

FirstEnergy – Penelec – 2026
Submission of Supplemental Projects for
Inclusion in the Local Plan

s1769 – Initially posted to 2019 Local Plan.
Updates for 2026 Local Plan highlighted in Red.

Need Number: PN-2018-001
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan
Previously Presented: Scope Change – 07/17/2026
Solution Meeting – 10/29/2018
Need Meeting – 09/21/2018

Project Driver(s):

Equipment Material Condition, Performance and Risk

Specific Assumption Reference(s)

Substation/Line Equipment Limits

Consider upgrading transmission line equipment (switches, conductor, splices, etc.) as well as terminal and protection equipment to meet or exceed the transmission line conductor rating.

Problem Statement

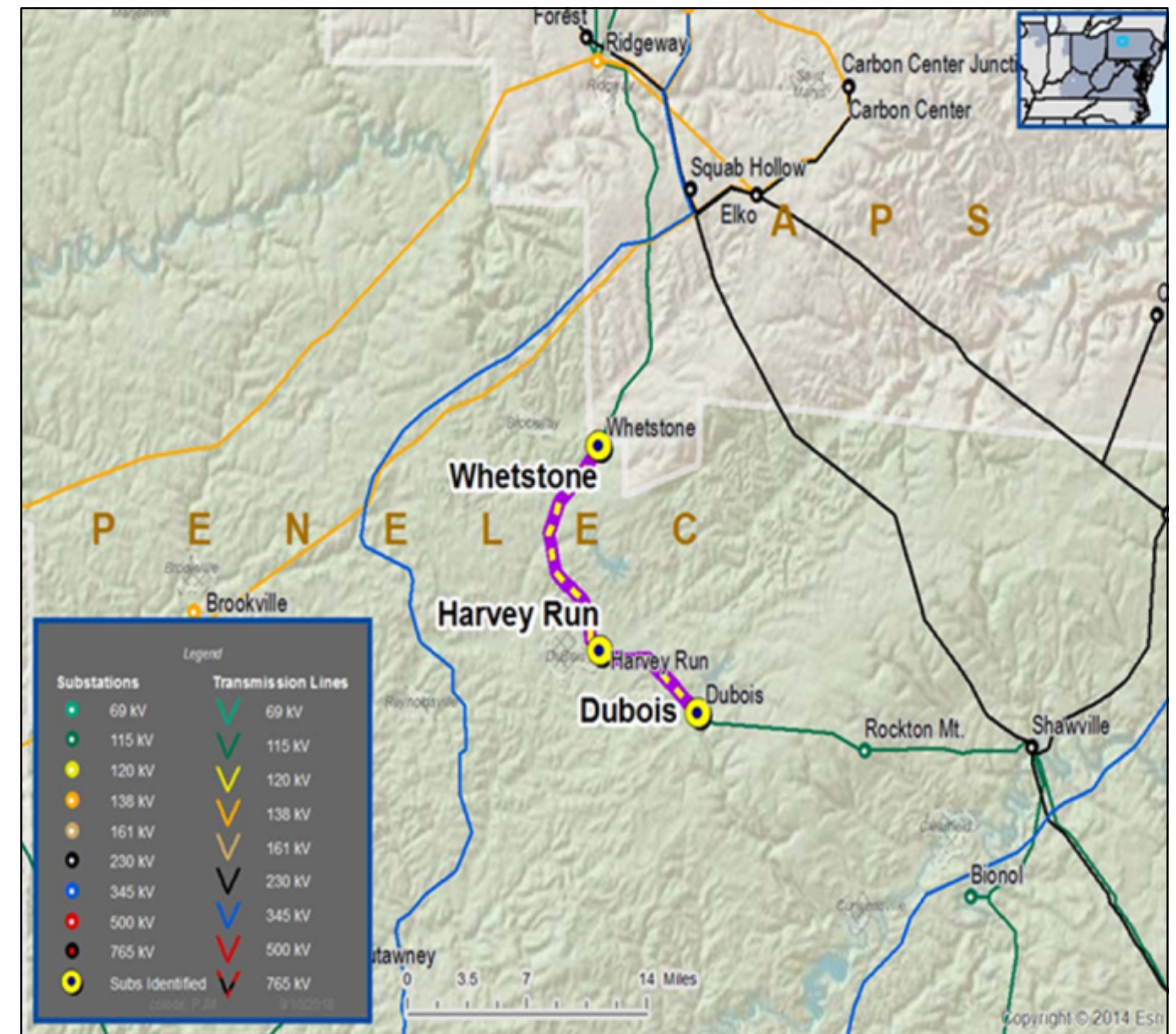
Maintenance/rehab work will be performed on the Dubois-Harvey Run-Whetstone 115 kV line.

Transmission line rating limited by terminal equipment.

Dubois – Harvey Run 115 kV line: Existing emergency line rating is 179 MVA. Existing conductor emergency rating is 245 MVA.

Harvey Run – Whetstone 115 kV line: Existing emergency line rating is 172 MVA. Existing conductor emergency rating is 245 MVA.

Penelec Transmission Zone - Scope Change Dubois - Harvey Run - Whetstone 115 kV Line Rehab





s1769 – Initially posted to 2019 Local Plan.
Updates for 2026 Local Plan highlighted in Red.

Selected Solution:

Dubois – Harvey Run – Whetstone 115 kV Line Rehab

- Rehab approximately 14.25 miles of wood pole construction (s1769.1)
- Reconductor approximately 10.1 miles of existing transmission line**

Dubois 115 kV Substation – Terminal equipment to be replaced includes:

- Line relaying, line trap, substation conductor, line tuner, CCVT, circuit breaker and breaker disconnects (s1769.2)

Harvey Run 115 kV Substation – Terminal equipment to be replaced includes:

- Substation conductor, disconnect switches and CVTs (s1769.3)

Whetstone 115 kV Substation – Terminal equipment to be replaced includes:

- Line relaying, line trap, substation conductor, line tuner, CCVT, circuit breaker and breaker disconnects (s1769.4)

Ratings:

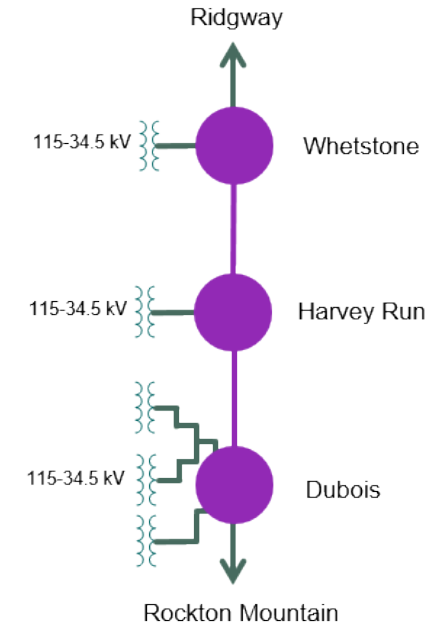
- Dubois – Harvey Run 115 kV Line
 - Before Selected Solution: 202 / 245 / 228 / 290 MVA (SN/SE/WN/WE)
 - After Selected Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)**
- Harvey Run – Whetstone 115 kV Line
 - Before Selected Solution: 202 / 245 / 228 / 290 MVA (SN/SE/ WN/WE)
 - After Selected Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)**

Estimated Project Cost: ~~\$5.3M~~ **\$39.3M**

Projected IS Date: ~~12/31/2021~~ **6/29/2030**

Supplemental Project ID: s1769

Penelec Transmission Zone - Scope Change Dubois - Harvey Run - Whetstone 115 kV Line Rehab



Legend	
500 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
New	

s3290 – Initially posted to 2024 Local Plan.
Updates for 2026 Local Plan highlighted in Red.

Need Number: PN-2023-005

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Scope Change – 11/13/2025
 Solution Meeting – 02/15/2024
 Need Meeting – 07/20/2023

Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

Add/Expand Bus Configuration

- Eliminate simultaneous outages to multiple network elements

System Performance Projects

- Substation/line equipment limits

System Performance Projects Global Factors

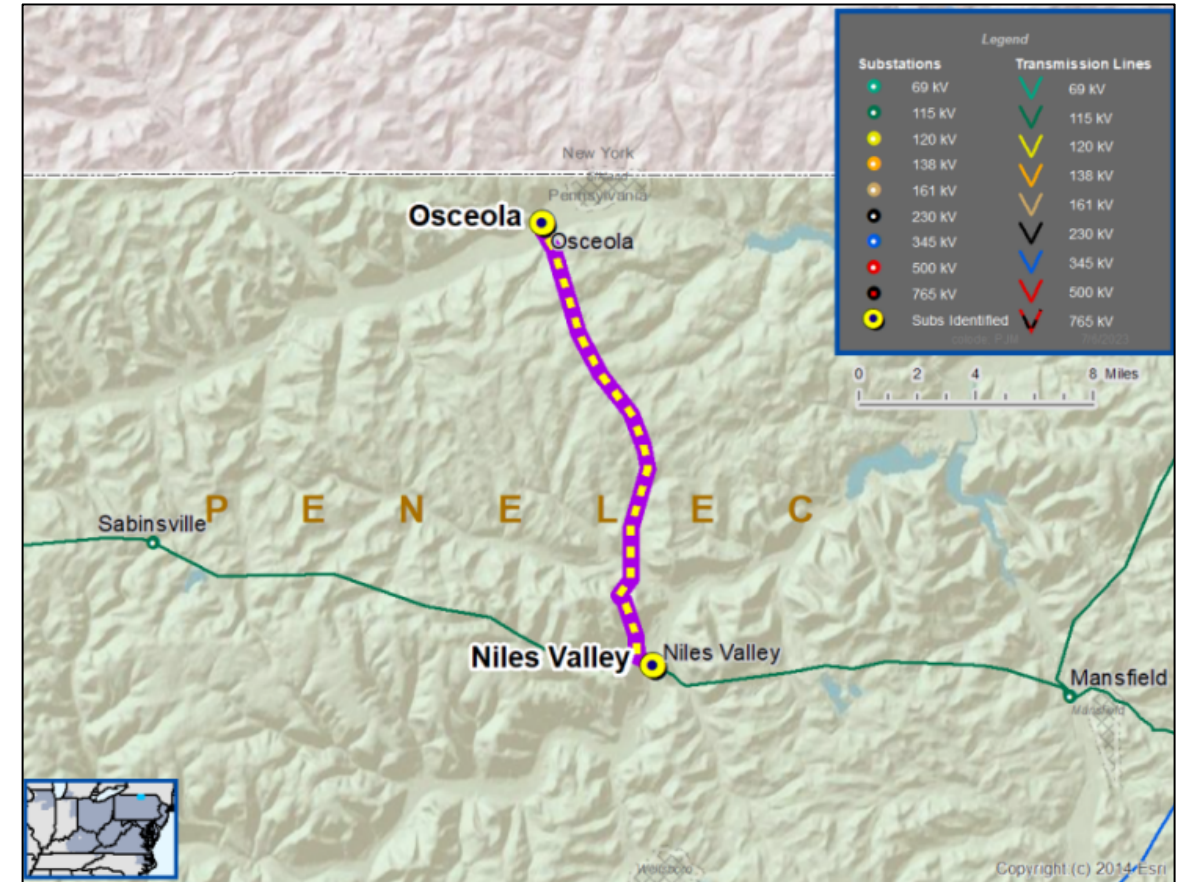
- Load and/or customers at risk on single transmission line

Problem Statement:

- Niles Valley 115 kV substation serves approximately 30 MW of load and 331 customers, including one large electric distribution company (Wellsboro).
- Additional 12 MW of load and 2,746 customers are served radially from Niles Valley at Osceola 115 kV substation.
- The existing Niles Valley 115 kV substation contains two networked 115 kV lines, two radial 115 kV lines, two 115-34.5 kV transformers, and a 115 kV capacitor bank.
- There are straight busses separated by a bus tie breaker. The distribution transformers do not have high side protection devices. During breaker maintenance (a potential two day outage), Wellsboro 115 kV service would be interrupted with no backup service (26 MVA of load).

Penelec Transmission Zone - Scope Change

Niles Valley 115 kV Ring Bus





s3290 – Initially posted to 2024 Local Plan.
Updates for 2026 Local Plan highlighted in Red.

Selected Solution:

Niles Valley 115 kV Substation

- Construct a six breaker ring bus
- Remove Niles Valley 115-34.5 kV Transformer #1
- Remove the 115 kV bypass switch between Wellsboro and Mansfield line exits (s2835) upon ring bus completion
- Replace existing 12.6 MVAR capacitor bank with new 14.4 MVAR capacitor bank
- Upgrade terminal equipment to transmission line ratings and adjust relay settings

Ratings:

Niles Valley – Sabinsville/Hector 115 kV Line

- Before Selected Solution 147 / 191 MVA SN/SE
- After Selected Solution 202 / 245 MVA SN/SE

Niles Valley – Mansfield 115 kV Line

- Before Selected Solution 147 / 185 MVA SN/SE
- After Selected Solution 202 / 245 MVA SN/SE

Niles Valley – Wellsboro 115 kV Line

- Before Selected Solution 147 / 191 MVA SN/SE
- After Selected Solution 232 / 282 MVA SN/SE

Niles Valley – Osceola 115 kV Line

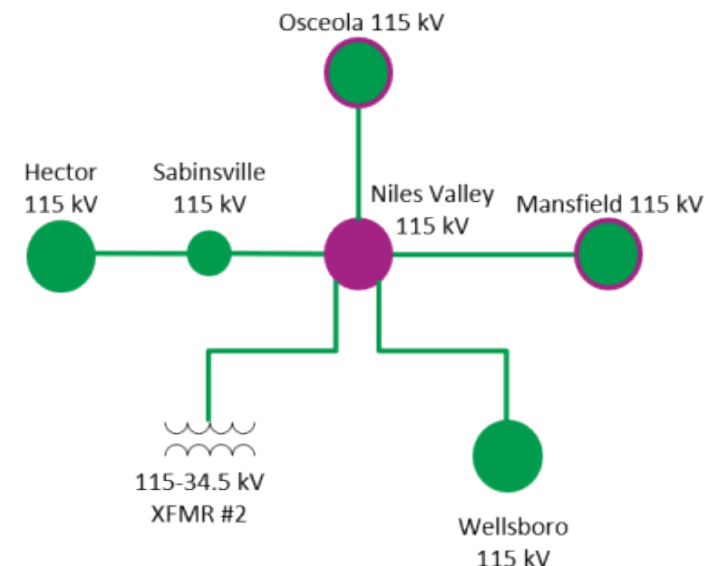
- Before Selected Solution 147 / 191 MVA SN/SE
- After Selected Solution 232 / 282 MVA SN/SE

Estimated Project Cost: \$16.0M

Projected In-Service: ~~11/04/2028~~ 4/28/2028

Supplemental Project ID: s3290.1

Penelec Transmission Zone - Scope Change Niles Valley 115 kV Ring Bus



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



s3291 – Initially posted to 2024 Local Plan.

Updates for 2026 Local Plan highlighted in Red.

Need Number: PN-2023-007

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Previously Presented: Scope Change – 05/15/2025
Solution Meeting – 05/15/2024
Need Meeting – 07/20/2023

Project Driver:
Customer Service

Specific Assumption Reference:

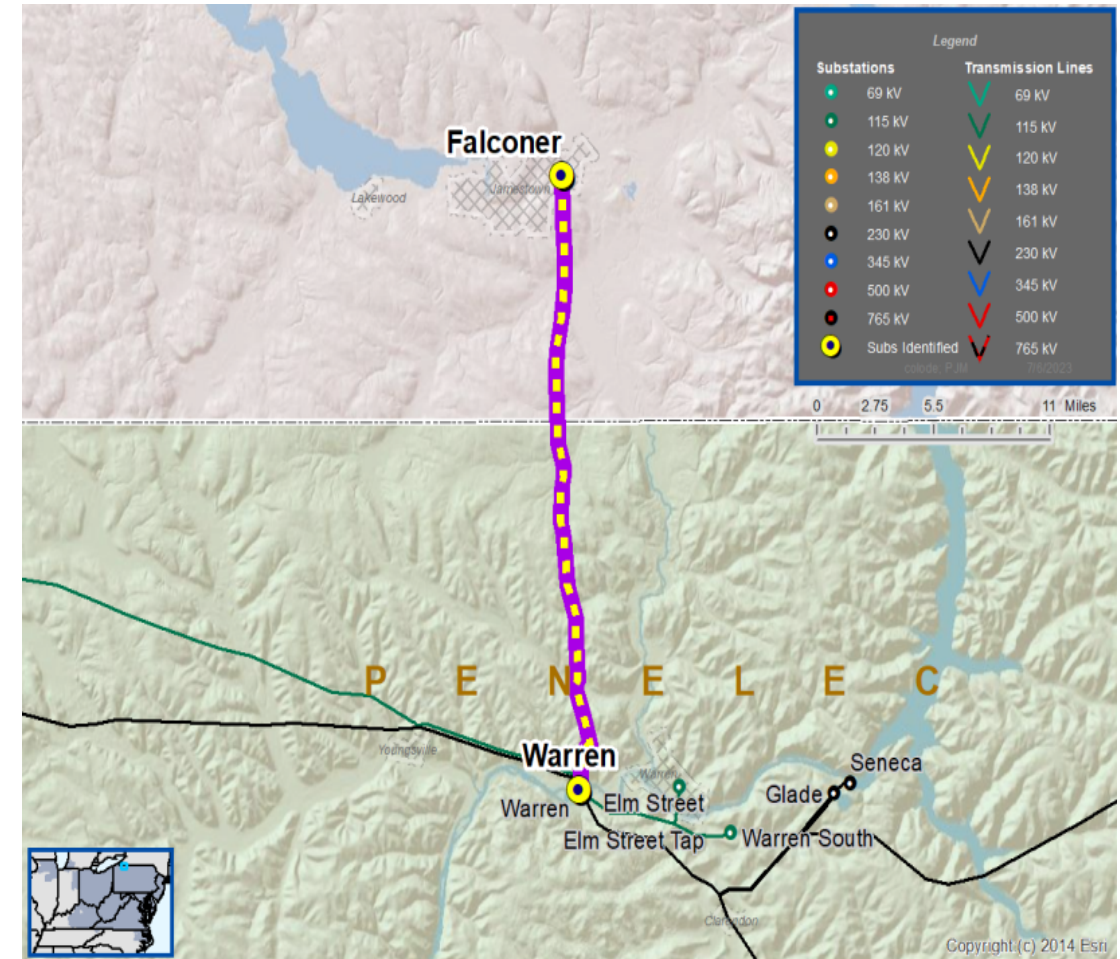
New customer connection requests will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document.

Problem Statement:

New Customer Connection – A customer requested 115 kV service; anticipated load is 22.4 MVA near the Warren – Falconer 115 kV Line.

Requested in-service date is ~~12/31/2024~~ **04/28/2028**.

Penelec Transmission Zone - Scope Change Warren – Falconer 115 kV Line – New Customer



s3291 – Initially posted to 2024 Local Plan.

Updates for 2026 Local Plan highlighted in Red.

Selected Solution:

Provide 115 kV service from the Warren – Falconer 115 kV Line:

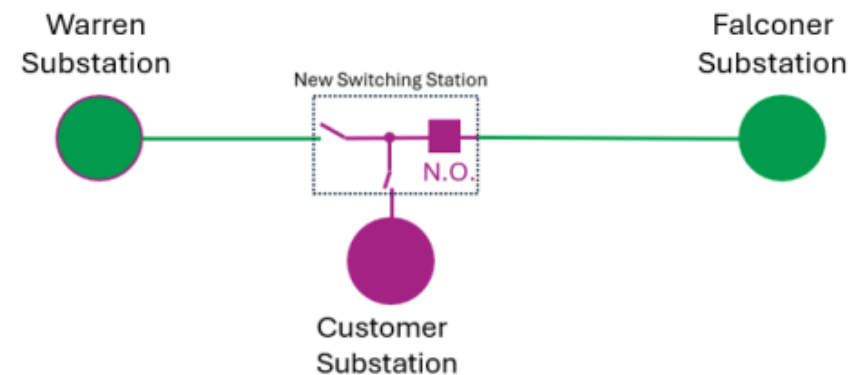
- Tap the Warren – Falconer 115 kV Line, install switches and build approximately 190 ft of transmission line from tap point to customer substation
- Construct new 115 kV switching station near the Warren - Falconer 115 kV Line
- Install two SCADA controlled transmission line disconnect switches with full load break interrupters
- Install one 115 kV circuit breaker (Normally Open)
- Install one 115 kV revenue metering package at customer substation
- Adjust relay settings at Warren Substation
- ~~Operate disconnect switch towards Falconer Substation as normally open~~

Estimated Project Cost: ~~\$1.5M~~ \$8.45M

Projected In-Service: ~~04/28/2027~~ 04/28/2028

Supplemental Project ID: s3291.1

Penelec Transmission Zone - Scope Change Warren – Falconer 115 kV Line – New Customer



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

Need Number: PN-2024-017

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - 8/14/2025
Need Meeting - 5/16/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

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 Carlisle Pike – Gardners 115 kV 976 Line was constructed approximately 69 years ago. The original poles were replaced in 1970. The conductor is original to the 1955 construction. The Penelec portion of this line is approximately 7.55 miles long with 71 wood H-frame transmission line structures.

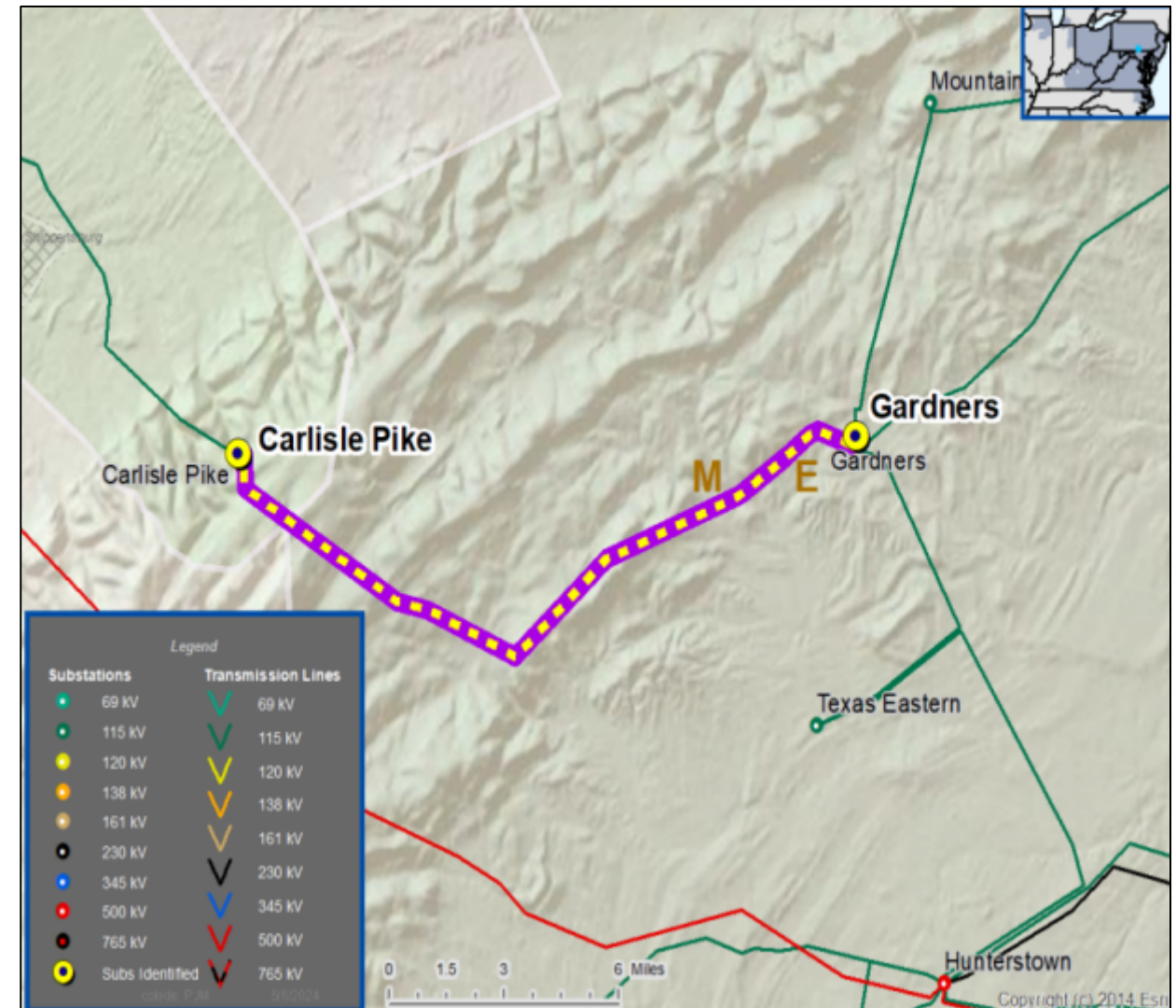
The Penelec portion of this line is exhibiting deterioration. Inspection findings include:

- 16 structures are Phase-Raised.
- 18 structures failed sound test.
- 54 structures are 54 years old.

There have been three unscheduled sustained outages in the last five years, two attributed to line equipment.

The line is limited by terminal equipment.

- Existing Transmission Line Ratings:
 - 86 / 110 / 122 / 137 MVA (SN/SE/WN/WE)



Penelec Transmission Zone M-3 Process Carlisle Pike – Gardners 115 kV 976 Line

Need Number: PN-2024-017
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

Carlisle Pike-Gardners 115 kV 976 Line Rebuild

- Rebuild 7.55 miles of transmission with new conductor

Transmission Line Ratings:

Carlisle Pike – Gardners 115 kV 976 Line

- Before Proposed Solution: 86 / 110 / 122 / 137 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$20.5M

Projected In-Service: 12/21/2029

Supplemental Project ID: s3743.2



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

Penelec Transmission Zone M-3 Process Warrior Ridge - Huntingdon - Owens Corning 46 kV Lines

Need Number: PN-2025-003

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting 8/14/2025
Need Meeting 06/12/2025

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

Line Condition Rebuild/Replacement

Age/condition of wood pole transmission line structures

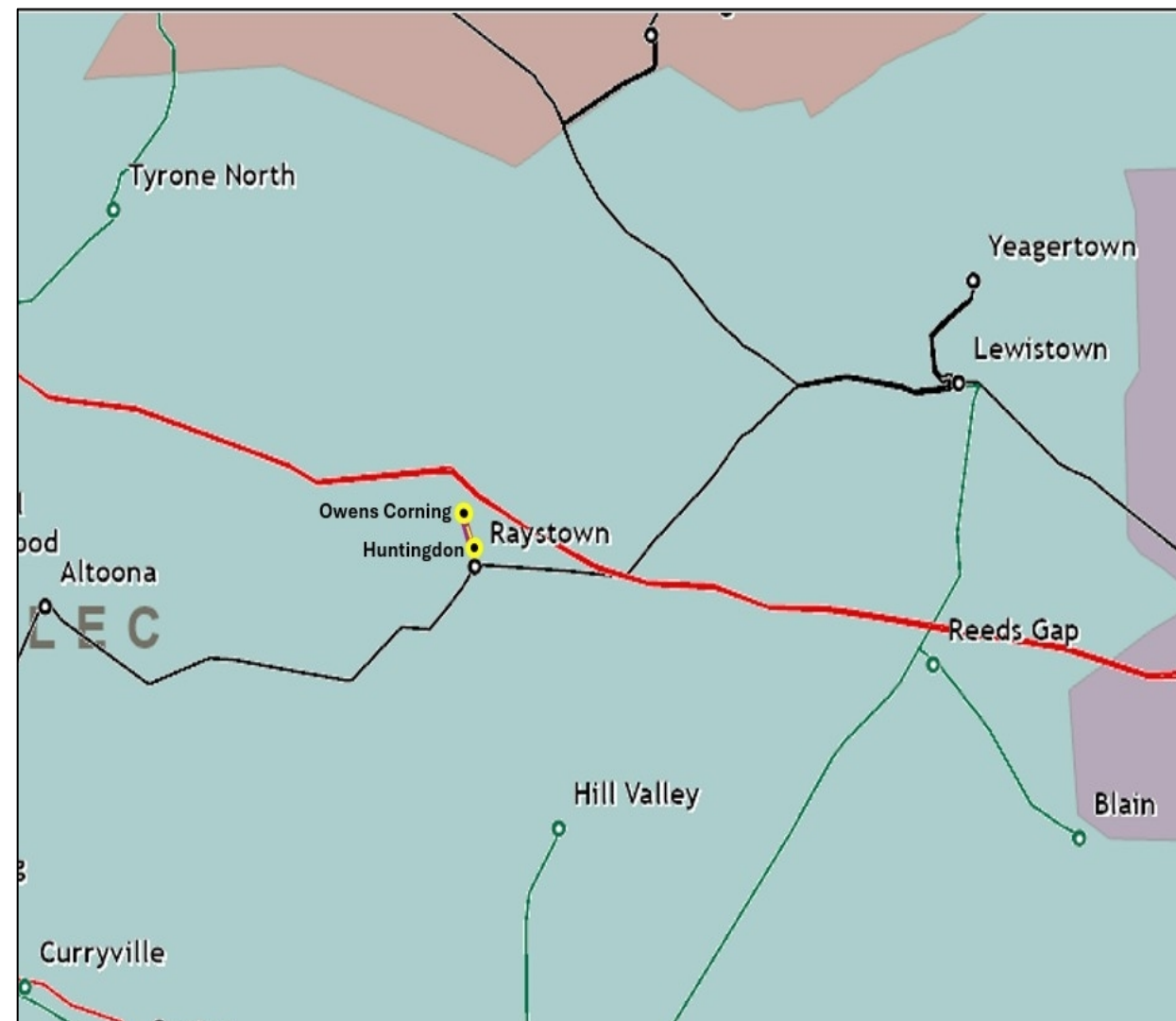
Problem Statement:

The Owens Corning (Huntingdon) 46 kV OC Line was constructed approximately 70 years ago and is approaching end of life. The radial line is 0.39 miles in length and serves 3 substations.

Per recent inspection, safety concerns were identified in seven spans as this circuit passes above and adjacent to several buildings.

Existing Transmission Line Ratings:

- 24 / 24 / 26 / 26 MVA (SN/SE/WN/WE)



Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

- Remove the existing back up feed and tap switches to Owens Corning
- Install four new 46 kV switches
- Rebuild the line from the new tap to Owens Corning No. 1 (~0.09 miles)
- Rebuild the Huntingdon – Owens Corning No. 3 46 kV line (~0.3 miles)
- Build a new line from Owens Corning No. 3 to the Huntingdon-Warrior Ridge 46 kV Line (~0.2 miles) and operate as normally open

Huntingdon – Owen Tap 46 kV Line:

- After Proposed Solution: 50 / 50 / 50 / 50 MVA (SN/SE/WN/WE)

- After Proposed Solution: 93 / 113 / 105 / 134 MVA (SN/SE/WN/WE)

- After Proposed Solution: 93 / 113 / 105 / 134 MVA (SN/SE/WN/WE)

Owen Corning No. 1 – Owen Corning No. 2 and No. 3 46 kV Line:

- After Proposed Solution: 93 / 113 / 105 / 134 MVA (SN/SE/WN/WE)

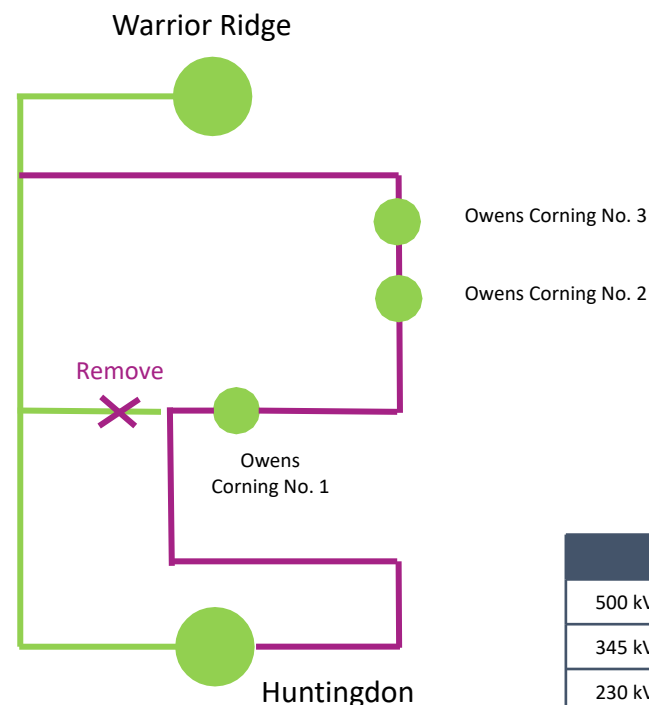
Owen Corning No. 2 and No. 3 – Warrior Ridge 46 kV Line:

- After Proposed Solution: 93 / 113 / 105 / 134 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$5.1M

Projected In-Service: 3/26/2026

Supplemental Project ID: s3744.1



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

Need Number: PN-2023-006

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – 09/18/2025
Need Meeting – 07/20/2023

Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

Add/Expand Bus Configuration

- Eliminate simultaneous outages to multiple network elements

System Performance Projects

- Substation/line equipment limits

System Performance Projects Global Factors

- Load and/or customers at risk on single transmission line

System Conversion Methodology

- Customer feedback

Problem Statement:

- Edinboro South Substation serves approximately 43 MW of load to 4,044 customers. A fault on the Erie South - Edinboro South 115 kV Line results in interruption of service to the No. 1 115-34.5 kV transformer with limited network transfer capability during peak conditions.
- The Erie South - Edinboro South 115 kV Line is approximately 16.9 miles long. Over the past five years, the Erie South - Edinboro South 115 kV Line has experienced two sustained outages.
- Edinboro South – Morgan Street – Springboro 115 kV Line has experienced a total of ten outages and there are five sustained outages over the past five years.



Need Number: PN-2023-006

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

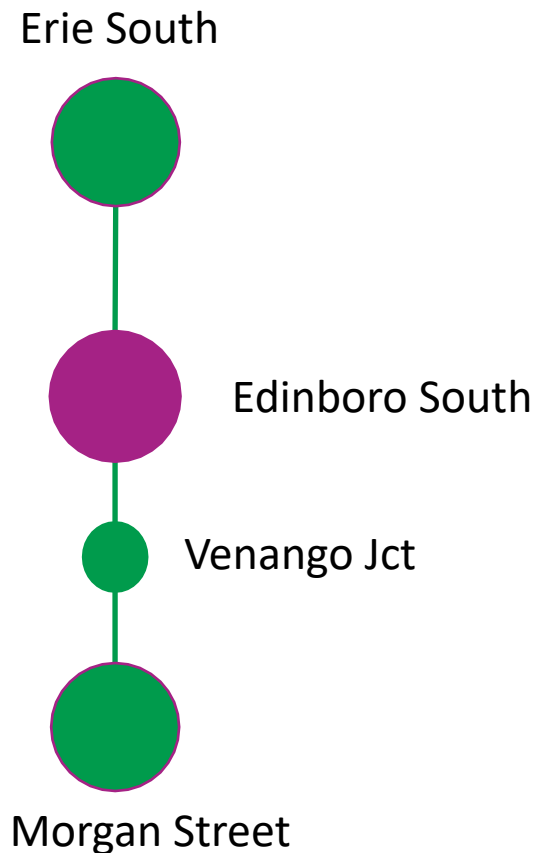
Selected Solution:

- Convert the Edinboro South Substation into a four-breaker ring bus.
- Adjust relay settings at Erie South and Morgan Street substations.

Estimated Project Cost: \$13.57M

Projected In-Service: 6/18/2027

Supplemental Project ID: s3745.1



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

Need Number: PN-2023-008
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan
Previously Presented: Solution Meeting – 09/18/2025
 Need Meeting – 08/17/2023

Project Driver:
Operational Flexibility and Efficiency

Specific Assumption Reference:

Add/Expand Bus Configuration

- Eliminate simultaneous outages to multiple network elements

System Performance Projects

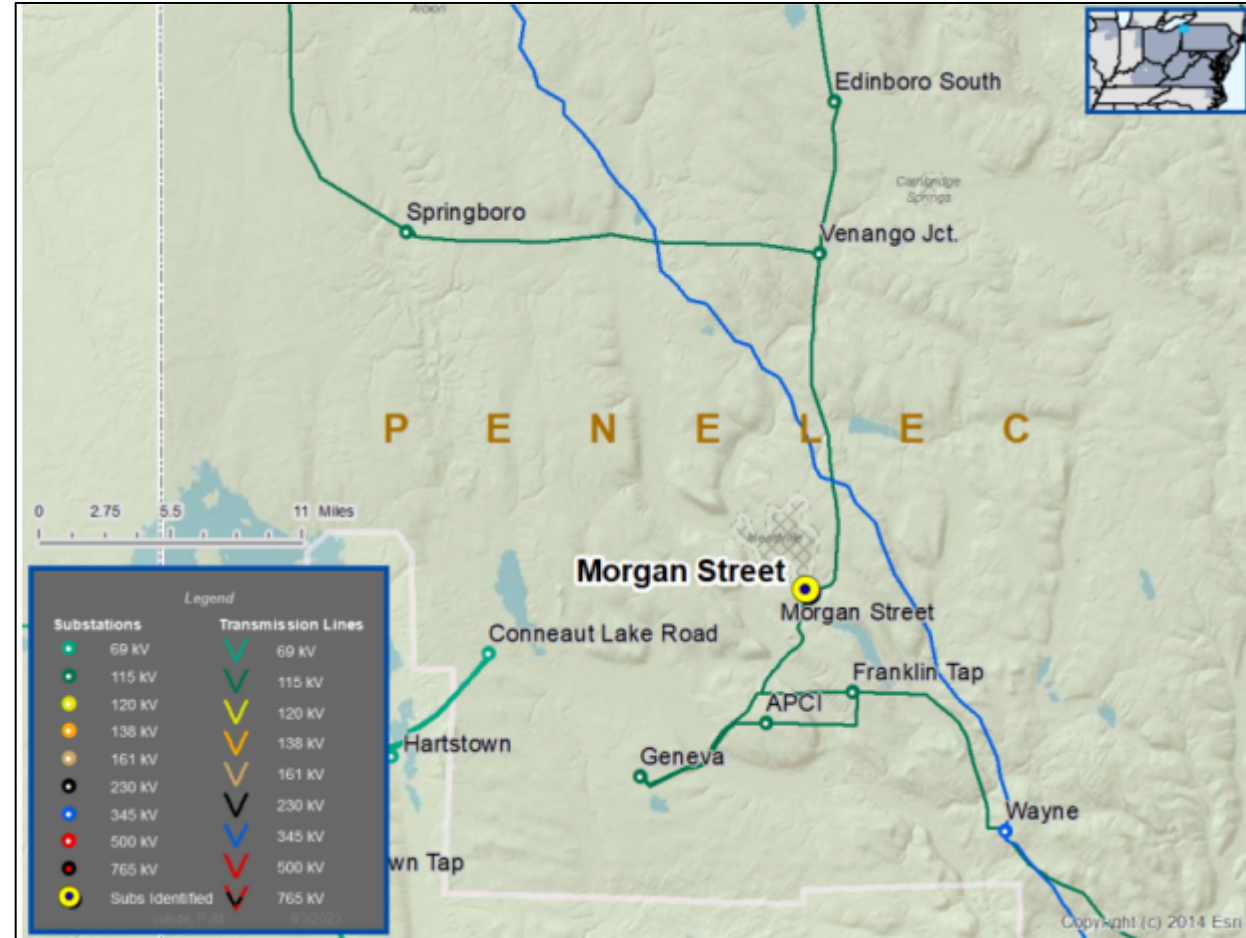
- Substation/line equipment limits

System Performance Projects Global Factors

- Load and/or customers at risk

Problem Statement:

- Morgan Street Substation serves 7,100 customers and 67 MW of load in the Meadville, Pennsylvania area.
- The current substation configuration of Morgan Street Substation is a straight bus with a bus tie breaker. In the event of a tie breaker failure, the entire Morgan Street Substation 115 kV bus is interrupted.
- In addition to a tie breaker failure at Morgan Street Substation, the consequential N-1-1 loss of the Geneva – Morgan Street 115 kV Line and the Edinboro South – Morgan Street – Springboro 115 kV Line eliminates the 115 kV source to the 34.5 kV system fed from Morgan Street Substation.



Need Number: PN-2023-008

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- Convert the Morgan Street Substation into a nine-breaker, breaker-and-a-half substation.
- Adjust relay settings at Geneva and Edinboro South substations.

Transmission Line Ratings:

Morgan Street - Venango Jct 115 kV Line:

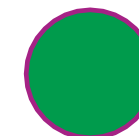
- Before Proposed Solution: 147 / 191 / 201 / 201 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$26.91M

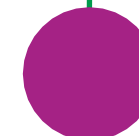
Projected In-Service: 12/3/2027

Supplemental Project ID: s3746.1

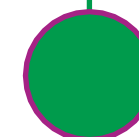
Edinboro South



Venango Jct



Morgan Street



Geneva

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

Need Number: PN-2024-003

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – 09/18/2025
Need Meeting – 03/14/2024

Project Driver:

Operational Flexibility and Efficiency

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Substation and line equipment limits

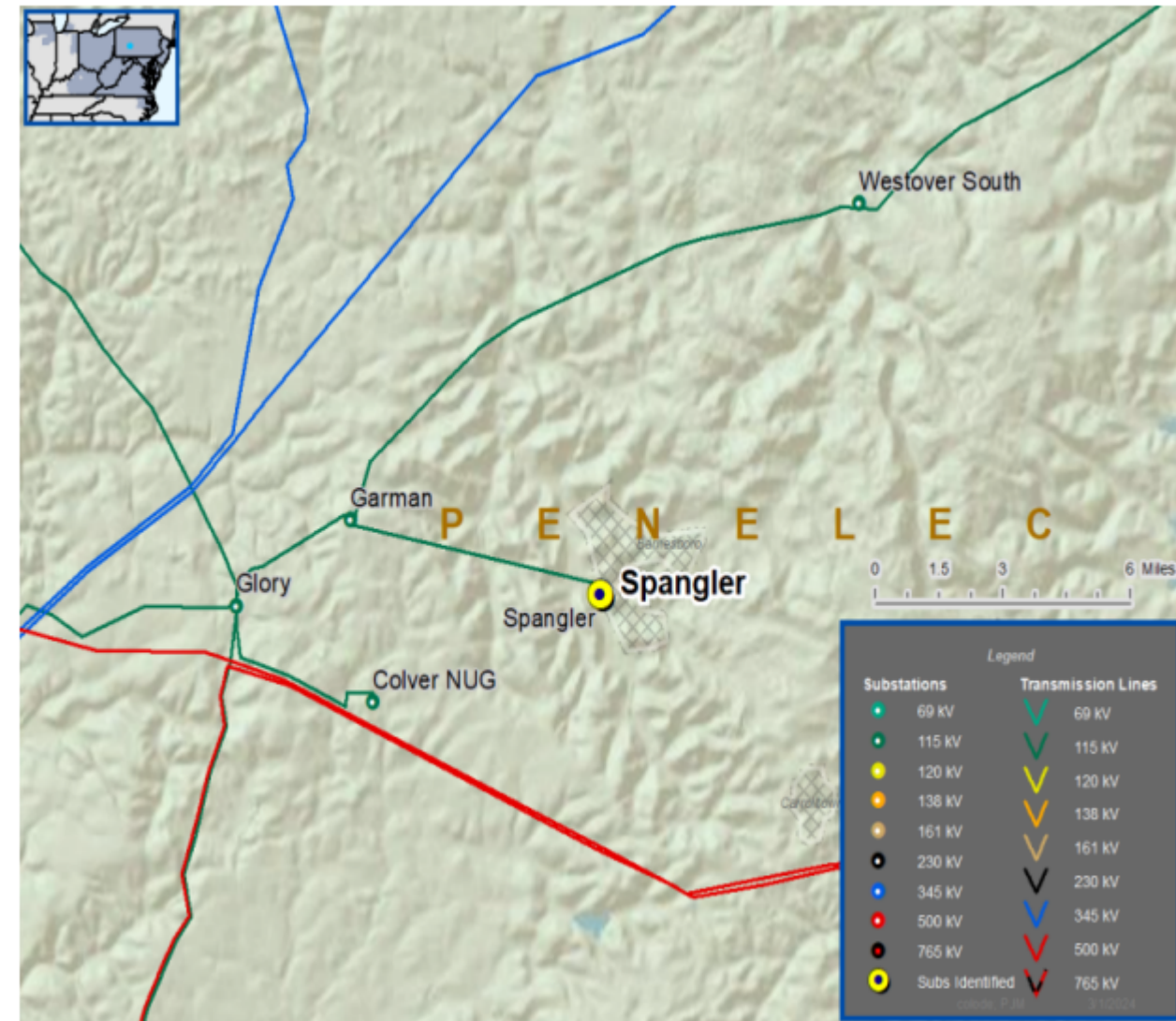
System Performance

- Criticality, impact on reliability, customer outages
- Reliability of non-bulk electric system (Non-BES) Facilities
- Load at risk and customers impacted

Problem Statement:

- Spangler Substation is currently configured as a 46 kV straight bus where bus faults and/or breaker failures result in the interruption of the entire substation.
- Spangler Substation serves approximately 27 MW of load and 2,600 customers.
- The existing Spangler No. 2 115-46 kV Transformer is 48 years old. The transformer has required corrective maintenance for moisture due to leaks, consists of obsolete parts not supported by the OEM, and is limited by terminal equipment.
- Existing Ratings
 - 34 / 44 / 49 / 55 (SN/SE/WN/WE)

Penelec Transmission Zone M-3 Process Spangler Substation



Need Number: PN-2024-003

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

At Spangler:

- Convert the 46 kV yard into a five-breaker ring bus.
- Replace No. 2 115/46 kV transformer and install high side circuit breaker.

At Garman:

- Replace line relaying and substation conductor

At Carrolltown and Nanty Glo substations:

- Adjust remote end relaying

Transmission Line Ratings:

Spangler – St. Benedict 46 kV Line:

- Before Proposed Solution: 33 / 38 / 40 / 44 MVA (SN/SE/WN/WE)
- After Proposed Solution: 36 / 43 / 40 / 51 MVA (SN/SE/WN/WE)

Spangler No. 2 115/46 kV Transformer:

- Before Proposed Solution: 34 / 44 / 49 / 55 MVA (SN/SLTE/WN/WLTE)
- After Proposed Solution: 58 / 70 / 71 / 81 MVA (SN/SE/WN/WE)

Spangler – Garman 115 kV Line:

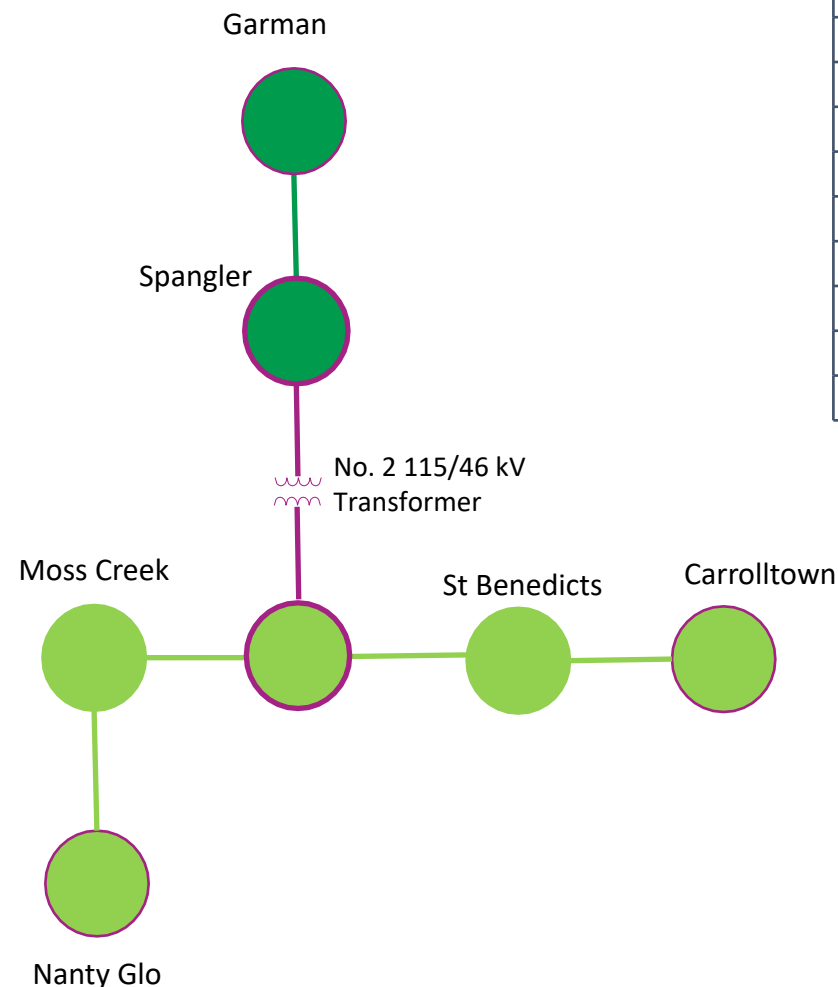
- Before Proposed Solution: 120 / 120 / 120 / 120 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$14.2M

Projected In-Service: 7/12/2027

Supplemental Project ID: s3747.1

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



Need Number: PN-2025-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - TEAC -10/08/2025
Need Meeting - TEAC - 06/05/2025

Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

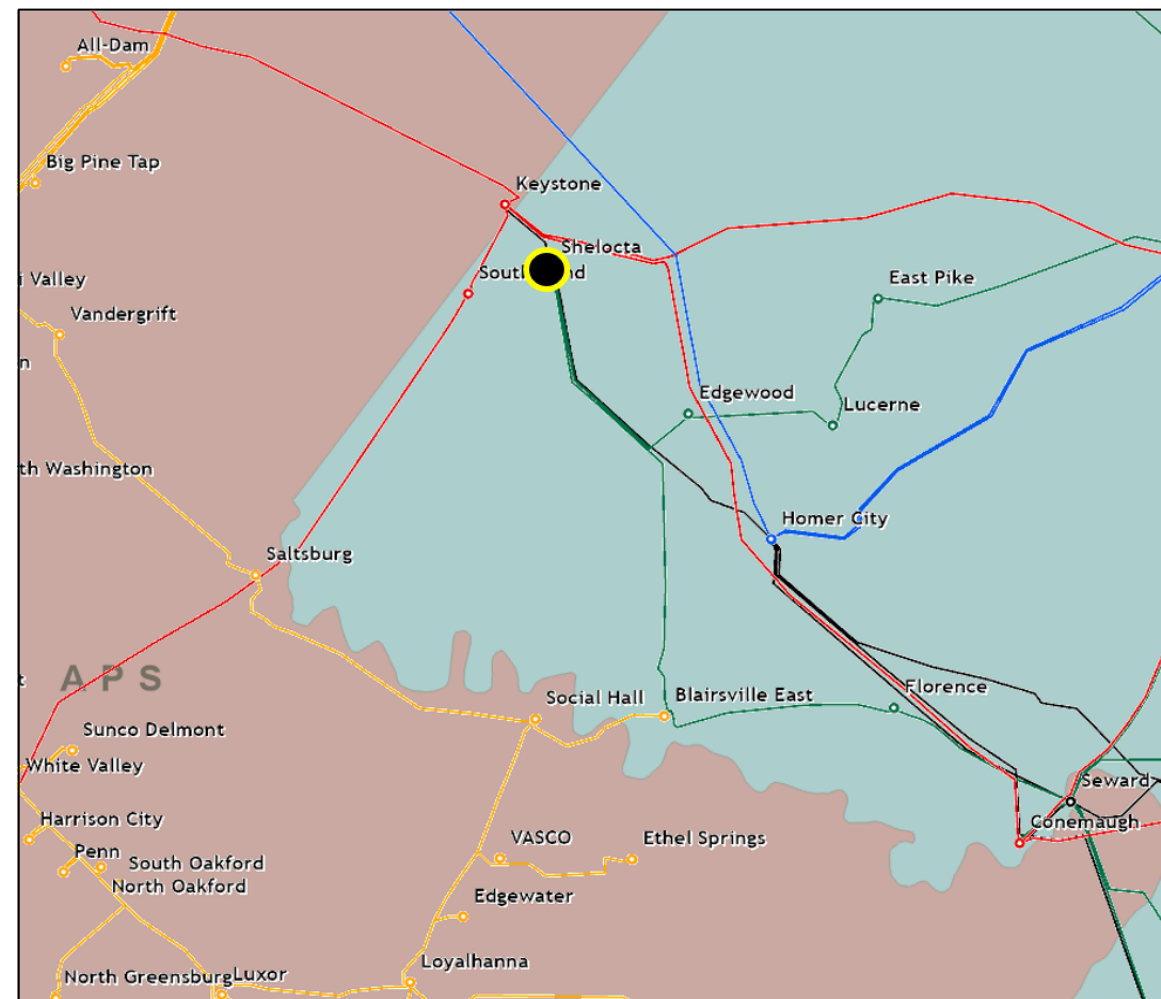
System Performance Global Factors

- Substation/line equipment limits

Problem Statement:

Upon field inspection, limiting bus conductor was found on the Shelocta No. 2 230/115 kV Transformer. The bus conductor has derated the capacity of the transformer circuit.

- Existing Facility Ratings: 146/190/209/236 MVA (SN/SSTE/WN/WSTE)
- Existing Transformer Ratings: 226/241/274/297 MVA (SN/SSTE/WN/WSTE)





Need Number: PN-2025-002
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:
Replace the limiting substation conductor on the Shelocta No. 2 230/115 kV Transformer.

- Ratings:**
Shelocta No. 2 230/115 kV Transformer Circuit
- Before Selected Solution: 146 / 190 / 209 / 236 MVA (SN/SE/WN/WE)
 - After Selected Solution: 221 / 228 / 274 / 283 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$ 0.25M
Projected In-Service: 05/06/2026
Supplemental Project ID: s3978.1

Penelec Transmission Zone M-3 Process Shelocta 230/115 kV Substation



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

Need Number: PN-2024-032

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 11/13/2025
Need Meeting – SRRTEP-MA – 11/14/2024

Project Driver:

Equipment Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

- System reliability and performance
- Substation/Line equipment limits

Substation Condition Rebuild/Replacement

- Limited availability of spare parts, software obsolescence and/or compatibility, or vendor technical support
- Expected service life (at or beyond) or obsolescence

Problem Statement:

The 115 kV B-7 Breaker and associated disconnect switches at the terminal of Cooper Substation towards Rosedale Junction are 63 years old and are beyond the end of their service life.

The 115 kV B-14 Breaker and associated disconnect switches at the terminal of Prospect Substation towards Rosedale Junction are 63 years old and are beyond the end of their service life.

Transmission lines are limited by terminal equipment.

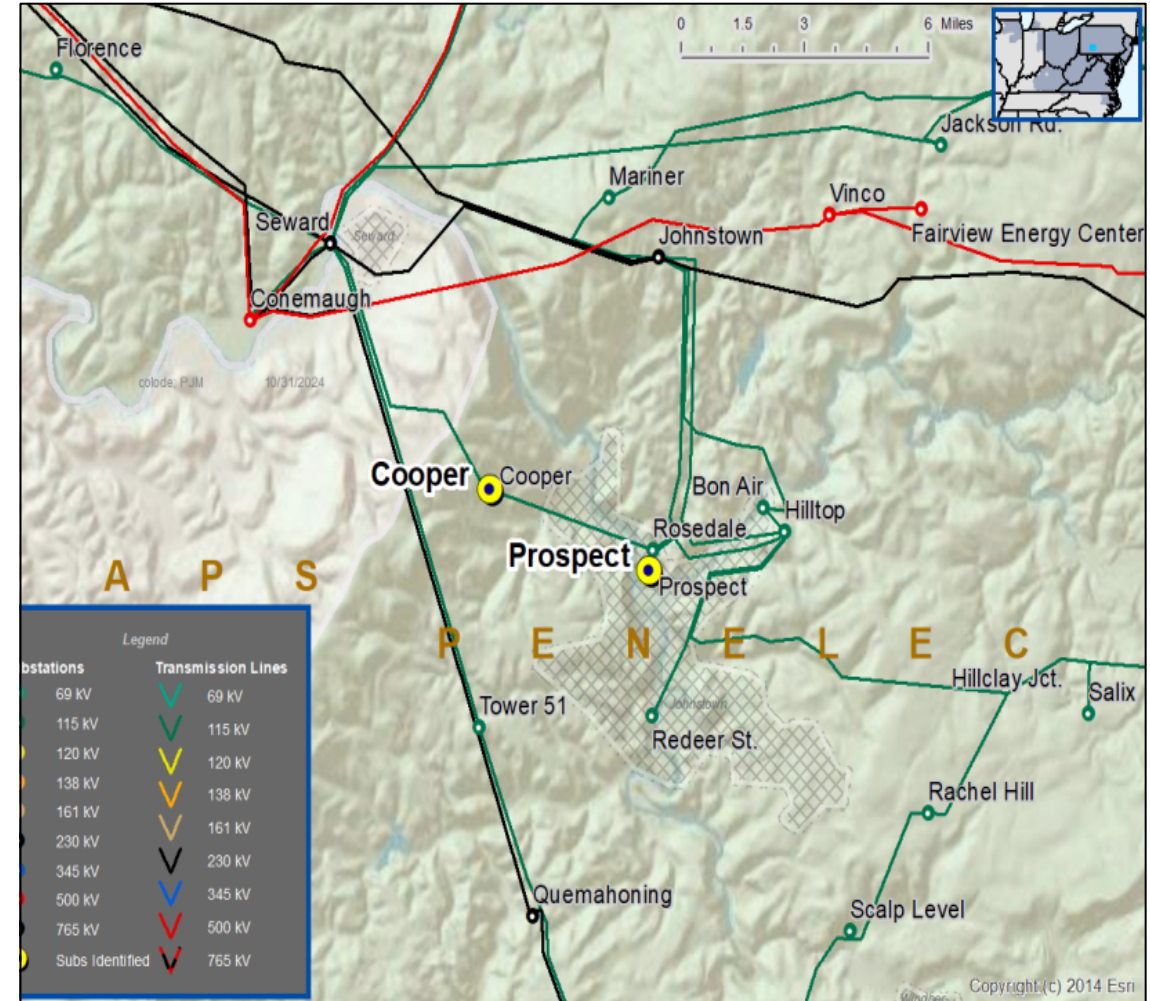
Cooper – Rosedale Junction 115 kV Line

- Existing Line Rating: 249 / 300 / 309 / 351 MVA (SN/SE/WN/WE)
- Existing Conductor Rating: 273 / 333 / 309 / 395 MVA (SN/SE/WN/WE)

Prospect – Rosedale Junction 115 kV Line

- Existing Line Rating: 147 / 191 / 211 / 237 MVA (SN/SE/WN/WE)
- Existing Line Conductor Rating: 202 / 245 / 228 / 290 MVA (SN/SE/WN/WE)

Penelec Transmission Zone M-3 Process Cooper and Prospect Substation Terminal Upgrades





Need Number: PN-2024-032
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- At Cooper Substation, replace circuit breaker, breaker leads, and associated disconnect switches, install new CCVTs and connect to existing relaying.
- At Prospect Substation, replace two circuit breakers, breaker leads, and associated disconnect switches, replaces substation conductor and transmission line drop.

Ratings:

Prospect - Rosedale Junction 115 kV Line:

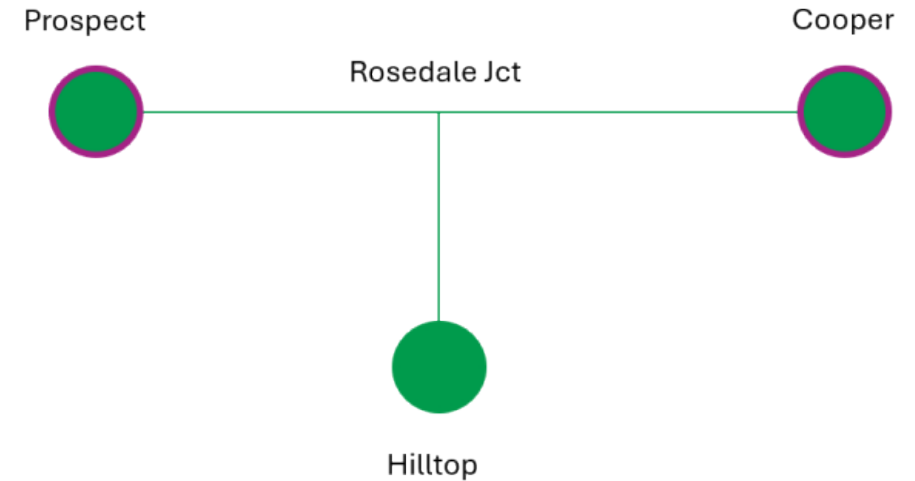
- Before Selected Solution: 147 / 191 / 214 / 237 MVA (SN/SE/WN/WE)
- After Selected Solution: 202 / 245 / 228 / 290 MVA (SN/SE/WN/WE)

Cooper - Rosedale Junction 115 kV Line:

- Before Selected Solution: 249 / 300 / 282 / 351 MVA (SN/SE/WN/WE)
- After Selected Solution: 273 / 333 / 309 / 395 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$ 3.25 M
Projected In-Service: 10/31/2029
Supplemental Project ID: s3979.1

Penelec Transmission Zone M-3 Process Cooper and Prospect Substation Terminal Upgrades



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

Need Number: PN-2024-022

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 12/11/2025
Need Meeting - SRRTEP-MA - 05/16/2024

Project Driver:
Operational Flexibility and Efficiency

Specific Assumption References:

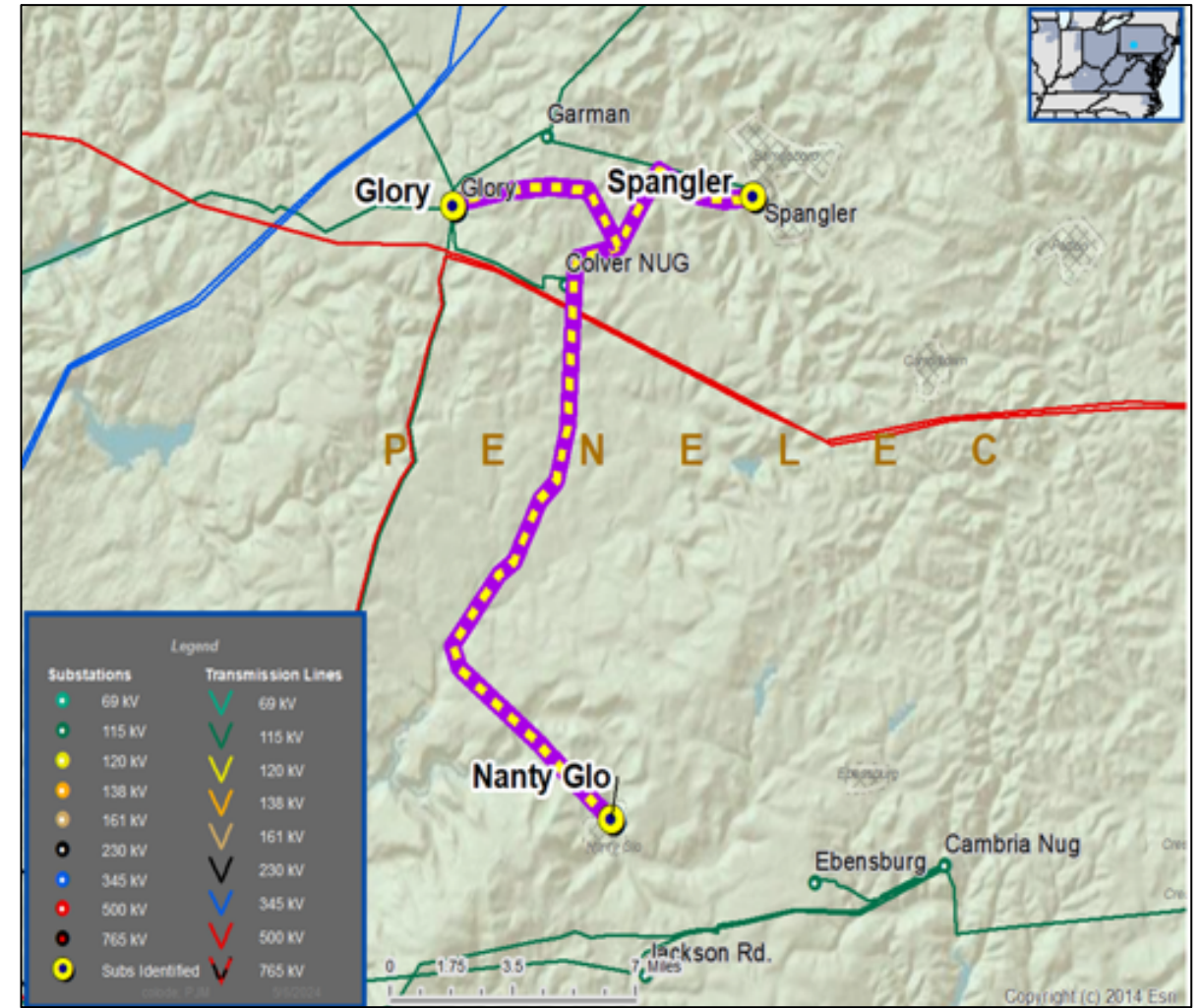
System Performance Projects

- Add/Expand Bus Configuration
- Load at risk in planning and operational scenarios
- Reduce the amount of exposed potential local load loss during contingency conditions

Problem Statement:

The Glory – Nanty Glo – Spangler 46 kV Line has over 23 miles of line exposure. A fault on this line will outage over 1,000 customers and multiple substations, including two rural electric cooperatives.

An outage on the Glory – Nanty Glo – Spangler 46 kV Line results in the loss of over 11 MW.



Penelec Transmission Zone M-3 Process Glory – Nanty Glo – Spangler 46 kV Line

Need Number: PN-2024-022

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- At Bobik Lane: Construct a new 46 kV four breaker ring bus station
- At Glory Substation: Replace line relaying
- At Spangler Substation: Replace line relaying
- At Nanty Glo Substation: Replace line relaying
- At Strongstown Substation: Replace disconnect switches and install SCADA control

Ratings:

Bobik Lane - Glory 46 kV Line:

- Before Selected Solution: N/A
- After Selected Solution: 67 / 81 / 75 / 95 MVA (SN/SE/WN/WE)

Bobik Lane - Teakettle 46 kV Line:

- Before Selected Solution: N/A
- After Selected Solution: 67 / 81 / 75 / 95 MVA (SN/SE/WN/WE)

Bobik Lane - Moss Creek 46 kV Line:

- Before Selected Solution: N/A
- After Selected Solution: 67 / 81 / 75 / 95 MVA (SN/SE/WN/WE)

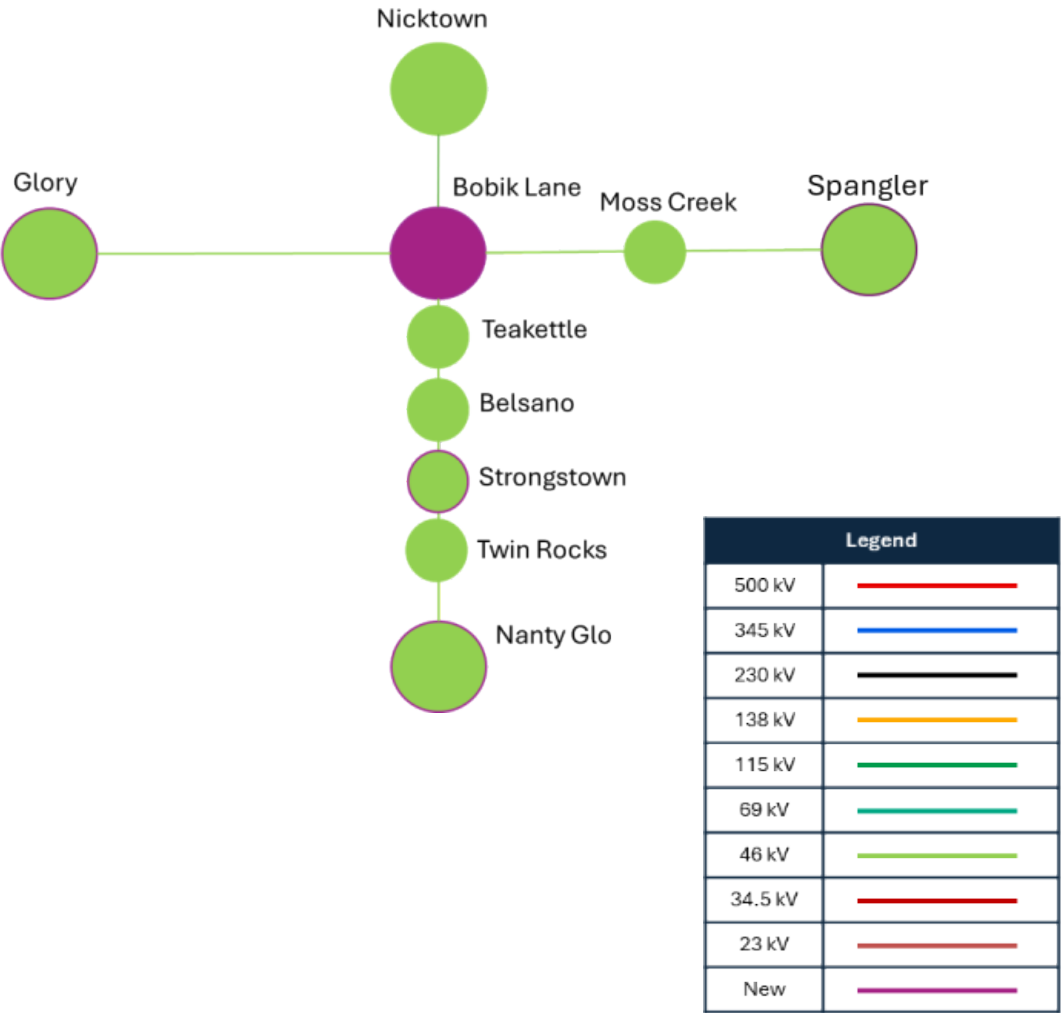
Bobik Lane - Nicktown 46 kV Line:

- Before Selected Solution: N/A
- After Selected Solution: 67 / 81 / 75 / 95 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$13.81M

Projected In-Service: 06/30/2028

Supplemental Project ID: s3981.1



Need Number: PN-2025-009

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 02/12/2026
Need Meeting – SRRTEP-MA – 12/11/2025

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

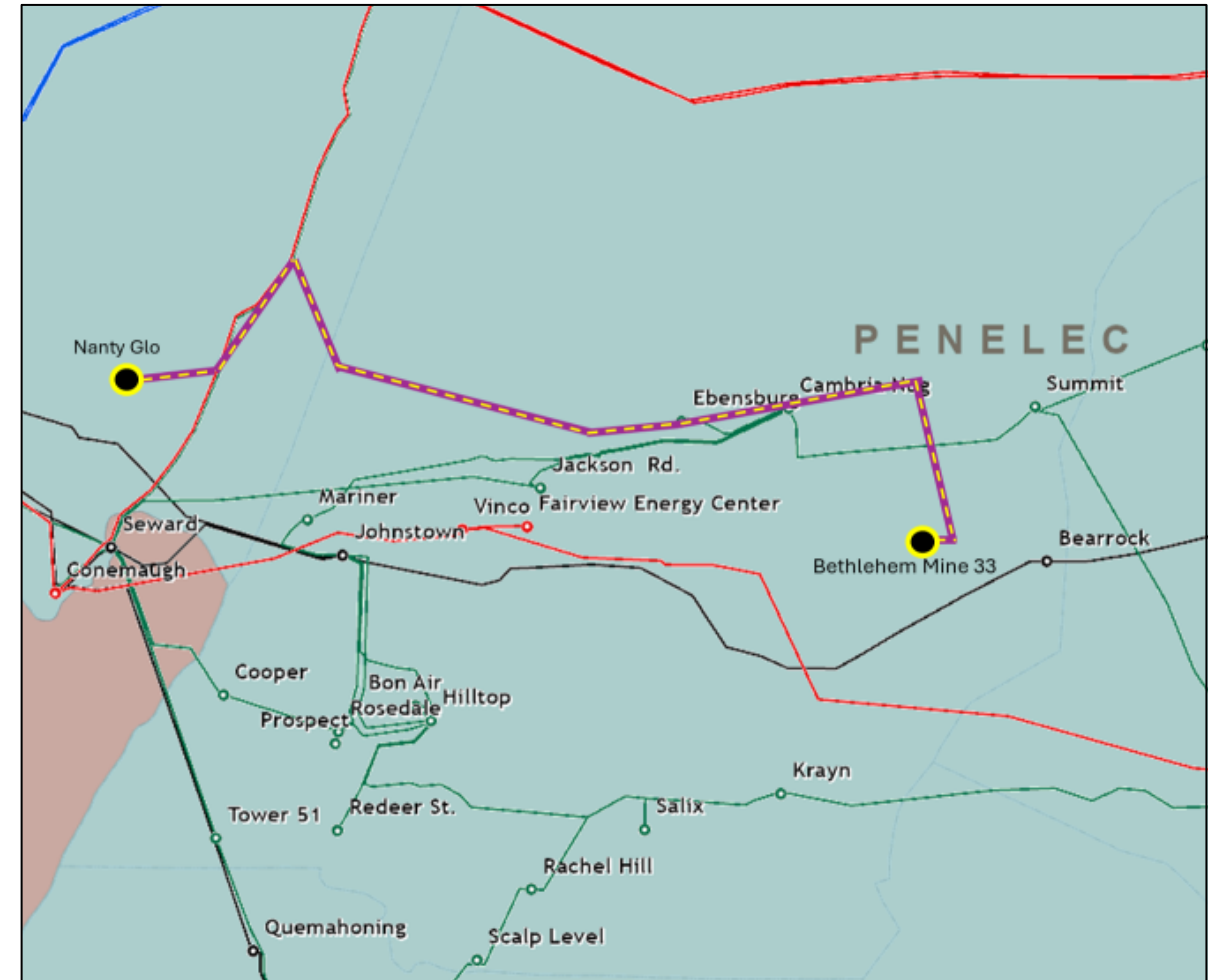
- Line Condition Rebuild/Replacement

Problem Statement:

The Bethlehem - Nanty Glo 46 kV SGR Line is 12 miles in length. Per recent inspection, safety concerns were identified on four spans as this circuit passes above and adjacent to several buildings and above existing distribution circuits. The four spans are located on the Ebensburg - Revloc 46 kV Line section. The line is currently derated due to insufficient clearance.

Existing Ratings for Ebensburg - Revloc 46 kV Line:

- Derating: 30 / 31 / 35 / 35 MVA (SN/SE/WN/WE)
- Conductor: 32 / 32 / 35 / 35 MVA (SN/SE/WN/WE)





Penelec Transmission Zone M-3 Process Bethlehem Mine 33 - Nanty Glo 46 kV SGR Line

Need Number: PN-2025-009
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

Reroute the existing 46 kV Line overbuilding an existing distribution ROW to eliminate the clearance concern:

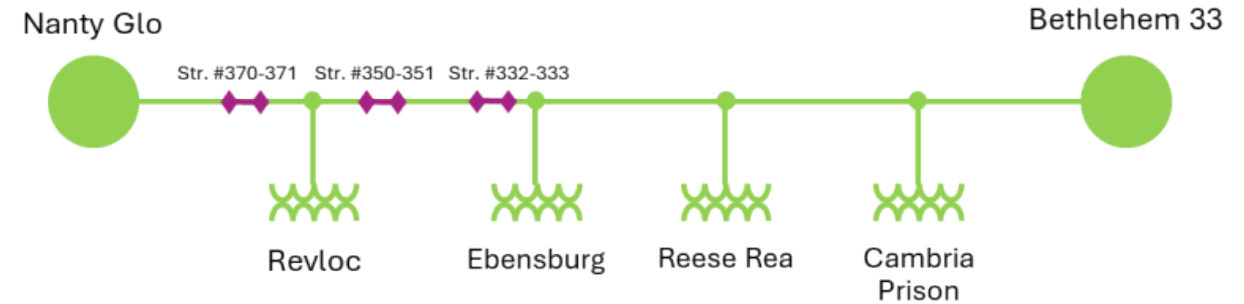
- Raise span #332 to #333, span #350 to #351, and span #370 to #371 due to clearance concerns

Ratings:

Ebensburg - Revloc 46 kV Line

- Before Selected Solution: 30 / 31 / 35 / 35 MVA (SN/SE/WN/WE)
- After Selected Solution: 32 / 32 / 35 / 35 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$1.67M
Projected In-Service: 05/21/2027
Supplemental Project ID: s3982.1



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

Penelec Transmission Zone M-3 Process Corry East - Four Mile Junction 115 kV Line

Need Number: PN-2024-019
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan
Previously Presented: Solution Meeting – SRRTEP-MA – 03/18/2026
 Need Meeting – SRRTEP-MA –

05/16/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

- System reliability/performance

Line Condition Rebuild/Replacement

- Age/condition of wood pole H-Frame transmission line structures

Problem Statement:

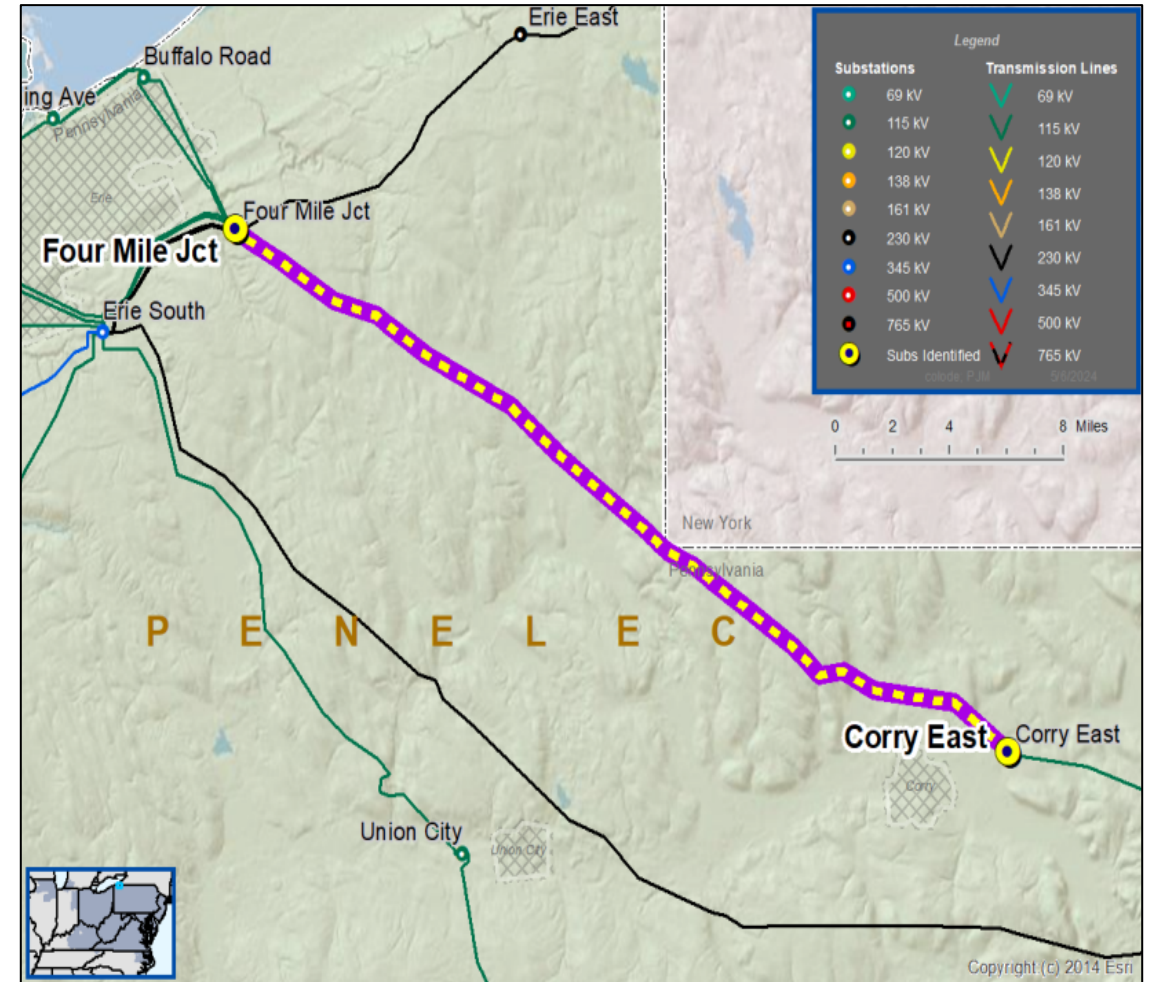
The Corry East – Four Mile Junction 115 kV Line was constructed approximately 56 years ago and is approaching end of life. It is 24.4 miles long with 198 wood H-Frame transmission line structures.

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

- 68 structures are phase-raised.
- 87 structures require repair for rotten, cracked, or deteriorated wood poles or hardware.
- 84 Structures failed sound test.

In the last five years, this line has incurred six unscheduled sustained outages, three were attributed to line equipment.

Existing Transmission Line Ratings: 199 / 241 / 225 / 285 MVA (SN/SE/WN/WE)





Penelec Transmission Zone M-3 Process Corry East - Four Mile Junction 115 kV Line

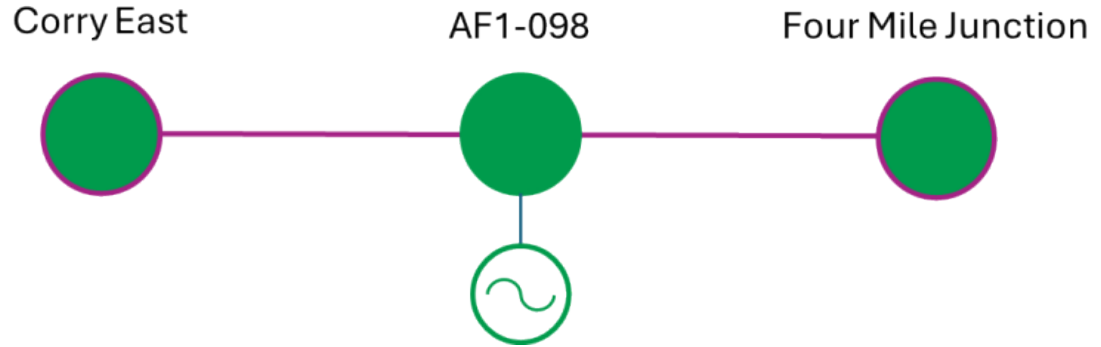
Need Number: PN-2024-019
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:
Rebuild the Corry East-Four Mile Junction 115 kV (24.3 miles total) with new conductor.
Replace SCCIR at Corry East Substation.

Ratings:
Corry East - Four Mile Junction 115 kV Line

- Before Selected Solution: 202 / 245 / 228 / 290 MVA (SN/SE/WN/WE)
- After Selected Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$68.82M
Projected In-Service: 12/28/2029
Supplemental Project ID: s3983.1



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

Need Number: PN-2024-023

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 03/18/2026
Need Meeting – SRRTEP-MA – 05/16/2024

Project Driver:

Operational Flexibility and Efficiency

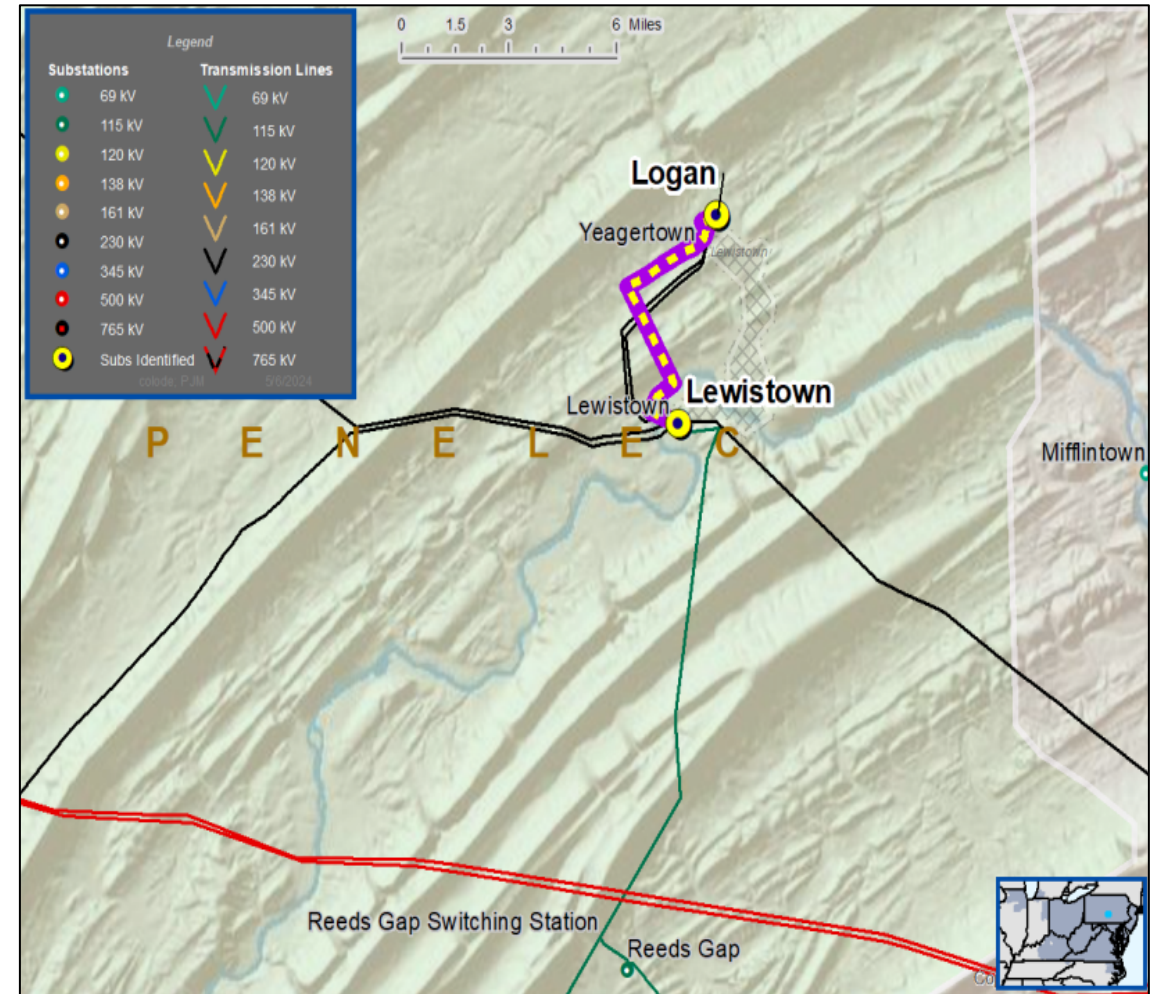
Specific Assumption Reference:

System Performance Projects

- Add/expand bus configuration
- Load at risk in planning and operational scenarios
- Reduce the amount of exposed potential local load loss during contingency conditions
- Reconductor/rebuild transmission lines with three or more terminals

Problem Statement:

There are two three-terminal lines with normally open points between Lewistown Substation and Logan Substation on the 46 kV system in Penelec. These lines have a combined exposure of over 20 miles. Upon multiple N-1-1 losses on these lines, several substations will experience an outage. 3,575 customers and 12 MW of load are at risk due to this configuration.





Need Number: PN-2024-023

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- Build a new two-mile 46 kV line from the Molly Ring Bus (b3754) and tap the 1LK2 46 kV line southwest of the existing Lewistown - Logan 46 kV 1LK Tap.
- Cut the 46 kV Line between the existing 1LK Tap and the new Molly - 1LK2 Tap 46 kV Line.
- Install a fourth 46 kV circuit breaker in the ring bus at Molly Substation.
- Eliminate normally open and three terminal lines on the 1LK 46 kV circuit between Yeagertown and Lewistown substations.
- Revise relay settings at Lewistown, Logan, Mount Union, Riverside, Warrior Ridge, and Yeagerstown Substation

Ratings:

New Molly - 1LK2 Tap 46 kV Line:

- Before Selected Solution: N/A
- After Selected Solution: 32 / 32 / 35 / 35 MVA (SN/SE/WN/WE)

Molly- 1LK Tap 46 kV Line:

- Before Selected Solution: 32 / 32 / 35 / 35 MVA (SN/SE/WN/WE)
- After Selected Solution: 32 / 32 / 35 / 35 MVA (SN/SE/WN/WE)

Yeagertown - Molly 46 kV Line:

- Before Selected Solution: N/A MVA (SN/SE/WN/WE)
- After Selected Solution: 36 / 43 / 40 / 51 MVA (SN/SE/WN/WE)

Lewistown - First Quality 46 kV Line:

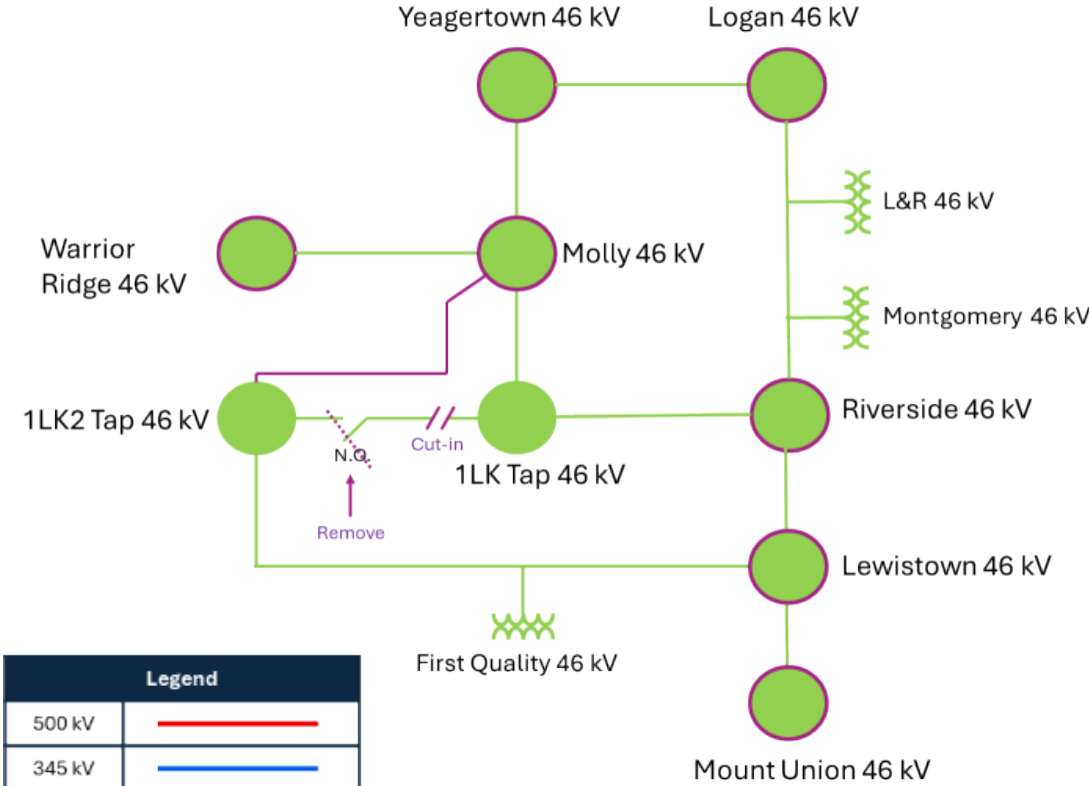
- Before Selected Solution: 93 / 113 / 105 / 134 MVA (SN/SE/WN/WE)
- After Selected Solution: 93 / 113 / 105 / 134 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$6.61M

Projected In-Service: 12/31/2027

Supplemental Project ID: s3984.1

Penelec Transmission Zone M-3 Process Lewistown Area 46 kV Network



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

Penelec Transmission Zone M-3 Process

Reeds Gap Switching Station – Blain 115 kV Line Rebuild

Need Number: PN-2020-013

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 07/17/2026
Need Meeting – SRRTEP-MA – 08/13/2020

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Line Condition Rebuild/Replacement
 - Age/condition of wood pole transmission line structures
- Substation Performance Projects Global Factors
 - Substation/line equipment limits

Problem Statement:

The Reeds Switching Station – Reeds Gap – Blain 115 kV line was originally constructed in 1967 and is exhibiting deterioration.

- Total line distance is approximately 9.8 miles
- 72 out of 77 wood structures failed inspection (93% failure rate)
- Failure reasons include rotten/cracked poles, decay, top rot, woodpecker, and cracked arms and braces

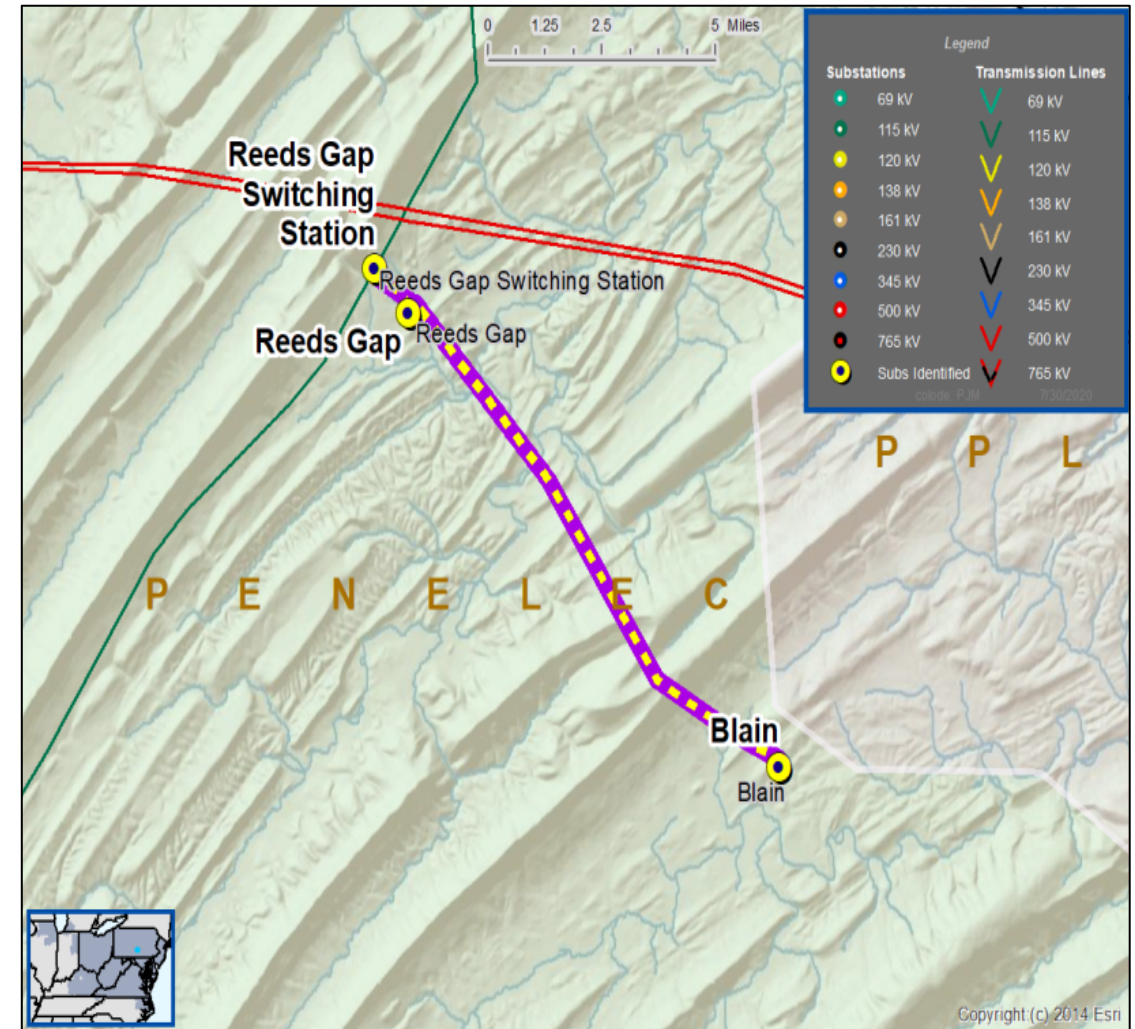
Transmission line ratings are limited by terminal equipment.

Reeds Switching Station – Reeds Gap 115 kV Line (substation conductor)

- Existing line rating: 86 / 99 MVA (SN / SE)
- Existing conductor rating: 95 / 99 MVA (SN / SE)

Reeds Gap – Blain 115 kV Line (substation conductor)

- Existing line rating: 88 / 129 MVA (SN / SE)
- Existing conductor rating: 133 / 160 MVA (SN / SE)



Penelec Transmission Zone M-3 Process Reeds Gap Switching Station – Blain 115 kV Line Rebuild

Need Number: PN-2020-013

Process Stage: Submission of Supplemental Projects for Inclusion
in the Local Plan

Selected Solution:

- Rebuild and reconductor 9.9 miles of 115 kV line from Reeds Gap Switching Station to Blain Switching Station on the Lewiston - Shade Gap 115 kV Line.
- Upgrade all substation equipment at the line terminal stations. Replace CT's and substation conductor at Reed's Gap Switching Station on line terminal to Shade Gap Substation.
- Replace substation conductor at Reed's Gap Switching on line terminal to Reeds Gap Substation.
- Replace substation conductor at Reeds Gap Substation on line terminal to Blain Substation.

Ratings:

Reeds Gap Switching Station - Reeds Gap 115 kV Line:

- Before Selected Solution: 95 / 99 / 121 / 121 MVA (SN/SE/WN/WE)
- After Selected Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

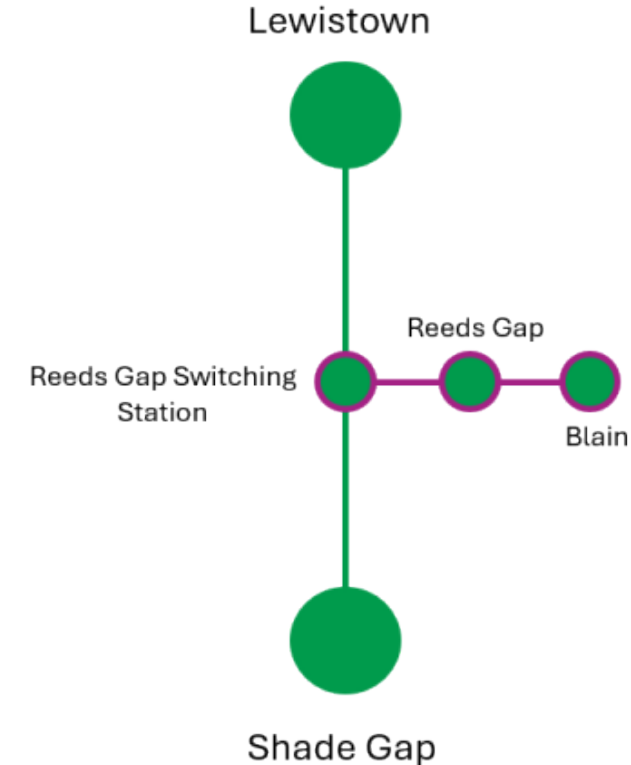
Reeds Gap - Blain 115 kV Line:

- Before Selected Solution: 86 / 110 / 122 / 137 MVA (SN/SE/WN/WE)
- After Selected Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$36.80M

Projected In-Service: 12/15/2029

Supplemental Project ID: s3985.1



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

Penelec Transmission Zone M-3 Process Shawville and Lewistown 230 kV Terminal Upgrades

Need Number: PN-2023-022

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – TEAC – 07/07/2026
Need Meeting – TEAC – 10/31/2023

Project Driver:
Operational Flexibility and Efficiency

Specific Assumption Reference:

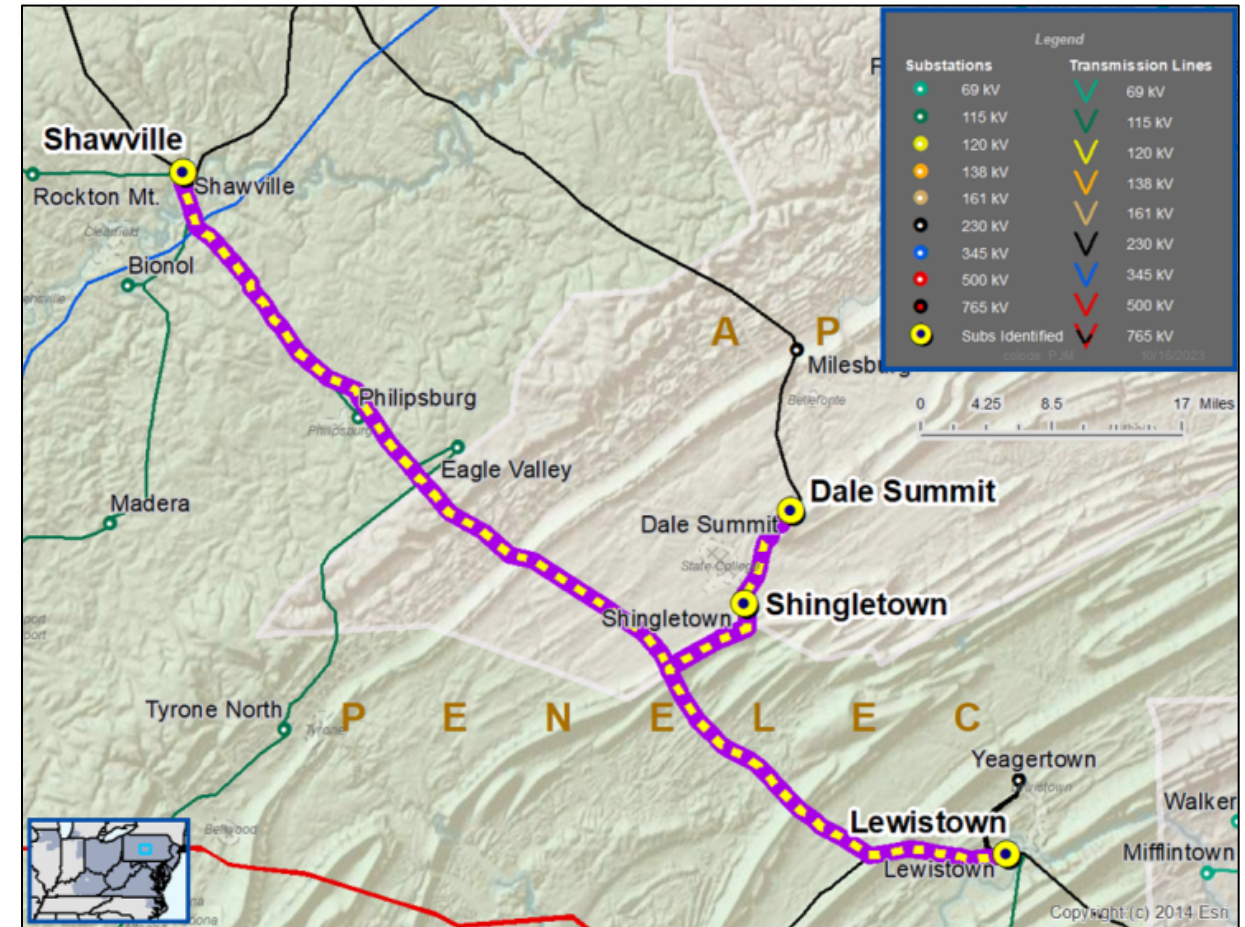
- System Performance Projects
 - Add/Expand Bus Configuration
 - Load at risk in planning and operational scenarios
 - Reduce the amount of exposed potential local load loss during contingency conditions
 - Eliminate simultaneous outages to multiple networked elements

Problem Statement:

The existing 230 kV yard at Shingletown is configured as a straight bus. Shingletown serves approximately 82.7 MW of load and 1,152 customers. With a stuck breaker contingency, the entire Shingletown substation will be outaged.

Transmission line ratings are limited by terminal equipment.

- Dale Summit – Shingletown 230 kV Line:
 - Existing line rating: 486 / 523 MVA (SN / SE)
 - Existing Transmission Conductor Rating: 617 / 754 MVA (SN / SE)
- Lewistown – Shingletown 230 kV Line:
 - Existing line rating: 512 / 612 MVA (SN / SE)
 - Existing Transmission Conductor Rating: 546 / 666 MVA (SN / SE)
- Shawville – Shingletown 230 kV Line:
 - Existing line rating: 445 / 587 MVA (SN / SE)
 - Existing Transmission Conductor Rating: 546 / 666 MVA (SN / SE)



Penelec Transmission Zone M-3 Process Shawville and Lewistown 230 kV Terminal Upgrades

Need Number: PN-2023-022

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

Convert Shingletown Substation into a six-breaker 230 kV ring bus. (APS-2023-059/s3932.1)

At Shawville Substation (PN-2023-022): Replace substation conductor and revise relay settings. (s3986.1)

At Lewistown Substation (PN-2023-022): Replace line trap and revise relay settings. (s3986.1)

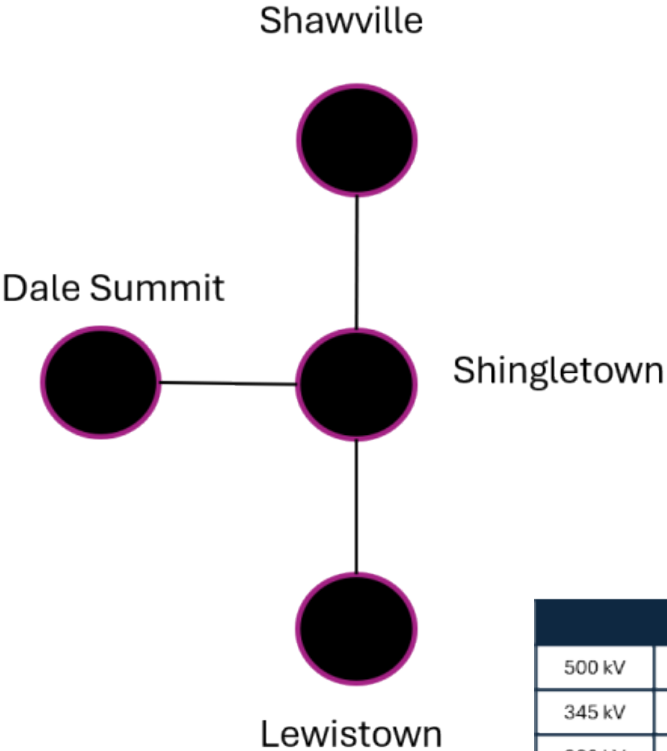
This project is concurrent with APS-2023-059.

- Ratings:**
- Lewistown - Shingletown 230 kV Line:
 - Before Selected Solution: 512 / 612 / 619 / 700 MVA (SN/SE/WN/WE)
 - After Selected Solution: 546 / 666 / 619 / 790 MVA (SN/SE/WN/WE)
 - Shawville - Shingletown 230 kV Line:
 - Before Selected Solution: 442 / 582 / 619 / 700 MVA (SN/SE/WN/WE)
 - After Selected Solution: 546 / 666 / 619 / 790 MVA (SN/SE/WN/WE)
 - Dale Summit - Shingletown 230 kV Line:
 - Before Selected Solution: 486 / 523 / 542 / 571 MVA (SN/SE/WN/WE)
 - After Selected Solution: 617 / 754 / 699 / 894 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$4.97M

Projected In-Service: 06/15/2028

Supplemental Project ID: s3986.1



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

Need Number: PN-2024-012

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 12/11/2025
Need Meeting - SRTEP-MA - 03/14/2024

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- Past system reliability/performance

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

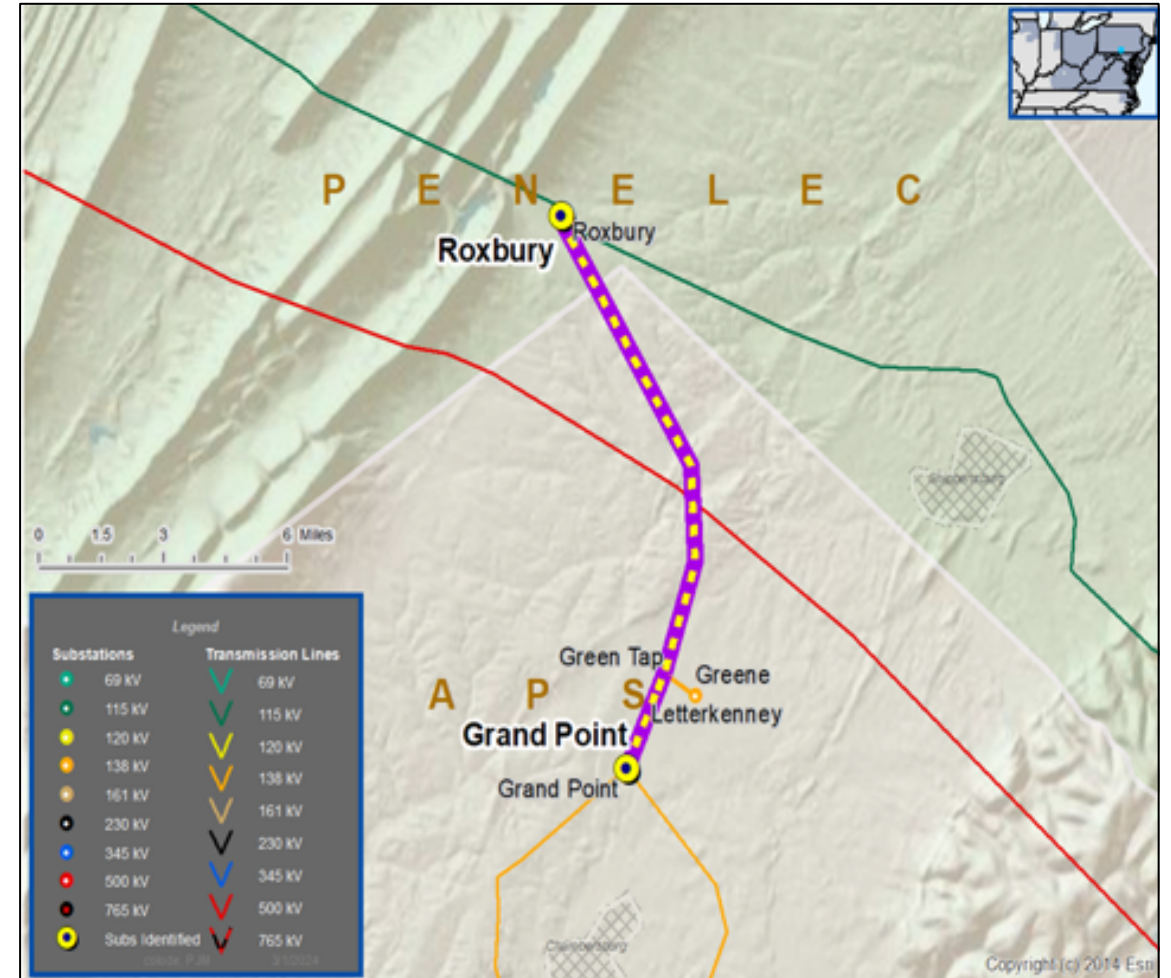
Problem Statement:

The Grand Point – Roxbury 138 kV Line was constructed in 1960. The line is approximately 14 miles long with 109 wood pole structures.

Recent inspections have indicated that 87 structures are exhibiting deterioration. Inspection findings include woodpecker damage, top rot, groundline decay and cracking.

Since 2014, the line has had eight unscheduled outages.

- Existing Grand Point – Letterkenney 138 kV Line Rating:
 - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- Existing Letterkenney – Greene Tap 138 kV Line Rating:
 - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- Existing Greene Tap – Roxbury 138 kV Line Rating:
 - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)





Penelec Transmission Zone M-3 Process Grand Point – Roxbury 138kV Line

Need Number: PN-2024-012

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- Rebuild the Grand Point - Roxbury 138 kV Line (14 miles total) with steel H-frame structures and new conductor.
- 5.5 miles per PN-2024-012 (s3987.1), 8.5 miles per APS-2024-028 (s3880.1)
- At Roxbury Substation: Replace limiting substation conductor and revise relay settings. (s3987.1)
- At Greene Substation (APS): Revise relay settings. (s3880.1)
- At Letterkenny Substation (APS): Replace line switch and revise relay settings. (s3880.1)
- At Grand Point Substation (APS): Replace substation conductor, circuit breaker, install surge arrestors and ground switch, and revise relay settings. (s3880.1)

Ratings:

Roxbury - AD2-062 138 kV Line:

- Before Selected Solution: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- After Selected Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Greene - AD2-062 138 kV Line:

- Before Selected Solution: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- After Selected Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Letterkenny - Greene 138 kV Line:

- Before Selected Solution: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- After Selected Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

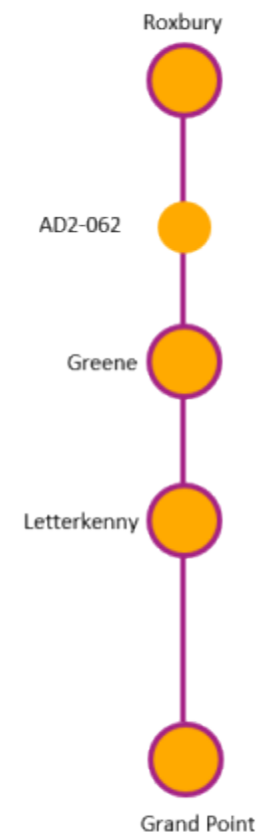
Grand Point - Letterkenny 138 kV Line

- Before Selected Solution: 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)
- After Selected Solution: 308 / 376 / 349 / 445 MVA (SN/SE/WN/WE)

Estimate Project Cost: \$17.94M

Projected In-Service: 06/15/2029

Supplemental Project ID: s3987.1



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

Need Number: PN-2024-014

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – 10/08/2025 Need Meeting – 04/30/2024

Project Driver:
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:
System Performance Global Factors

- Past system reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:
The Forest – Glade 230 kV FG Line was constructed approximately 65 years ago and is approaching end of life. The line is approximately 36 miles long with 306 wood pole transmission line structures.

Per recent inspections, the line is exhibiting deterioration. Inspection findings include cracked/deteriorated wood poles and components and sound test failure.

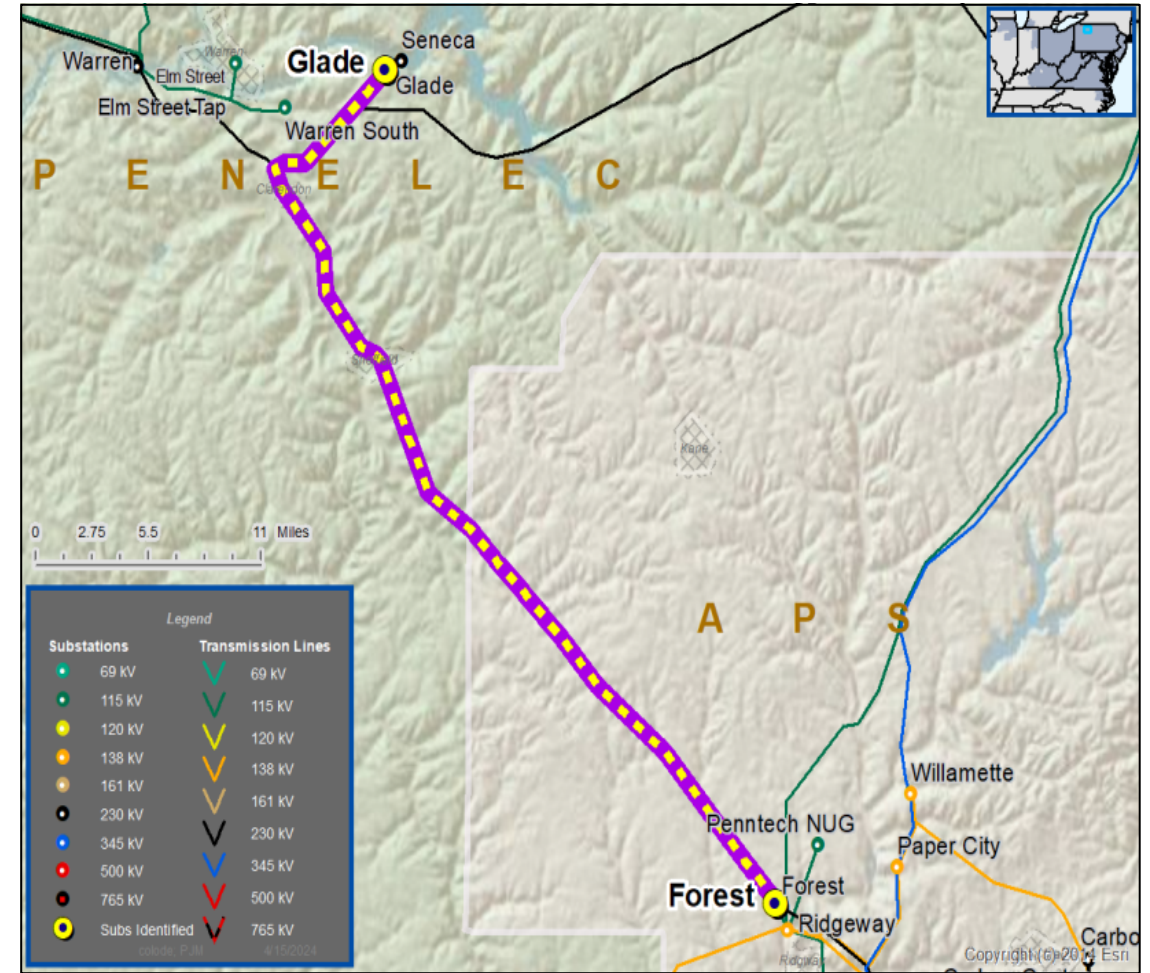
- 54 structures require replacement.
- 37 active repair conditions on structures for broken insulators and/or cracked/deteriorated wood pole components.

Structures from structure 289 to Glade Substation (approximately two miles) were rebuilt in 2009.

Since 2020, the line has had one unscheduled outage due to a pole failure.

The line is currently limited by terminal equipment.

Existing Ratings: 541 / 659 / 612 / 781 MVA (SN/SE/WN/WE)





Need Number: PN-2024-014
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:
Forest – Glade 230 kV Line

- Rebuild approximately 34.1 miles of 230 kV line from Forest Substation to structure 288

Glade Substation

- Replace the 1033 ACSR bus conductor

Ratings:
Forest – Glade 230 kV Line

- Before Selected Solution: 541 / 659 / 612 / 781 MVA (SN/SE/WN/WE)
- After Selected Solution: 546 / 666 / 619 / 790 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$ 156.72M
Projected In-Service: 05/31/2029
Supplemental Project ID: s4018.1

Penelec Transmission Zone M-3 Process Forest - Glade 230 kV FG Line



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

Need Number: PN-2024-027

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 06/16/2026
Need Meeting – SRRTEP-MA – 11/14/2024

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 East Pike – Glory 115 kV Line was constructed approximately 66 years ago and is approaching end of life. The line is approximately 13 miles long with 104 wood pole and two lattice transmission line structures.

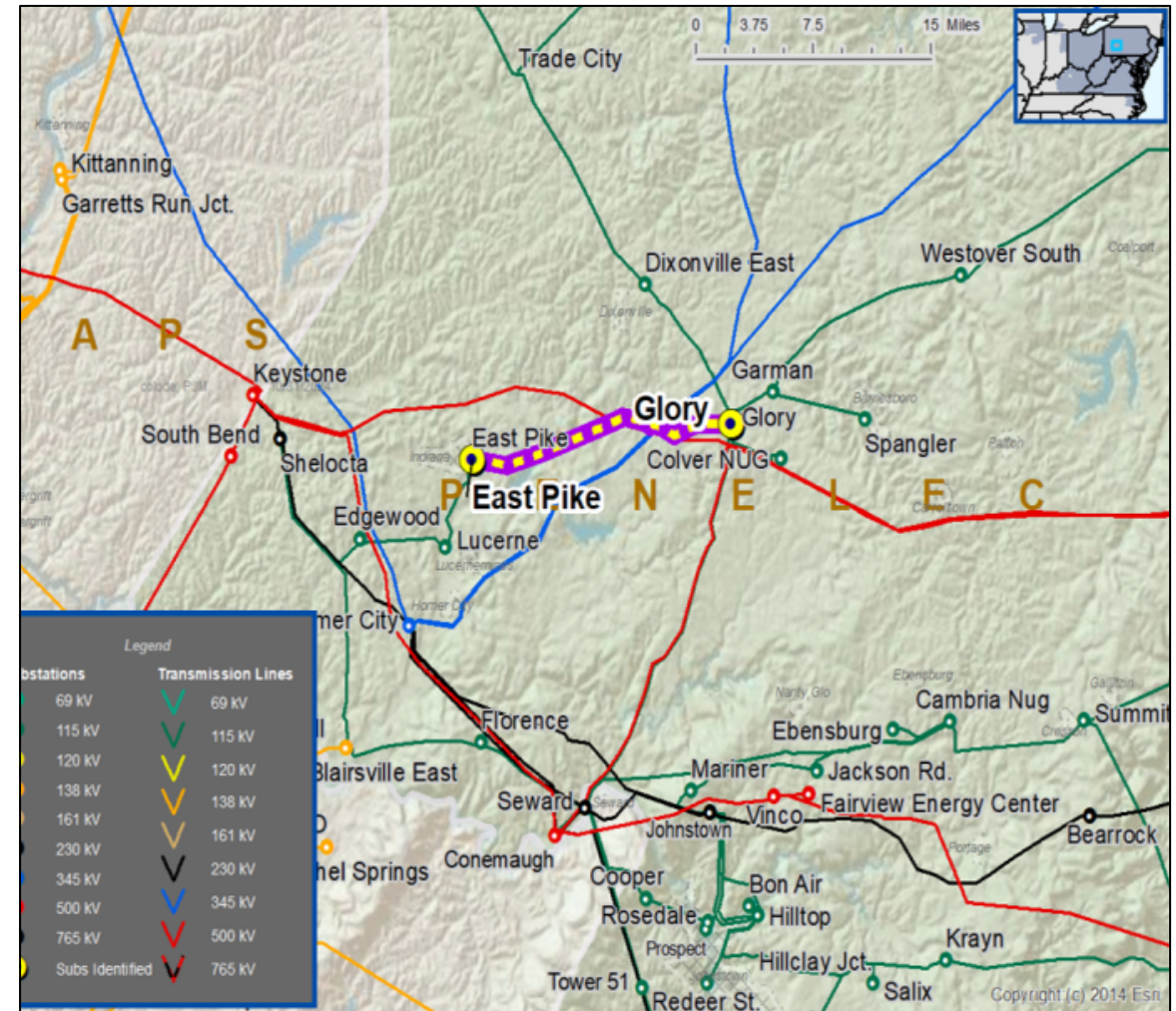
Per recent inspections, the line is exhibiting deterioration. Inspection findings include:

- 56 structures have cracked/deteriorated wood poles and/or braces.
- 14 structures are phase raised.

Since 2019, the line has had two unscheduled, sustained outages.

Existing Line Rating: 202 / 245 / 228 / 290 MVA (SN/SE/WN/WE)

Existing Conductor Rating: 202 / 245 / 228 / 290 MVA (SN/SE/WN/WE)





Need Number: PN-2024-027
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:
Rebuild 13.04 miles on the East Pike - Glory 115 kV Line and install new conductor.
At East Pike Substation, adjust relay settings as necessary.
At Glory Substation, adjust relay settings as necessary.

- Ratings:**
- Before Selected Solution: 137 / 177 / 188 / 245 MVA (SN/SE/WN/WE)
 - After Selected Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$47.73M
Projected In-Service: 12/19/2029
Supplemental Project ID: s4019.1

Penelec Transmission Zone M-3 Process East Pike - Glory 115 kV Line Rebuild



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

Need Number: PN-2025-007

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – TEAC – 11/4/2025
Need Meeting – TEAC – 10/8/2025

Project Driver:

Equipment Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

- System reliability and performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

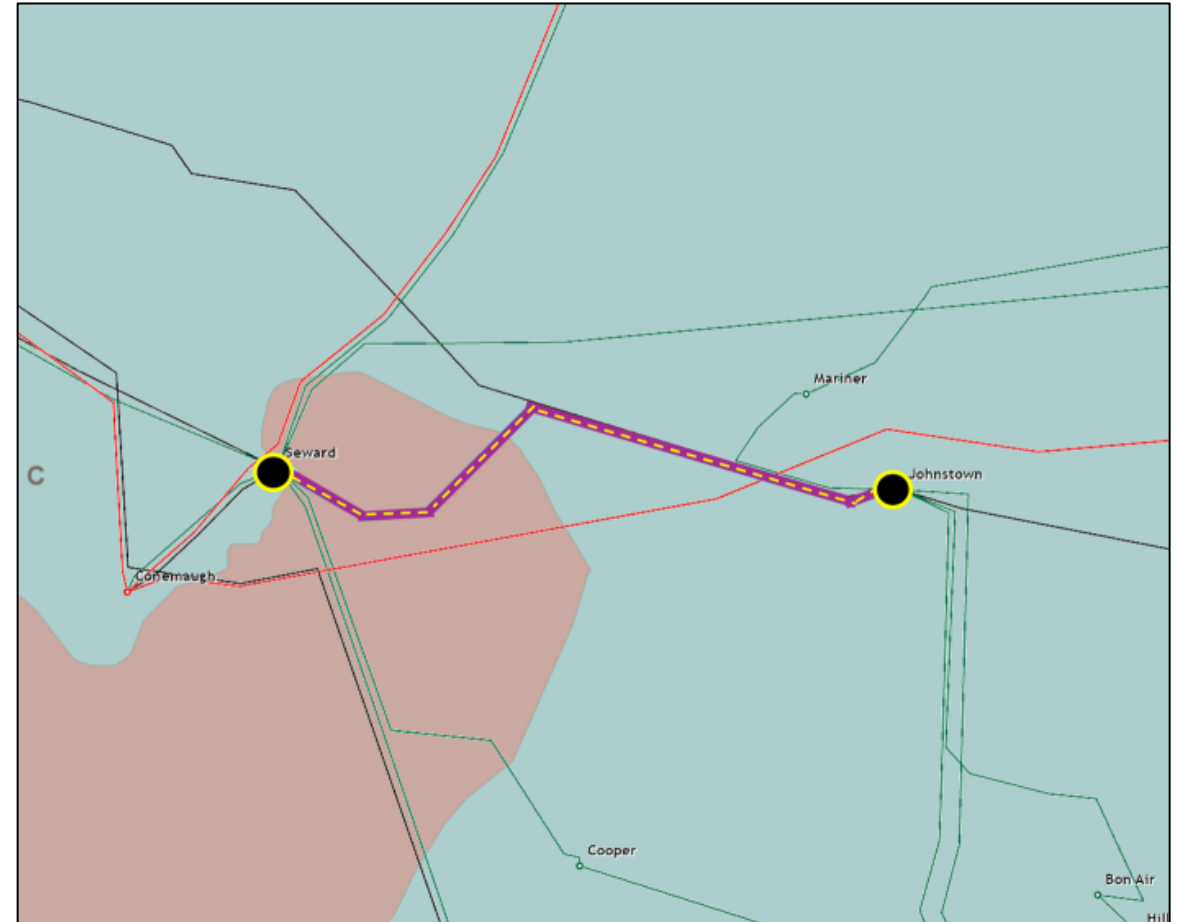
Problem Statement:

The Johnstown - Seward 230 kV Line was constructed approximately 64 years ago and is approaching end of life. The transmission line is 6.7 miles long with 129 wood pole structures.

Recent inspections have determined the line is exhibiting deterioration. Inspection findings include cracked wood poles and cross arms, woodpecker holes, and broken insulator bells occurring on 46% of the structures.

Since 2015, the line has had five unscheduled, sustained outages.

Existing Transmission Line Ratings: 548/666/619/790 MVA (SN/SE/WN/WE)





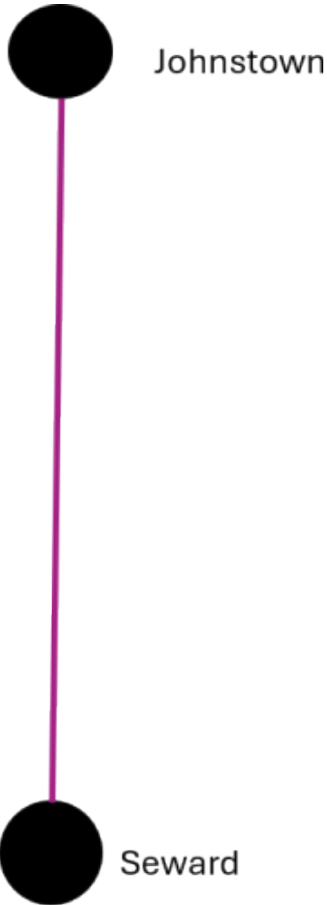
Need Number: PN-2025-007
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:
Rebuild 6.7 miles of 230 kV transmission line on steel structures and install new conductor.

- Ratings:**
Johnstown - Seward 230 kV Line
- Before Selected Solution: 546 / 666 / 619 / 790 MVA (SN/SE/WN/WE)
 - After Selected Solution: 627 / 775 / 729 / 939 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$ 30.01 M
Projected In-Service: 06/15/2027
Supplemental Project ID: s4020.1

Penelec Transmission Zone M-3 Process Johnstown - Seward 230 kV Line



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

Revision History

01/02/2026 – V1

s3743

s3744

s3745

s3746

s3747

10/01/2026 – V2

s1769

s3290

s3291

s3978

s3979

s3981

s3982

s3983

s3984

s3985

s3986

s3987

s4018

s4019

s4020