Sub Regional RTEP Committee
PJM Mid-Atlantic
Reliability Update

October 15, 2020

First Review

Baseline Reliability Projects

AEC Transmission Zone: Baseline

Process Stage: First 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-ST34, N2-ST37, and N2-ST38

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

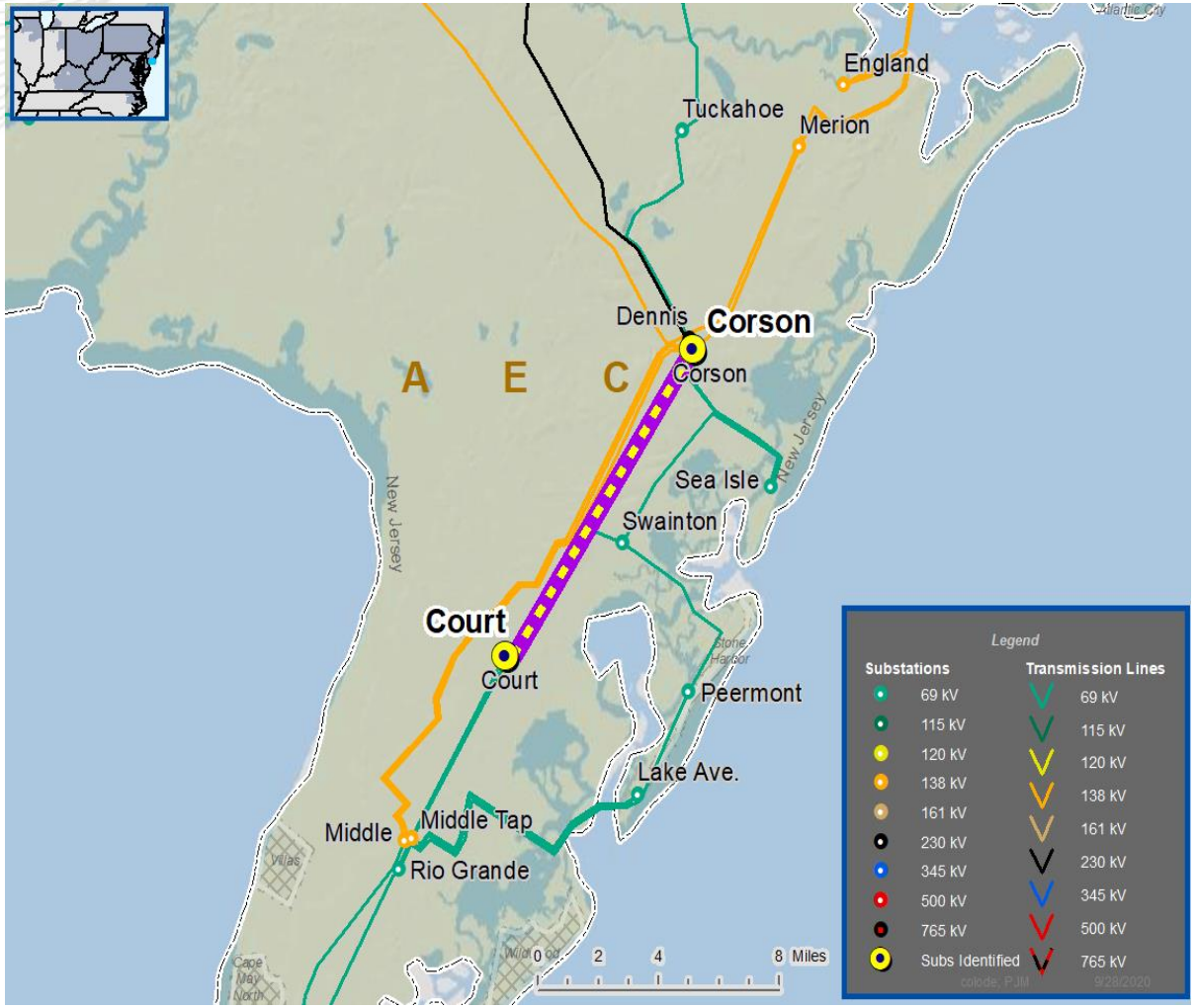
Proposed Facility Rating: 122SN/157SE MVA
141WN/177WE MVA

Proposed Solution:
Rebuild the Corson-Court 69 kV line to achieve ratings equivalent to 795 ACSR conductor or better

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



AEC Transmission Zone: Baseline

Process Stage: First 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

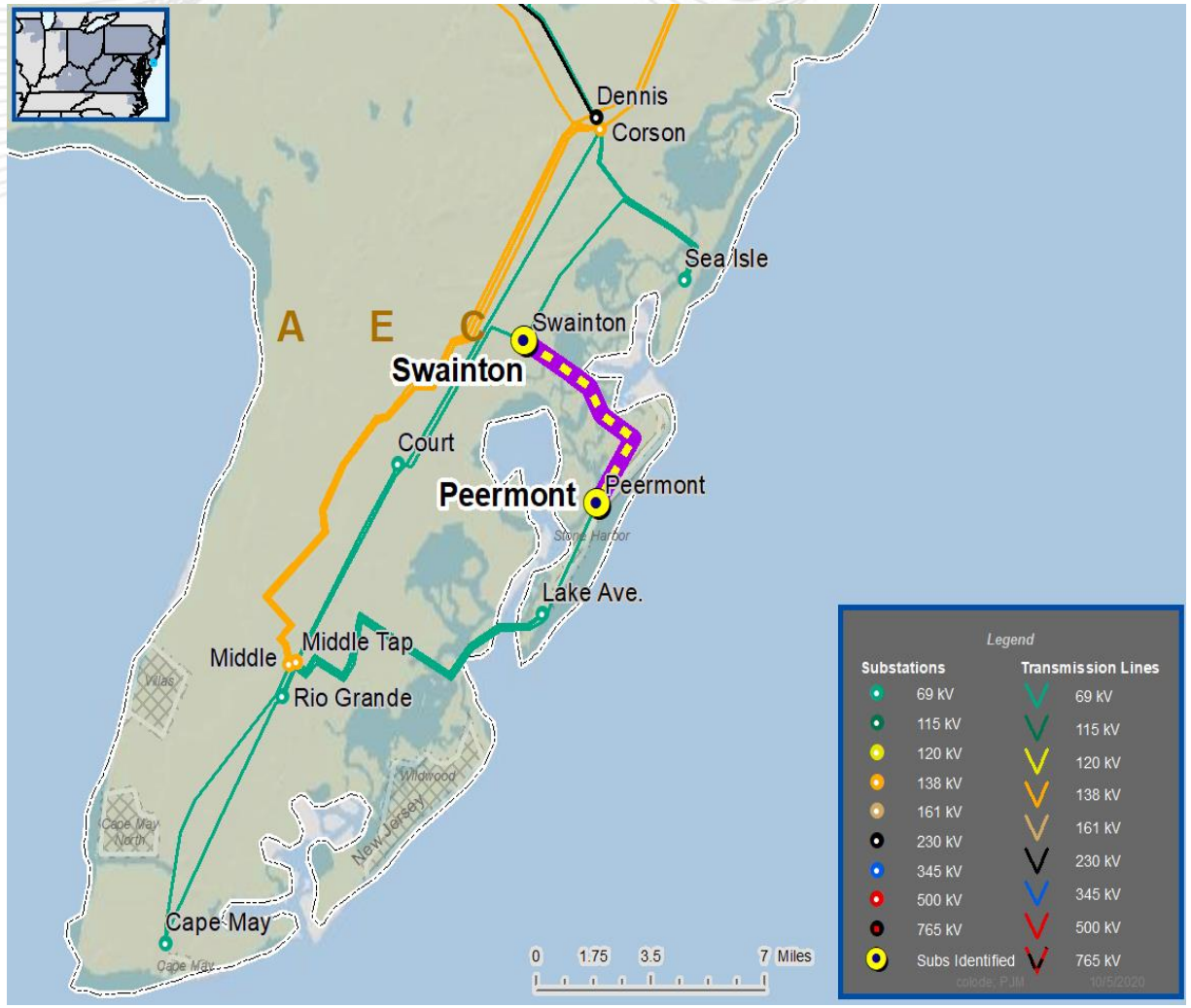
Proposed Solution:
Add 10 MVAR 69 kV capacitor bank at Swainton substation

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



BGE Transmission Zone: Baseline

Process Stage: First 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

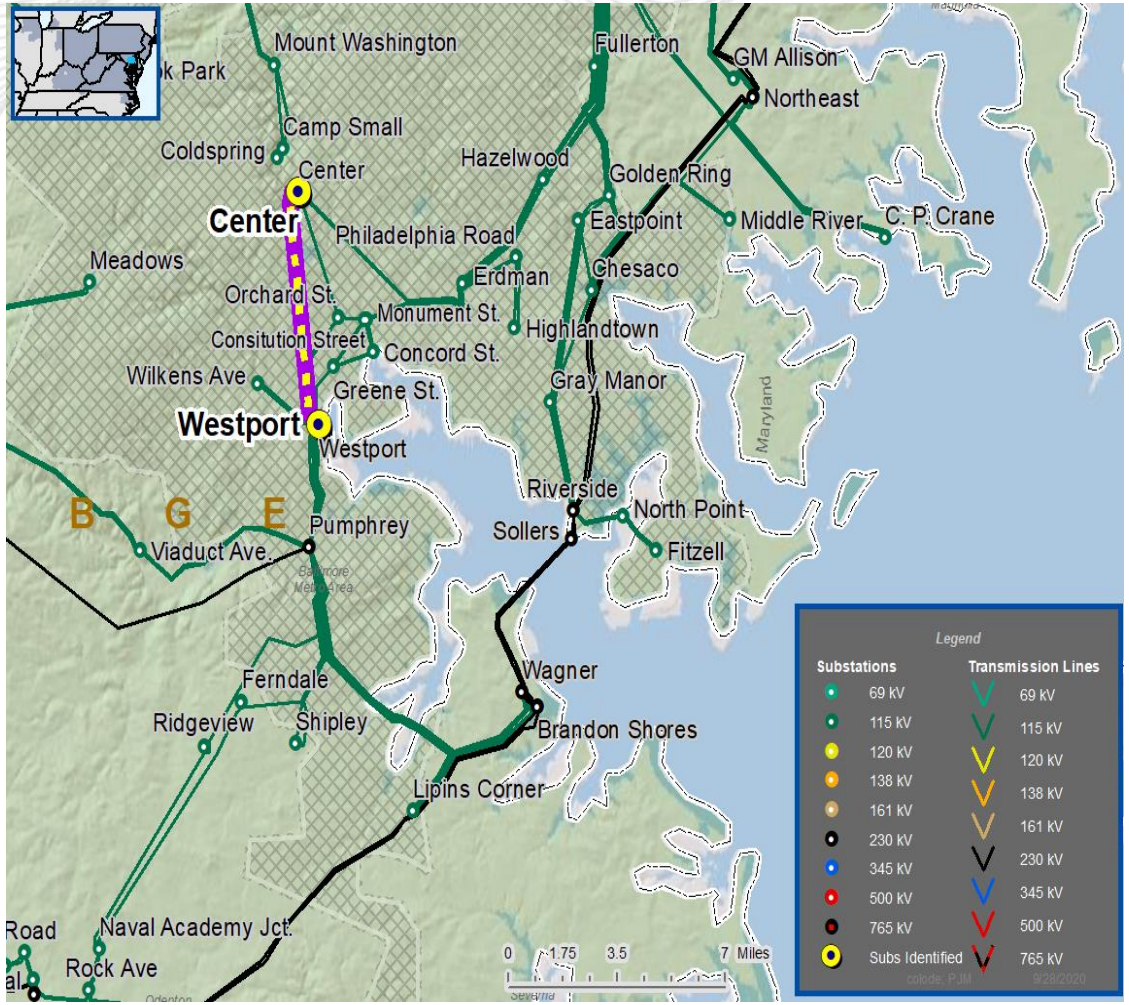
334/360 WN/WE MVA

Proposed Solution:
Replace two relays at Center 115 kV Substation to increase ratings on the Westport to Center 115 kV (110552) circuit.

Estimated Cost: $0.025 M

Alternatives: N/A

Required In-Service: 6/1/2025



DPL Transmission Zone: Baseline

Process Stage: First 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

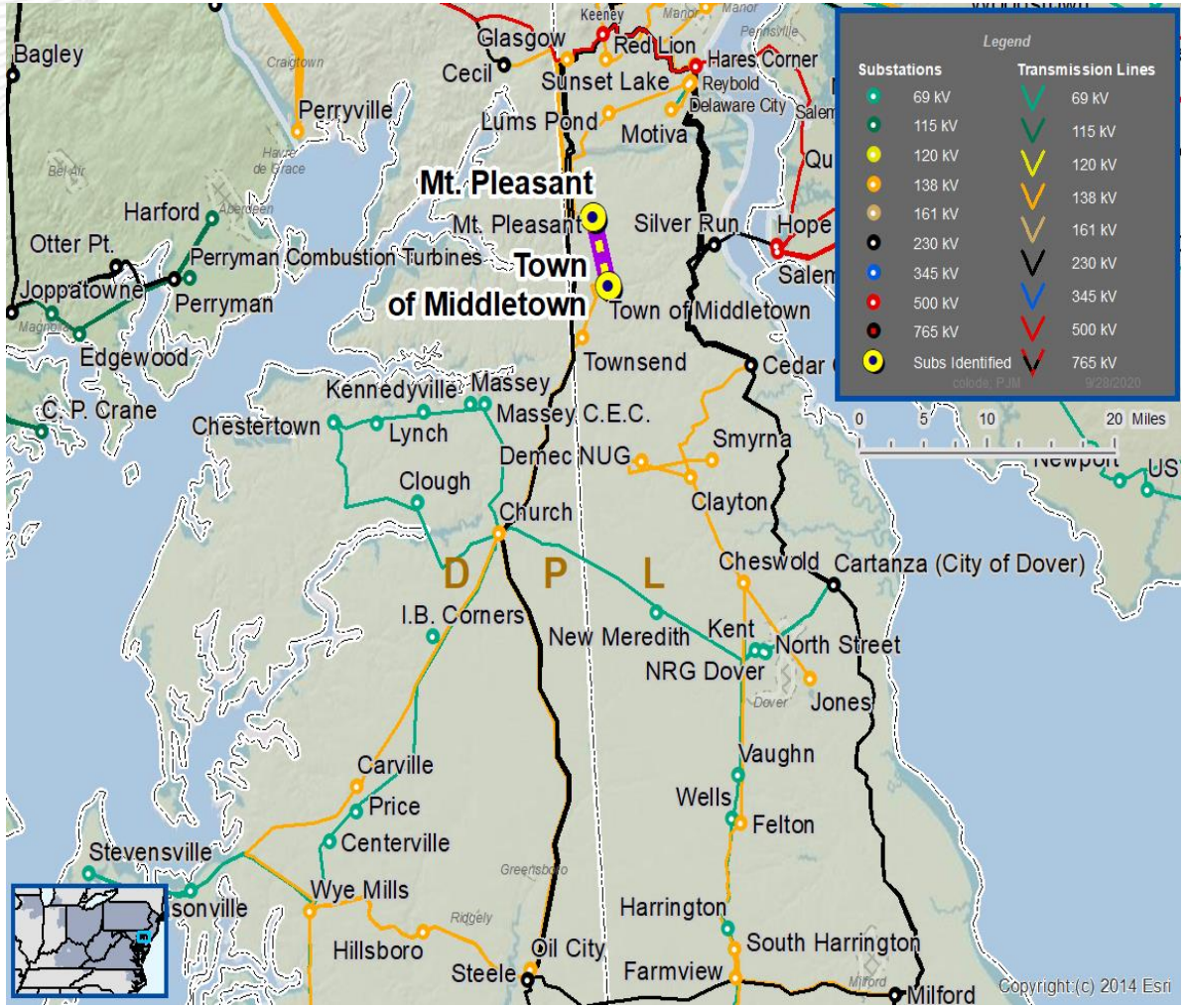
Proposed Facility Rating: 390SN/478SE MVA
449WN/478WE MVA

Proposed Solution:
Replace a disconnect switch at Middletown Tap and reconductor a short span of Mt. Pleasant - Middletown Tap line

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



PPL Transmission Zone: Baseline

Process Stage: First 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

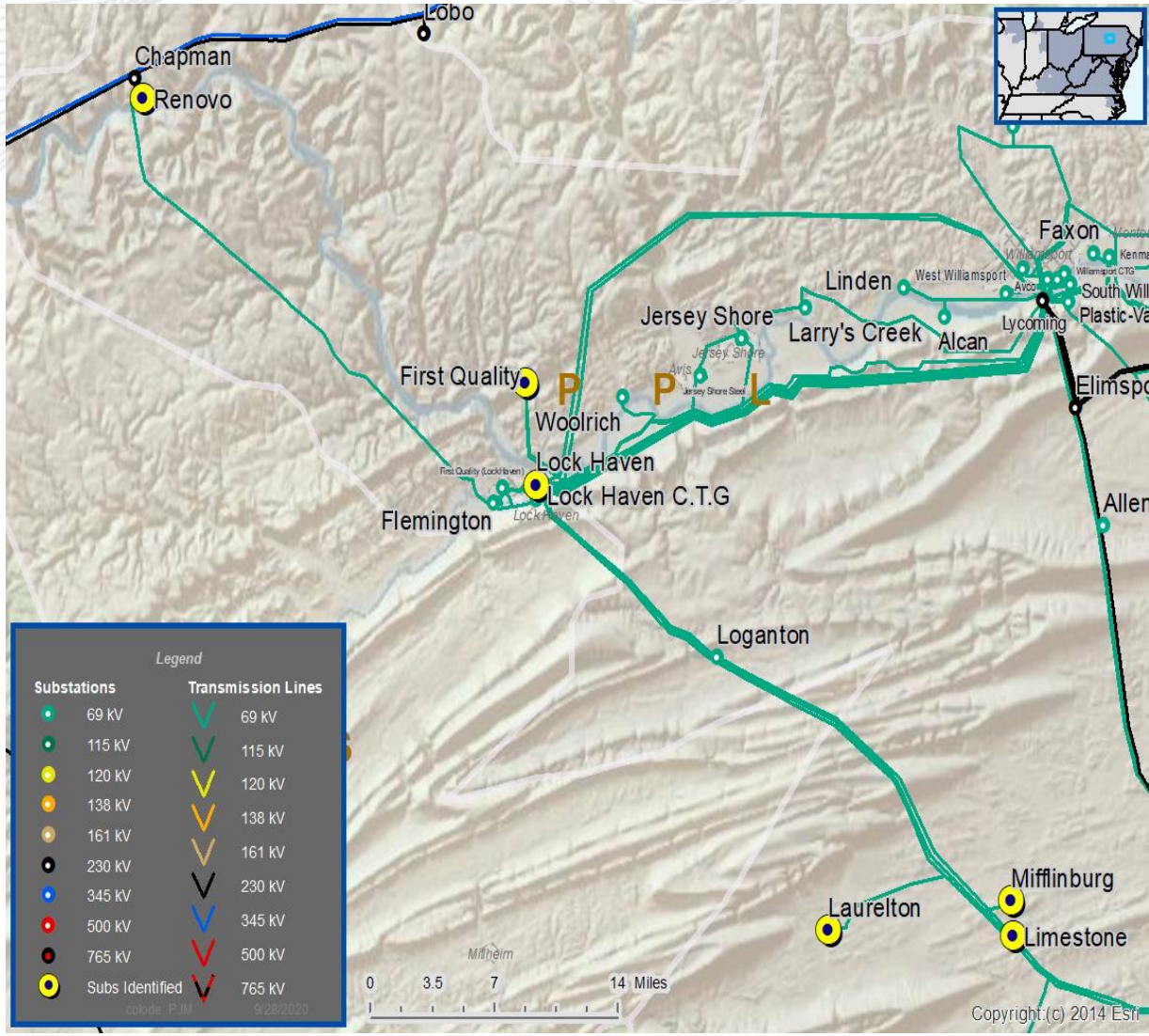
Proposed Solution:

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.

Estimated Cost: $1.9 M

Alternatives: N/A

Required In-Service: 6/1/2025



Penelec Transmission Zone: Baseline

Process Stage: First 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 – Mayersdale North 115 kV line. The Mayersdale, 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

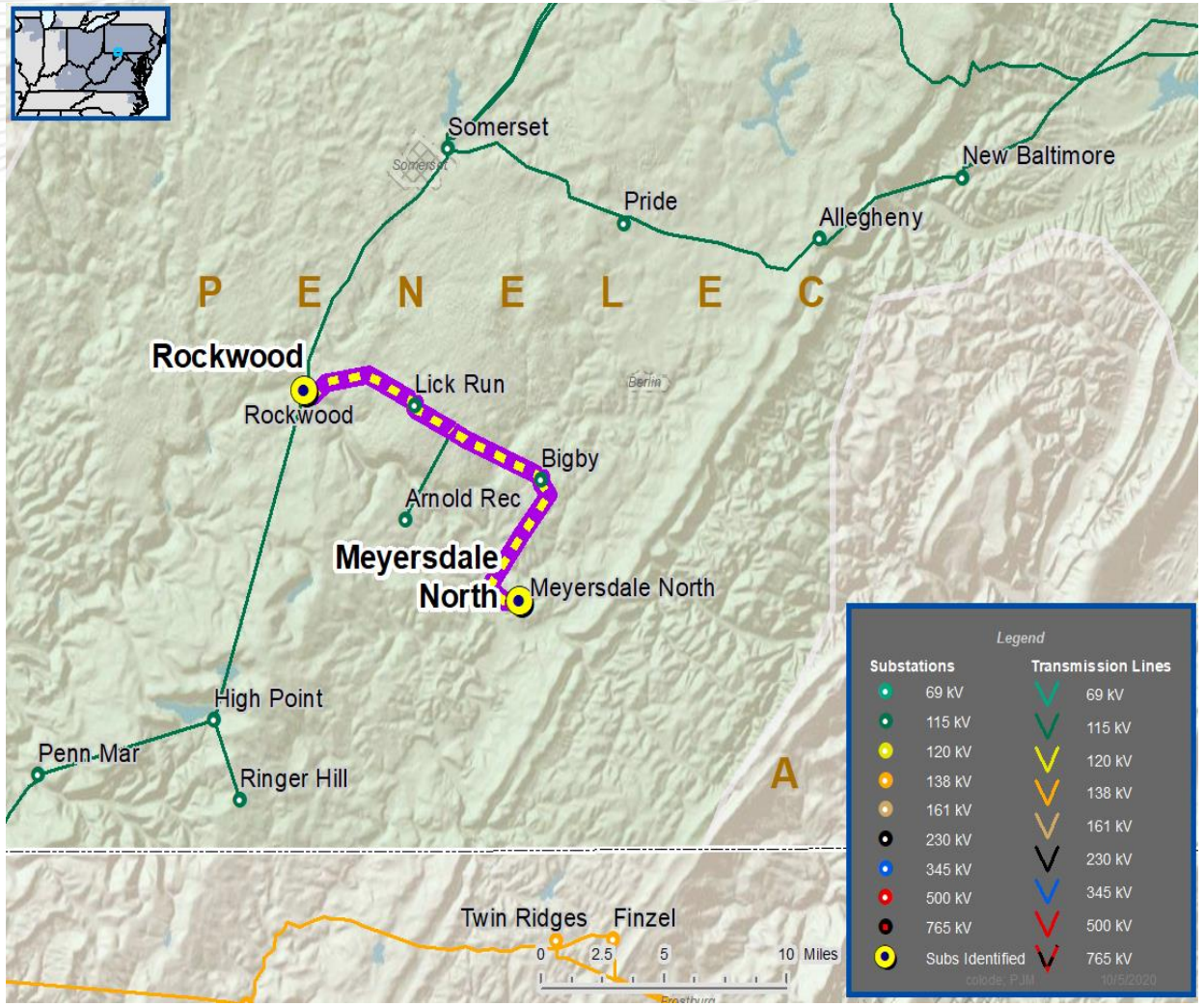
Proposed Facility Rating: N/A

Proposed 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.

Estimated Cost: $4.9 M

Alternatives: N/A

Required In-Service: 6/1/2025



Penelec Transmission Zone: Baseline

Process Stage: First 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

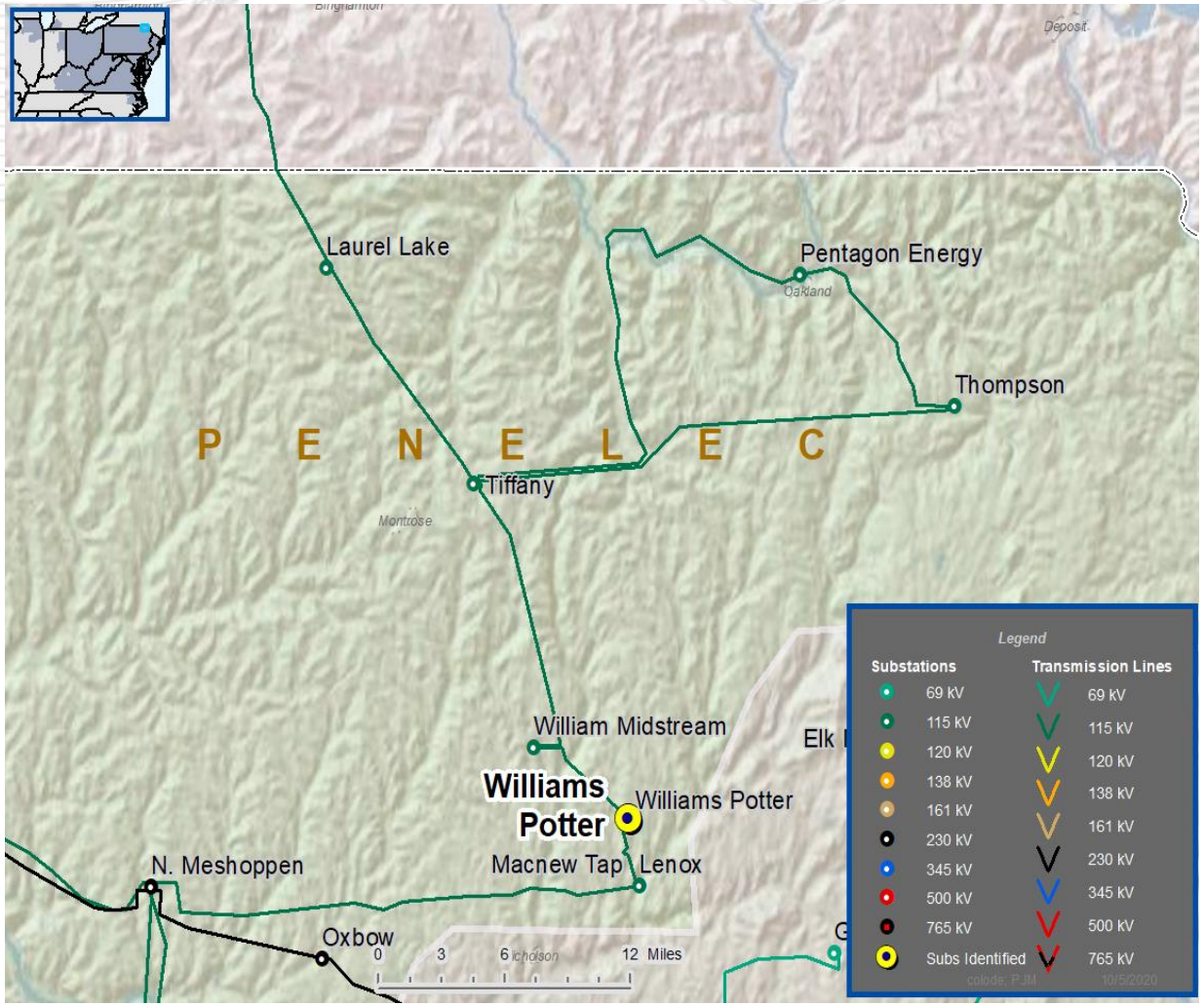
Proposed Facility Rating: N/A

Proposed Solution:
Construct a new breaker-and-a-half 115 kV 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.

Estimated Cost: $23.2 M

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

Required In-Service: 6/1/2025



Penelec Transmission Zone: Baseline

Process Stage: First 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

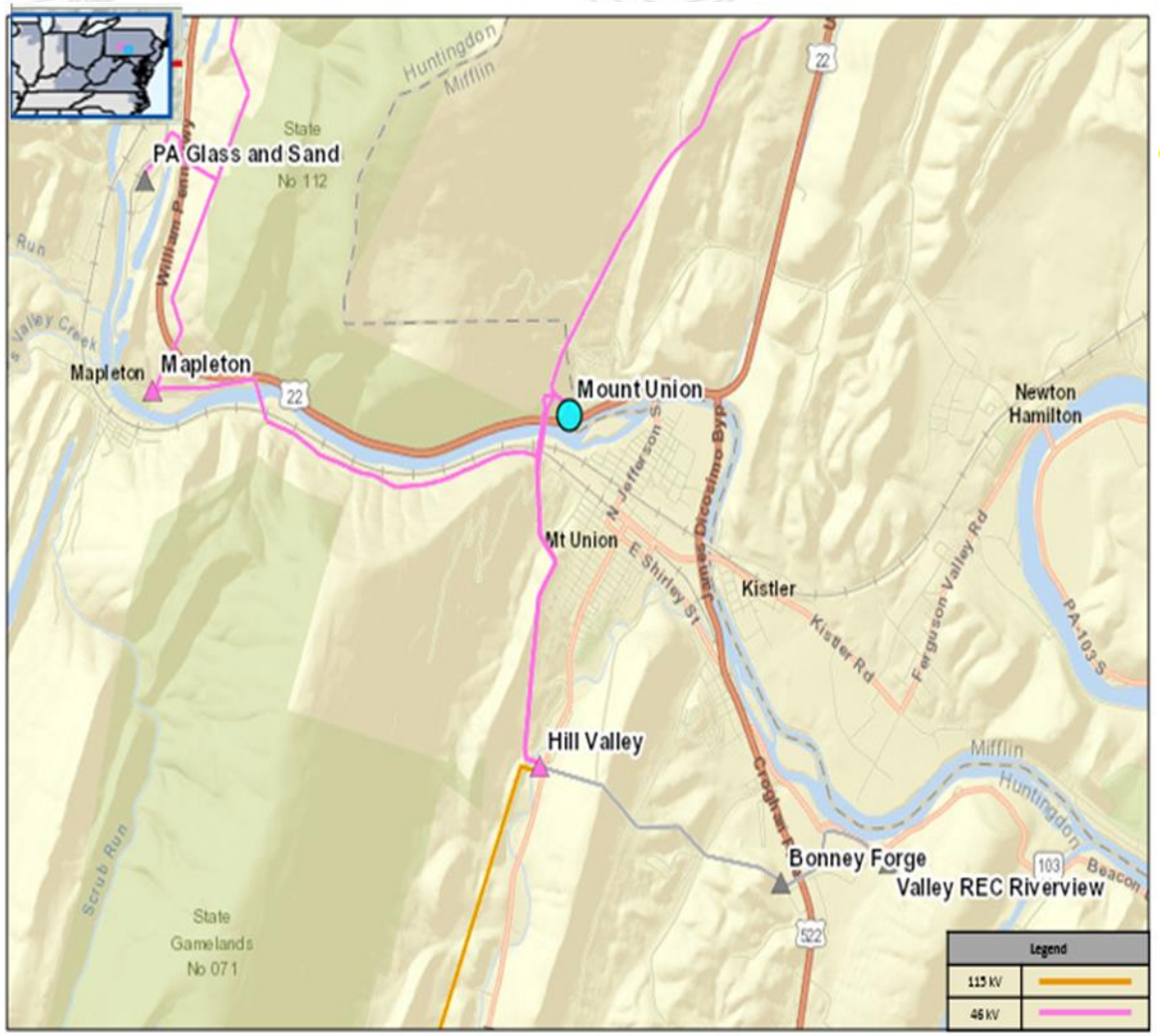
Proposed Solution:

Install two 46 kV 6.12 MVAR capacitors at Mt Union.

Estimated Cost: $4.0 M

Alternatives: N/A

Required In-Service: 6/1/2025



Short Circuit Project

JCPL Transmission Zone Baseline
Freneau 34.5 kV Breakers

Process Stage: First review

Criteria: First Energy FERC Form 715

Assumption Reference: First Energy Transmission Planning Criteria

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

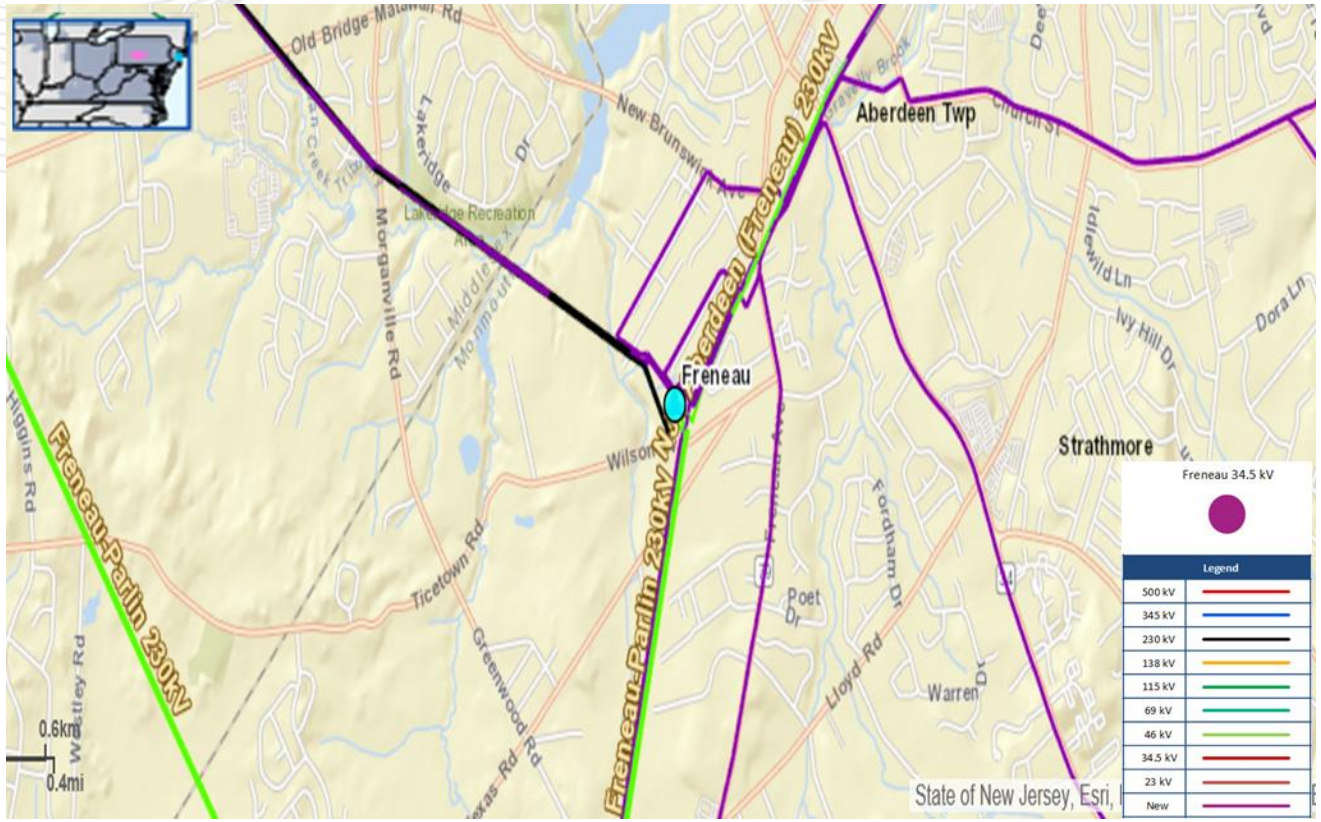
Proposal Window Exclusion: Below 200 kV

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

Proposed Solution:
Replace (14) Freneau overdutied 34.5 kV breakers with 63 kA rated equipment.

Estimated Cost: $5.7 M
Alternatives: None

Required In-Service Date: 6/1/2025



JCPL Transmission Zone Baseline
Whippany 34.5 kV Breakers

Process Stage: First review

Criteria: First Energy FERC Form 715

Assumption Reference: First Energy Transmission Planning Criteria

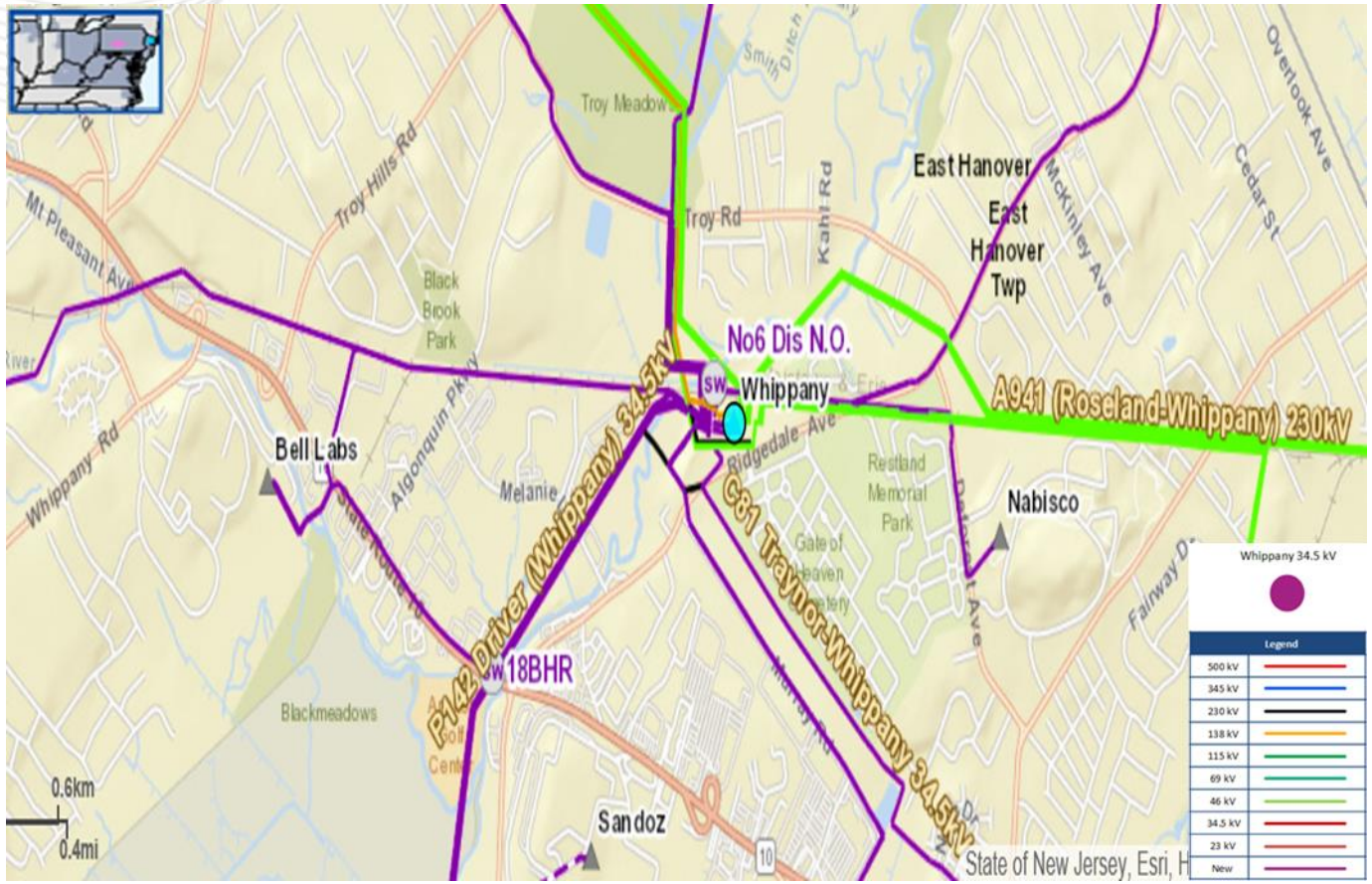
Model used for analysis: 2020 Series -2025 Short circuit model

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

Proposed Solution:
Replace (7) Whippany overdutied 34.5 kV breakers with 50 kA rated equipment.

Estimated Cost: $8.67 M
Alternatives: None

Required In-Service Date: 6/1/2025



Penelec Transmission Zone Baseline
Altoona 46 kV Breakers

Process Stage: First review

Criteria: First Energy FERC Form 715

Assumption Reference: First Energy Transmission Planning Criteria

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

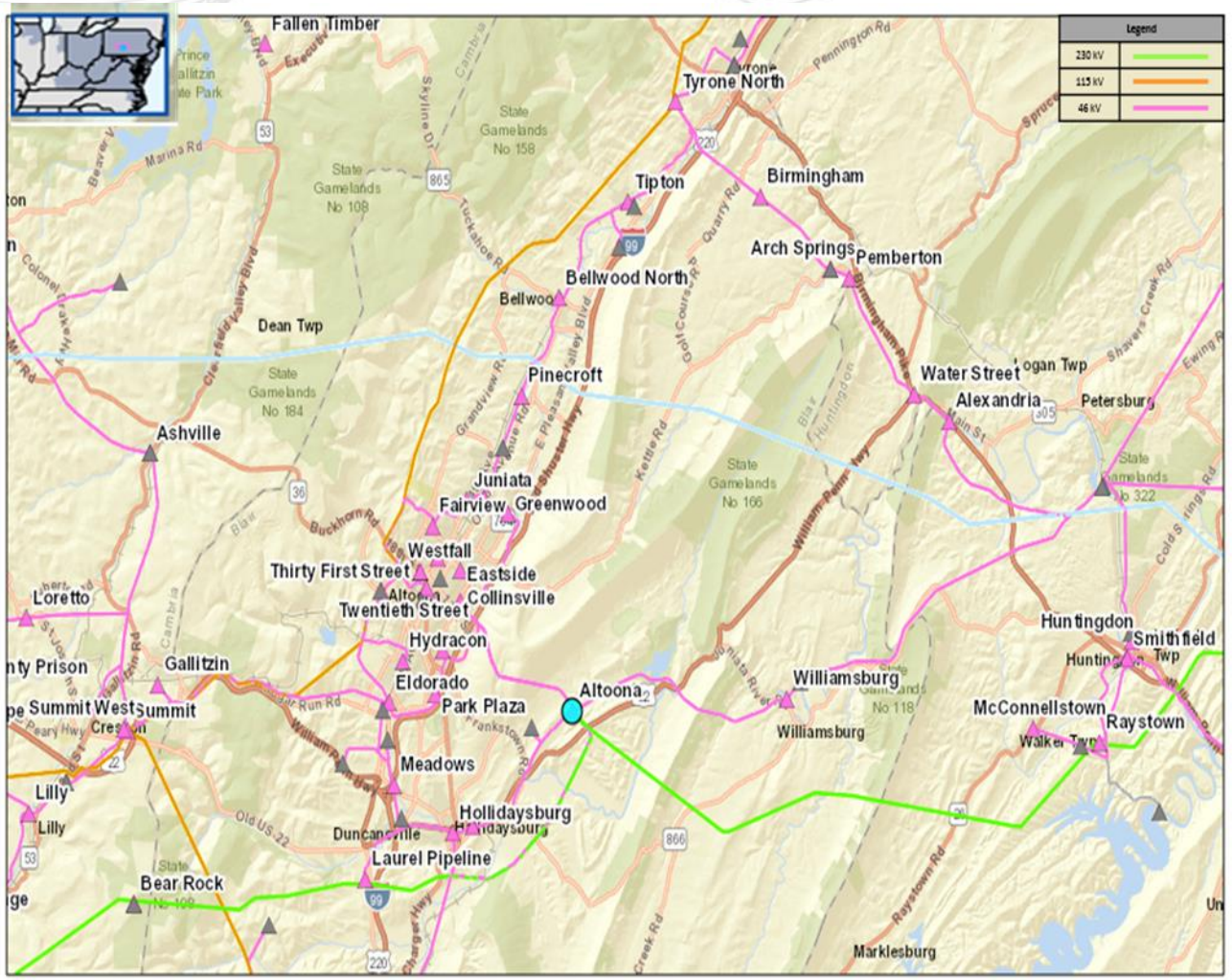
Proposal Window Exclusion: Below 200 kV

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

Proposed Solution:
Replace the existing Williamsburg, ALH (Hollidaysburg) and bus section breaker at the Altoona substation with a 40 kA rated equipment.

Estimated Cost: $1.7M
Alternatives: None

Required In-Service Date: 6/1/2025



Penelec Transmission Zone Baseline
Huntingdon 46 kV Breaker

Process Stage: First 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

Proposed Solution:
Replace the existing No. 2 cap bank breaker at Huntingdon substation with 40 kA rated equipment.

Estimated Cost: $0.8M
Alternatives: None

Required In-Service Date: 6/1/2025

Questions?

Upcoming SRRTEP Meetings

2020

- The remaining 2020 Mid-Atlantic SRRTEP meetings are as followed
- 11/18, 12/16

Revision History

V1 – 10/9/2020 – Original slides posted