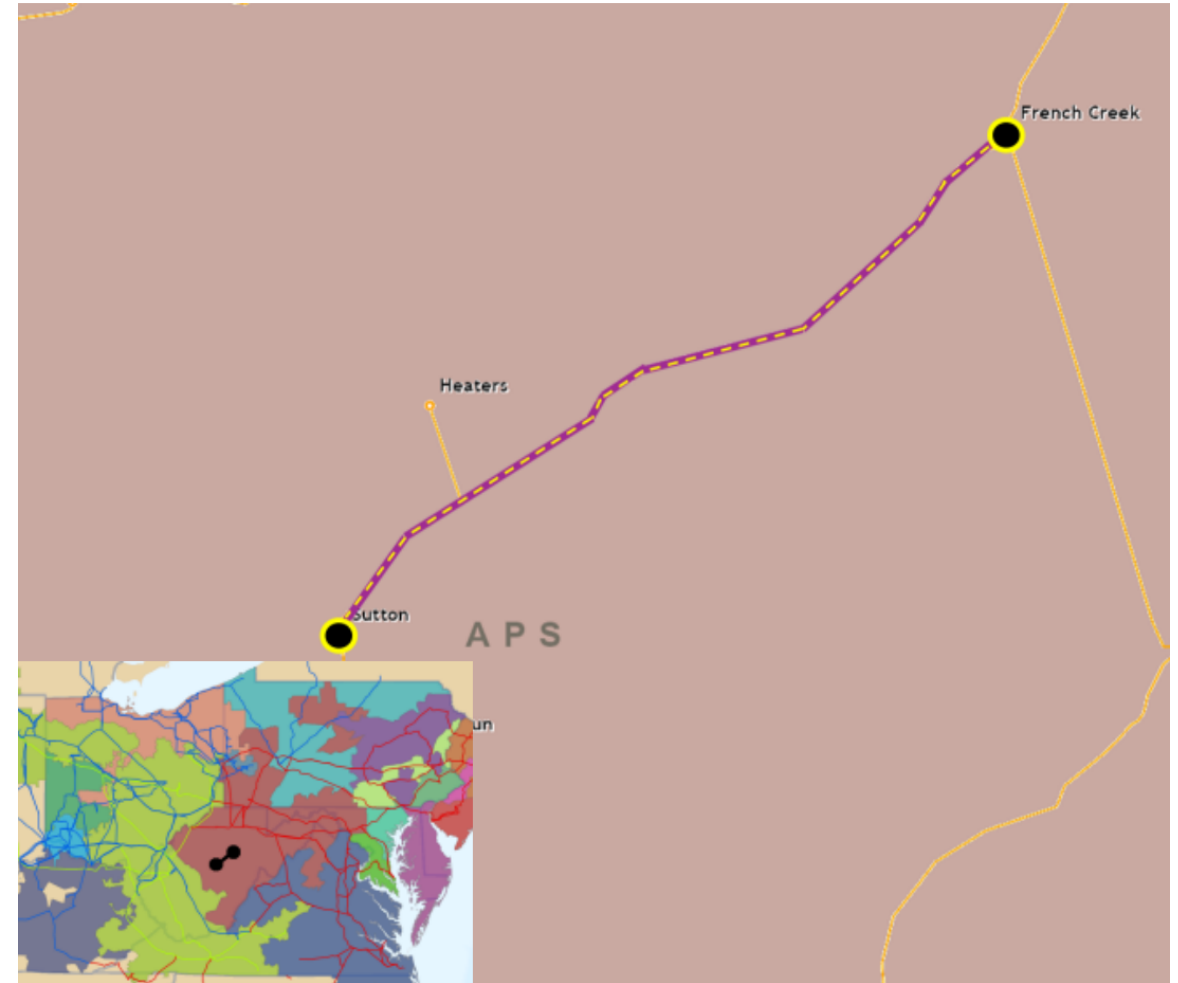
- Age/condition of wood pole transmission line structures

Problem Statement:

The French Creek - Sutton 138 kV Line was constructed approximately 78 years ago and is approaching end of life. It is 30.5 miles long with 248 wood pole structures of which 210 structures were installed approximately 49 years ago. Per recent inspections, the line is exhibiting deterioration. Inspection findings include:

- Five structures have phase-raisers
- Five structure replacements have been completed in past two years due to deteriorating conditions observed.
- 172 structures failed inspection due to woodpecker damage, top rot, decay, cracking, and delamination of cross-arms, of which 138 structures require repairs.
- Seven structures require repairs to insulators and related hardware, indicating that components are reaching end of life.

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Need Number: APS-2026-012

Process Stage: Solution Meeting 10/16/2026

Problem Statement (CONT'):

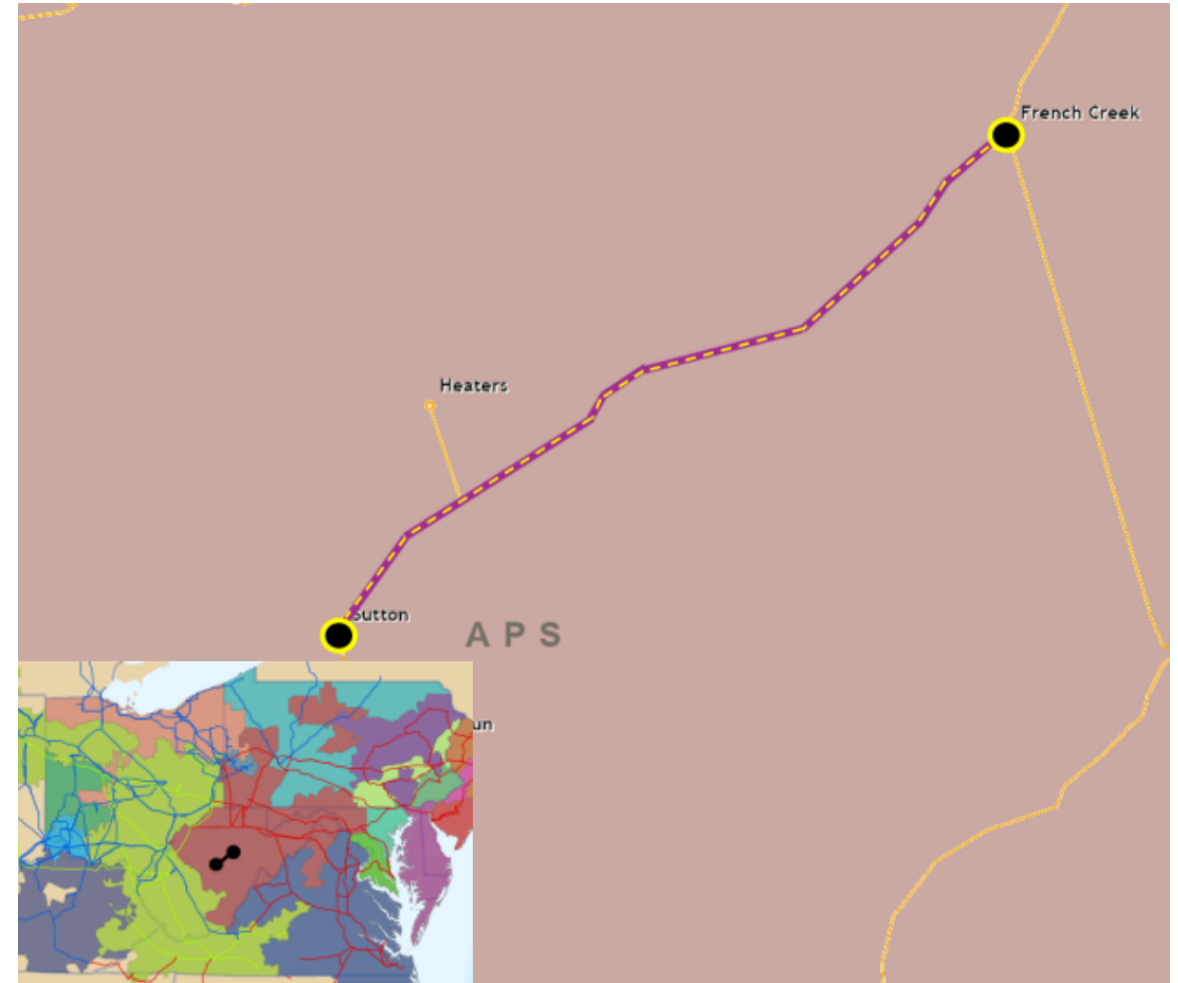
There were 208 priority maintenance repairs recorded since 2014 of which 172 were recorded in 2023.

French Creek - Heaters Tap 138 kV Line:

Existing line and conductor rating: 107 / 128 / 120 / 152 MVA
(SN/SE/WN/WE)

Heaters Tap - Sutton 138 kV Line:

Existing line and conductor rating: 107 / 128 / 120 / 152 MVA
(SN/SE/WN/WE)



Need Number: APS-2026-012
Process Stage: Solution Meeting 10/16/2026

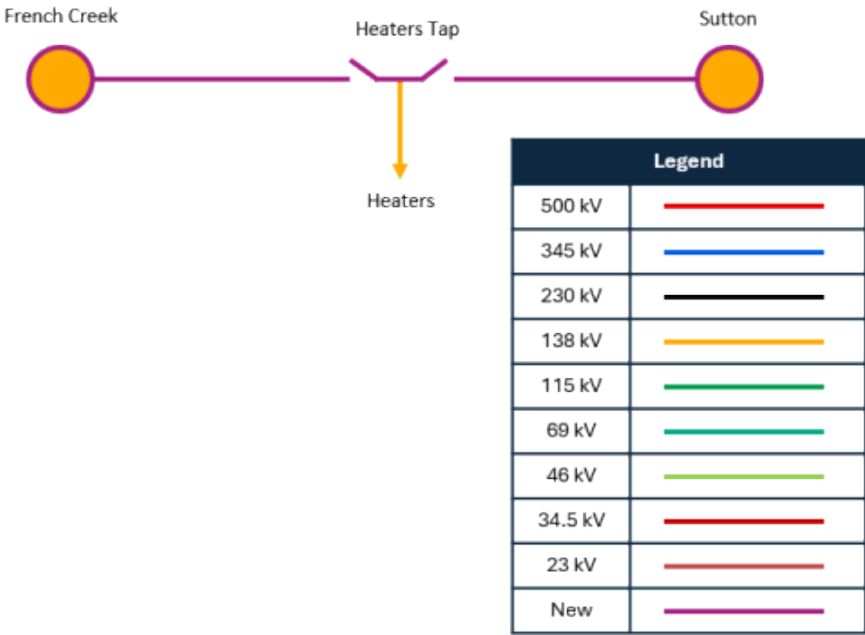
Proposed Solution:
 Rebuild 30.5 miles of the French Creek - Sutton 138 kV Line with steel pole structures and install OPGW.
 At Heaters Tap: Upgrade transmission line switches.
 At French Creek Substation: Remove wave trap, line turner and coax, and install fiber.
 At Sutton Substation: Remove wave trap, line turner and coax, and upgrade substation conductor.

French Creek - Heaters Tap 138 kV Line Ratings:
 Before Proposed Solution: 97 / 117 / 109 / 139 MVA (SN/SE/WN/WE)
 After Proposed Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Heaters Tap - Sutton 138 kV Line Ratings:
 Before Proposed Solution: 107 / 128 / 120 / 152 MVA (SN/SE/WN/WE)
 After Proposed Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Alternatives Considered:
 Continue to maintain with increased risk of equipment failure and unplanned outages and expected increase of maintenance cost

Transmission Cost Estimate: \$119.57 M
Projected In-Service: 05/06/2033
Project Status: Conceptual
Model: 2025 RTEP model for 2030 Summer (50/50)



Need Number: APS-2024-093

Process Stage: Solution Meeting 10/16/2026

Previously Presented: Need Meeting 11/15/2024

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance

Line Condition Rebuild/Replacement

- Age/condition of wood transmission line structures

Problem Statement:

The Belmont – Long Reach 138 kV Line was constructed approximately 47 years ago and is approaching end of life. It is approximately 17 miles long with 15 miles of wood pole structures and two miles of steel transmission line structures.

Per recent inspection, the line is exhibiting deterioration. Inspection findings include:

- 86 wood pole structures failed due to woodpecker damage and rot.
- Maintenance required on steel structures with no major defects reported.

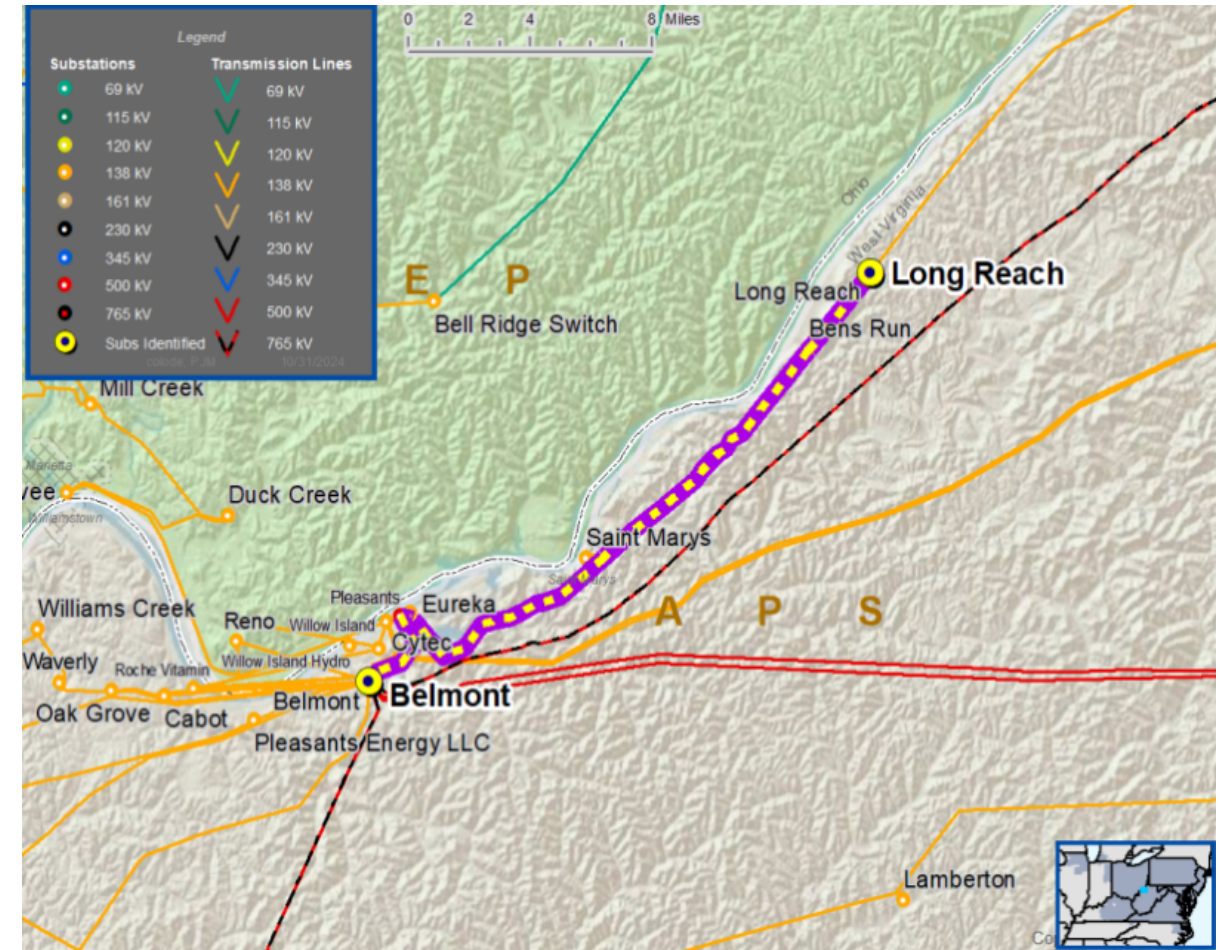
Over the last five years, the line has experienced five unplanned sustained outages.

Transmission Line / Substation Locations: Belmont – Eureka Tap 138 kV Line

Existing Line Rating: 308 / 376 / 349 / 445 MVA (SN / SE / WN / WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN / SE / WN / WE)

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Need Number: APS-2024-093

Process Stage: Solution Meeting 10/16/2026

Problem Statement (CONT’):

Transmission Line / Substation Locations: Eureka Tap – Pleasants Tap 138 kV Line

Existing Line Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Transmission Line / Substation Locations: Pleasants Tap – St Marys Tap 138 kV Line

Existing Line Rating: 134 / 138 / 157 / 157 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 134 / 138 / 157 / 157 MVA (SN/SE/WN/WE)

Transmission Line / Substation Locations: St Marys Tap – Bens Run Tap 138 kV Line

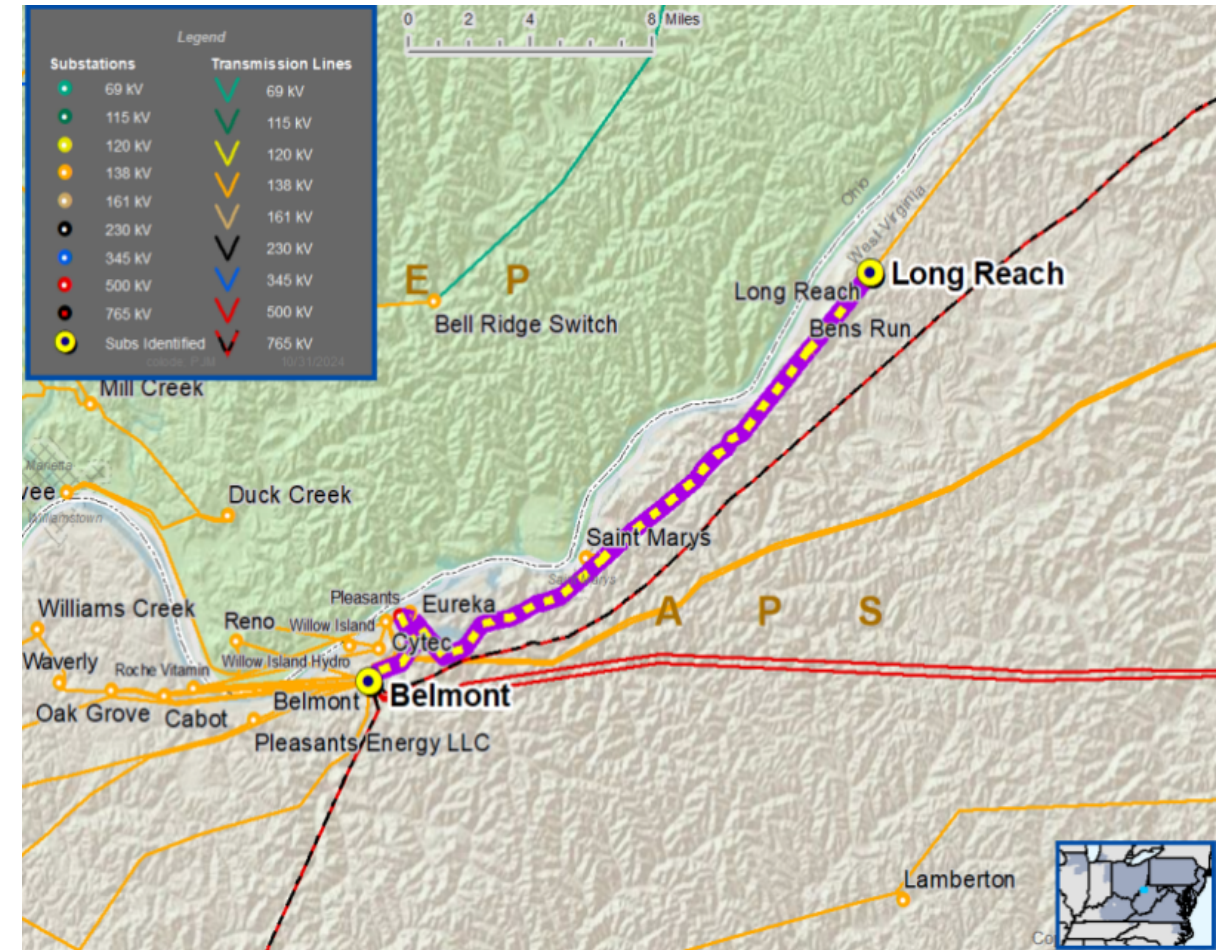
Existing Line Rating: 148 / 151 / 166 / 166 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 148 / 151 / 166 / 166 MVA (SN/SE/WN/WE)

Transmission Line / Substation Locations: Bens Run Tap – Long Reach 138 kV Line

Existing Line Rating: 148 / 151 / 166 / 166 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 148 / 151 / 166 / 166 MVA (SN/SE/WN/WE)



Need Number: APS-2024-093

Process Stage: Solution Meeting 10/16/2026

Proposed Solution:

Rebuild 16.9 miles of the Belmont - Long Reach 138 kV Line through replacing 140 wood structures with steel H-frame poles and install OPGW.

At Bens Run Tap: Upgrade line switches and limiting conductors.

At Long Reach Substation: Remove wave trap, upgrade circuit breaker, substation conductor and relaying.

Eureka T - Pleasants T - St. Marys T 138 kV Line Ratings:

Before Proposed Solution: 134 / 138 / 157 / 157 MVA (SN/SE/WN/WE)

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

St. Marys T - Bens Run T 138 kV Line Ratings:

Before Proposed Solution: 148 / 151 / 166 / 166 MVA (SN/SE/WN/WE)

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

Bens Run T - Long Reach 138 kV Line Ratings:

Before Proposed Solution: 148 / 151 / 166 / 166 MVA (SN/SE/WN/WE)

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

Alternatives Considered:

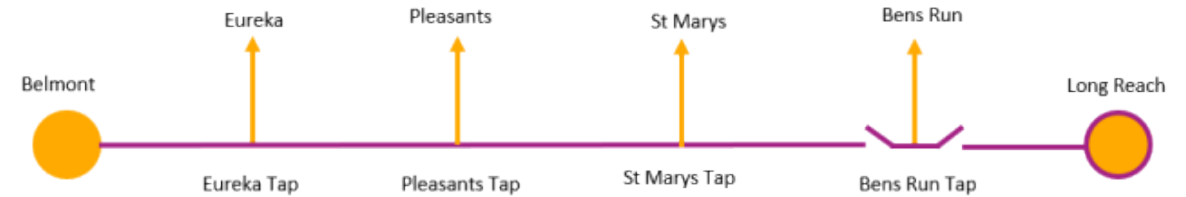
Continue to maintain with increased risk of unplanned outages and expected increase of maintenance cost due to structures and equipment age

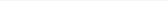
Transmission Cost Estimate: \$76.11 M

Projected In-Service: 11/27/2030

Project Status: Conceptual

Model: 2025 RTEP model for 2030 Summer (50/50)



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

Need Number: APS-2026-007
Process Stage: Solution Meeting 10/16/2026
Previously Presented: Need Meeting 06/17/2026
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

The Burma - Ridgway 138 kV Line was constructed approximately 44 years ago and is approaching end of life. It is 51.4 miles long with wood pole transmission line structures. The loop to Clarion Substation is established where the Burma - Clarion 138 kV Line and the Clarion - Ridgway 138 kV Line are terminated and interconnected through the Clarion Substation. The Clarion loop consists of approximately 3.7 miles of the Burma - Clarion 138 kV Line and 3.7 miles of the Clarion - Ridgway 138 kV Line. The Clarion loop contains 71 wood pole structures, which are approximately 48 years old and also approaching end of life.

Per recent inspections, the line is exhibiting deterioration. Inspection findings include:

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Need Number: APS-2026-007
Process Stage: Solution Meeting 10/16/2026

Problem Statement (CONT'):

- Thirteen structures are phase-raised of which one phase-raised structure is on the Clarion loop.
- 54 structures require repairs to insulators and related hardware, indicating that components are reaching end of life.
- 86 structures failed inspection due to sound, woodpecker damage, top rot, decay, cracking, and/or delamination of cross-arms of which 22 are on the Clarion loop.
- The transmission line is equipped with Lapp Polypace type insulators which have been the subject of multiple failures due to poor condition and poor design.

The line has experienced six unplanned sustained outages over the last five years. Four outages occurred in 2025, and one outage was related to failure of polymer insulators on the line.

The line is currently limited by terminal equipment.

Burma - Clarion 138 kV Line:

Existing Line Rating: 294 / 350 / 349 / 401 MVA (SN/SE/WN/SE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/SE)

Clarion - Ridgway 138 kV Line:

Existing Line Rating: 287 / 342 / 342 / 380 MVA (SN/SE/WN/SE)

Existing Conductor Rating: 308 / 376 / 349 / 445 MVA (SN/SE/WN/SE)



Need Number: APS-2026-007
Process Stage: Solution Meeting 10/16/2026

Proposed Solution:
 Rebuild 3.7 miles of the Burma - Ridgway 138 kV Line.
 Re-insulate and repair 47.7 miles of the Burma - Ridgway 138 kV Line.

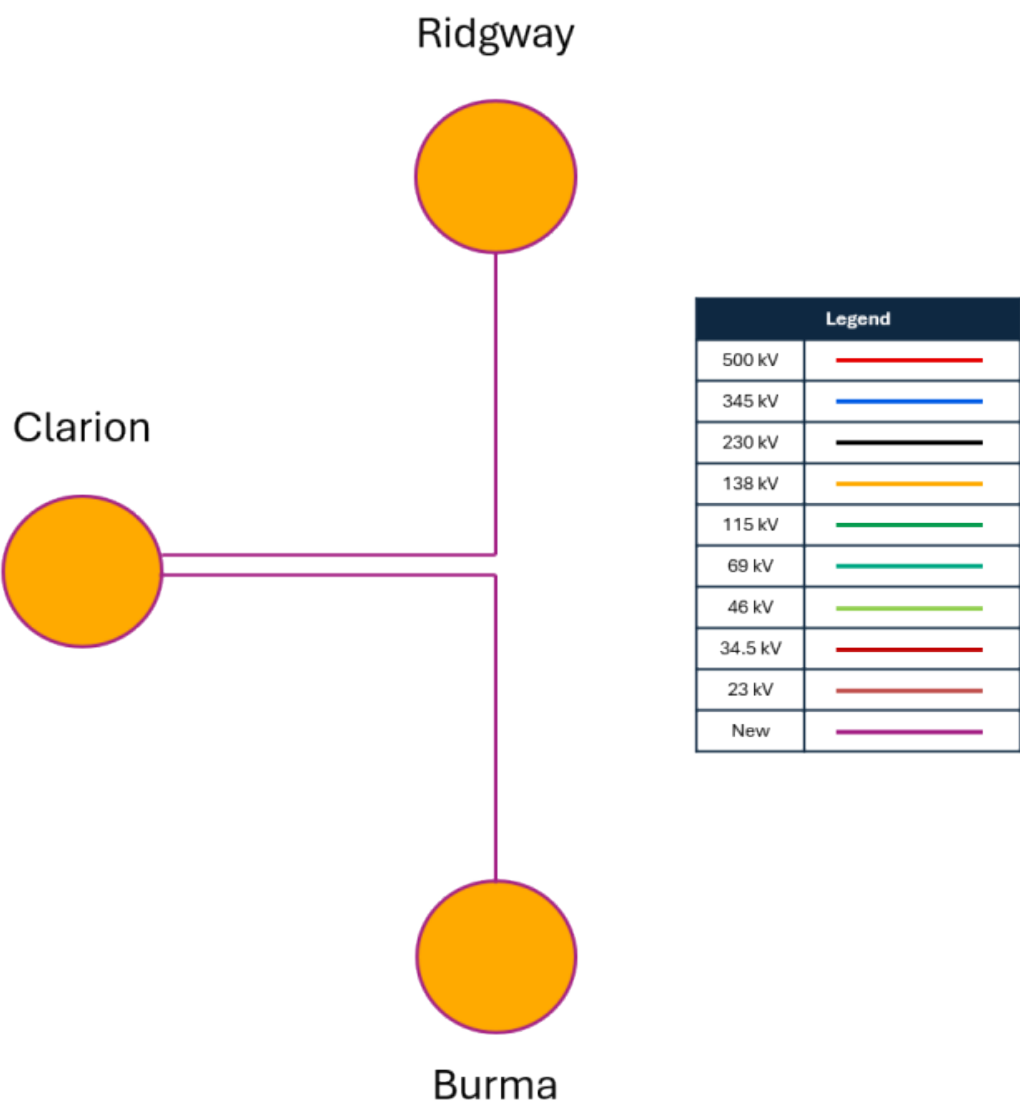
At Clarion Substation: Upgrade disconnect switches, CVT's, and revise relay settings.
 At Burma Substation: Upgrade substation conductor, and revise relay settings.
 At Ridgway Substation: Upgrade substation conductor, and revise relay settings.

Burma - Clarion 138 kV Line Ratings:
 Before Proposed Solution: 294 / 350 / 349 / 401 MVA (SN/SE/WN/SE)
 After Proposed Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/SE)

Clarion - Ridgway 138 kV Line Ratings:
 Before Proposed Solution: 287 / 342 / 342 / 380 MVA (SN/SE/WN/SE)
 After Proposed Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/SE)

Alternatives Considered:
 Continue to maintain with increased risk of unplanned outages and expected increase of maintenance cost due to structures and equipment age.

Transmission Cost Estimate: \$24.55 M
Projected In-Service: 06/22/2029
Project Status: Conceptual
Model: 2025 RTEP model for 2030 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

10/xx/2026– V1 – Original version posted to pjm.com