



# Sub Regional RTEP Committee PJM Mid-Atlantic Reliability Update

November 18, 2020

# Second Review

## Baseline Reliability Projects

**Process Stage:** Second Review

**Criteria:** Summer N-1-1

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Summer case

**Proposal Window Exclusion:** Below 200 kV exclusion

**Problem Statement:** The Corson-Court 69 kV line is overloaded for several N-1-1 outages including the Corson-Middle 138 kV line and Corson-England 138 kV lines.

Violations were posted as part of the 2020 Window 1: FG# N2-ST25 to N2-ST 34, N2-ST 37, and N2-ST 38

**Existing Facility Rating:** 87SN/111SE, 110WN/129WE MVA

**Proposed Facility Rating:** 122SN/157SE MVA  
141WN/177WE MVA

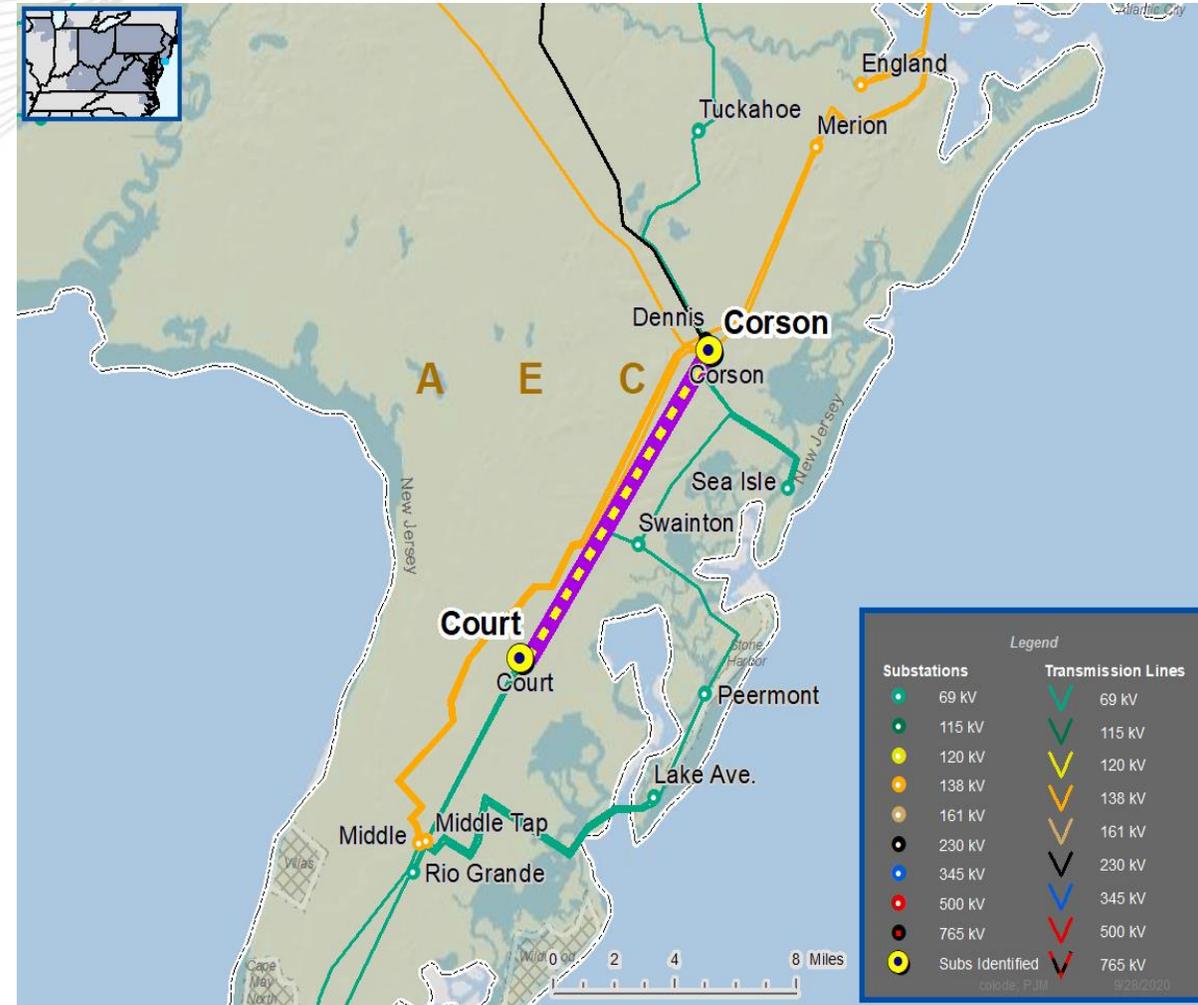
**Recommended Solution:**

Rebuild the Corson-Court 69 kV line to achieve ratings equivalent to 795 ACSR conductor or better. (b3227)

**Estimated Cost:** \$13.2 M

**Alternatives:** Reconductor the Corson-Court 69 kV line to achieve ratings equivalent to 795 ACSR conductor or better (not feasible)

**Required In-Service:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** Summer Baseline

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Summer case

**Proposal Window Exclusion:** Below 200 kV exclusion

**Problem Statement:** Post contingency voltage violation at Peermont and Swainton 69 kV stations. The Peermont and Swainton 69 kV buses have low voltage and voltage drop violation for single contingency outage of the Carson – Swainton 69 kV circuit.

Violations were posted as part of the 2020 Window 1: FG# N1-SVM9, N1-SVM10, N1-SVD15, and N1-SVD16

**Existing Facility Rating:** N/A

**Proposed Facility Rating:** N/A

**Recommended Solution:**

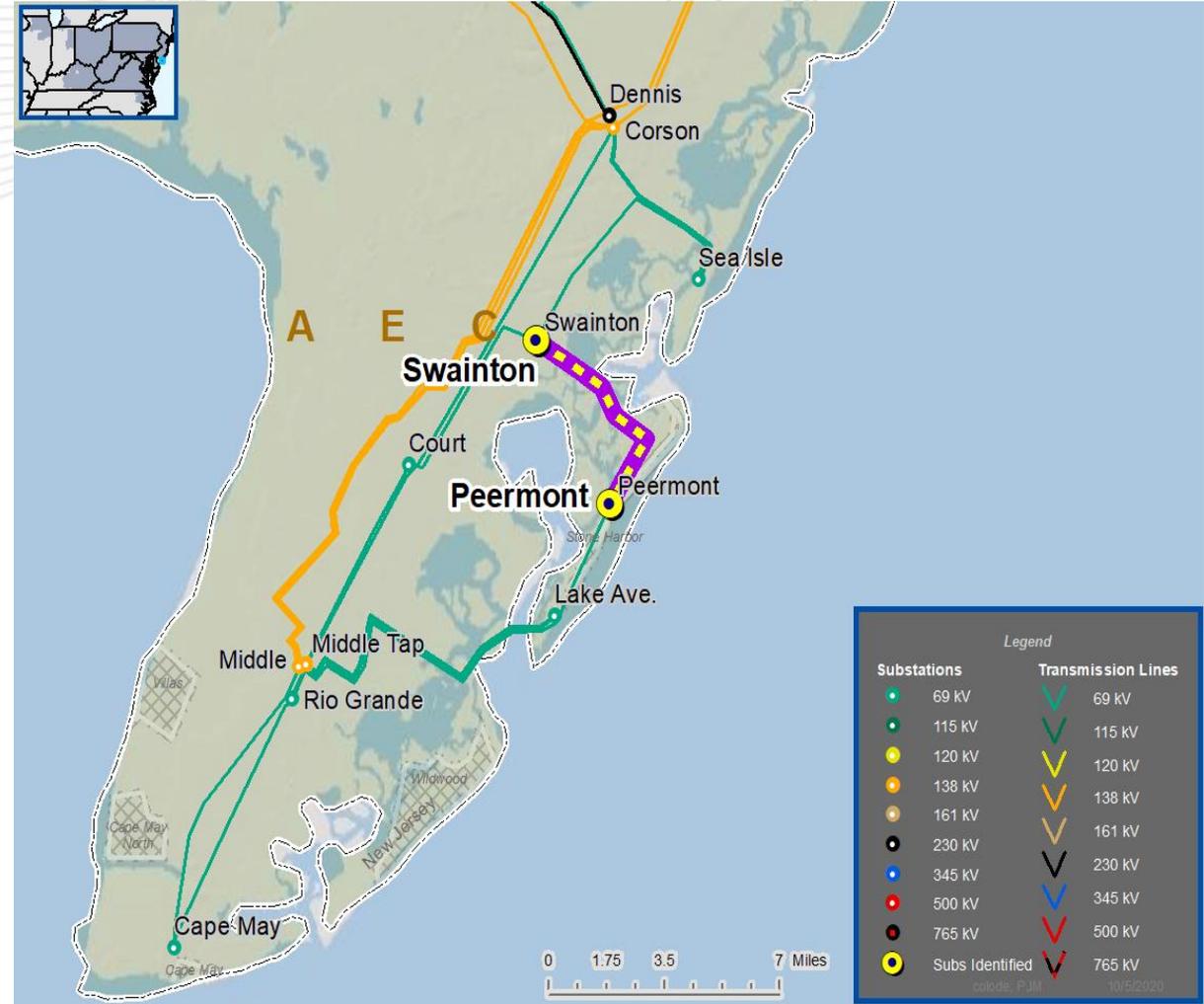
Add 10 MVAR 69 kV capacitor bank at Swainton substation. (b3226)

**Estimated Cost:** \$2.9 M

**Alternatives:**

Cut the Middle-Peermont 69 kV line and connect to Court substation (\$4.4M)

**Required In-Service:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** Winter baseline, Winter and Summer Generator Deliverability

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Summer and winter case

**Proposal Window Exclusion:** Substation Equipment

**Problem Statement:** The Westport to Center 115 kV circuit is overloaded for towerline outage loss of the Brandon Shore to Riverside 230 kV circuits #2344 & 2345. The circuits are overloaded in both Summer and Winter studies.

Violations were posted as part of the 2020 Window 1: (FG# GD-S482, N1-W-T13, GD-W307)

**Existing Facility Rating:** 278SN/278SE, 278WN/278WE MVA

**Proposed Facility Rating:** 296/329 SN/SE MVA

334/360 WN/WE MVA

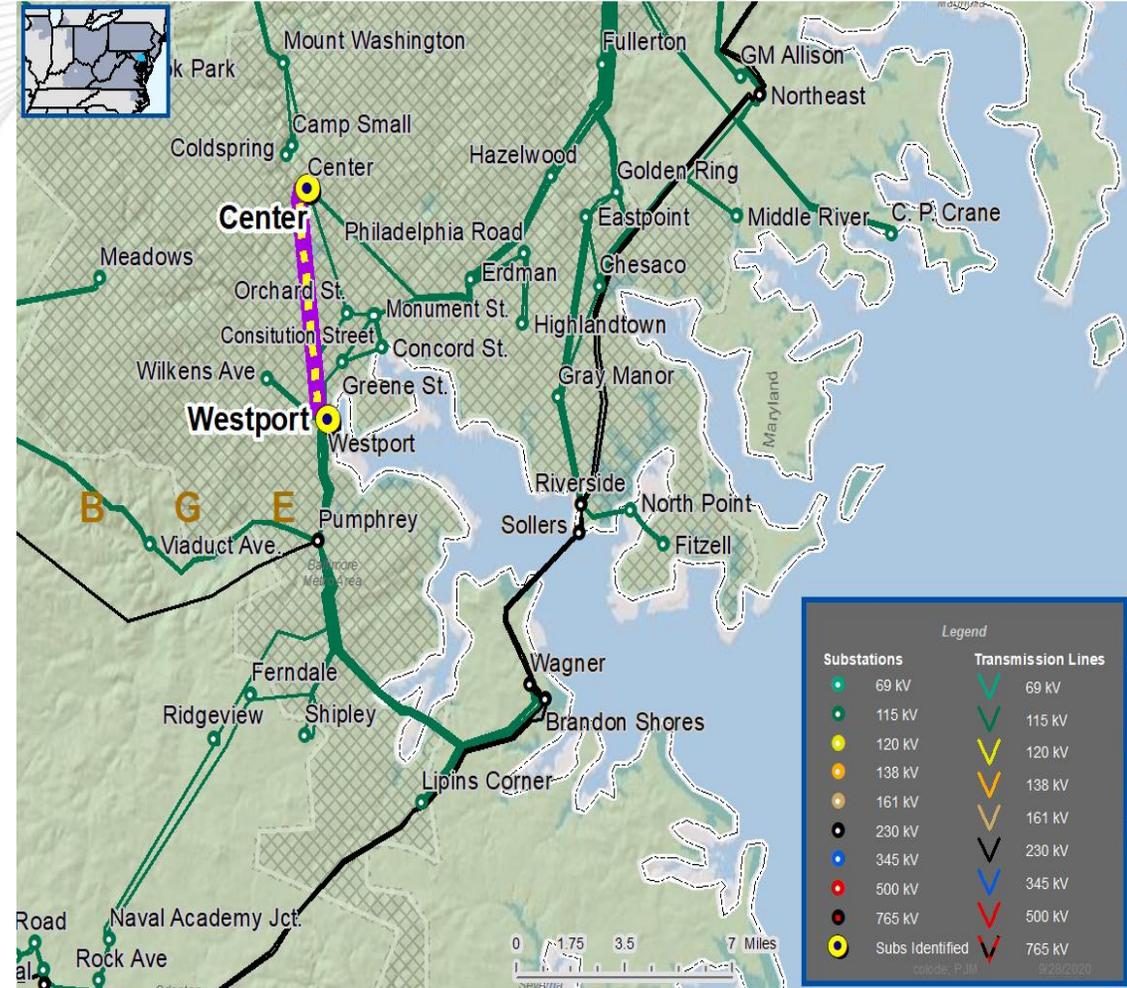
**Recommended Solution:**

Replace two relays at Center 115 kV Substation to increase ratings on the Westport to Center 115 kV (110552) circuit. **(b3228)**

**Estimated Cost:** \$0.025 M

**Alternatives:** N/A

**Required In-Service:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** Winter baseline, Summer and Winter Generator Deliverability

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Summer and winter cases

**Proposal Window Exclusion:** Below 200 kV exclusion

**Problem Statement:** The Mt. Pleasant to Middletown Tap 138 kV circuit is overloaded for towerline outage loss of the Keeney to Steele 230 kV circuits #23009 & 23001. The circuit is overloaded in both Summer and Winter studies.

Violations were posted as part of the 2020 Window 1: FG# N1-W-T2, GD-W308

**Existing Facility Rating:** 273SN/348SE, 315WN/392WE MVA

**Proposed Facility Rating:** 390SN/478SE MVA  
449WN/478WE MVA

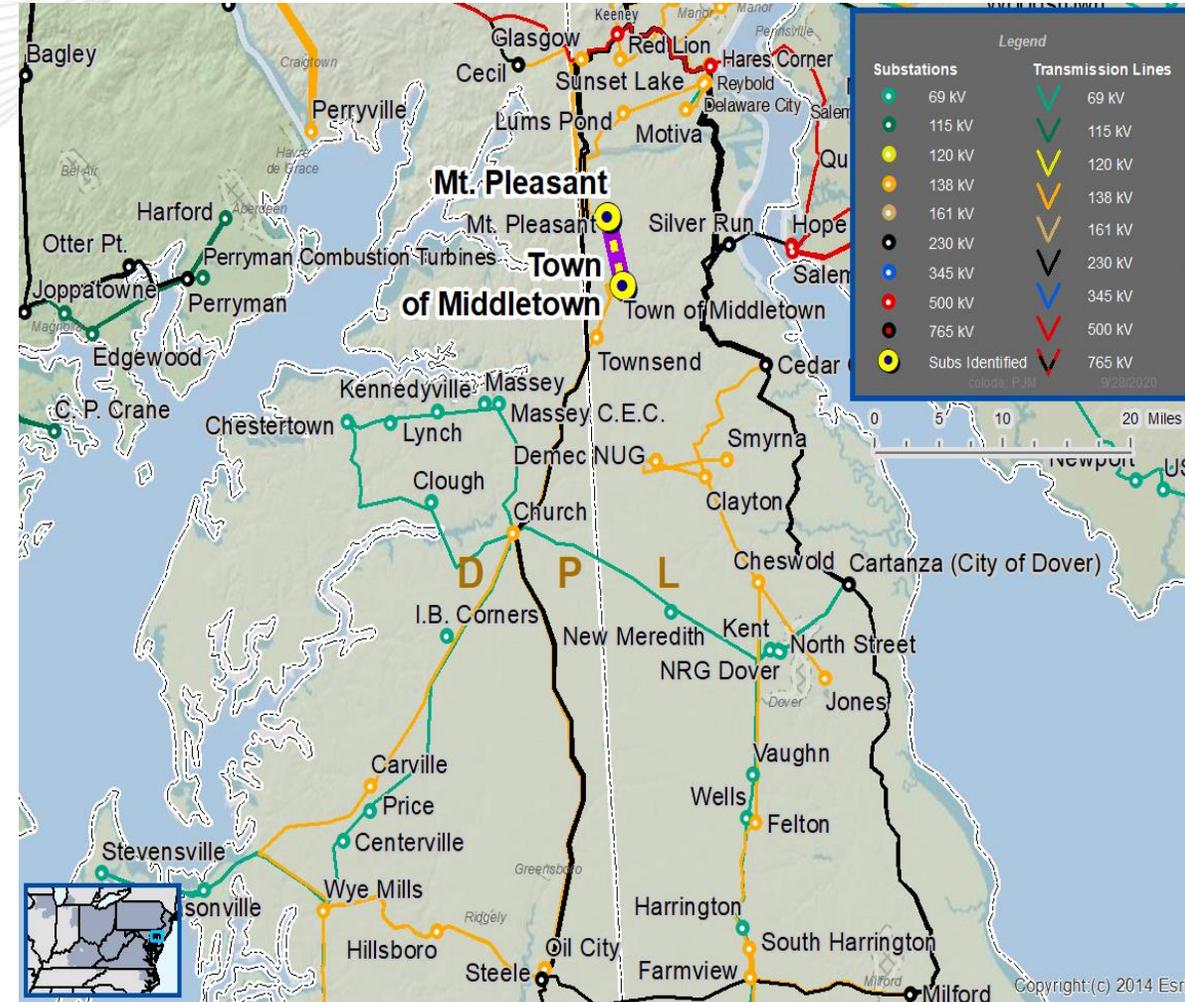
**Recommended Solution:**

Replace a disconnect switch at Middletown Tap and reconductor a short span of Mt. Pleasant - Middletown Tap line. **(b3224)**

**Estimated Cost:** \$0.425 M

**Alternatives:** Build a second Mt. Pleasant-Middletown Tap 138 kV line with new ring bus at Middletown Tap. **Estimated Cost:** \$24 M

**Required In-Service:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** PPL FERC Form 715

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Summer and Winter cases

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:** Post contingency voltage violation on the 69 kV system along the Limestone – Lock Haven – Renovo path. The Limestone, Laural Renovo, First Quality and Mifflinburg 69 kV buses have a voltage magnitude and Voltage drop issues for several contingencies in both Summer and Winter cases.

**Existing Facility Rating:** N/A

**Proposed Facility Rating:** N/A

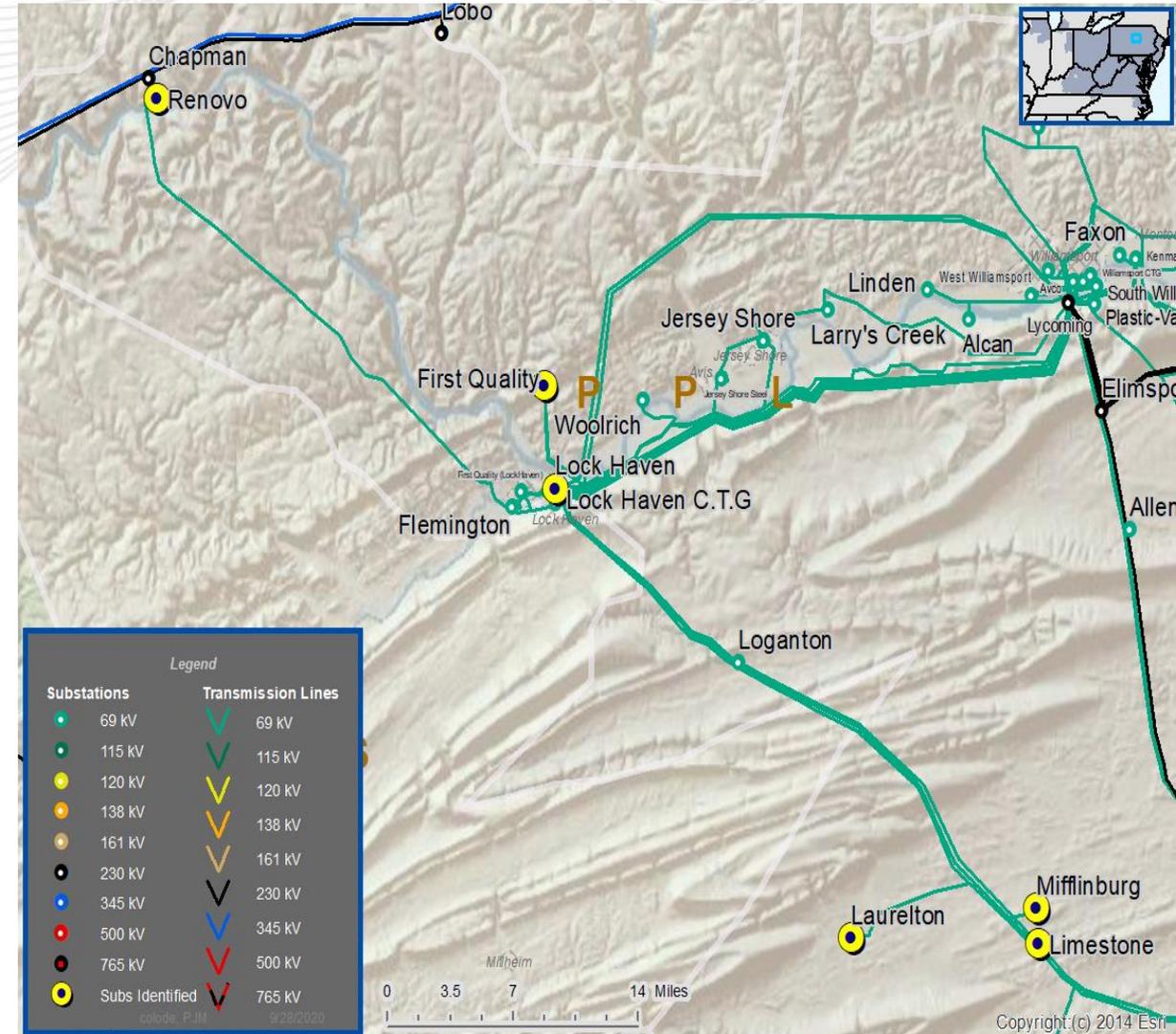
**Recommended Solution:**

Install one (1) 7.2 MVAR fixed cap bank on the Lock Haven-Reno 69 kV line and one (1) 7.2 MVAR fixed cap bank on the Lock Haven-Flemington 69 kV line near the Flemington 69/12kV substation. **(b3222)**

**Estimated Cost:** \$1.9 M

**Alternatives:** N/A

**Required In-Service:** 6/1/2025





# Penelec Transmission Zone: Baseline

**Process Stage:** Second Review

**Criteria:** Light Load baseline

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Light Load case

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:** Post contingency high voltage violations along the Rockwood – Meyersdale North 115 kV line. The Meyersdale, Bigby, Lick Run, Arnold Rec, Rockwood and Somerset buses resulted in a high voltage issue for multiple single, bus and line fault stuck breaker contingencies in the Rockwood vicinity.

Violations were posted as part of the 2020 Window 1: FG# N1-LLVH1 – N1-LLVH26

**Existing Facility Rating:** N/A

**Proposed Facility Rating:** N/A

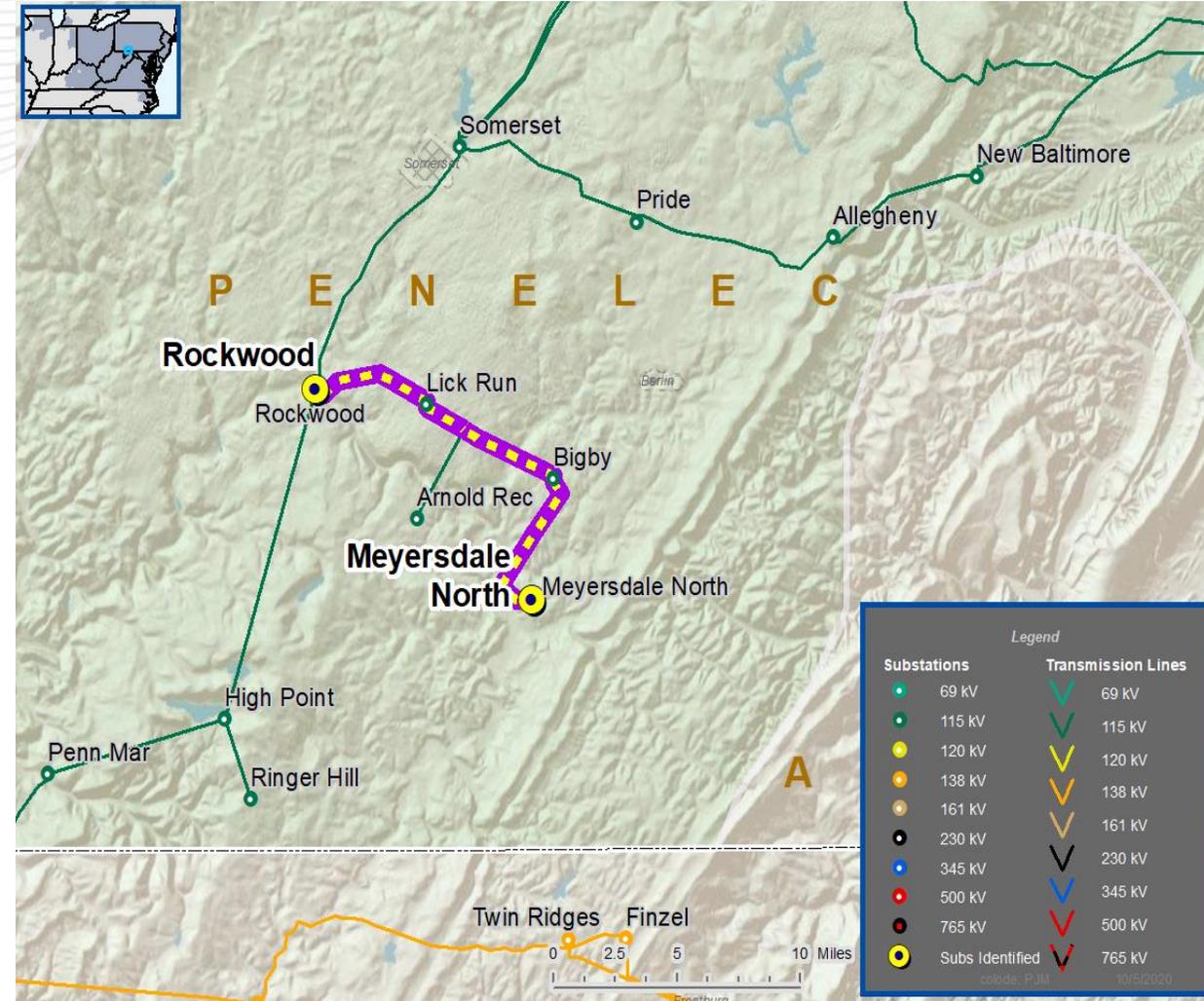
**Recommended Solution:**

Lick Run substation: Install one 34 MVAR 115 kV shunt reactor and breaker. Install one 115 kV circuit breaker to expand the substation to a 4 breaker ring bus. (b3233)

**Estimated Cost:** \$4.9 M

**Alternatives:** N/A

**Required In-Service:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** Winter Baseline

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Winter case

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:** Post contingency voltage drop violation on the Williams 115 kV substation. The Williams 115 kV bus has a voltage drop issue for a line fault stuck breaker contingency loss of the Williams – Tiffany – Laurel lake – Westover 115 kV circuit.

Violations were posted as part of the 2020 Window 1: FG# N1-WVD1

**Existing Facility Rating:** N/A

**Proposed Facility Rating:** N/A

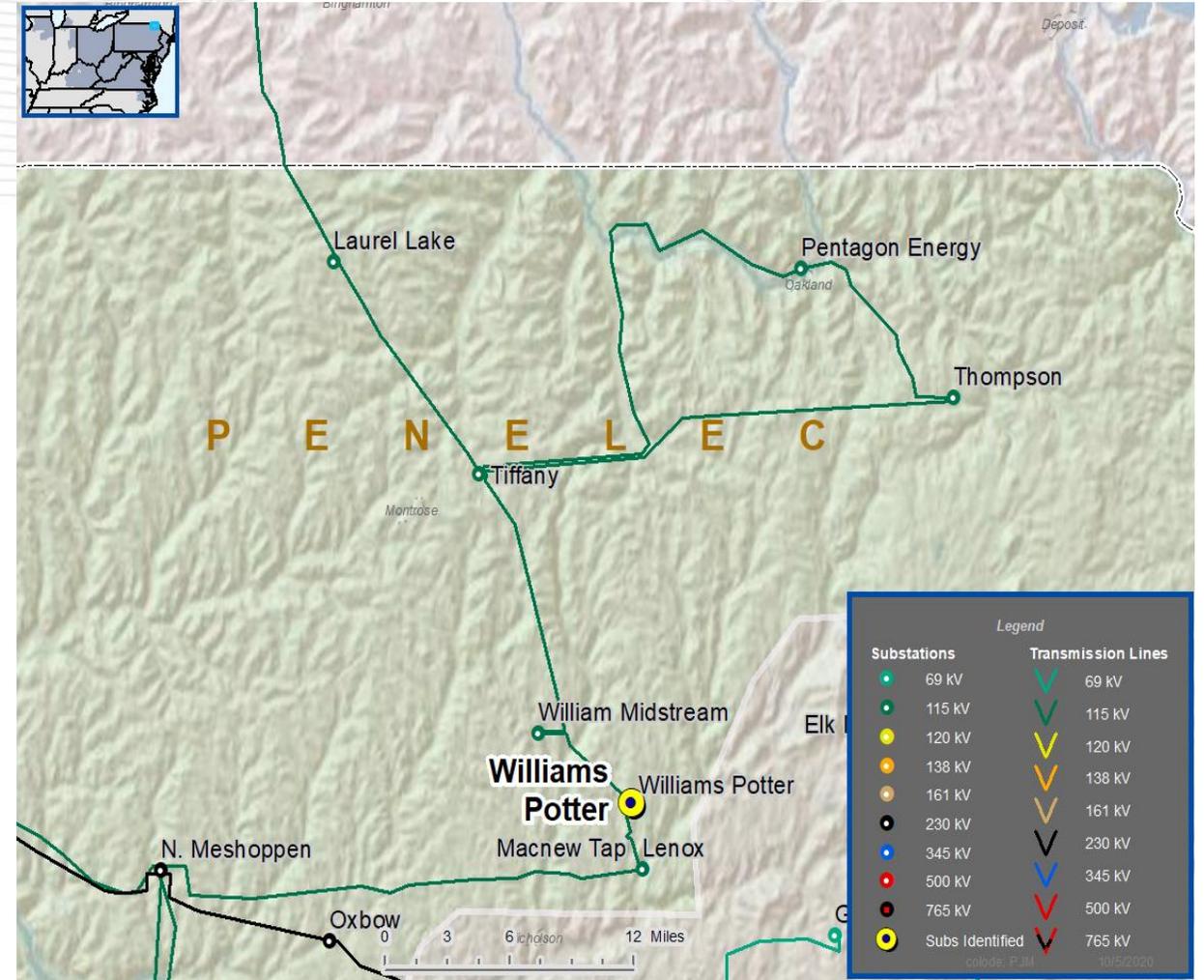
**Recommended Solution:**

Construct a new breaker-and-a-half 115 kV (Warriner Pond) substation near Tiffany substation. All transmission assets and lines will be relocated from Tiffany to the new substation. The two distribution transformers will be fed via two dedication 115 kV feeds to the existing Tiffany substation. (b3245)

**Estimated Cost:** \$23.2 M

**Alternatives:** Convert Tiffany Substation to a ring bus configuration (Not feasible).

**Required In-Service:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** First Energy FERC Form 715

**Assumption Reference:** 2025 RTEP assumption

**Model Used for Analysis:** 2025 RTEP Summer and Winter cases

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:** Post contingency voltage violation on the 46 kV system along the Hill Valley – Mount Union – Mapleton path. Several 46 kV station including Hill Valley, Mount Union 46 kV buses have a voltage magnitude and Voltage drop issues for several contingencies in both Summer and Winter cases.

Violations were posted as part of the 2020 Window 1:FG#s PN-VM1 - PN-VM19 and PN-VD1 - PN-VD16

**Existing Facility Rating:** N/A

**Proposed Facility Rating:** N/A

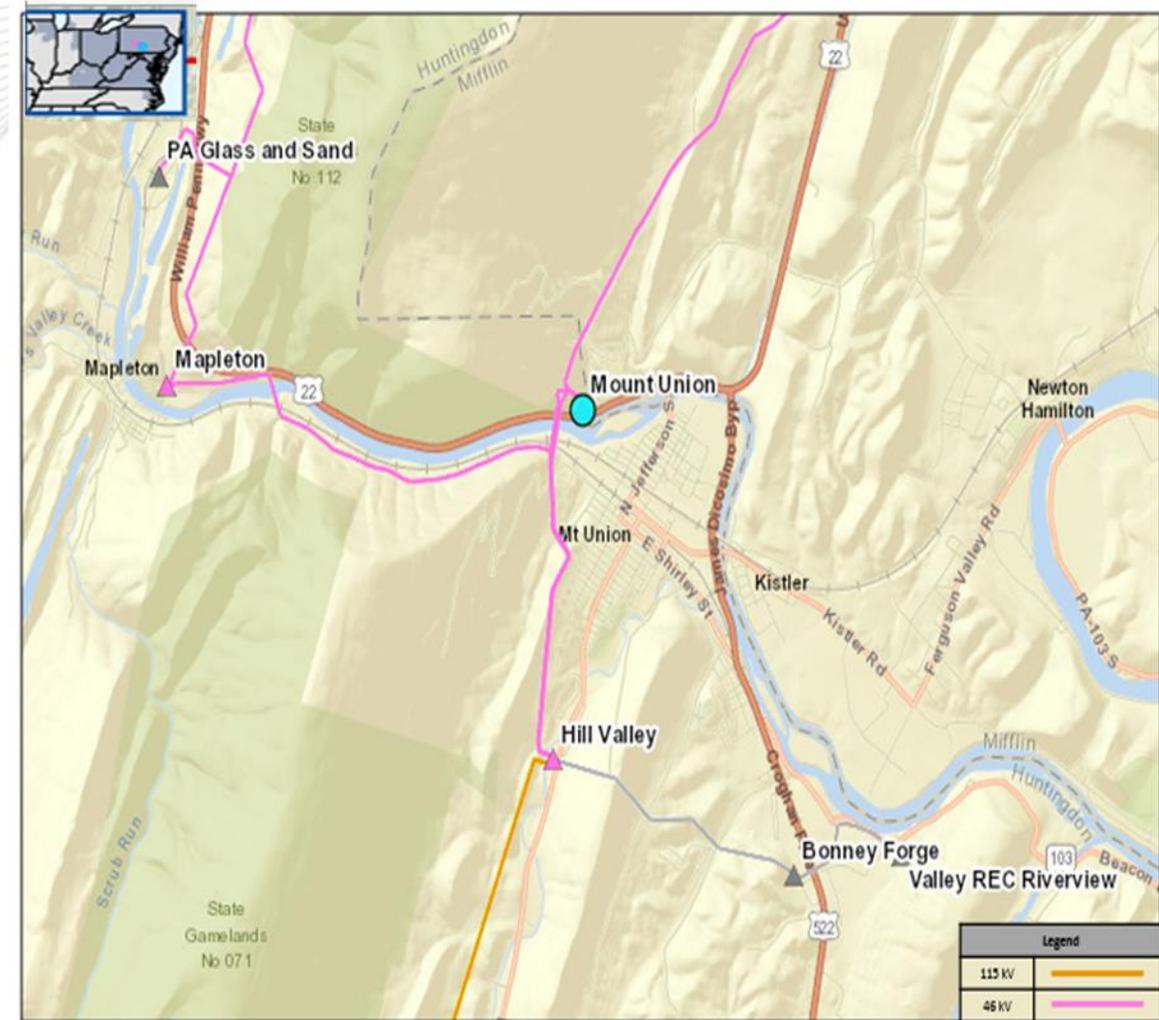
**Recommended Solution:**

Install two 46 kV 6.12 MVAR capacitors at Mt Union. **(b3237)**

**Estimated Cost:** \$4.0 M

**Alternatives:** N/A

**Required In-Service:** 6/1/2025



# Short Circuit Project

**Process Stage:** Second Review

**Criteria:** First Energy FERC Form 715

**Assumption Reference:** First Energy Transmission Planning Criteria

**Model used for analysis:** 2020 Series -2025 Short circuit model

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:**

Fourteen (14) existing 40kA Freneau 34.5 kV breakers (M139A, M139B, C211, B29 (V100, W101, Z104, O15, S45, F32, E31, BK1A, BK1B, BK2A and BK2B) are overdutied in the 2025 case model.

Violations were posted as part of the 2020 Window 1: FG# JCPL-SC1 to JCPL-SCPN-SC10 and JCPL-SC18 to JCPL-SCPN-SC21

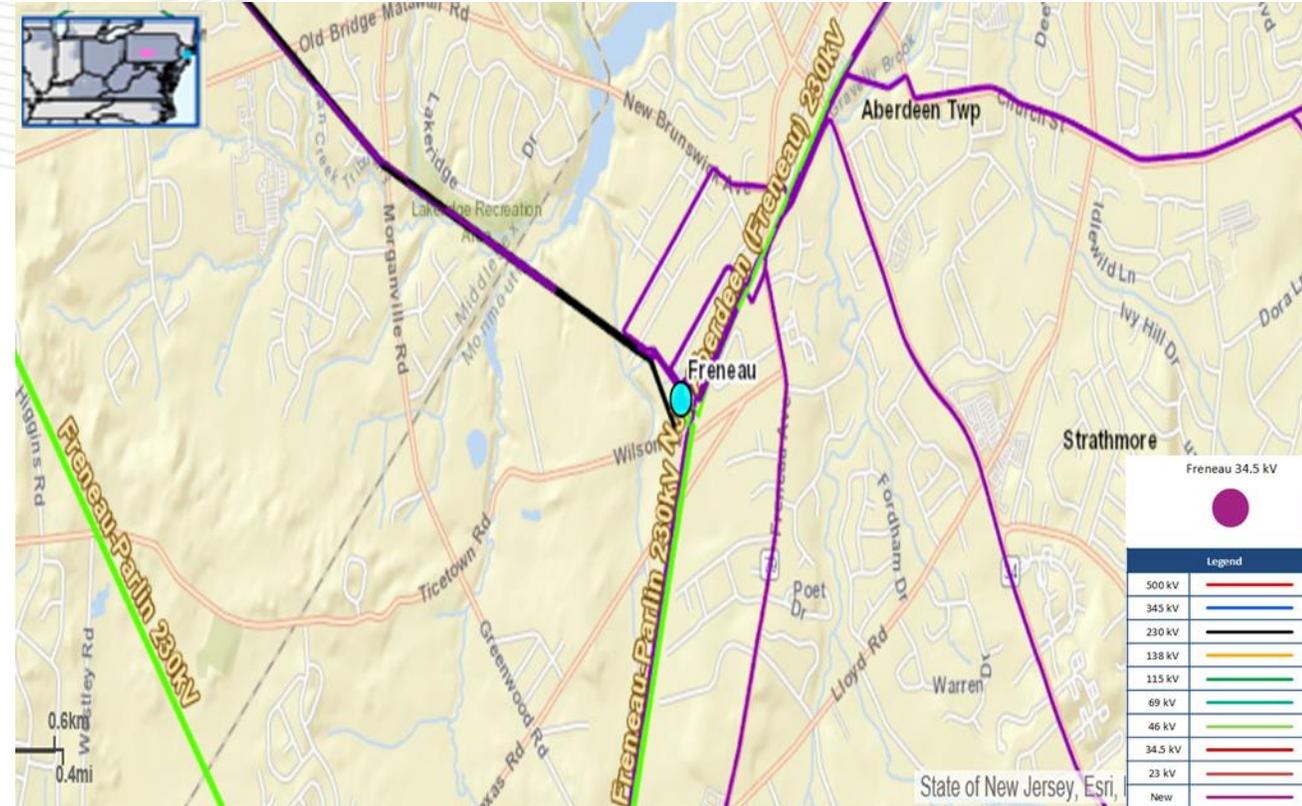
**Recommended Solution:**

Replace (14) Freneau overdutied 34.5 kV breakers with 63 kA rated breakers and associated equipment. **(b3239)**

**Estimated Cost:** \$5.7 M

**Alternatives:** None

**Required In-Service Date:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** First Energy FERC Form 715

**Assumption Reference:** First Energy Transmission Planning Criteria

**Model used for analysis:** 2020 Series -2025 Short circuit model

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:**

Seven(7) existing 40kA Whippany 34.5 kV breakers (X76, B37 (O769), D4, F6, P142, 320BY77 and A157) are overdutied in the 2025 case model. Violations were posted as part of the 2020 Window 1: FG# JCPL-SC11 to JCPL-SCPN-SC17

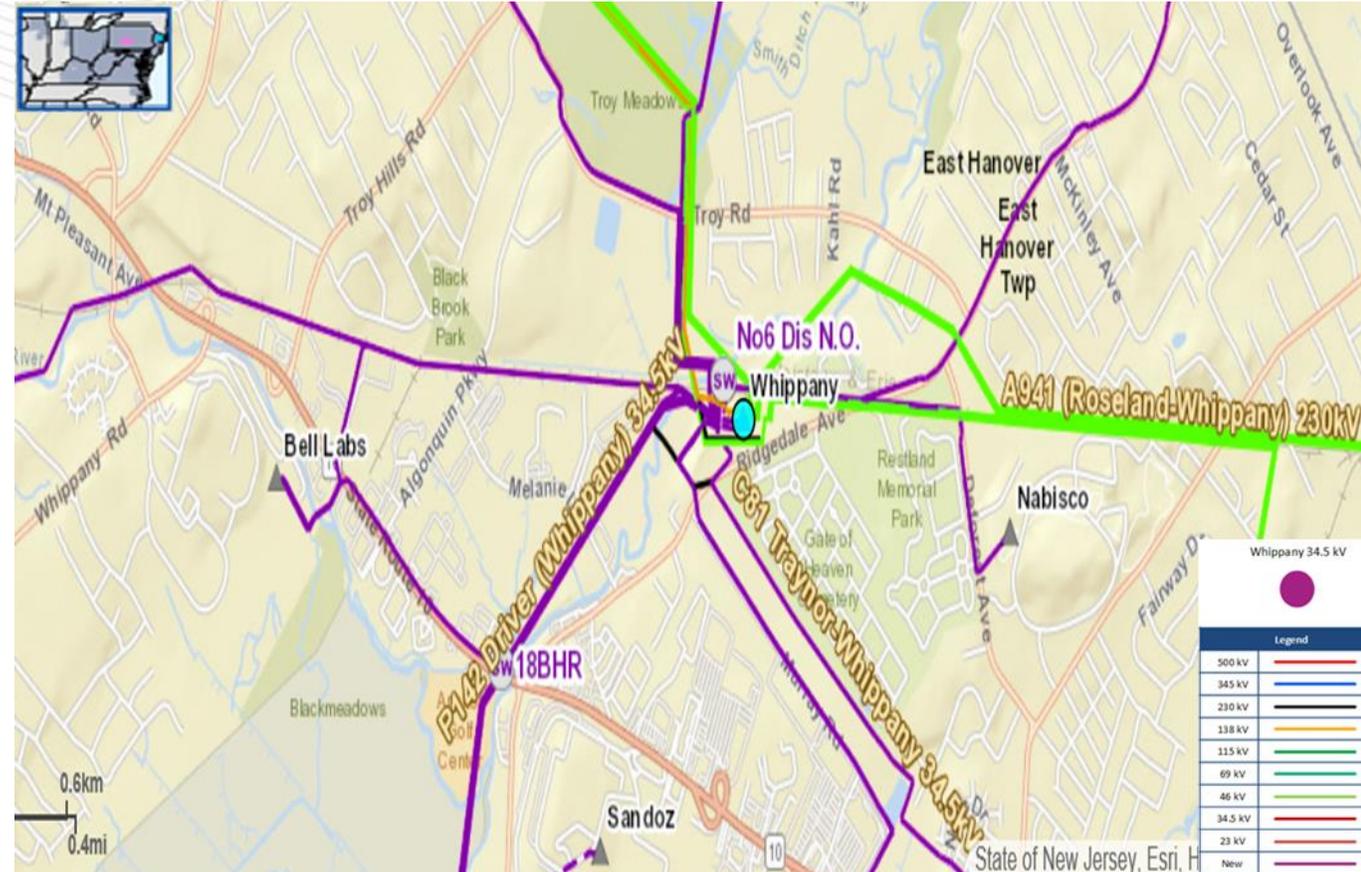
**Recommended Solution:**

Replace (7) Whippany overdutied 34.5 kV breakers with 50 kA rated breakers and associated equipment. **(b3238)**

**Estimated Cost:** \$8.67 M

**Alternatives:** None

**Required In-Service Date:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** First Energy FERC Form 715

**Assumption Reference:** First Energy Transmission Planning Criteria

**Model used for analysis:** 2020 Series -2025 Short circuit model

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:**

Three Altoona 46 kV breakers are overdutied. The Altoona #1 (BUS\_SECT and ALH\_HOLI) breakers and Altoona #2 (WMSBURG) breaker.

Violations were posted as part of the 2020 Window 1: FG# PN-SC1, PN-SC2 and PN-SC3

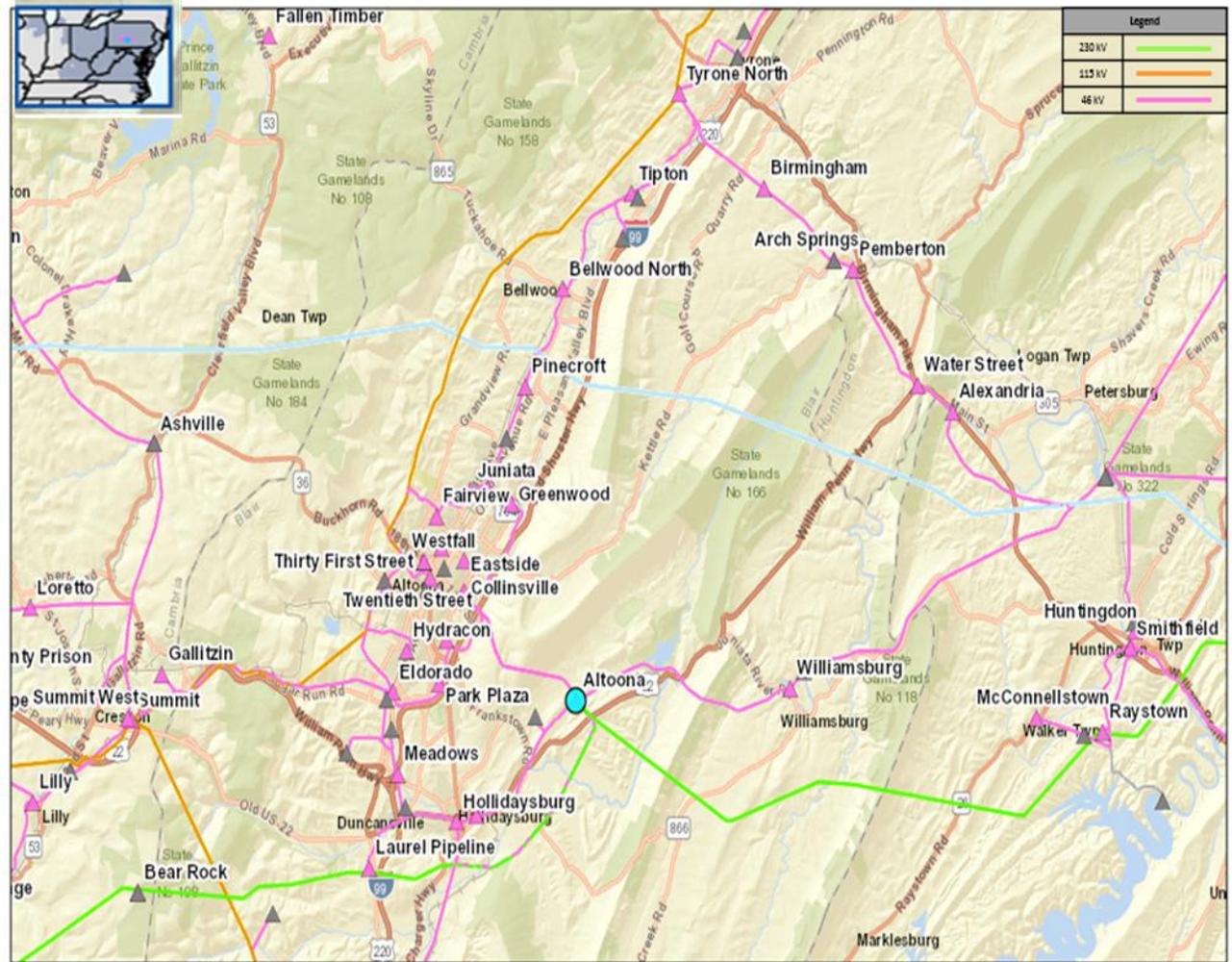
**Recommended Solution:**

Replace the existing Williamsburg, ALH (Hollidaysburg) and bus section breaker at the Altoona substation with 40 kA rated breaker and associated equipment. (b3232)

**Estimated Cost:** \$1.7M

**Alternatives:** None

**Required In-Service Date:** 6/1/2025



**Process Stage:** Second Review

**Criteria:** First Energy FERC Form 715

**Assumption Reference:** First Energy Transmission Planning Criteria

**Model used for analysis:** 2020 Series -2025 Short circuit model

**Proposal Window Exclusion:** Below 200 kV

**Problem Statement:**

The Huntingdon 46 kV breaker # 2 is overdutied in the 2025 case model. Violations were posted as part of the 2020 Window 1: FG# PN-SC4

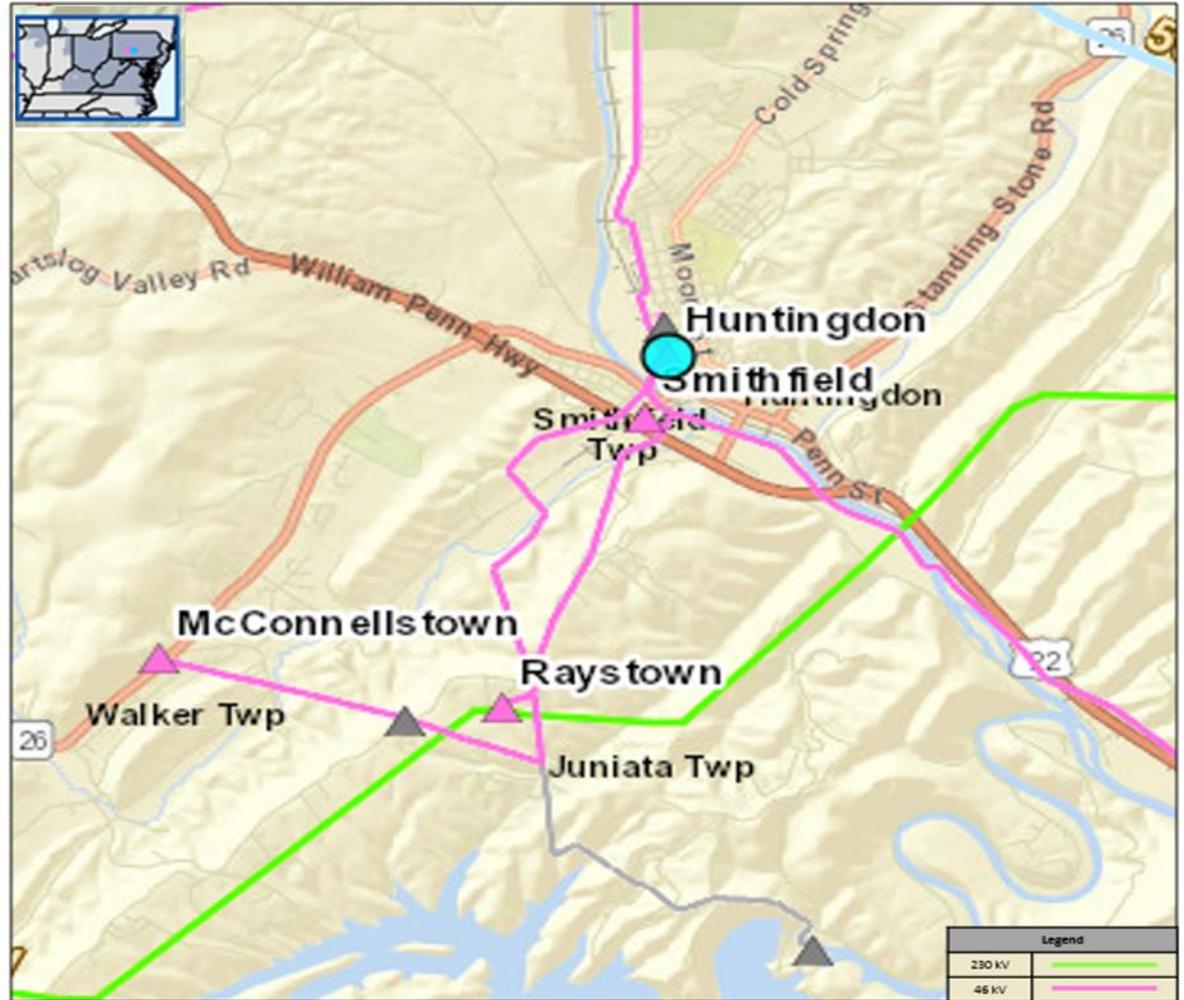
**Recommended Solution:**

Replace the existing No. 2 cap bank breaker at Huntingdon substation with a 40 kA rated breaker and associated equipment. (b3231)

**Estimated Cost:** \$0.8M

**Alternatives:** None

**Required In-Service Date:** 6/1/2025



# Questions?



2020

- The remaining 2020 Mid-Atlantic SRRTEP meetings are as followed
- 12/16

V1 – 11/10/2020 – Original slides posted