



Appendix: Previously Reviewed Baseline Upgrade Recommendations for the September 2020 PJM Board Review

Unit(s)	Transmission Zone	Requested Deactivation Date	PJM Reliability Status
Dickerson 1, 2, and 3 (545 MW)	PEPCO	08/13/2020	Reliability analysis Complete. Existing baseline revolves identified impact. Unit can retire as scheduled.

Problem Statement: Generation Deliverability for Dickerson 1, 2, and 3

Messick Rd. – Ridgeley 138 kV line is overloaded for the following scenarios.

- Breaker failure contingency for loss of Bedington - Black Oak 500 kV line and Bedington 500/138 kV Transformers 1&3
- Breaker failure contingency for loss of Bedington - Black Oak 500 kV line, Bedington 500/138 kV Transformers 2&4, and Capacitor Bank at Bedington 500 kV bus

Recommended Solution(B3158):

Replace line relays on the Ridgeley Terminal at Messick Rd. 138 kV Substation.

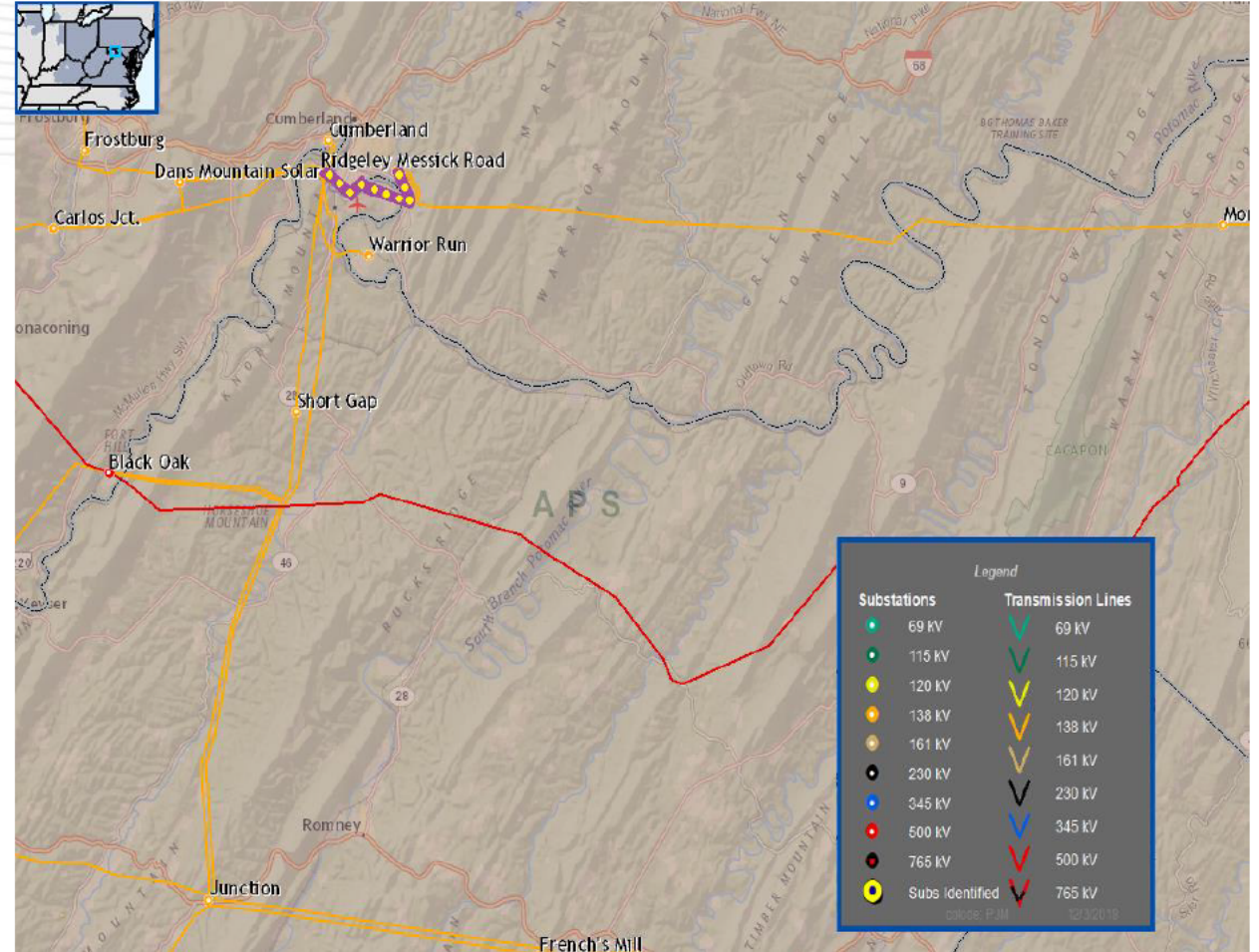
- Existing Scope Rating: 221 MVA SN /229 MVA SE
- New Scope Rating: 221 MVA SN /268 MVA SE

Estimated Project Cost: \$0.14M

Original Required IS Date: 12/1/2024

Newly required IS Date: 08/13/ 2020

Projected IS date: 06/01/2021



Existing b2900 Cost Increase and Scope Modification

Date Project Last Presented: PJM SRRTEP – South – 08/29/2017

Problem: (End of Life Criteria)

- 115kV Line #139 Everetts to Windsor has 336 ACSR conductor constructed on wood H-frames in the 1951 timeframe. Line #139 serves one delivery point Windsor DP (Roanoke EC). This line needs to be rebuilt to current standards or provide another source for Windsor DP based on Dominion’s “End of Life” criteria.
- Permanent MW load loss for removal of this line is 10 MW.

Original Solution:

- Build a new 230-115kV switching station connecting to 230kV network Line #2014 (Earleys – Everetts). Purchase land and install three single phase 30 MVA 230-115kV transformers (and a spare) with a high and low side breaker. Provide a 115kV source from the new station to serve Windsor DP. Remove Line #139 19.5 miles (15.5 miles Everetts – Windsor, 1.1 mile Windsor to idle line, 2.9 miles idle line). **(b2900)**

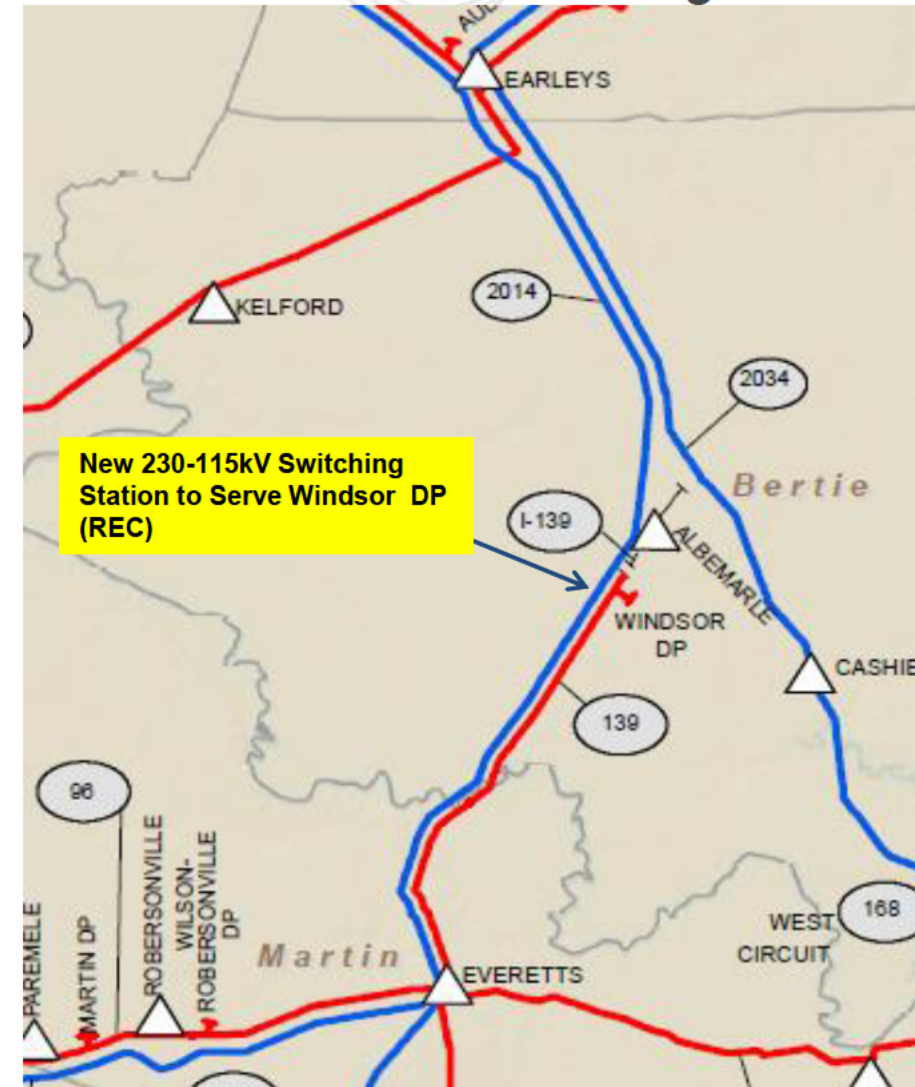
Revised Solution: **New**

- Build a new 230-115kV switching station connecting to 230kV network Line #2014 (Earleys – Everetts). Purchase land and install (2) three phase 84 MVA 230 -115kV transformers (one serve as a spare) with a high and low side breaker. Provide a 115kV source from the new station to serve Windsor DP. Remove Line #139 19.5 miles (15.5 miles Everetts – Windsor, 1.1 mile Windsor to idle line, 2.9 miles idle line).

- **Original Estimated Project Cost:** \$11.5 M
- **Revised Estimated Project Cost:** \$17.4 M **New**

Projected IS Date: 12/30/2022

Project Status: Engineering





Penelec Transmission Zone: Baseline Homer City 345/230 kV transformer

B2767 Scope change:

Problem Statement:

The Homer City 345/230 kV transformer “S” is overloaded for a line fault stuck breaker contingency loss of the Homer City – Armstrong 345 kV circuit and Homer City 345/230 kV transformer #N.

Violation identified as part of the 2016 2nd window.

Old scope:

Construct a new 345kV breaker string with three (3) 345kV breakers at Homer City and move the North autotransformer connection to this new breaker string. (2016_2-8G)

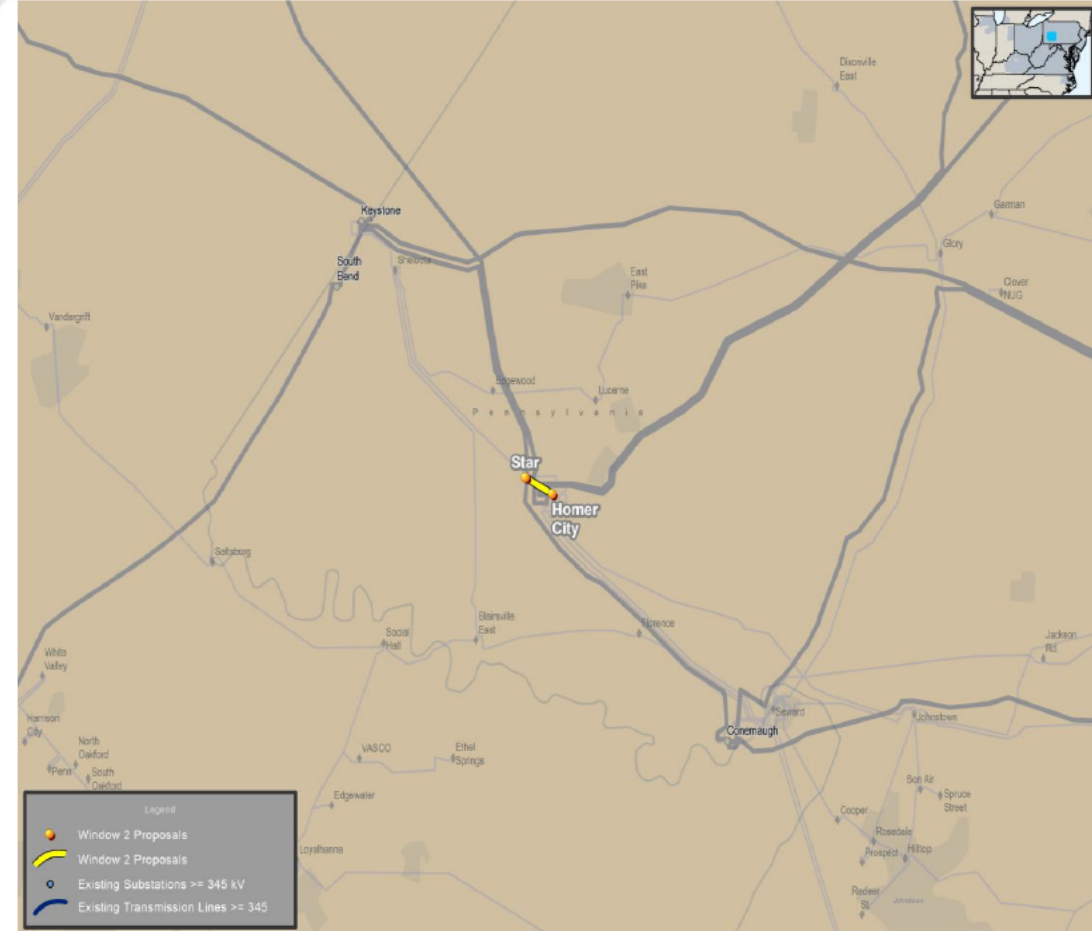
Old Estimated Project Cost: \$ 7.0 M

New scope:

Install one new 345 kV breaker and relocate the Homer City - Mainesburg 345 kV line terminal and Homer City 345/230 kV North transformer terminal

New Estimated Project Cost: \$ 7.0 M

Required IS Date: 6/1/2021





Baseline Scope change: B3100, Previously presented in 1/11/19 and 2/20/19 SRRTPEP

Problem Statement:

Planning Criteria Violations: In the 2022 PJM Winter RTEP, a TO Criteria violation was identified due to exceeding the thermal emergency rating (106% of the 66 MVA thermal emergency rating) on Chemical transformer #2 under a N-1-1 contingency condition involving the loss of the Chemical transformer #6 (which includes the loss of XFR #4, Chemical – Turner 138 kV line and Chemical – Ortin 138 kV, due to the loss of 138 kV bus #1) paired with the loss of the Capitol Hill – Chemical 138 kV line (which includes the loss of XFR #1, due to it's existing configuration on the line).

Selected Solution:

~~Replace 138kV MOAB switch "YY" with a new 138kV circuit switcher on the high side of Chemical XFR #6.~~

Relocate 138 kV circuit breaker W between 138 kV bus #1 extension and bus #2. Install a new 138 kV circuit breaker between bus #1 and bus #1 extension.

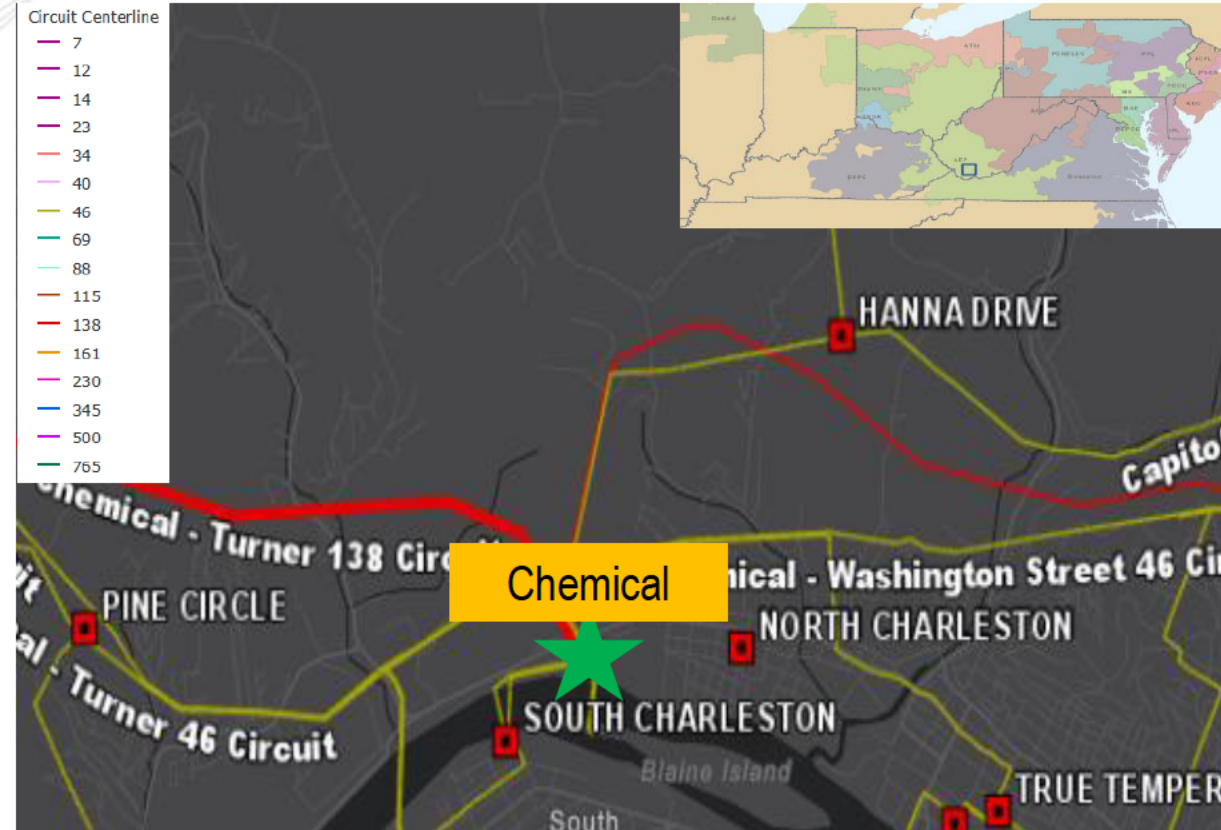
Total Estimated Transmission Cost: \$0.7M

Ancillary Benefits: The addition of the 138 kV circuit breaker W1 on the No. 6 200 MVA Transformer creates an improved operational configuration where no single event, such as a circuit breaker failure, would cause both 138 kV buses to be outaged which in turn would otherwise also outage all three of the 138 – 46 kV transformers at Chemical Station. This configuration that creates three 138 kV buses allows for a significantly increased flexibility to both schedule maintenance outages and withstand forced outages on the 138 kV equipment at Chemical Station.

Reason for the change: The baseline solution was re-visited as AEP completed engineering for the supplemental solution (AEP-2018-AP018 and AEP-2019-AP010). Instead of installing a switcher only on the high side of the transformer, AEP installs a breaker in series with existing breaker W to create another high side bus to serve the 138/46 kV transformer. The cost is the same; it only affects the layout of the high side of the station. As outlined in the ancillary benefits though, it allows for much greater operational flexibility.

Required In-service: 12/1/2022

Project Status: Scoping



Baseline Scope Change: B3116, Previously presented 2/20/19 and 5/20/19 in SRRTEP

Problem Statement:

Planning Criteria Violations: In the 2022 PJM Winter RTEP, TO Criteria violation due to exceeding thermal emergency rating (105% of the 35 MVA thermal emergency rating) on Mullens 138/46 kV transformer #4 under N-1-1 contingency condition involving the loss of the Bradley – Jehu Branch 138 kV line plus the loss of the Tams Mountain – Mullens 138 kV line.

Selected Solution:

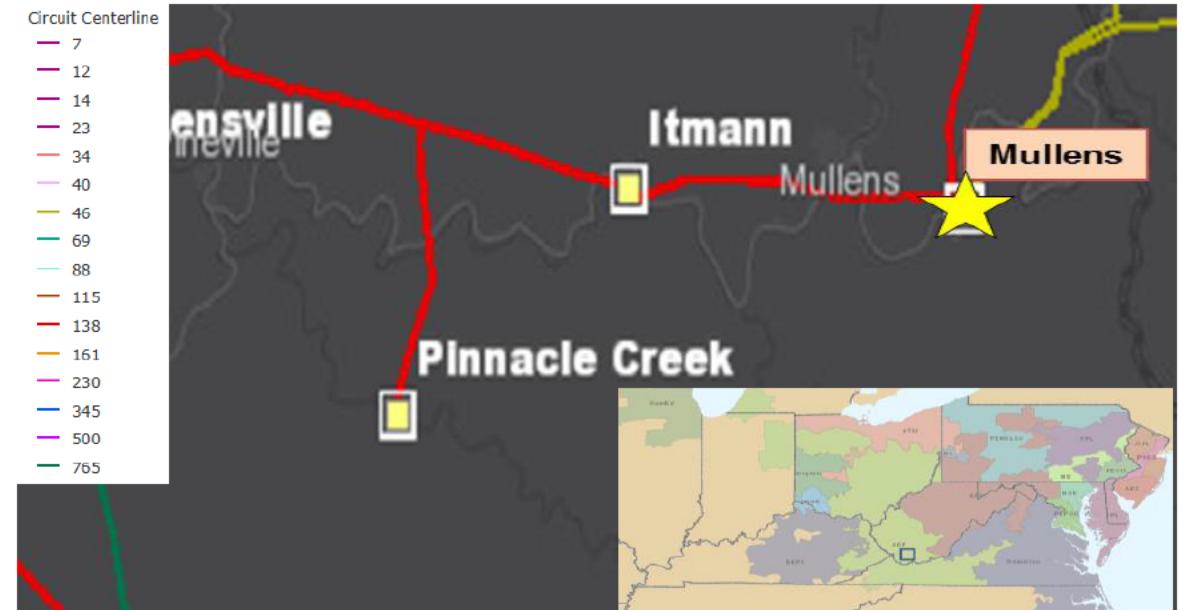
Replace existing 138/46kV 30 MVA transformer #4 and associated protective equipment with a with a new 138/46 kV 90 MVA transformer and associated protective equipment. **Install required high side transformer protection by replacing the existing ground switch MOAB with a new 138 kV high side circuit breaker.**

Total Estimated Transmission Cost: ~~\$3.0M~~ \$4.0M

Reason for the change: It's a scope clarification to include that piece of the baseline solution. When replacing the transformer, the existing high side ground switch MOAB will also be replaced with a circuit switcher. This is considered baseline work because it is required with the replacement of the transformer.

Projected In-service: 6/1/2022

Project Status: Scoping



Baseline Project Cancellation: B2594, Previously presented in 1/7/15 TEAC

Problem Statement:

TO criteria violation: The Brantly – Bridge S 69KV line is overloaded for the loss of Danville – Riverside 138kV line

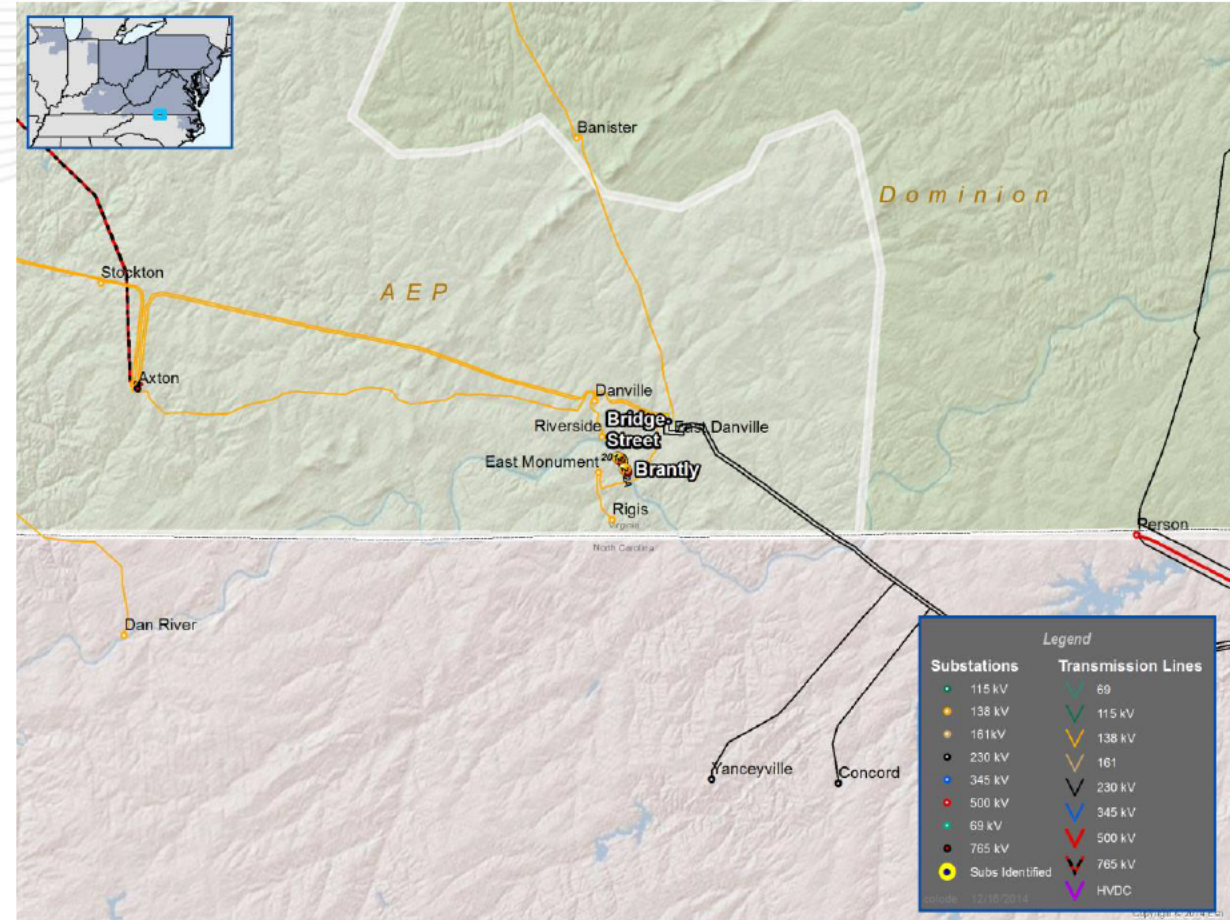
Recommended Solution:

Rebuild 1.0 mile of Brantly-Bridge Street 69 kV Line with 1033 ACSR overhead conductor. (P2014_2-2A)

Estimated Project Cost: \$1.5 M

Required IS Date: 6/1/2019

Reason for the Cancellation: The line is entirely owned by Danville, not AEP. This is not a PJM tariff facility.





Baseline Scope Change: B3040.6, Previously presented 8/31/19 and 9/28/19 in SRRTEP

Original Scope: South Buffalo: Install 28.8 MVAR Cap Bank
New Scope: South Buffalo: Install 34.6 MVAR Cap Bank

Old Estimated Project Cost: \$0.8 M
New Estimated Project Cost: \$0.8 M

Required IS Date: 6/1/2022

Reason for the Change: AEP, in working with vendors to ensure the most cost effective equipment is available, changed their standard equipment list with respect to capacitor banks. 28.8 MVAR capacitor banks were removed as part of this review, so the next size available is 34.6 MVAR. This change has no cost impact on the project and is re-presented here due to the required change to future cases.

