Reliability Update – MAAC Region

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Recommended Solutions
Baseline Reliability Projects

DPL Transmission Zone: Baseline
The Reybold 138/69 kV transformer

Process Stage: Second Review

Criteria: Winter Generation Deliverability

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP Winter

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: The Reybold 138/69 kV transformer is overloaded for multiple contingencies.

Violations were posted as part of the 2024 Window 1: FG# - W1-GD-W10, FG# - GD-W112

Existing Facility Rating: 120SN/139E, 137WN/457WE MVA

Proposed Facility Rating: 140SN/174E, 159WN/196WE

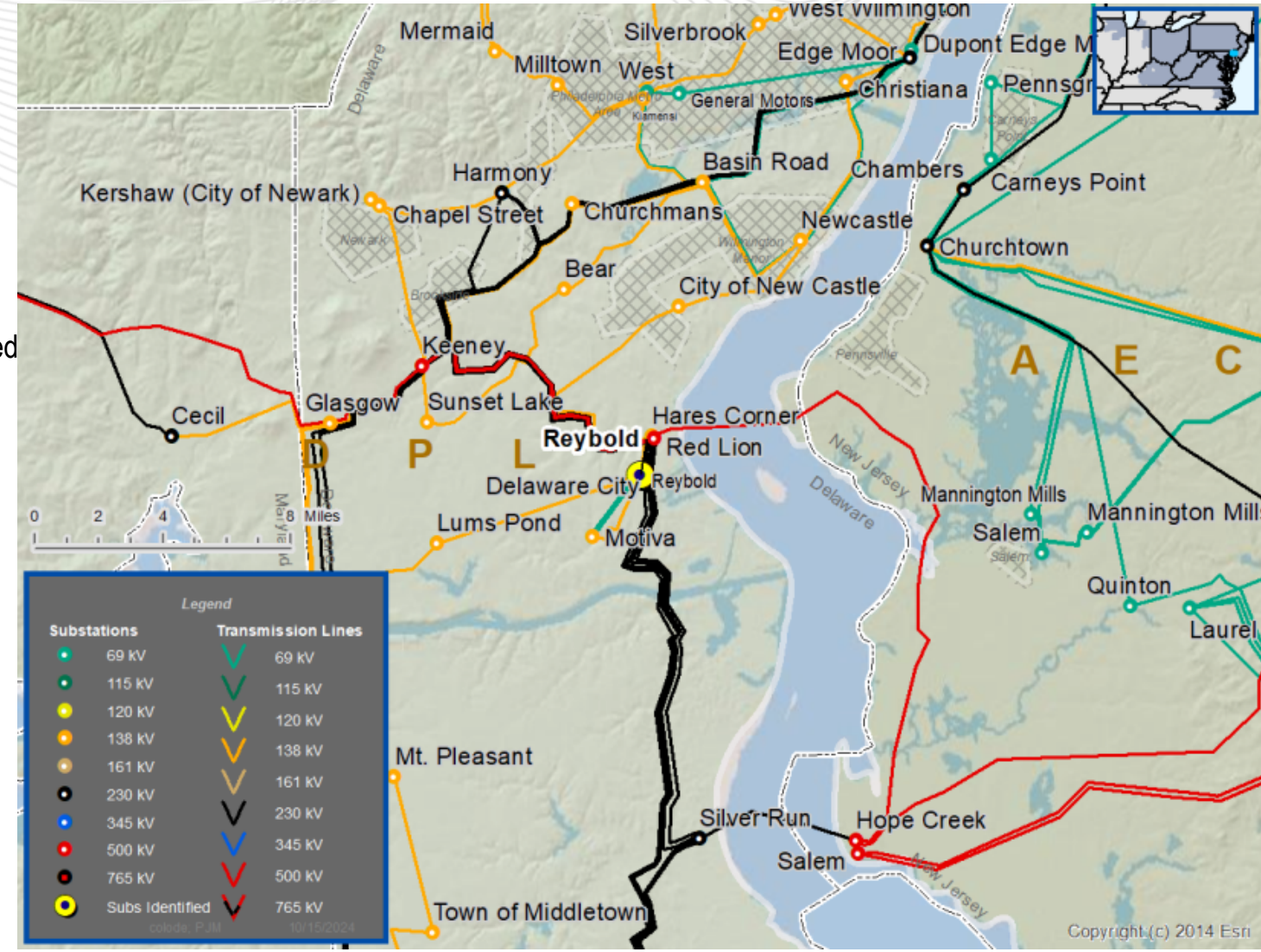
Recommended Solution:
Upgrade/Replace 138/69kV autotransformer, a 69kV breaker, two disconnects and move a takeoff structure at Reybold Substation. These upgrades will require a substation expansion to move the takeoff structure and a control house expansion to move the 69kV breaker relays from the Delaware City control house to the Reybold control house. (**b3865.1)**

Estimated Cost: $9.48 M

Alternatives

- N/A

Required In-Service: 12/31/2029



MetEd Transmission Zone: Baseline Yorkana and Windsor area

Process Stage: Second Review

Criteria: Summer and Winter Baseline Voltage

Assumption Reference: 2029 RTEP assumption

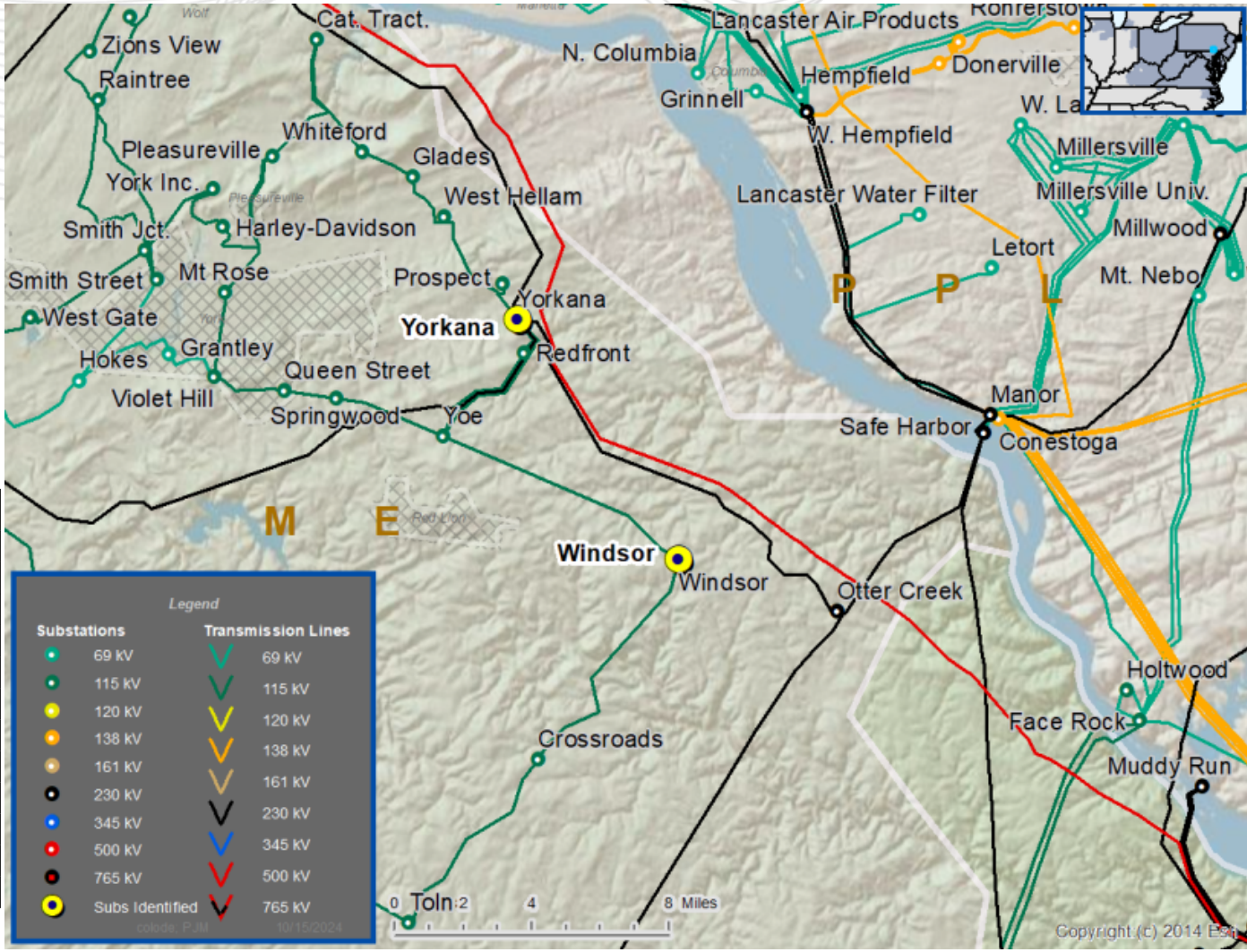
Model Used for Analysis: 2029 RTEP Summer and Winter

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: Voltage magnitude and drop violation on the 115 kV MetEd system in the Yorkana and Windsor vicinity for the loss of multiple contingencies.

Violations were posted as part of the 2024 Window 1:

2024-W1-N1-SVM769	2024-W1-N1-SVD15	2024-W1-N1-SVD28	2024-W1-N1-WVM24	2024-W1-N1-WVD12
2024-W1-N1-SVM770	2024-W1-N1-SVD16	2024-W1-N1-WVM12	2024-W1-N1-WVM25	2024-W1-N1-WVD13
2024-W1-N1-SVM771	2024-W1-N1-SVD17	2024-W1-N1-WVM13	2024-W1-N1-WVM26	2024-W1-N1-WVD14
2024-W1-N1-SVM772	2024-W1-N1-SVD18	2024-W1-N1-WVM14	2024-W1-N1-WVM27	2024-W1-N1-WVD15
2024-W1-N1-SVM773	2024-W1-N1-SVD19	2024-W1-N1-WVM15	2024-W1-N1-WVM28	2024-W1-N1-WVD16
2024-W1-N1-SVM774	2024-W1-N1-SVD20	2024-W1-N1-WVM16	2024-W1-N1-WVM29	2024-W1-N1-WVD17
2024-W1-N1-SVD8	2024-W1-N1-SVD21	2024-W1-N1-WVM17	2024-W1-N1-WVD5	2024-W1-N1-WVD18
2024-W1-N1-SVD9	2024-W1-N1-SVD22	2024-W1-N1-WVM18	2024-W1-N1-WVD6	2024-W1-N1-WVD19
2024-W1-N1-SVD10	2024-W1-N1-SVD23	2024-W1-N1-WVM19	2024-W1-N1-WVD7	2024-W1-N1-WVD20
2024-W1-N1-SVD11	2024-W1-N1-SVD24	2024-W1-N1-WVM20	2024-W1-N1-WVD8	2024-W1-N1-WVD21
2024-W1-N1-SVD12	2024-W1-N1-SVD25	2024-W1-N1-WVM21	2024-W1-N1-WVD9	2024-W1-N1-WVD22
2024-W1-N1-SVD13	2024-W1-N1-SVD26	2024-W1-N1-WVM22	2024-W1-N1-WVD10	
2024-W1-N1-SVD14	2024-W1-N1-SVD27	2024-W1-N1-WVM23	2024-W1-N1-WVD11	



MetEd Transmission Zone: Baseline Yorkana and Windsor area

Process Stage: Second Review

Recommended Solution:

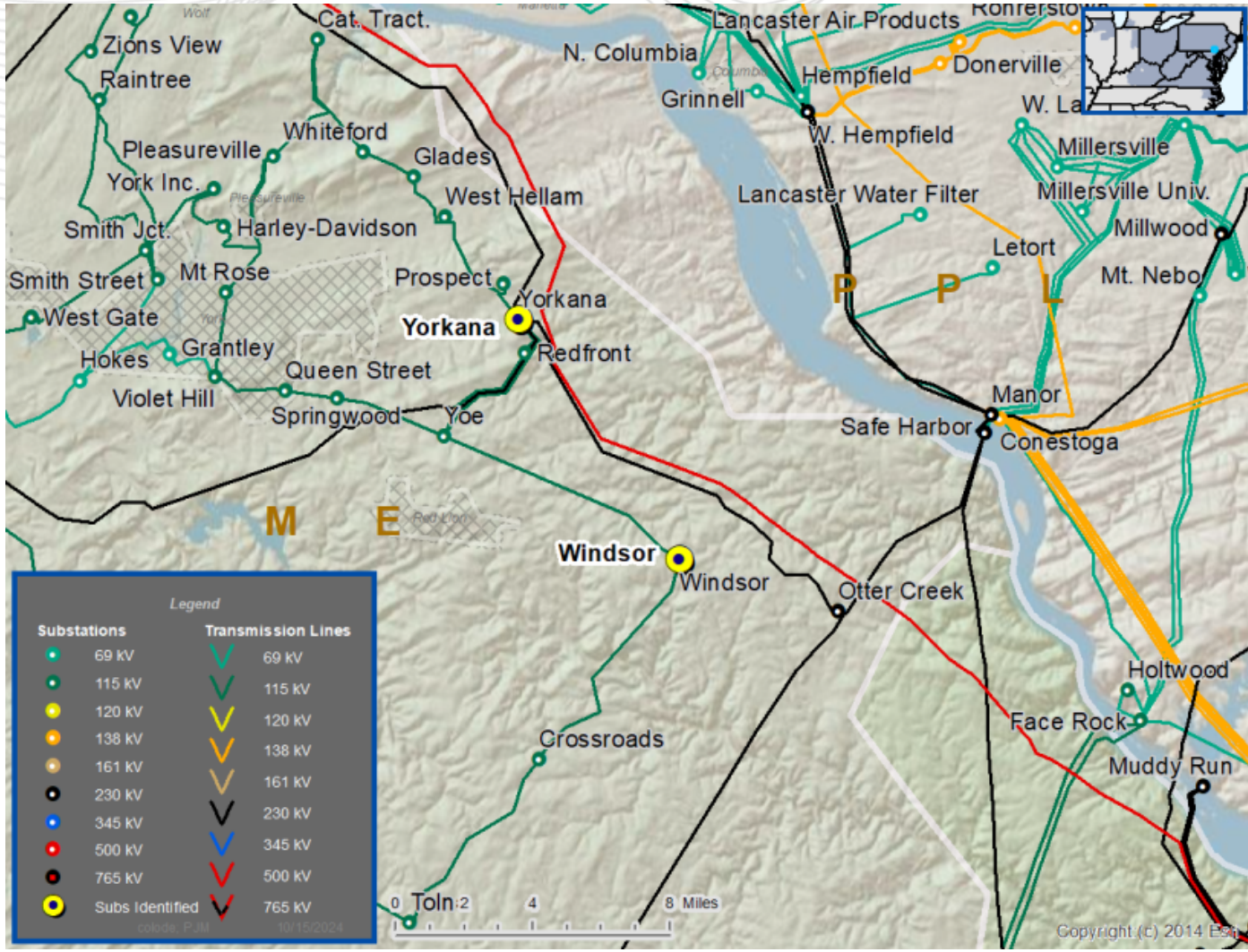
- Rebuild the Windsor Substation 115 kV yard to convert from a straight bus configuration into a six-breaker ring bus configuration. Install two (2) 21.62 MVAR, 115 kV capacitor banks. **(b3858.1)**
- Rebuild the Yorkana Substation 115 kV yard converting from a straight bus configuration to a (9) breaker, breaker-and-a-half configuration. **(b3858.2)**

Estimated Cost: $33.1 M

Alternatives

Rebuilding the Glades Substation 115 kV yard and installing a 115 kV capacitor bank was considered. This option was not pursued due to potential overloads on the Jackson - Bair 115 kV Line for stuck breaker and bus fault contingencies at Yorkana Substation that de-energize the two 230/115 kV transformers, the 115 kV capacitor bank, the Glades - Yorkana 115 kV Line, and the Glades - Windsor 115 kV Line.

Required In-Service: 6/1/2029



PECO Transmission Zone: Baseline
The Schuylkill 230/69 kV transformer

Process Stage: Second Review

Criteria: PECO FERC Form 715

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: The Schuylkill 230/69 kV #7 Transformer is overloaded for single contingency.

Violations were posted as part of the 2024 Window 1: FG# - 2024-W1-PECO-T1

Existing Facility Rating: 193SN/223E, 230WN/256WE MVA

Proposed Facility Rating: 250SN/288E, 297WN/330WE

Recommended Solution:

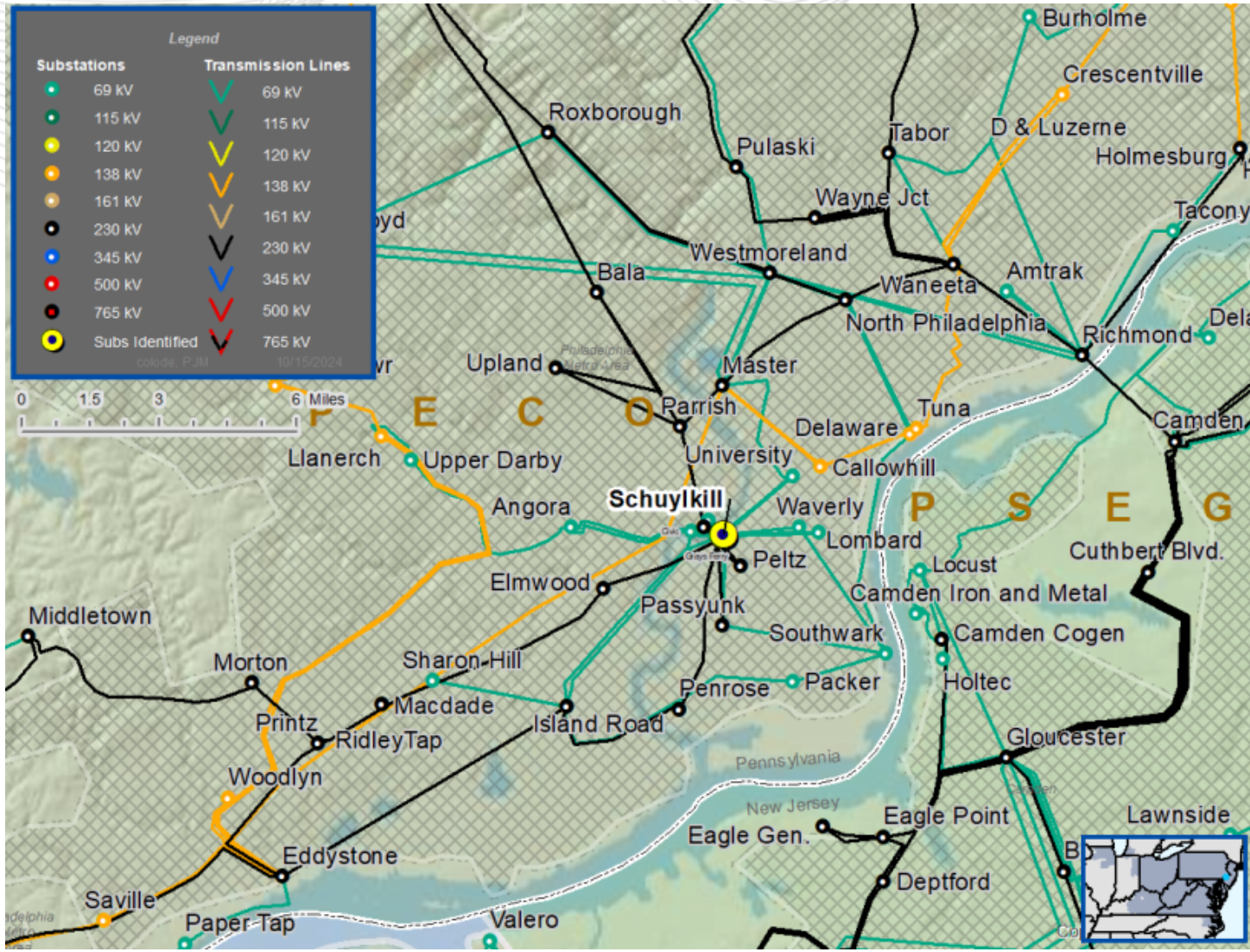
Schuylkill Substation Upgrades. Change tap ratios on two (2) CTs at Schuylkill Substation **(b3863.1)**

Estimated Cost: $0.1 M

Alternatives

- N/A

Required In-Service: 12/31/2029



PECO Transmission Zone: Baseline
Richmond - Tacony 69 kV

Process Stage: Second Review

Criteria: Summer Baseline Thermal

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP Summer

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: The Richmond - Tacony 69 kV line is overloaded for line fault stuck breaker contingency.

Violations were posted as part of the 2024 Window 1: FG# - 2024W1-N1-STNEW13

Existing Facility Rating: 40SN/72E, 53WN/83WE MVA

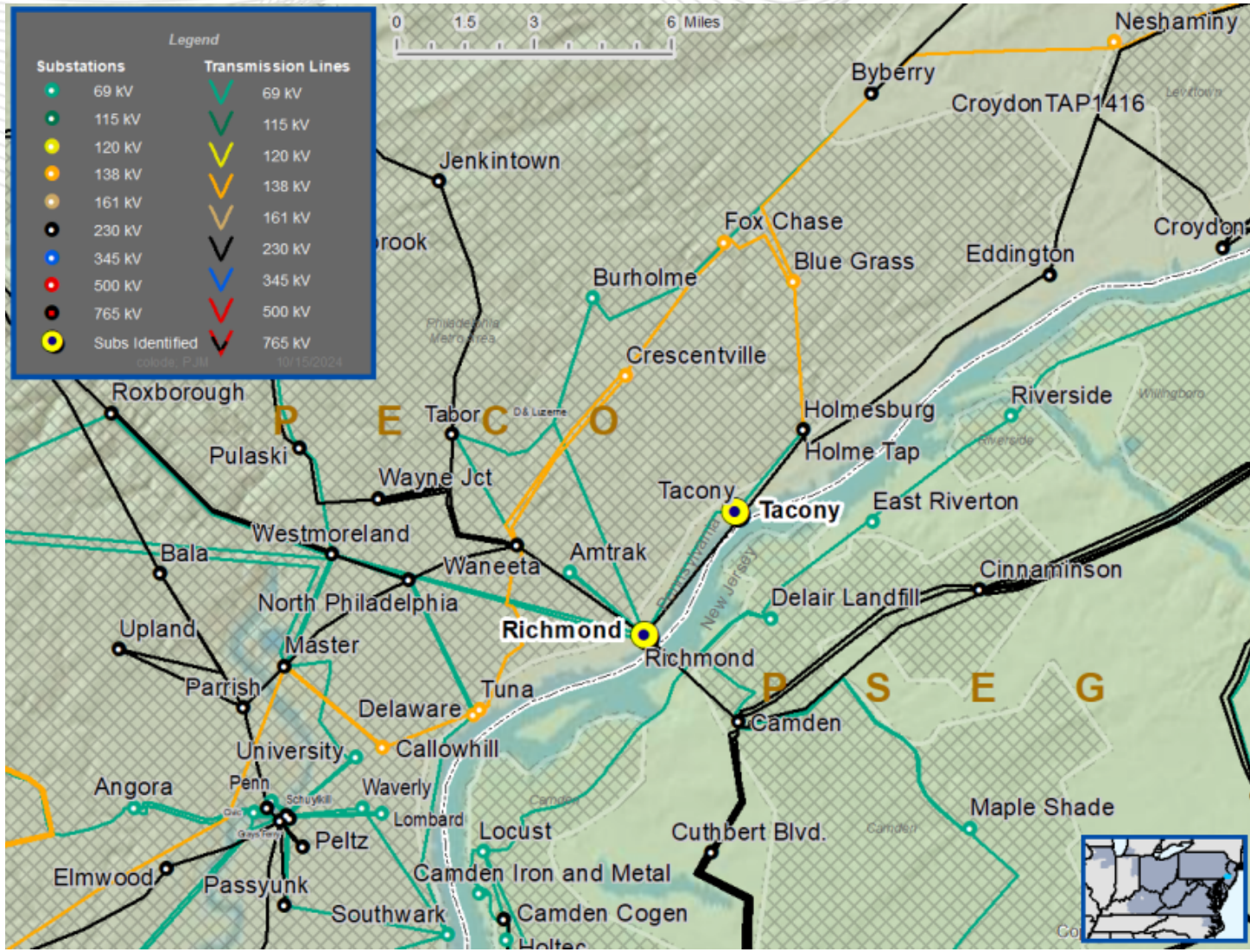
Proposed Facility Rating: 81SN/84E, 92WN/96WE

Recommended Solution:
Replace station cable at Richmond 69 kV **(b3864.1)**

Estimated Cost: $0.175 M

Alternatives
- N/A

Required In-Service: 6/1/2029



PSEG Transmission Zone: Baseline Penhorn to Union City 69 kV

Process Stage: Second Review

Criteria: PSEG FERC Form 715

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP Summer

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: The Penhorn – Union City 69kV line is overloaded for N-1-1 contingency.

Violations were posted as part of the 2024 Window 1: FG# - 2024W1-PSEG-T1

Recommended Solution:

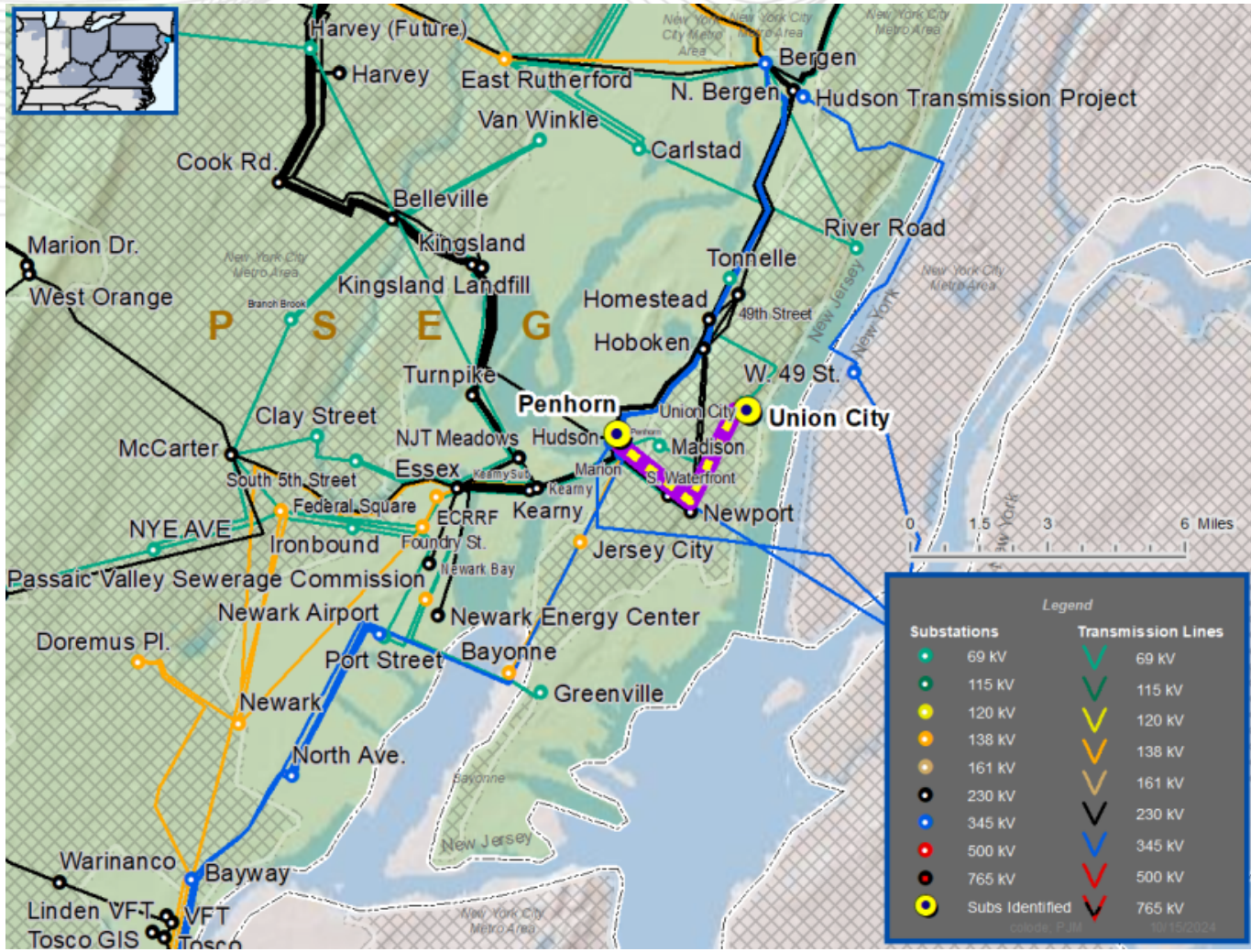
- Carlstadt to Penhorn 69kV : Cut existing Carlstadt to River Road 69kV line and extend Carlstadt line side to Penhorn 69kV. Extend the other end of the line by constructing a new portion and connecting it to Kingsland 69kV Switch. **(b3868.1)**
- Tonnelle to Kingsland Switch 69kV: Extend the other end of L-636 to Kingsland Switch by constructing new 5.5 miles portion utilizing existing I-2314 Transmission towers from H-A 5/4 to H-A 2/3. New 69kV line to be routed along County Ave pass Secaucus Rd in Secaucus NJ. **(b3868.2)**
- Union City to River Road 69kV: Reconfigure former River Road to Carlstadt 69kV and Tonnelle Ave to Union City 69kV lines at the intersection Tonnelle Ave and Granton Ave in North Bergen, NJ. by connecting Union City to River Road and Tonnelle Ave to Kingsland. **(b3868.3)**

Estimated Cost: $46 M

Alternatives

Reconfigure 69kV lines by connecting Union City to River Rd and Tonnelle Ave to Carlstadt. Construct a 69kV line from Kingsland 69kV Switch to a tap of the Tonnelle Ave to Carlstadt line. This alternative provided less margin as compared to the selected project.

Required In-Service: 6/1/2029



PSEG Transmission Zone: Baseline
Bergen 138 kV series reactors

Process Stage: Second Review

Criteria: Winter Baseline Spare Equipment

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP Winter

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: For the outage of the Bergen series reactors, the normally open bypass switches have to be closed to keep the Bergen – Fairlawn and Bergen – East Rutherford 138 kV circuits operational. As a result, several thermal violations have been identified on the 138kV line from Bergen to Fairlawn (M-1339) and/or on the 138kV line from Bergen to East Rutherford resulting from several N-1 contingencies.

Violations were posted as part of the 2024 Window 1: FG# - 2024W1-SE-WT1, 2024W1-SE-WT2

Recommended Solution:

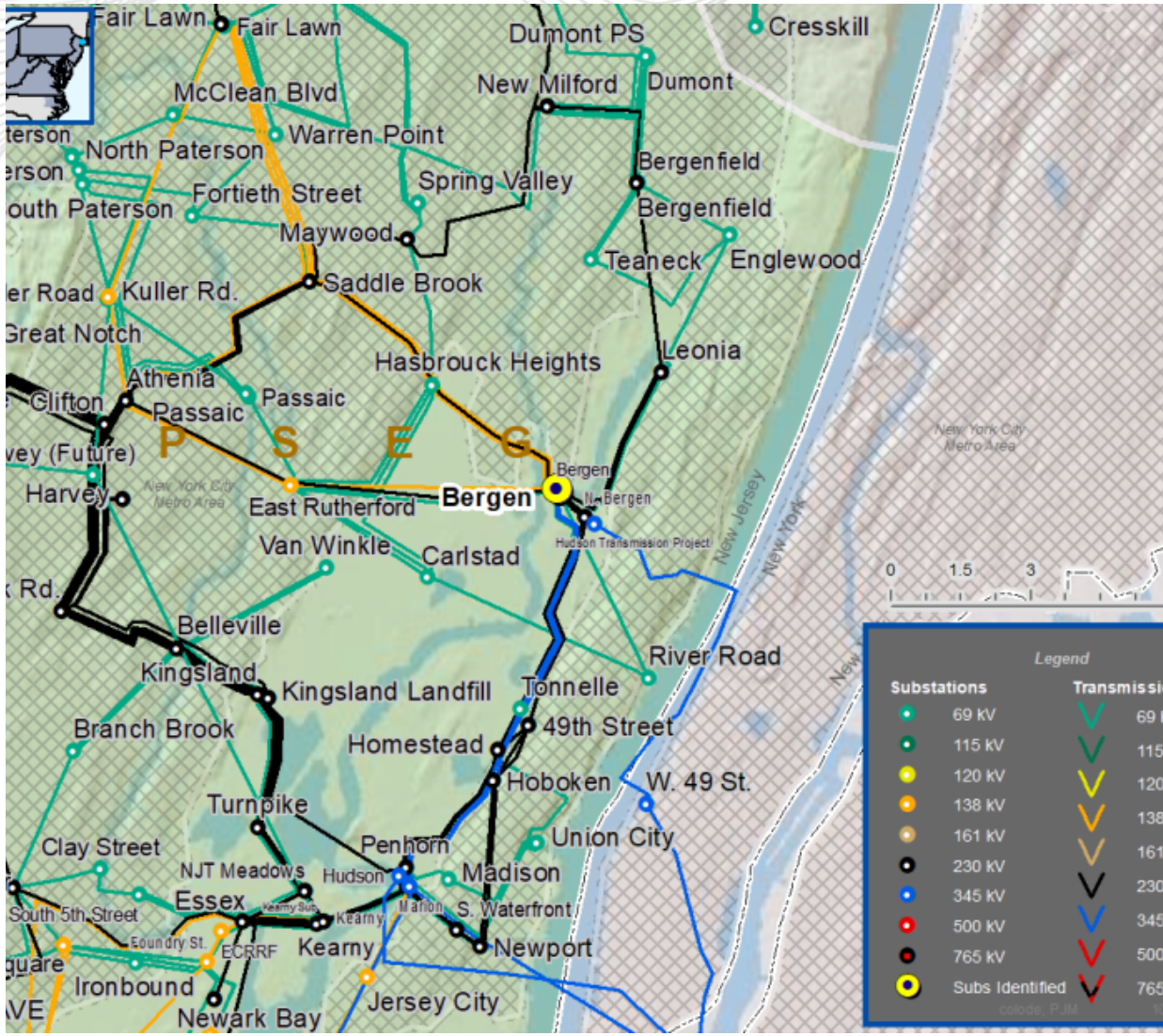
- Relocate the Bergen Gen #1 point of interconnection from Bergen 138kV to Bergen 345kV GIS through the existing 345/138kV transformer **(b3869.1)**
- Remove and retire the two (2) existing Bergen 138kV Series Reactors and associated ancillary equipment. **(b3869.2)**

Estimated Cost: $12.5 M

Alternatives

N/A

Projected In-Service: 9/1/2027



Short Circuit

JCPL Transmission Zone: Baseline Chester 34.5kV Breaker

Process Stage: Second Review

Criteria: FERC 715 Short Circuit

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP Short Circuit Model

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: The bus tie breaker at Chester Substation is overdutied at 25kA .

Violations were posted as part of the 2024 Window 1: FG# - W1-FE-SC3

Existing Breaker Rating: 25kA

Proposed Breaker Rating: 40kA

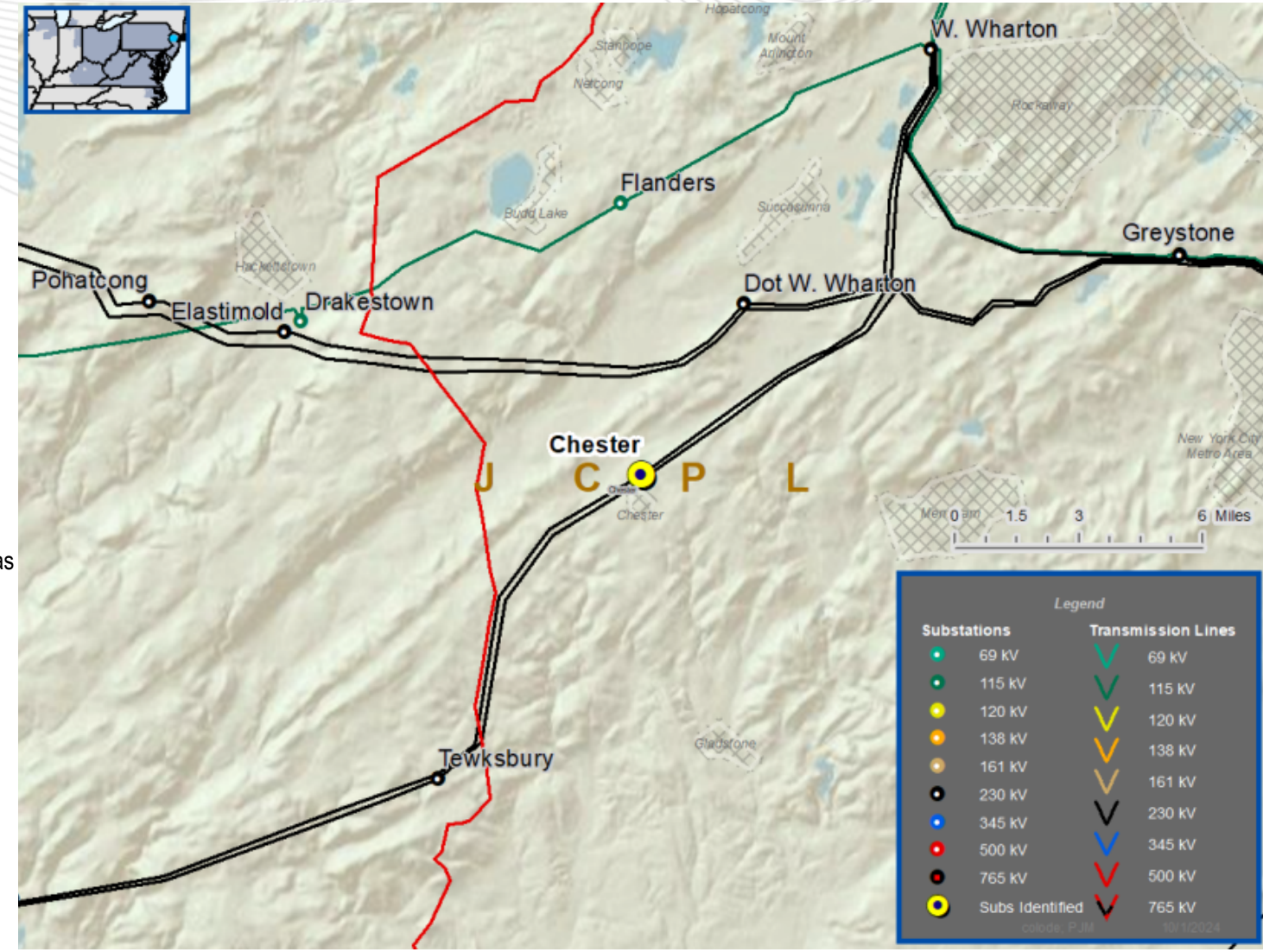
Recommended Solution:
Replace the 34.5 kV bus tie breaker at Chester Substation with a new 34.5 kV breaker that has an interruption capability of 40 kA. **(b3860.1)**

Estimated Cost: $0.541M

Alternatives

- N/A

Required In-Service: 12/31/2029



JCPL Transmission Zone: Baseline
Werner 34.5kV Breaker

Process Stage: Second Review

Criteria: FERC 715 Short Circuit

Assumption Reference: 2029 RTEP assumption

Model Used for Analysis: 2029 RTEP Short Circuit Model

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: The breaker at Werner Substation is overdutied at 25kA .

Violations were posted as part of the 2024 Window 1: FG# - W1-FE-SC1

Existing Breaker Rating: 25kA

Proposed Breaker Rating: 40kA

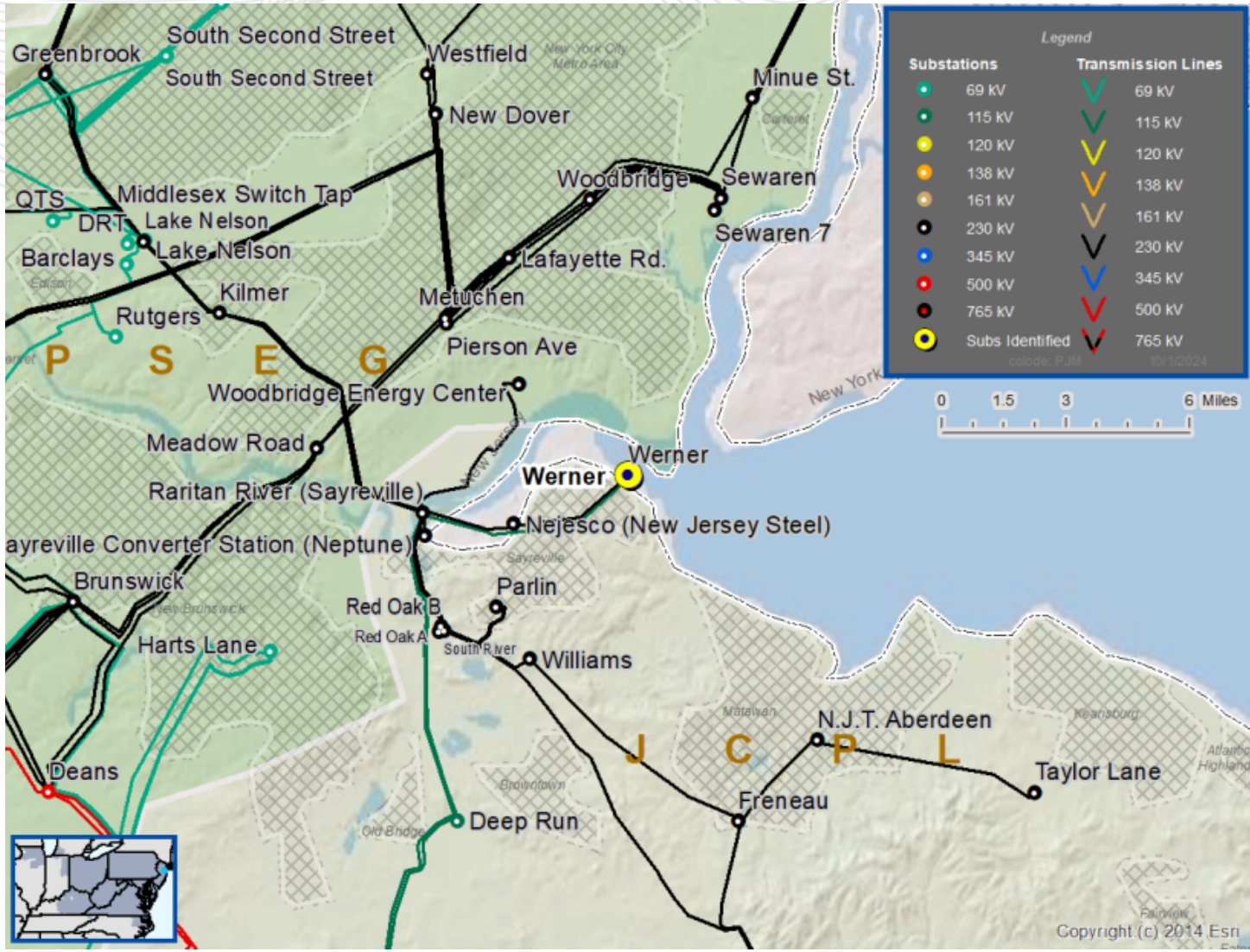
Recommended Solution:
Replace the W101 34.5 kV breaker at Werner Substation with a new 34.5 kV breaker that has an interruption capability of 40 kA. **(b3861.1)**

Estimated Cost: $0.541M

Alternatives

- N/A

Required In-Service: 12/31/2029



Questions?

Upcoming SRRTEP Meetings

2024

- The Next 2024 Mid-Atlantic SRRTEP meetings are as followed
- 12/12/2024

Revision History

V1 – 11/xx/2024 – Original slides posted