

Appendix: Previously Reviewed Baseline Upgrade Recommendations for the February 2022 PJM Board Review

Note: Items presented at the January 2022 TEAC will also be recommended for Board approval.



2020/21 Long-Term Window 2nd Read

- Proposal 704, terminal equipment upgrades at the Plymouth Meeting and Whitpain 230 kV substations, selected as the preferred solution:
 - Addresses the target congestion and has the highest B/C Ratio, 75.30.
 - Lowest Cost: \$0.62 million.
 - Passes all PROMOD sensitivity scenarios.
 - Reliability analysis has been completed and no reliability violations identified associated with this solution.
- 1st Read presented at the [November TEAC](#) meeting.
- PJM staff intends to submit Proposal 704 to be approved by the PJM Board for inclusion in the Regional Transmission Expansion Plan.



Proposal No. 704 (Plymouth-Whitpain 220-13, 220-14 Terminal Upgrades)

Project ID: 202021_704

Proposed Solution:
Replace station conductor and metering inside Whitpain and Plymouth substations.

Project Type: Upgrade

kV Level: 230 kV

In-Service Cost (\$M): \$0.62

In-Service Year: 2025

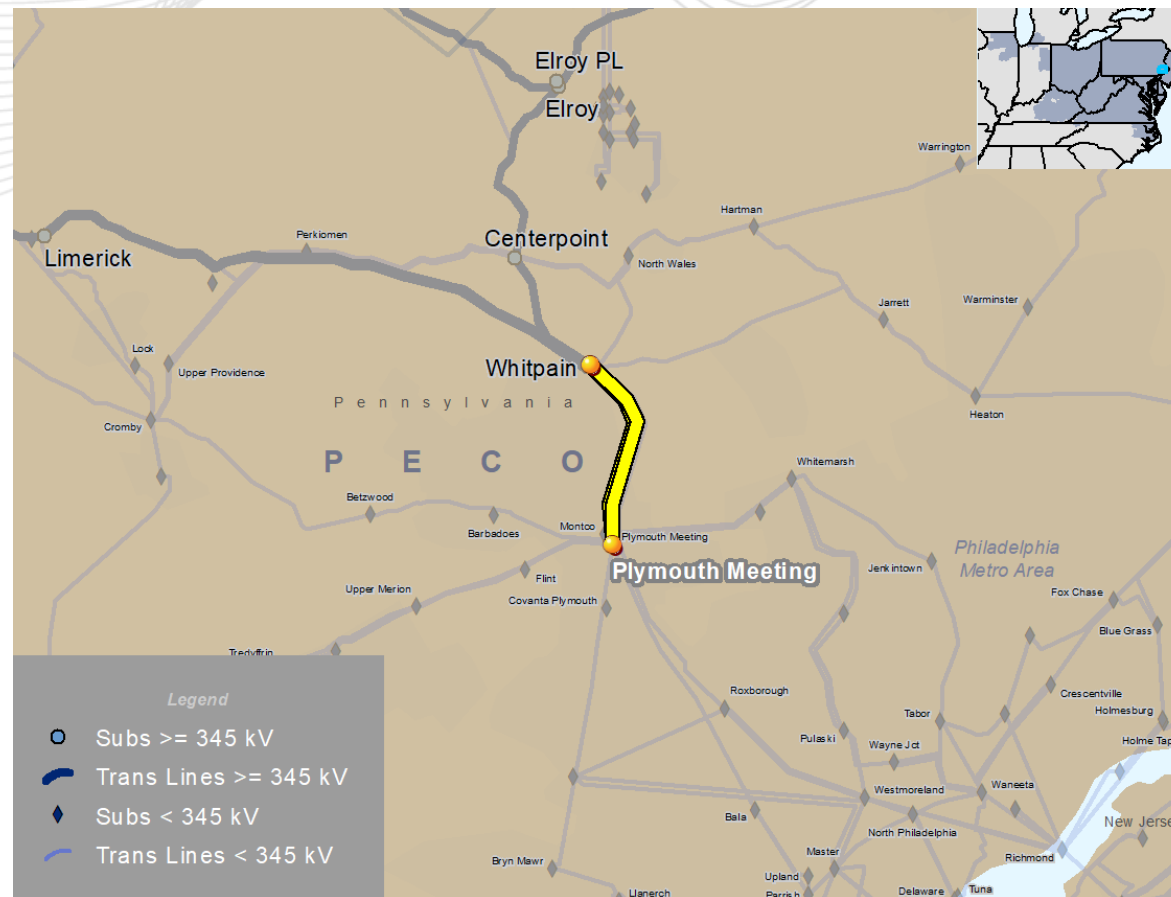
B/C Ratio = 75.30

Target Zone: PECO

ME Constraints:

Plymouth Meeting to Whitpain 230 kV

Notes: [Redacted Public Proposal 704](#)



- Proposal 218, reconductor the Juniata-Cumberland 230 kV line, selected as the preferred solution:
 - Fully addresses the target congestion driver and has the highest B/C Ratio, 11.28.
 - Low Cost: \$9.00 million.
 - Passes all PROMOD sensitivity scenarios.
 - Reliability analysis has been completed and no reliability violation identified associated with this solution.
- 1st Read presented at the [November TEAC](#) meeting.
- PJM staff intends to submit Proposal 218 to be approved by the PJM Board for inclusion in the Regional Transmission Expansion Plan.



Proposal No. 218 (Juniata - Cumberland 230 kV Line Reconductor)

Project ID: 202021_218

Proposed Solution:
Reconductor the Juniata - Cumberland 230kV line.

Project Type: Upgrade

kV Level: 230 kV

In-Service Cost (\$M): \$9.00

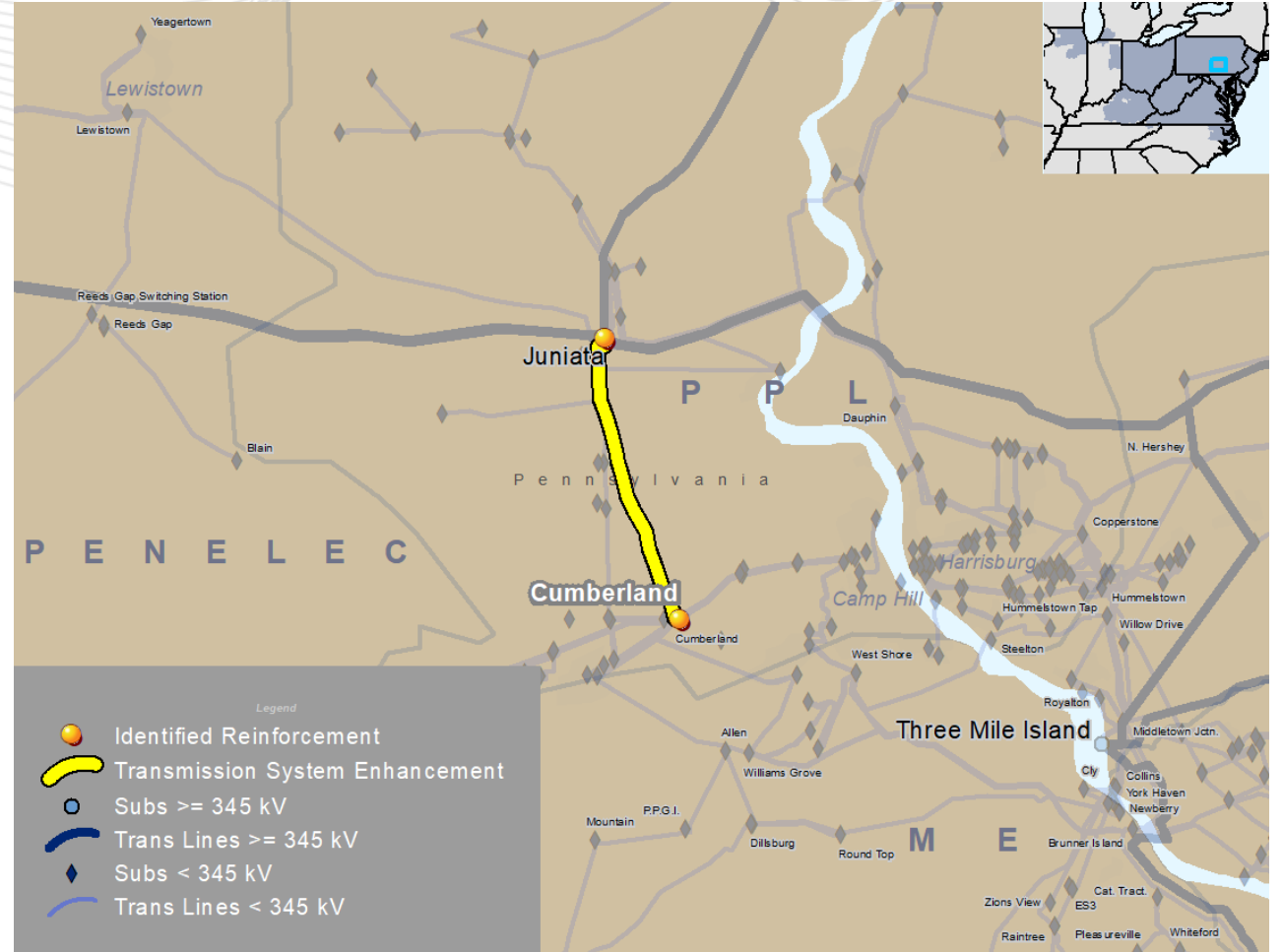
In-Service Year: 2023

B/C Ratio = 11.28

Target Zone: PPL

ME Constraints:
Cumberland to Juniata 230 kV

Notes: [Redacted Public Proposal 218](#)



- Proposal 651, series reactor on the Charlottesville-Proffit 230 kV line, selected as the preferred solution:
 - Fully addresses target congestion driver and has the highest B/C Ratio, 16.05.
 - Low Cost: \$11.38 million.
 - Passes all PROMOD sensitivity scenarios.
 - Reliability analysis has been completed and no reliability violation identified associated with this solution.
- 1st Read presented at the [November TEAC](#) meeting.
- PJM staff intends to submit Proposal 651 to be approved by the PJM Board for inclusion in the Regional Transmission Expansion Plan.

Project ID: 202021_651

Proposed Solution:
Install series reactor on the Charlottesville – Proffit Rd. 230 kV line.

Project Type: Upgrade

kV Level: 230 kV

In-Service Cost (\$M): \$11.38

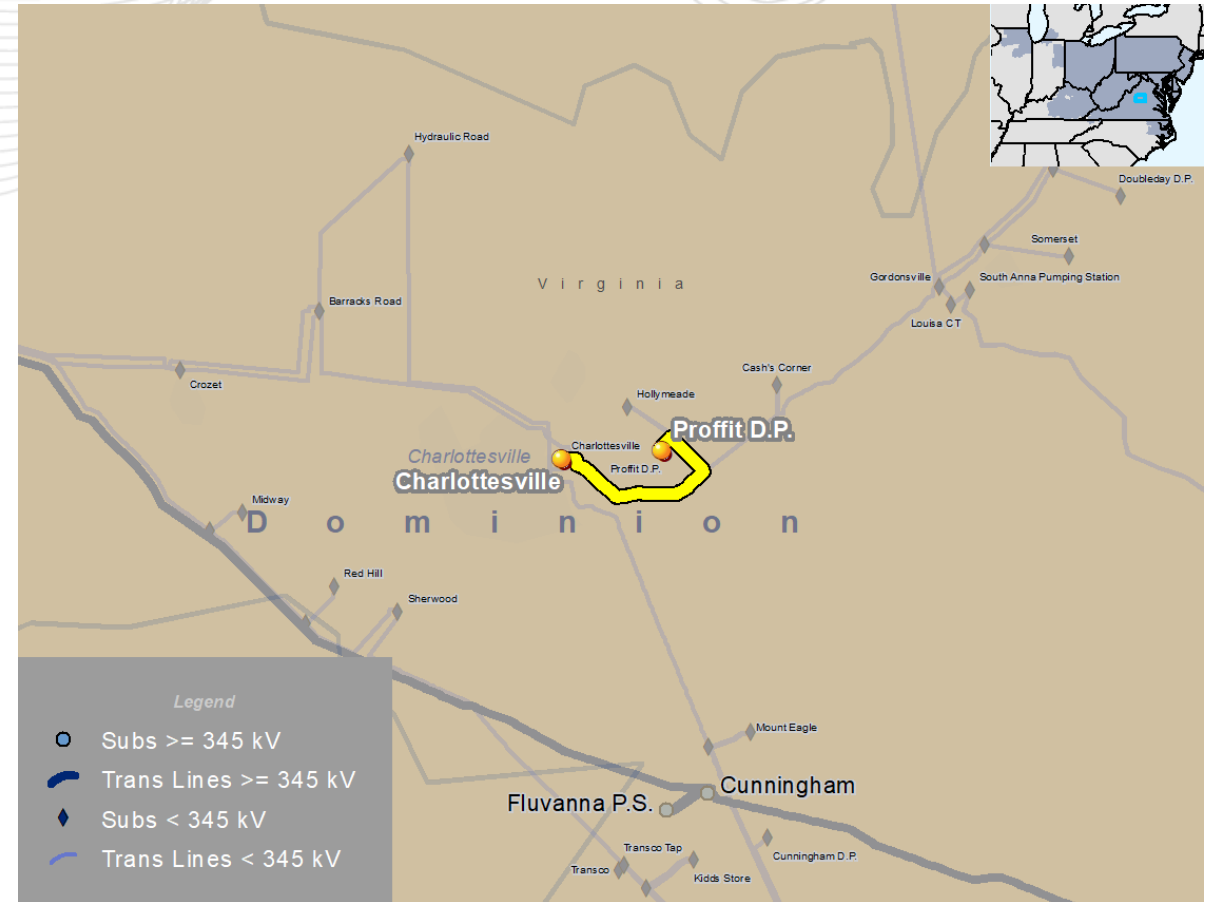
In-Service Year: 2023

B/C Ratio = 16.05

Target Zone: DOM

ME Constraints:
Charlottesville to Proffit Rd Del Pt 230 kV

Notes: [Redacted Public Proposal 651](#)



- Final recommendation to the PJM Board for review and approval.

Recommended Solutions

Baseline Reliability Projects



AEP Transmission Zone: Baseline Delphos Area

Process Stage: Second Review

Criteria: AEP FERC 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

AEP -T15, AEP -T16, AEP -T17, AEP -T18, AEP -T19, AEP -T20, AEP -T21, AEP -T22, AEP -T23, AEP -T24, AEP -T25, AEP -T26, AEP -T27, AEP -T28, AEP -T47, AEP -T48, AEP -T49, AEP -T50, AEP -T51, AEP -T52, AEP -T53, AEP -T54, AEP -T55, AEP -T56, AEP -T57, AEP -T58, AEP -T73, AEP -T74, AEP -T75, AEP -T76

In 2026 RTEP summer, winter and light load cases, the North Delphos – East Delphos 69kV line and the East Delphos – Elida Road 69kV line are overloaded for multiple N-1-1 contingency pairs. The North Delphos – East Delphos 69kV line and the Delphos – South Delphos are overload for a N-1-1 contingency pair.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05N DELPHO – 05E DELPHO 69KV	46/46/56/56
05E DELPHO – 05ELIDA ROAD 69KV	46/46/56/56
05DELPHO – 05S DELPHO 69KV	50/50/63/63
05N DELPHO – 05S DELPHO 69KV	54/54/76/76



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



As part of the 2021 RTEP Window #1, the projects listed in the table below are proposed to address the following violations: AEP -T15, AEP -T16, AEP -T17, AEP -T18, AEP -T19, AEP -T20, AEP -T21, AEP -T22, AEP -T23, AEP -T24, AEP -T25, AEP -T26, AEP -T27, AEP -T28, AEP -T51, AEP -T52, AEP -T53, AEP -T54, AEP -T73, AEP -T74, AEP -T75, AEP -T76

(NOTE: Proposal 202 and 786 additionally addresses: AEP -T47, AEP -T48, AEP -T49, AEP -T50, AEP -T55 , AEP -T56, AEP -T57, AEP -T58)

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
202	AEP	Delphos Area Line Rebuilds	8.871
786	AEP	Haviland Sectionalizing Addition (Plus convert s2389 to baseline)	1.309 (plus \$65.36M for s2389 conversion)
503	CNTLTM	LS Rockford - LS West Van Wert 69kV Transmission Project	14.415

Proposed Solution: Proposal #2021_1-202

- Rebuild approximately 3.5 miles of overloaded 69 kV line between North Delphos-East Delphos-Elida Road switch. This includes approximately 1.1 miles of double circuit line that makes up a portion of the North Delphos-South Delphos 69 kV line and the North Delphos-East Delphos 69 kV line. Approximately 2.4 miles of single circuit line will also be rebuilt between the double circuit portion to East Delphos station and from East Delphos to Elida Road Switch. **(B3346.1)**
Estimated cost: \$8.434M
- Replace the line entrance spans at South Delphos to eliminate the overloaded 4/0 Copper and 4/0 ACSR conductor. **(B3346.2)** Estimated cost: \$0.437M

Total Estimated Cost: \$8.871M



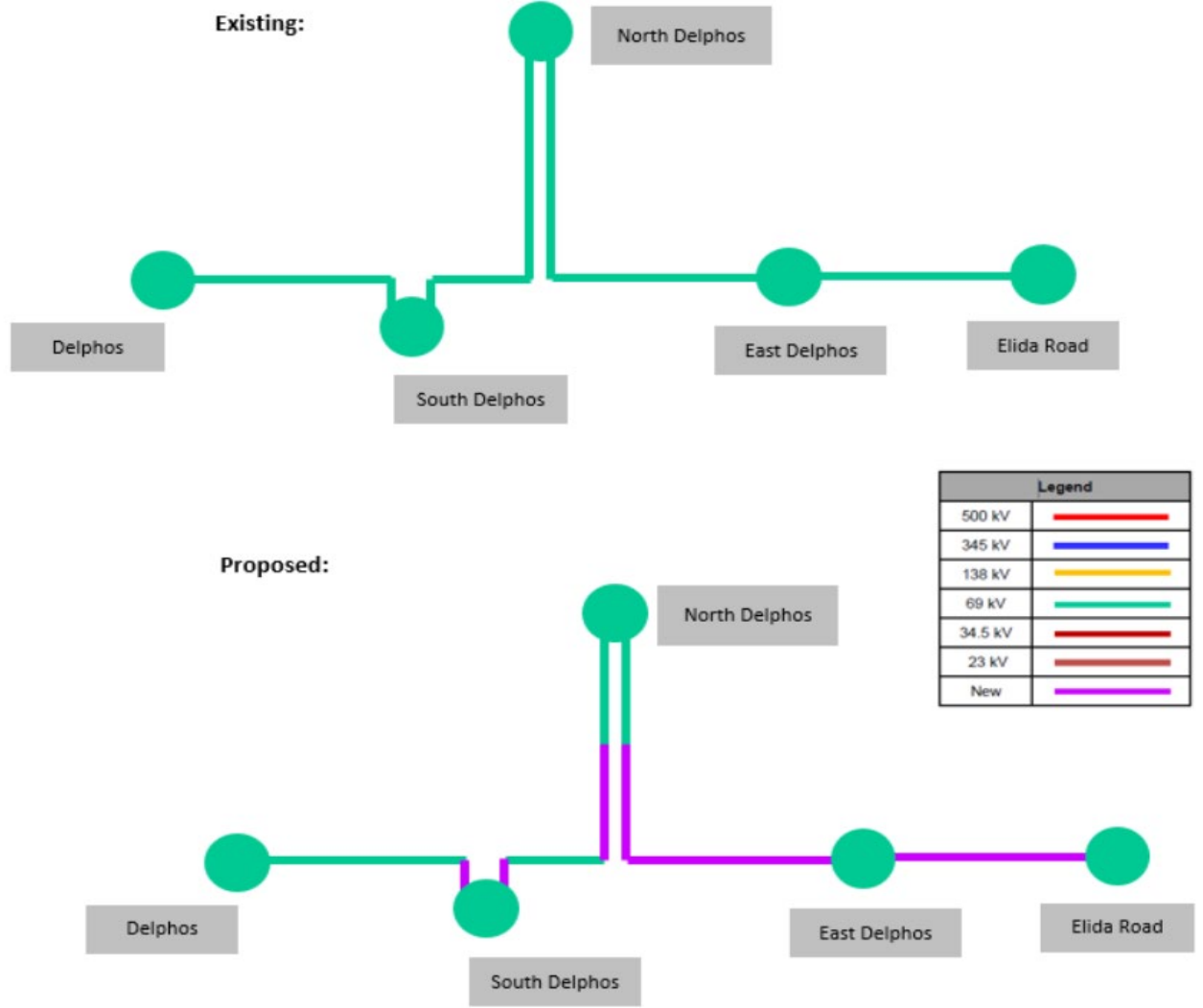
AEP Transmission Zone: Baseline Delphos Area

Additional Benefit: The lines that are will addressed on the proposal include: One mile of the 5.26 mile North Delphos – South Delphos 69kV line asset consists of 22 wood pole structures, originally installed in 1943 primarily with 2/0 COPPER 7 (20COP) conductor. The line asset is part of two circuits: North Delphos – Van Wert 69kV and North Delphos-West Moulton 69kV circuits. There are currently 7 open conditions specifically affecting the 1 mile section of the line The Delphos Junction – East Delphos 69kV Line asset is 2.29 miles long and consists of wood pole structures, originally installed in 1939 primarily with 2/0 COPPER 7 (2/0COP) conductor. There are 40 structures with at least one open condition, which relates to 74% of the structures on the line. There are 36 open conditions related to broken or missing ground lead wires which could lead to the poor lightning performance. There are currently 9 structure related open conditions specifically affecting the Knee/Vee Brace (broken/rot).

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05N DELPHO – 05E DELPHO 69KV	68/71/71/71
05E DELPHO – 05ELIDA ROAD 69KV	82/90/107/113
05DELPHO – 05S DELPHO 69KV	73/73/91/91
05N DELPHO – 05S DELPHO 69KV	68/73/90/91

Required IS Date: 6/1/2026
Required IS Date: 6/1/2026
Previously Presented: 11/2/2021



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



AEP Transmission Zone: Baseline Dehue Area

Process Stage: Second Review

Criteria: AEP FERC 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

AEP -T6, AEP -T7, AEP -T8

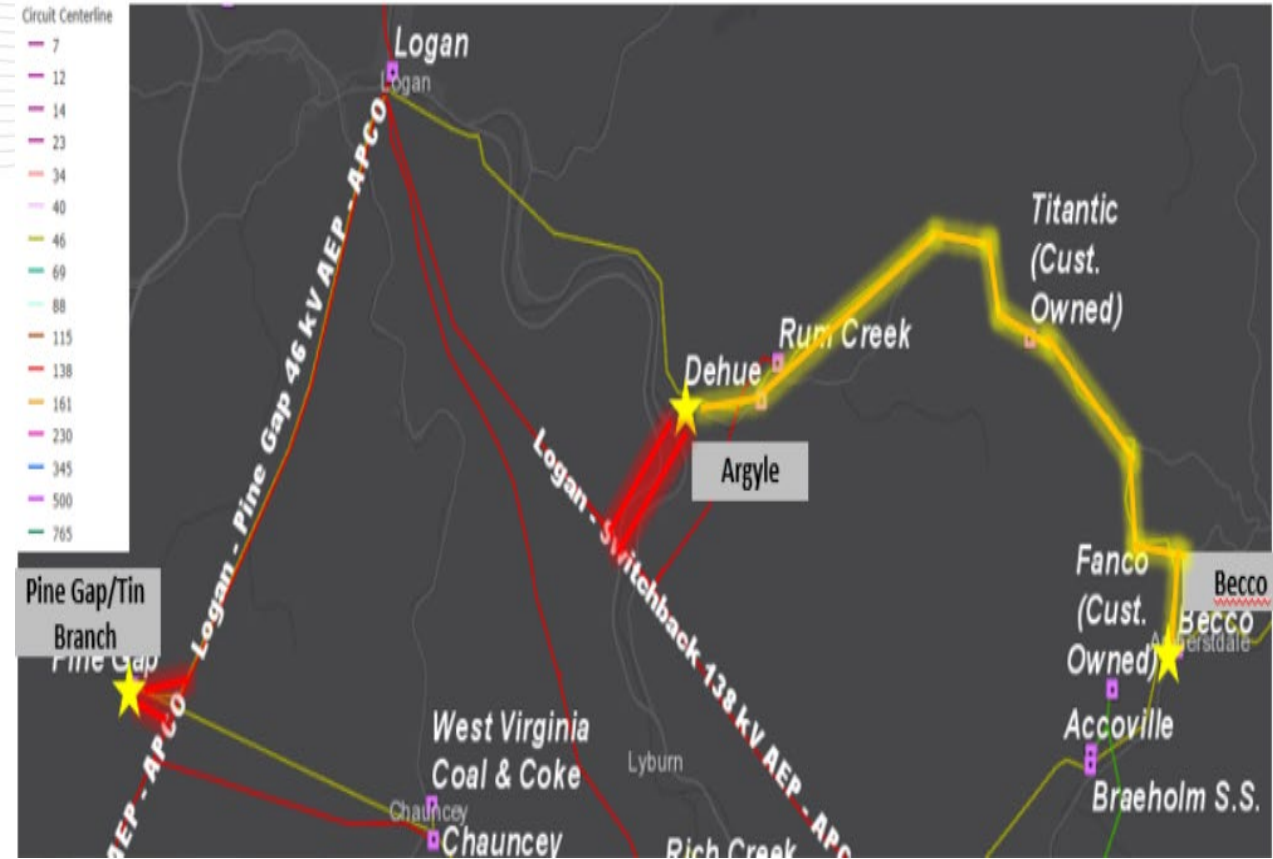
In 2026 RTEP light load case, the Becco – Slagle 46kV line, the Dehue – Pine Gap 46kV line and Dehue – Slagle 46kV line are overload for a N-1-1 contingency pair.

AEP-VM1, AEP-VM2, AEP-VM3, AEP-VM4, AEP-VM5, AEP-VM6, AEP-VM7, AEP-VM8, AEP-VM9, AEP-VD1, AEP-VD2, AEP-VD3, AEP-VD4, AEP-VD5, AEP-VD6, AEP-VD7, AEP-VD8, AEP-VD9 (excluded from Window due to <200KV exclusion).

Low voltage and voltage drop violations at Three Fork, Toney Fork, Cyclone, Pardee, Crane,, Latrobe, Becco, Slagle, Dehue 46kV buses for a N-1-1 contingency pair.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05BECCO – 05SLAGLE 46KV	23/23/32/32
05DEHUE– 05SLAGLE 46KV	23/23/32/32
05DEHUE – 05PINE GAP 46KV	27/27/34/34



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



As part of the 2021 RTEP Window #1, the projects listed in the table below are proposed to address the following violations: AEP -T6, AEP -T7, AEP -T8, AEP-VM1, AEP-VM2, AEP-VM3, AEP-VM4, AEP-VM5, AEP-VM6, AEP-VM7, AEP-VM8, AEP-VM9, AEP-VD1, AEP-VD2, AEP-VD3, AEP-VD4, AEP-VD5, AEP-VD6, AEP-VD7, AEP-VD8, AEP-VD9

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
365	AEP	Accoville-Becco 69 kV	13.048
310	AEP	Becco-Pine Gap Rebuild	50.191
488	AEP	Dehue Expansion and Line Rebuilds	65.798

Recommended Solution: Proposal #2021_1-488

- Construct a 138kV single bus station (Tin Branch) consisting of a 138kV box bay with a distribution transformer and 12kV distribution bay. Two 138kV lines will feed this station (from Logan and Sprigg Stations), and distribution will have one 12kV feed. Install two 138 kV circuit breakers on the line exits. Install 138 kV circuit switcher for the new transformer. **(B3348.1)** Estimated cost: \$5.584M
- Construct a new 138/46/12 kV Argyle station to replace Dehue station. Install a 138kV ring bus using a breaker-and-a-half configuration, with an autotransformer with a 46kV feed and a distribution transformer with a 12kV distribution bay. Two 138kV lines will feed this station (from Logan and Wyoming Stations). There will also be a 46kV feed from this station to Becco Station. Distribution will have two 12kV feeds. Retire Dehue station in its entirety. **(B3348.2)** Estimated cost: \$9.996M
- Bring the Logan - Sprigg #2 138kV circuit in and out of Tin Branch station by constructing approximately 1.75 miles of new overhead double circuit 138kV line. Double circuit T3 series lattice towers will be used along with 795,000cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD and one shield wire will be OPGW. **(B3348.3)** Estimated cost: \$8.578M
- Logan - Wyoming No. 1 circuit in and out of the proposed Argyle Station. Double circuit T3 series lattice towers will be used along with 795,000cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD and one shield wire will be OPGW. **(B3348.4)** Estimated cost: \$7.702M
- Rebuild approximately 10 miles of 46 kV line between Becco and the new Argyle substation. Retire approximately 16 miles of 46 kV line between the new Argyle substation and Chauncey station. **(B3348.5)** Estimated cost: \$33.705M
- Adjust relay settings due to new line terminations and retirements at Logan, Wyoming, Sprigg, Becco, and Chauncey stations. **(B3348.6)** Estimated cost: \$0.233M

Total Estimated Cost: \$65.798M

Additional Benefit:

- This project will also address the needs reviewed with stakeholders under need number AEP-2020-AP044 in the November 20, 2020 W-SRRTEP.
- This project will also address the asset performance, condition, and risk needs on the Chauncey - Pine Gap 46kV Line which is a 1937 vintage wood pole line with 29 open structure conditions with 59% of the structures along the line with at least one open condition.
- This proposal, by constructing approximately 3.5 miles of greenfield 138 kV line and two new stations, allows for the retirement of over 15 miles of deteriorating 46 kV line in very challenging territory, helping to reduce future rebuild investment required to address asset renewal needs on the 46 kV system.
- This project will also address the asset performance, condition, and risk needs at Pine Gap 46kV station:
 - Transformer #1 is a 46/12kV 1949s vintage bank. The transformer has high levels of acetylene, decreasing and low interfacial tension (IFT), and high and rising moisture levels. These levels indicate increased decomposition of the paper insulating materials and indicate that electrical discharges have been occurring within the main tank. The insulation is shrinking and weakening. This is an indication of an aged oil with polar contaminants and oxidation byproducts. The values of IFT and moisture indicate the dielectric strength of the insulation system (oil and paper) is in poor condition. The oil containment is extremely deteriorated with the lining visible above the station stone.
 - Pine Gap Substation currently deploys 16 relays, implemented to ensure the adequate protection and operation of the substation. Currently, all 16 relays are in need of replacement. All 16 of these are of the electromechanical and static type which have significant limitations with regards to spare part availability and fault data collection and retention. In addition, these relays lack vendor support. The existing control house lacks enough panel space to accommodate new relaying.



AEP Transmission Zone: Baseline Dehue Area

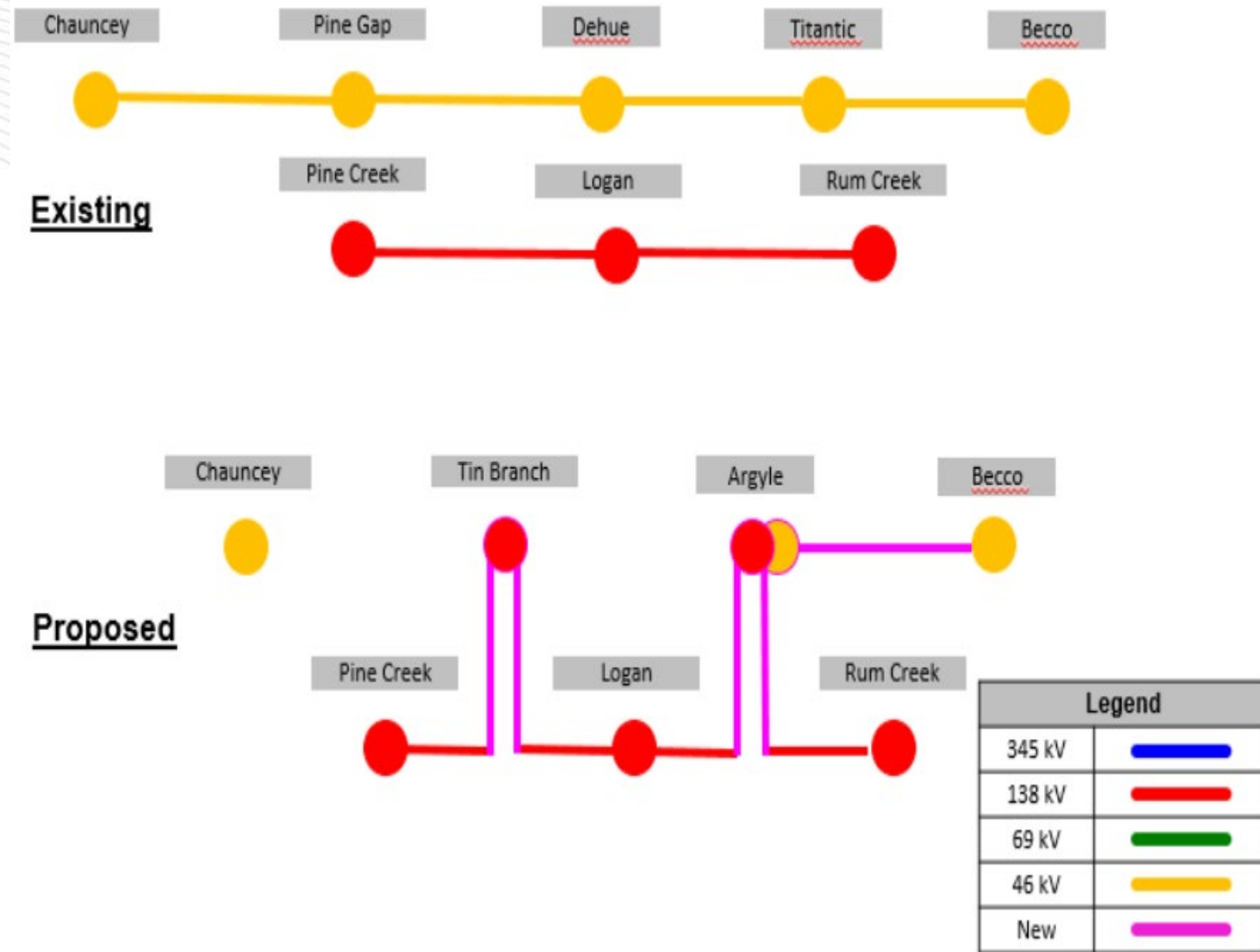
Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05LOGAN1– 05ARGYLE 138KV	257/360/325/404
05RUMCKZ – 05ARGYLE 138KV	257/360/325/404
05ARGYLE 138/69/46KV 1st winding	90/90/90/90
05ARGYLE 138/69/46KV 2nd winding	90/90/90/90
05ARGYLE 138/69/46KV 3rd winding	60/60/60/60

Required IS Date: 11/1/2026

Projected IS Date: 6/30/2026

Previously Presented: 11/2/2021



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



Dominion Transmission Zone: Baseline Remington CT - Gainesville

Process Stage: Second Review

Criteria: Generator Deliverability, N-1

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

GD-S12, GD-S17, GD-S715, GD-S37, GD-S717, N1-ST49

In the 2026 RTEP summer case, 230kV Line #2114 Remington CT – Gainesville is overloaded for a tower contingency under N-1 and a single & tower contingencies under Generator Deliverability.

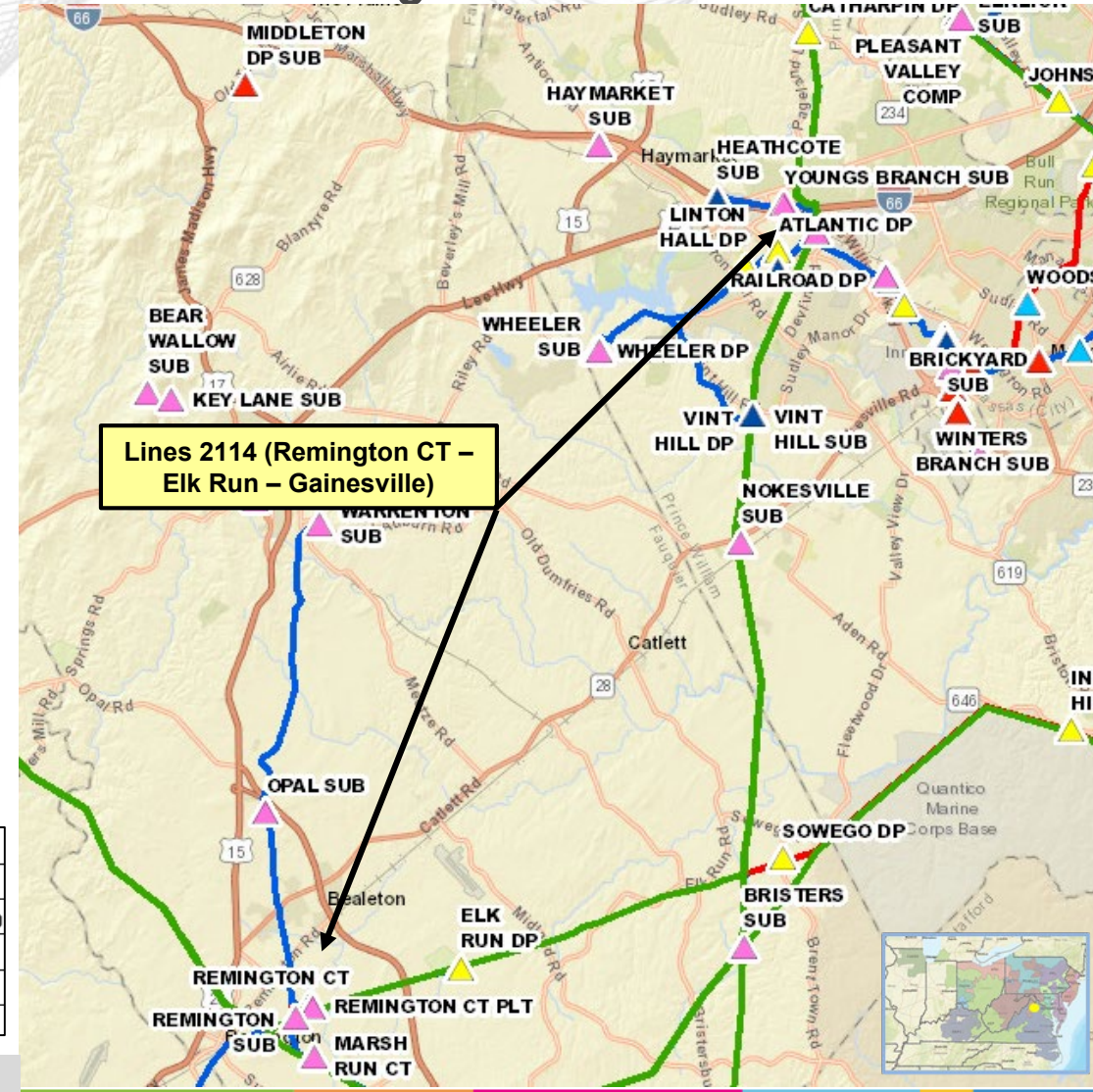
Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
6REMNGCT– 6ELK RUN 230kV	1047/1047/1160/1160
6ELK RUN – 6GAINSVL 230kV	1047/1047/1160/1160

COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED

Continued on next slide....

SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency





As part of the 2021 RTEP Window #1, the following projects were proposed to address violations on 230kV Line #2114:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
445	Dominion	Line #2114 Remington CT to Gainesville full reconductor. Upgrade wave trap and substation conductor at both terminals. Upgrade Brambleton breakers.	30.680
333	Dominion	Line #2114 Remington CT to Gainesville full reconductor. Upgrade terminal equipment at both ends to include 230kV circuit breakers, switches and leads to achieve 4000A rating. Upgrade Brambleton breakers.	39.693
298 ⁽¹⁾	TRNSRC	Construct greenfield Lee District 500 kV station with 6-breaker ring bus.	72.876

⁽¹⁾Proposal 298 also addresses Generator Deliverability violation GD-S30. (This flowgate was eliminated as a result of the 2021 RTEP re-tool).

Recommended Solution: Proposal #2021_1-445

- Reconductor approximately 24.42 miles of 230kV Line #2114 Remington CT - Elk Run - Gainesville to achieve a summer rating of 1574 MVA by fully reconductoring the line and upgrading the wave trap and substation conductor at Remington CT and Gainesville. **Estimated cost: \$28.988M (b3689.1)**
- Replace 230 kV breakers SC102, H302, H402, and 218302 at Brambleton substation with 4000A 80kA breakers and associated equipment including breaker leads as necessary to address breaker duty issues identified in short circuit analysis. **Estimated cost: \$1.692M (b3689.2)**

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Dominion Transmission Zone: Baseline Remington CT - Gainesville

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
6REMNGCT- 6ELK RUN 230kV	1574/1574/1650/1650
6ELK RUN - 6GAINSVL 230kV	1574/1574/1650/1650

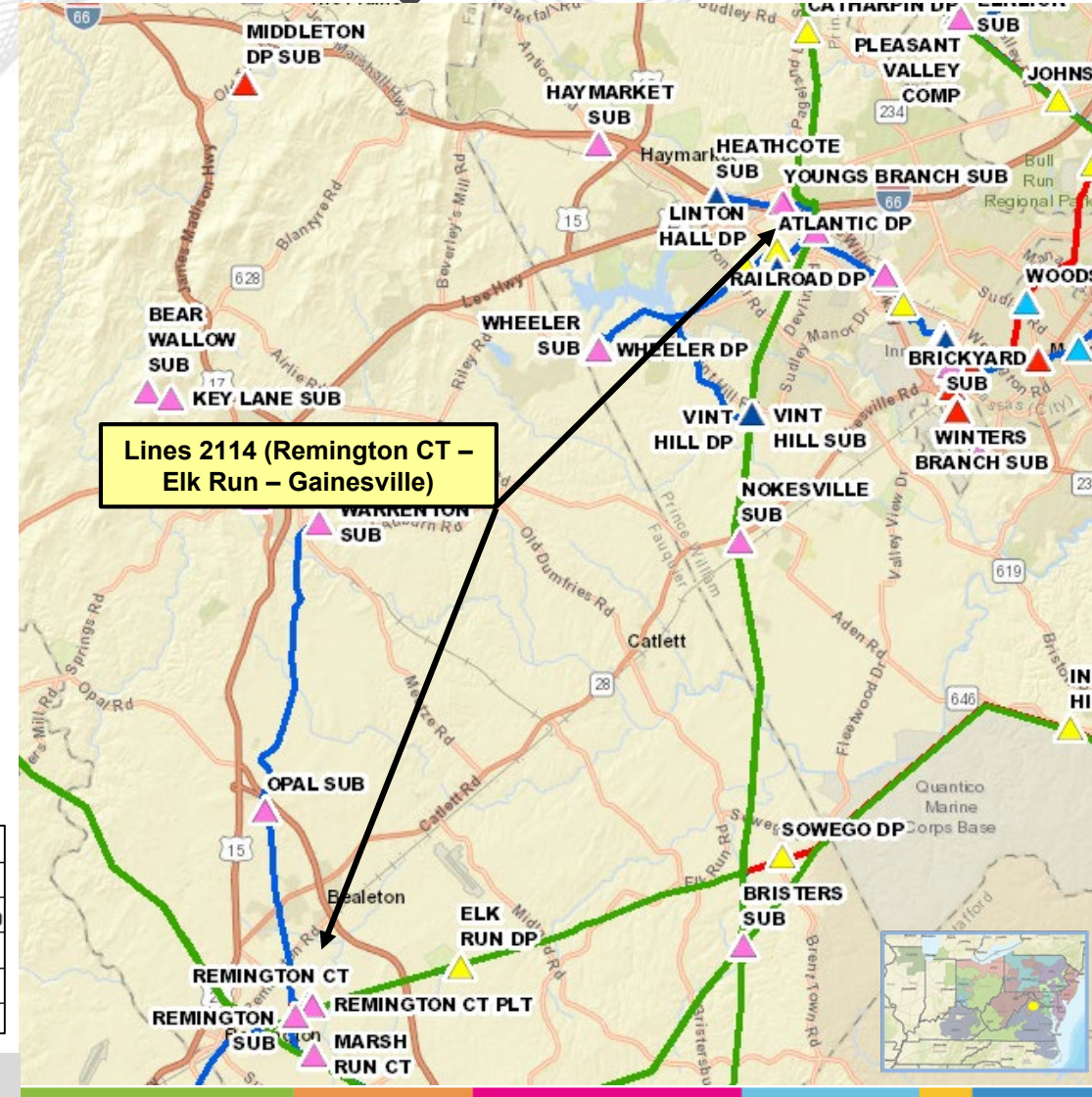
Total Estimated Cost: \$30.680M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021

COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



Dominion Transmission Zone: Baseline Cub Run - Walney

Process Stage: Second Review

Criteria: N-1

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

N1-ST33

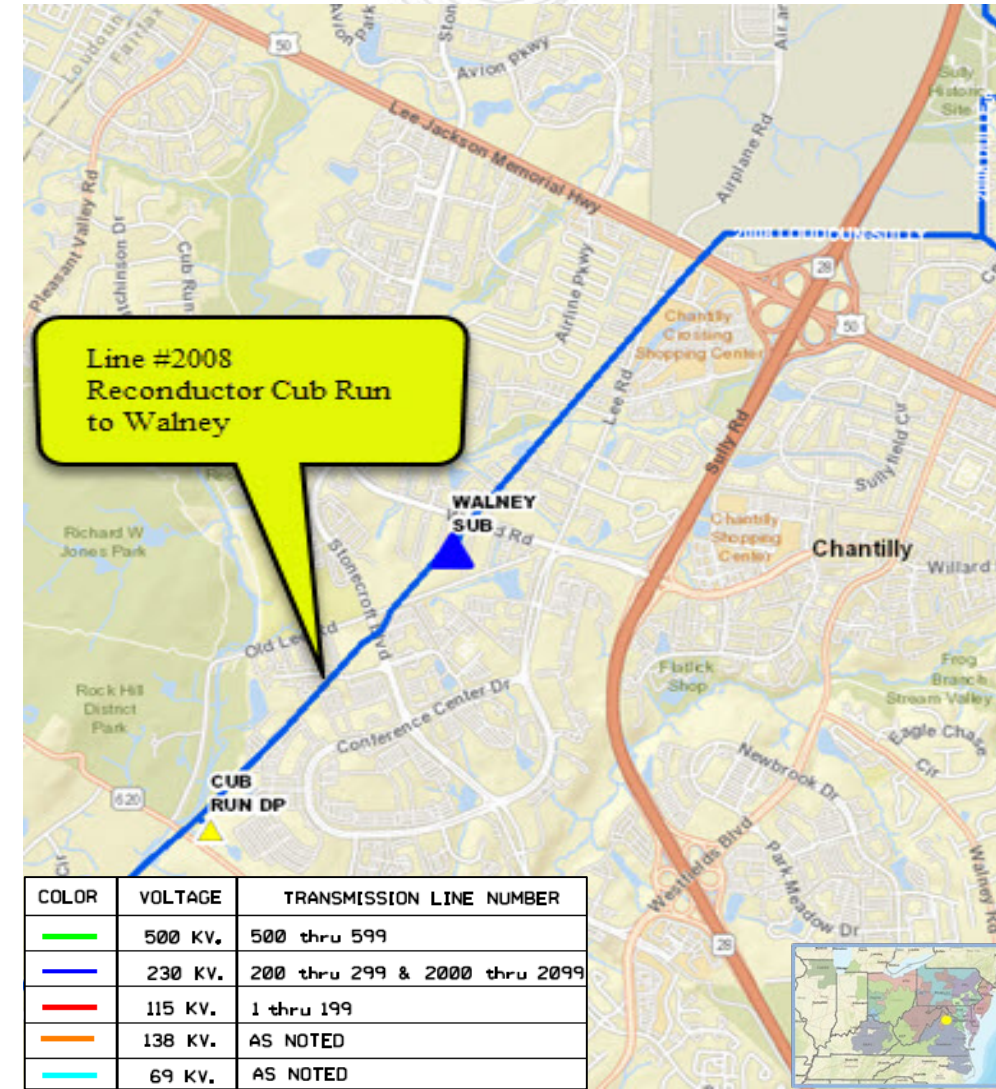
In the 2026 RTEP summer case, 230kV Line #2008 Cub Run to Walney is overloaded for a breaker contingency under N-1.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
6CUBRUN – 6WALNEY 230KV	823/823/944/944

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SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency





Dominion Transmission Zone: Baseline Cub Run - Walney

As part of the 2021 RTEP Window #1, the following project was proposed to address violations on 230kV Line #2008:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
600	Dominion	Line #2008 Cub Run to Walney reconductor. Replace line switch 200826 with a 4000A switch.	1.934

Recommended Solution: Proposal #2021_1-600

- Reconductor approximately 1.07 miles of 230kV Line #2008 segment from Cub Run – Walney to achieve a summer rating of 1574 MVA. Replace line switch 200826 with a 4000A switch. **(b3690)**

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
6CUBRUN – 6WALNEY 230kV	1574/1574/1650/1650

Total Estimated Cost: \$1.934M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021



Dominion Transmission Zone: Baseline Lakeview - Carolina

Process Stage: Second Review

Criteria: Generator Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

GD-S19

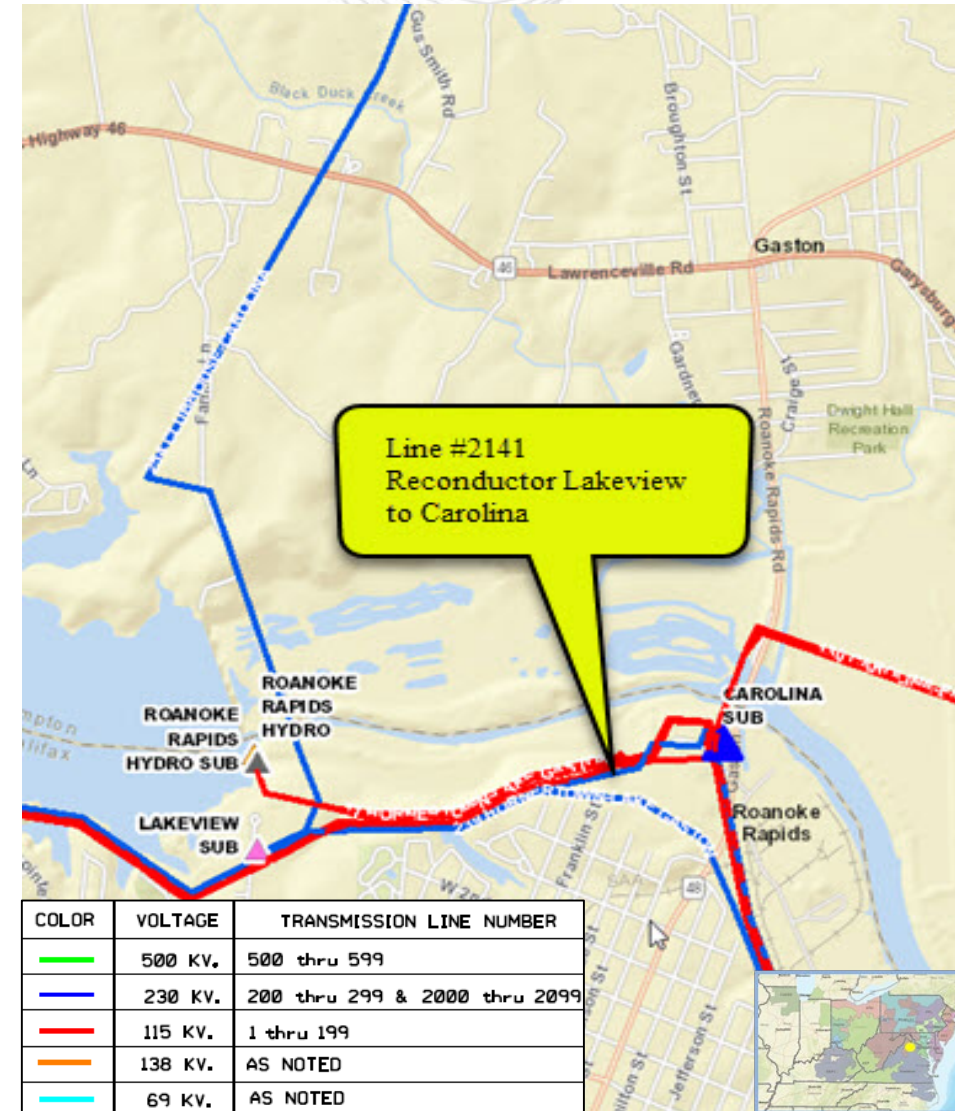
In the 2026 RTEP summer case, 230kV Line #2141 Lakeview to Carolina is overloaded for a single contingency under Generator Deliverability.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
6LAKEVEW – 6CAROLNA 230kV	399/399/505/505

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SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency





Dominion Transmission Zone: Baseline Lakeview - Carolina

As part of the 2021 RTEP Window #1, the following project was proposed to address violations on 230kV Line #2141:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
414	Dominion	Line #2141 Lakeview to Carolina reconductor	1.185

Recommended Solution: Proposal #2021_1-414

- Reconductor approximately 1.4 miles of 230kV Line #2141 from Lakeview – Carolina to achieve a summer rating of 1047 MVA. (b3691)

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
6LAKEVEW – 6CAROLNA 230kV	1047/1047/1160/1160

Total Estimated Cost: \$1.185M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021



Dominion Transmission Zone: Baseline Elmont - Chickahominy

Process Stage: Second Review

Criteria: FERC Form 715 (C.2.9 End-of-Life Criteria)

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

DOM-02

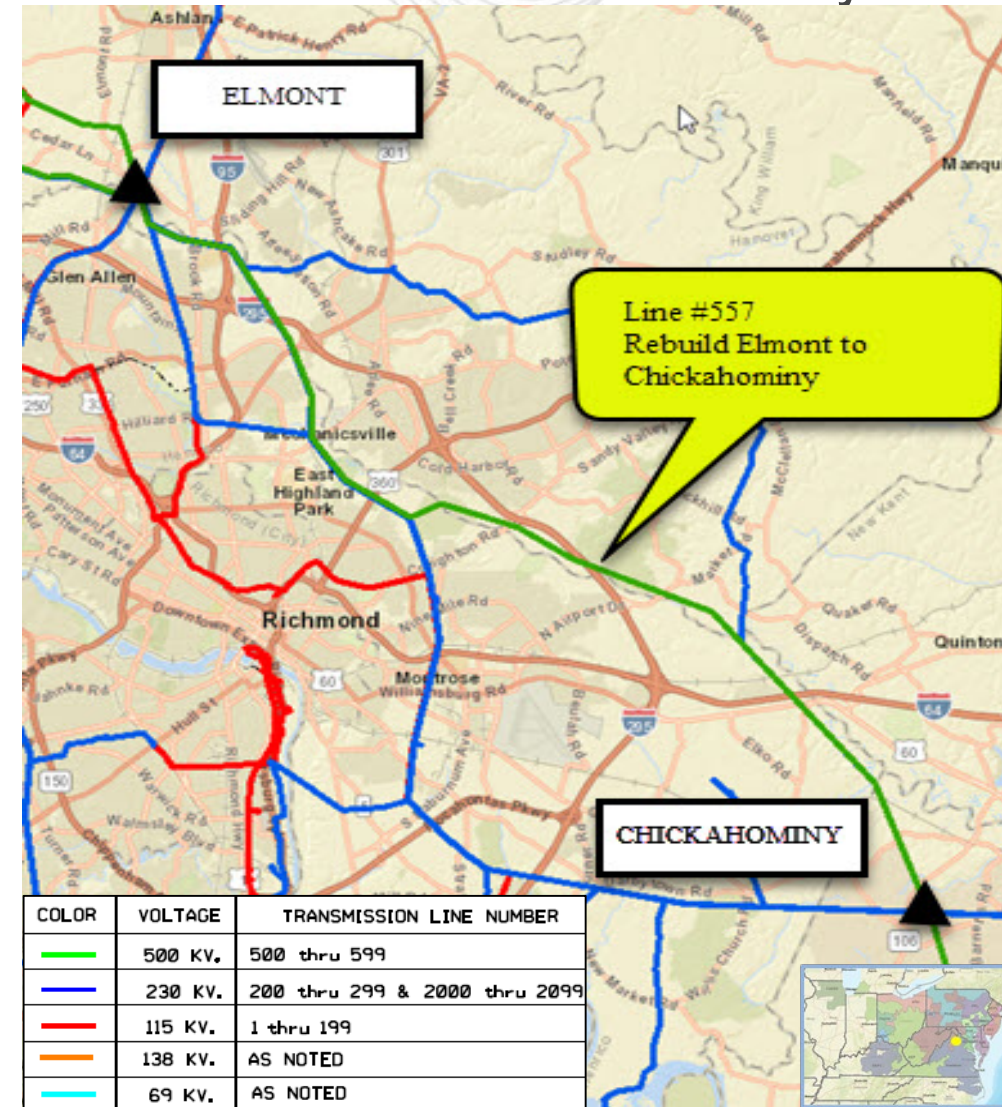
500kV Line #557 Elmont to Chickahominy was constructed in 1971 with ACAR conductor and 5-series Corten towers that need to be rebuilt to current standards based on Dominion's End-of-Life Criteria.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
8ELMONT – 8CHCKAHM 500kV	2598/2598/2988/3014

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SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency





Dominion Transmission Zone: Baseline Elmont - Chickahominy

As part of the 2021 RTEP Window #1, the following projects was proposed to address violations on 500kV Line #557:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
124	Dominion	Line #557 Elmont to Chickahominy reconductor	58.155

Recommended Solution: Proposal #2021_1-124

- Rebuild approximately 27.7-miles of 500 kV transmission line from Elmont to Chickahominy with current 500 kV standards construction practices to achieve a summer rating of 4330 MVA. (b3692)

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
8ELMONT – 8CHCKAHM 500kV	4330/4330/4980/5023

Total Estimated Cost: \$58.155M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021



Dominion Transmission Zone: Baseline Lexington & Bath County 500kV

Process Stage: Second Review

Criteria: N-1 Voltage Magnitude & Drop

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

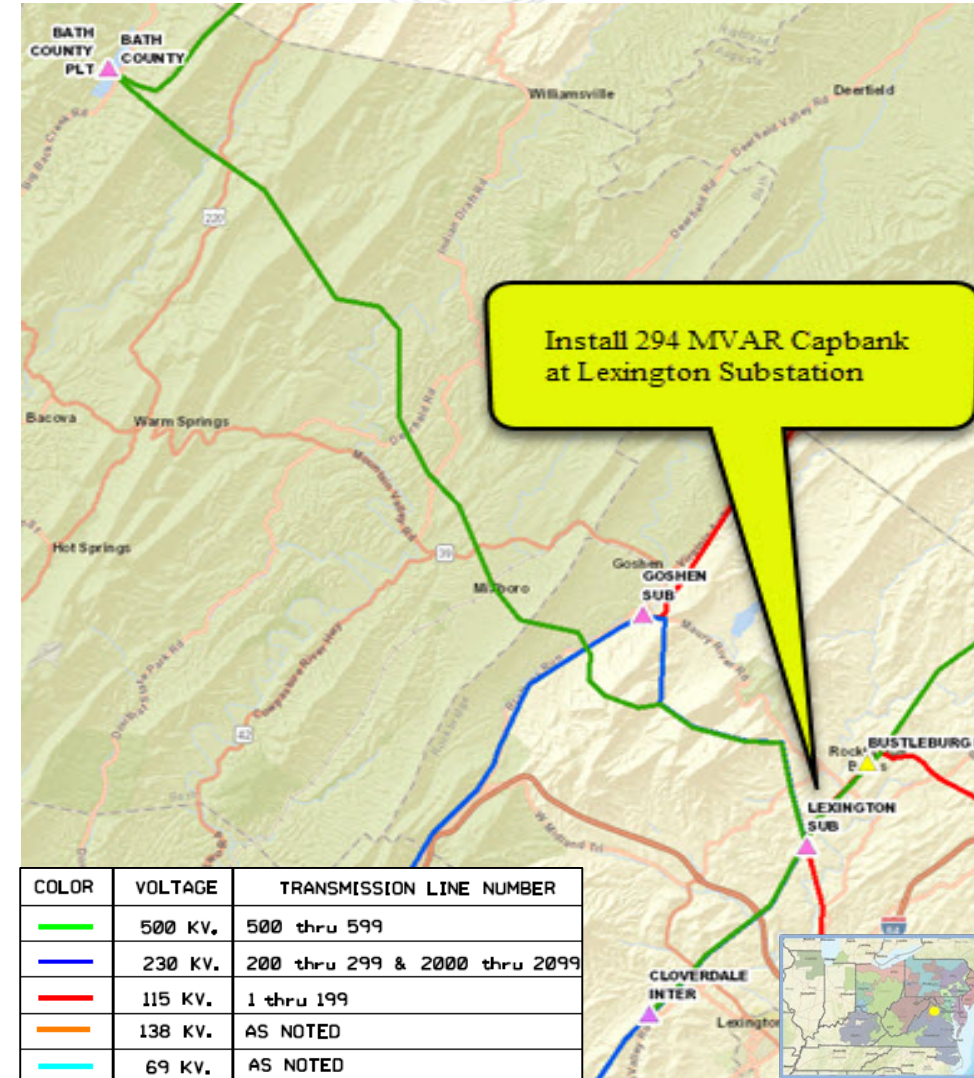
Proposal Window Exclusion: None

Problem Statement:

N1-LLVM1, N1-LLVM2, N1-LLVM3, N1-LLVM4, N1-LLVM5, N1-LLVM6, N1-LLVM7, N1-LLVM8, N1-LLVD1, N1-LLVD2, N1-LLVD3

In the 2026 RTEP light load case, there are voltage magnitude and voltage drop violations at the 500kV buses of Lexington and Bath County for single and breaker contingencies under N-1.

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Dominion Transmission Zone: Baseline Lexington & Bath County 500kV

As part of the 2021 RTEP Window #1, the following project was proposed to address violations at Lexington and Bath County 500kV:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
722	Dominion	Install 294 MVar Cap Bank at Lexington substation	5.860

Recommended Solution: Proposal #2021_1-722

- Expand substation and install approximately 294 MVar cap bank at 500kV Lexington substation along with a 500kV breaker. Adjust the tap positions associated with the two 230/69kV transformers at Harrisonburg to neutral position and lock them. **(b3693)**

Total Estimated Cost: \$5.860M

Projected In-Service Date: 11/1/2026

Required In-Service Date: 11/1/2026

Previously Presented: 11/2/2021

SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



Dominion Transmission Zone: Baseline Ox 500/230kV Transformers

Process Stage: Second Review

Criteria: FERC Form 715 (C.2.1.3 Critical Stress Case)

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

DOM-T3, DOM-T4

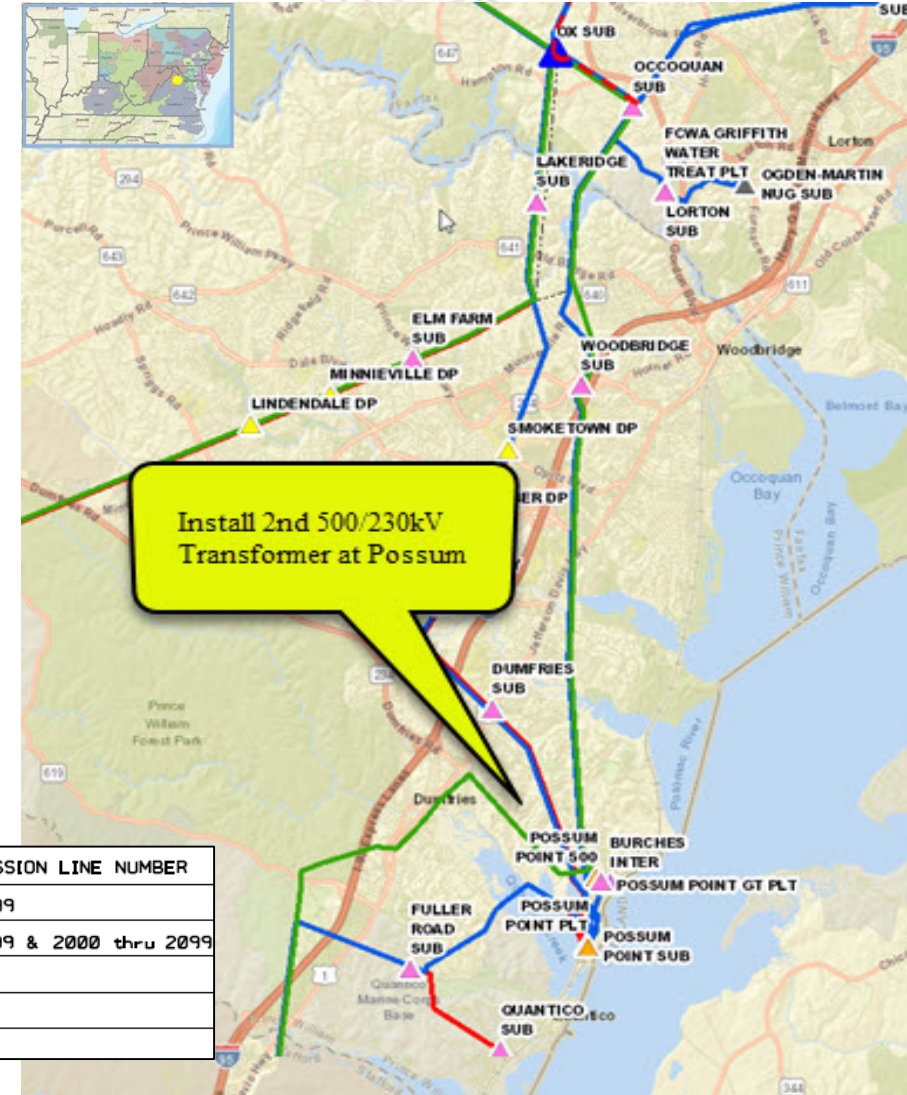
In the 2026 RTEP summer case, the Ox 500/230kV transformer #1 & Ox 500/230kV transformer #2 are overloaded under Dominion stress case criteria. (Outage of the most critical generator followed by single contingency: N-1-1).

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
8OX – 6OX #1 500/230kV	931.9/963.8/1198.8/1242.3
8OX – 6OX #2 500/230kV	909.3/951.9/1167.6/1220.4

Continued on next slide....

SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency





As part of the 2021 RTEP Window #1, the following projects were proposed to address violations on 500/230kV transformer #1 & #2 at Ox:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
57 ⁽¹⁾	Dominion	Install 2 nd 500/230kV transformer at Possum Point	24.539
319	Dominion	Replace both 500/230kV transformers at Ox	63.768
637	Dominion	Expand Occoquan substation via the installation of a 500kV GIS ring bus, 1-1100MVA 500/230kV transformer and 230kV breaker-and-a-half bus arrangement.	75.389

⁽¹⁾ Proposal 57 corresponds to baseline b2443.6 that was brought to TEAC to be canceled but not taken to Board to cancel due to issue being identified in the 2021 RTEP and potential for project to be brought back if the proposal was provided to mitigate the violation. (Adding 2nd 500/230kV transformer at Possum Point.)

Recommended Solution: Proposal #2021_1-57

- Install a 2nd 500kV-230kV 840MVA transformer bank at Possum Point 500kV yard, a 0.8 mile long 230kV line extension between Possum Point 500kV and Possum Point 230kV substation, and a new 230kV breaker at Possum 230kV yard to terminate the extension. **(b2443.6)**

Note: Possum Point 500kV Substation and Possum Point 230kV Substation are separated by approximately 0.85 miles.

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Dominion Transmission Zone: Baseline Ox 500/230kV Transformers

Preliminary Facility Rating:

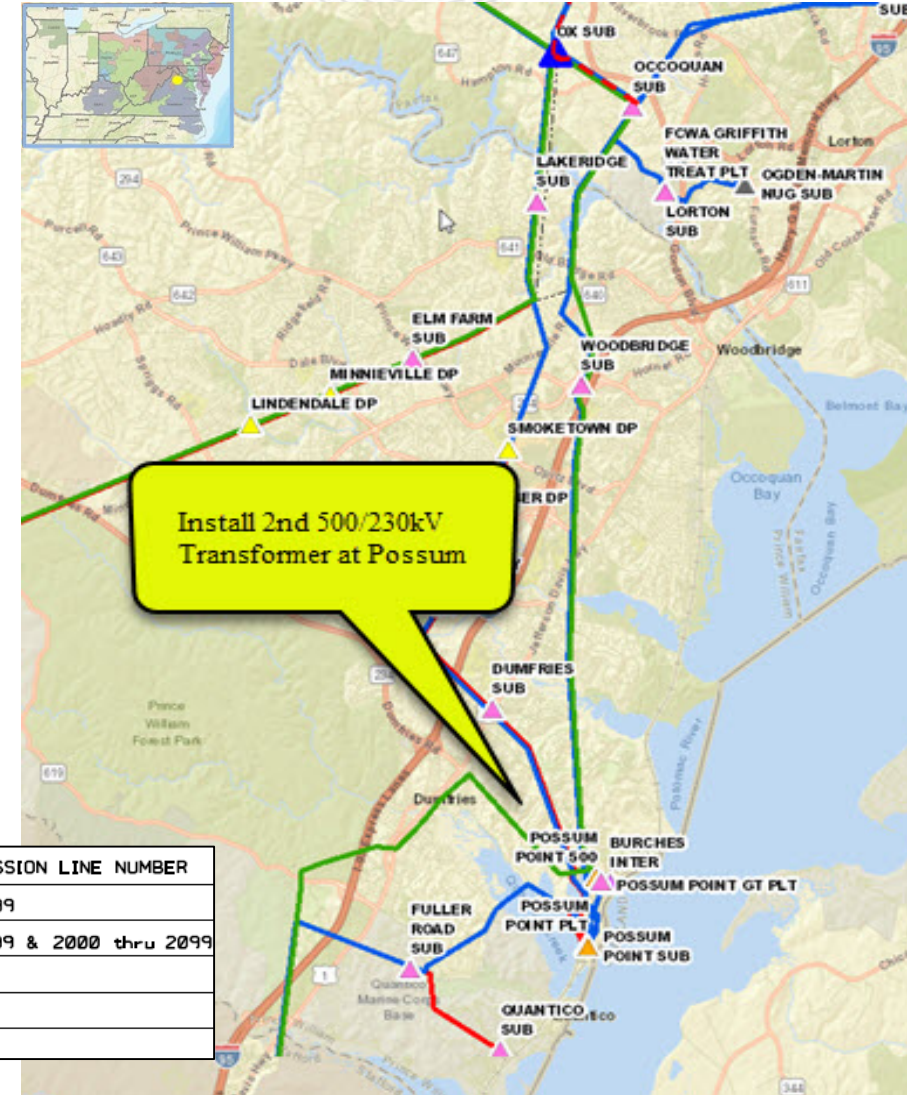
Branch	SN/SE/WN/WE (MVA)
8POSSUM – 6POSSUM #2 500/230kV	902.4/945.9/1155.4/1209.9

Total Estimated Cost: \$24.539M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED

SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Process Stage: Second Review

Criteria: Generator Deliverability, FERC Form 715 (C.2.1.3 Critical Stress Case) & N-1

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

In the 2026 RTEP summer case:

Fredericksburg (Group 1: N2-SLD1, N2-SLD2, GD-S16, GD-S467, DOM-T5)

- 230kV Line #2104 Cranes Corner to Stafford is overloaded for a single and breaker contingency under Generator Deliverability and is also overloaded under Dominion stress case criteria.
- Load loss of 307 MW under N-1-1.

Carson (Group 2: GD-S465, GD-S39)

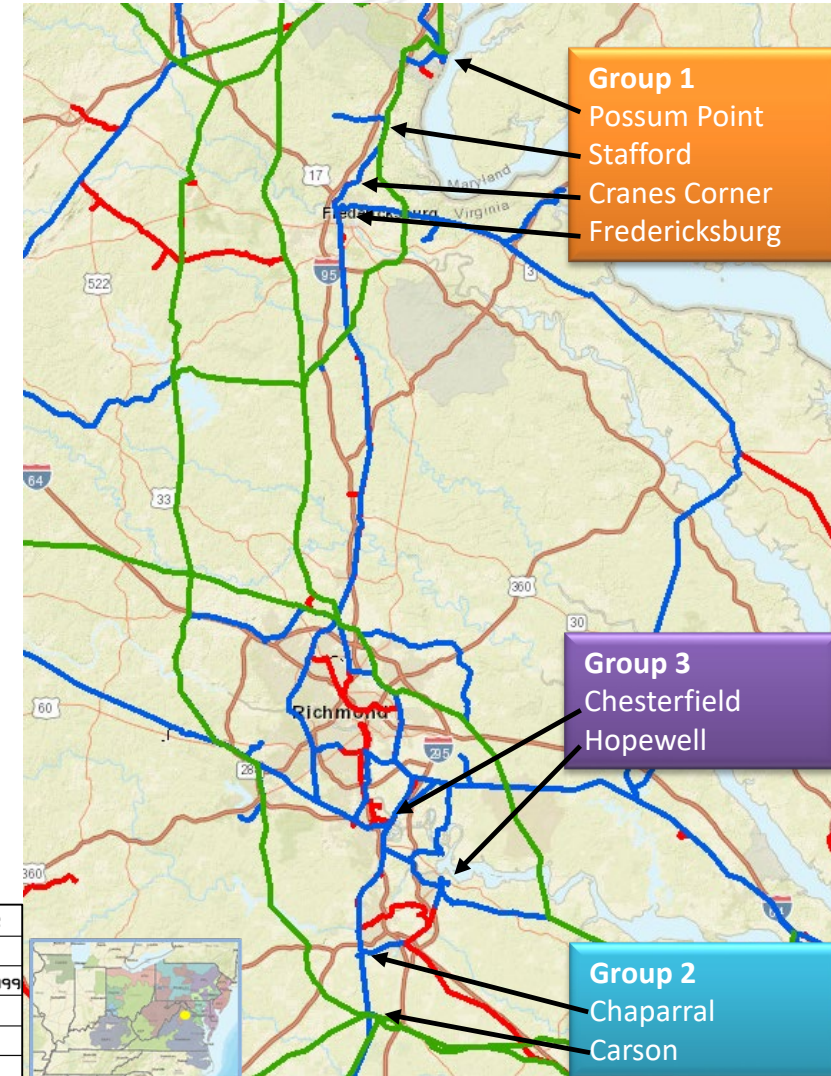
- Carson 500/230kV transformer #2 is overloaded for a breaker contingency under Generator Deliverability.
- 230kV Line #249 Carson to Chaparral is overloaded for a single contingency under Generator Deliverability.

Hopewell (Group 3: GD-S18, GD-S33, GD-S436)

- 230kV Line #211 is overloaded for a single contingency under Generator Deliverability.
- 230kV Line #228 is overloaded for a single and breaker contingency under Generator Deliverability.

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COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Cyan	69 KV.	AS NOTED





Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Existing Facility Rating:

Area	Branch	SN/SE/WN/WE (MVA)
Fredericksburg	6CRANES – 6STAFORD 230kV	722/722/914/914
Carson	8CARSON – 6CARSON 500/230kV #2	928.1/961.6/1192.8/1238.1
Carson	6CARSON – 6CHAPARRAL T 230kV	595/595/659/659
Carson	6LOCKS – 6CHAPARRAL T 230kV	595/595/659/659
Carson	6LOCKS – 3HARROWG 115kV	147/147/185/185
Hopewell	6HOPEWLL – 6CHESTF A 230kV	478/478/606/606
Hopewell	6HOPEWLL – 6CHESTF B 230kV	478/478/606/606

As part of the 2021 RTEP Window #1, the following project was proposed to address violations at Fredericksburg, Carson and Hopewell:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
224	Dominion	<p>Fredericksburg: Convert 115kV Line #29 to 230 kV; Reconductor 230kV Line #2104 Cranes Corner to Aquia Harbor. Feed Quantico via Fuller Road Substation</p> <p>Carson: Energize Carson 500/230kV Tx#1; Reconductor 230kV Line #249 Carson to Locks; Partial Rebuild 115kV Line #100 Locks to Harrowgate</p> <p>Hopewell: Partial rebuild 2.9 miles of double circuit 230kV Lines #211/228</p>	93.412

Continued on next slide....



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Recommended Solution: Proposal #2021_1-224

Fredericksburg

- Convert Line #29 Aquia Harbor to Possum Point to 230 kV (Extended Line #2104) and swap Line #2104 and converted Line #29 at Aquia Harbor backbone termination. Upgrade terminal equipment at Possum Point to terminate converted Line 29 (now extended Line #2104). (Line #29 from Fredericksburg to Aquia Harbor is being rebuilt under baseline b2981 to 230kV standards.) **Estimated cost: \$9.386M (b3694.1)**
- Upgrade Aquia Harbor terminal equipment to not limit 230kV Line #9281 conductor rating. **Estimated cost: \$0.631M (b3694.2)**
- Upgrade Fredericksburg terminal equipment by rearranging 230 kV bus configuration to terminate converted Line 29 (now becoming 9281). The project will add a new breaker at the 230kV bay and reconfigure line termination of 230kV Lines #2157, #2090, and #2083. **Estimated cost: \$2.725M (b3694.3)**
- Reconductor/rebuild approximately 7.6 miles of 230kV Line #2104 Cranes Corner – Stafford to achieve a summer rating of 1047 MVA⁽¹⁾. Reconductor/rebuild approximately 0.34 miles of 230kV Line #2104 Stafford – Aquia Harbor to achieve a summer rating of 1047 MVA. Upgrade terminal equipment at Cranes Corner to not limit the new conductor rating. **Estimated cost: \$19.596M (b3694.4)**
- Upgrade wave trap and line leads at 230kV Line #2090 Ladysmith CT terminal to achieve 4000A rating. **Estimated cost: \$0.152M (b3694.5)**
- Upgrade Fuller Road substation to feed Quantico substation via 115 kV radial line. Install four breaker ring and break 230kV Line #252 into two new lines: 1) #252 between Aquia Harbor to Fuller Road and 2) #9282 between Fuller Road and Possum Point. Install a 230/115 kV transformer which will serve Quantico substation. **Estimated cost: \$24.159M (b3694.6)**

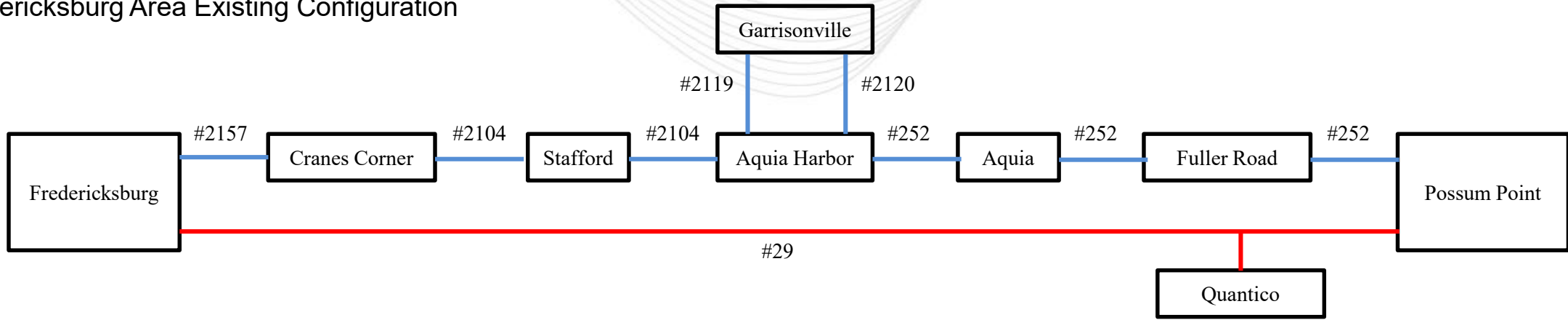
⁽¹⁾ This portion of the project will be addressed by baseline b3321 as it overlaps the violation associated with the deactivation of Morgantown 1 and 2 presented at the 8/31 TEAC.

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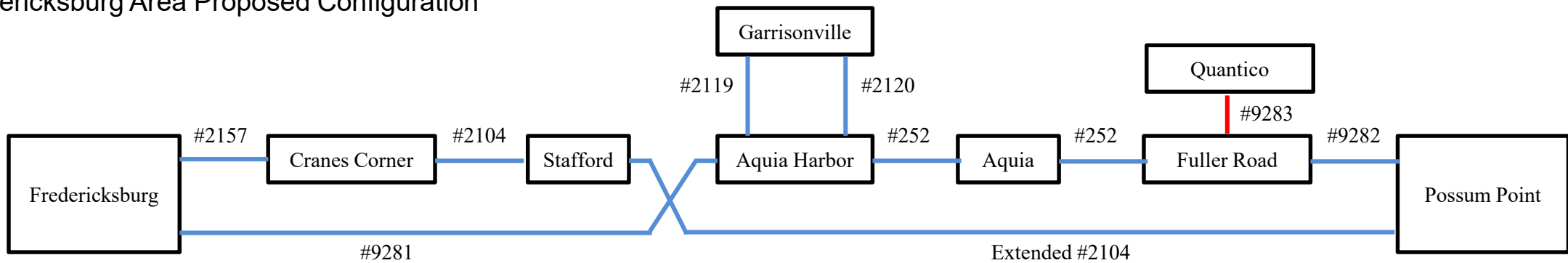


Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Fredericksburg Area Existing Configuration



Fredericksburg Area Proposed Configuration



Continued on next slide....



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Recommended Solution: Proposal #2021_1-224

Carson

- Energize in-service spare 500/230kV Carson Tx#1 **(b3694.7)**
- Partial wreck and rebuild 10.34 miles of 230kV Line #249 Carson - Locks to achieve a minimum summer emergency rating of 1047 MVA. Upgrade terminal equipment at Carson and Locks to not limit the new conductor rating. **Estimated cost: \$15.365M (b3694.8)**
- Wreck and rebuild 5.4 miles of 115kV Line #100 Locks - Harrowgate to achieve a minimum summer emergency rating of 393 MVA. Upgrade terminal equipment at Locks and Harrowgate to not limit the new conductor rating and perform Line #100 Chesterfield terminal relay work. **Estimated cost: \$9.097M (b3694.9)**

Hopewell

- Reconductor approximately 2.9 miles of 230 kV Line #211 Chesterfield – Hopewell to achieve a minimum summer emergency rating of 1046 MVA. **Estimated cost: \$4.914M (b3694.10)**
- Reconductor approximately 2.9 miles of 230 kV Line #228 Chesterfield - Hopewell to achieve a minimum summer emergency rating of 1046 MVA. **Estimated cost: \$4.914M (b3694.11)**
- Upgrade equipment at Chesterfield substation to not limit ratings on Lines 211 and 228. **Estimated cost: \$0.759M (b3694.12)**
- Upgrade equipment at Hopewell substation to not limit ratings on Lines 211 and 228. **Estimated cost: \$1.714M (b3694.13)**

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Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Preliminary Facility Rating:

Area	Branch	SN/SE/WN/WE (MVA)
Fredericksburg	6CRANES – 6STAFORD 230kV	1047/1047/1160/1160
Carson	8CARSON – 6CARSON 500/230kV #1	889.2/939.4/1140/1193.7
Carson	6CARSON – 6CHAPARRAL T 230kV	1047/1047/1160/1160
Carson	6LOCKS – 6CHAPARRAL T 230kV	1047/1047/1160/1160
Carson	6LOCKS – 3HARROWG 115kV	393/393/412/412
Hopewell	6HOPEWLL – 6CHESTF A 230kV	1046/1046/1095/1095
Hopewell	6HOPEWLL – 6CHESTF B 230kV	1046/1046/1095/1095

Total Estimated Cost: \$93.412M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021

Process Stage: Second Review

Criteria: Summer N-1-1

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: Substation Equipment and Below 200 kV exclusion

Problem Statement: The Windy Edge - Chesco Park 110501 115kV circuit is overloaded for N-1-1 contingency.

Violations were posted as part of the 2021 Window 1: (FG# N2-ST1, N2-ST2)

Existing Facility Rating: 136SN/156SE, 168WN/183WE MVA

Proposed Facility Rating: 143SN/186SE, 171WN/215WE MVA

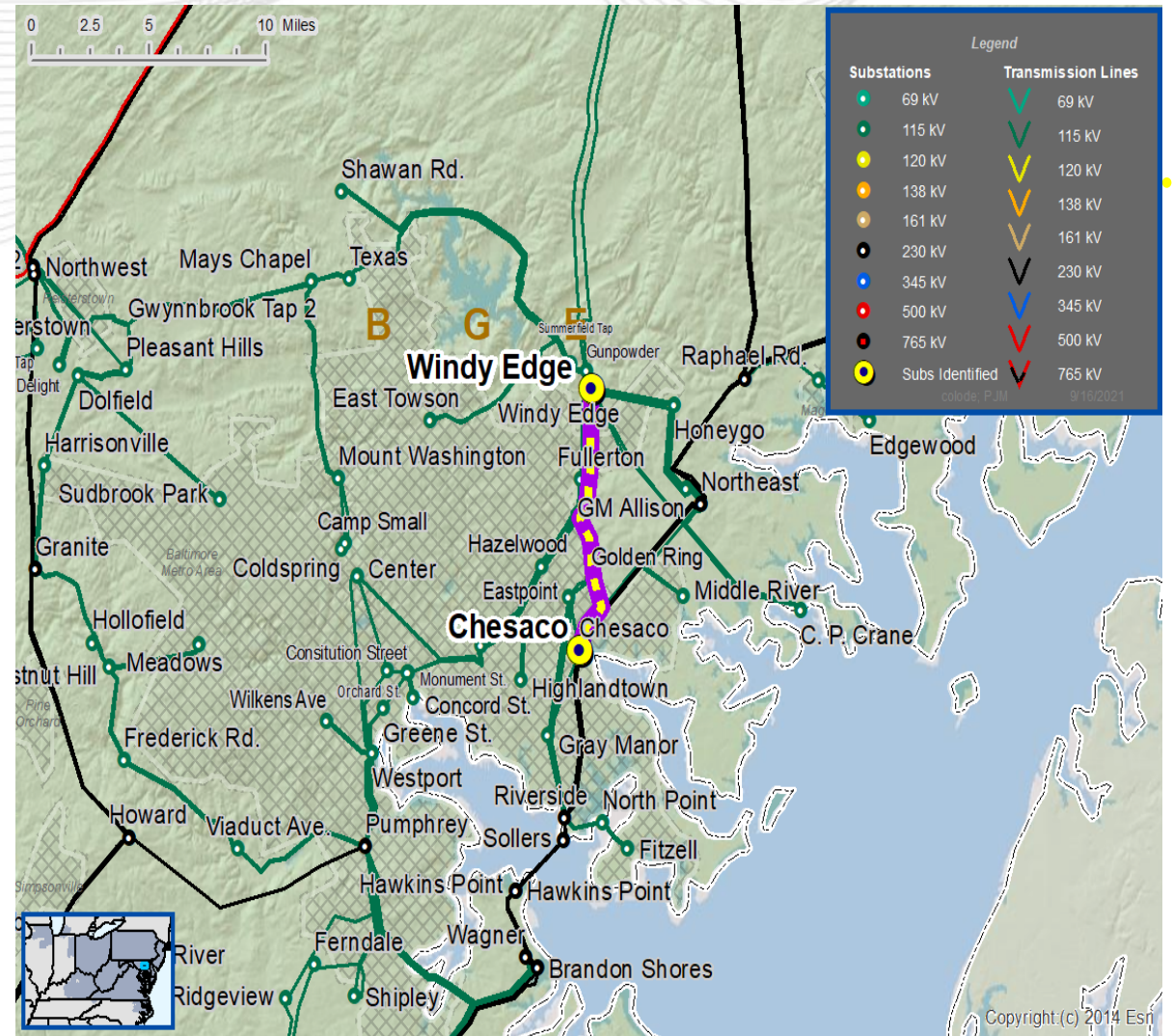
Recommended Solution:

Upgrade Windy Edge 115 kV Substation Conductor to increase ratings of the Windy Edge - Chesco Park 110501 circuit. **(B3668)**

Estimated Cost: \$0.5 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: Winter Generator Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Winter case

Proposal Window Exclusion: Substation Equipment and Below 200 kV exclusion

Problem Statement: The Townsend-Church 138 kV circuit is overloaded for towerline contingency.

Violations were posted as part of the 2021 Window 1: (FG# GD-W248)

Existing Facility Rating: 280SN/348SE,318WN/389WE MVA

Proposed Facility Rating: 392SN485SE,451WN/546WE MVA

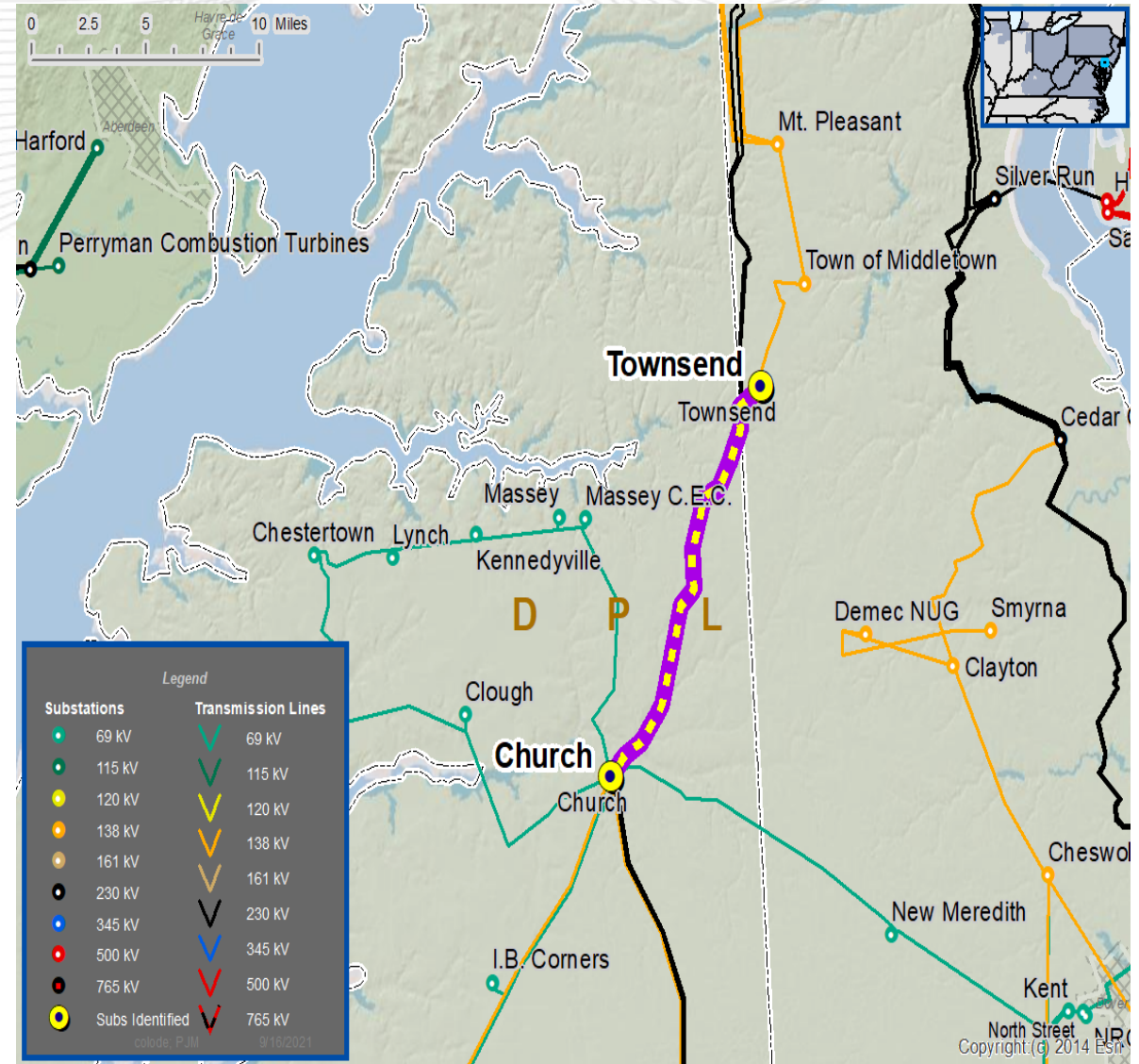
Recommended Solution:

- Replace terminal equipment (Stranded Bus, Disconnect Switch, and Circuit Breaker) at Church Substation. **(B3669.1)**
- Replace terminal equipment (Circuit Breaker) at Townsend Substation. **(B3669..2)**

Estimated Cost: \$1.45 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: Summer Generator Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: Substation Equipment and Below 200 kV exclusion

Problem Statement: The Loretto - Fruitland 69 kV circuit is overloaded for line fault stuck breaker contingency.

Violations were posted as part of the 2021 Window 1: (FG# GD-S444)

Existing Facility Rating: 87SN/112SE, 110N/143WE MVA

Proposed Facility Rating: 105SN/136SE, 121WN/153WE MVA

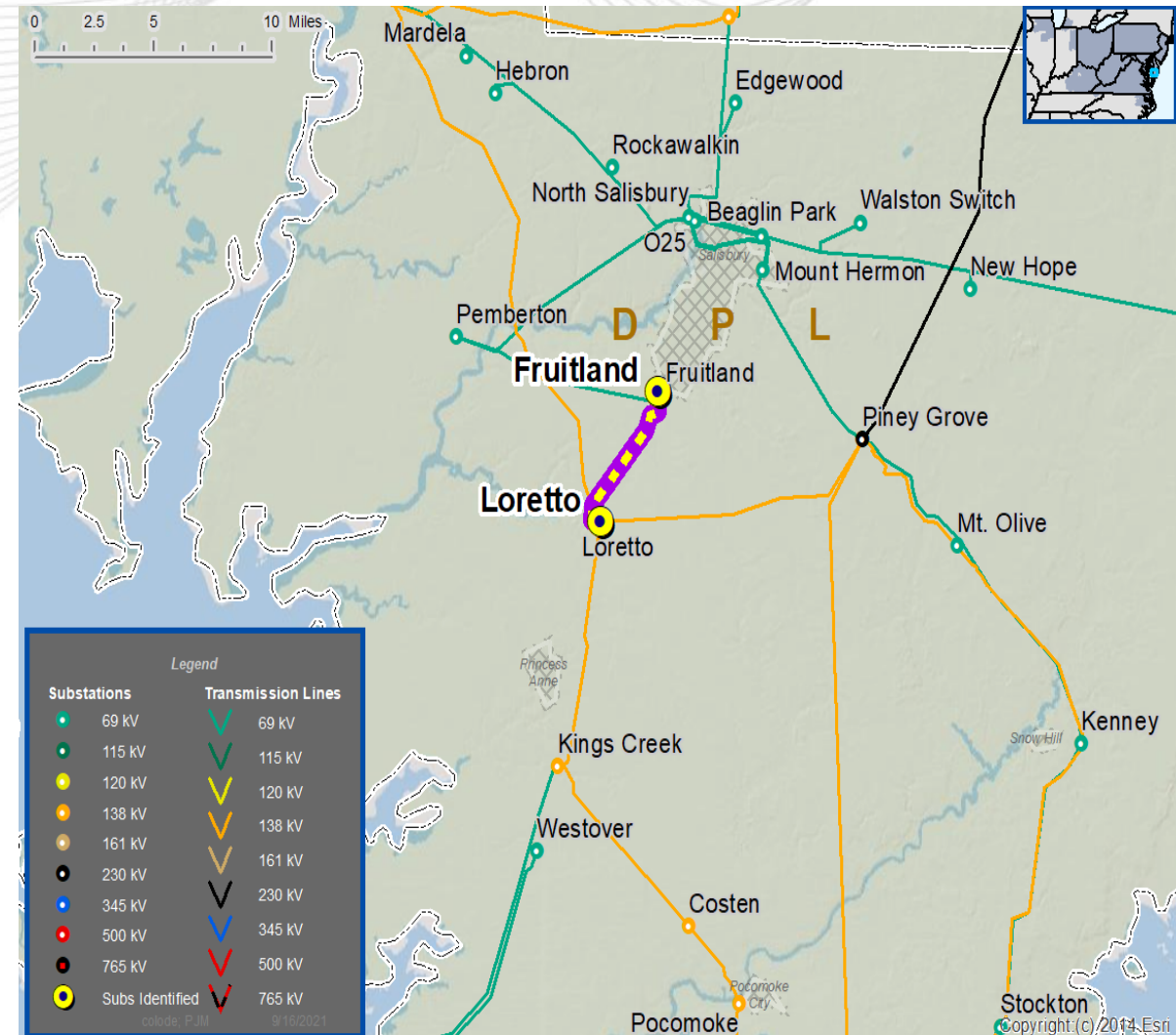
Recommended Solution:

Upgrade terminal equipment on the Loretto - Fruitland 69 kV circuit: Replace the 477 ACSR stranded bus on the 6711 line terminal inside Loretto substation and the 500 SDCU stranded bus on the 6711 line terminal inside Fruitland substation with 954 ACSR conductor. **(B3670)**

Estimated Cost: \$0.8 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement: N. Boyertown - W. Boyertown 69 kV circuit is overloaded for multiple breaker contingencies.

Violations were posted as part of the 2021 Window 1: (FG# ME-T1 and ME-T2)

Existing Facility Rating: 71SN/72SE,72WN/72WE MVA

Proposed Facility Rating: 139SN/169SE, 158WN/201WE MVA

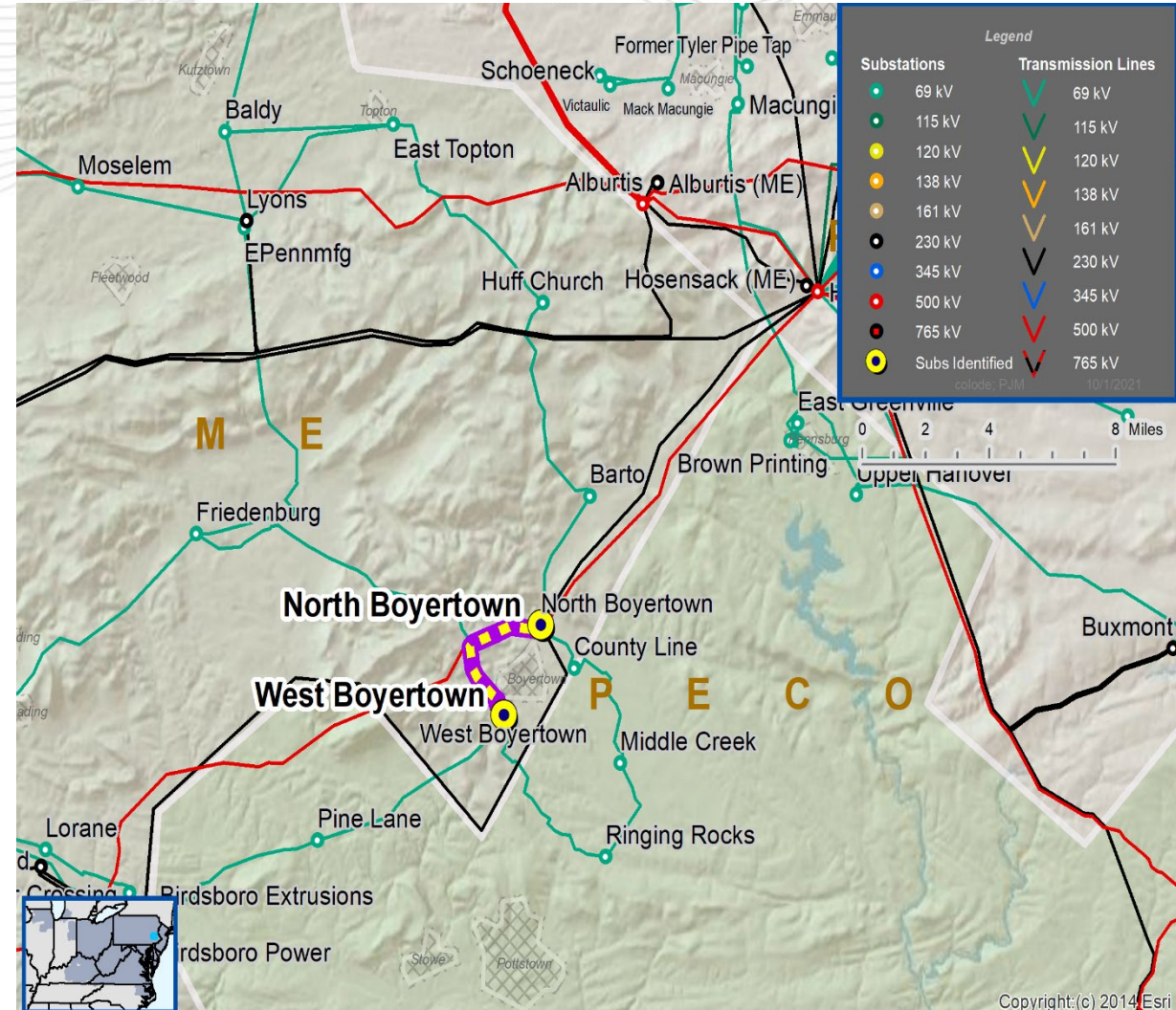
Recommended Solution:

Rebuild approx. 3.6 miles of N. Boyertown - W. Boyertown 69 kV circuit # 875 with 795 ACSR.. Upgrade terminal equipment (circuit breaker, disconnect switches, substation conductor) and relays at N. Boyertown and W. Boyertown substation. **(B3671)**

Estimated Cost: \$8.79 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: Summer Generator Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: None

Problem Statement:

East Towanda – North Meshoppen 115 kV is overloaded for N-1 contingency.

Violations were posted as part of the 2021 Window 1: GD-S13

Existing Facility Rating: 202SN/245SE, 228WN/290WE MVA

Proposed Facility Rating: 448SN/453SE, 448WN/516WE MVA

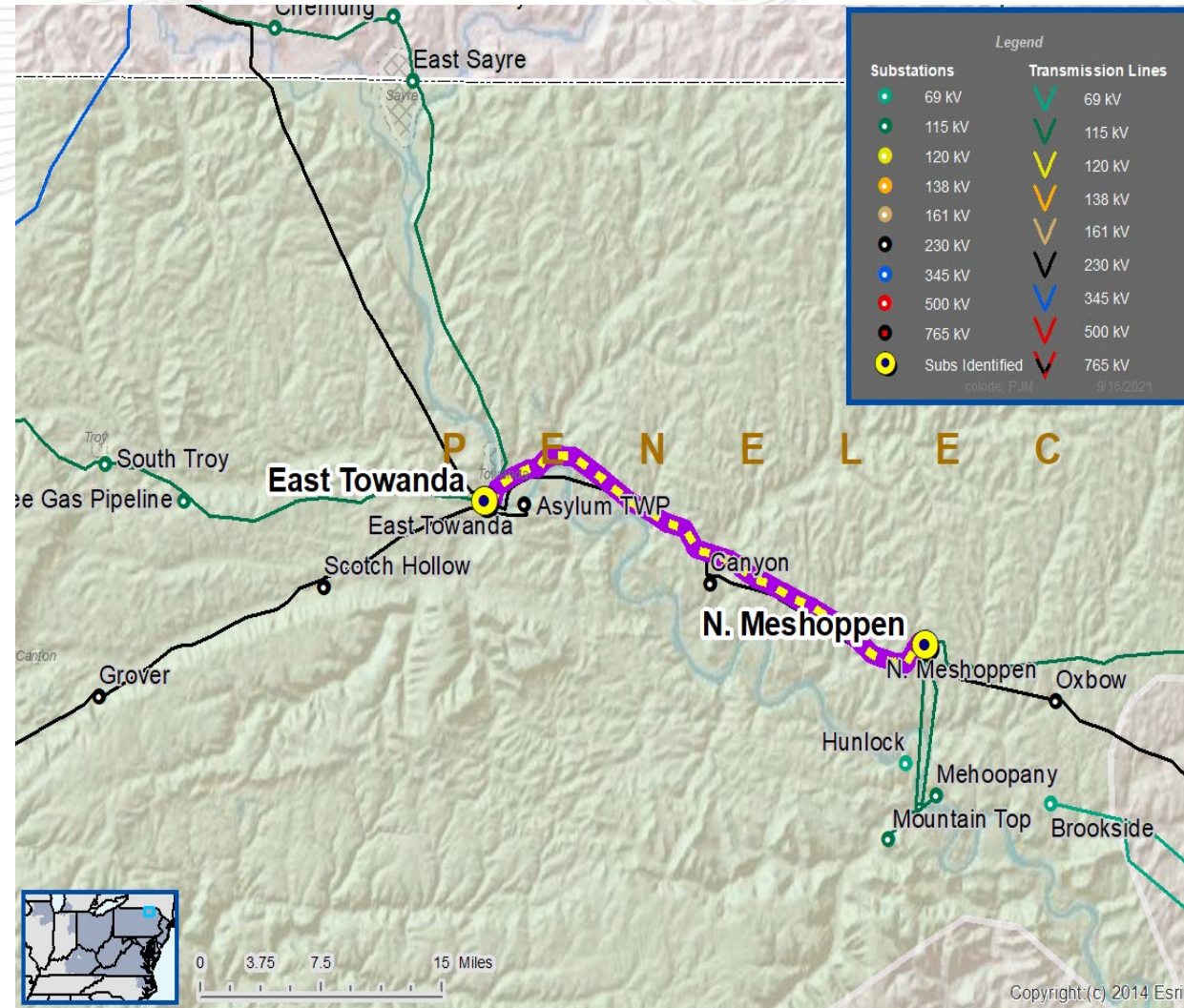
Recommended Solution:

Proposal ID 589 - East Towanda – North Meshoppen 115 kV Line: Rebuild 2.5 miles of 636 ACSR with 1113 ACSS conductor using single circuit construction. Upgrade all terminal equipment to the rating of 1113 ACSS. **(B3672)**

Estimated Cost: \$6.66 M

Alternatives: N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer and Winter cases

Proposal Window Exclusion: Substation Equipment and Below 200 kV exclusion

Problem Statement: Beth 33 – Cambria Prison 46 kV circuit is overloaded for a breaker contingency.

Violations were posted as part of the 2021 Window 1: (FG# , PN-T1 and PN-T2)

Existing Facility Rating: 22SN/22SE, 22WN/22WE MVA

Proposed Facility Rating: 32SN/32SE, 35WN/35WE MVA

Recommended Solution:

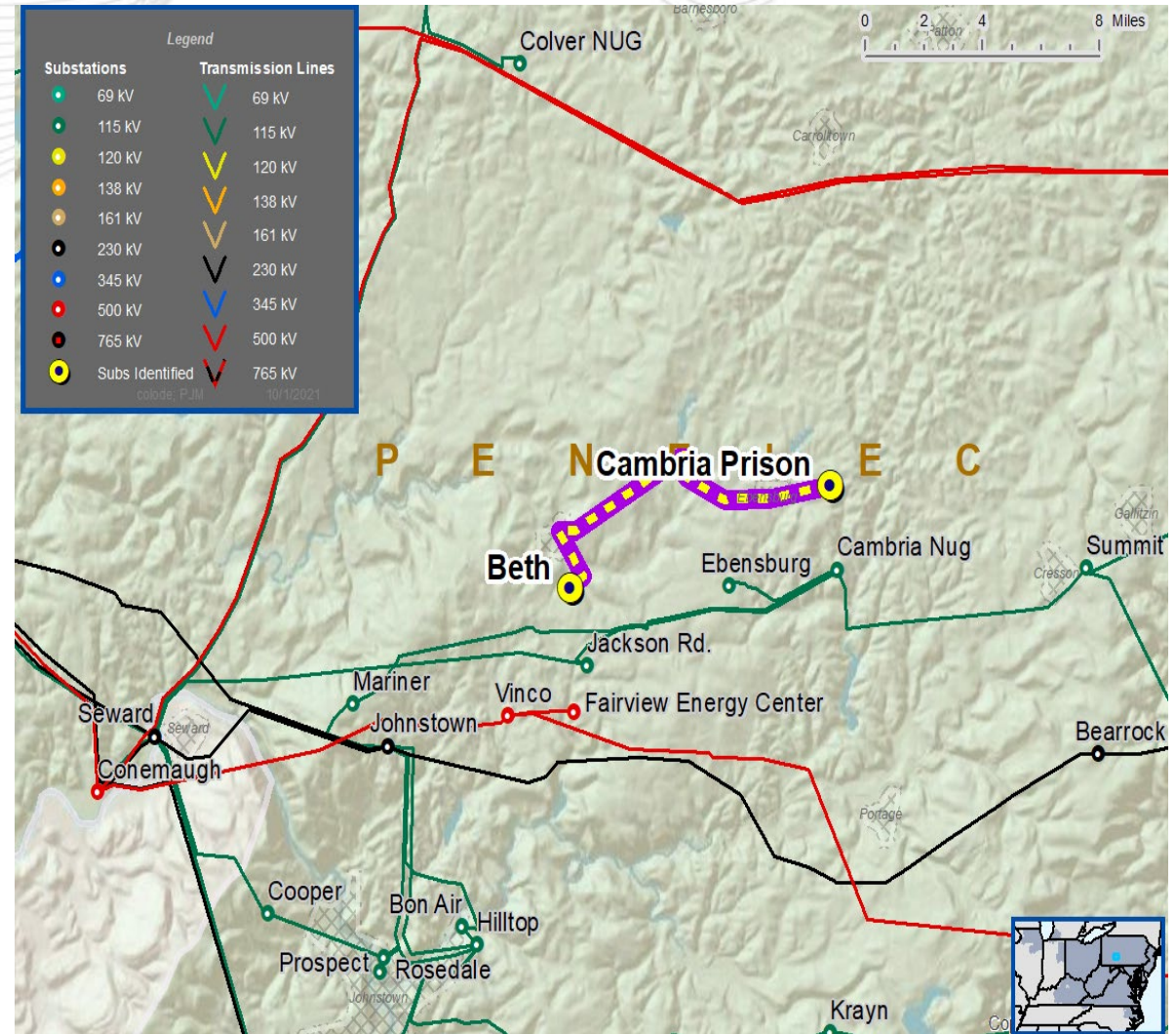
Replace the relay panels at Bethlehem 33 46 kV substation on the Cambria Prison line . **(B3673)**

Note: The Beth 33 – Cambria Prison 46 kV circuit will be upgrades as part of the s2412, if s2412 project is completed prior to June 6, 2026, the baseline identified to address the reliability violation will be canceled.

Estimated Cost: \$0.3 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2021 Series -2026 Short circuit model

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement: Five Existing Atlantic 34.5 kV breakers (J36, BK1A, BK1B, BK3A and BK3B), are overdutied in the 2026 case model.

Violations were posted as part of the 2021 Window 1: (FG# JCPL-SC1, JCPL-SC2, JCPL-SC3, JCPL-SC4 and JCPL-SC5)

Existing Facility Rating: 40 kA and 41.8 kA

Proposed Facility Rating: 63 kA

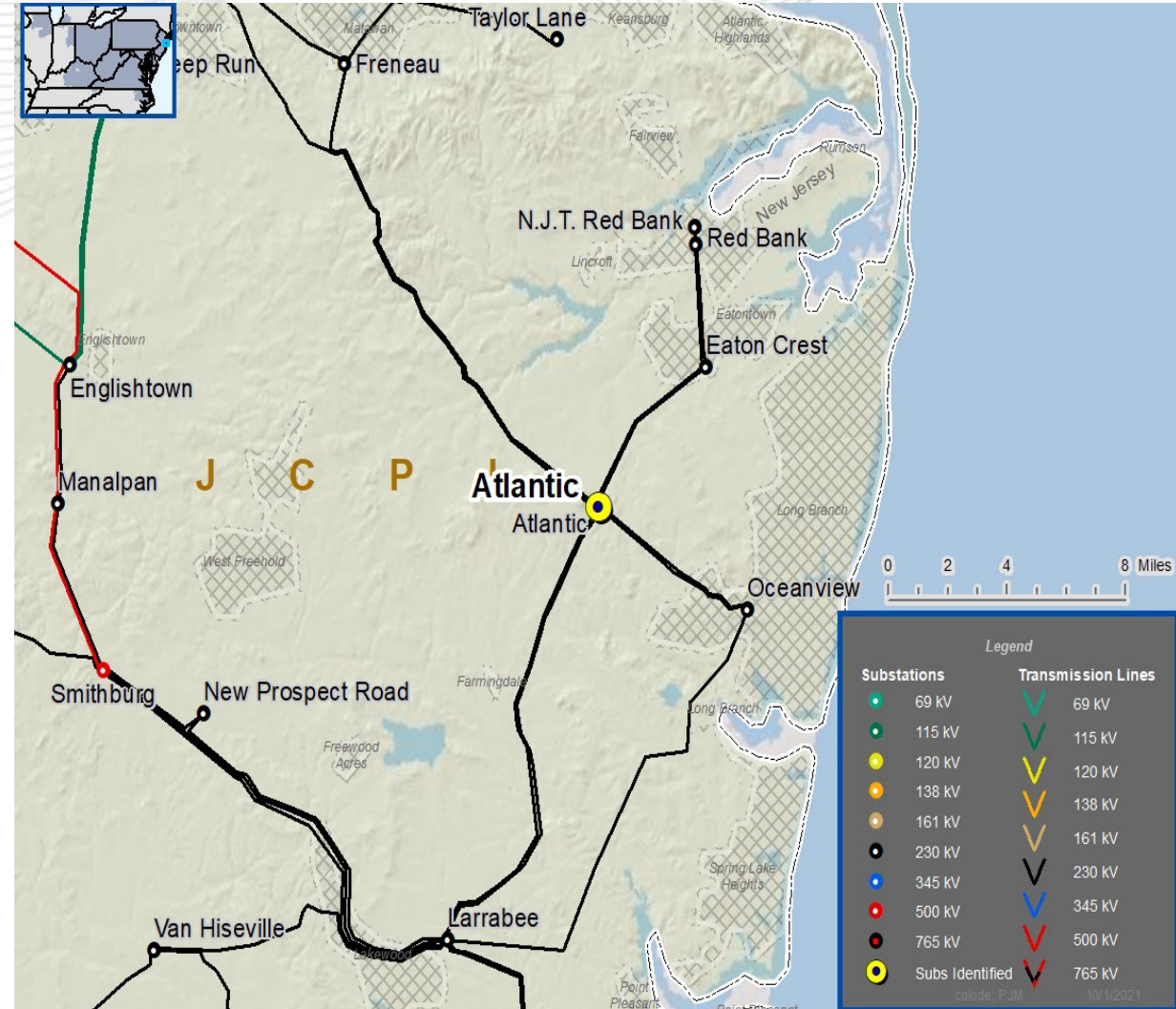
Recommended Solution:

Replace Five Atlantic 34.5 kV breakers (J36, BK1A, BK1B, BK3A and BK3B) with 63kA rated breakers and associated equipment. **(B3674)**

Estimated Cost: \$3.5 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2021 Series -2026 Short circuit model

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement: Six existing Werner 34.5 kV breakers (E31A_Prelim, E31B_Prelim, V48 future, W101, M39 and U99) are overdutied in the 2026 case model.

Violations were posted as part of the 2021 Window 1: (FG# JCPL-SC6, JCPL-SC7, JCPL-SC8, JCPL-SC9, JCPL-SC10 and JCPL-SC11)

Existing Facility Rating: 25.1 kA

Proposed Facility Rating: 40 kA

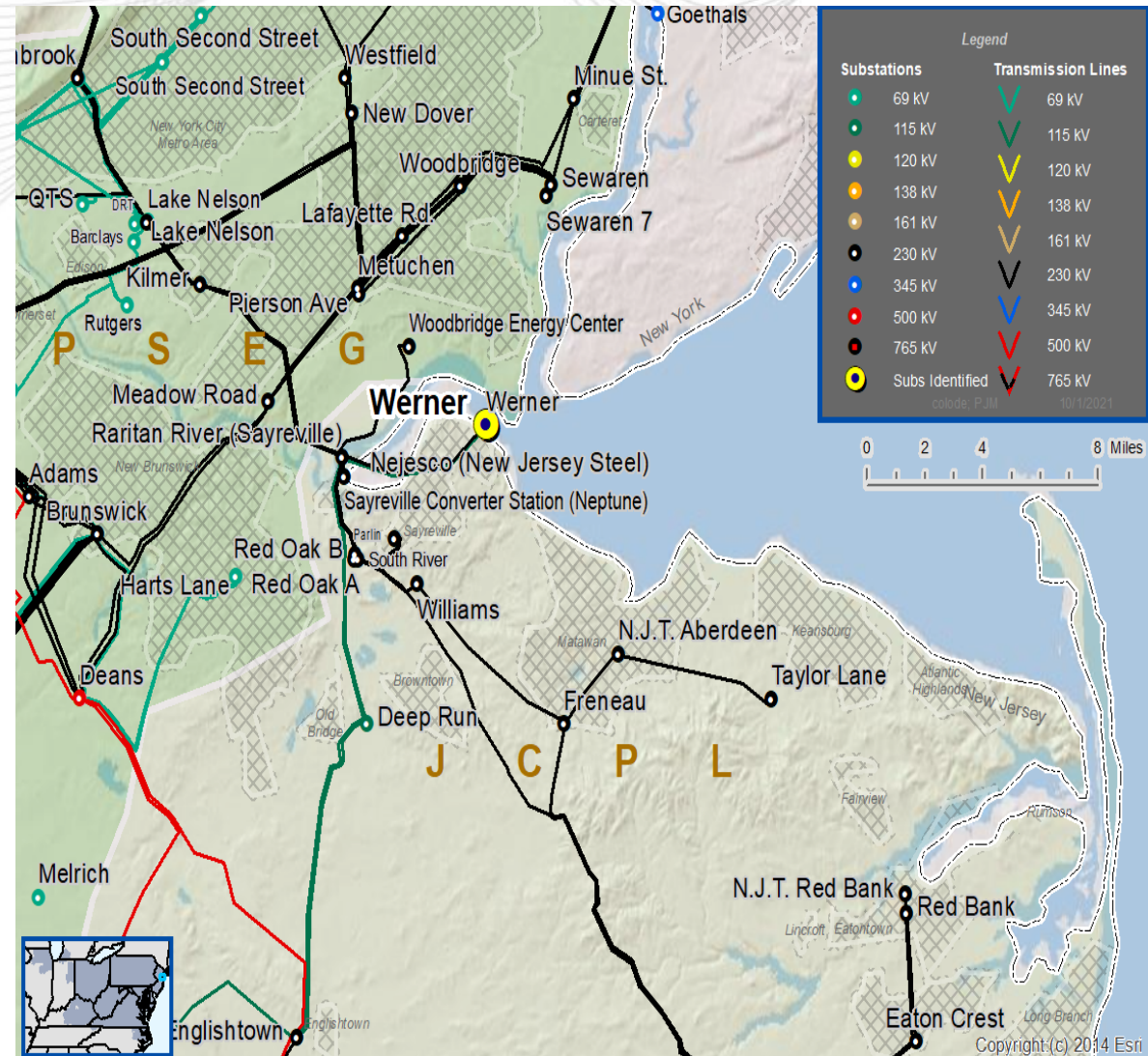
Recommended Solution:

Replace Six Werner 34.5 kV breakers (E31A_Prelim, E31B_Prelim, V48 future, W101, M39 and U99) with 40 kA rated breakers and associated equipment.. **(B3675)**

Estimated Cost: \$4.2 M

Alternatives N/A

Required In-Service: 6/1/2026



Process Stage: Second Review

Criteria: FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2021 Series -2026 Short circuit model

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement: One Freneau existing 34.5 kV breaker (BK6) is overdutied in the 2026 case model.

Violations were posted as part of the 2021 Window 1: (FG# JCPL-SC12)

Existing Facility Rating: 40 kA

Proposed Facility Rating: 63 kA

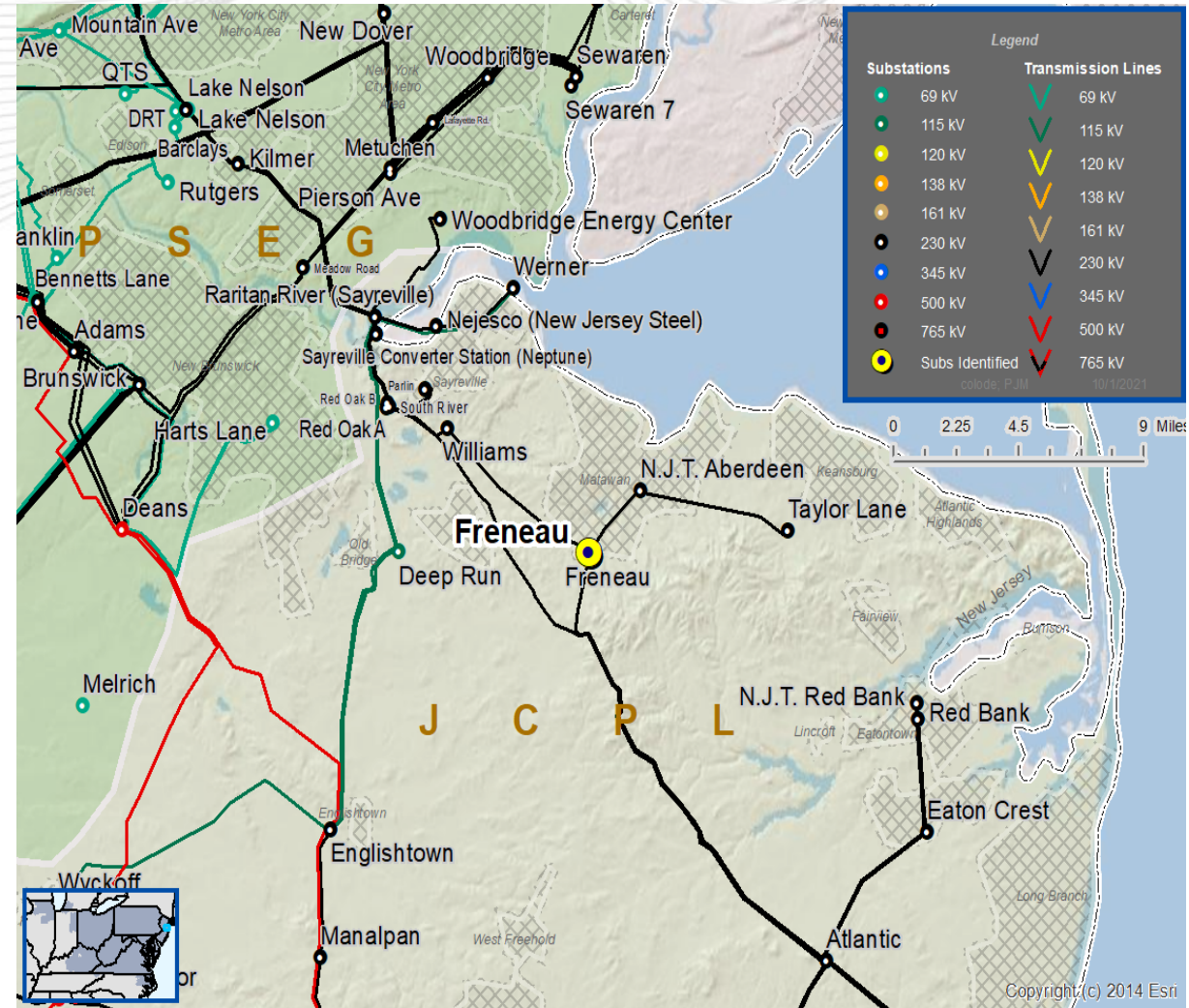
Recommended Solution:

Replace One Freneau 34.5 kV breaker (BK6) with 63 kA rated breakers and associated equipment.. (B3676)

Estimated Cost: \$0.7 M

Alternatives: N/A

Required In-Service: 6/1/2026





Dominion Transmission Zone: Baseline

Process Stage: Recommended Solution

Criteria: Summer Generator Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

115 kV Line #126 segment from Earleys to Kelford is overloaded for a tower contingency under generator deliverability. (FG: GD-S710)

Preliminary Facility Rating: 262SN/262SE/301SLD, 290WN/290WE/334WLD MVA

Recommended Solution:

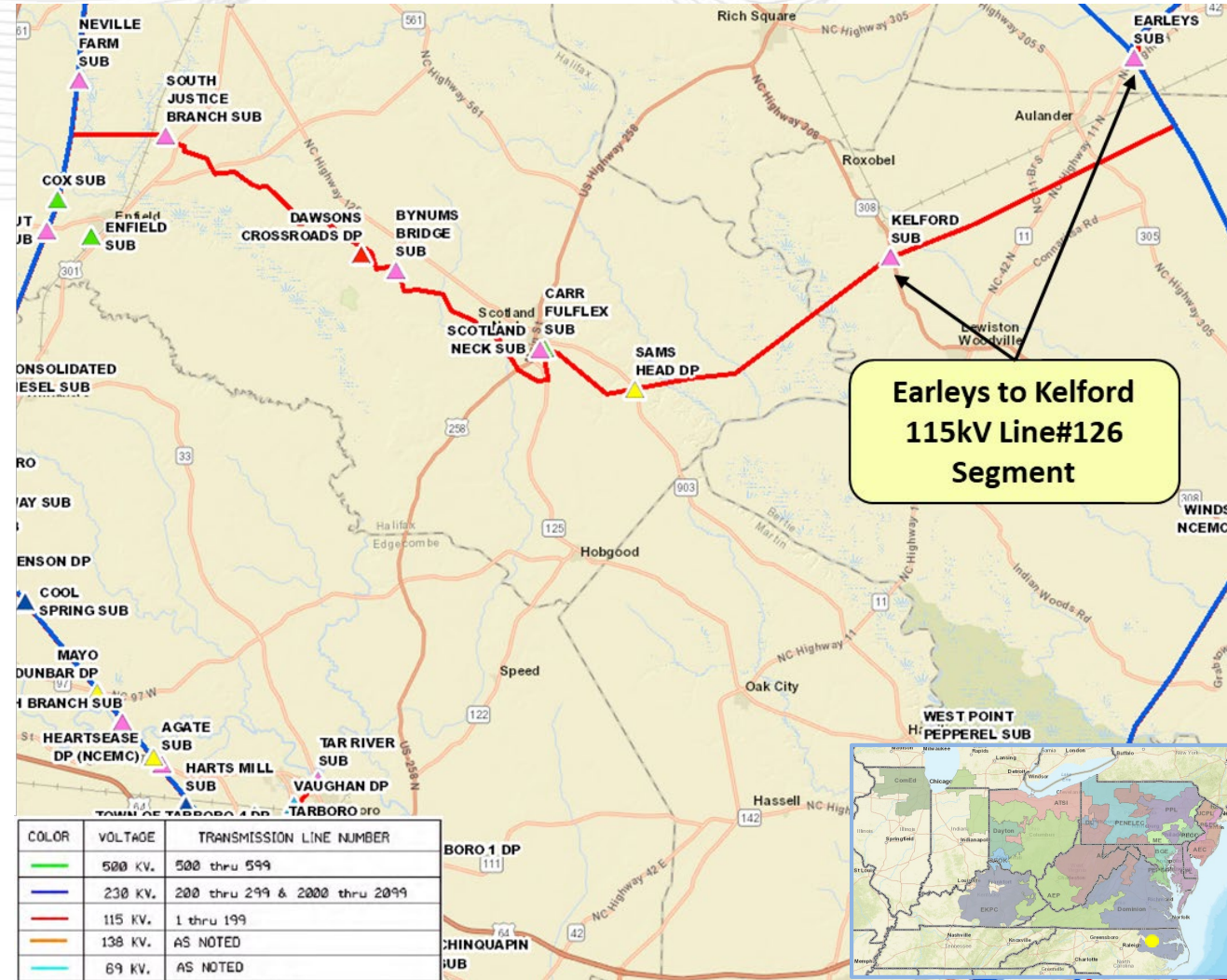
Rebuild 12.4 miles of 115 kV Line #126 segment from Earleys to Kelford with a summer emergency rating of 262 MVA. Replace structures as needed to support the new conductor. Upgrade breaker switch 13668 at Earleys from 1200 A to 2000 A. **(b3684)**

Estimated Cost: \$18.75 M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 10/14/2021



Process Stage: Recommended Solution

Criteria: FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer & Winter cases

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

Low voltage violations at Cloud 115kV Bus and Boydton 115kV Bus under N-1-1 contingency conditions.
(FG: DOM-VM20, DOM-VM25, DOM-VM32, DOM-V33)

Recommended Solution:

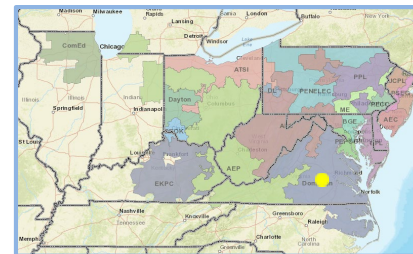
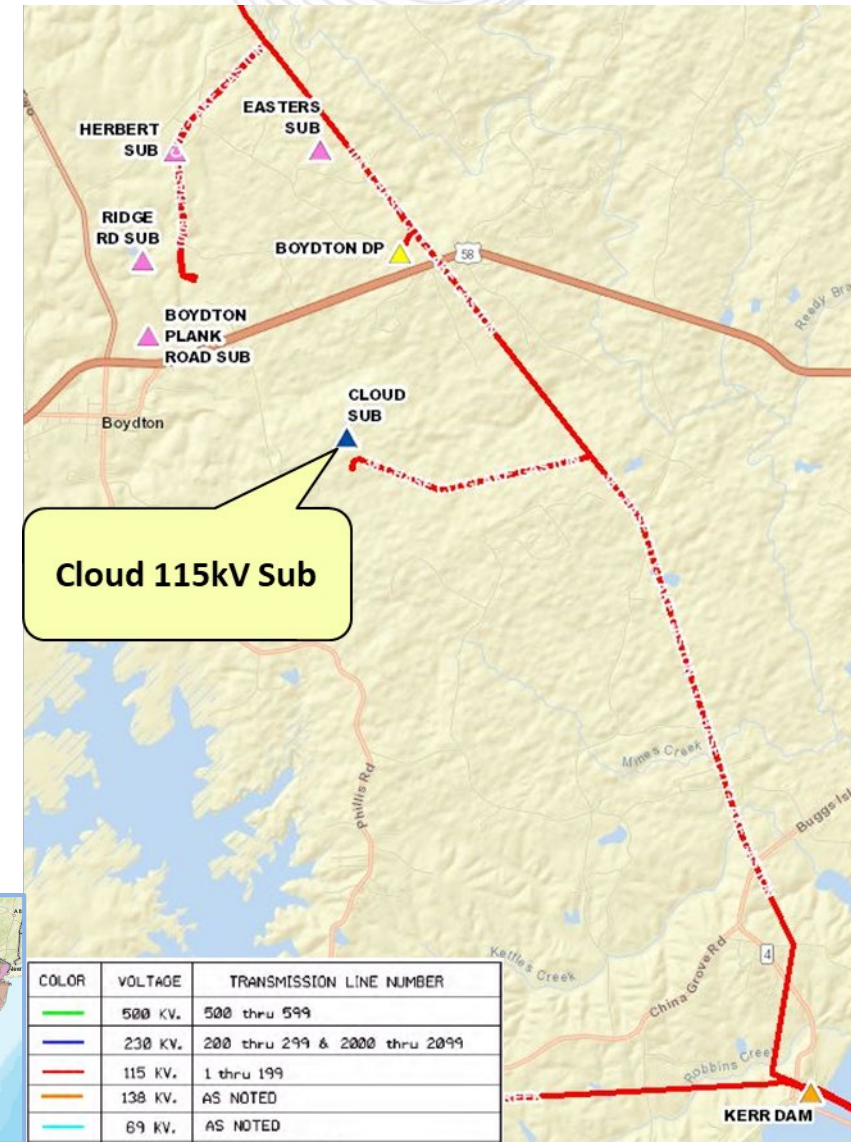
Install a 33 MVAR cap bank at Cloud 115kV bus along with a 115kV breaker. Add 115kV circuit breaker for 115kV Line #38. (b3685)

Estimated Cost: \$1.5 M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 10/14/2021



Process Stage: Recommended Solution

Criteria: FERC Form 715 - Radial Transmission Line (700MW-Mile Exposure)

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Winter case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

115kV Line #4 is a radial transmission line from Bremo to Columbia DP. This line exceeds the 700MW-Mile threshold under FERC Form 715-TO Criteria. (FG: DOM-O1)

Recommended Solution:

Purchase land close to the bifurcation point of Line #4 (where the line is split into two sections) and build a new 115kV switching station called Duncan Store. The new switching station will require space for an ultimate transmission interconnection consisting of a 115kV six-breaker ring bus (with three breakers installed initially). (b3686)

Estimated Cost: \$16 M

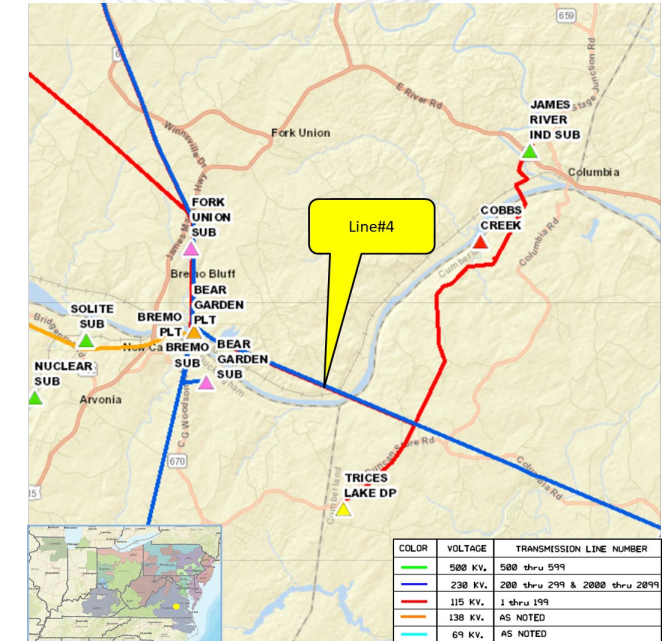
Substation cost: \$11 M

Transmission cost: \$ 5 M

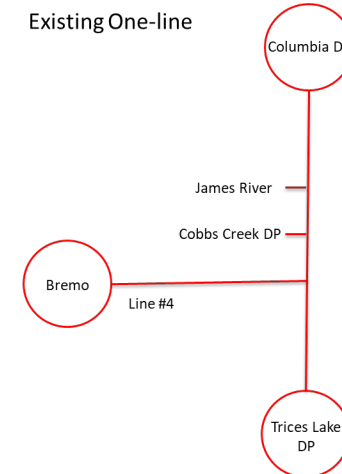
Projected In-Service Date: 12/1/2026

Required In-Service Date: 12/1/2026

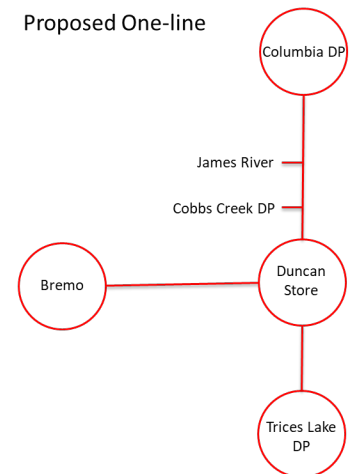
Previously Presented: 10/14/2021



Existing One-line



Proposed One-line





Dominion Transmission Zone: Baseline

Process Stage: Recommended Solution

Criteria: Summer Generator Deliverability, N-1, N-1-1 & FERC Form 715

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

Bristers 230/115kV transformer is overloaded for a single contingency under generator deliverability & for Dominion Stress Case (FERC Form 715).

115kV Line #183 Sowego – Independent Hill segment is overloaded for a single contingency under generator deliverability, N-1 (single & line fault stuck breaker contingencies), N-1-1 & Dominion Stress Case (FERC Form 715).

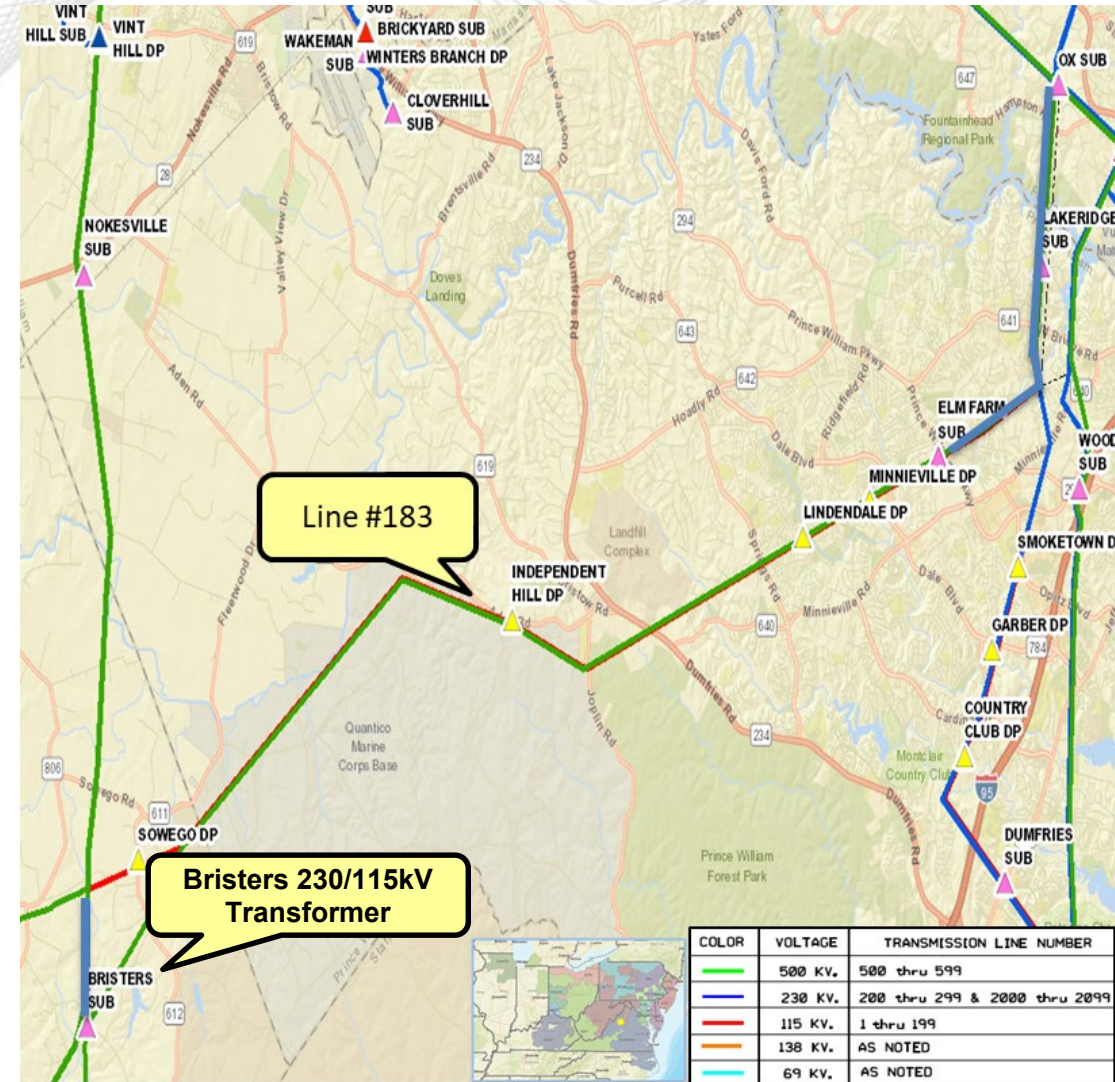
(FG: DOM-T1, DOM-VM14, DOM-VM15, DOM-VM16, DOM-VM17, DOM-VM18, DOM-VM19, DOM-VM21, DOM-VM22, DOM-VM23, DOM-VM24, DOM-VM7, DOM-VM8, DOM-VM9, GD-S11, GD-S34, N1-ST47, N1-ST48, DOM-T2, GD-S34, N1-ST129)

Preliminary Facility Rating (Bristers 230/115kV transformer): 248.7SN /260.2SE/287.1SLD, 319WN/330.8WE/358.4WLD MVA

Preliminary Facility Rating (Ox-Minnieville): 523SN/523SE/601SLD, 580WN/580WE/667WLD MVA

Preliminary Facility Rating (Minnieville-Bristers): 786SN/786SE/904SLD, 824WN/823WE/947WLD MVA

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Recommended Solution:

This project will require the full rebuild of the approximately 15.1-mile-long line segment between Bristers and Minnieville DP with 2-768 ACSS and 4000 A supporting equipment from Bristers to Ox to allow for future 230 kV capability of 115kV Line #183. The continuous summer normal rating will be 523 MVA from Ox – Minnieville. The continuous summer normal rating will be 786 MVA from Minnieville – Bristers. **(b3687)**

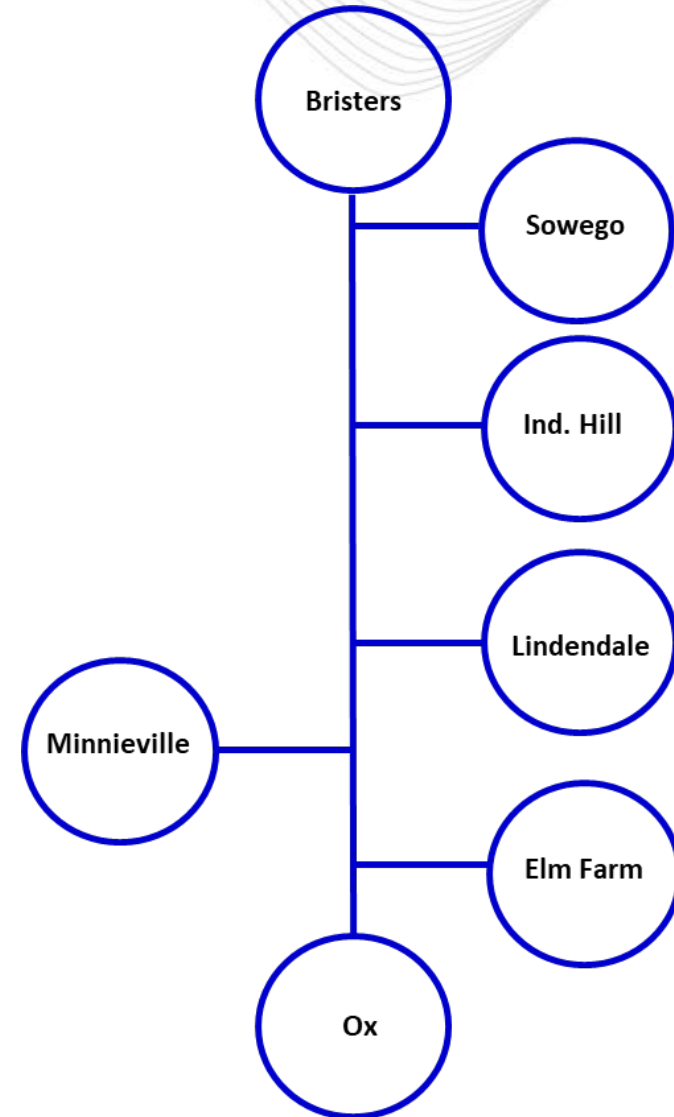
Note: Approximately 1.65 miles of the Bristers – Sowego, as well as approximately 6.86 miles from Ox – Minnieville, had been previously rebuilt with 2-636 ACSR to support future 230 kV capability.

Estimated Cost: \$30 M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 10/14/2021





AEP Transmission Zone: Baseline Bellefonte 69kV Riser

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

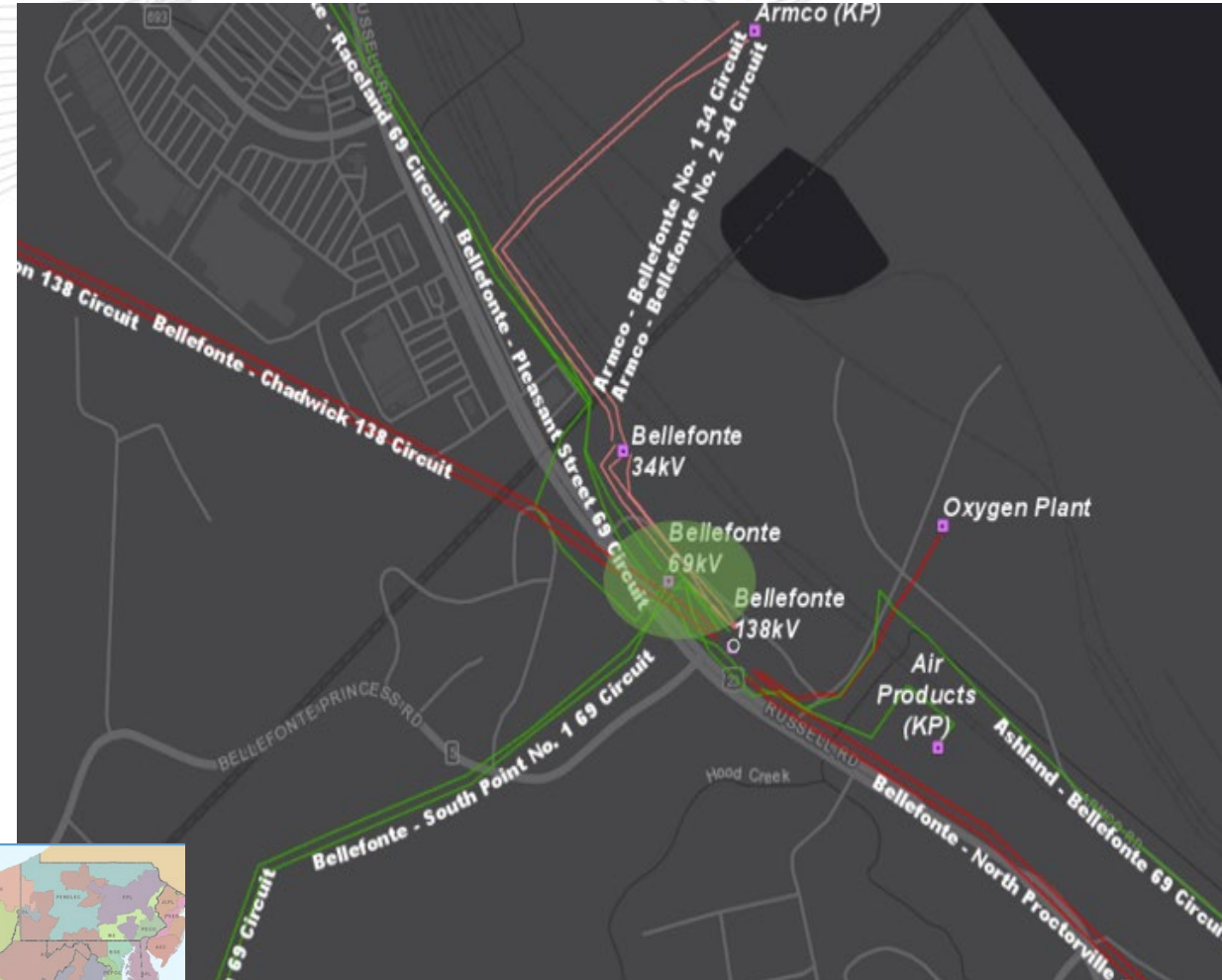
Problem Statement:

FG: AEP-T29, AEP-T30, AEP-T31, AEP-T32

In 2026 Summer RTEP case, the 69kV risers between 69kV Bus #2 and 69kV winding of TR#3 are overloaded for multiple N-1-1 contingencies.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05 BELLF2 - 05BELLEFNT 138/69 kV	143/168/182/200





AEP Transmission Zone: Baseline Bellefonte 69kV Riser

Recommended Solution:

Replace Bellefonte 69kV risers on the section between Bellefonte TR#3 and 69kV Bus #2. (B3349)

Total Estimated Cost: \$0.54 M

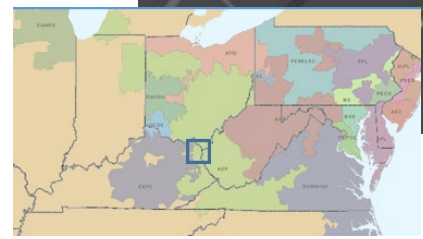
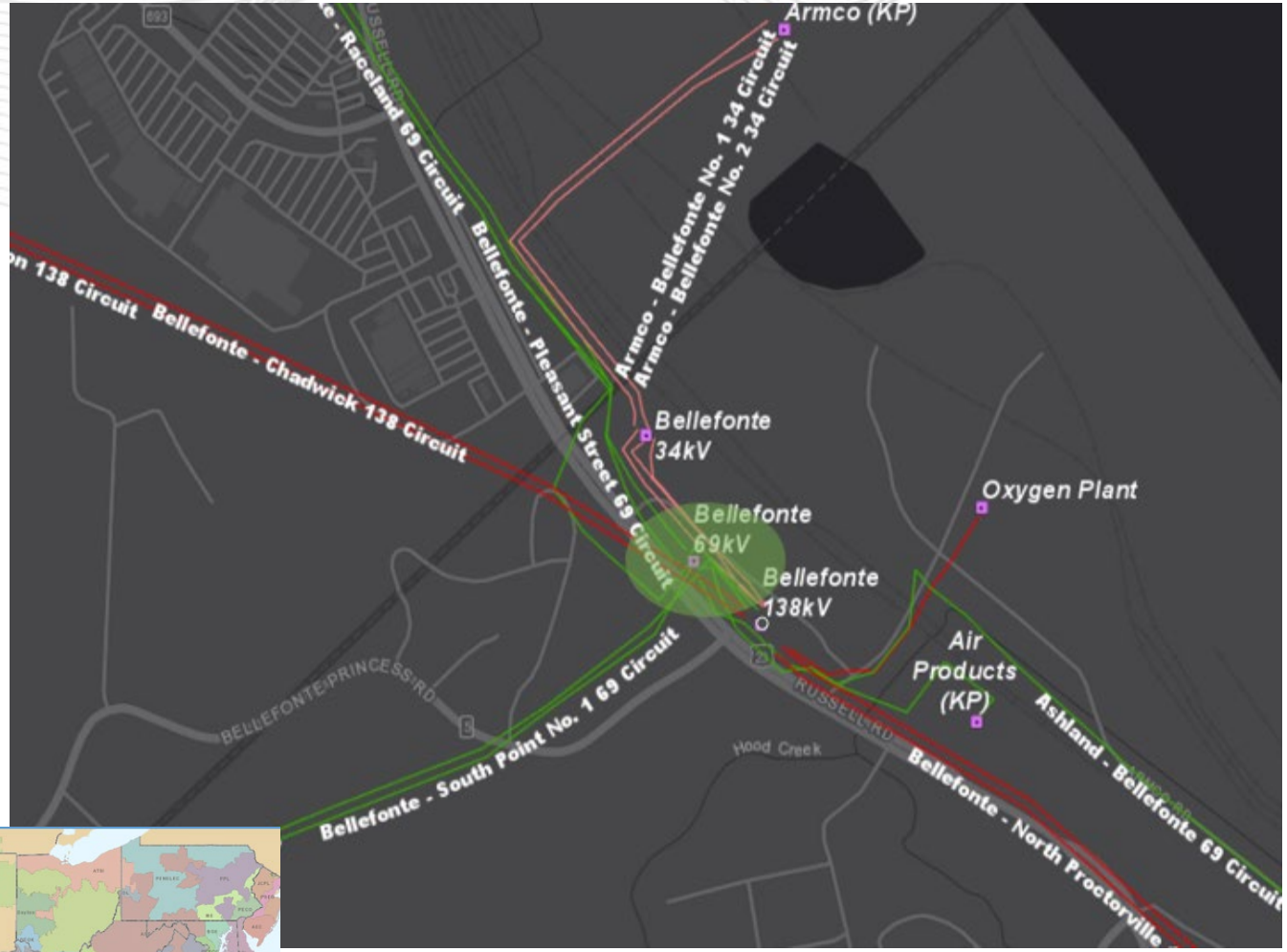
Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05 BELLF2 - 05BELLEFNT 138/69 kV	179/210/227/250

Required IS date: 6/1/2026

Projected IS date: 4/30/2026

Previously Presented: 10/15/2021





AEP Transmission Zone: Baseline Monterey 69 kV Switch Replacements

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP Summer case

Proposal Window Exclusion: Below 200 kV Exclusion and Substation equipment exclusion

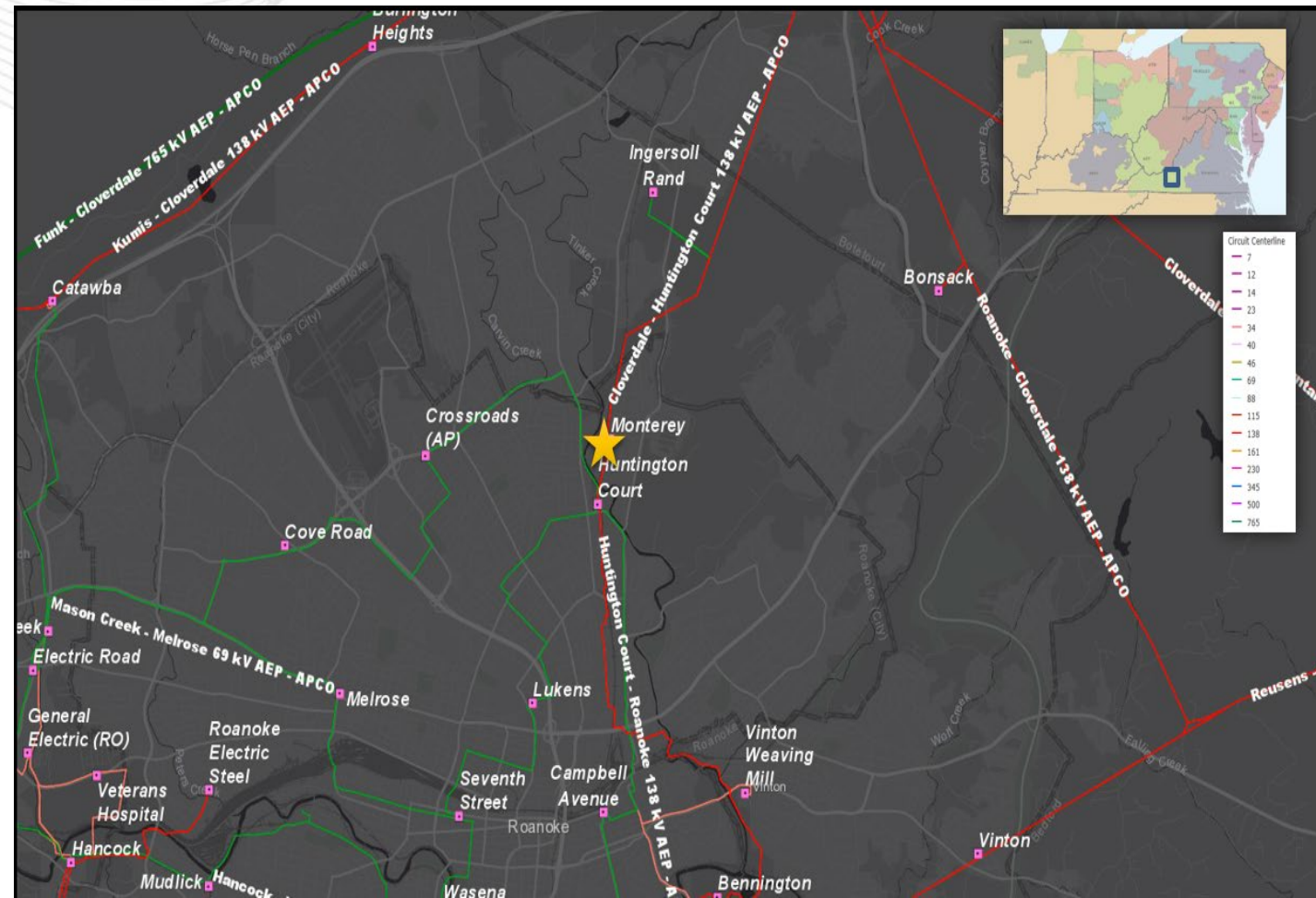
Problem Statement:

FG: AEP-T35, AEP-T36

In 2026 RTEP Summer case, the Monterey-Huntington Court 69 kV line section caused by an N-1-1 contingency.

Existing Facility Rating:

Branch	Ratings (SN/SE/WN/WE)
05MONTERAV - 05HUNTCRT2 69kV	82/90/107/113





AEP Transmission Zone: Baseline Monterey 69 kV Switch Replacements

Recommended Solution:

Replace the 69 kV, in-line switches at Monterey 69kV Substation. (B3351)

Transmission Estimated Cost: \$0M

Distribution Estimated Cost: \$0.22M

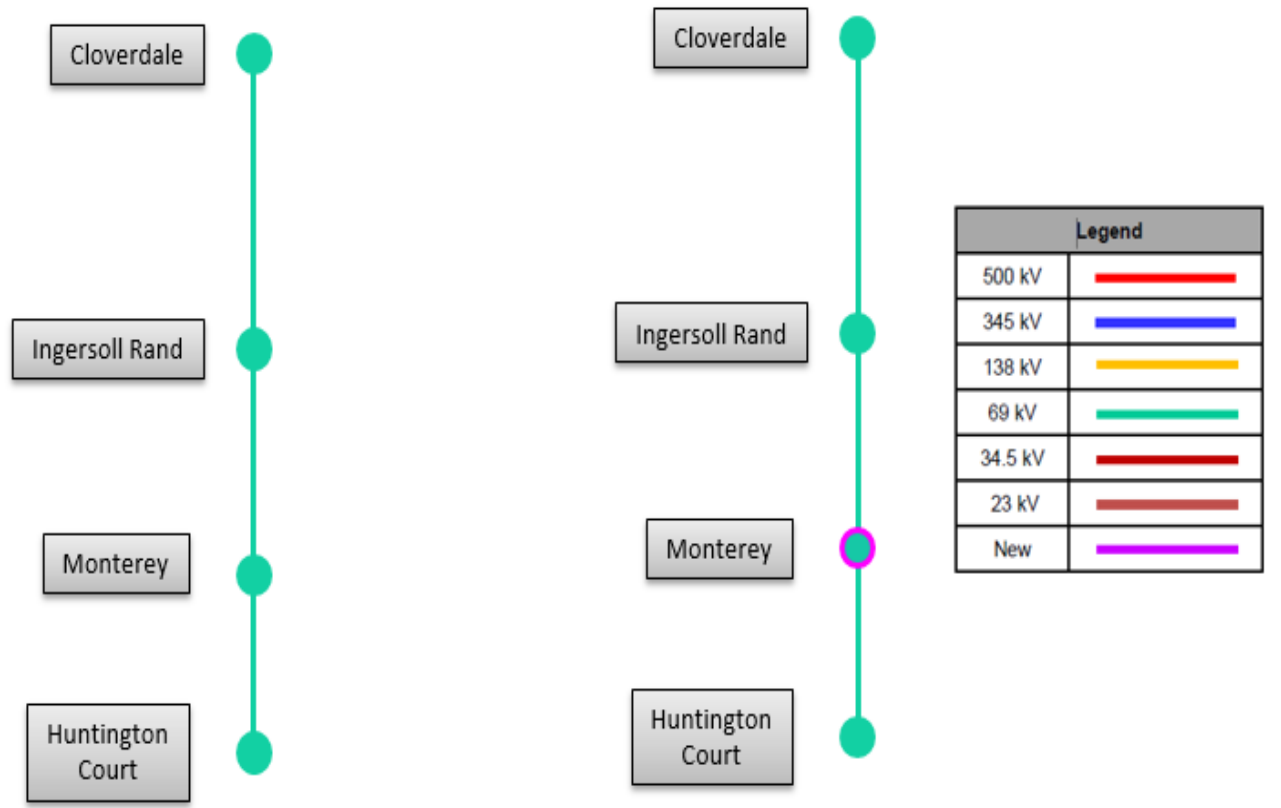
Preliminary Facility Rating:

Branch	Ratings (SN/SE/WN/WE)
05MONTERAV - 05HUNTCRT2 69kV	125/125/158/158

Required IS date: 6/1/2026

Projected IS date: 6/1/2026

Previously Presented: 10/15/2021





AEP Transmission Zone: Baseline 47th Street Upgrades

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement:

FG: AEP-T37, AEP-T38

In 2026 RTEP Summer case, the Kenova - 47th street line section is overloaded for an N-1-1 contingency.

Existing Facility Rating:

Branch	Ratings (SN/SE/WN/WE)
0547TH ST - 05KENOVA H 69kV	79/90/100/109





AEP Transmission Zone: Baseline 47th Street Upgrades

Recommended Solution:

Replace MOAB W, MOAB Y, line and bus side jumpers of both W and Y at 47th Street 69kV station. Upgrade the 69kV Strain bus between MOABs W and Y to 795 KCM AAC. Change the connectors on the tap to MOAB X1 to accommodate the larger 795 KCM AAC. (B3352)

Transmission Estimated Cost: \$0M

Distribution Estimated Cost: \$0.22M

Preliminary Facility Rating:

Branch	Ratings (SN/SE/WN/WE)
0547TH ST - 05KENOVA H 69kV	102/102/129/129

Required IS date: 6/1/2026

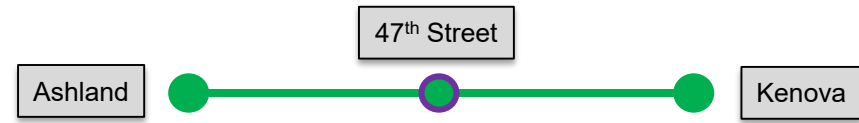
Projected IS date: 6/1/2026

Previously Presented: 10/15/2021

System Electrical Diagram (Existing):



System Electrical Diagram (Proposed):



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
46 kV	
New	



AEP Transmission Zone: Baseline Allen Station Rebuild baseline conversion

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

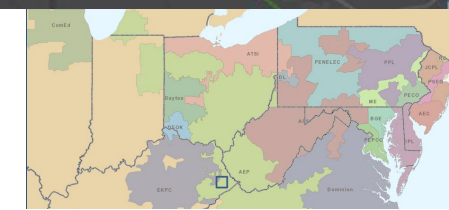
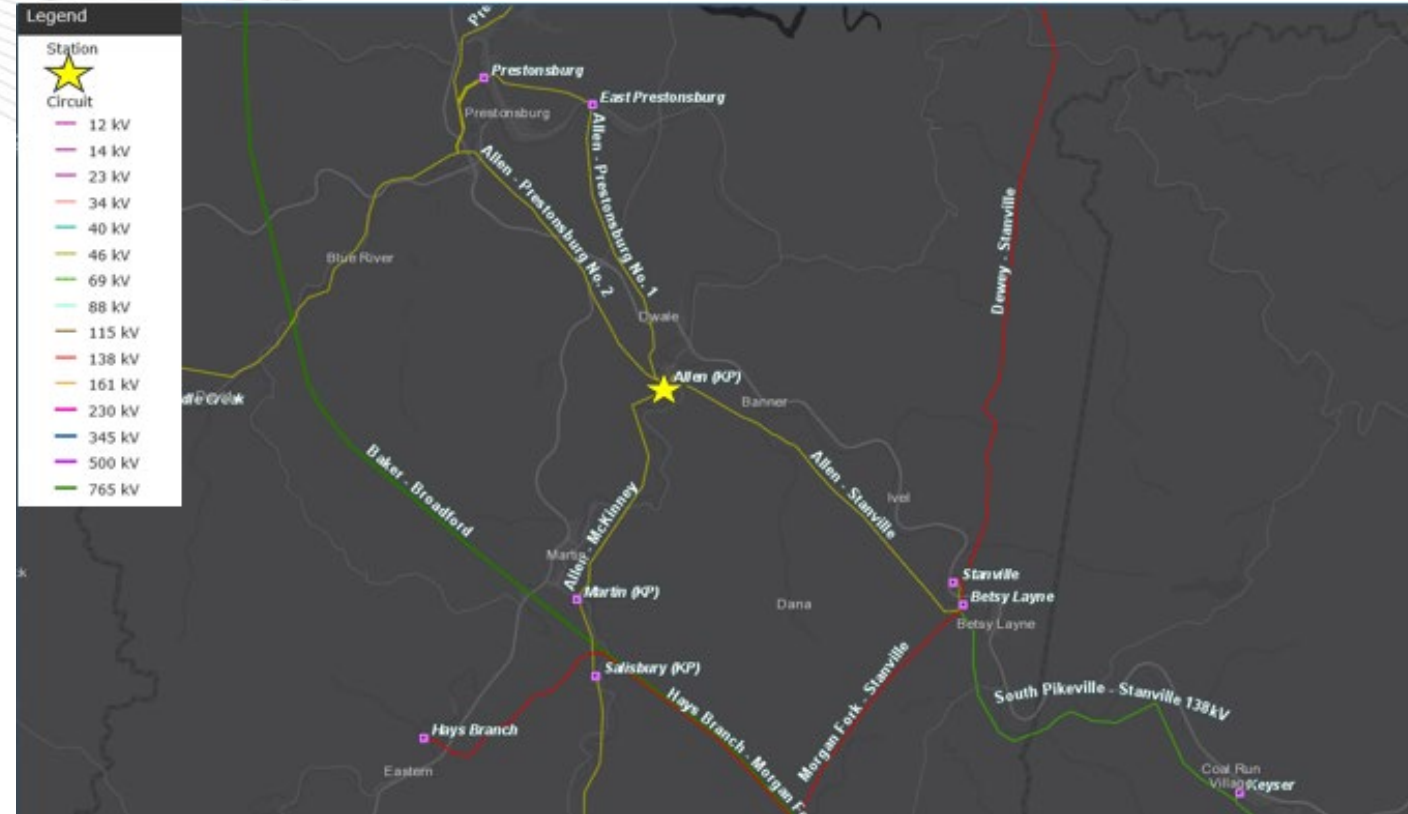
Problem Statement:

FG: AEP-T66, AEP-T67, AEP-T68, AEP-T69

In 2026 RTEP winter case, the Stanville - Allen line section is overloaded for multiple N-1-1 contingency pairs.

Existing Facility Rating:

Branch	Ratings (SN/SE/WN/WE)
05ALLEN- 05STANVILLE 46kV	47/47/47/47
05ALLEN- 05EPRESTNS 46kV	45/58/60/69





AEP Transmission Zone: Baseline Allen Station Rebuild baseline conversion

Recommended Solution: Conversion of S2405.1-.6

Allen Substation: Rebuild Allen Station to the northwest of its current footprint utilizing a standard air-insulated substation with equipment raised by 7' concrete platforms and control house raised by a 10' platform to mitigate flooding concerns. Install five 69 kV 3000A 40 kA circuit breakers in a ring bus (operated at 46kV) configuration with a 13.2 MVAR capacitor bank. Existing Allen station will be retired (original S2405.1) (B3353.1) Estimated Cost: \$10.55 M (Does not include the distribution cost) Distribution Scope of Work: Install 69/46kV-12kV 20 MVA transformer along with 2-12kV breakers on 7' concrete platforms.

Allen – East Prestonsburg: A 0.20 mile segment of this 46 kV line will be relocated to the new station. (SN/SE/WN/WE: 53/61/67/73MVA). (original S2405.2) (B3353.2) Estimated Cost: \$0.33 M

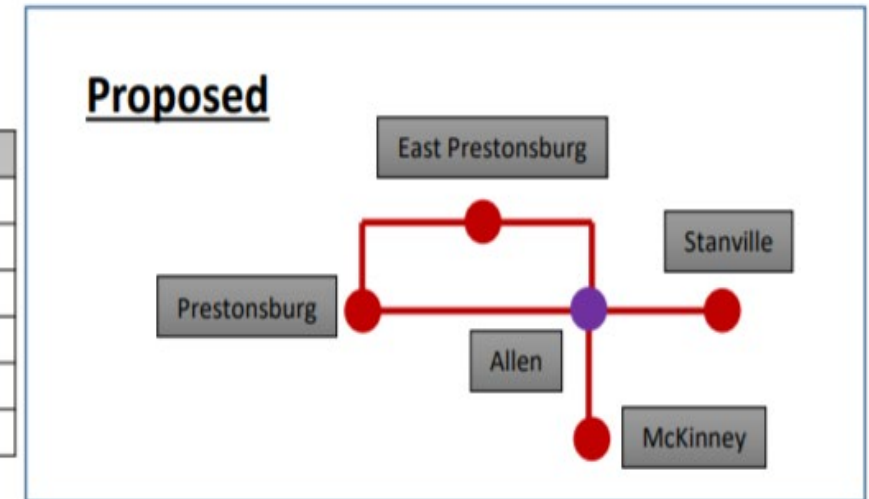
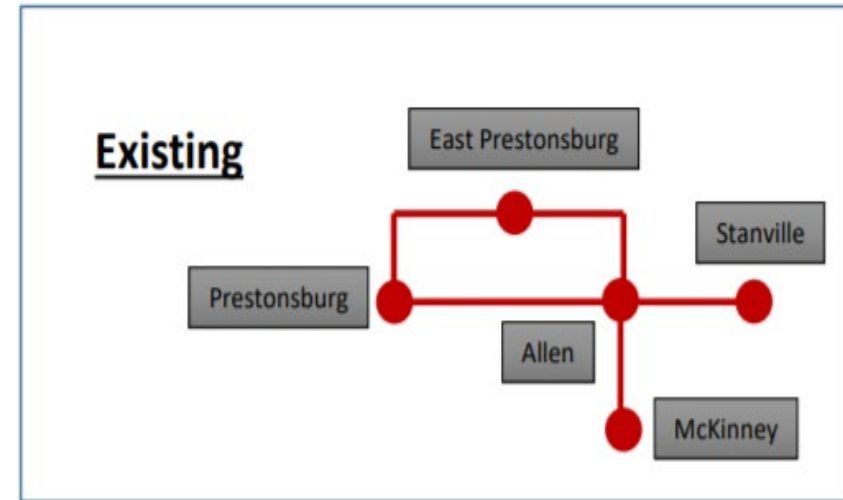
McKinney – Allen: The new line extension will walk around the south and east sides of the existing Allen Station to the new Allen Station being built in the clear. A short segment of new single circuit 69kV line and a short segment of new double circuit 69kV line (both operated at 46 kV) will be added to the line to tie into the new Allen Station bays. (original S2405.3) (B3353.3) Estimated Cost: \$1.95 M

Stanville – Allen: A segment of this line will have to be relocated to the new station (SN/SE/WN/WE: 50/50/63/63MVA). (original S2405.4) (B3353.4) Estimated Cost: \$0.17 M

Allen – Prestonsburg: 0.25 mile segment of this existing single circuit will be relocated. The relocated line segment will require construction of one custom self-supporting double circuit dead end structure and single circuit suspension structure. A short segment of new double circuit 69kV line (energized at 46 kV) will be added to tie into the new Allen Station bays which will carry Allen – Prestonsburg 46kV and Allen – East Prestonsburg 46kV lines. A temporary 0.15 mile section double circuit line will be constructed to keep Allen – Prestonsburg and Allen – East Prestonsburg 46kV lines energized during construction. (original S2405.5) (B3353.5) Estimated Cost: \$2.66 M

Remote End Remote end work will be required at Prestonsburg, Stanville, and McKinney stations. (original S2405.6) (B3353.6) Estimated Transmission Cost: \$0.34 M

Total Transmission Estimated Cost: \$16M



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
46 kV	
New	



AEP Transmission Zone: Baseline Allen Station Rebuild baseline conversion

Preliminary Facility Rating:

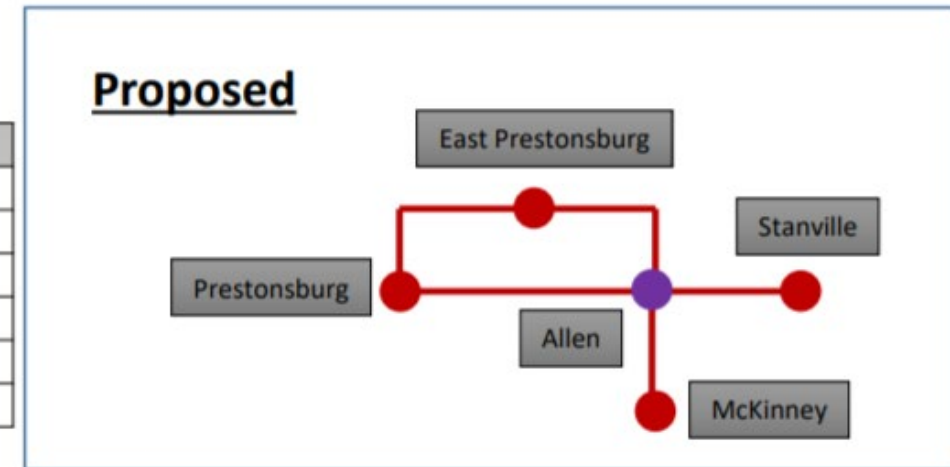
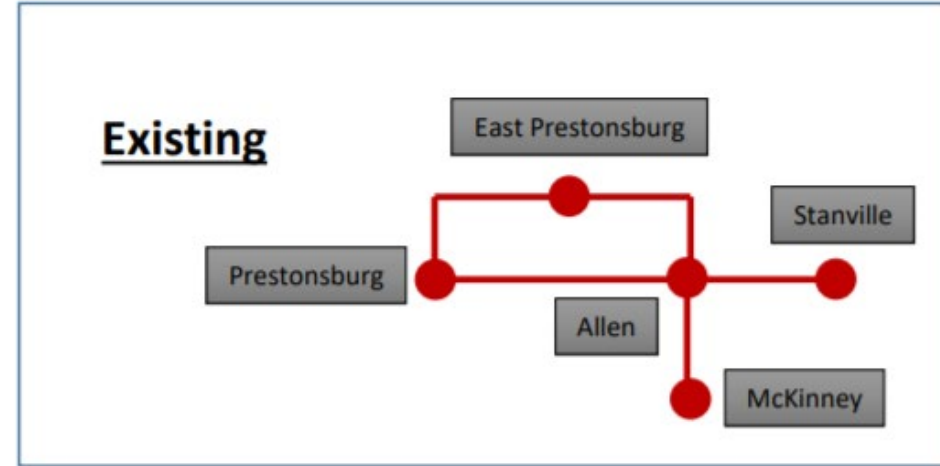
Branch	Ratings (SN/SE/WN/WE)
05ALLEN- 05STANVILLE 46kV	50/50/63/63
05ALLEN- 05EPRESTNS 46kV	53/61/67/73

Ancillary Benefits: The proposed conversion of the s2405 to baseline does not add any cost to the RTEP. S2405 address issues identified in AEP-2019-AP025.

Required IS date: 12/1/2026

Projected IS date: 12/31/2023

Previously Presented: 10/15/2021



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
46 kV	
New	

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement:

FG: AEP-VD10, AEP-VD11, AEP-VD12, AEP-VD13, AEP-VD14

In 2026 RTEP Summer case, voltage drop violations have been identified at Slate, Mills, Lattaville, and Mill (SCP) 69kV stations for multiple N-1-1 contingency pairs.

Recommended Solution:

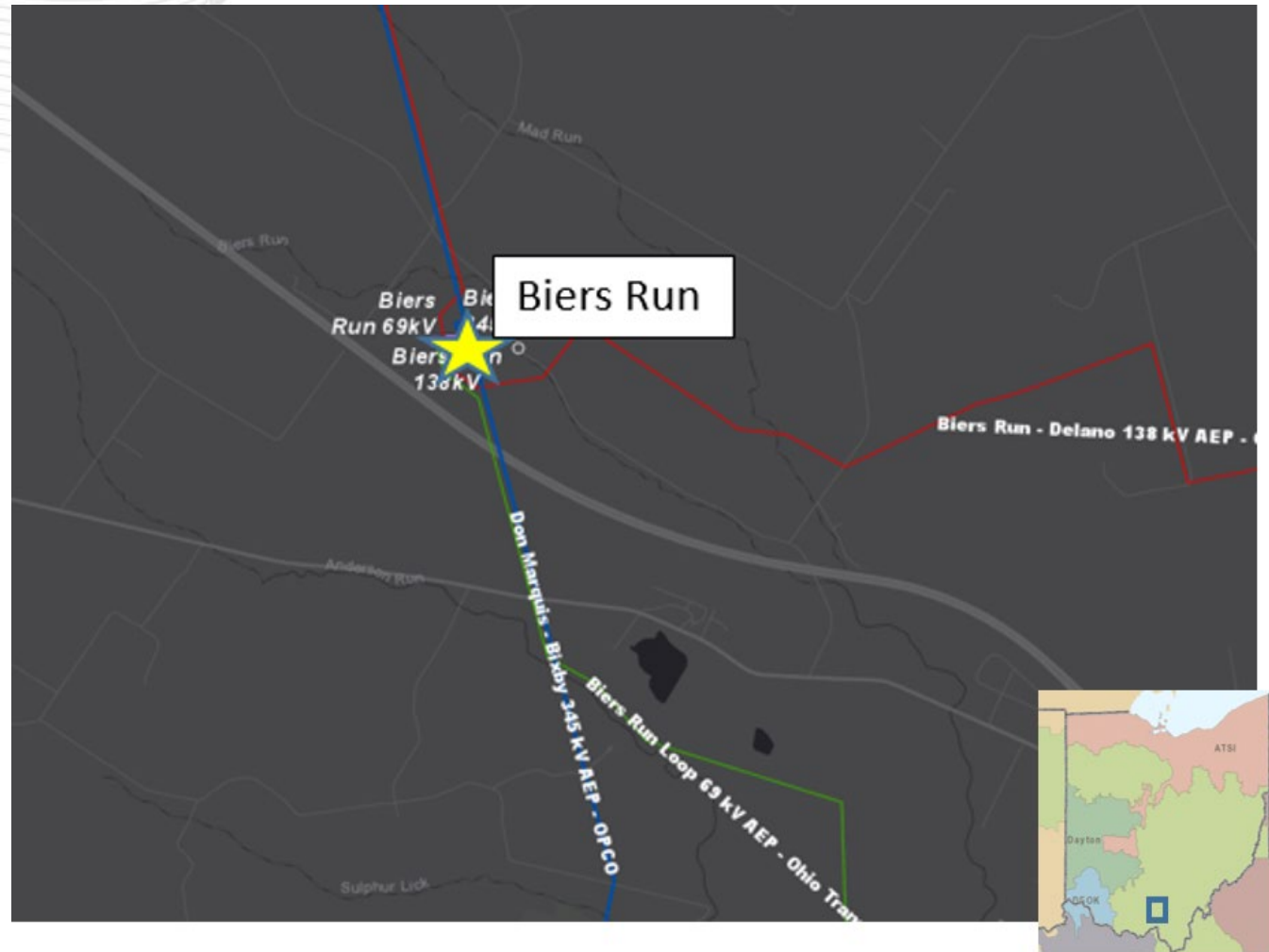
Install a 69 kV 11.5 MVAR capacitor at Biers Run station. **(B3358)**

Transmission Estimated Cost: \$0.85 M

Required IS date: 6/1/2026

Projected IS date: 9/1/2025

Previously Presented: 10/15/2021





AEP Transmission Zone: Baseline North Van Wert Sw. - Van Wert 69 kV Rebuild

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement:

FG: AEP-T59, AEP-T60, AEP-T61, AEP-T62

In 2026 RTEP Summer case, 2.3 miles of existing 4/0 Cu conductor on N. Van Wert Sw - Van Wert 69 kV line is overloaded for multiple N-1-1 contingency pairs.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05VAN WERT - 05N.VANWRTSS 69KV	54/54/76/76





AEP Transmission Zone: Baseline North Van Wert Sw. - Van Wert 69 kV Rebuild

Recommended Solution:

Rebuild approximately 2.3 miles of the existing North Van Wert Sw - Van Wert 69 kV line utilizing 556 ACSR conductor. (B3359)

Transmission Estimated Cost: \$6.2M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05VAN WERT - 05N.VANWRTSS 69KV	82/90/107/113

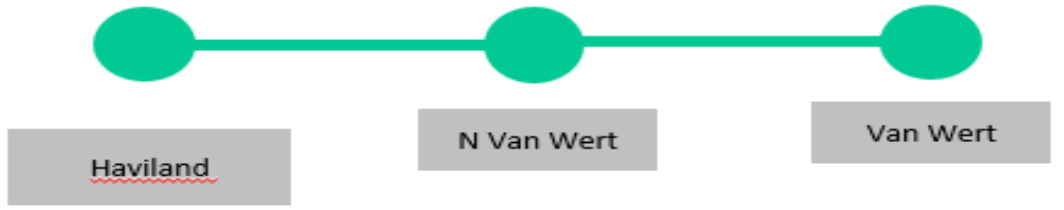
Ancillary Benefits: Project rebuilds a portion of the Van Wert - Haviland line that was originally constructed in in the 1920s and is primarily comprised of wood poles. The conductor being replaced as a part of this proposal dates back to the 1920's. There have been numerous customer speculation load requests in this area that would require this line rebuild if the alternative was chosen.

Required IS date: 6/1/2026

Projected IS date: 9/1/2025

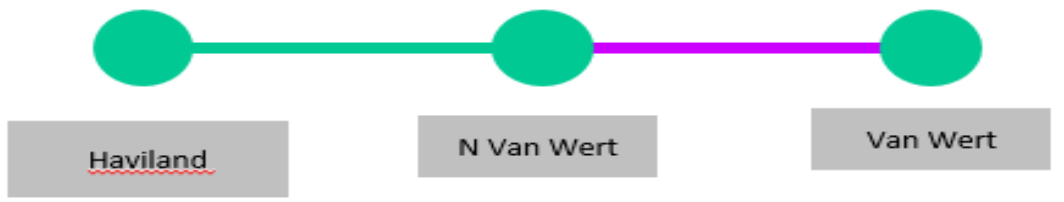
Previously Presented: 10/15/2021

Existing:



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

Proposed:





AEP Transmission Zone: Baseline Thelma Transformer Replacement

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

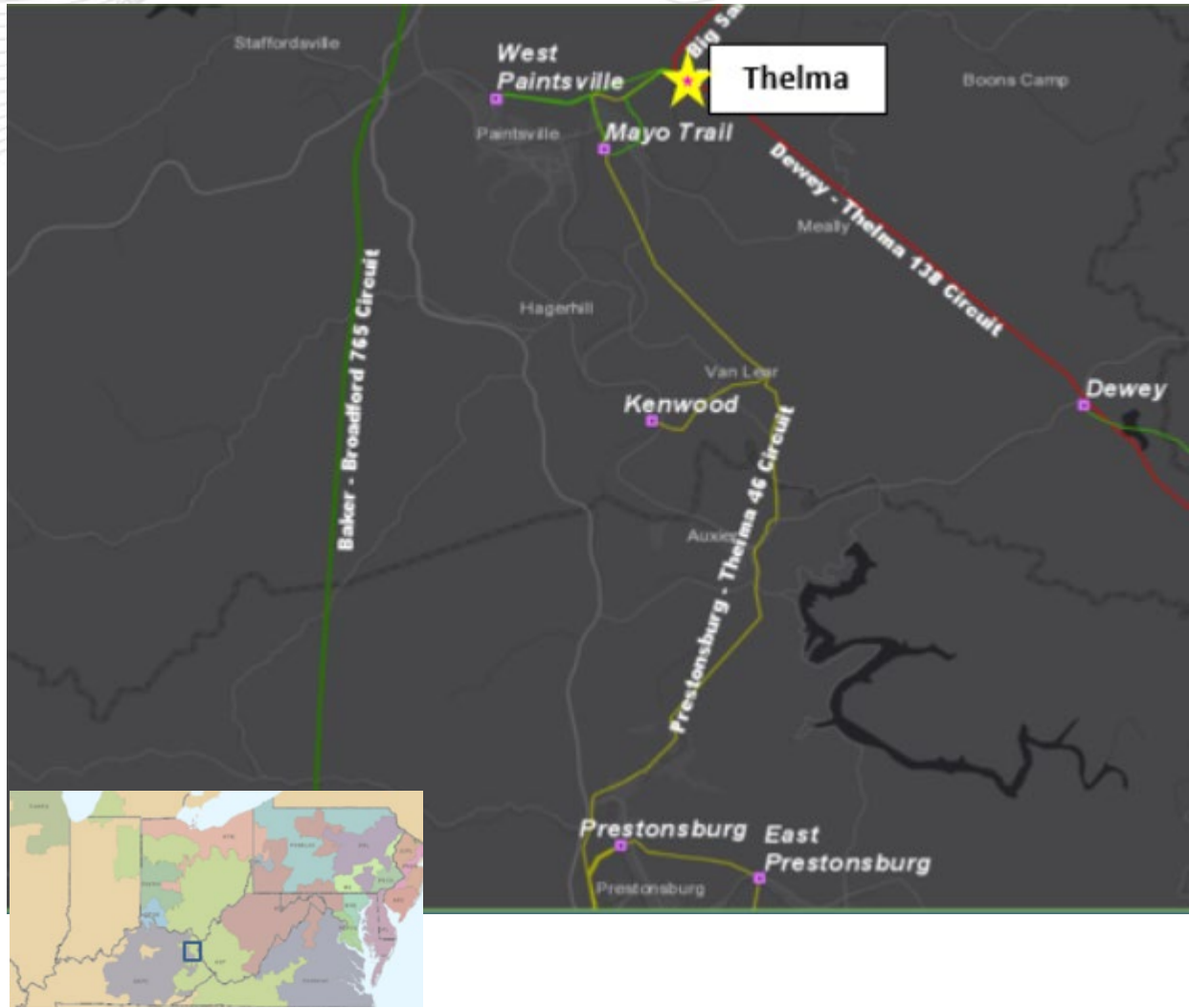
Problem Statement:

FG: AEP-T70, AEP-T71, AEP-T72

In 2026 RTEP Winter case, the 46kV winding of the Thelma TR#1 is overload for multiple N-1-1 contingency pairs.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05THELMAEQ – 05THELMA 999/138KV	84/92/84/92
05THELMAEQ – 05THELM1 999/69KV	84/92/84/92
05THELMAEQ – 05THELMA 999/46KV	53/58/53/58





AEP Transmission Zone: Baseline Thelma Transformer Replacement

Recommended Solution:

Replace Thelma Transformer #1 with a 138/69/46kV 130/130/90 MVA transformer and replace 46kV risers and relaying towards Kenwood substation. Existing TR#1 to be used as spare. (B3360)

Transmission Estimated Cost: \$3.54M

Preliminary Facility Rating:

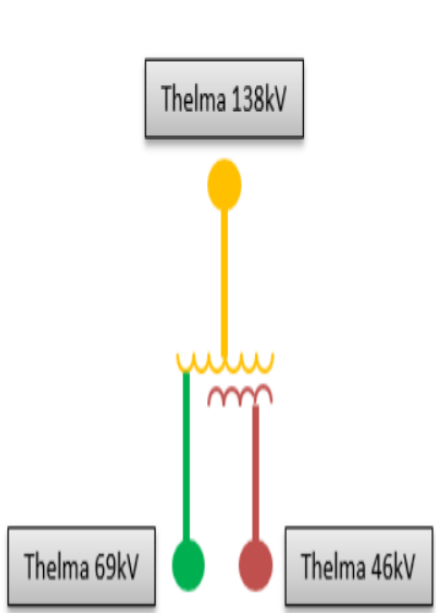
Branch	SN/SE/WN/WE (MVA)
05THELMAEQ – 05THELMA 999/138KV	130/130/130/130
05THELMAEQ – 05THELM1 999/69KV	130/130/130/130
05THELMAEQ – 05THELMA 999/46KV	90/90/90/90

Required IS date: 12/1/2026

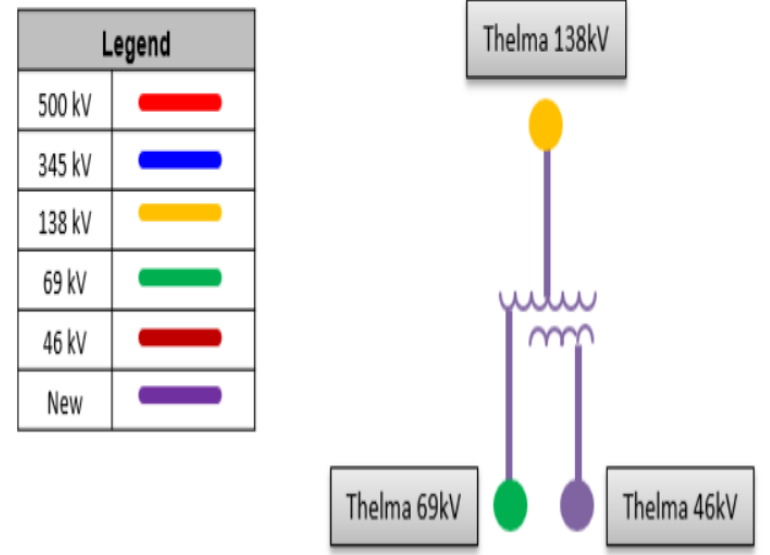
Projected IS date: 10/1/2025

Previously Presented: 10/15/2021

Project System Electrical Diagram (existing)



Project System Electrical Diagram (Proposed)





AEP Transmission Zone: Baseline Prestonsburg - Thelma 46kV Rebuild

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

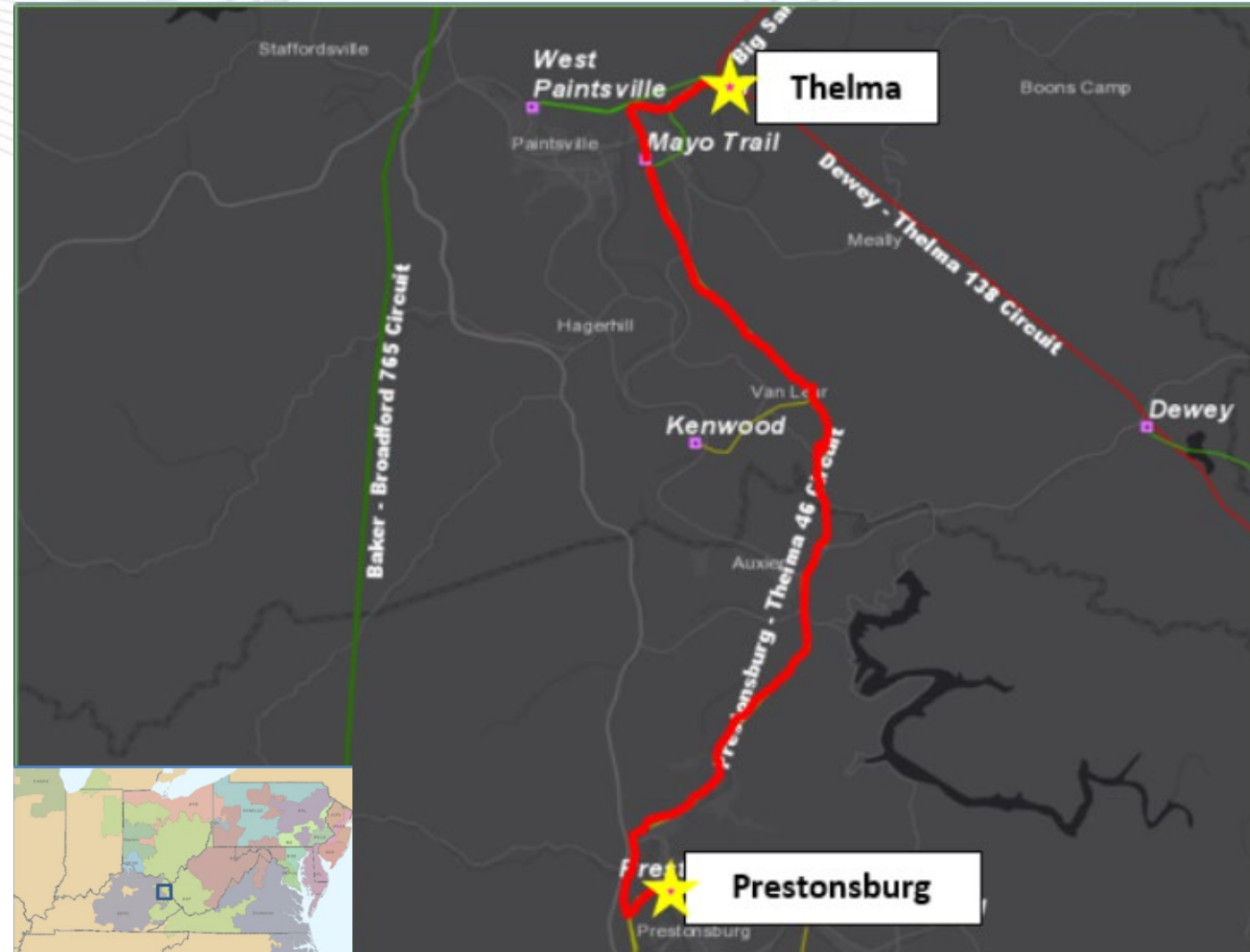
Problem Statement:

FG: AEP-VM10, AEP-VM11, AEP-VM12, AEP-VM13, AEP-VM14, AEP-VM15, AEP-VM16, AEP-VM17, AEP-VM18, AEP-VM19, AEP-VM20, AEP-VM21, AEP-VM22, AEP-VM23, AEP-VM24, AEP-VM25, AEP-VM26, AEP-VM27, AEP-VM28, AEP-VM29, AEP-VM30, AEP-VM31, AEP-VM32, AEP-VM33, AEP-VM34, AEP-VM35, AEP-VM36, AEP-VM37, AEP-VM38, AEP-VM39, AEP-VM40, AEP-VM41, AEP-VD15, AEP-VD16, AEP-VD17, AEP-VD18, AEP-VD19, AEP-VD20, AEP-VD21, AEP-VD22, AEP-VD23, AEP-VD24, AEP-VD25, AEP-VD26, AEP-VD27, AEP-VD28, AEP-VD29, AEP-VD30, AEP-VD31, AEP-VD32, AEP-VD33, AEP-VD34, AEP-VD35, AEP-VD36, AEP-VD37, AEP-VD38, AEP-VD39, AEP-VD40, AEP-VD41, AEP-VD42, AEP-VD43, AEP-VD44, AEP-VD45, AEP-VD46

In 2026 RTEP Winter case, voltage magnitude and voltage drop violations at McKinney, Salsbury, Allen, East Prestonsburg, Prestonsburg, Middle Creek, Kenwood 46kV buses are identified for multiple N-1-1 contingency pairs.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05Thelma – 05KENWDTAP 46KV	50/50/63/63





AEP Transmission Zone: Baseline Prestonsburg - Thelma 46kV Rebuild

Recommended Solution:

Rebuild Prestonsburg - Thelma 46kV circuit, approximately 14 miles. Retire Jenny Wiley SS. (B3361)

Transmission Estimated Cost: \$33.01M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05Thelma – 05KENWDTAP 46KV	68/85/86/101
05PRESTNSB– 05KENWDTAP 46KV	68/85/86/101

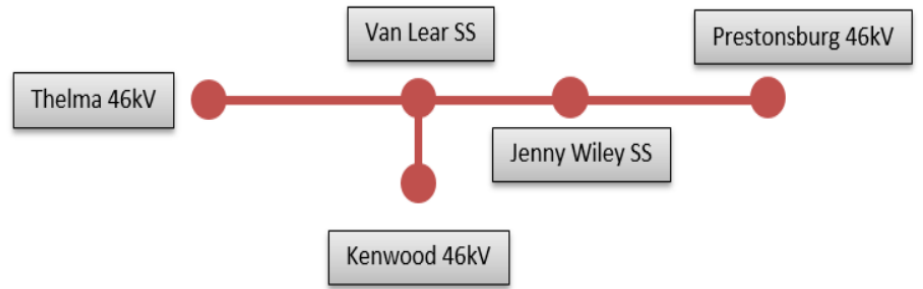
Ancillary Benefits: The proposed solution also completely addresses the identified needs in AEP-2018-AP022 and AEP-2020-AP029.

Required IS date: 12/1/2026

Projected IS date: 10/1/2025

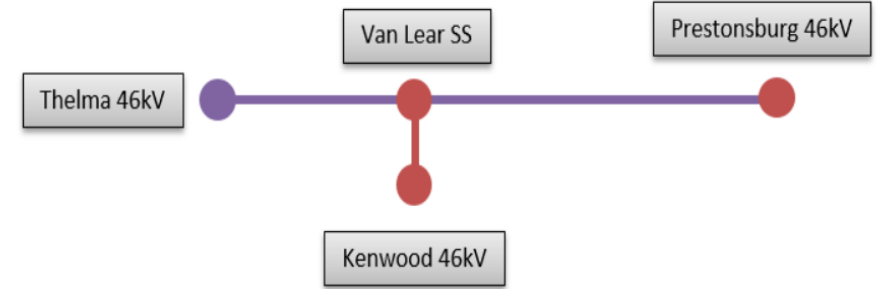
Previously Presented: 10/15/2021

Project System Electrical Diagram (existing)



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
46 kV	
New	

Project System Electrical Diagram (Proposed)





AEP Transmission Zone: Baseline Oertels Corner - North Portsmouth 69 kV Rebuild

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: Below 200 kV Exclusion

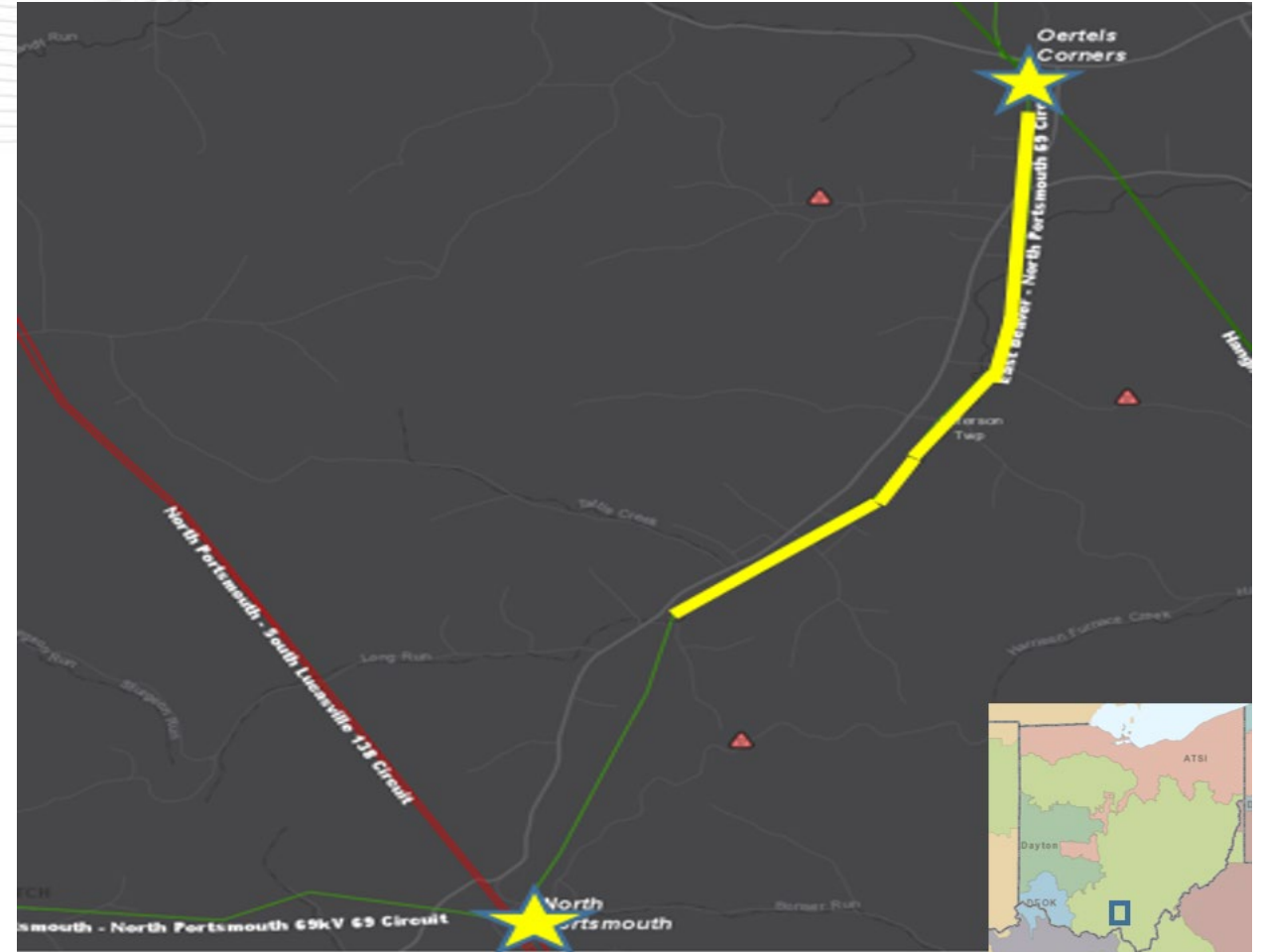
Problem Statement:

FG: AEP-T64, AEP-T65

In 2026 RTEP Summer case, the Oertels Corner - North Portsmouth 69 kV line is overloaded for an N-1-1 contingency pair.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05N PORTSM – 05ORTELCRN 69KV	34/34/42/42





AEP Transmission Zone: Baseline Oertels Corner - North Portsmouth 69 kV Rebuild

Recommended Solution:

Rebuild approximately 3.1 miles of the overloaded conductor on the existing Oertels Corner - North Portsmouth 69 kV line utilizing 556 ACSR . (B3362)

Transmission Estimated Cost: \$8.0 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05N PORTSM – 05ORTELCRN 69KV	44/44/56/56

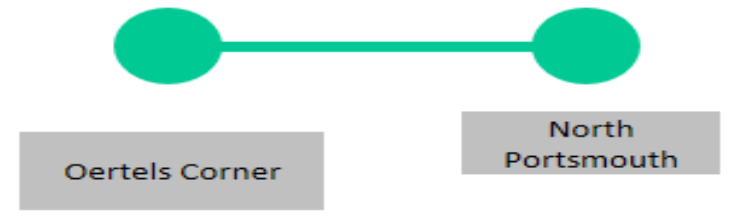
Ancillary Benefits: Project rebuilds a portion of the North Portsmouth - Oertels Corners line that was originally constructed in in the 1940s and is primarily comprised of wood poles. The conductor being replaced as a part of this proposal dates back to the 1940's. There are currently 21 open conditions on this line. There have been 11 momentary and 4 permanent outages (2.1M CMI) over the last 5 years (2015-2020).

Required IS date: 6/1/2026

Projected IS date: 9/1/2025

Previously Presented: 10/15/2021

Existing:



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

Proposed:





ComEd Transmission Zone: Baseline Line 0108 LaSalle-Mazon 138 kV

Process Stage: Recommended Solution

Criteria: Generator Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 Light Load RTEP case

Proposal Window Exclusion: Below 200 kV Exclusion

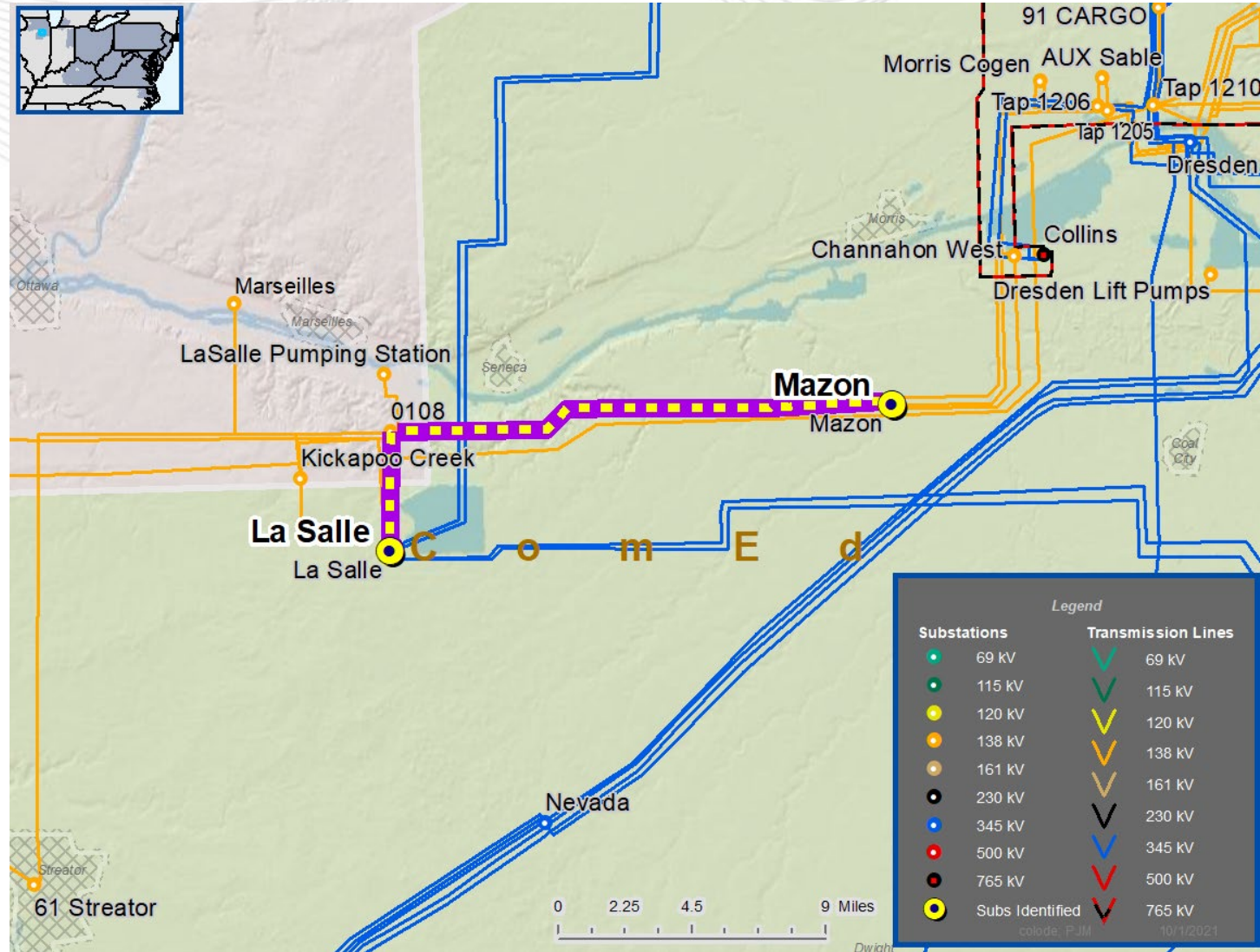
Problem Statement:

FG: GD-LL36

In 2026 Light Load RTEP case, the LaSalle-Mazon 138 kV line is overloaded for an N-2 outage.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
LASCO STA; B-MAZON ; B 138 kV	173/223/213/253
MAZON ; R-4CORBIN 138 kV	173/223/213/253





ComEd Transmission Zone: Baseline Line 0108 LaSalle-Mazon 138 kV

Recommended Solution:

Rebuild a 13 mile section of 138 kV line 0108 between LaSalle and Mazon with 1113 ACSR or higher rated conductor. **(b3677)**

Transmission Estimated Cost: \$42.06 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
LASCO STA; B-MAZON ; B 138 kV	351/442/421/472
MAZON ; R-4CORBIN 138 kV	210/223/252/262

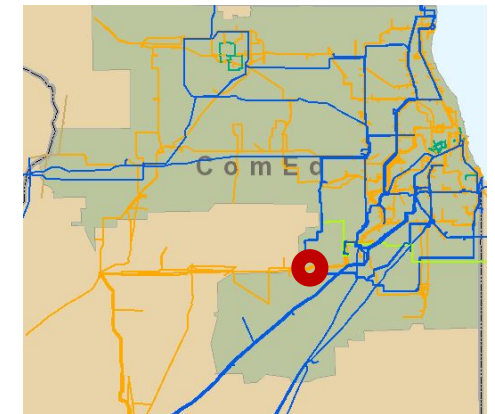
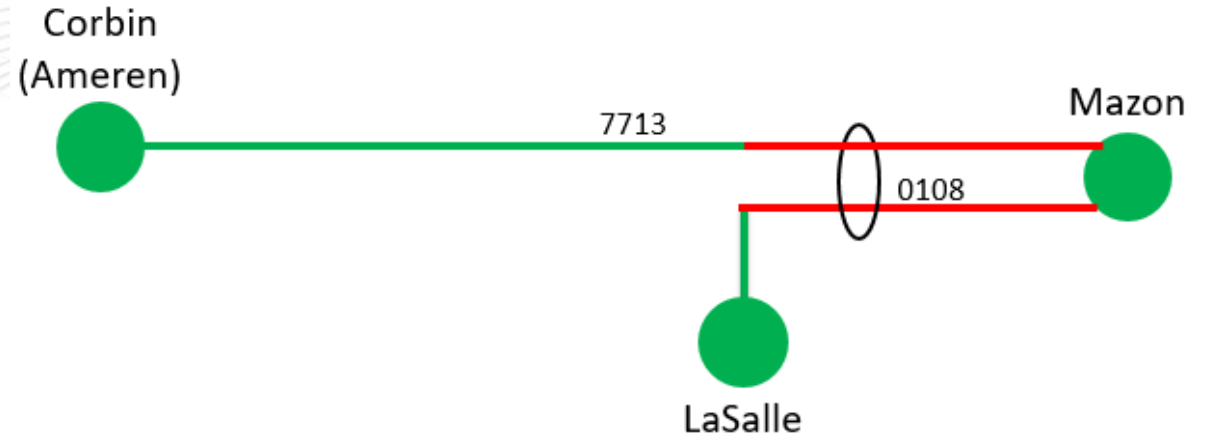
Ancillary Benefits:

Conductor and towers that are 94 years old will be replaced. A portion of line 7713 from Oglesby (future Corbin) to Mazon which shares these double circuit towers will be reconducted due to the rebuild, replacing all of the 94 year old 300 cu conductor on that line.

Required IS date: 11/1/2026

Projected IS date: 12/31/2024

Previously Presented: 10/15/2021



Process Stage: Recommended Solution

Criteria: First Energy 715 Criteria

Assumption Reference: 2026 RTEP assumption

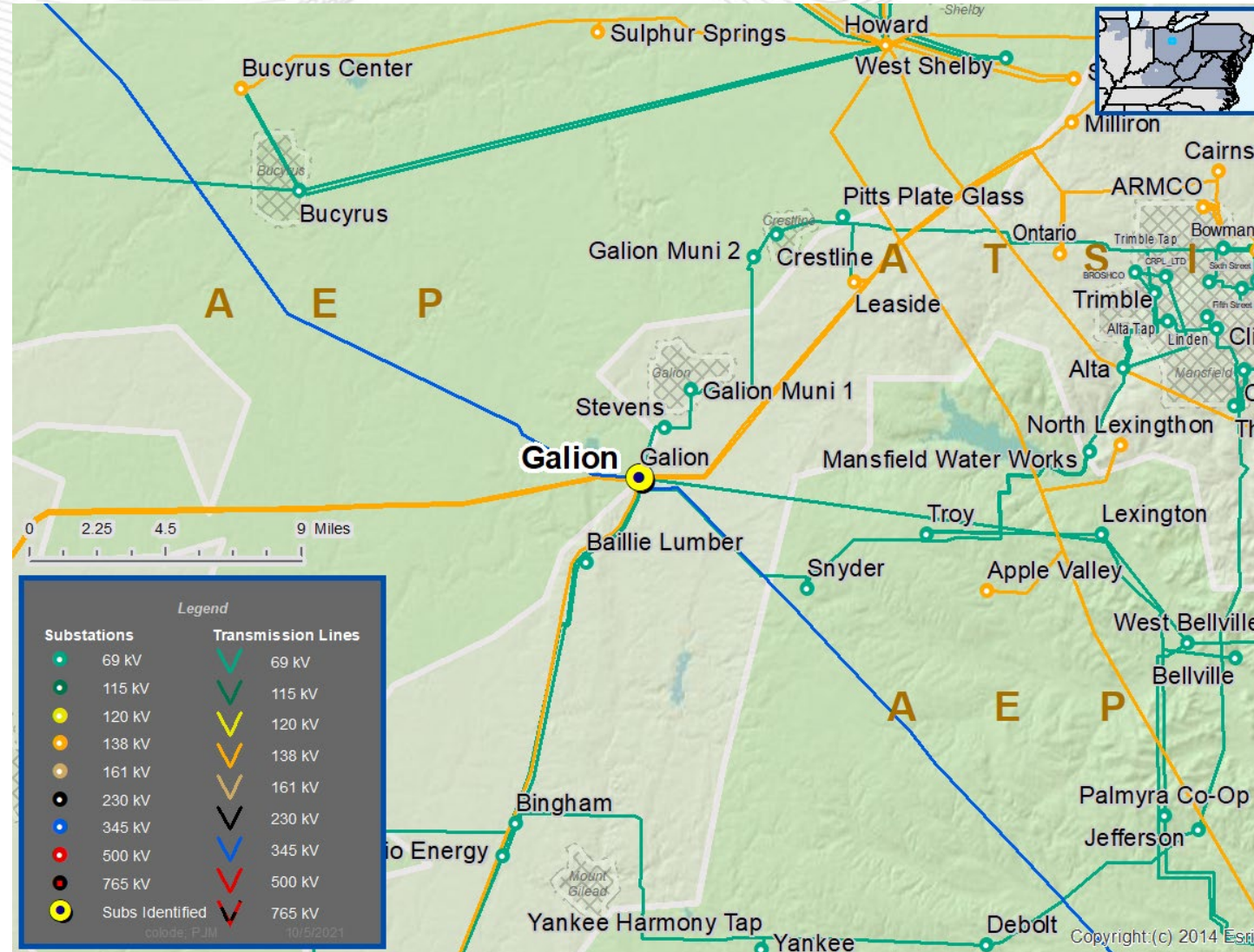
Model Used for Analysis: 2026 Light Load RTEP case

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement:

FG: ATSI-VM1

In 2026 Light Load RTEP case, high voltage is observed at Galion 69 kV substation due to N-1.



Recommended Solution:

Expand 138 kV substation; Install 100 MVAR reactor, associated breaker and relaying. **(b3678)**

Total Estimated Cost: \$1.70 M

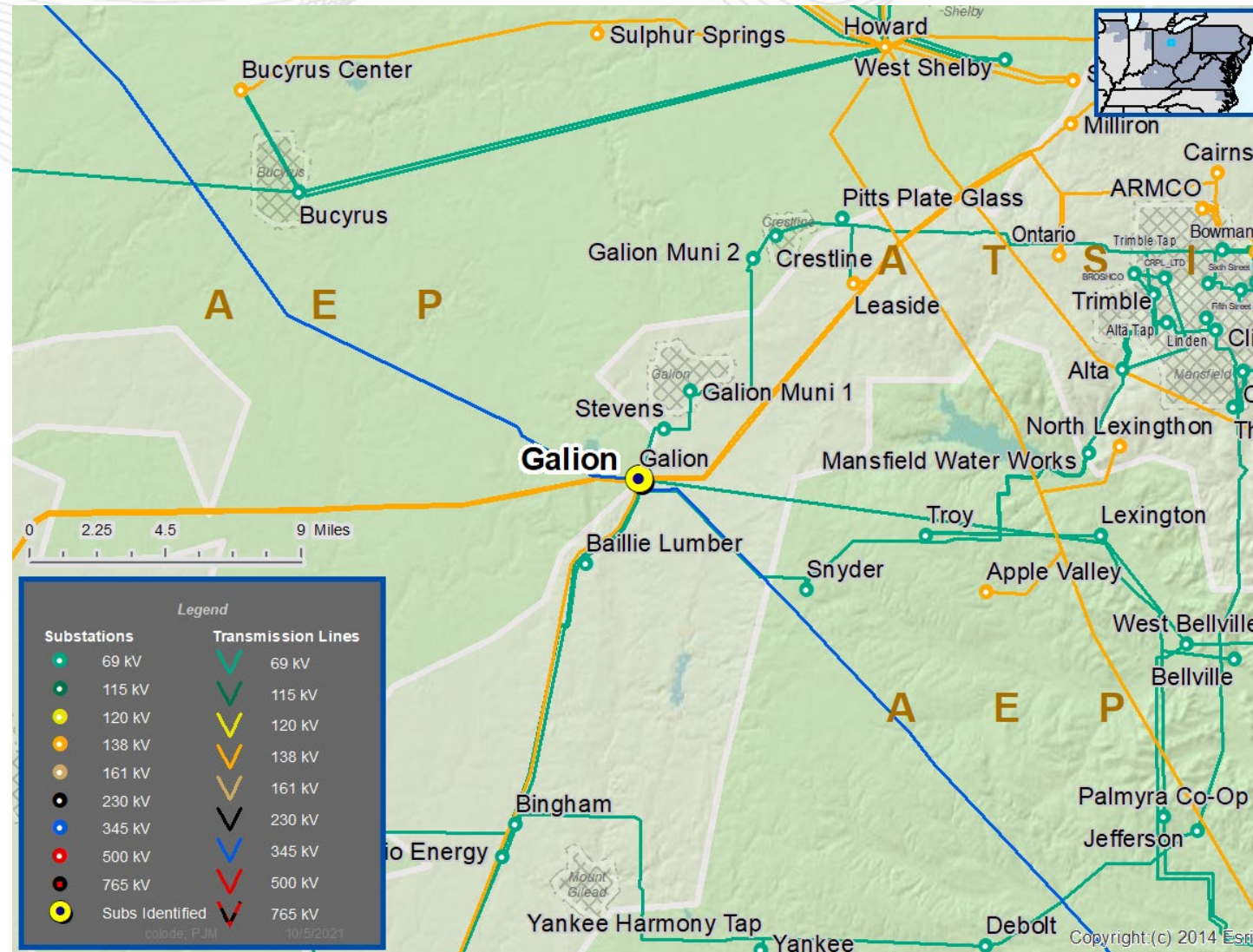
Alternatives: None

Ancillary Benefits:

Voltage reduction across all regional 69 kV, which might experience additional high voltages under less-than-light-load conditions

Required IS date: 06/01/2026

Projected IS date: 06/01/2026





ATSI Transmission Zone: Baseline West Fremont TR2 Replacement

Process Stage: Recommended Solution

Criteria: First Energy 715 Criteria

Assumption Reference: 2026 RTEP assumption

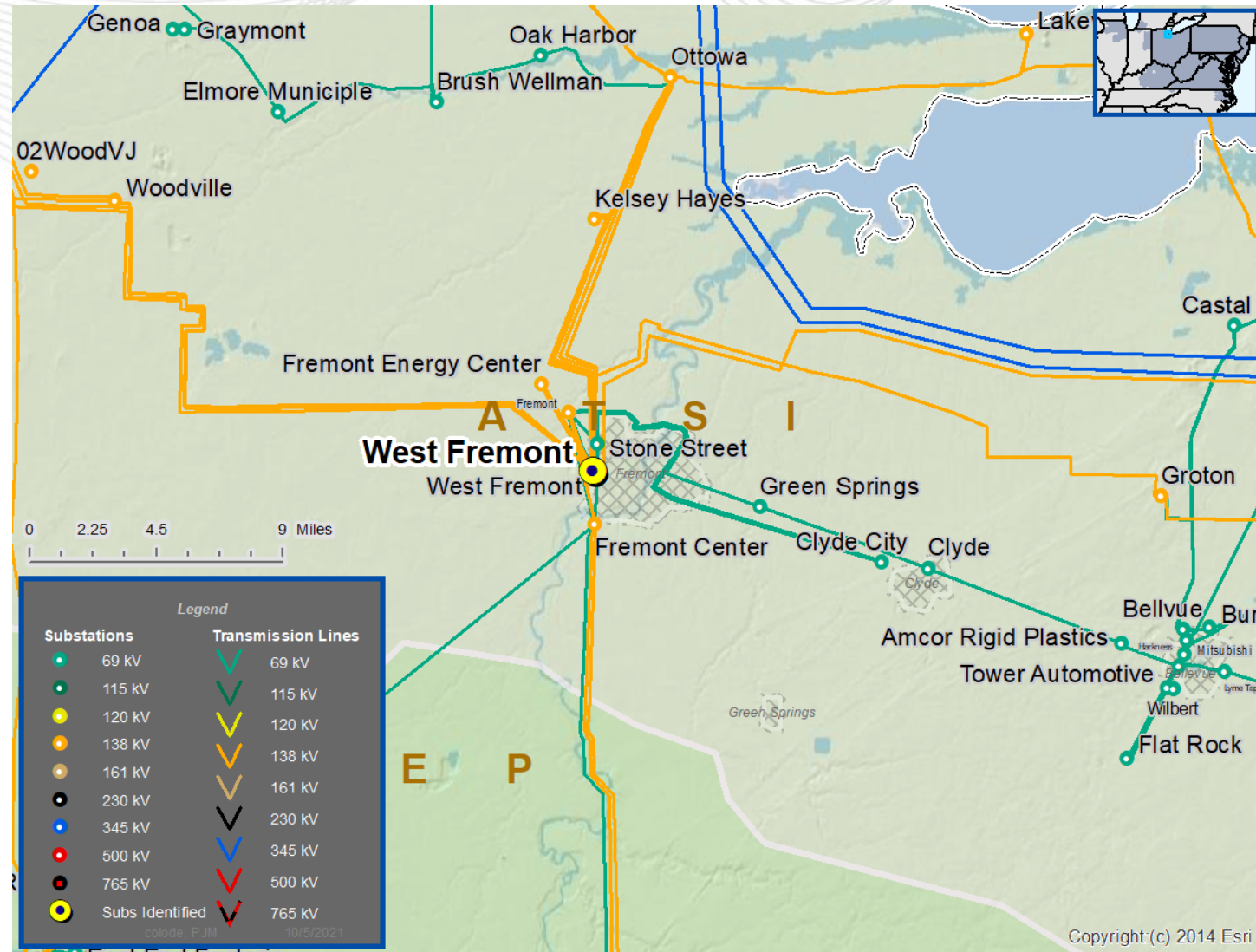
Model Used for Analysis: 2026 Light Load RTEP case

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement:

FG: ATSI-VM2

In 2026 Light Load RTEP case, high voltage is observed at West Fremont 69 kV substation due to N-1.



Recommended Solution:

Replace West Fremont 138/69 kV TR2 with a transformer having additional high-side taps. **(b3679)**

Total Estimated Cost: \$2.9 M

Alternatives:

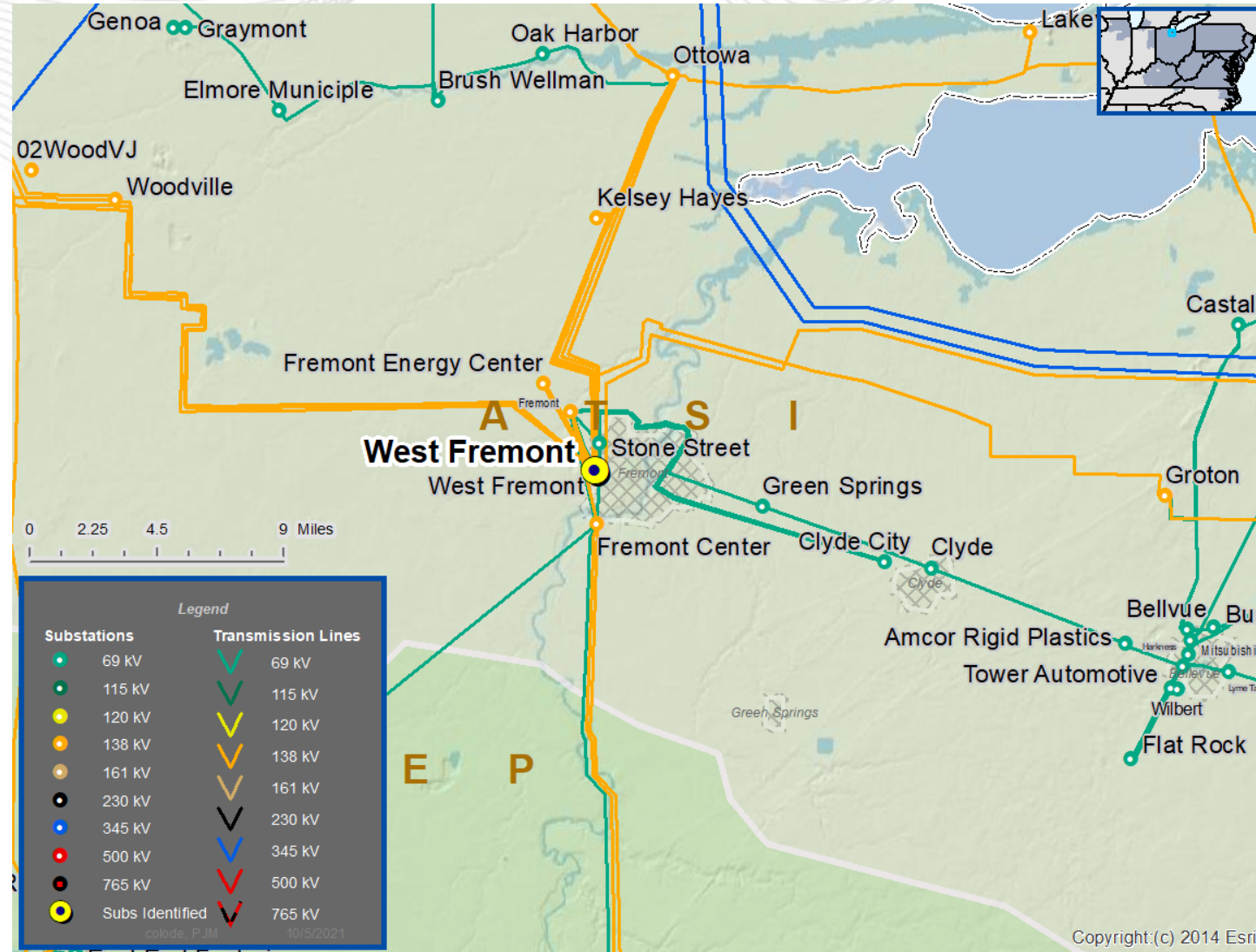
1. Install 100 MVAR reactor at West Fremont
2. Install 100 MVAR reactor at Ottawa

Ancillary Benefits:

By allowing for a high side tap of 145, the transformer will be able to reduce the high voltage in the area is experiencing.

Required IS date: 06/01/2026

Projected IS date: 06/01/2026





ATSI Transmission Zone: Baseline Sanborn 138 kV terminal upgrade

Process Stage: Recommended Solution

Criteria: RTEP Summer N-1-1 Thermal

Assumption Reference: 2026 RTEP assumption

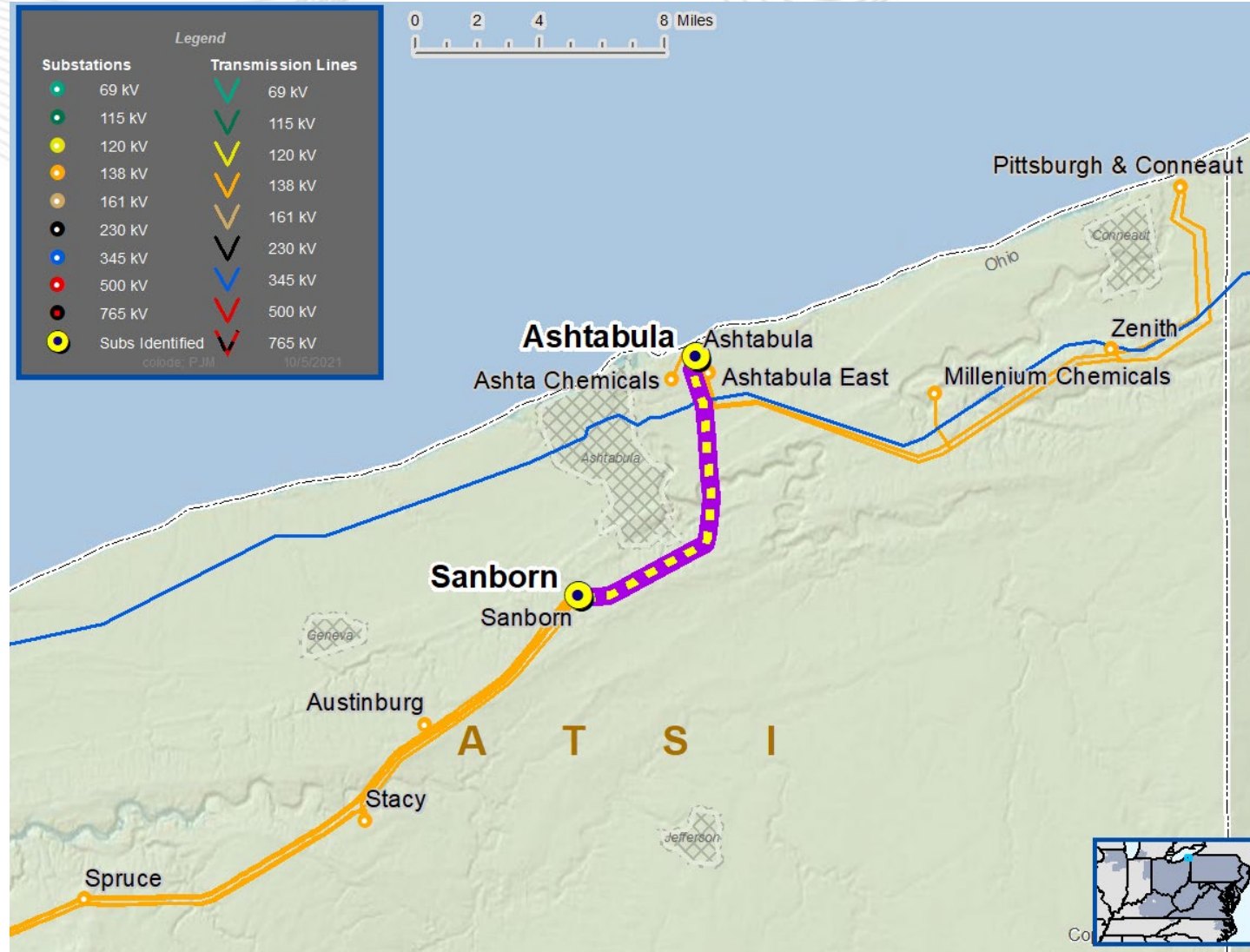
Model Used for Analysis: 2026 Summer RTEP case

Proposal Window Exclusion: Below 200 kV Exclusion

Problem Statement:

FG: N2-ST3

In 2026 Summer RTEP case, Ashtabula to Sanborn Q3 138 kV line is overloaded due to N-1-1.





ATSI Transmission Zone: Baseline Sanborn 138 kV terminal upgrade

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Ashtabula to Sanborn Q2	103/132/147/167
Sanborn to Austinburg Q2	103/132/147/167
Ashtabula to Sanborn Q3	103/132/147/167
Sanborn to Stacy Q3	103/132/147/167
Ashtabula to Sanborn Q4	103/132/147/167
Sanborn to Spruce Q4	103/132/147/167

Recommended Solution:

At Sanborn, replace limiting substation conductors on Ashtabula 138 kV exit to make transmission line conductor the limiting element. (b3680)

Total Estimated Cost: \$0.3 M



Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Ashtabula to Sanborn Q2	148/151/166/166
Sanborn to Austinburg Q2	148/151/166/166
Ashtabula to Sanborn Q3	148/151/166/166
Sanborn to Stacy Q3	148/151/166/166
Ashtabula to Sanborn Q4	148/151/166/166
Sanborn to Spruce Q4	148/151/166/166

Alternatives: None

Ancillary Benefits: Upgrading the limiting terminal equipment will increase the ratings on the line segment and no overload will occur.

Required IS date: 12/31/2022

Projected IS date: 12/31/2022





APS Transmission Zone: Baseline Messick Road to Ridgeley 138 kV Upgrades

Process Stage: Recommended Solution

Criteria: RTEP Generation Deliverability

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 summer RTEP case

Proposal Window Exclusion: Below 200 kV Exclusion

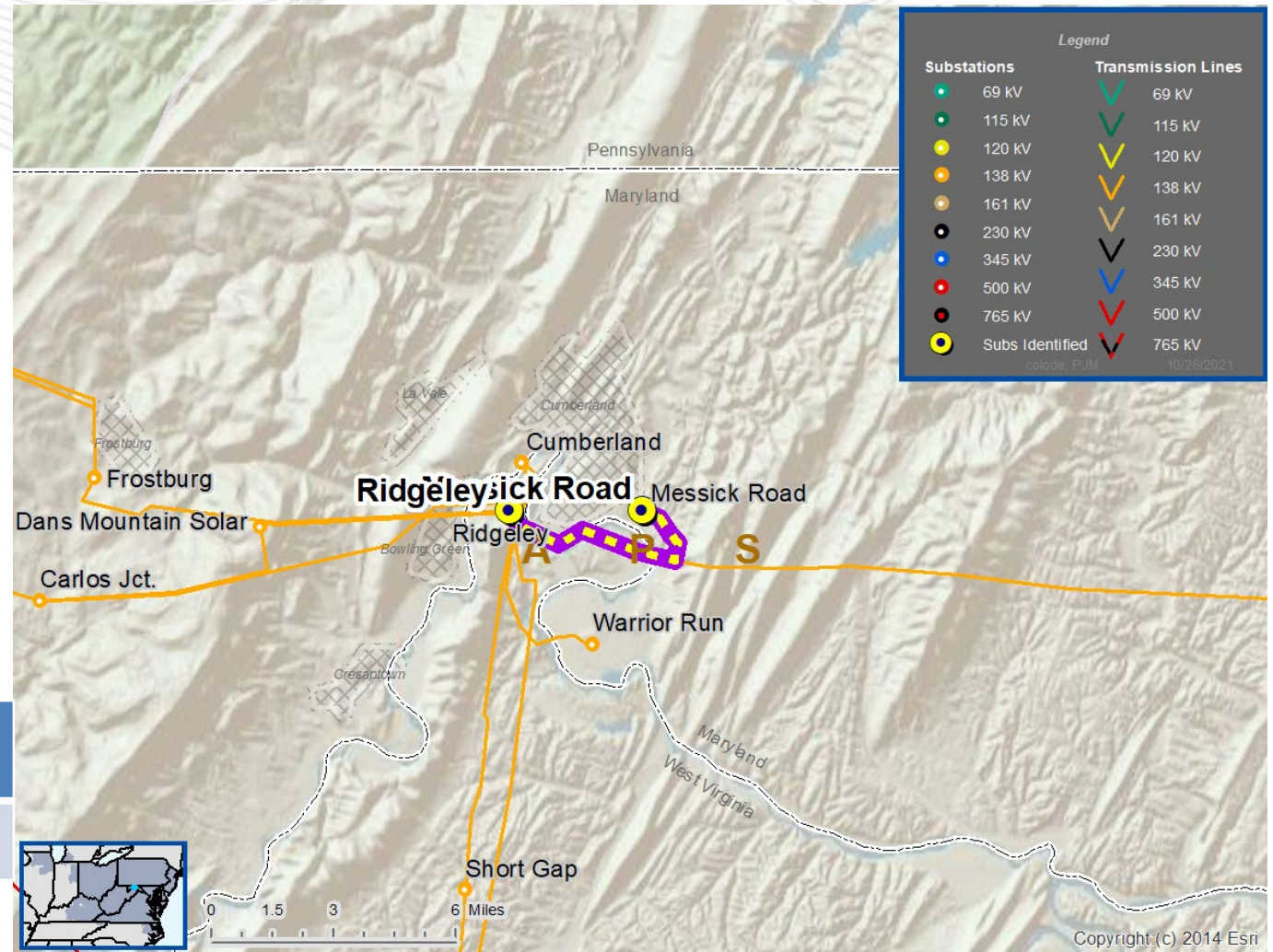
Problem Statement:

FG: GD-S446 and GD-S448

In 2026 Summer RTEP case, Messick Road to Ridgeley 138 kV line is overloaded due to multiple breaker contingencies.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
01RIDGLY - 01MESSCK 138 kV	221/268/250/287



APS Transmission Zone: Baseline Messick Road to Ridgeley 138 kV Upgrades

Recommended Solution: Reconductor the existing 556.5 ACSR line segments on the Messick Road-Ridgeley WC4 138 kV line with 954 45/7 ACSR to achieve 308/376 MVA SN/SE and 349/445 MVA WN/WE ratings. Replace the remote end equipment for the Messick Road-Ridgeley WC4 138 kV line. **(B3683)**

Transmission Estimated Cost: \$11.2M

Preliminary Facility Rating:

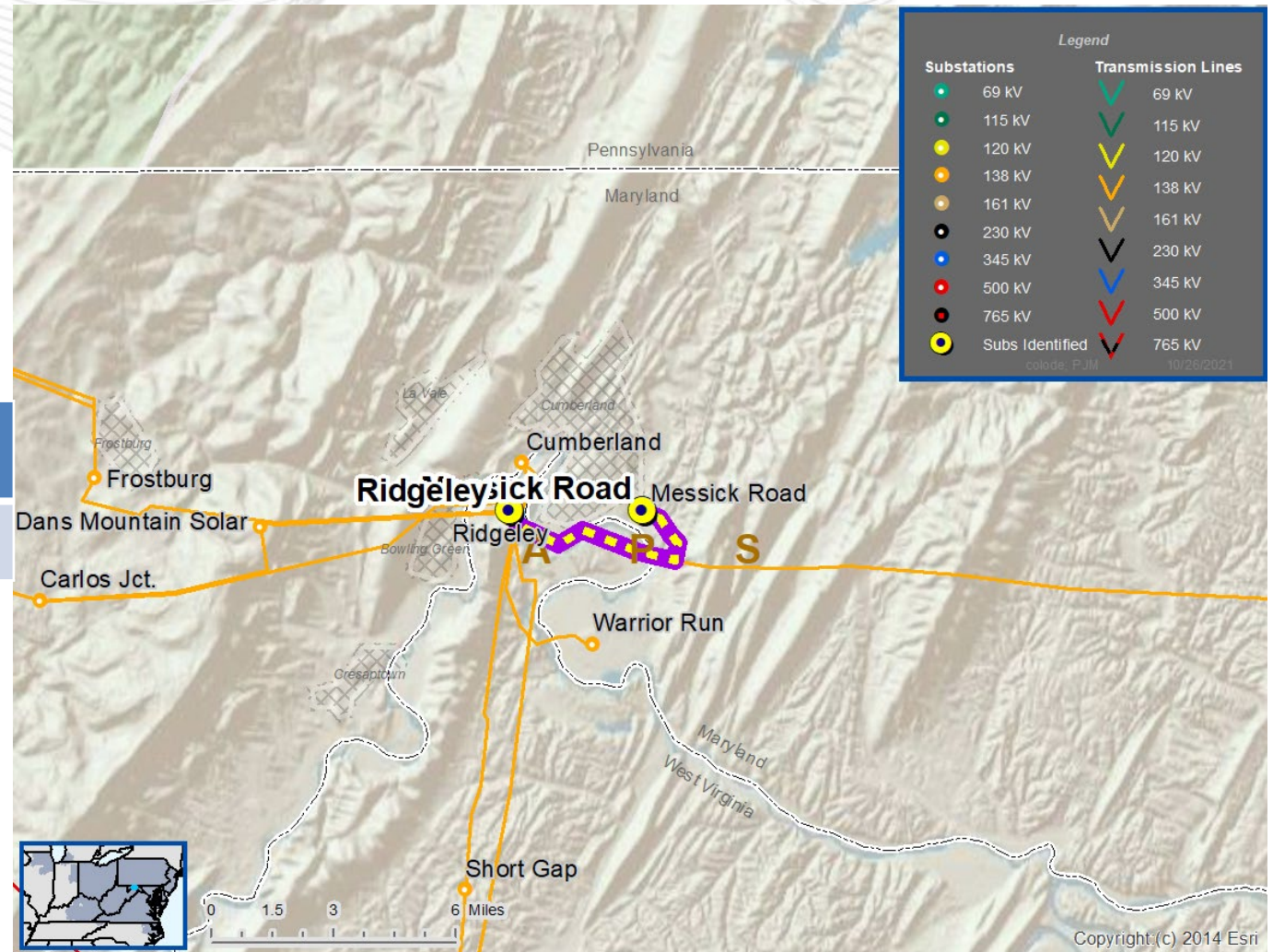
Branch	SN/SE/WN/WE (MVA)
01RIDGLY - 01MESSCK 138 kV	308/376/349/445

Ancillary Benefits: This facility is commonly seen to overload for the loss of various 500 kV lines. This upgrade will result in less operational switching to alleviate N-1 overloads.

Alternatives: No cost effective alternative identified.

Required IS date: 06/01/2026

Projected IS date: 06/01/2026



Cancelation



AMPT Projects in ATSI Transmission Zone: Baseline Amherst (B3153)

Previously Presented: 11/22/2019 SRRTEP-W, 12/18/2019 SRRTEP-W
(Changes are marked in Red)

Process Stage: Recommended Solution
Solution Criteria: TO Planning Criteria
Assumption Reference: AMPT FERC 715
Model Used for Analysis: RTEP 2024 Summer-Base Case
Proposal Window Exclusion: FERC 715 (TO Criteria)

Problem Statement:
 Amherst #2—Amherst #1—Nordson Line Tap topology violates AMPT TO Criteria for Single point radial exposure (Currently 39.29 MW mile, Limit is set to 30 MW-mile in AMPT TO guidelines). Note: ATSI-2019-004 (added to local plan 10/2019) revises the MW-Mile calculation, violation still valid).

Existing Facility Rating: N/A

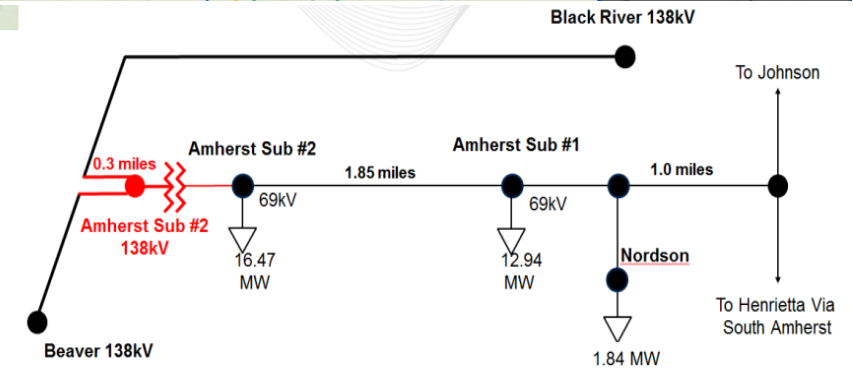
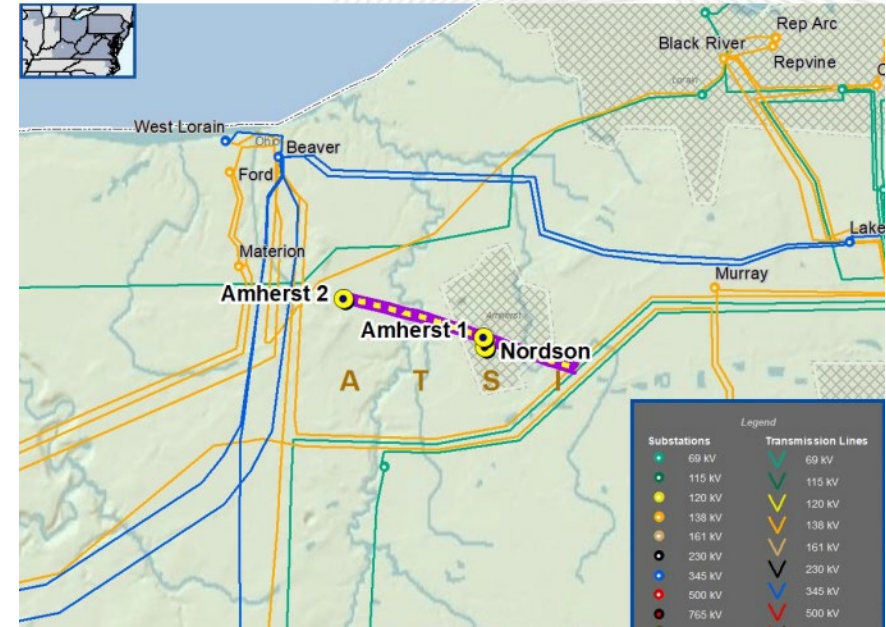
Proposed Solution:
 Instruct a greenfield 0.3 mile 138kV double circuit line tapping the Beaver-Black River (ATSI) 138 kV line; Install five monopole 138kV double circuit steel structures with concrete foundations and string 1590 ACSR conductor. (\$1.3M) Expand the Amherst #2 Substation with the installation of three 138kV circuit breakers; one 138/69/12kV 130 MVA transformers; two 69kV circuit breaker (\$5.7M). Install One 69kV breaker towards Nordson (\$0.5M)

Estimated Cost: \$ 7.5M

- Alternatives:**
- 1) Rebuild existing 69 kV line to double ckt - \$9.6M
 - 2) New Amherst 2—South Amherst 69 kV line - \$10.7M
 - 3) Same as proposed w/ different route - \$8.4M

Required In-Service: 6/1/2020

Reason for Cancellation: This project is being resubmitted as a supplemental project as an administrative change due to the update to AMPT's FERC 715 filing. The project need is still valid; however, this project is no longer a baseline project. See AMPT-2021-005





Submission of Additional Dominion Supplemental Projects for Inclusion in the 2021 Local Plan

Dominion Transmission Zone M-3 Process

Cloud 230kV Delivery - MEC

Need Number: DOM-2021-0009

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Previously Presented:

Need – 02/09/2021

Solution – 04/06/2021, 11/30/2021

Project Driver:

Customer Service

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

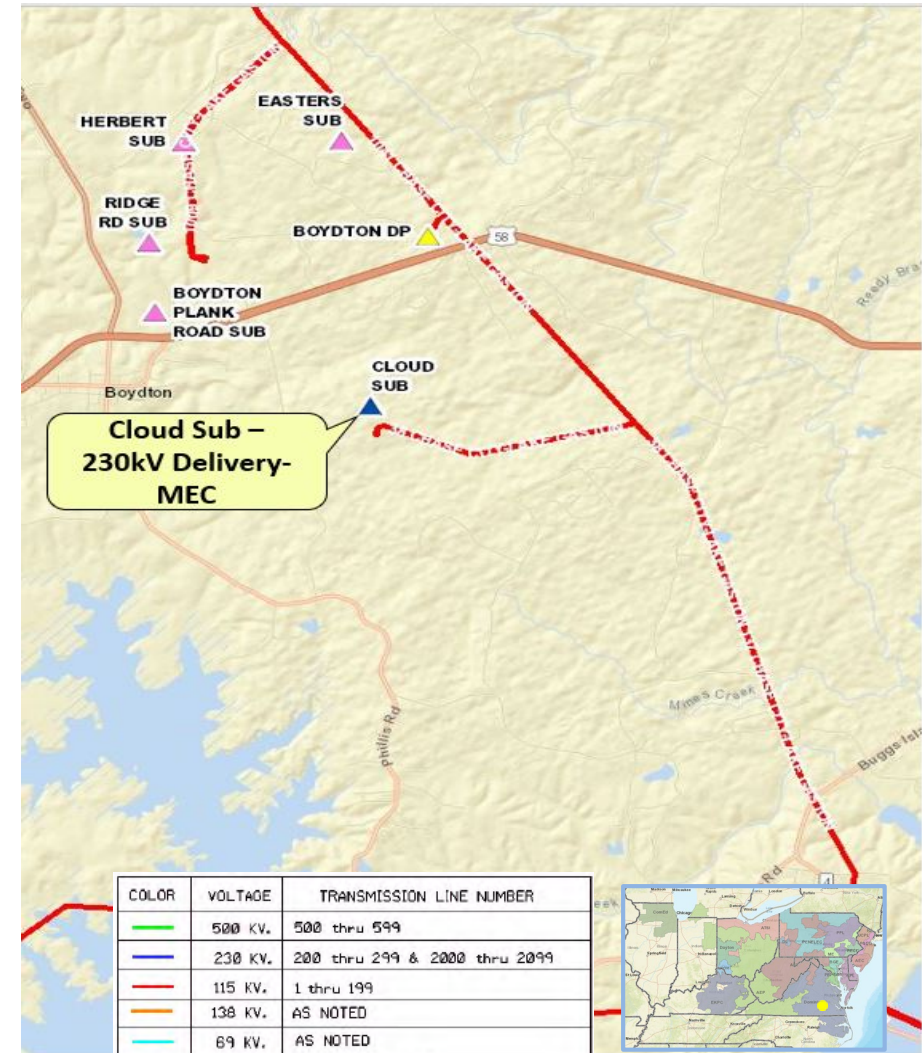
Problem Statement:

ODEC has submitted a request with an updated load projection on behalf of Mecklenburg Electric Coop (MEC) for a delivery point (Cloud Sub - Coleman Creek DP) at Boydton, VA, to support a datacenter campus of total load in excess of 100 MW. The customer requests service by June 1, 2024.

Projected 2026 load

Summer: 156.0 MW

Winter: 150.0 MW



Dominion Transmission Zone M-3 Process

Cloud 230kV Delivery - MEC

Need Number: DOM-2021-0009

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

- Split Line #235 (Clover - Farmville) near Chase City substation and extend two single circuit 230kV lines for approx. 15 miles to the proposed Cloud Substation.
- Terminate the two 230kV lines into 4 breaker ring bus to create a Cloud - Clover line and a Cloud - Farmville line.
- Add two 224 MVA 115/230kV transformers with breakers on both sides.
- Expand 115kV bus to 4 breaker ring bus.
- 4 additional 230kV breakers will be paid for by Customer (cost not included here).

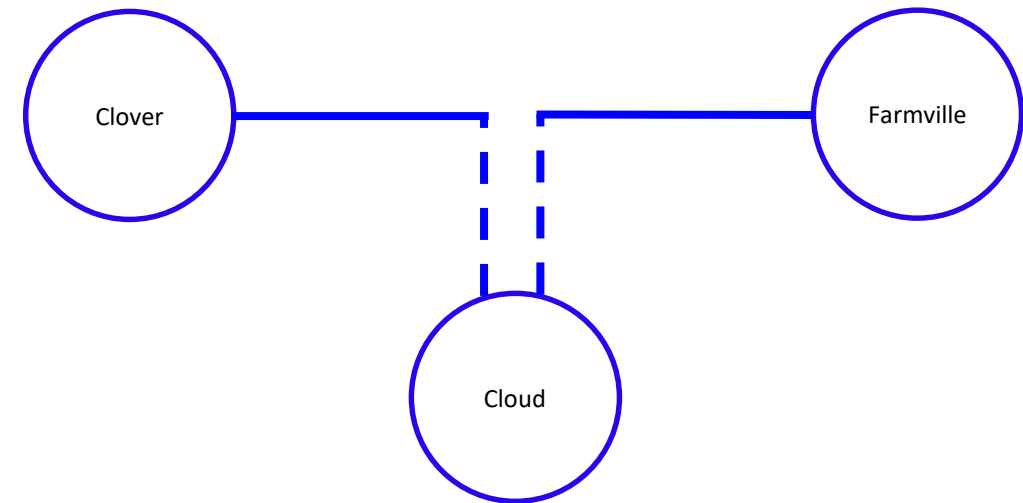
Estimated Cost: \$81.0M Total (Transmission Line \$66M; Substation \$15M)

Projected In-Service: 06/01/2024

Supplemental Project ID: s2601

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process

Easters 230kV Delivery - MEC

Need Number: DOM-2021-0010

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Previously Presented:

Need – 02/09/2021

Solution – 04/06/2021, 11/30/2021

Project Driver:

Customer Service

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

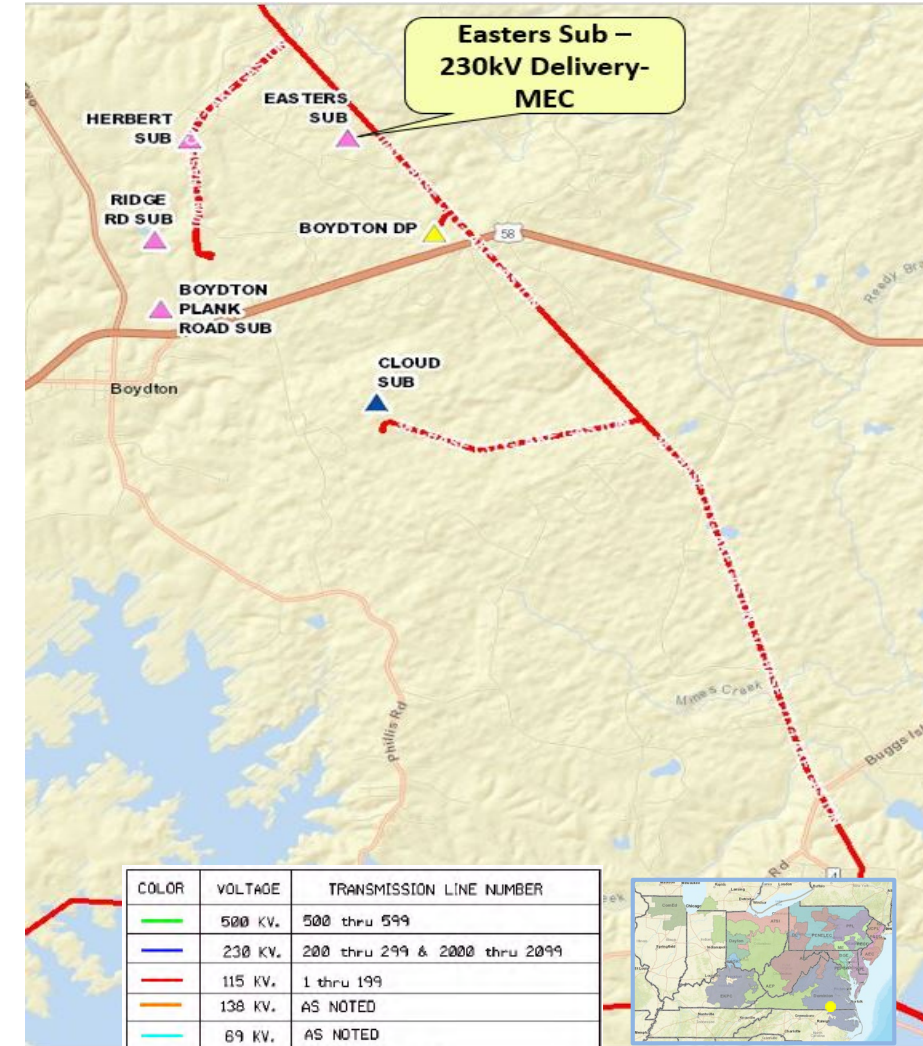
Problem Statement:

ODEC has submitted a request on behalf of Mecklenburg Electric Coop (MEC) for a new delivery point (Easters Sub – Timber DP) at Boydton, VA, to support a new datacenter campus with a total load in excess of 100 MW. The customer requests service by November 1, 2021.

Projected 2026 load

Summer: 123.0 MW

Winter: 105.0 MW



Dominion Transmission Zone M-3 Process

Easters 230kV Delivery - MEC

Need Number: DOM-2021-0010

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

The project will need to be built in 2 stages due to the timeframe associated with obtaining a CPCN and extend 230kV into the area. The 115kV Station will help meet the initial load target date.

Stage 1: Interconnect the new substation by cutting and extending Line #137 (Kerr Dam – Ridge Road) to the proposed Easters 115kV Substation. The conductor, substation and line equipment used to interconnect Easters 115 kV with the transmission system will be same as 230kV substation. The projected in-service date for Stage 1 is November 1, 2021.

Stage 2: Cut and extend Line #2226 (Clover – Cloud 230kV) to the proposed Easters 230kV Substation. Add one 84 MVAR 230kV cap bank for voltage support. Once conversion from 115kV to 230kV substation is complete, remove Easters 115kV tap and reconnect Line #137 Kerr Dam – Ridge Road. 8 additional 230kV breakers will be paid for by Customer (cost not included here). The projected in-service date for Stage 2 is June 1, 2024.

Estimated Cost: \$20.0M Total

(Transmission Line \$5M; 115kV Substation \$10M; 230kV Substation \$5M)

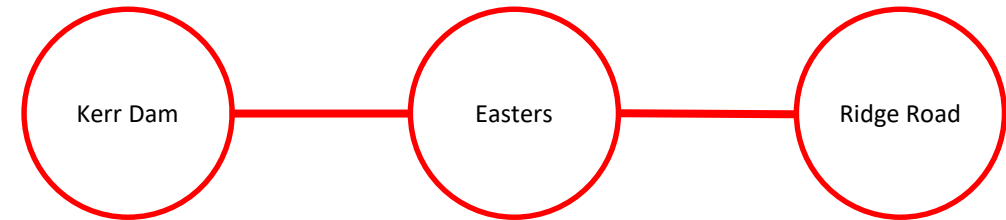
Projected In-Service: 11/01/2021 (Stage 1); 06/01/2024 (Stage 2)

Supplemental Project ID: s2602.1

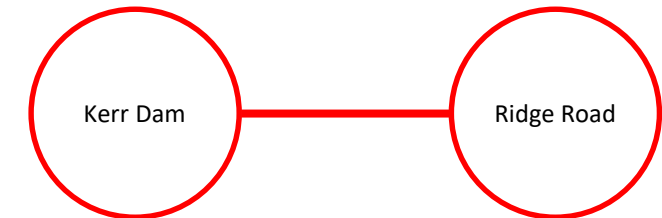
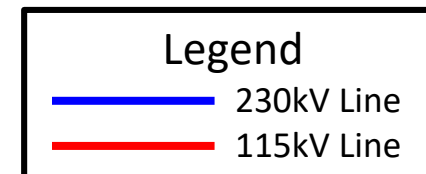
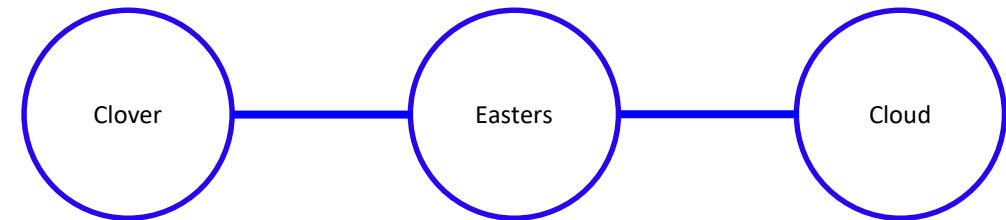
Project Status: Engineering

Model: 2025 RTEP

Stage 1: Easters 115kV Sub



Stage 2: Easters 230kV Sub



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0009-DNH & DOM-2021-0010-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Presentation Date:

DNH – 11/30/2021

Supplemental Project Driver:

Do No Harm Analysis

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

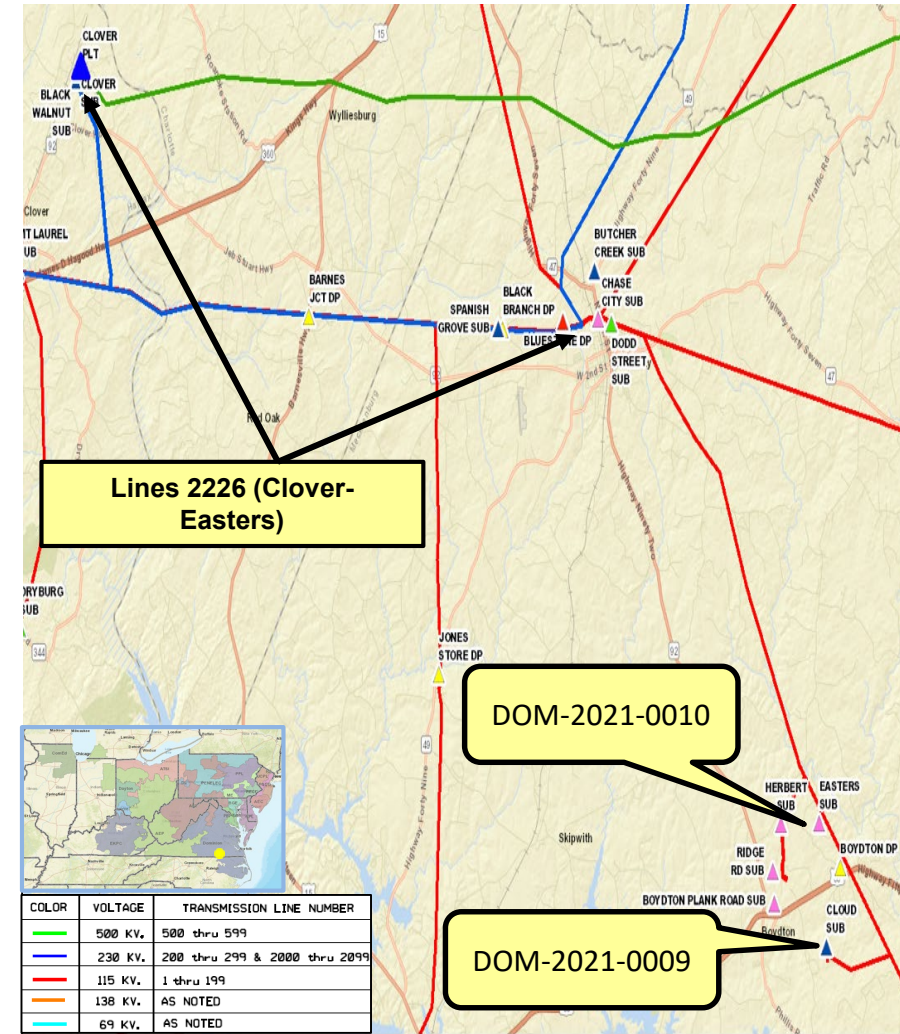
Problem Statement:

PJM has identified a N-1 Generator Deliverability contingency scenario that results in overload of Line 2226 (Clover to Easters) in the 2021 Do-No-Harm analysis.

The loss of Line 556 (Clover – Rawlings) under contingency DVP-P1-2: Line 556 creates overload on:

- Line 2226 (Clover to Easters)

The violations are caused by previously presented Supplemental Projects DOM-2021-0009 and DOM-2021-0010 in the Dominion Zone.



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0009-DNH & DOM-2021-0010-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

Rebuild approximately 16 miles between Clover Sub and structure #235/310 of 230kV Line 2226 using a higher capacity conductor and associated substation equipment to achieve an expected rating of 1572 MVA.

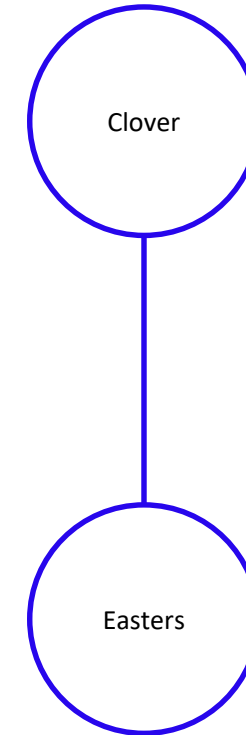
Estimated Cost: \$34.0M

Projected In-Service: 06/30/2026

Supplemental Project ID: s2602.2

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process

Interconnection 230kV Delivery - DEV

Need Number: DOM-2021-0016

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Previously Presented:

Need – 03/09/2021

Solution – 04/06/2021, 11/30/2021

Project Driver:

Customer Service

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

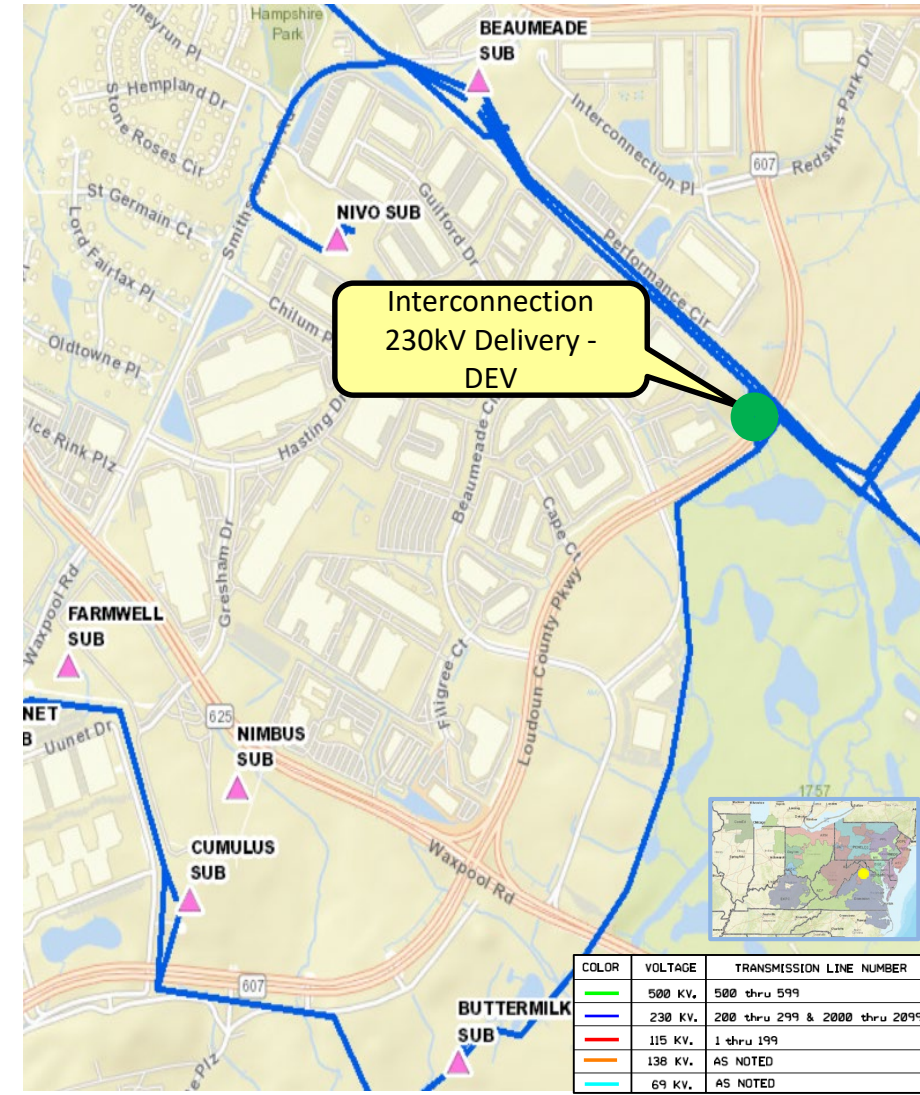
Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Interconnection) to accommodate a new datacenter campus in Loudoun County with a total load in excess of 100MW. Requested in-service date is 12/15/2024.

Projected 2026 load

Summer: 208.3 MW

Winter: 207.9 MW



Dominion Transmission Zone M-3 Process Interconnection 230kV Delivery - DEV

Need Number: DOM-2021-0016

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

Interconnect the new substation by cutting and extending Line #2152 (Buttermilk - Beaumeade) to the proposed Interconnection Substation. Terminate both ends into a four-breaker ring arrangement to create an Interconnection - Beaumeade line and an Interconnection - Buttermilk line.

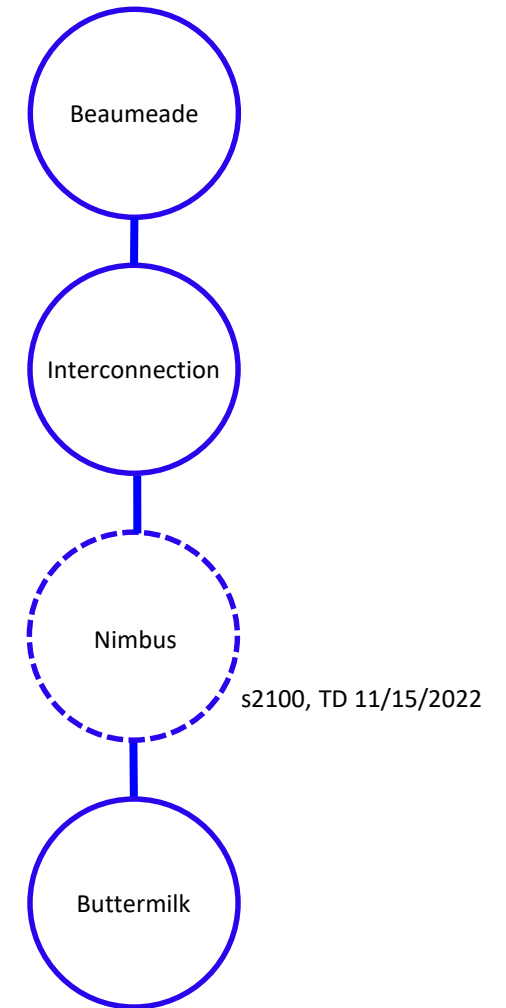
Estimated Cost: \$16.0 M

Projected In-Service: 12/15/2024

Supplemental Project ID: s2609.1

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0016-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Presentation Date:

DNH – 11/30/2021

Supplemental Project Driver:

Do No Harm Analysis

Specific Assumption Reference:

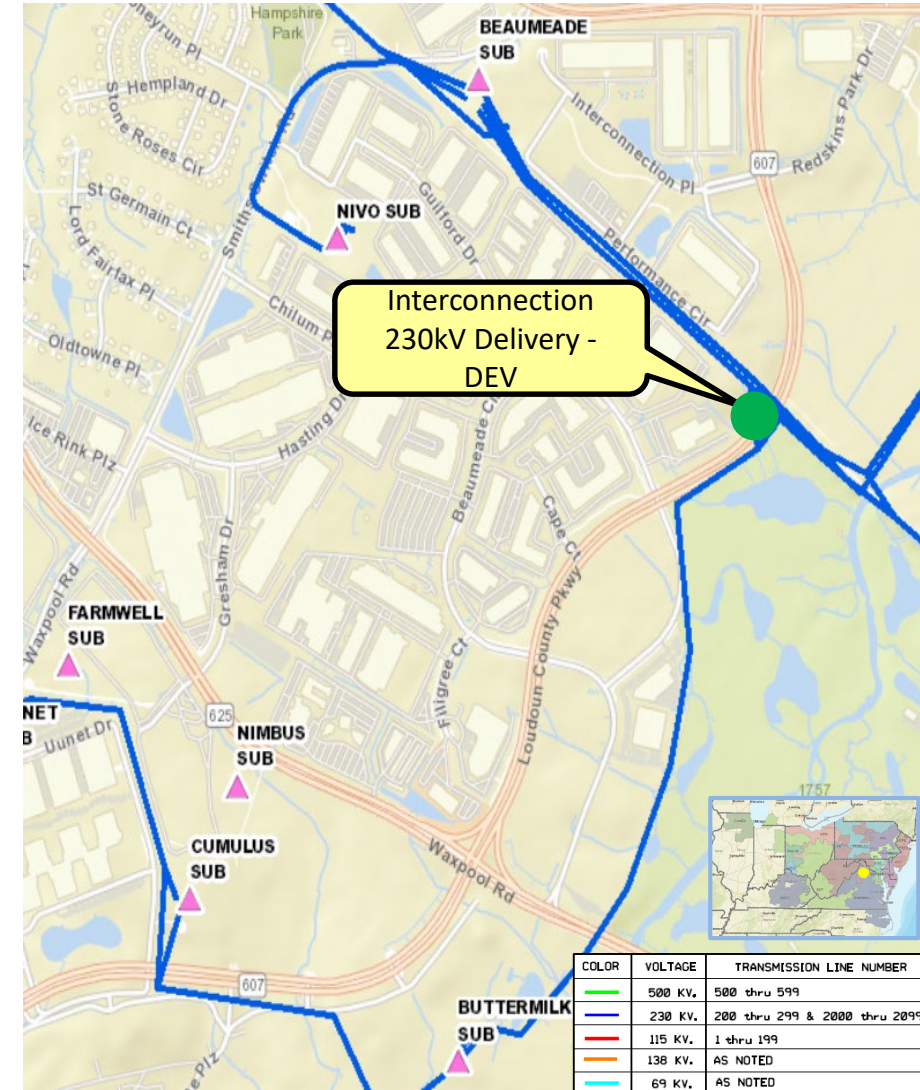
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

Problem Statement:

PJM has identified violations on three separate facilities.

- 1) Pleasant View 500-230kV TX – **(Generator Deliverability Analysis)**
 - Contingency scenario: DVP_P1-3: 8BRAMBLETON-TX#1
- 2) Line #202 (Clark to Idylwood) – **(N-1 Contingency Analysis)**
 - Contingency scenario: DVP_P7-1: LN 227-274
- 3) Ox 500-230kV Transformers (1 & 2) – **(N-1-1 Contingency Analysis)**
 - Contingency scenarios: DVP_P1-2: LN 561 and DVP_P1-3: 8OX-TX#1
DVP_P1-2: LN 561 and DVP_P1-3: 8OX TX#2
- 4) Line #205 (Locks – Harrowgate – Tyler) – **(Generator Deliverability Analysis)**
 - Contingency scenario: DVP_P4-2: 562T563

These violations were caused by Supplemental Project DOM-2021-0016 in the Dominion Zone.



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0016-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution (Part 1 of 4):

Pleasant View 500-230kV Transformer (s2609.2)

- Install (1) 1440 MVA 500-230 kV transformer at Goose Creek Substation.
 - Extend the existing 500kV ring bus at Goose Creek Substation to be set up for a future six-breaker ring arrangement. One breaker to be installed initially creating a five-breaker ring bus.
 - Install a new 230kV ring bus at Goose Creek Substation to be set up for a future four-breaker ring arrangement. Three 230kV breakers to be installed initially.
- Cut and extend line #227 (Belmont to Beaumeade) into Goose Creek Substation.
- Upgrade 230kV Pleasant View breakers L3T203 and L3T2180 from 50kA to 63kA. (s2609.9)

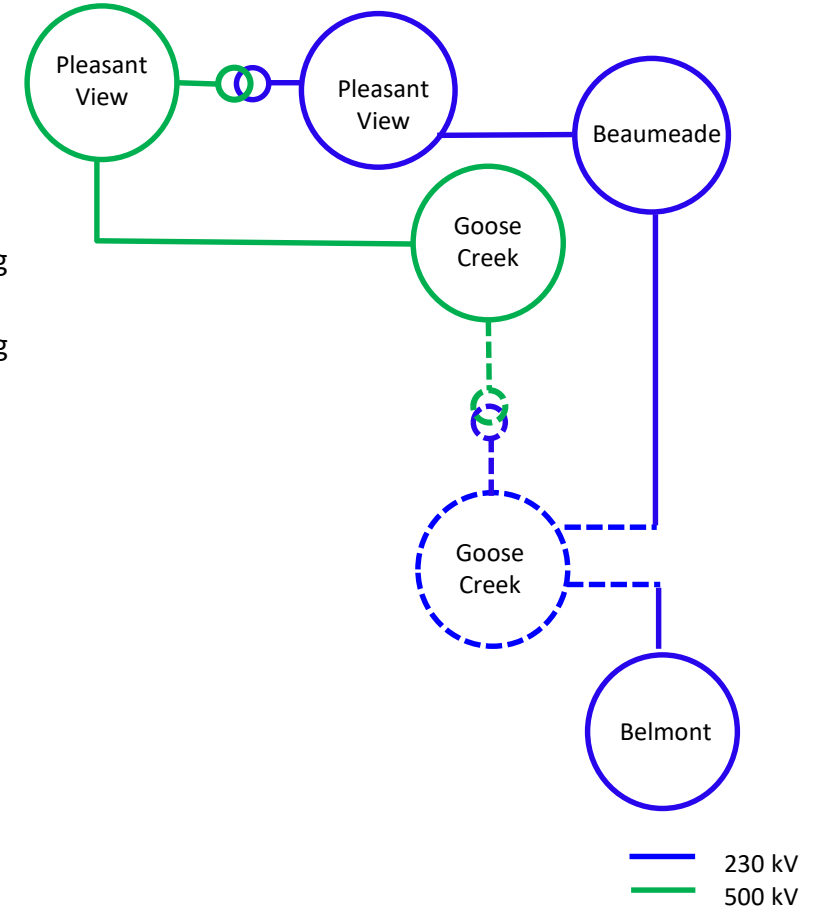
Estimated Cost: \$41.0M Total (Transmission Line \$5.0M; Substation \$36.0M)

Projected In-Service: 12/15/2026

Supplemental Project ID: (see above)

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0016-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution (Part 2 of 4):

Line #202 (Clark to Idylwood) – Reconductor Line #202 (Clark – Idylwood), approximately 4 miles, using a higher capacity conductor and upgrade terminal equipment to achieve an expected rating of 1574MVA.

Estimated Cost: \$8.0M Total (Transmission Line \$4.0M; Substation \$4.0M)

Projected In-Service: 12/15/2026

Supplemental Project ID: s2609.3

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0016-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution (Part 3 of 4):

Ox 500-230kV Transformers

- Install (1) 1440 MVA 500-230 kV transformer and associated 500 kV and 230 kV equipment (breakers, switches, leads) at Occoquan Substation to supply the area with a 500 kV source (**s2609.4**)
- Cut and loop 500 kV line #571 (Ox – Possum Point) as the 500 kV source into the proposed 500 kV ring bus
- Existing terminations for 230 kV line #2001 (Occoquan – Possum Point), line #2013 (Occoquan – Ox), and line #2042 (Odgen Martin – Ox) will be rearranged to terminate into the Occoquan station
- Line #215 (Hayfield – Possum Point) will be rearranged to route over the expanded Occoquan station
- Rebuild 230 kV line #2013 (Occoquan – Ox) using a higher capacity conductor, as well as terminal equipment upgrades, to achieve an expecting rating of 1574 MVA. (**s2609.5**)
- Upgrade (2) 230 kV breakers 201342 & L142 from 50kA to 63kA at Ox Substation due to an insufficient breaker duty rating with the expansion in place. (**s2609.6**)
- Cut and loop line #237 (Braddock – Possum Point) into Ox Substation (**s2609.7**)
- Install a new backbone and associated 230 kV equipment to the south of the existing 230 kV yard in Ox substation

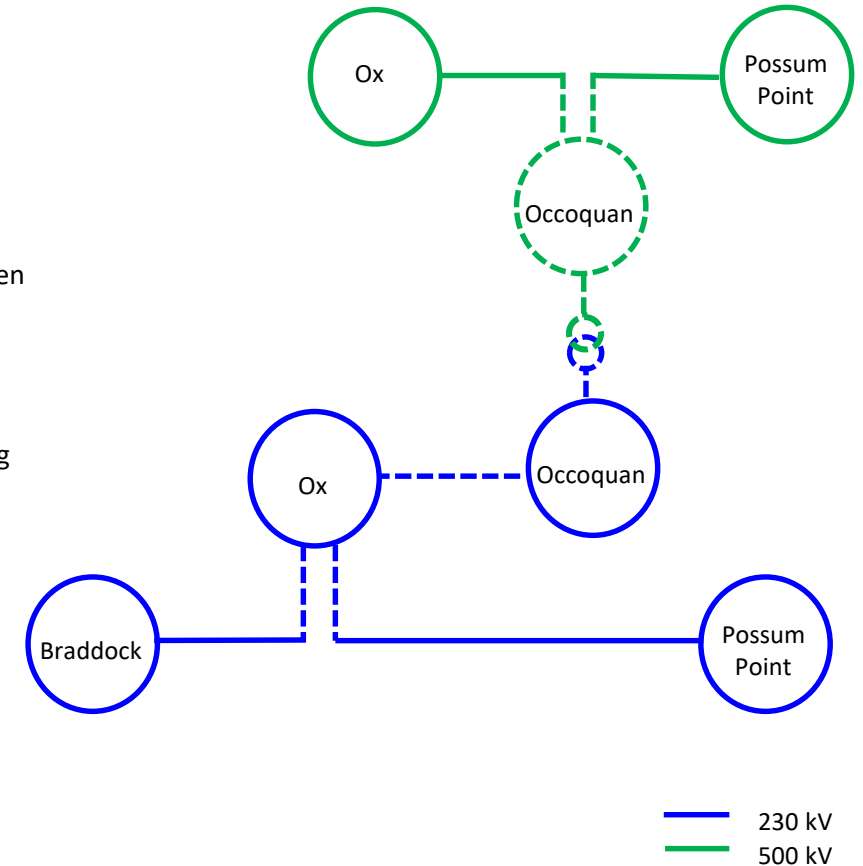
Estimated Cost: \$84.5M Total (Transmission Line \$14.0M; Substation \$70.5M)

Projected In-Service: 12/15/2026

Supplemental Project ID: (see above)

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2021-0016-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution (Part 4 of 4):

Line #205 (Locks – Harrowgate – Tyler) – Rebuild approximately 10 miles segment of Line #205 from Locks to Tyler and upgrade the terminal equipment. The minimum summer normal rating of the line segments will be 1572MVA.

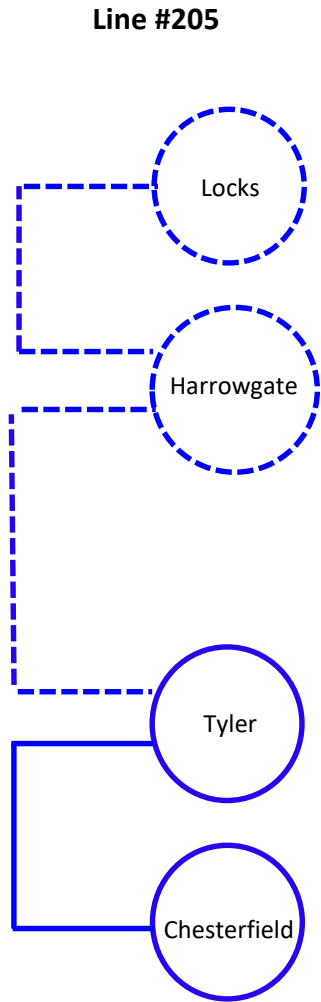
Estimated Cost: \$27.0 M

Projected In-Service: 12/15/2026

Supplemental Project ID: s2609.8

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process

Hourglass 230kV Delivery – NOVEC

Need Number: DOM-2021-0020

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Previously Presented:

Need – 04/06/2020

Solution – 05/11/2021, 11/30/2021

Project Driver:

Customer Service

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

Problem Statement:

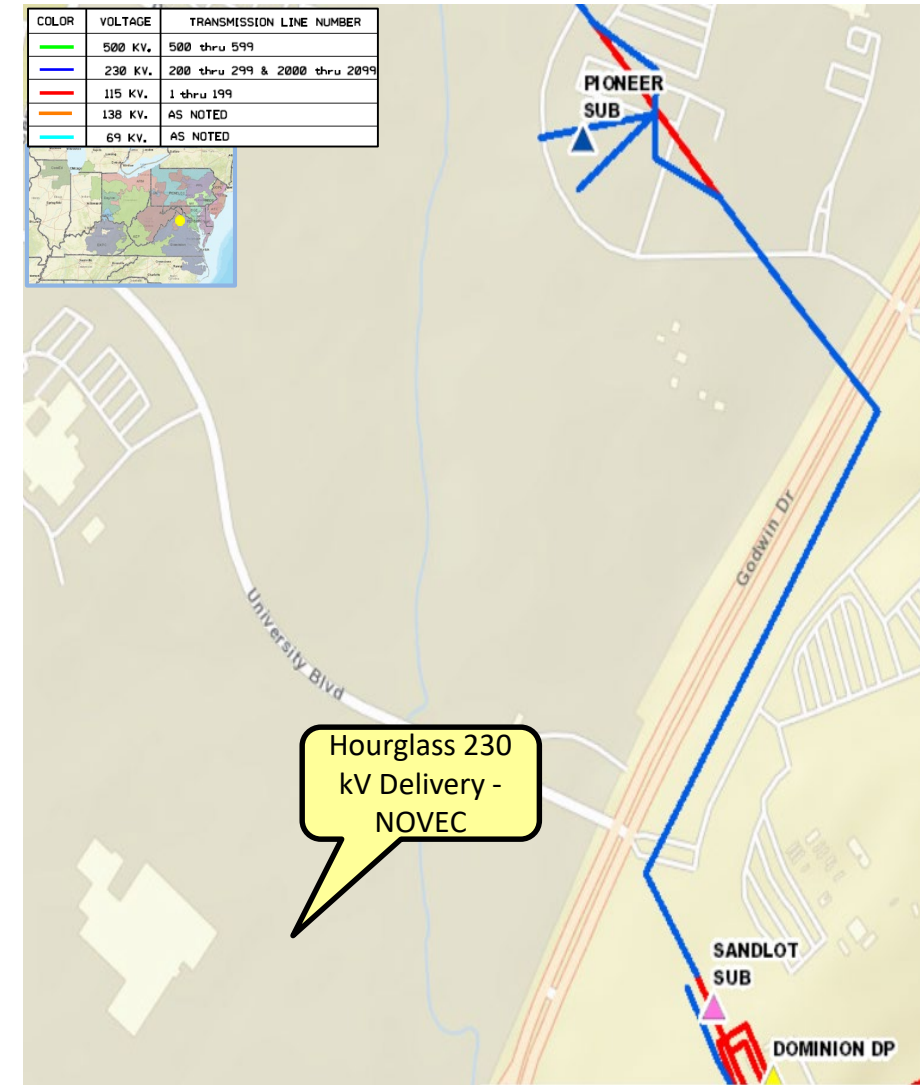
NOVEC has submitted a DP Request for a new substation (Hourglass) to serve a data center complex in Prince William County with a total load in excess of 100 MW by 2025.

Requested in-service date is 06/15/2023.

Projected 2026 load

Summer: 114.7 MW

Winter: 114.6 MW



Dominion Transmission Zone M-3 Process Hourglass 230kV Delivery – NOVEC

Need Number: DOM-2021-0020

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

Interconnect the new substation by cutting and extending Line #2196 (Pioneer - Sandlot) to the proposed Hourglass Substation. Terminate both ends into a 230 kV four-breaker ring arrangement with a provision to add two additional 230 kV breakers for an ultimate configuration of a six-breaker arrangement.

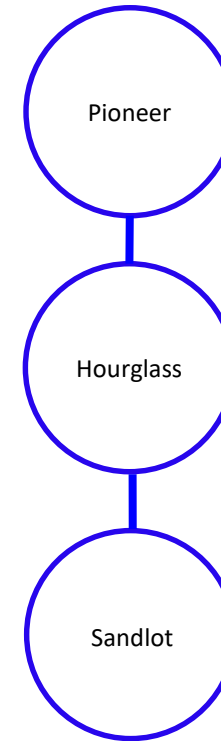
Estimated Cost: \$11.0 M

Projected In-Service: 06/15/2023

Supplemental Project ID: s2608.1

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0020-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Presentation Date:

DNH – 11/30/2021

Supplemental Project Driver:

Do No Harm Analysis

Specific Assumption Reference:

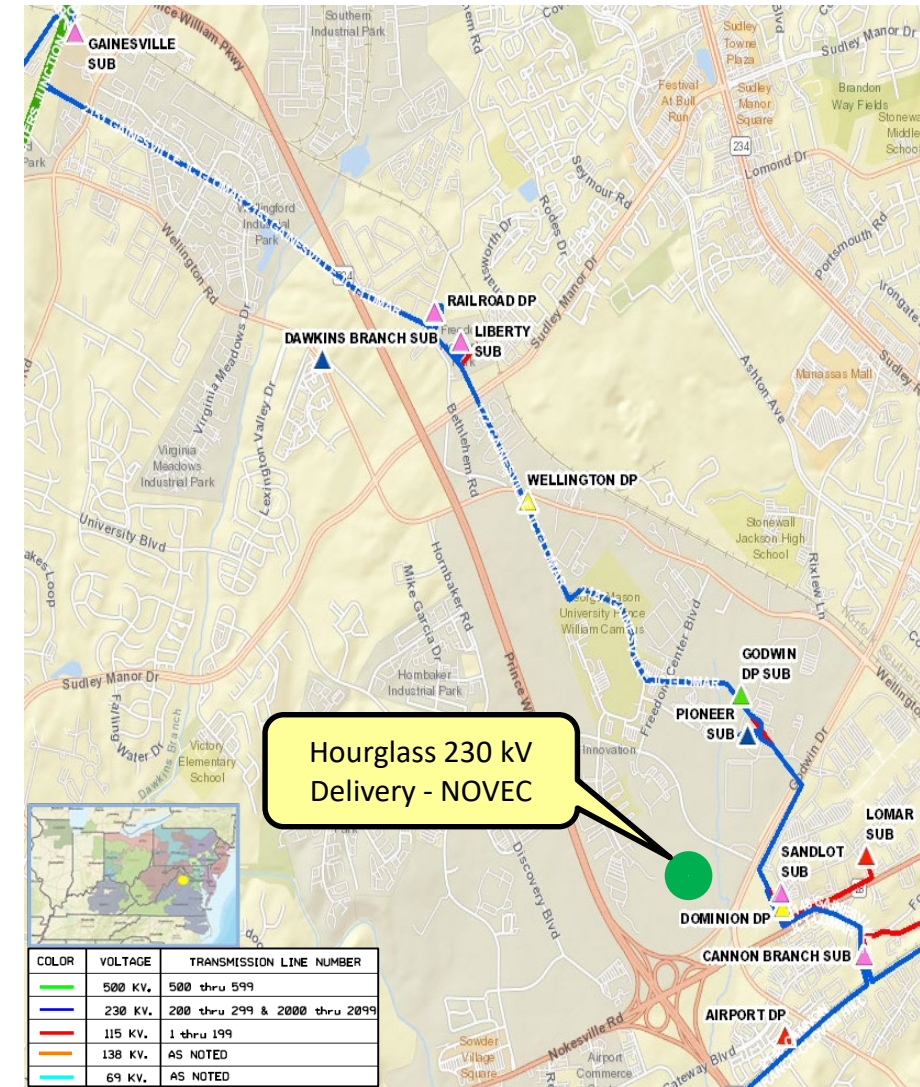
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

Problem Statement:

PJM has identified violations on the following separate facilities:

- Bristers 500-230 kV TX – **(N-1-1 Contingency Analysis)**
Contingency scenario: DVP_P1-2: LN 539 and DVP_P1-2: LN 569
- Line #2187 (Pioneer DP to Liberty) – **(N-1-1 Contingency Analysis)**
Contingency scenario: DVP_P1-2: LN 2228 and DVP_P1-2: LN 2011
- Line #2228 (Pioneer DP to Liberty) – **(N-1-1 Contingency Analysis)**
Contingency scenarios: DVP_P1-2: LN 2187 and DVP_P1-2: LN 2011
- Line #2080 (Liberty to Railroad DP) – **(N-1-1 Contingency Analysis)**
Contingency scenarios: DVP_P1-2: LN 2163 and DVP_P1-2: LN 2011
- Line #2151 (Railroad DP to Gainesville) – **(N-1-1 Contingency Analysis)**
Contingency scenarios: DVP_P1-2: LN 2163 and DVP_P1-2: LN 2011
- Line #2163 (Vint Hill to Liberty) – **(N-1-1 Contingency Analysis)**
Contingency scenarios: DVP_P1-2: LN 2151 and DVP_P1-2: LN 2011

These violations were caused by Supplemental Project DOM-2021-0020 in the Dominion Zone.



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0020-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution (Part 1 of 2):

Re-conductor the following segments of 230kV line using a higher capacity conductor as well as terminal equipment upgrades to achieve an expected rating of 1572 MVA:

- Line #2187: Pioneer DP – Liberty 230 kV (approx. 2.1 miles) (**s2608.2**)
- Line #2228: Pioneer DP – Liberty 230 kV (approx. 2.1 miles) (**s2608.3**)
- Line #2163: Vint Hill – Liberty (approx. 6.2 miles) (**s2608.4**)
- Line #2080: Liberty – Railroad DP 230 kV (approx. 0.3 miles) (**s2608.5**)
- Line #2151: Railroad DP – Gainesville 230 kV (approx. 2.2 miles) (**s2608.6**)

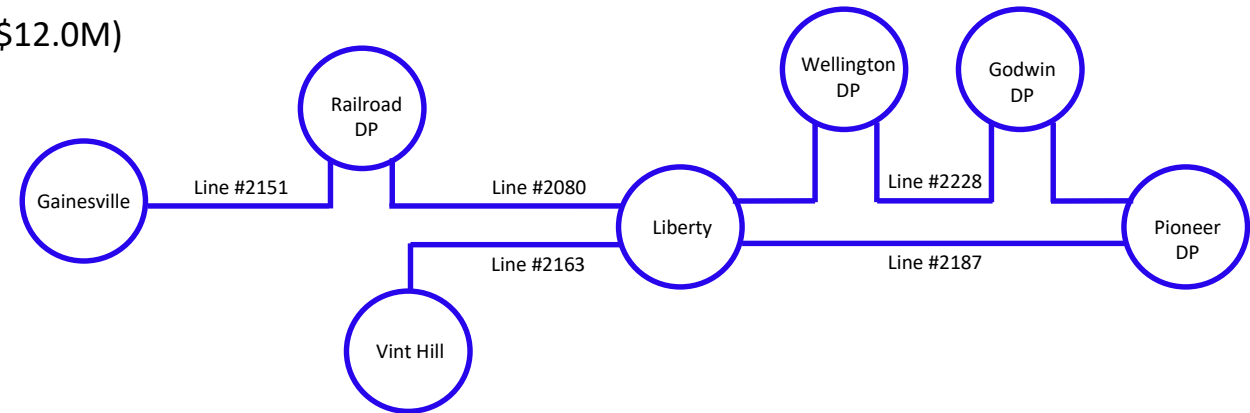
Estimated Cost: \$32.0M Total (Transmission Line \$20.0M; Substation \$12.0M)

Projected In-Service: 12/15/2026

Supplemental Project ID: (see above)

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2021-0020-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution (Part 2 of 2):

Bristers Substation

- Install (1) 840 MVA 500-230 kV transformer at Bristers Substation and associated 500 kV and 230 kV equipment
- Expand Bristers Substation to the north of the existing site to accommodate the 230 kV breaker ring required for the addition of the new transformer
- Line terminations for Line #183 (Bristers – Ox 115 kV), Line #2101 (Bristers – Vint Hill 230 kV), and Line #539 (Ox – Bristers 500 kV) will be re-arranged to accommodate the expansion

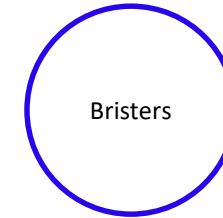
Estimated Cost: \$65.0M Total (Transmission Line \$5.0M; Substation \$60.0M)

Projected In-Service: 12/15/2026

Supplemental Project ID: s2608.7

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process

Park Center 230kV Delivery - DEV

Need Number: DOM-2020-0043

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Previously Presented:

Need – 11/04/2020

Solution – 05/11/2021, 11/30/2021

Project Driver:

Customer Service

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

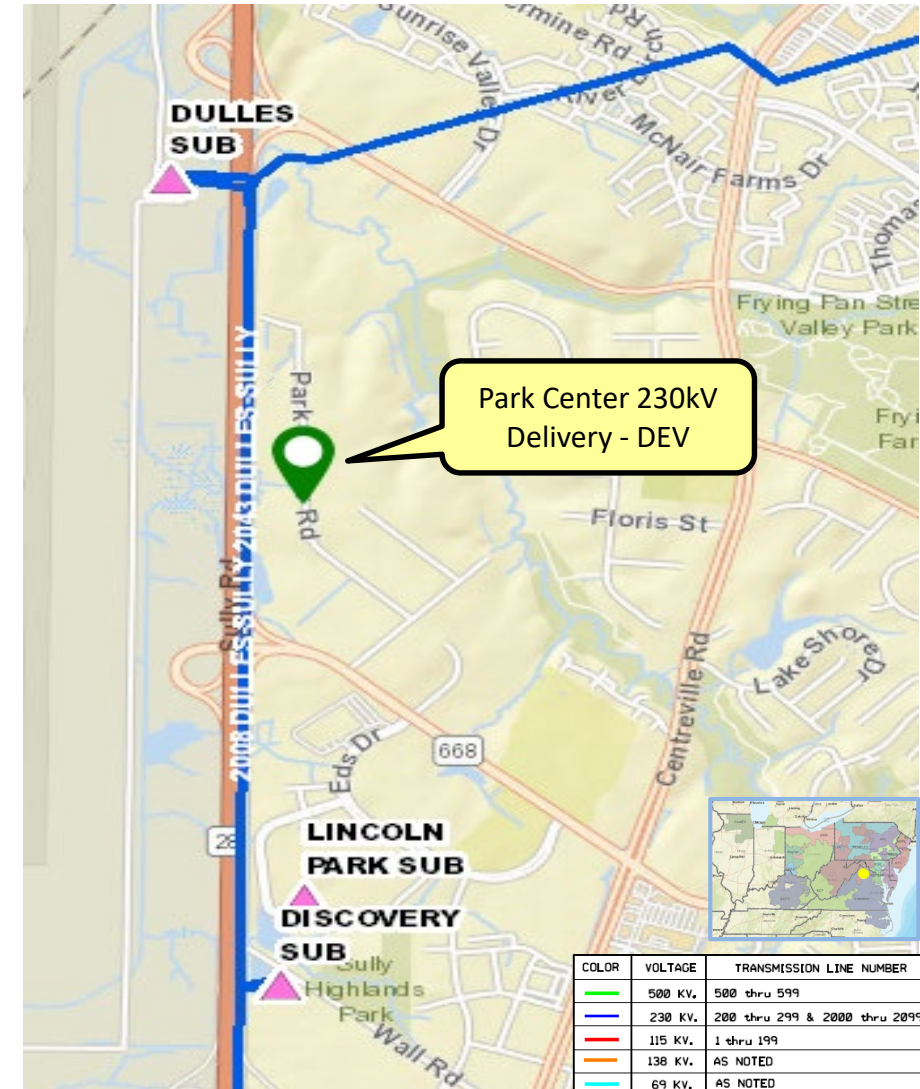
Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Park Center) to accommodate a new datacenter campus in Fairfax County with a total load in excess of 100MW. Requested in-service date is 08/01/2024.

Projected 2026 load

Summer: 64.0 MW

Winter: 52.0 MW



Dominion Transmission Zone M-3 Process Park Center 230kV Delivery - DEV

Need Number: DOM-2020-0043

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

Interconnect the new substation by cutting and extending Line #2043 (Reston-Lincoln Park) to the proposed Park Center Substation. Terminate both ends into a four-breaker ring arrangement to create a Park Center-Reston line and a Park Center-Lincoln Park line.

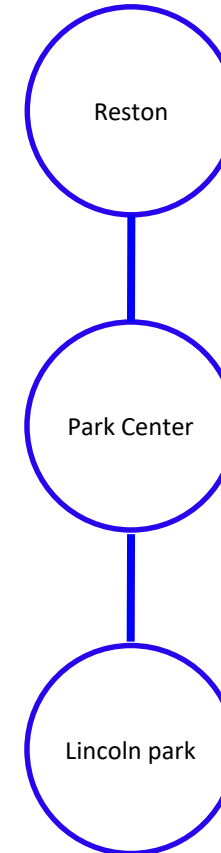
Estimated Cost: \$10.0 M

Projected In-Service: 08/01/2024

Supplemental Project ID: s2622.1

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2020-0043-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Presentation Date:

DNH – 11/30/2021

Supplemental Project Driver:

Do No Harm Analysis

Specific Assumption Reference:

Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

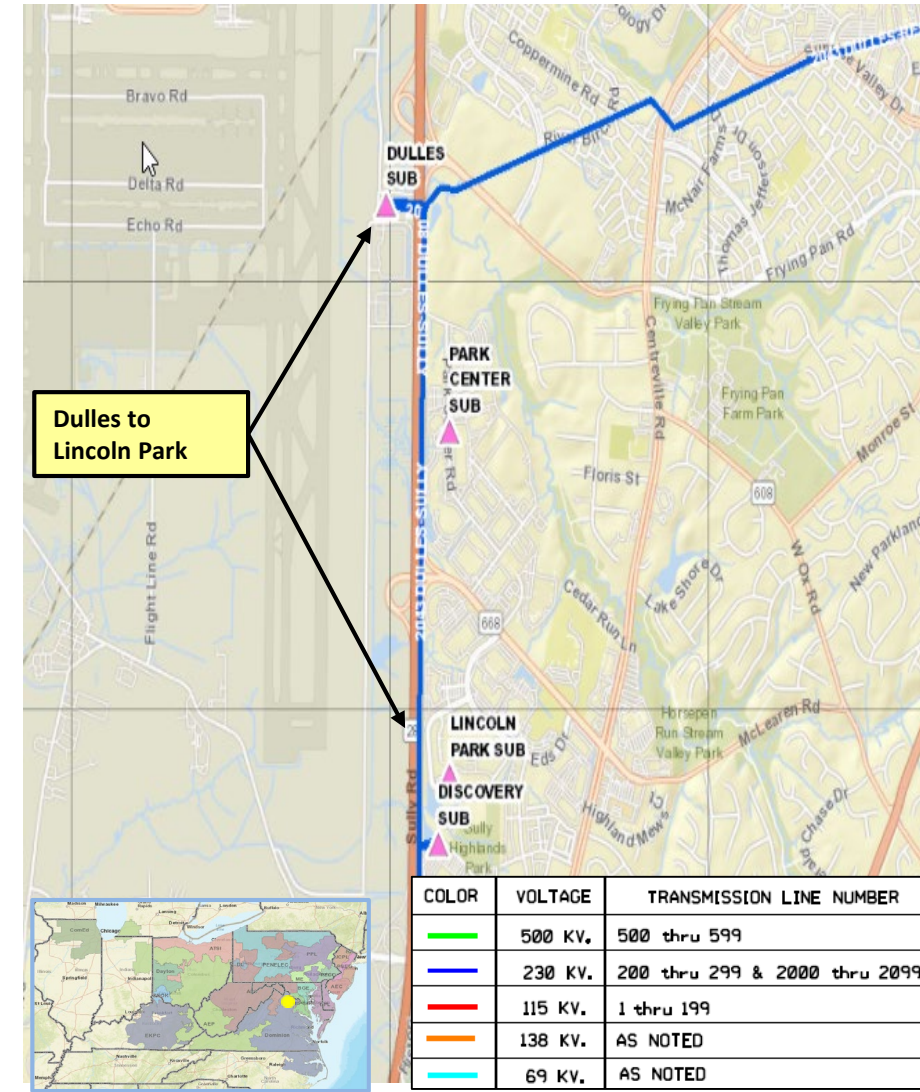
Problem Statement:

PJM has identified an N-1-1 contingency that results in an overload of the Dulles to Lincoln Park segment of Line #2008.

Contingency causing overload:

- Primary contingency: Loss of Line #227 (Beaumeade to Belmont)
- Secondary contingency: Loss of Line #274 (Beaumeade to Pleasant View)

These violations were caused by Supplemental Project DOM-2020-0043 in the Dominion Zone.



Dominion Transmission Zone M-3 Process Do No Harm (DNH) Analysis

Need Number: DOM-2020-0043-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

Selected Solution:

Reconductor approximately 3 miles of Line #2008 from Dulles to Lincoln Park upgrade the terminal equipment. The minimum summer rating of the line segment will be 1572 MVA.

Estimated Cost: \$5.0M

Projected In-Service: 12/15/2026

Supplemental Project ID: s2622.2

Project Status: Engineering

Model: 2025 RTEP

