



# Reliability Analysis Update

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Sub Regional RTEP Committee - PJM South

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# Scope Change & Cost Update Baseline Reliability Projects



# Dominion Transmission Zone: Baseline Line #23 Bell Ave to Suffolk 115 kV Partial Rebuild

Process Stage: **Scope Change & Cost Update**

Criteria: Generation Deliverability

Assumption Reference: 2027 RTEP assumption

Model Used for Analysis: 2027 Summer RTEP case

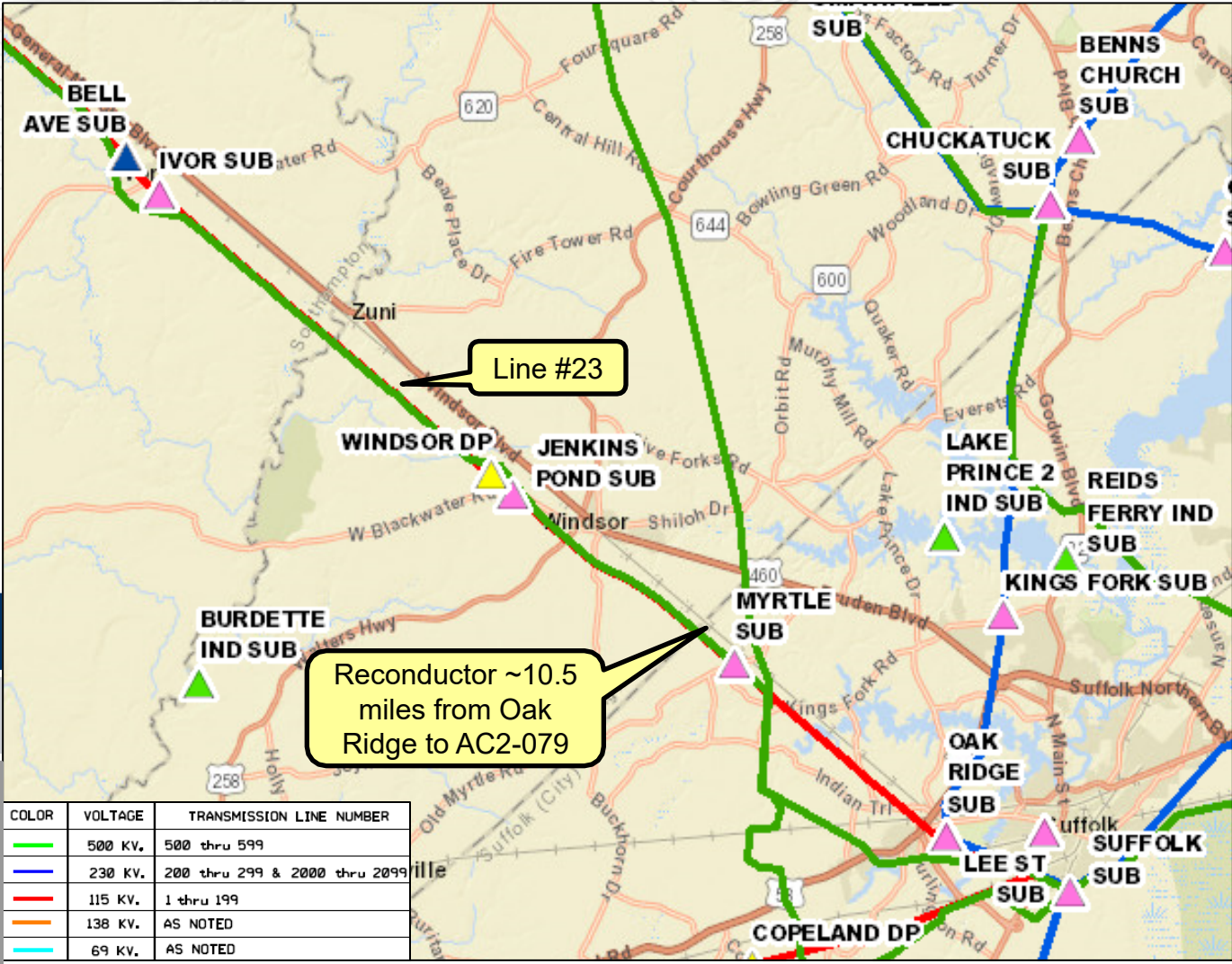
Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement: 2022W1-GD-S523 - 2022W1-GD-S526

In the 2027 RTEP Summer case, failed breaker contingencies that isolate Poe 115kV Bus #1 overload the Oak Ridge to AC2-079 segment of 115kV Line #23 Bell Ave - Suffolk.

Existing Facility Rating:

| Branch                         | SN/SE/WN/WE (MVA) |
|--------------------------------|-------------------|
| Oak Ridge – AC2-079 TAP 115 kV | 118/118/149/149   |





# Dominion Transmission Zone: Baseline Line #23 Bell Ave to Suffolk 115 kV Partial Rebuild

## Original Solution:

Reconductor approximately 10.5 miles of 115kV Line #23 segment from Oak Ridge to AC2-079  
Tap to minimum emergency ratings of 393 MVA Summer / 412 MVA Winter. **(B3759)**

**Transmission Estimated Cost:** \$23.5M

**Alternatives:** None

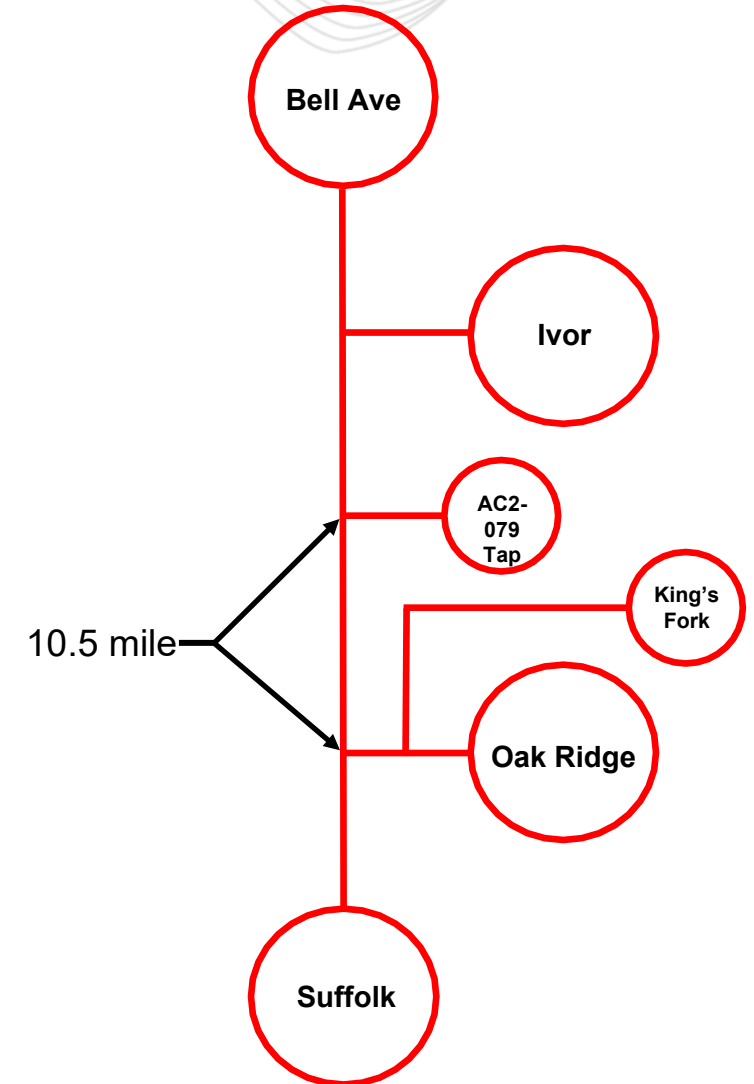
**Preliminary Facility Rating:**

| Branch                         | SN/SE/WN/WE (MVA) |
|--------------------------------|-------------------|
| Oak Ridge – AC2-079 TAP 115 kV | 393/393/413/413   |

**Required in-service date:** 6/1/2027

**Projected in-service date:** 6/1/2027

**Previously Presented:** 10/13/2022



# Dominion Transmission Zone: Baseline Line #23 Bell Ave to Suffolk 115 kV Partial Rebuild

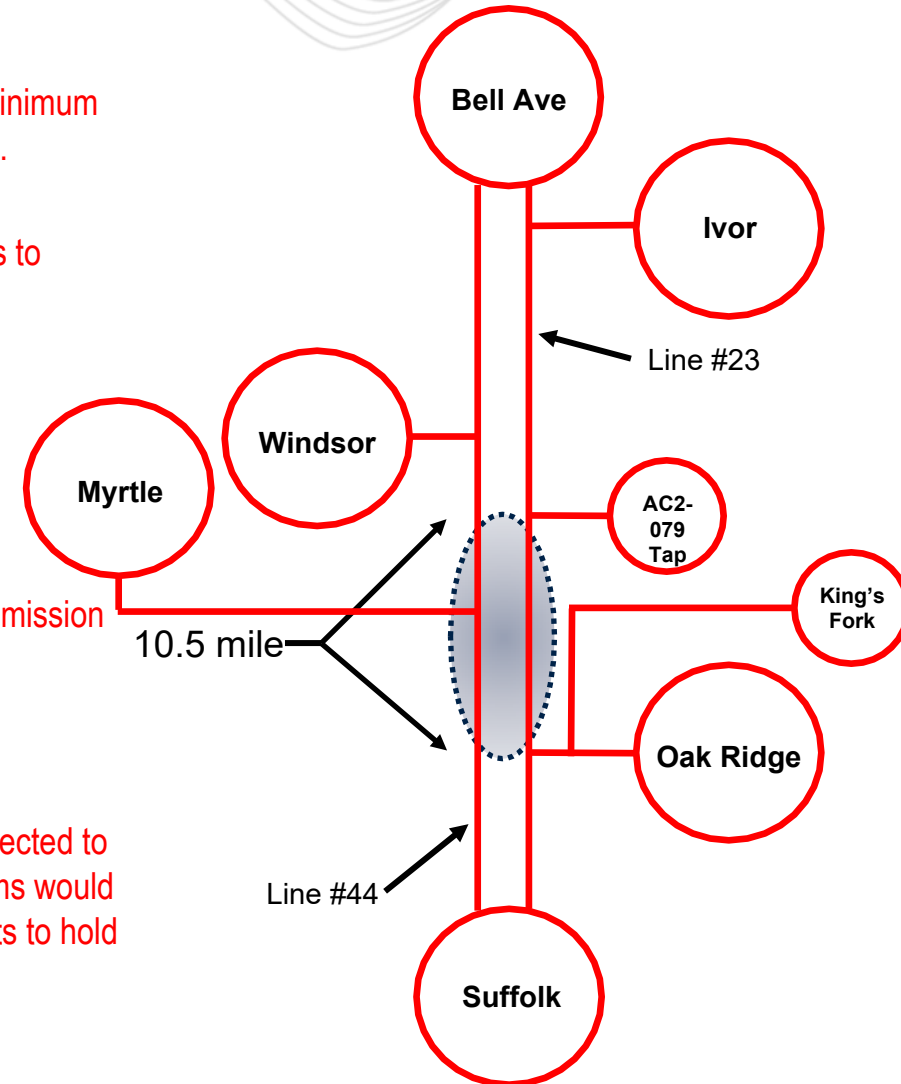
## Revised Solution:

- Wreck and rebuild approximately 10.5 miles of 115kV Line #23 segment from Oak Ridge to AC2-079 Tap to minimum emergency ratings of 393 MVA Summer / 412 MVA Winter. Structures to be rebuilt to current 115kV standards.  
**Transmission Estimated Cost: \$37.1M**
- Reconductor 115kV Line #44 segment from Oak Ridge to AC2-079 Tap which also shares the same structures to minimum emergency ratings of 393 MVA Summer / 412 MVA Winter. Existing conductor is about 70 years old.  
**Transmission Estimated Cost: \$3.9M**
- Total Estimated Cost: \$41M (B3759)**

## Reason for Scope Change & Cost Update:

During the transmission line conceptual review, a number of issues were encountered for the majority of the transmission towers including:

- Inability to maintain adequate Dominion clearance using the new conductor
- ~80% of the towers will need grillage foundation modifications
- ~50% of the structures experienced failures in two of the steel angle members located in the arms when subjected to the region's specified ice and wind parameters. Upgrading these structures by replacing the angles in the arms would necessitate full access to the structures. This includes the access roads, as well as equipment and labor costs to hold the wire in the air during arm modifications.



# Recommended Solution Baseline Reliability Projects



**Process Stage:** Recommended Solution

**Criteria:** Summer & Winter Baseline Thermal & IPD, and Summer Generation Deliverability

**Assumption Reference:** 2029 RTEP assumption

**Model Used for Analysis:** 2029 RTEP Summer & Winter

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

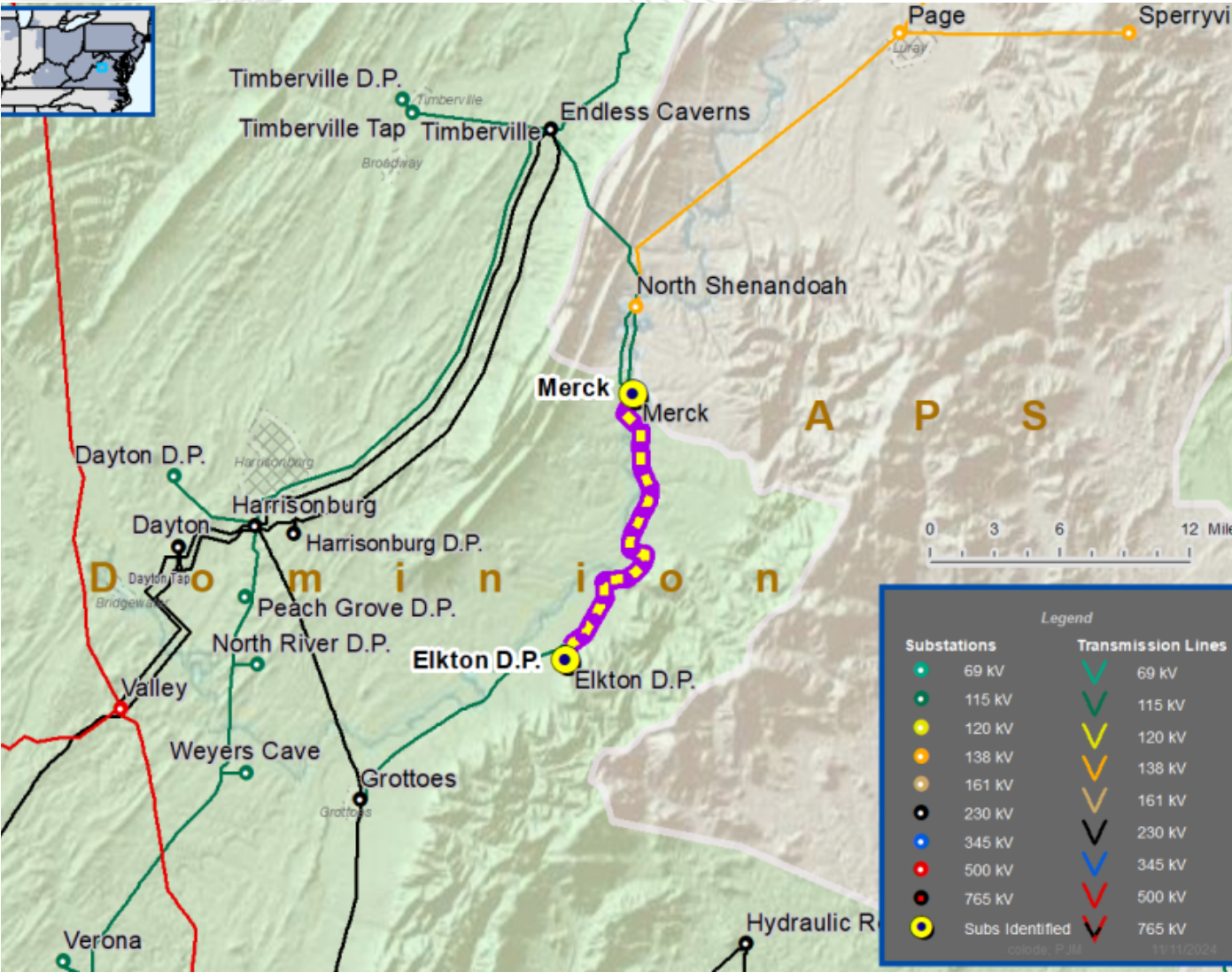
**Problem Statement:** The Merck #5 – Port Republic 115kV line is overloaded for multiple contingencies.

Violations were posted as part of the 2024 Window 1:

|                  |                    |                  |
|------------------|--------------------|------------------|
| 2024W1-GD-S847   | 2024W1-IPD-S1690   | 2024W1-N1-WTNEW1 |
| 2024W1-GD-SNEW27 | 2024W1-IPD-SNEW137 | 2024W1-N1-WT5    |
| 2024W1-IPD-S525  | 2024W1-N1-ST3      |                  |
| 2024W1-IPD-S647  | 2024W1-N1-STNEW12  |                  |

**Existing Facility Rating:**

| Branch                  | SN/SE/WN/WE (MVA) |
|-------------------------|-------------------|
| 3ELKTON– 3MERCK5 115 kV | 144/144/175/175   |







### Recommended Solution:

- Wreck and rebuild 115kV line #119 from structure 119/305 (Merck #5 substation) to 119/411A (Port Republic Substation). The existing structures shall be replaced one for one within the existing ROW using primarily custom engineered double circuit 115kV steel structures on concrete foundations. The line will be rebuilt with 3-phase 1-768.2 ACSS/TW/HS (20/7) 250 MOT "Maumee" conductor and two (2) DNO-11410 OPGW. **(B3921.1) Estimated Cost 41.87M**
- Uprate the 397.5 ACSR jumpers and associated equipment at Merck #5 substation to meet the line conductor rating of 393MVA. **(B3921.2) Estimated Cost .46M**

- Estimated Cost:** \$42.33M

### Preliminary Facility Rating:

| Branch                  | SN/SE/WN/WE (MVA) |
|-------------------------|-------------------|
| 3ELKTON- 3MERCK5 115 kV | 393/393/412/412   |

### Alternatives:

- N/A

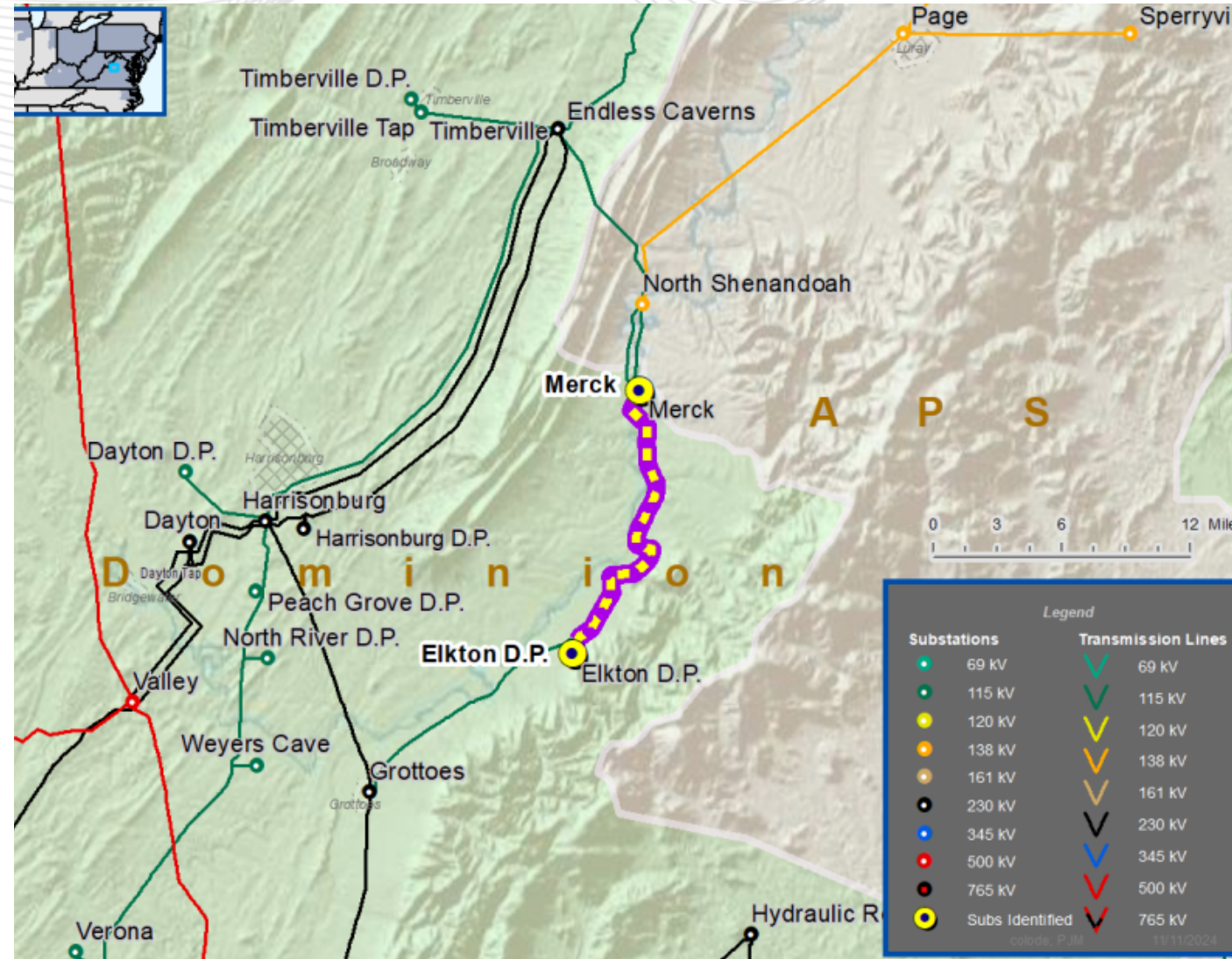
### Required IS Date:

- 6/1/2029

### Projected IS Date:

- 6/1/2029

# DOM Transmission Zone: Baseline Merck #5 to Port Republic 115kV





**Process Stage:** Recommended Solution

**Criteria:** Summer Generation Deliverability

**Assumption Reference:** 2029 RTEP assumption

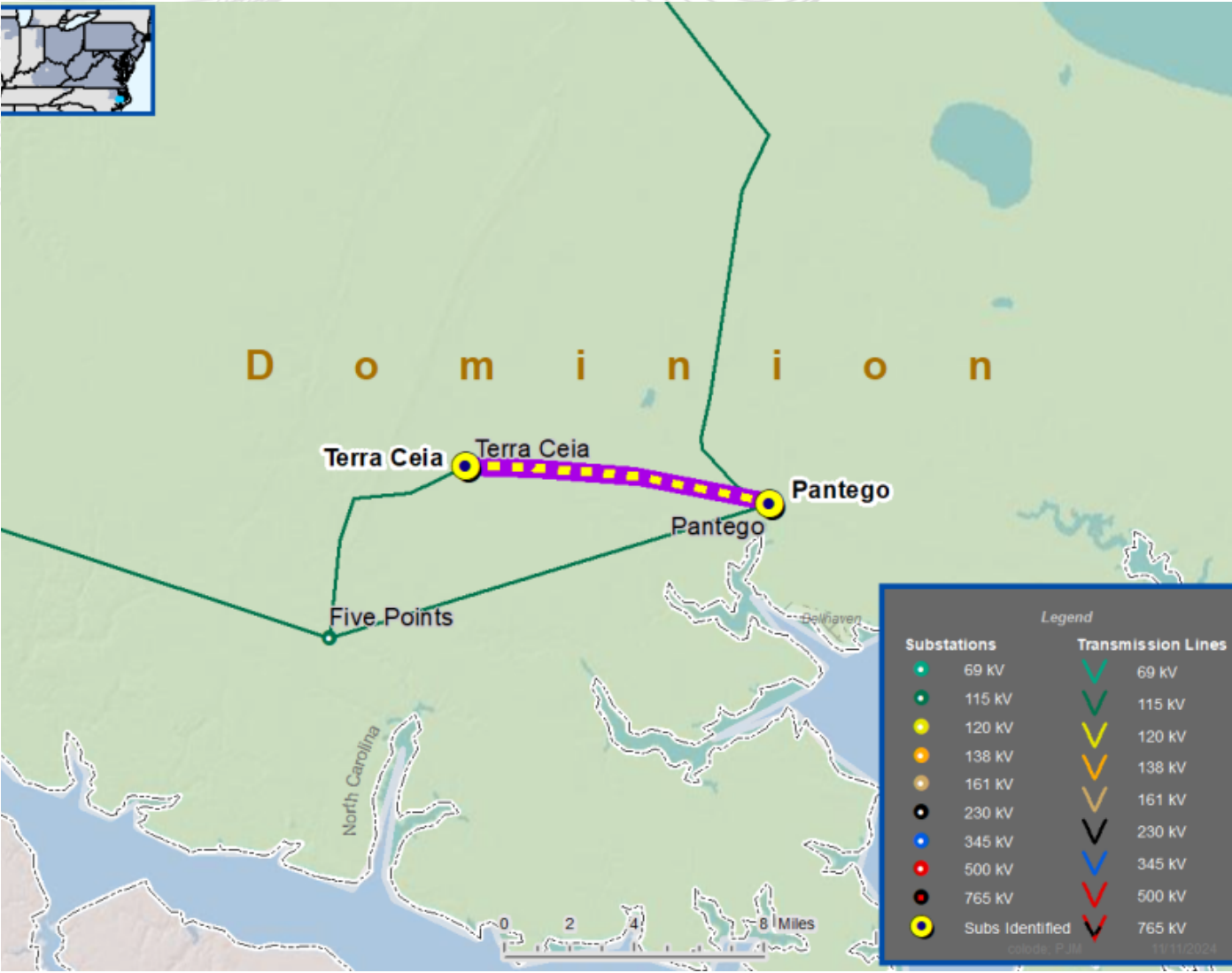
**Model Used for Analysis:** 2029 RTEP Summer

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

**Problem Statement:** The Pantego to Terra 115kV line is overloaded under the N-1-1 test.

**Existing Facility Rating:**

| Branch                       | SN/SE/WN/WE (MVA) |
|------------------------------|-------------------|
| AB2-169 POI- 3PANTEGO 115 kV | 79/79/100/100     |



## Recommended Solution:

Wreck and rebuild 115kV line 1031 from structure 1031/220 to structure 1031/329. The existing structures shall be replaced one for one within the existing ROW using single circuit steel monopoles on foundations. The line will be rebuilt with single circuit 3-phase 768.2 ACSS/TW/HS (20/7) "Maumee" conductor and single (1) DNO-11410 OPGW, respectively. (B3922.1)

**Estimated Cost:** \$29.4M

**Preliminary Facility Rating:**

| Branch                       | SN/SE/WN/WE (MVA) |
|------------------------------|-------------------|
| AB2-169 POI- 3PANTEGO 115 kV | 393/393/412/412   |

## Alternatives:

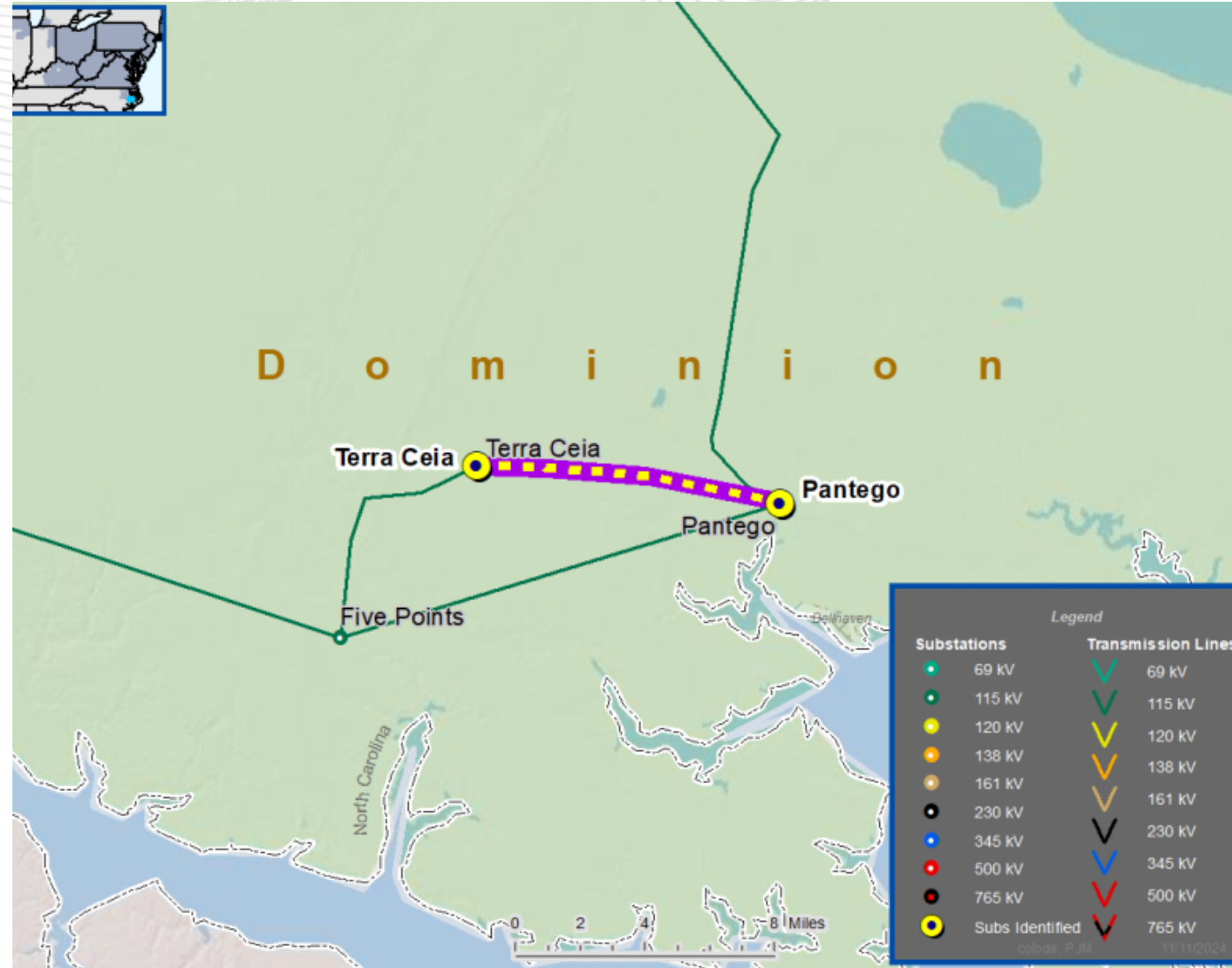
- N/A

## Required IS Date:

- 6/1/2029

## Projected IS Date:

- 6/1/2029



# Second Review Baseline Reliability Project Cancellations



# DOM Transmission Zone: Baseline Bremon 138/115kV Transformer #8

**Process Stage:** Recommended Solution (Cancellation)

**Criteria:** Summer Generation Deliverability, Baseline Thermal & IPD

**Assumption Reference:** 2029 RTEP assumption

**Model Used for Analysis:** 2029 RTEP Summer

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

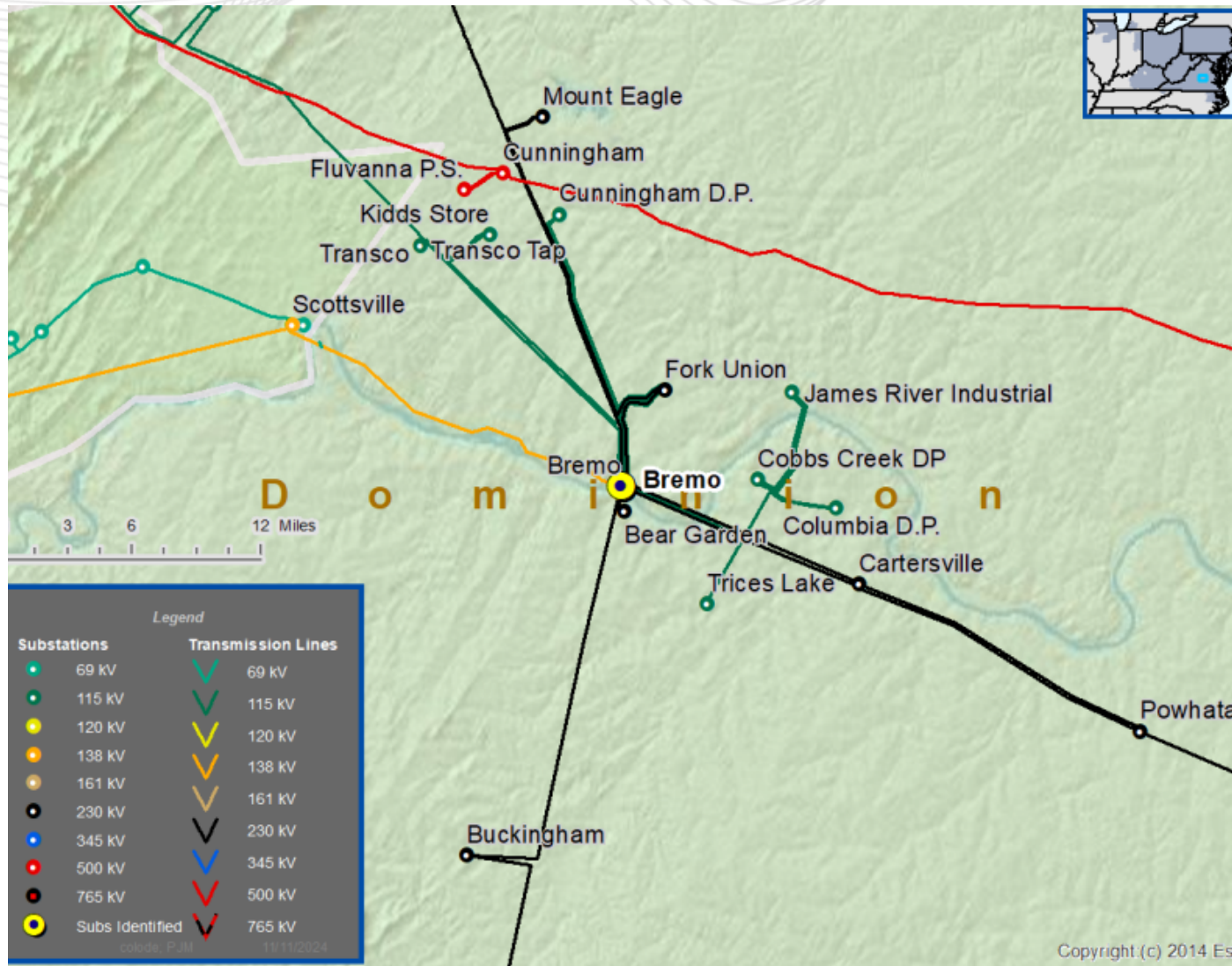
**Problem Statement:** The Bremon 138/115kV Transformer #8 is overloaded for multiple contingencies.

Violations were posted as part of the 2024 Window 1:

|                  |                  |                 |
|------------------|------------------|-----------------|
| 2024W1-IPD-SNEW2 | 2024W1-IPD-S926  | 2024W1-N1-ST106 |
| 2024W1-IPD-SNEW3 | 2024W1-IPD-S1562 | 2024W1-N1-ST64  |
| 2024W1-IPD-S925  | 2024W1-IPD-S1900 | 2024W1-GD-S5    |
| 2024W1-IPD-S923  | 2024W1-IPD-S1901 | 2024W1-GD-S326  |
| 2024W1-IPD-S924  | 2024W1-GD-S330   | 2024W1-GD-S328  |

**Existing Facility Rating:**

| Transformer               | SN/SE/WN/WE (MVA) |
|---------------------------|-------------------|
| 4BREMO- 3BREMO 138/115 kV | 198/218/250/266   |



## Recommended Solution:

Upgrade the 795AAC high side and low side leads as to not limit the Bremon Transformer #8 rating. **Overload is relieved due to regional solutions selected for the 2024 Open Window 1.**

**Estimated Cost:** \$.092M

**Preliminary Facility Rating:**

| Transformer               | SN/SE/WN/WE (MVA) |
|---------------------------|-------------------|
| 4BREMO- 3BREMO 138/115 kV | 293/302/360/360   |

## Alternatives:

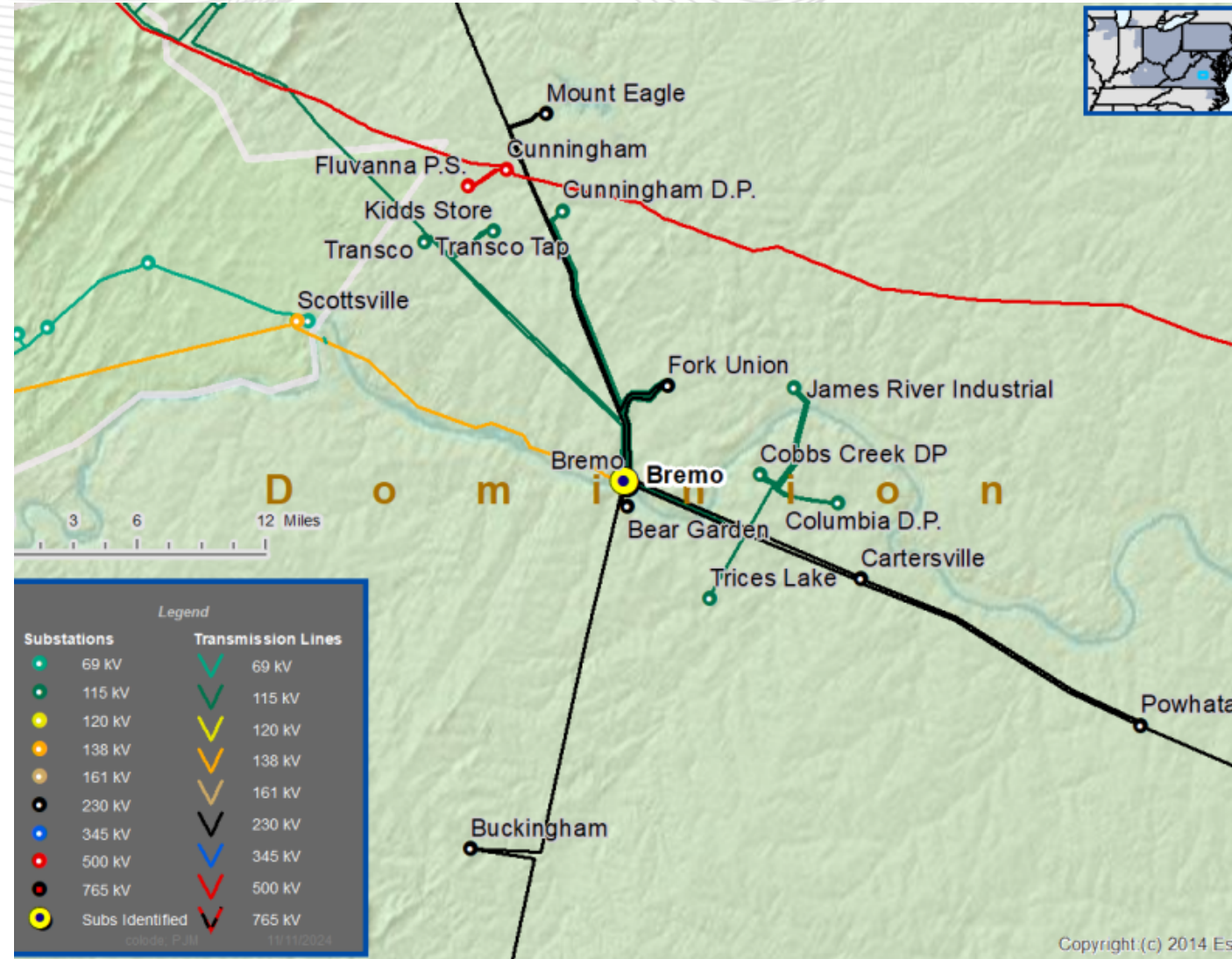
- N/A

## Required IS Date:

- 6/1/2029

## Projected IS Date:

- 6/1/2029





# DOM Transmission Zone: Baseline Alta Vista 138/115kV Transformer #3

**Process Stage:** Recommended Solution (Cancellation)

**Criteria:** Summer Generation Deliverability

**Assumption Reference:** 2029 RTEP assumption

**Model Used for Analysis:** 2029 RTEP Summer

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

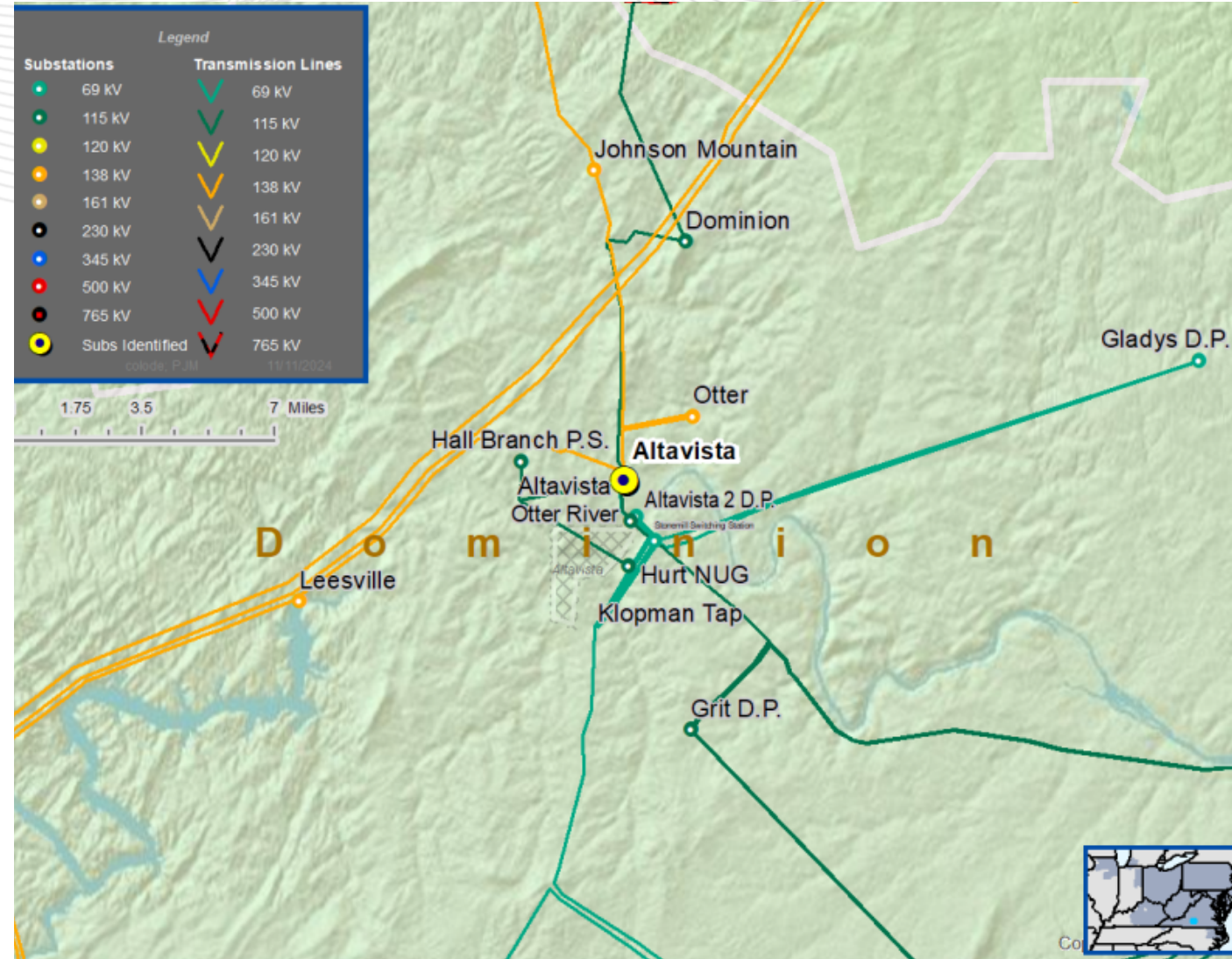
**Problem Statement:** The Alta Vista 138/115kV Transformer #3 is overloaded for a single contingency.

Violations were posted as part of the 2024 Window 1:

FG# - 2024W1-GD-S82

**Existing Facility Rating:**

| Branch                        | SN/SE/WN/WE (MVA) |
|-------------------------------|-------------------|
| 4ALTVSTA- 3ALTVSTA 138/115 kV | 127/131/157/160   |





# DOM Transmission Zone: Baseline Alta Vista 138/115kV Transformer #3

## Recommended Solution:

Upgrade 138/115kV transformer and associated substation equipment for the Alta Vista 138/115kV Transformer #3. **Overload is relieved due to regional solutions selected for the 2024 Open Window 1.**

**Estimated Cost:** \$5M

**Preliminary Facility Rating:**

| Branch                        | SN/SE/WN/WE (MVA) |
|-------------------------------|-------------------|
| 4ALTVSTA– 3ALTVSTA 138/115 kV | 198/219/251/266   |

## Alternatives:

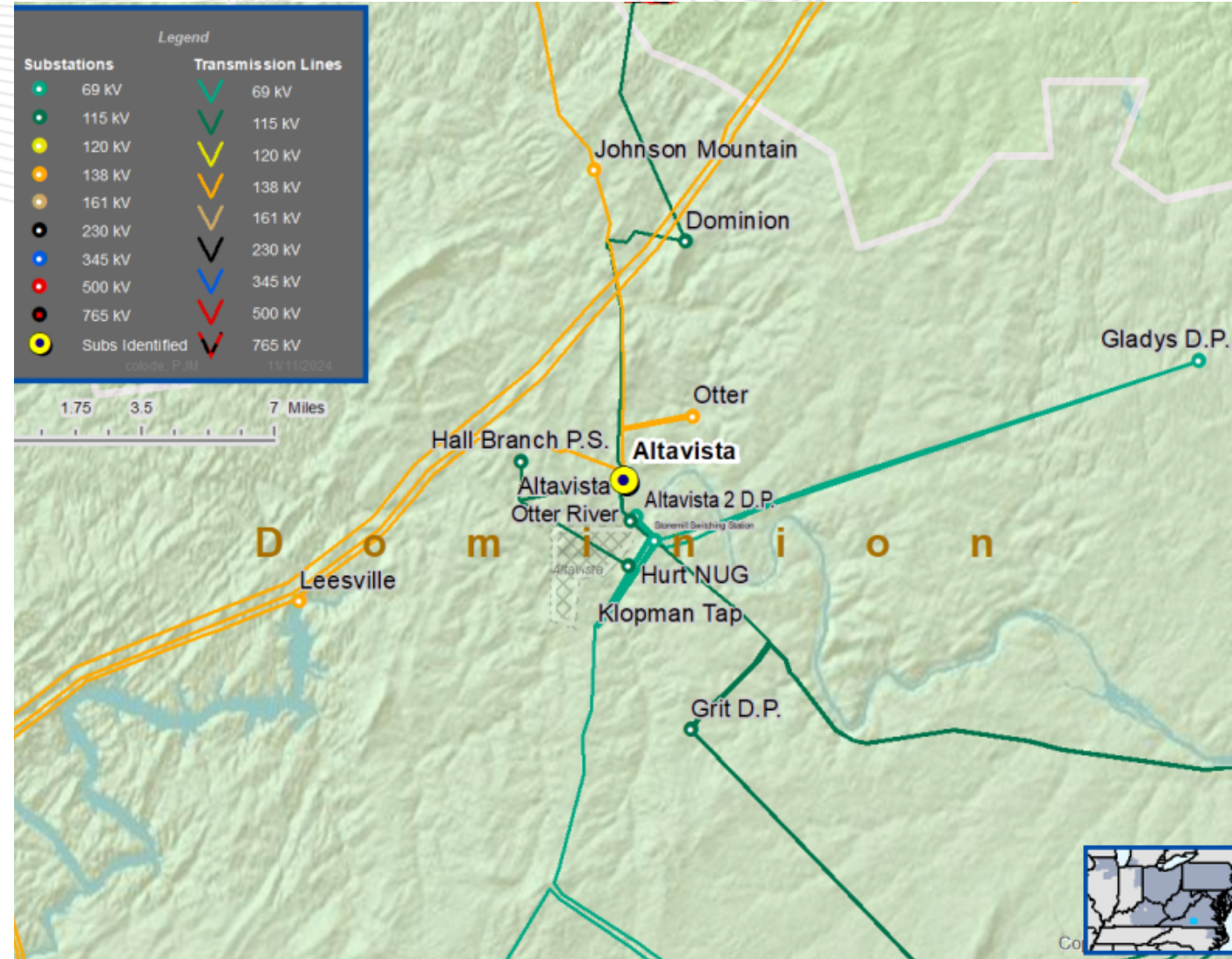
- N/A

## Required IS Date:

- 6/1/2029

## Projected IS Date:

- 6/1/2029



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## Reliability Analysis Update



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| Version No. | Date              | Description  |
|-------------|-------------------|--|
| 1           | December 09, 2024 | <ul style="list-style-type: none"><li>Original slides posted</li></ul> |
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