

First Energy (Penelec) Local Plan Submission for the 2022 RTEP

Need Number: PN-2019-035

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan 10/13/2022

Previously Presented:

Solutions Meeting 7/21/2022

Needs Meeting 7/31/2019, 6/13/2022

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

System Performance Projects Global Factors

- Substation/line equipment limits

Problem Statement:

The Piney – Haynie – Grandview – Titusville – Union City – Erie South 115 kV line is exhibiting deterioration.

- Total line distance is approximately 82.3 miles.
- 556 out of 697 structures failed inspection (80% failure rate).
- Failure reasons include age, woodpecker damage, top rot, phase raised, failed sound test, and weatherization.

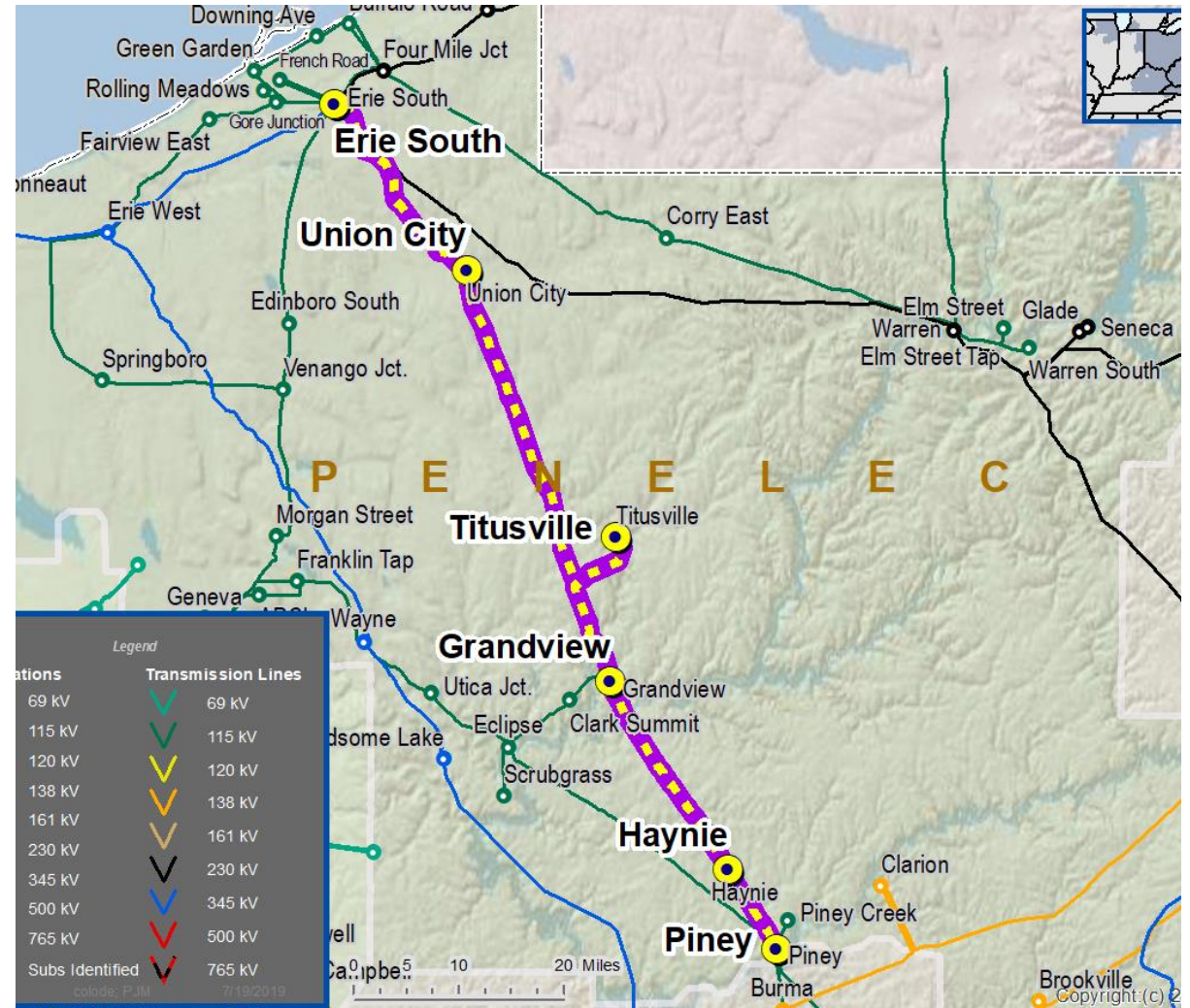
Transmission line ratings are limited by terminal equipment.

Piney – Haynie 115 kV line (substation conductor, line relaying, line trap, CTs)

- Existing line rating: 147/174 MVA (SN/SE)
- Existing conductor rating: 202/245 MVA (SN/SE)

Haynie – Grandview 115 kV line (substation conductor, line relaying, line trap)

- Existing line rating: 147/174 MVA (SN/SE)
- Existing conductor rating: 202/245 MVA (SN/SE)



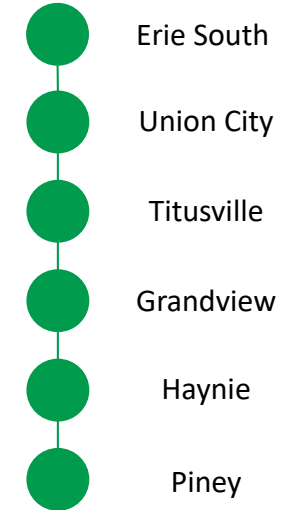
Penelec Transmission Zone M-3 Process Piney – Erie South Rebuild

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Selected Solution:

- Rebuild the Piney – Grandview – Titusville – Union City – Erie South 115 kV line using double circuit 115 kV construction adjacent to the existing 115 kV corridor (~82 miles).
- Energize the line in a six-wire configuration.
- Upgrade all substation terminals such that the new transmission line is the most limiting element.
- This proposed solution would be constructed in coordination with existing supplemental project s1672.



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

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Selected Solution (continued):

Transmission Line Ratings:

Piney – Haynie 115 kV Line:

- Before Proposed Solution: 147/174 MVA (SN/SE)
- After Proposed Solution: 273/333 MVA (SN/SE)

Haynie – Grandview 115 kV Line:

- Before Proposed Solution: 147/174 MVA (SN/SE)
- After Proposed Solution: 273/333 MVA (SN/SE)

Grandview – Titusville 115 kV Line:

- Before Proposed Solution: 202/245 MVA (SN/SE)
- After Proposed Solution: 273/333 MVA (SN/SE)

Titusville – Union City 115 kV Line:

- Before Proposed Solution: 202/245 MVA (SN/SE)
- After Proposed Solution: 273/333 MVA (SN/SE)

Union City – Erie South 115 kV Line:

- Before Proposed Solution: 232/282 MVA (SN/SE)
- After Proposed Solution: 273/333 MVA (SN/SE)

Ancillary Benefits:

Provides the opportunity for future reliability enhancement to substations served from this line with the ability to split into two lines and stagger loads between the two lines.

Estimated Project Cost: \$443 M

Projected In-Service: 6/1/2034

Supplemental Project ID: s2764, s2764.1 s2764.2, s2764.3, s2764.4 s2764.5

Model: 2021 RTEP model for 2026 Summer (50/50)

Revision History

10/12/2022 – V1 – Local plan posted for s2764 -