Dominion Transmission Zone M-3 Process
King and Queen 230kV Delivery – DEV

Need Number: DOM-2020-0019
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 09/01/2020

Solution – 11/04/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

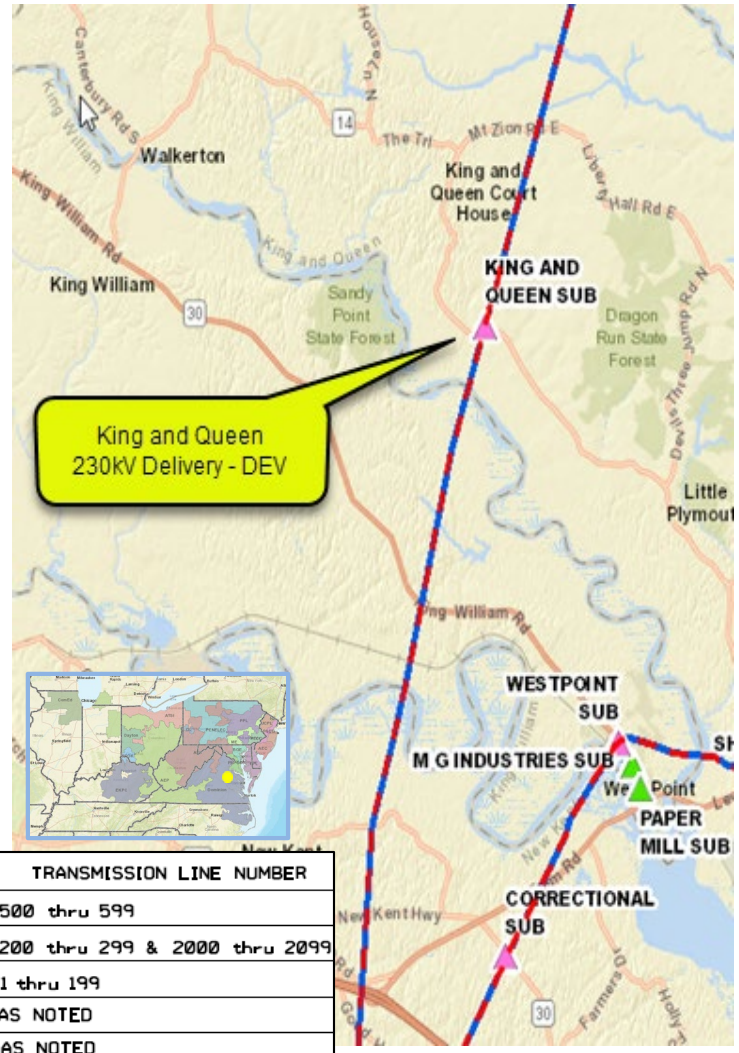
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (King and Queen) to replace the source to an island of load that will be lost when a river crossing is eliminated as part of the 230kV Line #224 (Lanexa-Northern Neck) rebuild project. Requested in-service date is 06/01/2023.

Projected 2025 load

Summer: 3.5 MW
Winter: 5.4 MW



Dominion Transmission Zone M-3 Process
King and Queen 230kV Delivery – DEV

Need Number: DOM-2020-0019
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:
Tap Line #224 in accordance with the Company's Facility Interconnection Requirements (FIR) document to create a tee-tap arrangement with line switches on either side of the tap. Install a 1200 Amp, 20kAIC circuit switcher and any additional transmission related equipment (e.g. 230kv bus, etc.) deemed necessary by the project team to support the interconnection of the permanent substation.

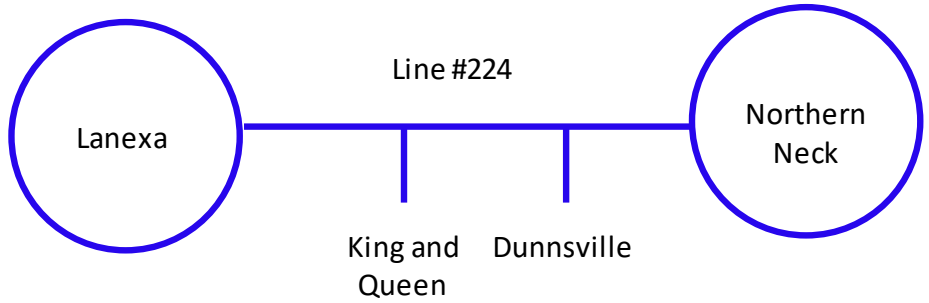
Estimated Project Cost: $1.86 M

Projected In-service Date: 06/01/2023

Supplemental Project ID: s2496

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Rollins Ford 230kV Delivery – DEV

Need Number: DOM-2020-0026

Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:
Need – 08/04/2020
Solution – 09/01/2020

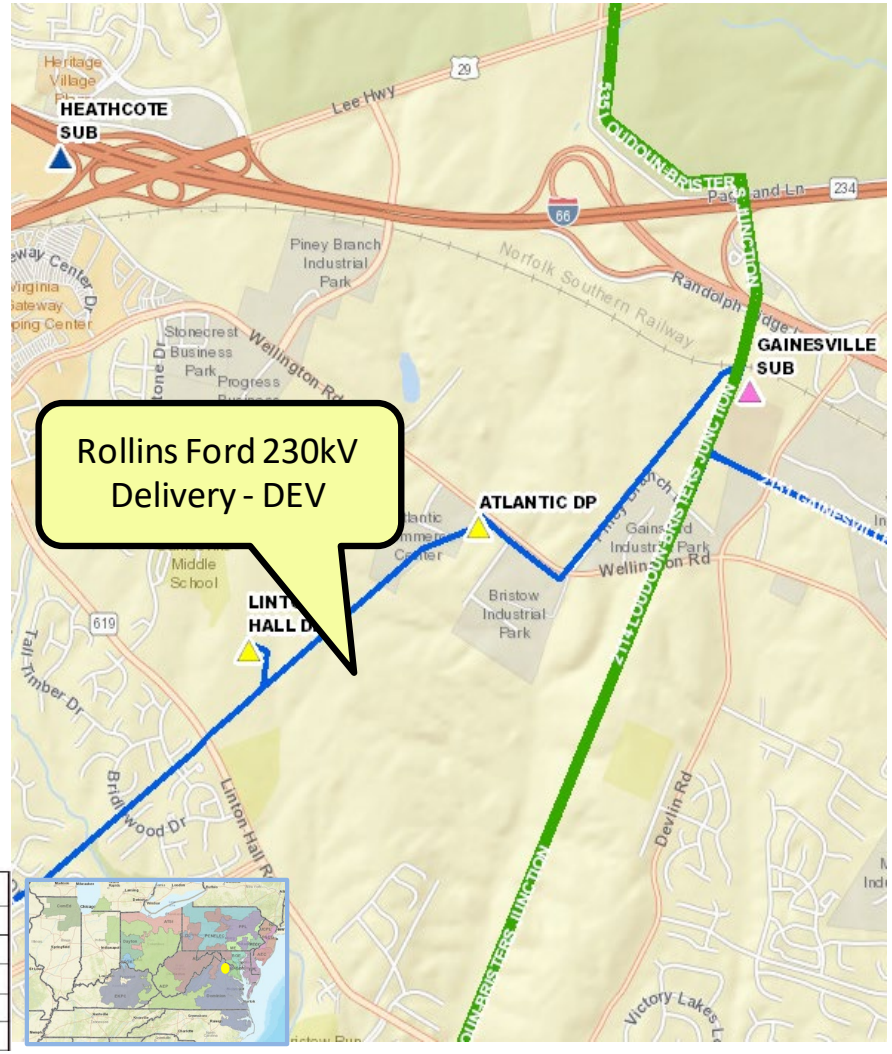
Project Driver:
Customer Load Request

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 (Rollins Ford) to accommodate a new datacenter campus in Prince William County. NOVEC has requested a 230kV ring bus connection. Due to the total load requested less than 100 MW, NOVEC will be required to pay excess facilities for all equipment required for the ring bus configuration above a T-tap. Requested in-service date is 12/31/2021.

Projected 2025 load
Summer: 53.7 MW
Winter: 64.2 MW



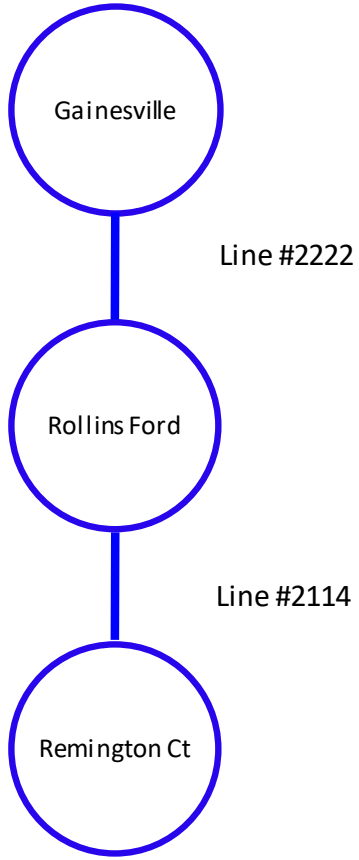
COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
	500 KV.	500 thru 599
	230 KV.	200 thru 299 & 2000 thru 2099
	115 KV.	1 thru 199
	138 KV.	AS NOTED
	69 KV.	AS NOTED

Dominion Transmission Zone M-3 Process
Rollins Ford 230kV Delivery – DEV

Need Number: DOM-2020-0026
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Interconnect the new substation by cutting and extending Line #2114 (Gainesville -Remington CT) to the proposed Rollins Ford Substation. Terminate both ends into a four-breaker ring arrangement to create a Rollins Ford - Gainesville line and a Rollins Ford - Remington CT line.



Estimated Cost: $10.0 M

Projected In-Service: 12/31/2021

Supplemental Project ID: s2340

Project Status: Engineering

Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Line #233 - Replace switches 23339 and 23336

Need Number: DOM-2020-0027
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 08/04/2020

Solution – 09/01/2020

Project Driver:

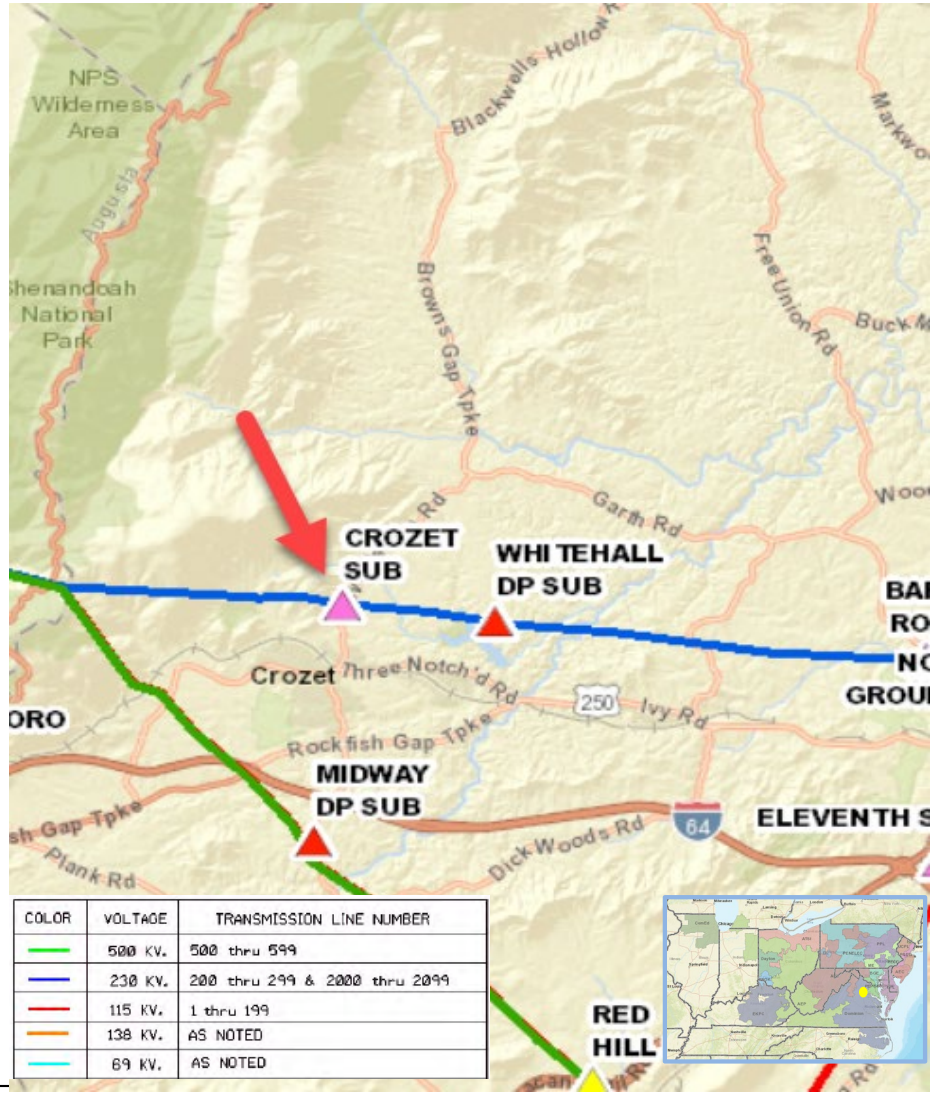
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Line #233 switches 23339 and 23336 are less than 15 years and have operating issues. These issues include the following:

- Multiple bottle failures
- The vertical drive pipe U-joints have broken multiple times
- System Control Center's records show they are inoperable (blue tagged)



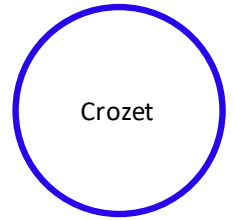
Dominion Transmission Zone M-3 Process
Line #233 - Replace switches 23339 and 23336

Need Number: DOM-2020-0027
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Replace two backbone structures, modify existing tower structures along with some conductor work. The replacement switches will be 3000 Amp to align with Dominion's 230 kV system standard. The section of Line #233 from Dooms to Crozet will have a summer rating of 925 MVA after the switches have been replaced.

Estimated Cost: $1.5 M
Projected In-Service: 10/27/2020
Supplemental Project ID: s2341
Project Status: Complete
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
230kV Line #293 & 115 kV Partial Line #83 – EOL Rebuild

Need Number: DOM-2020-0028
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 09/01/2020

Solution – 04/06/2021

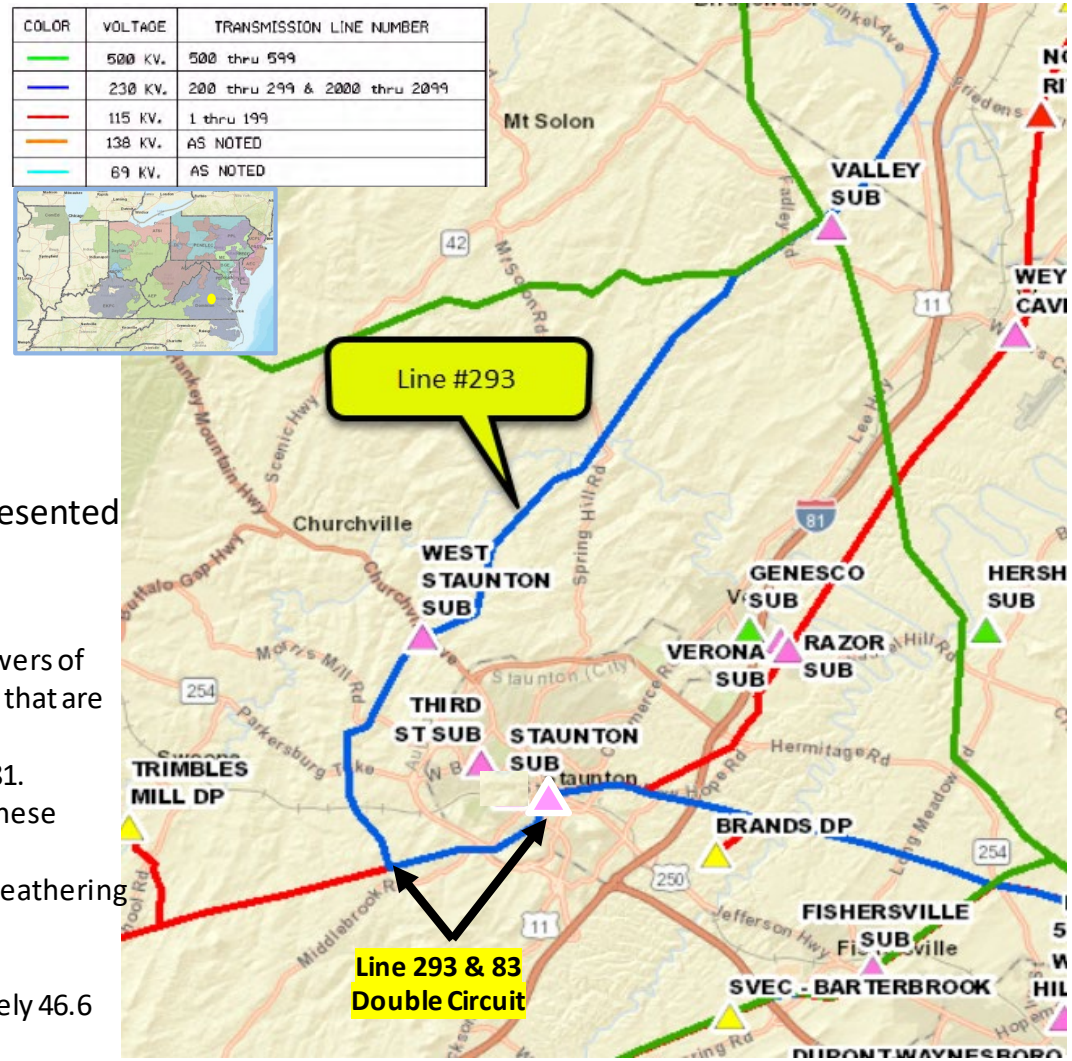
Project Driver:

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:
Dominion Energy has identified a need to replace 17.8 miles of existing single-circuit wood transmission towers of 230 kV Line #293 (Staunton and Valley), and 3.5 miles of double-circuit painted/weathering steel structures that are shared between Line #293 and 115 kV Line #83 (Craigsville-Staunton).

- The 293 line was constructed largely on wood H-frame structures in timeframe between 1971 and 1981. Approximately 17.8 miles of 21.3 miles of this line was constructed on wood H-frame structures and these structures are at the end of their useful life.
- The remaining 3.5 miles of double-circuit structures were constructed in 1981 and consist mainly of weathering steel lattice structures that are at the end of their useful life.
- Industry guidelines indicate equipment life for wood structures is 35-55 years.
- The Line #293 provides service to West Staunton Substation (Dominion Distribution) with approximately 46.6 MW tapped load.



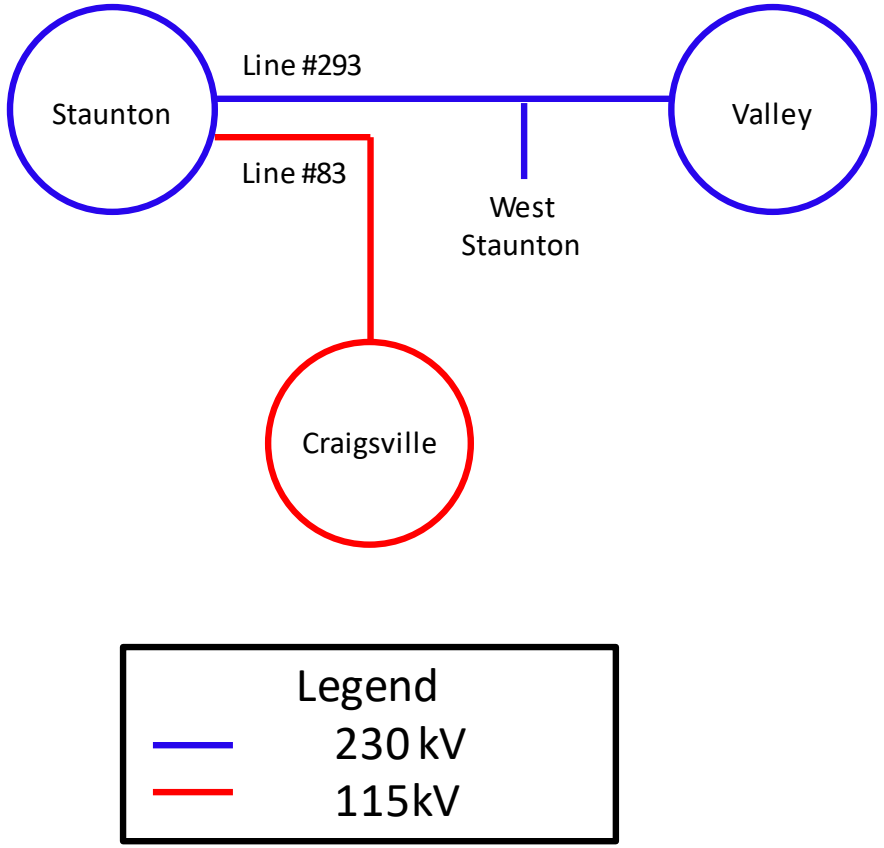
Dominion Transmission Zone M-3 Process
230kV Line #293 & 115 kV Partial Line #83 – EOL Rebuild

Need Number: DOM-2020-0028
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Replace approximately 17.8 miles of existing single-circuit wood H-frame structures on Line #293 and 3.5 miles of double-circuit painted/weathering steel structures shared between Line #293 and Line #83 with single and double-circuit steel monopoles, as appropriate. New conductor with a normal summer rating of 1047 MVA will be used for the entire Line #293. The 3.5-mile segment of Line#83 that is being replaced will use new conductor with a normal summer rating of 261 MVA.

Estimated Cost: $44.8 M
Projected In-Service: 12/15/2025
Supplemental Project ID: s2497
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115 kV Line #14 – EOL Rebuild

Need Number: DOM-2020-0029
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 11/18/2020

Solution – 12/16/2020

Project Driver:

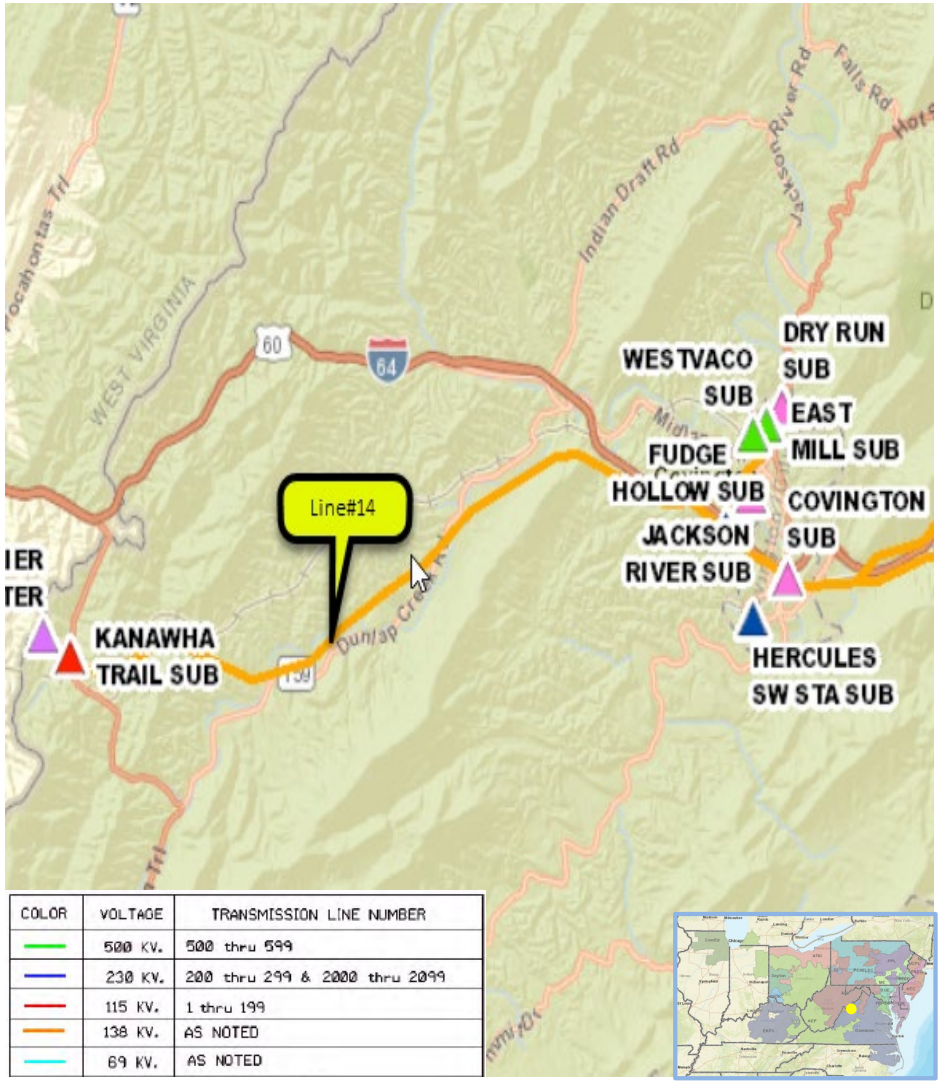
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Dominion Energy has identified the need to replace 92 transmission towers on Line #14 between Fudge Hollow and the interconnect with AEP.

- Line #14 extends 14.94 miles to AEP territory from Fudge Hollow. AEP is fed radially from Fudge Hollow, most of the time.
- Existing structures are 1920's vintage Blaw Knox galvanized/painted towers.
- The line is at the end of its useful life (94 years old) and the ground line conditions of the structures range from fair to severe condition.



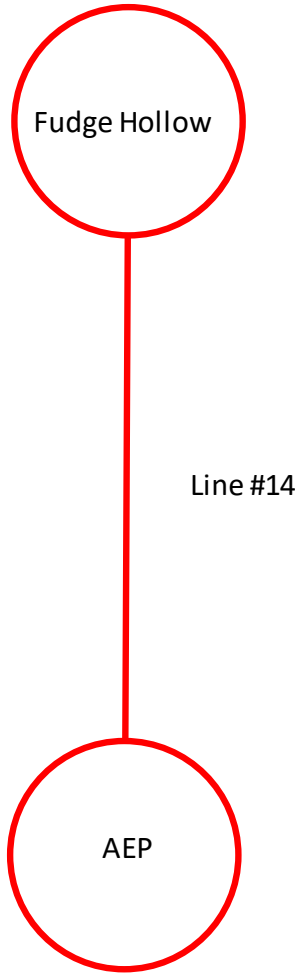
Dominion Transmission Zone M-3 Process
115 kV Line #14 – EOL Rebuild

Need Number: DOM-2020-0029
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Rebuild approximately 14.94 miles of Line #14, between Fudge Hollow to the demarcation point of AEP, to current 138kV standards and with a minimum rating of 211 MVA.

Estimated Cost: $30.0 M
Projected In-Service: 12/31/2024
Supplemental Project ID: s2504
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115 kV Line #1001 – EOL Rebuild

Need Number: DOM-2020-0032
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 09/10/2020

Solution – 11/18/2020

Project Driver:

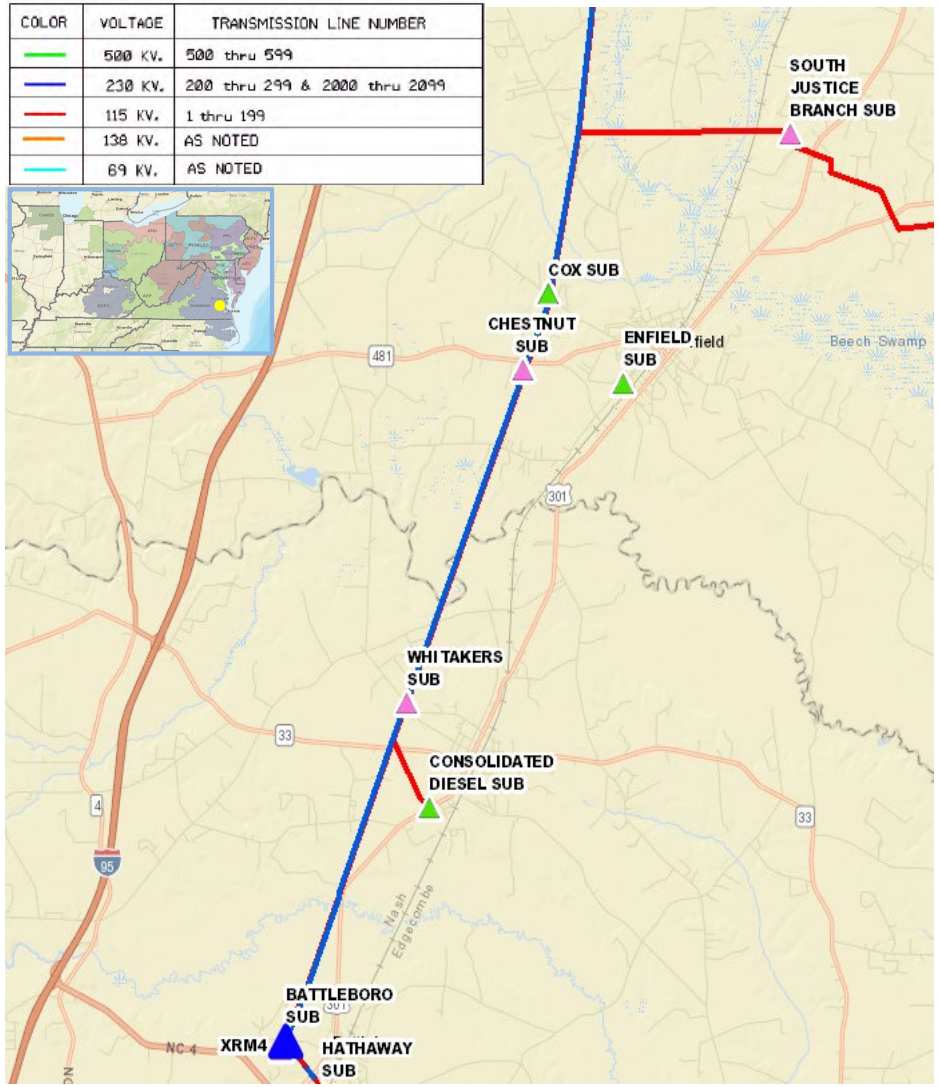
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Dominion Energy has identified a need to rebuild Line#1001 (Battleboro – Chestnut) due to end of life.

- Line 1001 was constructed on predominately wood H-frame structures in 1959 from Battleboro to Chestnut (9.28 miles) .
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.
- The Line #1001 provides service to Consolidated Diesel and Whitakers substations with approximately 6.0 MW and 8.3 MW tapped load.



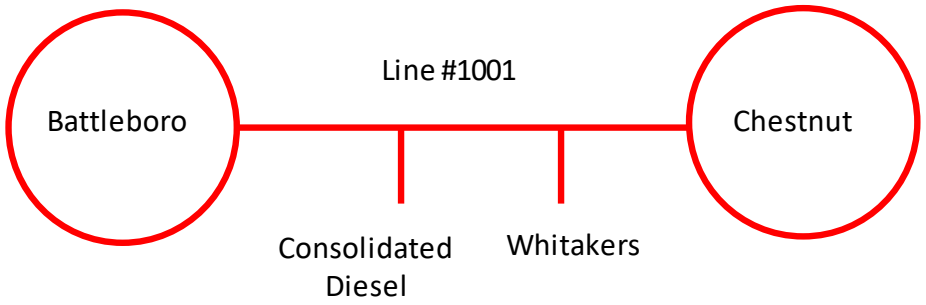
Dominion Transmission Zone M-3 Process
115 kV Line #1001 – EOL Rebuild

Need Number: DOM-2020-0032
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Rebuild Line#1001 (Battleboro – Chestnut) to current 115kV standards with a minimum summer rating of 261 MVA.

Estimated Cost: $14.0 M
Projected In-Service: 12/15/2024
Supplemental Project ID: s2501
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115 kV Line #1024 – EOL Rebuild

Need Number: DOM-2020-0033
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 09/10/2020

Solution – 11/18/2020

Project Driver:

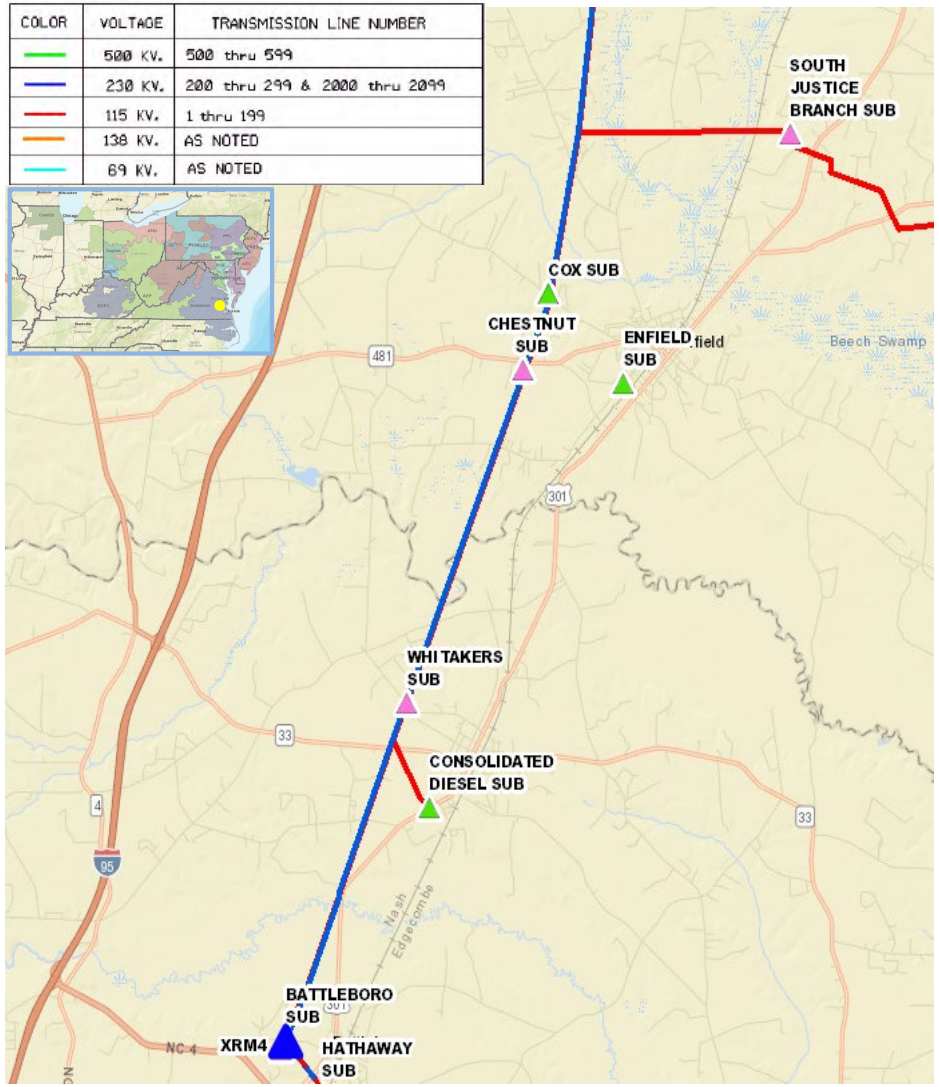
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Dominion Energy has identified a need to rebuild Line#1024 (Chestnut – South Justice Branch) due to end of life.

- Line 1024 was constructed on predominately wood H-frame structures in 1959 from Chestnut to South Justice Branch (3.39 miles of 6.41 miles) .
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.
- The Line #1024 provides service to Cox DP substations with approximately 14.0 MW of tapped load.



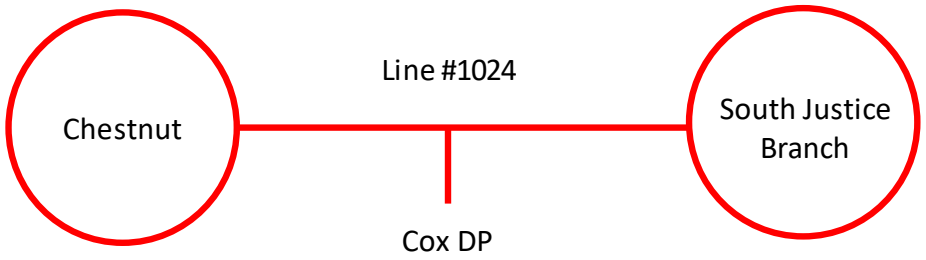
Dominion Transmission Zone M-3 Process
115 kV Line #1024 – EOL Rebuild

Need Number: DOM-2020-0033
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Rebuild Line#1024 (Chestnut – South Justice Branch) to current 115kV standards with a minimum summer rating of 261 MVA.

Estimated Cost: $5.1 M
Projected In-Service: 12/31/2023
Supplemental Project ID: s2502
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115 kV Partial Line #87 – EOL Rebuild

Need Number: DOM-2020-0034
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 09/10/2020

Solution – 10/15/2020

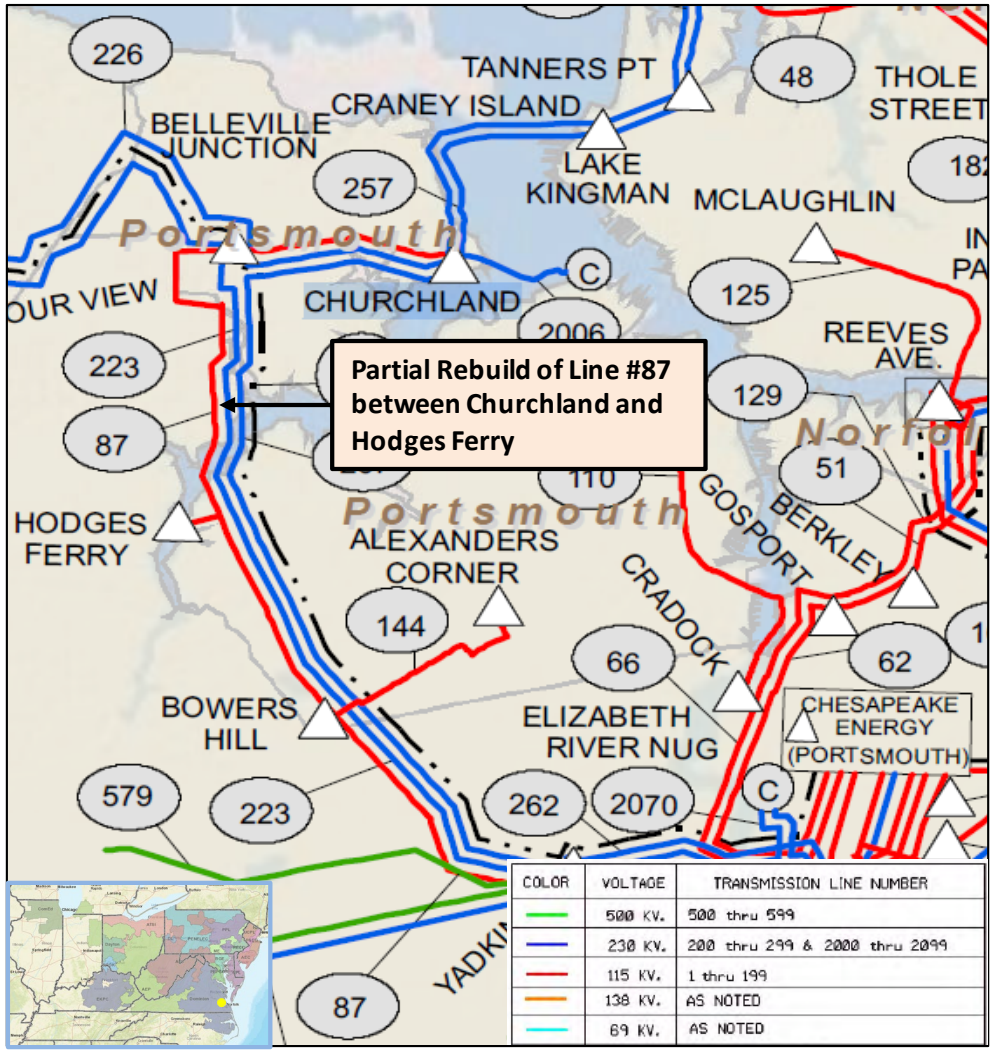
Project Driver:

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:
Dominion Energy has identified a need to replace 42 wood pole structures (Churchland – Hodges Ferry segment) of Line #87 (Churchland – Chesapeake Energy Center) based on the Company's End of Life criteria.

- The 5.21 miles segment of Line #87 was constructed on wood H-frame structures in 1957, and includes ACSR conductor and 3#8 static. These structures are at the end of their useful life.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.
- Line #87 provides service to Bower's Hill and Hodges Ferry substations with approximately 18 MW and 61 MW tapped load. Removal of the Churchland – Hodges Ferry segment will create a radial line exceeding Dominion's 700 MW-miles criteria.

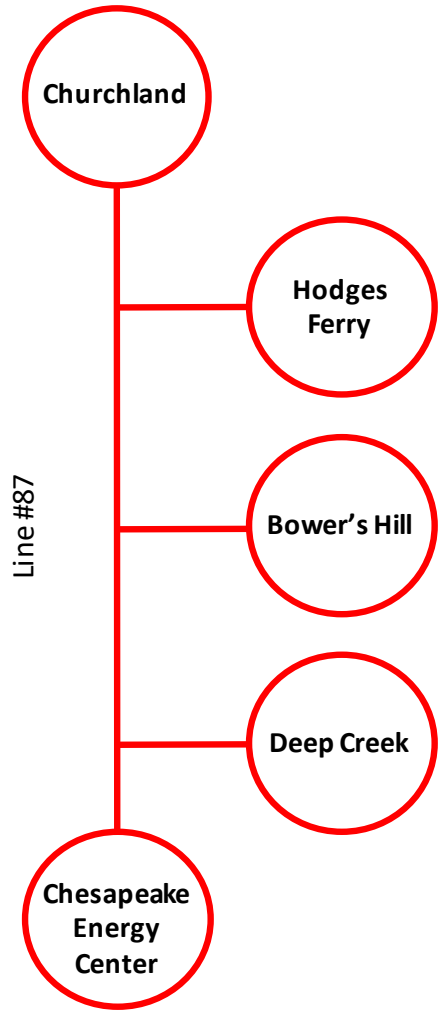


Dominion Transmission Zone M-3 Process
115 kV Partial Line #87 – EOL Rebuild

Need Number: DOM-2020-0034
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:
Rebuild approximately 5.21 miles of Line #87 between Churchland and Hodges Ferry to current 115kV standards. The summer rating of the line segment will be 262 MVA.

Estimated Cost: $8.0 M
Projected In-Service: 12/31/2023
Supplemental Project ID: s2495
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Farmwell 230kV Delivery – Add 3rd TX – DEV

Need Number: DOM-2020-0035

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 10/06/2020

Solution – 11/04/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

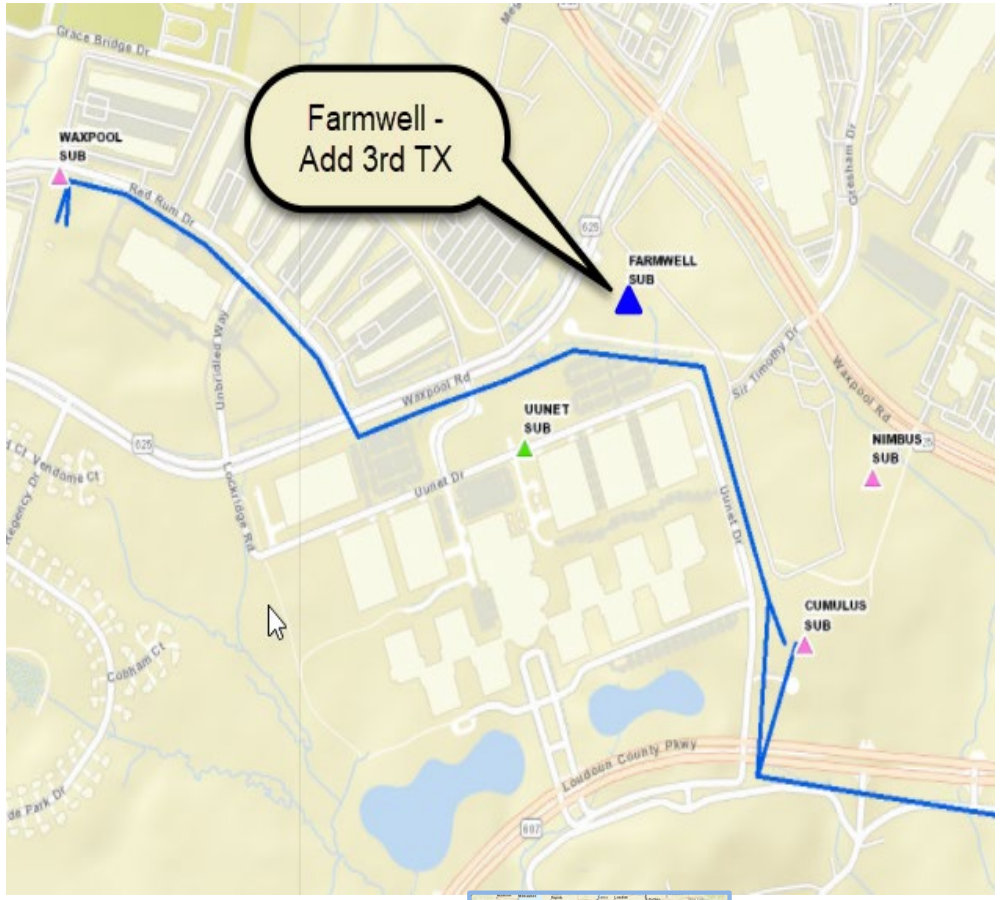
Problem Statement:

DEV Distribution has submitted a DP Request to add a 3rd distribution transformer at Farmwell Substation in Loudoun County. The new transformer is being driven by continued load growth in the area and contingency loading for loss of one of the existing transformers. Requested in-service date is 01/01/2023.

Projected 2025 load

Summer: 228.2 MW

Winter: 216.2 MW



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

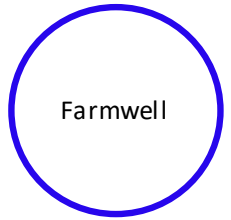
Dominion Transmission Zone M-3 Process
Farmwell 230kV Delivery – Add 3rd TX – DEV

Need Number: DOM-2020-0035
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Install a 1200 Amp, 50kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Farmwell.

Estimated Cost: $0.5 M
Projected In-Service: 01/01/2023
Supplemental Project ID: s2498
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
230 kV Line #2007 – EOL Rebuild

Need Number: DOM-2020-0036

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 10/06/2020

Solution – 11/04/2020

Project Driver:

Equipment Material Condition, Performance, and Risk

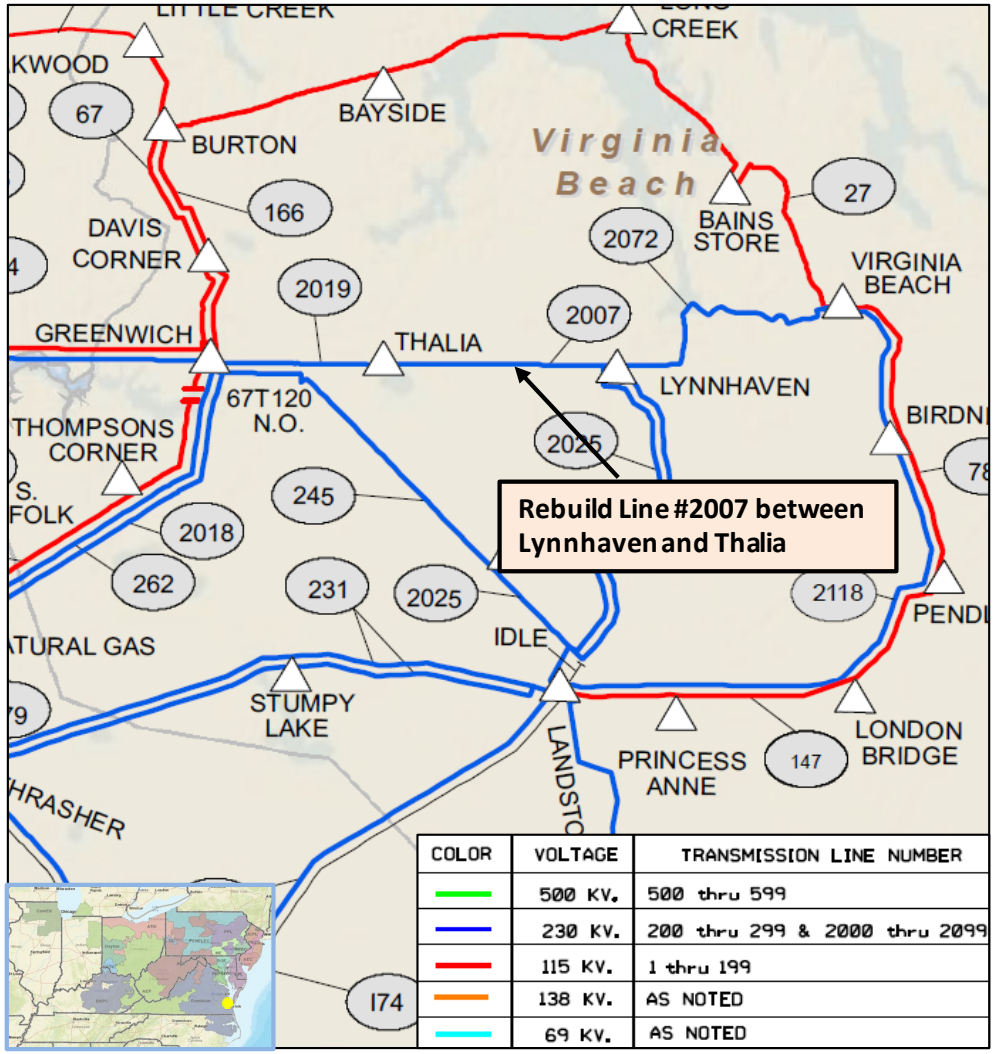
Specific Assumption Reference:

See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Dominion Energy has identified a need to replace 60 concrete structures of Line #2007 (Lynnhaven – Thalia) based on the Company's End of Life criteria.

- The 3.37 miles long line was constructed on concrete structures in 1970. These structures have developed significant structural concerns as they age.
- Every pole is experiencing hairline cracking at a minimum, and many of the poles have more advanced cracking that has exposed some of the interior reinforcing bars and cables.
- The cracks allow for significant water infiltration which can accelerate the deterioration of the concrete and cause rusting of the steel reinforcing components.
- The Line #2007 provides service to Thalia substation with approximately 134 MW of tapped load.

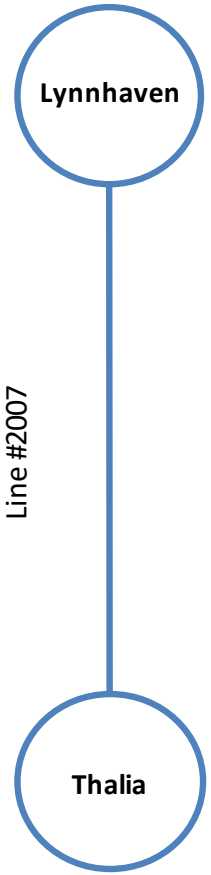


Dominion Transmission Zone M-3 Process
230 kV Line #2007 – EOL Rebuild

Need Number: DOM-2020-0036
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:
Rebuild the 3.37 miles long Line #2007 between Lynnhaven and Thalia to current 230kV standards. The normal summer rating of the line will be 1047 MVA.

Estimated Cost: $7.0 M
Projected In-Service: 12/31/2025
Supplemental Project ID: s2499
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
230 kV Partial Line #2019 – EOL Rebuild

Need Number: DOM-2020-0037

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 10/06/2020

Solution – 11/04/2020

Project Driver:

Equipment Material Condition, Performance, and Risk

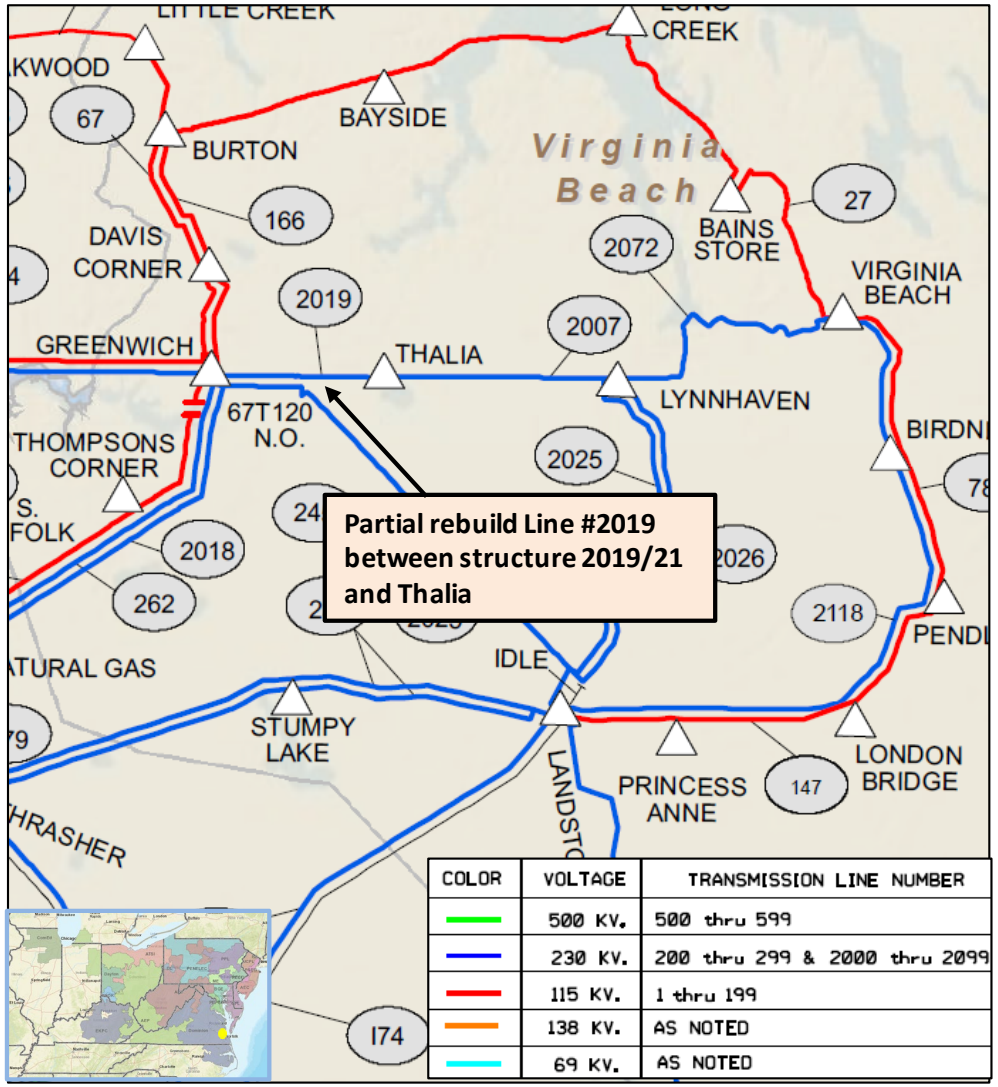
Specific Assumption Reference:

See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Dominion Energy has identified a need to replace 20 concrete structures (Structure 2019/21 – Thalia segment) of Line #2019 (Greenwich – Thalia) based on the Company's End of Life criteria.

- The 1.17 miles segment of Line #2019 was constructed on concrete structures in 1970. These structures have developed significant structural concerns as they age.
- Every pole is experiencing hairline cracking at a minimum, and many of the poles have more advanced cracking that has exposed some of the interior reinforcing bars and cables.
- The cracks allow for significant water infiltration which can accelerate the deterioration of the concrete and cause rusting of the steel reinforcing components.
- The Line #2019 provides service to Thalia substation with approximately 134 MW of tapped load.

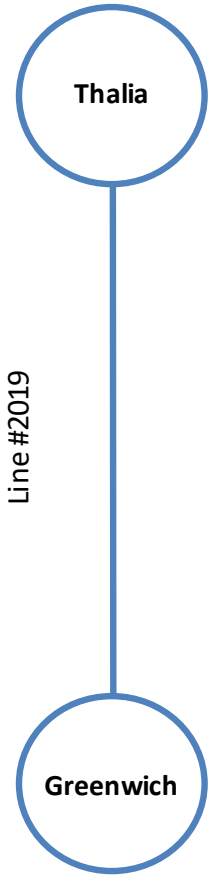


Dominion Transmission Zone M-3 Process
230 kV Partial Line #2019 – EOL Rebuild

Need Number: DOM-2020-0037
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:
Rebuild approximately 1.17 miles of Line #2019 between Thalia and Structure 2019/21 to current 230kV standards. The normal summer rating of the line segment will be 1047 MVA.

Estimated Cost: $3.0 M
Projected In-Service: 12/15/2025
Supplemental Project ID: s2500
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Cumulus 230kV Delivery – Add 4th TX – DEV

Need Number: DOM-2020-0041

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 11/04/2020

Solution – 12/01/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

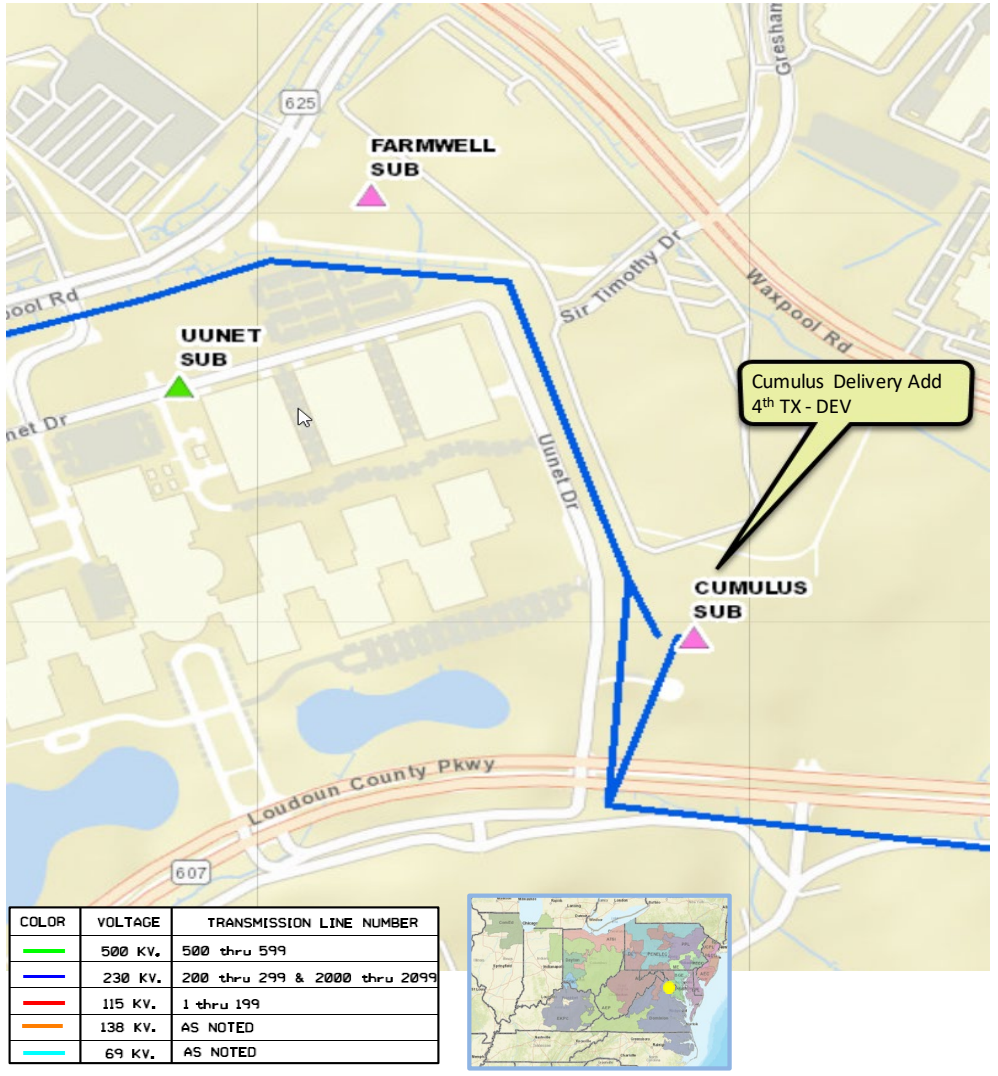
Problem Statement:

DEV Distribution has submitted a DP Request to add a 4th distribution transformer at Cumulus Substation in Loudoun County. The new 84 MVA transformer is being driven by continued load growth in the area and contingency loading for loss of one of the existing transformers. Requested in-service date is 12/01/2022.

Projected 2025 load

Summer: 256.1 MW

Winter: 241.3 MW



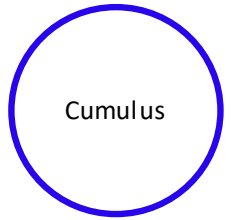
Dominion Transmission Zone M-3 Process
Cumulus 230kV Delivery – Add 4th TX – DEV

Need Number: DOM-2020-0041
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Install a 1200 Amp, 50kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Cumulus.

Estimated Cost: $0.5 M
Projected In-Service: 12/01/2022
Supplemental Project ID: s2503
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Garysville 230kV Delivery – PGEC

Need Number: DOM-2020-0045

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 12/01/2020

Solution – 02/09/2021

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

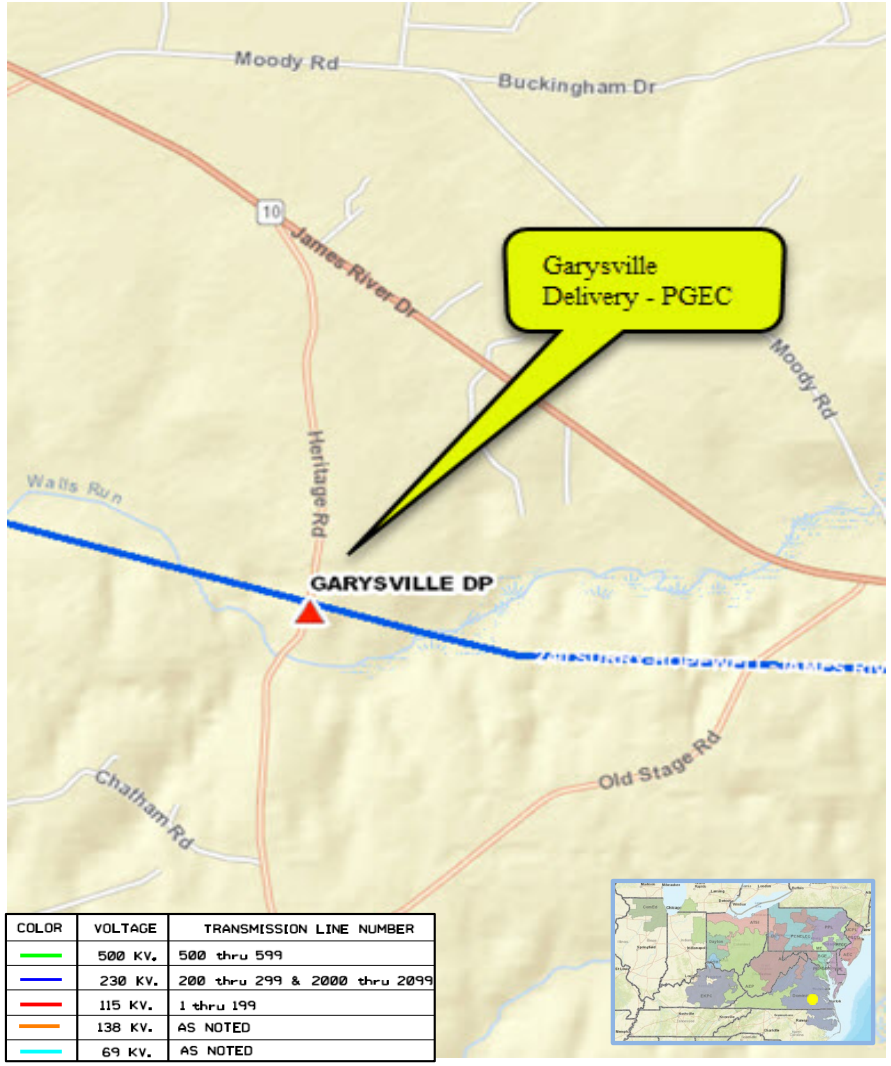
Problem Statement:

ODEC (on behalf of Prince George Electric Cooperative – PGEC) has submitted a DP Request to convert existing Garyville DP, in Prince George County, from a distribution sourced delivery to a transmission sourced delivery due to poor supplier reliability. Requested in-service date is 12/01/2022.

Projected 2025 load

Summer: 7.0 MW

Winter: 11.7 MW

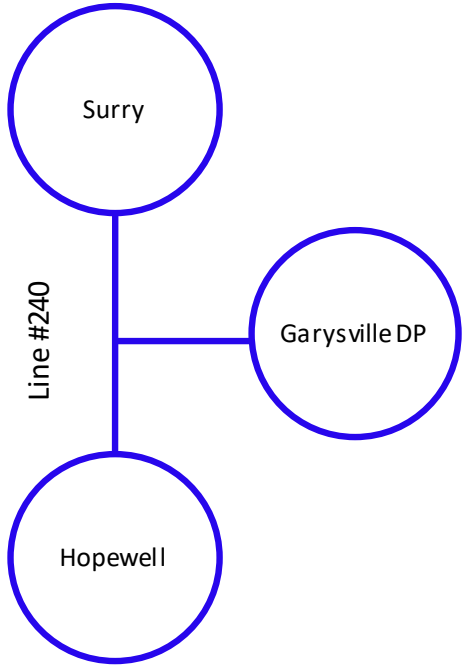


Dominion Transmission Zone M-3 Process
Garysville 230kV Delivery – PGEC

Need Number: DOM-2020-0045
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Create a tee-tap on 230kV Line #240 (Hopewell-Surry) at tower 196 by installing double-circuit H-frame switch structures on both sides at mid-span and remove tower 196. Replace towers 195 and 197 (suspension towers) with double-deadend steel pole structures to accommodate phase roll. Install terminal structure and H-frame switch structure for the tap span. Other ancillary work as needed.



Estimated Cost: $3.0 M
Projected In-Service: 12/01/2022
Supplemental Project ID: s2506
Project Status: Conceptual
Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Brandy 115kV Delivery – Add New TX - REC

Need Number: DOM-2020-0046
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 12/16/2020

Solution – 01/14/2021

Project Driver:

Customer Load Request

Specific Assumption Reference:

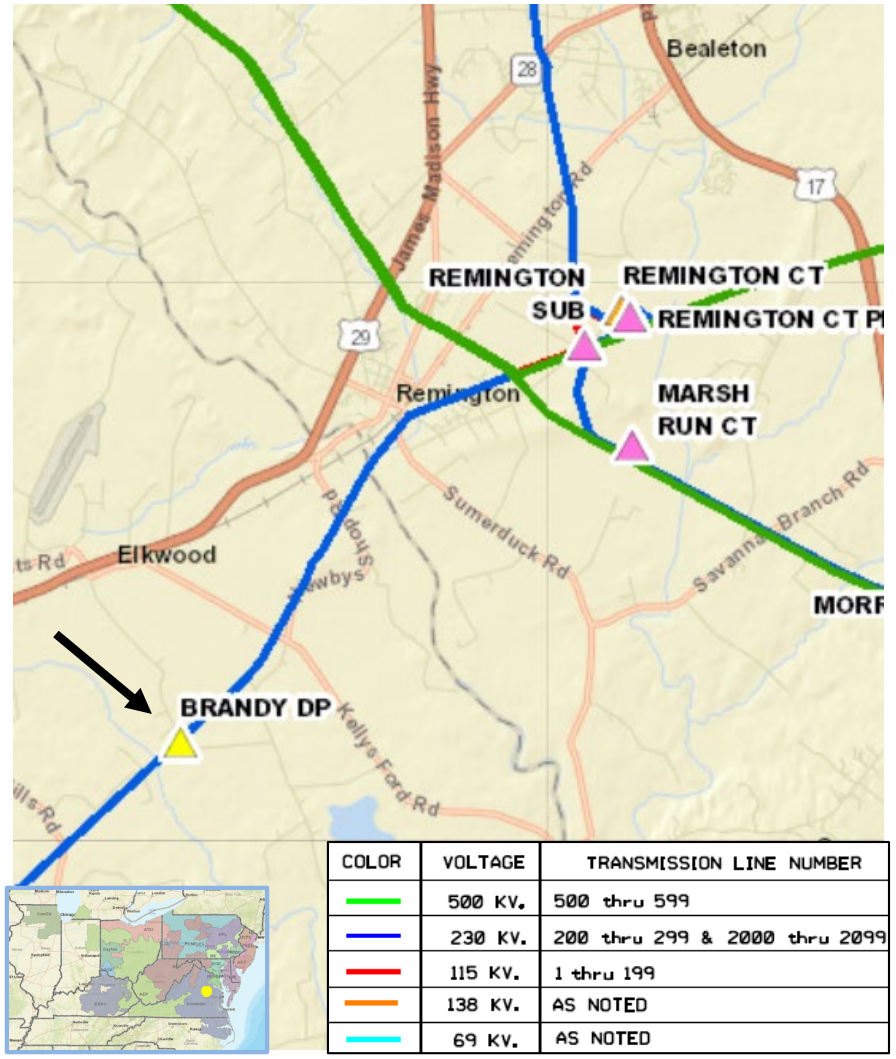
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

ODEC has submitted a DP Request (on behalf of REC) to add a new, 56 MVA distribution transformer at Brandy DP in Culpeper County. The new transformer is needed to meet future growth and will initially serve load that is transferred from one of the existing substation transformers. The projected in-service date is 12/15/2020.

Projected 2025 load

Summer: 24.6 MW
Winter: 25.8 MW



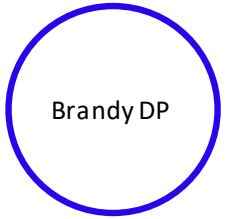
Dominion Transmission Zone M-3 Process
Brandy 115kV Delivery – Add New TX - REC

Need Number: DOM-2020-0046
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Install three 35kV CTs and three 35kV PTs at lower side of the transformers and associated equipment (the metering cabinet, the meter, the cellular modem, etc.).

Estimated Cost: $35 k
Projected In-Service: 12/15/2020
Supplemental Project ID: s2505
Project Status: Completed
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Shellhorn 230kV Delivery – Add 3rd TX - DEV

Need Number: DOM-2021-0002

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 01/06/2021

Solution – 02/09/2021

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

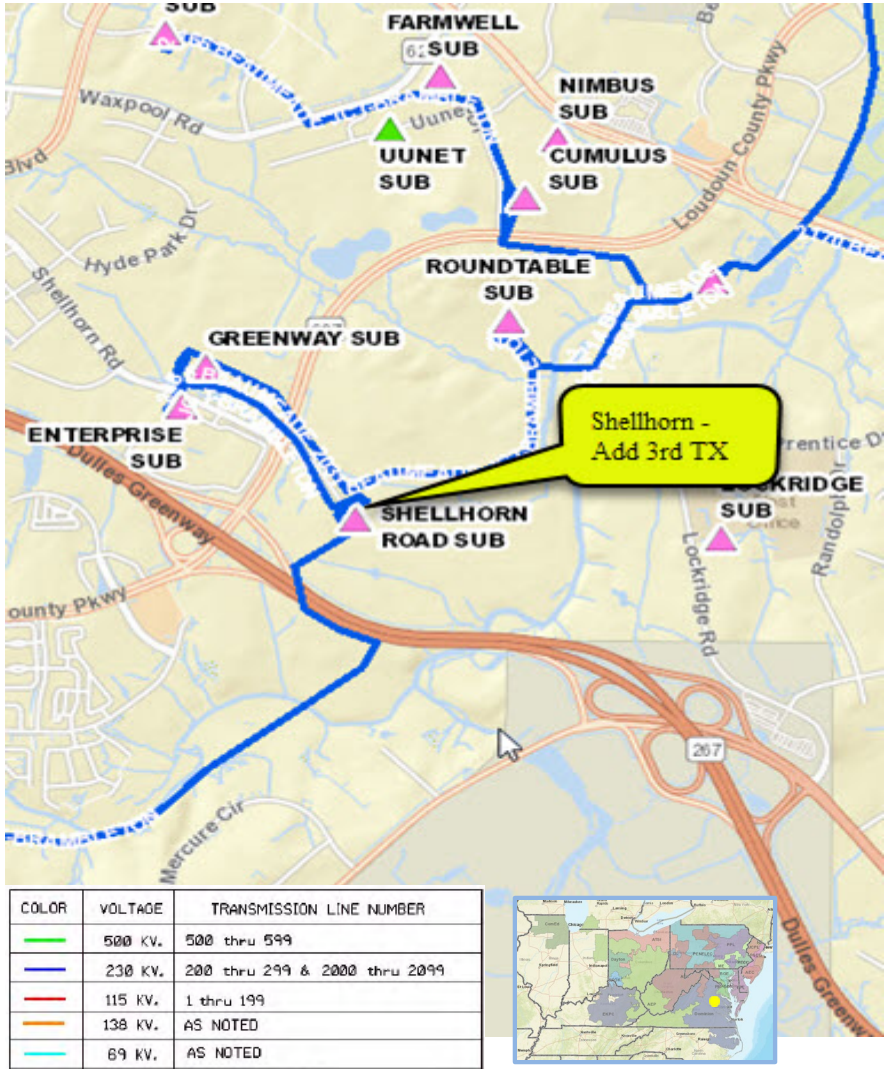
Problem Statement:

DEV Distribution has submitted a DP Request to add a 3rd transformer at Shellhorn Substation in Loudoun County. The new transformer is required to accommodate continued load growth in the area and support contingency loading for loss of one of the existing transformers. Requested in-service date is 04/15/2022.

Projected 2026 load

Summer: 201.5 MW

Winter: 201.5 MW



Dominion Transmission Zone M-3 Process
Shellhorn 230kV Delivery – Add 3rd TX - DEV

Need Number: DOM-2021-0002
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Install a 1200 Amp, 50kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Shellhorn.

Estimated Cost: $0.5 M
Projected In-Service: 04/15/2022
Supplemental Project ID: s2507
Project Status: Engineering
Model: 2025 RTEP

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

Need Number: DOM-2020-0026-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

DNH – 06/08/2021

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.

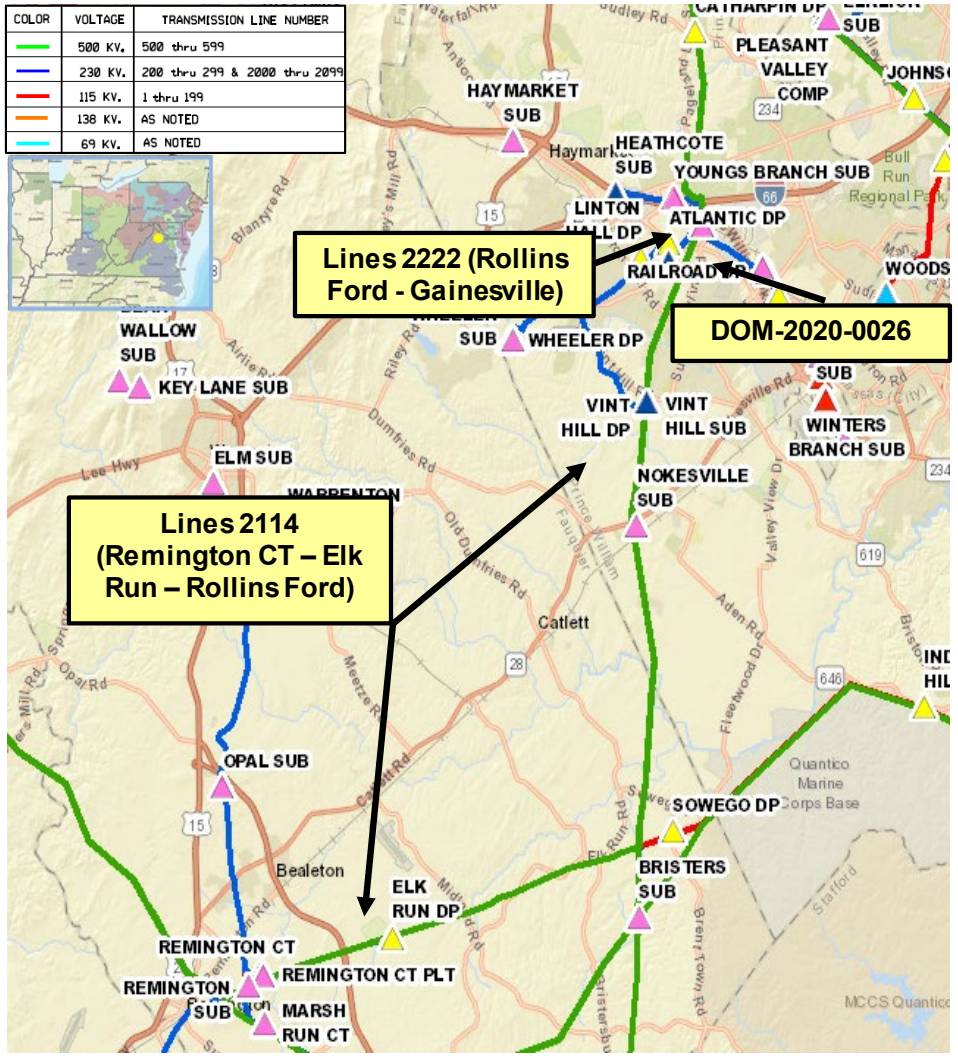
Problem Statement:

PJM has identified a N-1 Generator Deliverability contingency scenario that results in overloads of both segments of Line 2114 (Remington CT to Elk Run; Elk Run to Rollins Ford) in the 2021 Do-No-Harm analysis.

For example, the loss of Line 569 (Loudoun – Morrisville) under contingency DVP-P1-2: Line 569 creates overloads of:

- Line 2114 (Remington CT to Elk Run) – Current rating 1047 MVA
- Line 2114 (Elk Run to Rollins Ford) – Current rating 1047 MVA

The violations are caused by previously presented Supplemental Project DOM-2020-0026 in the Dominion Zone.



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

Need Number: DOM-2020-0026-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Re-conductor the following segments of 230kV Line 2114 using a higher capacity conductor and upgrade terminal equipment to achieve an expected rating of 1574 MVA.

- Line segment from Remington CT to Elk Run (approx. 3.46 miles)
- Line segment from Elk Run to Rollins Ford (approx. 19.71 miles)

Re-conductor approx. 1.11 miles of 230kV Line 2222 from Rollins Ford to Gainesville using a higher capacity conductor and upgrade terminal equipment to achieve an expected rating of 1574 MVA.

Estimated Cost:

Line 2114 (Remington CT – Elk Run – Rollins Ford) - $ 35.0 M

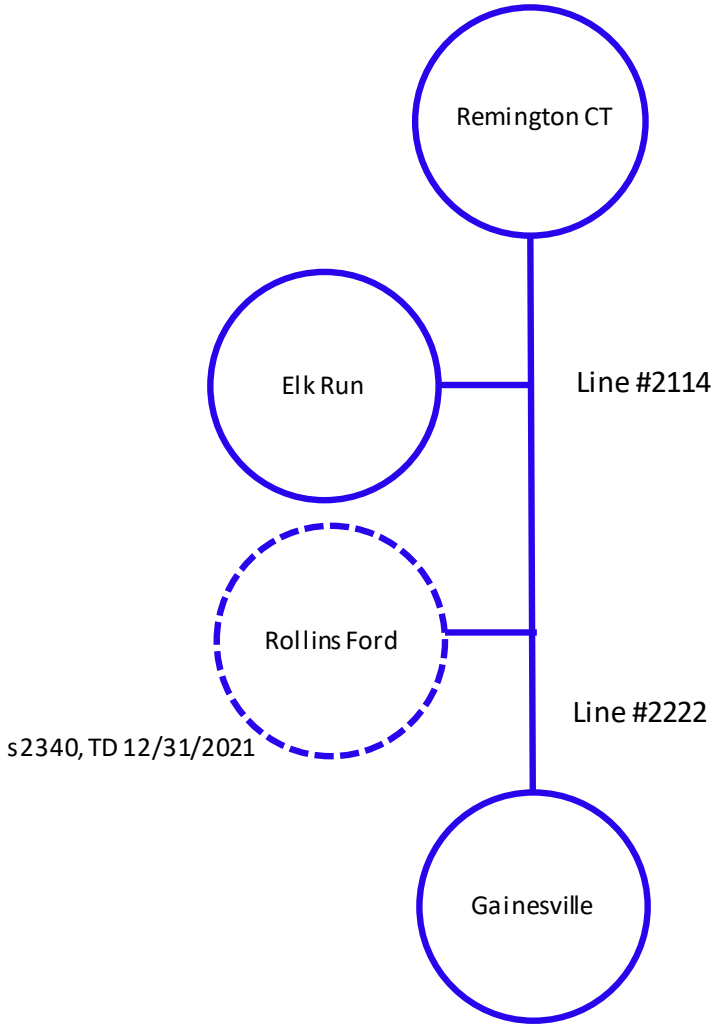
Line 2222 (Rollins Ford - Gainesville) - $ 2.0 M

Projected In-Service: 12/31/2025

Supplemental Project ID: s2340.1 (Line 2114); s2340.2 (Line 2222)

Project Status: Conceptual

Model: 2025 RTEP



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

Need Number: DOM-2021-0002-DNH
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

DNH – 06/08/2021

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.

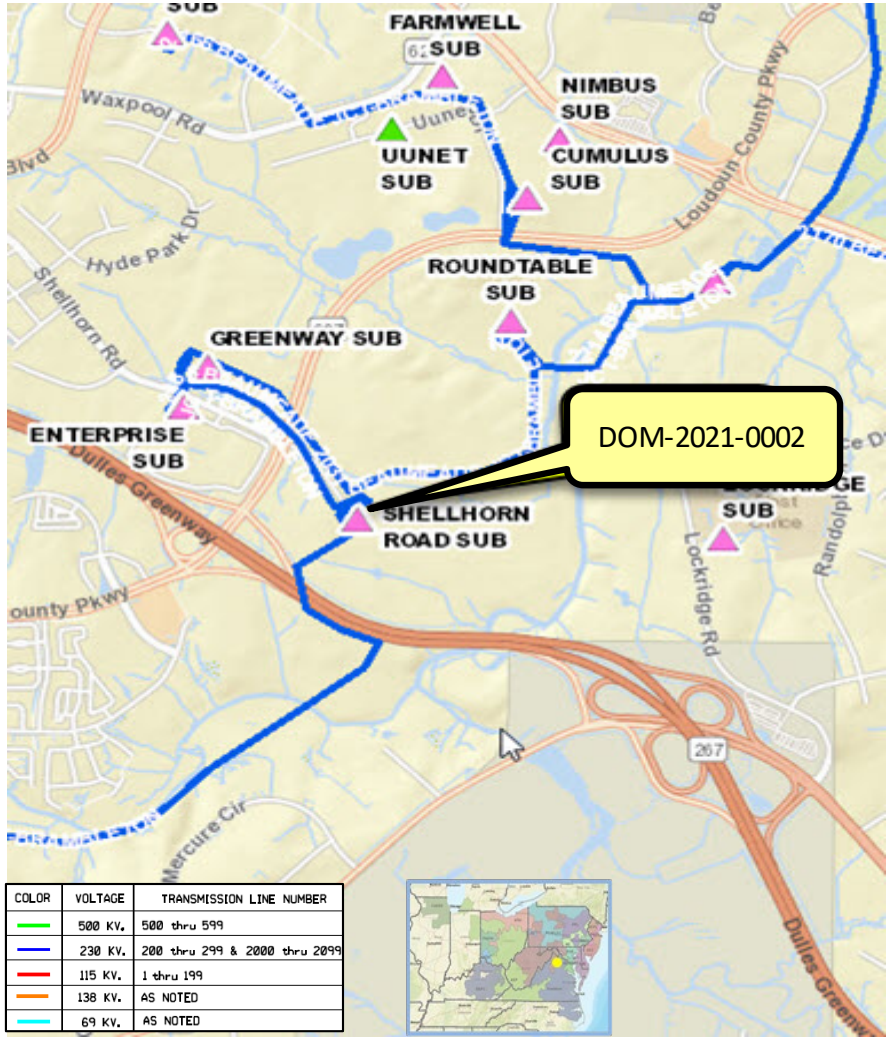
Problem Statement:

PJM has identified a N-1 contingency that results in overloads of two segments of Line 2008 (Loudoun to Takeoff) in the 2021 Do-No-Harm analysis.

For contingency DVP-P4-2: 2172T2210 overloads:

- Line 2008 (Cub Run to Walney) – Current rating 823 MVA
- Line 2008 (Walney to Takeoff) – Current rating 823 MVA

The violations are caused by previously presented Supplemental Project DOM-2021-0002 in the Dominion Zone.



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

Need Number: DOM-2021-0002-DNH

Process Stage:

Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Selected Solution:

Re-conductor the segments of 230kV Line 2008 between Cub Run and Walney (1.07 miles) and Walney to Takeoff (1.94 miles) using a higher capacity conductor and upgrade terminal equipment to achieve an expected rating of 1574 MVA.

Estimated Cost:

Line 2008 (Cub Run – Walney) - $ 2.5 M

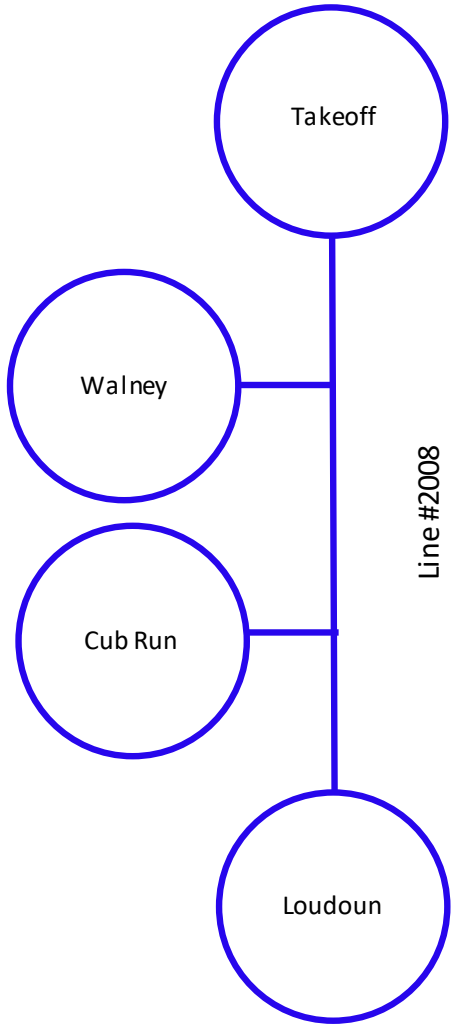
Line 2008 (Walney – Takeoff) - $ 3.5 M

Projected In-Service: 12/31/2025

Supplemental Project ID: s2507.1 (Cub Run-Walney); s2507.2 (Walney-Takeoff)

Project Status: Conceptual

Model: 2025 RTEP



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

Need Number: DOM-2020-0040
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 11/04/2020

Solution – 5/11/2021, 08/10/2021

Project Driver:

Customer Service

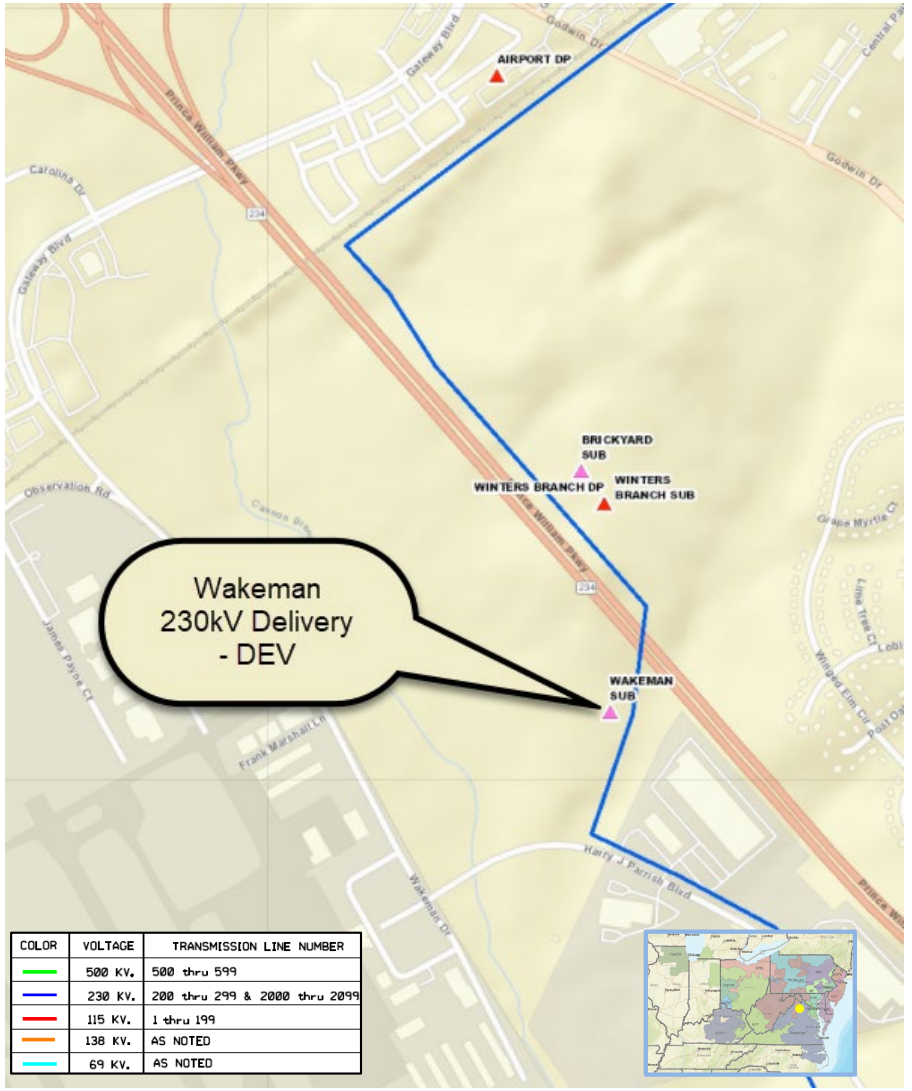
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Wakeman) to accommodate a new datacenter campus in Prince William County with a total load in excess of 100MW by 2024. Requested in-service date is 12/01/2022.

Projected 2026 load

Summer: 196.3 MW
Winter: 161.0 MW



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

Need Number: DOM-2020-0040

Process Stage:

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

Selected Solution:

To Interconnect Customer Load:

Interconnect the new substation by cutting and Line #2148 (Cannon Branch-Cloverhill) to the proposed Wakeman Substation. Lines to terminate in a four-breaker ring with the station being set up for an ultimate six-breaker ring arrangement.

To Resolve DNH 300MW N-1-1 Load Drop Violation:

Extend a new 230kV Line 0.25 miles between Winters Branch and Wakeman. Add a 230kV breaker at Winters Branch and Wakeman substations to terminate the new 230kV line.

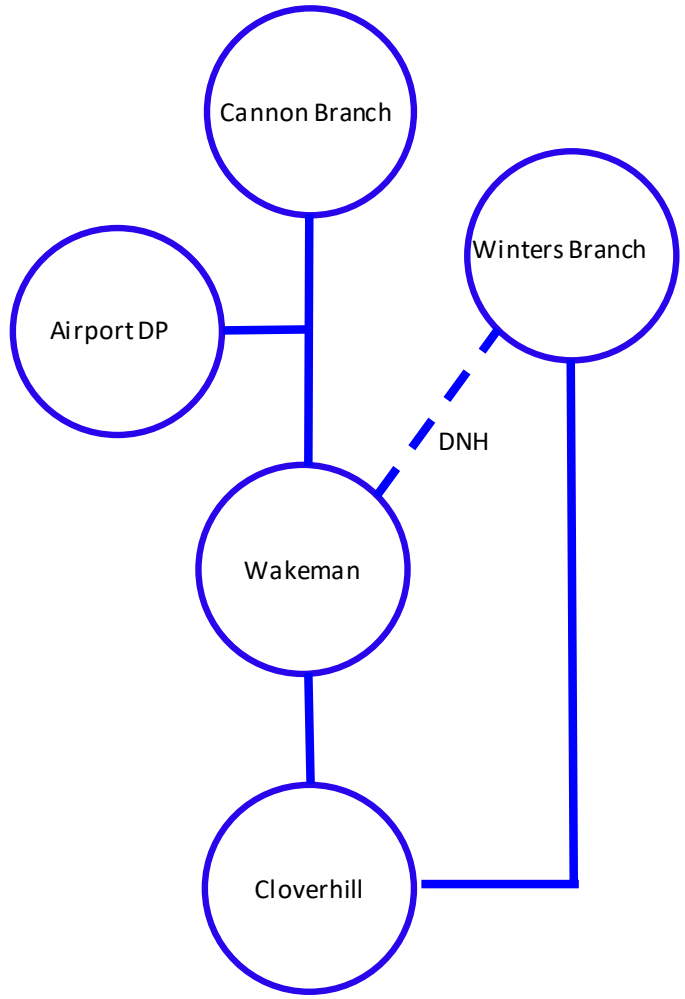
Estimated Cost: $11.0M (Total)
(Wakeman Substation - $9.0M; DNH 230kV line extension - $1.0M; DNH Substation Expansion - $0.6M)

Projected In-Service: 12/01/2022 (Customer Service); 06/15/2026 (DNH Solution)

Supplemental Project ID: s2630.1 (Wakeman); s2630.2 (DNH)

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
EOL Rebuild 115kV Lines #53 and #72 – Chesterfield to Brown Boveri Tap

Need Number: DOM-2020-0042
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 06/18/2021

Previously Presented:

Need – 11/18/2020

Solution – 03/18/2021

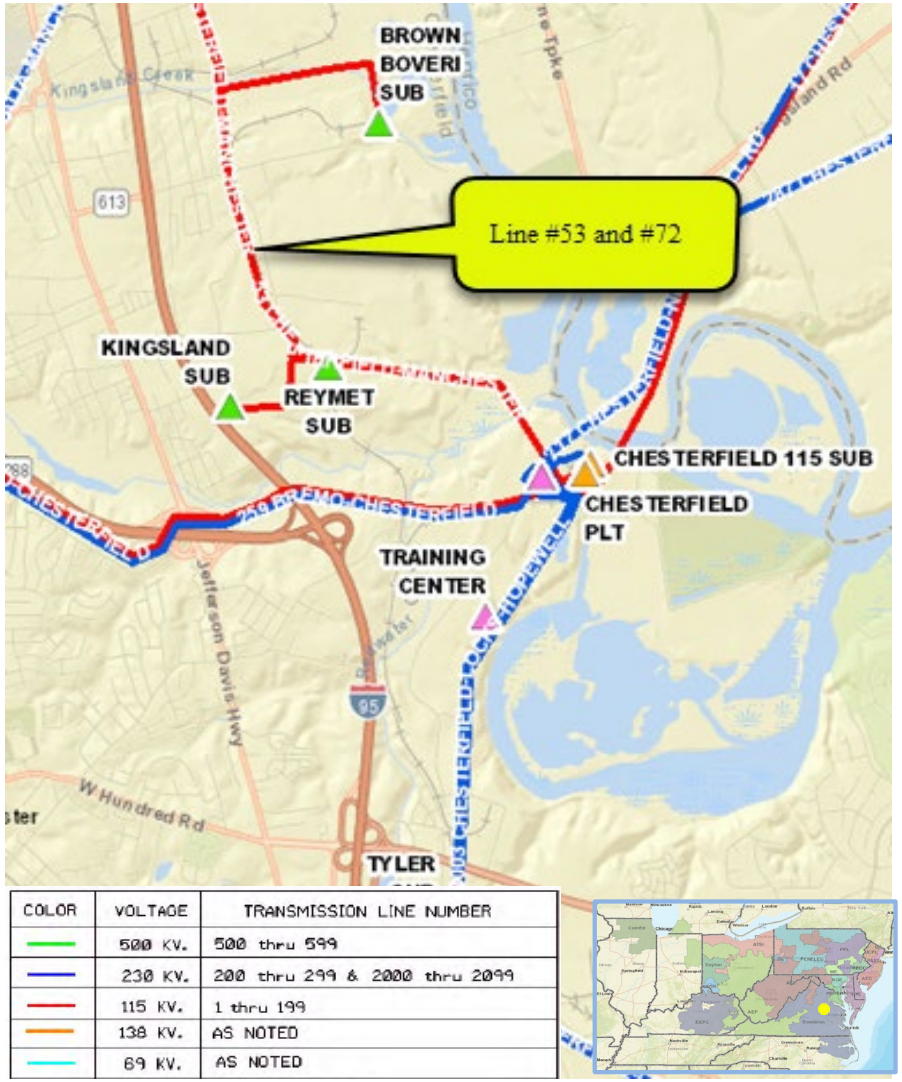
Project Driver:

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2019 and updated in September 2020

Problem Statement:
Dominion Energy has identified a need to replace approximately 3.7 miles of 115kV Lines #53 and #72 between Chesterfield Power Station and the Brown-Boveri Tap, including an additional approximately 0.52 mile tap line into Kingsland Substation from Line #72.

- Mainly double-circuit, wood, 3-pole H-frame construction with structures dating back to 1956. ACSR conductor.
- A field-condition assessment indicated severe corrosion of the 3/8" steel static wire and woodpecker damage to a number of poles
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



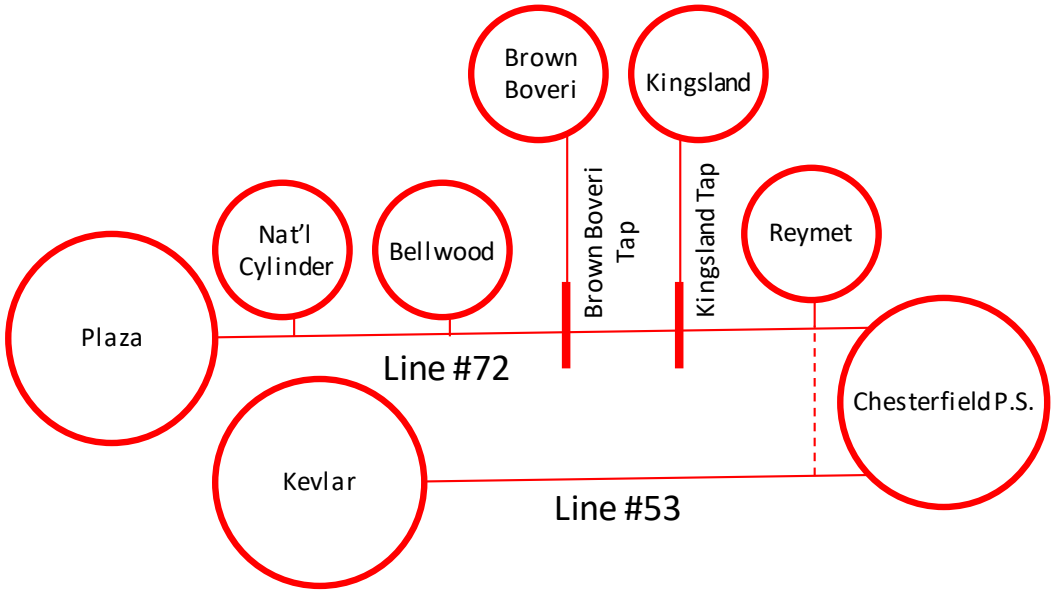
Dominion Transmission Zone M-3 Process
EOL Rebuild 115kV Lines #53 and #72 – Chesterfield to Brown Boveri Tap

Need Number: DOM-2020-0042
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Wreck and rebuild Line #53 and Line #72, approximately 3.7 miles from Chesterfield Power Station to the Brown-Boveri Tap (structures 200A to 232) with a minimum summer normal rating of 393 MVA. Uprate the line terminals (wave trap, risers, line/breaker leads, switches, breakers, etc.) at Chesterfield Power Station to support/match the increased line rating. The 0.52-mile tap line into Kingsland Substation will use the lower rated standard conductor for 115kV tap lines (175 MVA).

Estimated Cost: $9.75 M
Projected In-Service: 09/30/2022
Supplemental Project ID: s2616
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Replace Northern Neck TX#4 - DEV

Need Number: DOM-2021-0005

Process Stage:

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

Previously Presented:

Need – 01/06/2021

Solution – 03/09/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

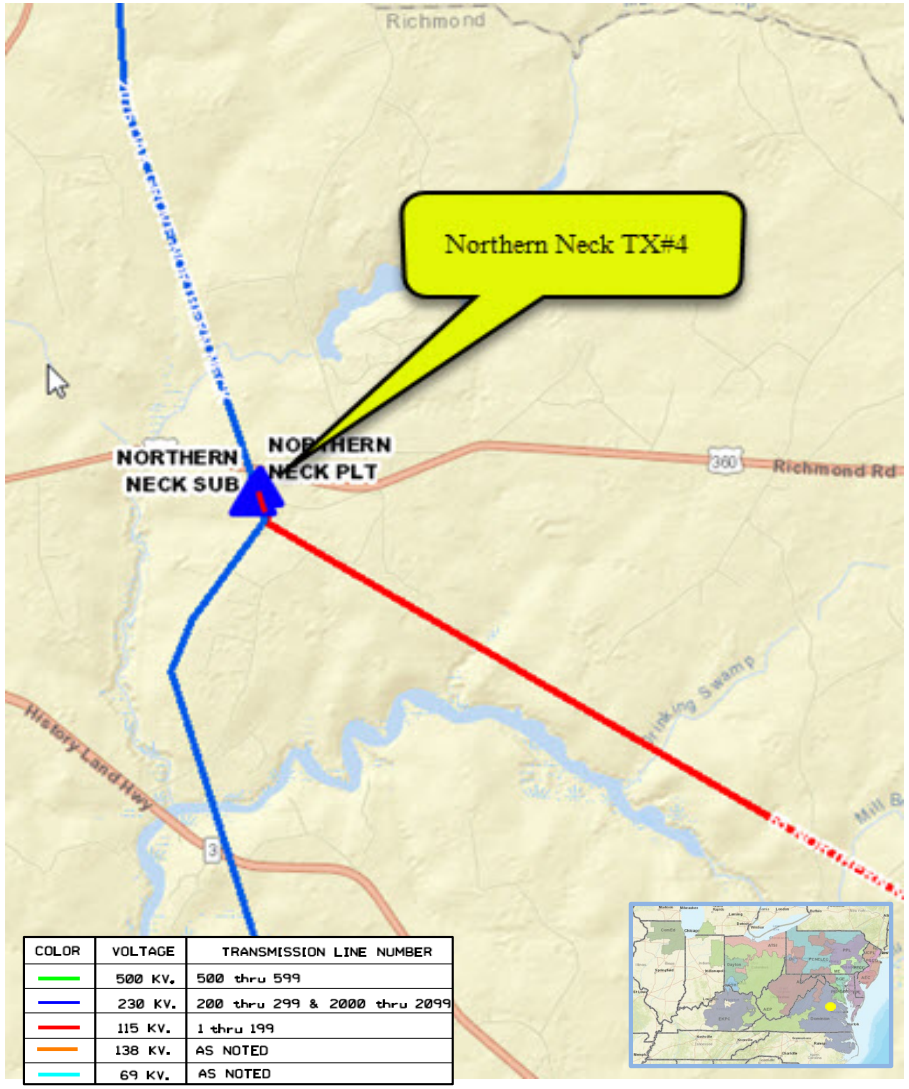
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Northern Neck Tx#4 is a 168 MVA, 230/115kV transformer bank consisting of three single-phase units that were manufactured in 1987. This transformer bank has been identified for replacement based on the results of Dominion's transformer health assessment (THA) process. Detailed drivers include:

- Age (>30 years old).
- Reduced BIL ratings (3 levels below standard).
- Oil DGA indicates high CO and CO2 levels in all three units; potential breakdown of dielectric paper insulation on main current carrying conductors inside the transformer.
- LTC design (in-tank) does not allow oil samples to be taken to determine condition of LTC; Sister unit LTC failed in 2014; All three LTC's replaced but have periodic sync issues.
- THA score less than 80.



Dominion Transmission Zone M-3 Process
Replace Northern Neck TX#4 - DEV

Need Number: DOM-2021-0005
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace Northern Neck TX#4 with a three-phase, 230-115kV, 168 MVA unit from Prince George Substation. Include other ancillary equipment (arresters, switches, relays, etc.) as needed.

Note: The Prince George transformer is being upgraded to accommodate the AB2-190 Wards Creek project (a 160 MW solar facility). This unit was manufactured in 2012 and has a THA score of 95.

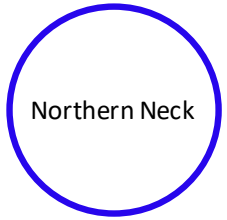
Estimated Cost: $1.7 M

Projected In-Service: 08/19/2021

Supplemental Project ID: s2621

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Line #209 and Line #58 Partial Rebuild

Need Number: DOM-2021-0006

Process Stage:

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

Previously Presented:

Need – 03/09/2021

Solution – 06/08/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

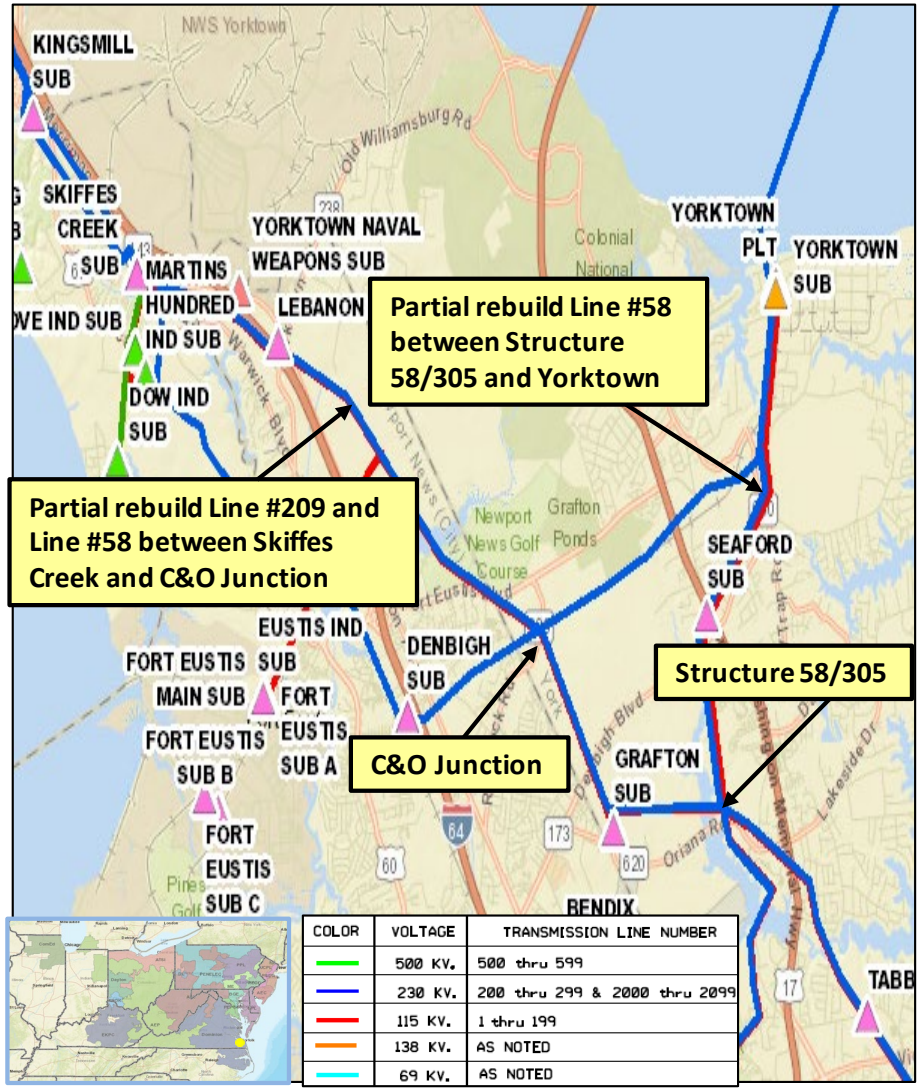
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace 52 double-circuit wood pole structures from Skiffes Creek to C&O Junction of Line #209 (Skiffes Creek-Yorktown) and Line #58 (Skiffes Creek-Yorktown), and 47 single-circuit wood pole structures from Structure 58/305 to Yorktown of Line #58 based on the Company's End of Life criteria.

- The 6.2 miles segment from Skiffes Creek-C&O Junction of Line #209 and Line #58, and the 4.5 miles segment from Structure 58/305-Yorktown of Line #58 were constructed on wood H-frame structures in 1952 and includes ACSR conductor and 3#8 static. These structures are at the end of their useful life.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.
- Line #209 and Line #58 provide service to Lebanon substation with approximately 46.6MW of load.



Dominion Transmission Zone M-3 Process
Line #209 and Line #58 Partial Rebuild

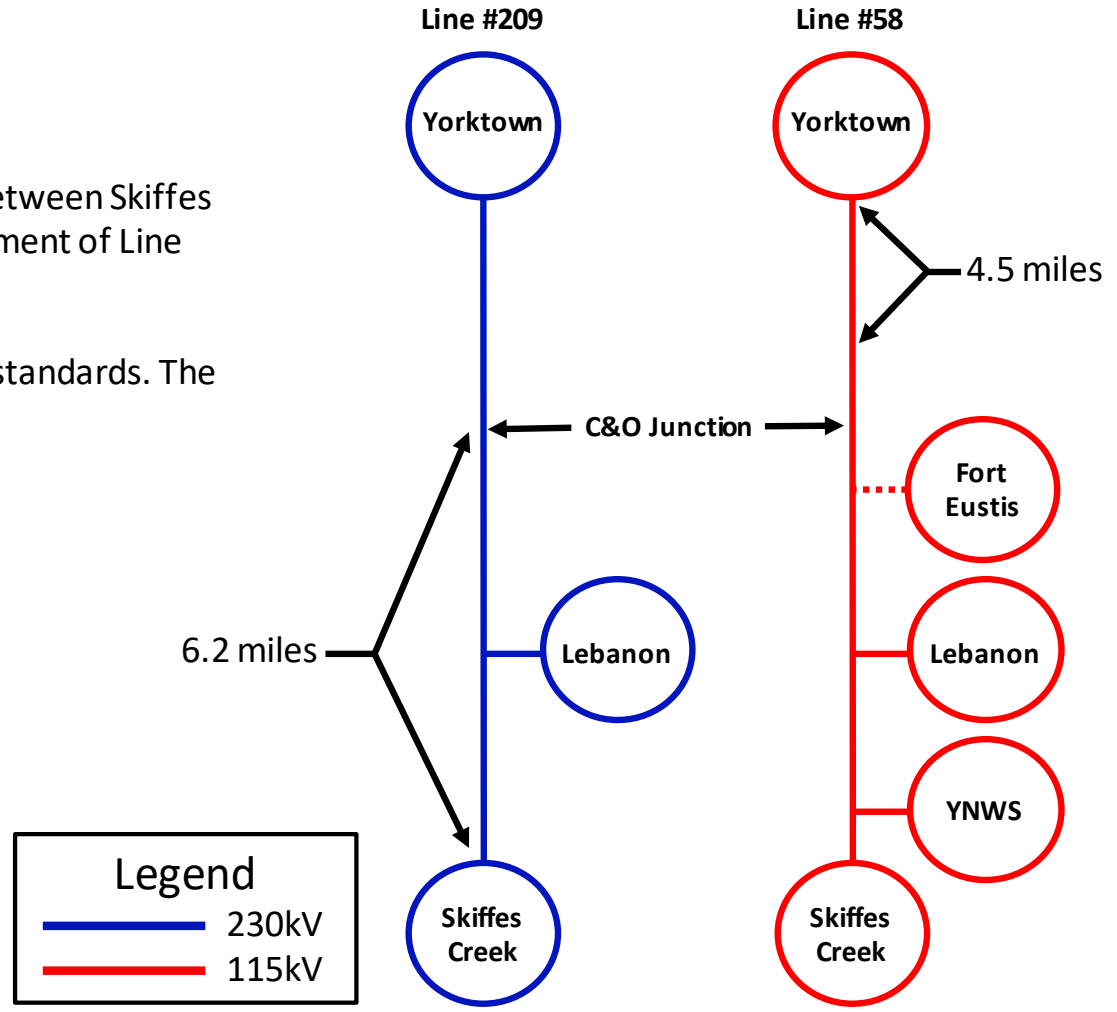
Need Number: DOM-2021-0006
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Rebuild approximately 6.2 miles double circuit segment of Line #209 and Line #58 between Skiffes Creek and C&O Junction to current standards. The normal summer rating of this segment of Line #209 and Line #58 will be 1047MVA and 262MVA, respectively.

Rebuild approximately 4.5 miles single circuit segment of Line #58 to current 115kV standards. The normal summer rating of the line segment will be 262MVA.

Estimated Cost: $19.5M
Projected In-Service: 12/31/2025
Supplemental Project ID: s2623
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Line #238 and Line #249 Partial Rebuild

Need Number: DOM-2021-0007

Process Stage:

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

Previously Presented:

Need – 03/09/2021

Solution – 04/06/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

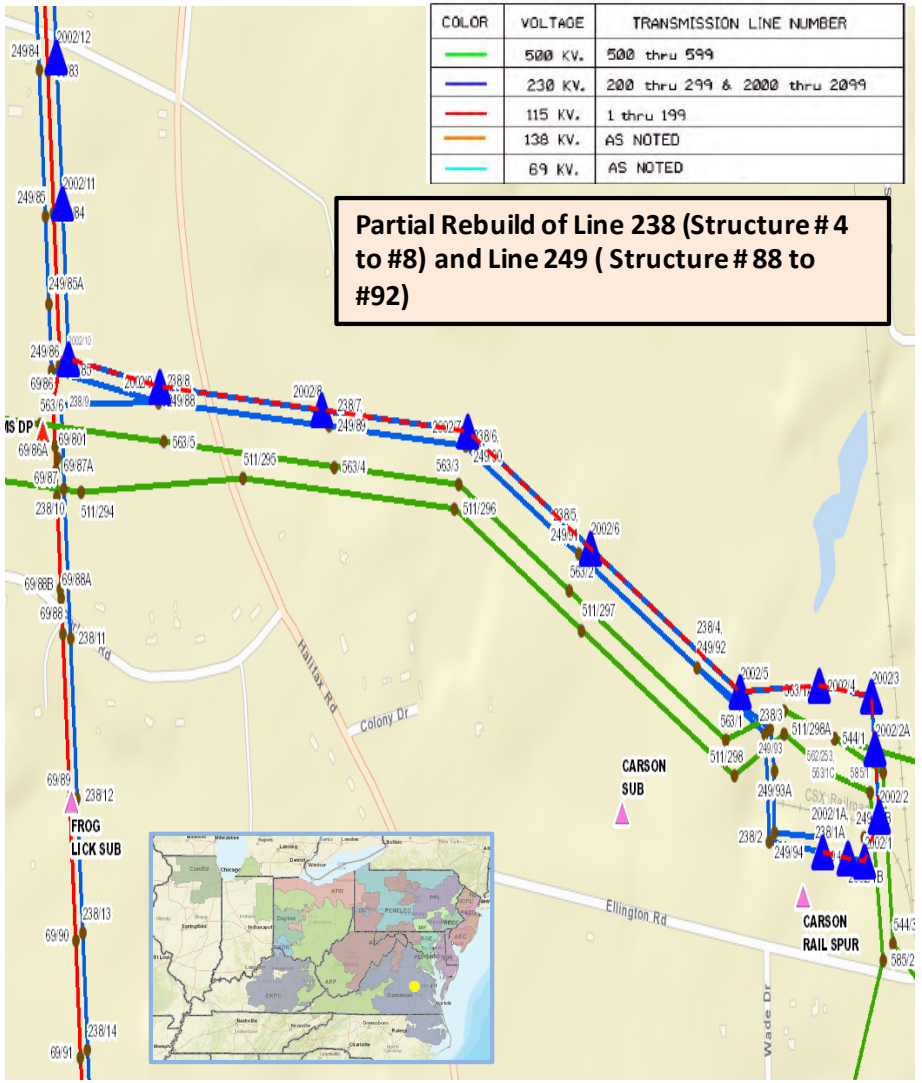
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace five (5) existing double-circuit COR-TEN® lattice towers that carry Line #238 (Structure #4 to # 8) and Line #249 (Structure #88 to #92) based on the Company's End of Life criteria.

- The five (5) transmission COR-TEN® towers were built in 1972 (49 years in service). Continued degradation of the steel components and connections on these towers has severely reduced their structural integrity. Field reports and condition assessment has identified the need to replace the towers.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years. A 50-year cycle for COR-TEN® steel structures is often cited.
- Line 238 serves 20.5 MW of directly connected load. Line 249 serves 20 MW of directly connected load and 24.1 MW load at Locks Sub.



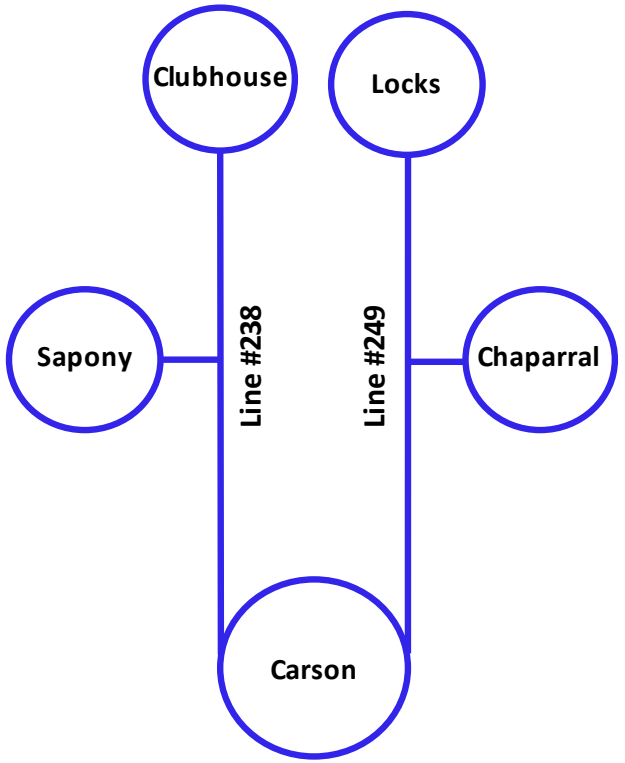
Dominion Transmission Zone M-3 Process
Line #238 and Line #249 Partial Rebuild

Need Number: DOM-2021-0007
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace five existing double-circuit towers with new galvanized steel towers of the same structural design on the existing foundations. Preliminary investigations have found that the existing foundation designs have sufficient structural capacity to support the new towers. Detailed field assessments may find that some foundation remediation is necessary, but extensive remediation is not anticipated.

Estimated Cost: $3.5 M
Projected In-Service: 12/31/2023
Supplemental Project ID: s2626
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Line #2002 Partial Rebuild

Need Number: DOM-2021-0008

Process Stage:

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

Previously Presented:

Need – 03/09/2021

Solution – 04/06/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

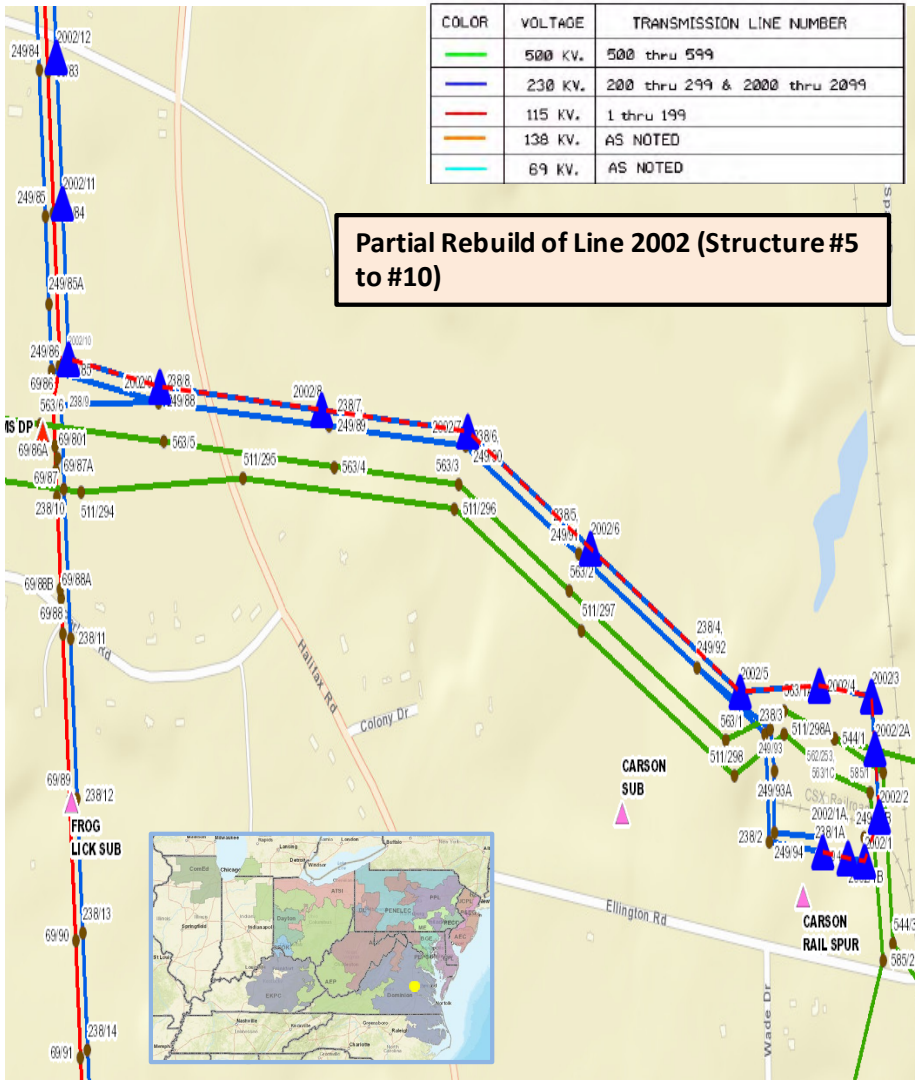
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace six existing COR-TEN® lattice tower structures from Carson to Poe Line #2002 from Structure #5 to #10 based on the Company's End of Life criteria.

- Line 2002 runs approximately 12.58 miles from Carson to Poe. The six (6) transmission COR-TEN® towers were built in 1977 (44 years in service). Continual deterioration of the steel components and connections on these towers has severely reduced their structural capacity and poses risk to the reliability of Line #2002. Field reports and condition assessment has identified the need to replace the towers.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years. A 50-year cycle for COR-TEN® steel structures is often cited.
- Line 2002 serves 78 MW of loads at Poe Substation.



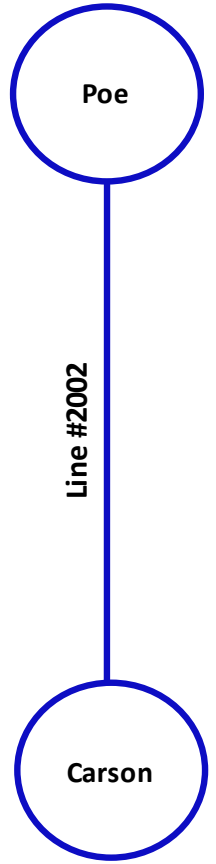
Dominion Transmission Zone M-3 Process
Line #2002 Partial Rebuild

Need Number: DOM-2021-0008
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace the six existing towers with new galvanized steel towers of the same structural design on the existing foundations. Preliminary investigations have found that the existing foundation designs have sufficient structural capacity to support the new towers. Detailed field assessments may find that some foundation remediation is necessary, but extensive remediation is not anticipated.

Estimated Cost: $4.25 M
Projected In-Service: 12/31/2023
Supplemental Project ID: s2625
Project Status: Engineering
Model: 2025 RTEP



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 – 11/12/2021

Previously Presented:

Need – 02/09/2021

Solution – 04/06/2021

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.

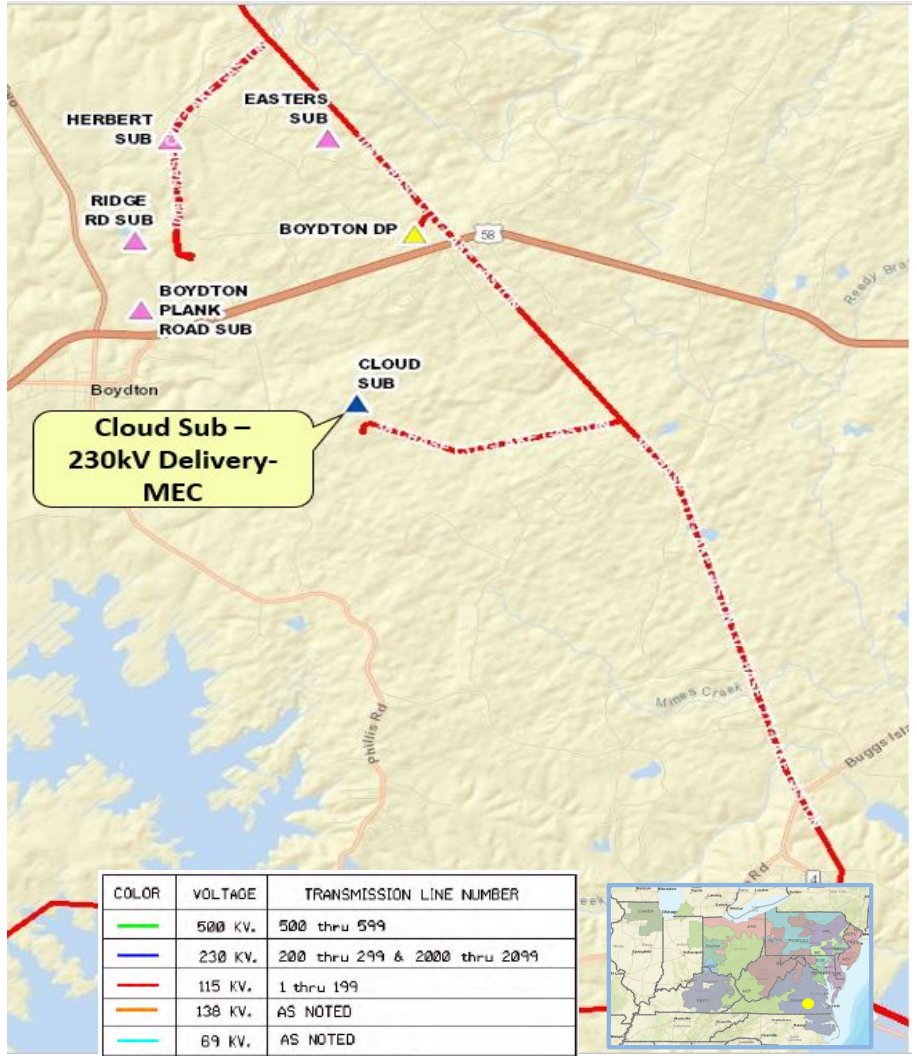
Problem Statement:

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
Chase City 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2021-0011
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 02/16/2021

Solution – 03/18/2021

Project Driver:

Customer Service

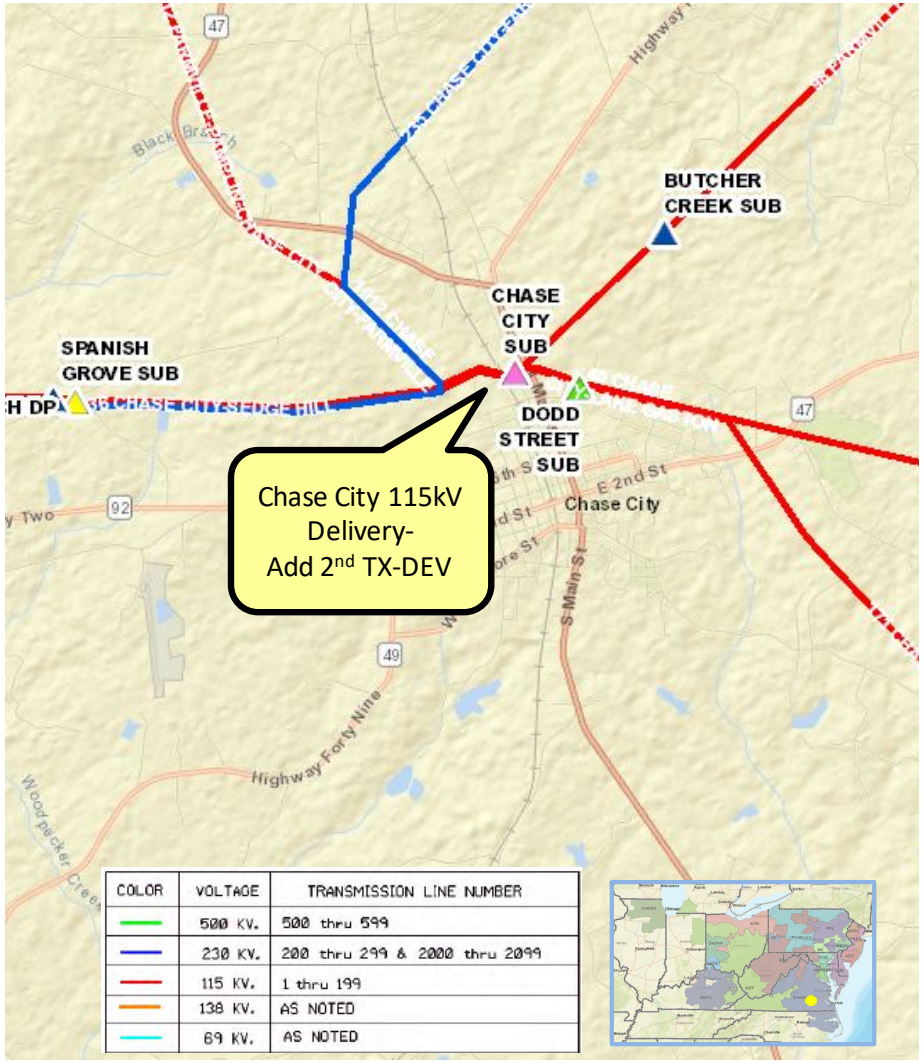
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request to add a 2nd, 22.4 MVA distribution transformer at Chase City Substation in Mecklenburg County. The new transformer is needed to mitigate load loss for a transformer contingency. Requested in-service date is 12/31/2021.

Projected 2026 load

Summer: 19.7 MW
Winter: 19.7 MW



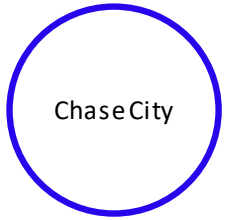
Dominion Transmission Zone M-3 Process
Chase City 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2021-0011
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Install a 1200 Amp, 25kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Chase City.

Estimated Cost: $0.5 M
Projected In-Service: 12/31/2021
Supplemental Project ID: s2600
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Altair 230kV Delivery - NOVEC

Need Number: DOM-2021-0012
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 02/09/2021

Solution – 03/09/2021

Project Driver:

Customer Service

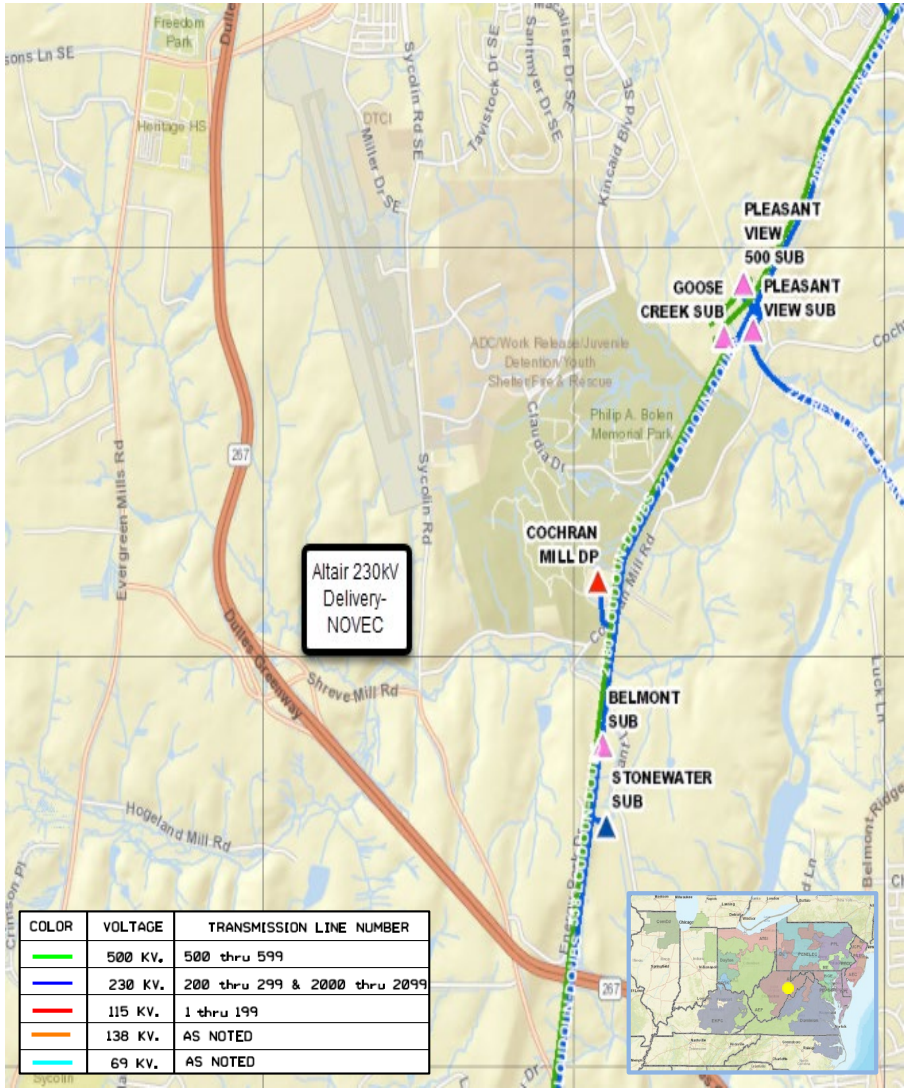
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

NOVEC has submitted a DP Request for a new substation (Altair) to serve a data center complex in Loudoun County with a total projected load in excess of 100MW. Requested in-service date is 09/01/2024.

Projected 2026 load

Summer: 107.0 MW
Winter: 107.0 MW



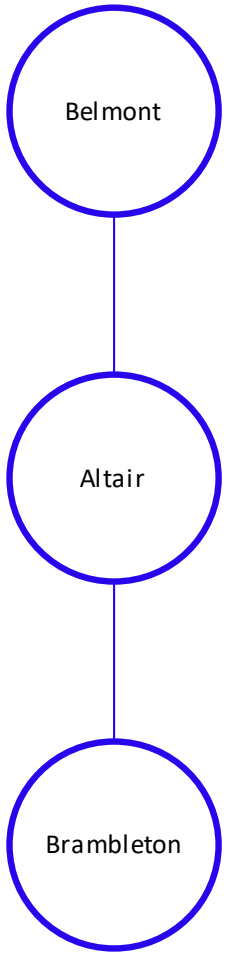
Dominion Transmission Zone M-3 Process
Altair 230kV Delivery - NOVEC

Need Number: DOM-2021-0012
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Interconnect the new substation by cutting and extending Line #201 (Belmont-Brambleton) to the proposed Altair Substation. Lines to terminate in a 230kV four-breaker ring arrangement with an ultimate arrangement of a six-breaker ring.

Estimated Cost: $15.0 M
Projected In-Service: 09/01/2024
Supplemental Project ID: s2598
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
230 kV Line #272 – EOL Rebuild

Need Number: DOM-2021-0014
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 03/09/2021

Solution – 04/06/2021

Project Driver:

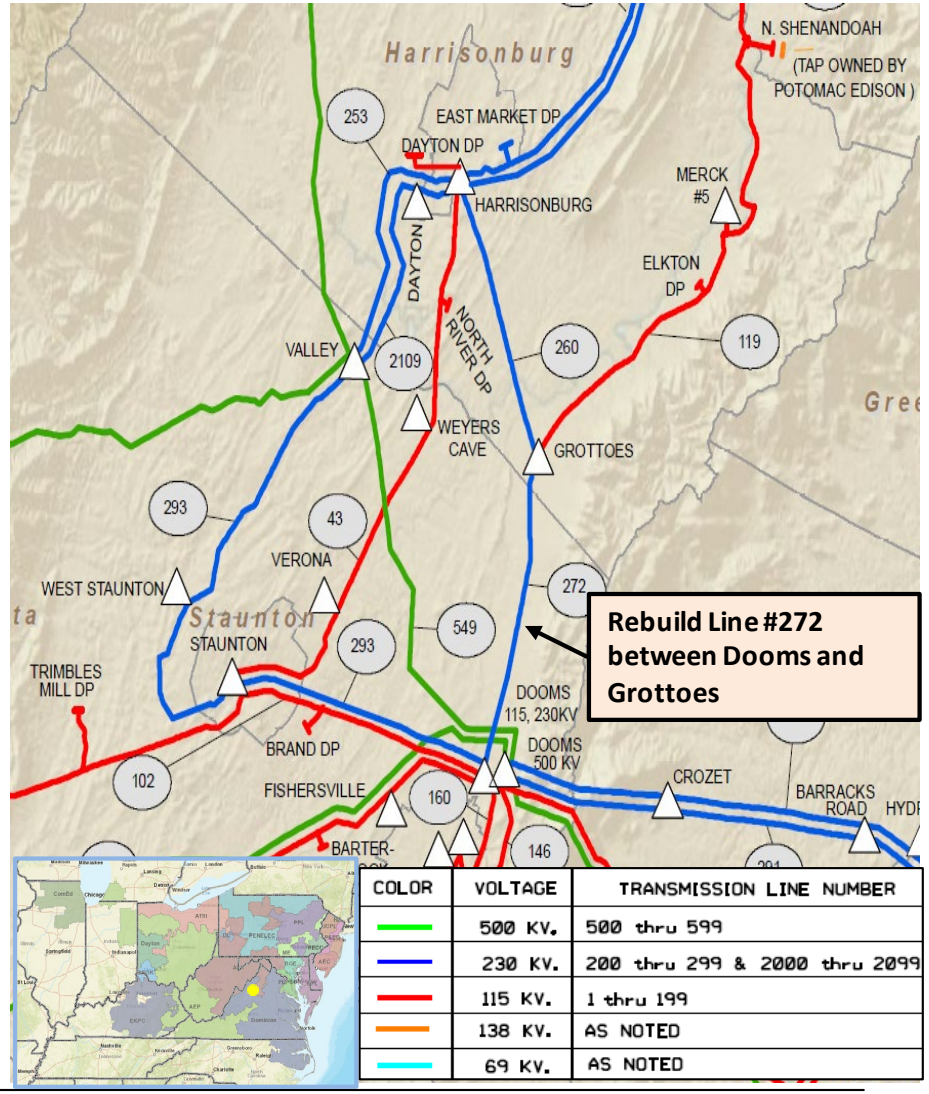
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace 79 existing transmission towers that carry 230 kV Line #272 (Dooms - Grottoes). The need for replacement is based on the Company's End of Life criteria.

- The 11.5 mile long line consists of CORTEN X-Series lattice-type towers that were constructed in 1967.
- These towers have inherent corrosion problems causing continuous deterioration to the steel members and have reached the end of their useful life. They are amongst the weakest and most problematic CORTEN lattice towers on our system and are a high priority for replacement.

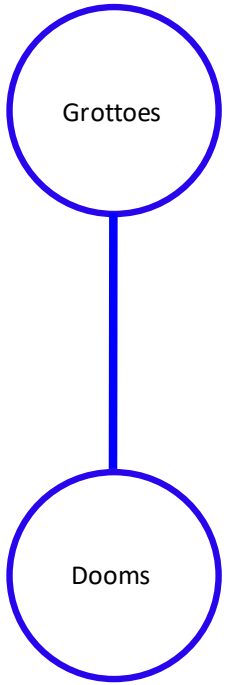


Dominion Transmission Zone M-3 Process
230 kV Line #272 – EOL Rebuild

Need Number: DOM-2021-0014
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Approximately 11.5 miles containing weathering CORTEN lattice-type towers will be replaced with steel monopoles and new conductor with a normal summer rating of 1047 MVA to meet current 230 kV standards.



Estimated Cost: $30.8 M
Projected In-Service: 12/31/2026
Supplemental Project ID: s2613
Project Status: Conceptual
Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Nokesville - Add 2nd TX - DEV

Need Number: DOM-2021-0018
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 04/06/2020

Solution – 05/11/2021

Project Driver:

Customer Service

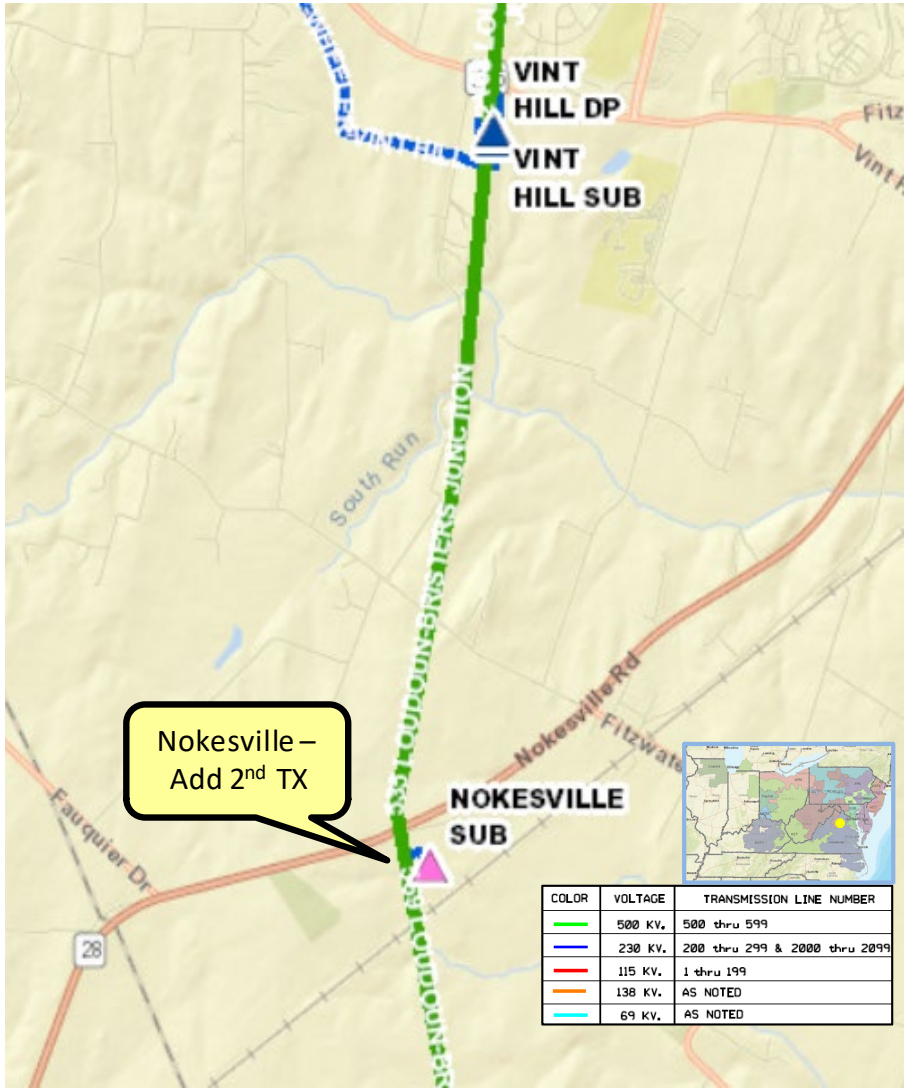
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request to add a 2nd distribution transformer at Nokesville Substation in Prince William County. The new transformer is being driven by continued load growth in the area.

Projected 2026 load

Summer: 63.3 MW
Winter: 58.8 MW



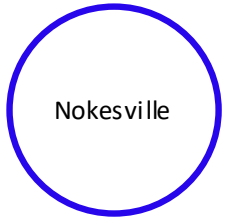
Dominion Transmission Zone M-3 Process
Nokesville - Add 2nd TX - DEV

Need Number: DOM-2021-0018
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Install a 1200 Amp, 50kAIC circuit switcher and associated equipment (bus, relaying, etc.) to feed the new transformer at Nokesville.

Estimated Cost: $0.75 M
Projected In-Service: 11/01/2022
Supplemental Project ID: s2620
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Hamilton - Add 2nd TX - DEV

Need Number: DOM-2021-0019
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 04/06/2020

Solution – 05/11/2021

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 to add a 2nd distribution transformer at Hamilton Substation in Loudoun County. The new transformer is being driven by contingency loading for loss of the existing transformer. Requested in-service date is 12/01/2022.

Projected 2026 load

Summer: 66.4 MW
Winter: 62.0 MW

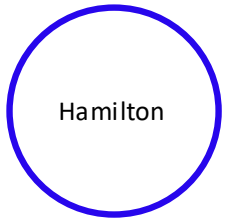
Dominion Transmission Zone M-3 Process
Hamilton - Add 2nd TX - DEV

Need Number: DOM-2021-0019
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Install a 1200 Amp, 50kAIC circuit switcher and associated equipment (bus, relaying, etc.) to feed the new transformer at Hamilton.

Estimated Cost: $0.75 M
Projected In-Service: 12/01/2022
Supplemental Project ID: s2605
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
EOL Rebuild 115kV Line #17 – Chesterfield to Northeast

Need Number: DOM-2021-0021

Process Stage:

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

Previously Presented:

Need – 05/20/2021

Solution – 06/15/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

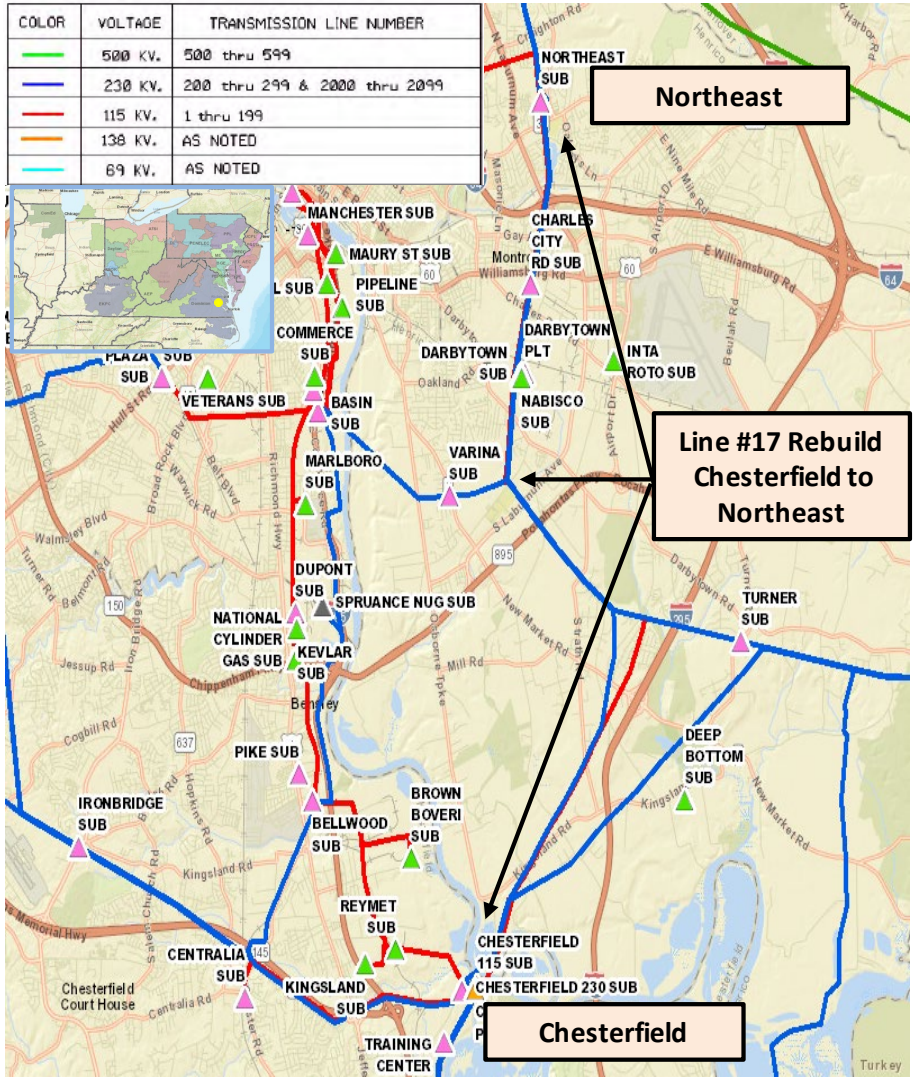
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified the need to replace the entire 14.0 miles of 115kV Line#17 (Chesterfield to Northeast) based on the Company's end of life criteria.

- Line #17 is built mostly on wood H-frame structures installed between 1941 and 1972. The line has ACSR conductor and 3/8 inch static steel.
- Several structures have been replaced and assets/structures continue to experience deterioration.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



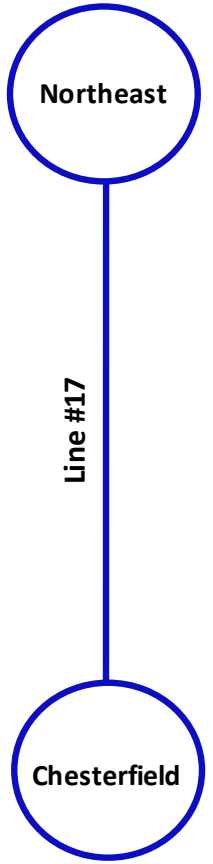
Dominion Transmission Zone M-3 Process
EOL Rebuild 115kV Line #17 – Chesterfield to Northeast

Need Number: DOM-2021-0021
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Rebuild all wood H-frame structures and reconductor the entire 14.0 miles with current 115 kV standards construction practices. Upgrade terminal equipment as needed.

Estimated Cost: $18.2M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2611
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
EOL Rebuild 115kV Lines #73 – Elmont to Four Rivers

Need Number: DOM-2021-0022
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 05/20/2021

Solution – 06/15/2021

Project Driver:

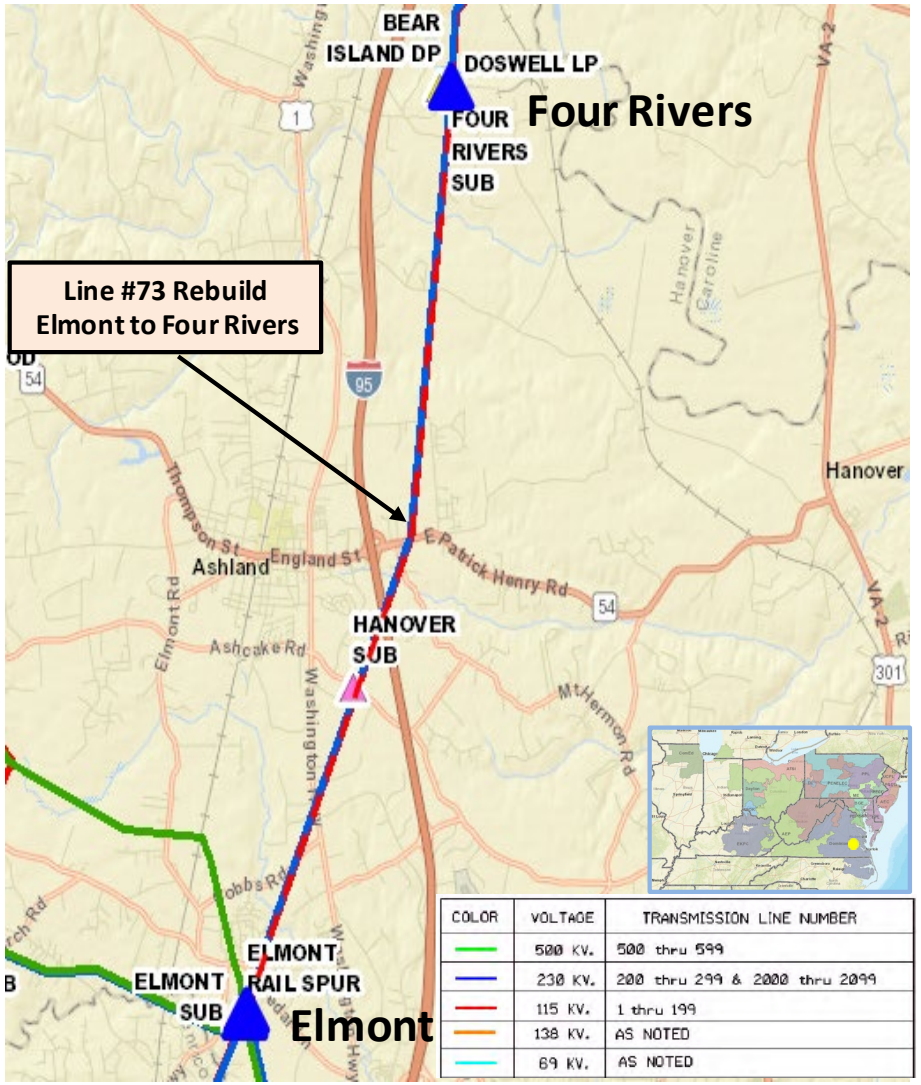
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified the need to replace the entire 9 miles of 115kV Line #73 (Elmont to Four Rivers) based on the Company's End of Life Criteria.

- Line #73 was constructed on primarily wood H-frame structures built in 1956 (65 service years). The line has ACSR conductor and 3/8 inch static steel.
- A number of structures have either been repaired or replaced and assets/structures continue to experience deterioration.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.

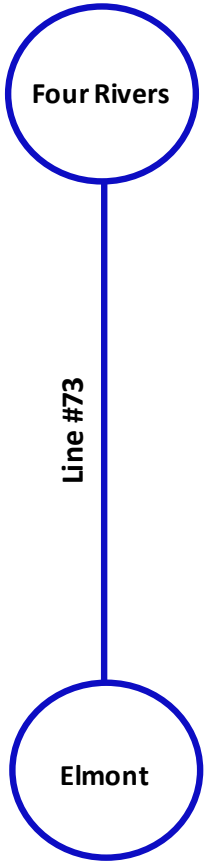


Dominion Transmission Zone M-3 Process
EOL Rebuild 115kV Lines #73 – Elmont to Four Rivers

Need Number: DOM-2021-0022
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:
Rebuild the entire 9.0 miles with current 115 kV standards construction practices. Upgrade terminal equipment as needed.

Estimated Cost: $11.7M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2617
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Partial EOL Rebuild 115kV Line #100 – Locks to Harrowgate

Need Number: DOM-2021-0023

Process Stage:

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

Previously Presented:

Need – 05/20/2021

Solution – 06/15/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

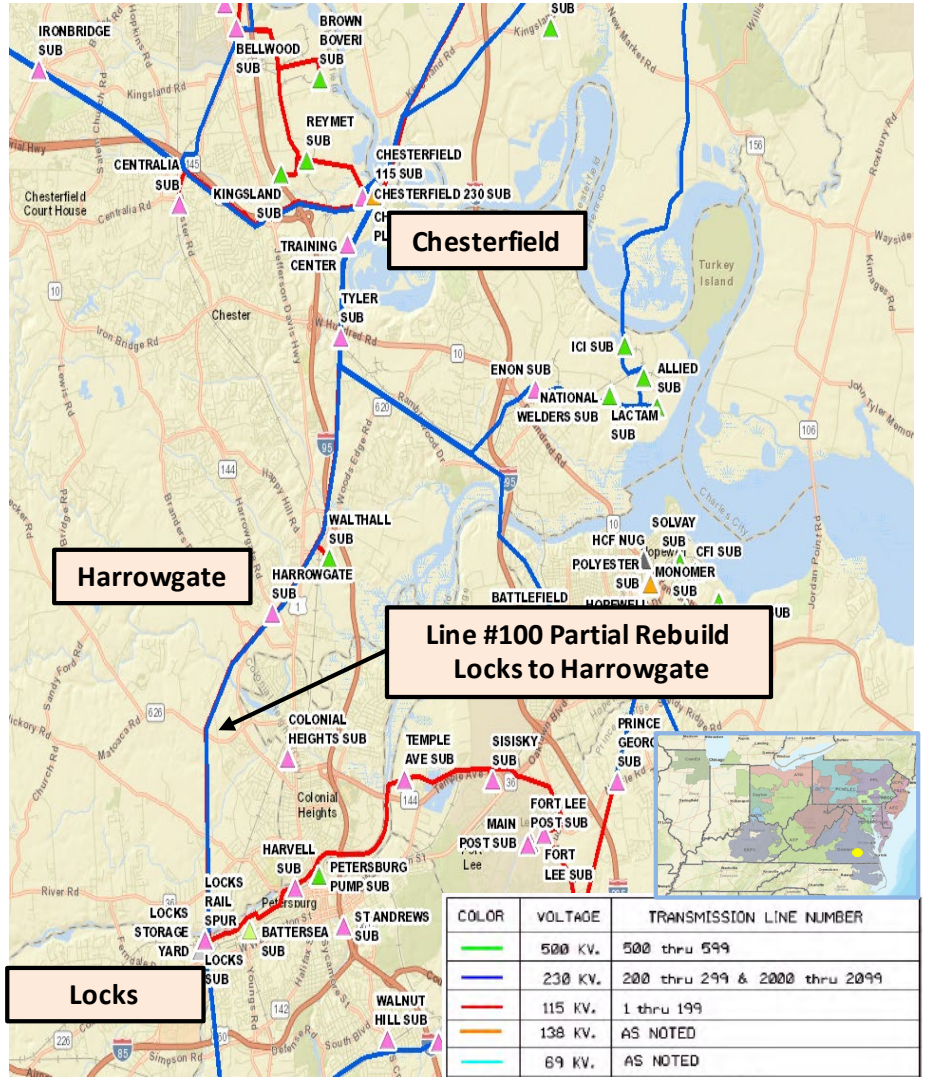
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified the need to replace approximately 5.3 miles of 115kV Line #100 (Locks – Chesterfield) between Locks and Harrowgate Substations.

- Transmission structures between Locks and Harrowgate are wood H-frame structures built in 1952 (69 service years). The line has ACSR conductor and 3/8 inch static steel.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



Dominion Transmission Zone M-3 Process
Partial EOL Rebuild 115kV Line #100 – Locks to Harrowgate

Need Number: DOM-2021-0023
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

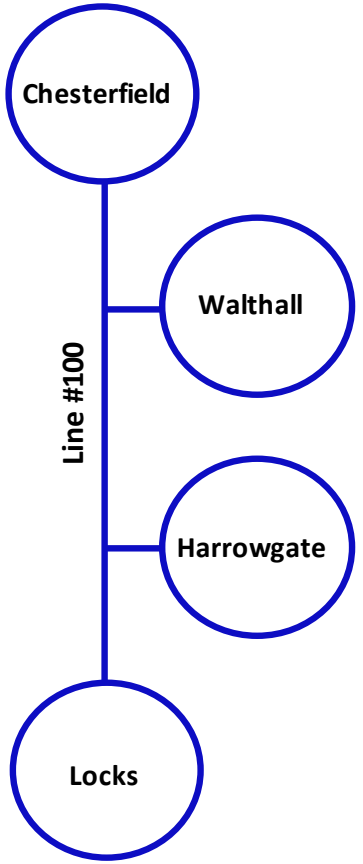
Rebuild all wood H-frame structures from Locks to Harrowgate and reconductor the 5.4 miles with current 115 kV standards construction practices. Upgrade terminal equipment as needed.

Estimated Cost: $6.9M
Projected In-Service: 12/31/2022

Supplemental Project ID: s2610

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Replace Twelve 69kV Breakers at Davis Substation - DEV

Need Number: DOM-2021-0024
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 03/18/2021

Solution – 07/12/2021

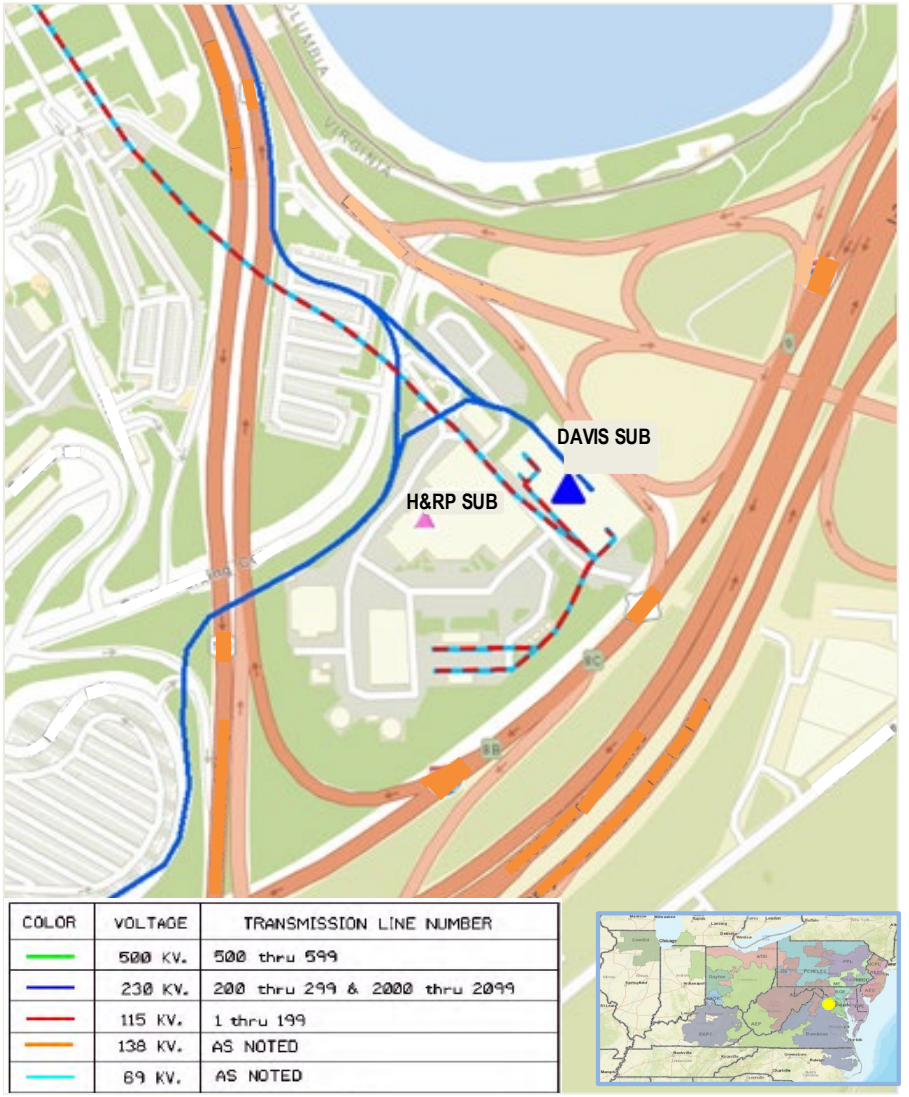
Project Driver:

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace twelve 69kV breakers at Davis Substation due to age and increasing maintenance issues. The breakers in question were manufactured in 1990 and several of this type have experienced the arcing tip breaking and falling off the main moving contact assembly. There is no way to detect this issue without a failure unless it is caught during maintenance. This condition can lead to a catastrophic failure if the arcing tip falls into the breaker and creates a flash or unsuccessful fault interruption.



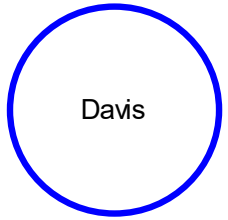
Dominion Transmission Zone M-3 Process
Replace Twelve 69kV Breakers at Davis Substation - DEV

Need Number: DOM-2021-0024
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace the existing twelve 69kV breakers with new 69kV, 3000 Amp, 50kA units.
Include other ancillary equipment (arresters, switches, relays, etc.) as needed.

Estimated Cost: $5.5 M
Projected In-Service: 12/02/2021
Supplemental Project ID: s2599
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process Line #239 and Line #2141 Partial Rebuild

Need Number: DOM-2021-0025

Process Stage:

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

Previously Presented:

Need – 04/06/2021

Solution – 06/08/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

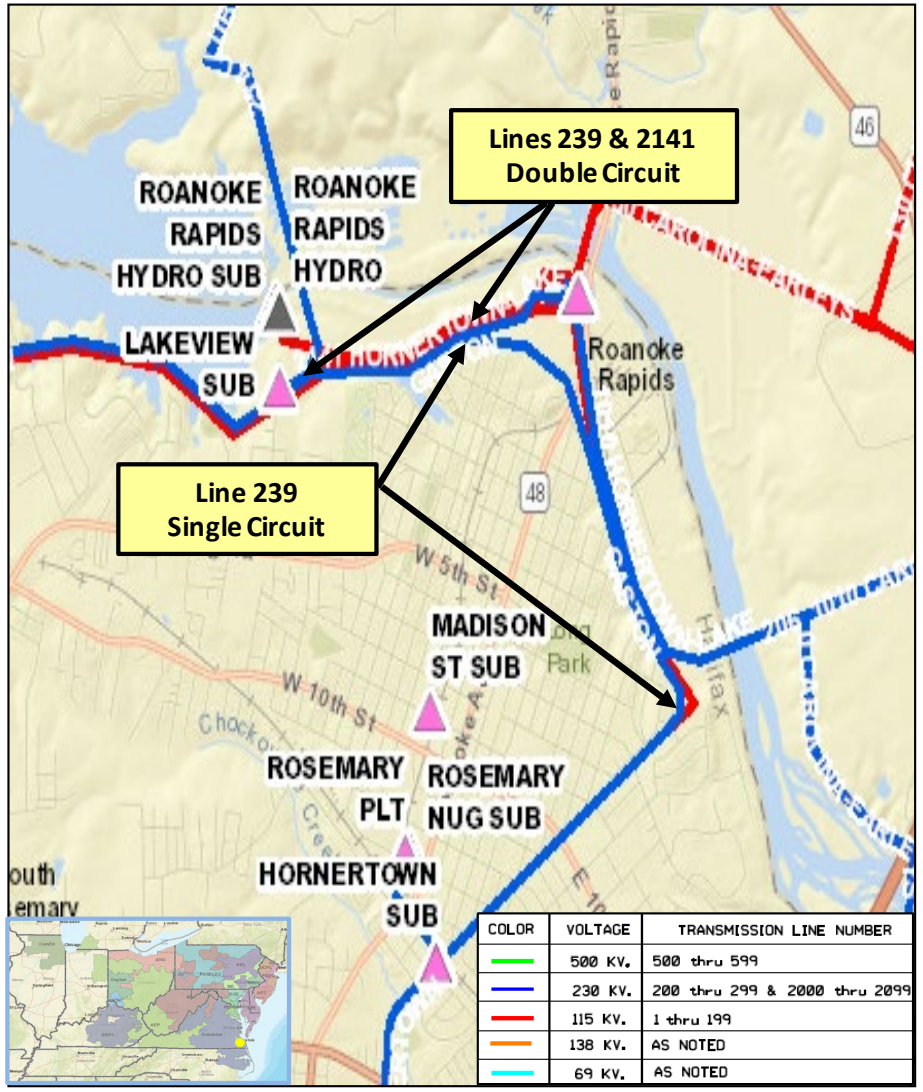
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace approximately 2.7 miles of 230kV Line #239 (Lakeview to Hornertown) which includes the double circuit segment with Line #2141 (Carolina to Lakeview) based on the Company's End of Life criteria.

- Double-circuit is on steel towers and single-circuit is on 2-pole wood H-frame structures all dating back to 1967. Conductor is ACSR.
- A field-condition assessment indicated woodpecker damage to several poles and broken insulators in numerous locations.
- Industry guidelines indicate equipment life for steel structures is 40-60 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.
- Remaining segment of Line #239 is being rebuilt under project b3114.



Dominion Transmission Zone M-3 Process
Line #239 and Line #2141 Partial Rebuild

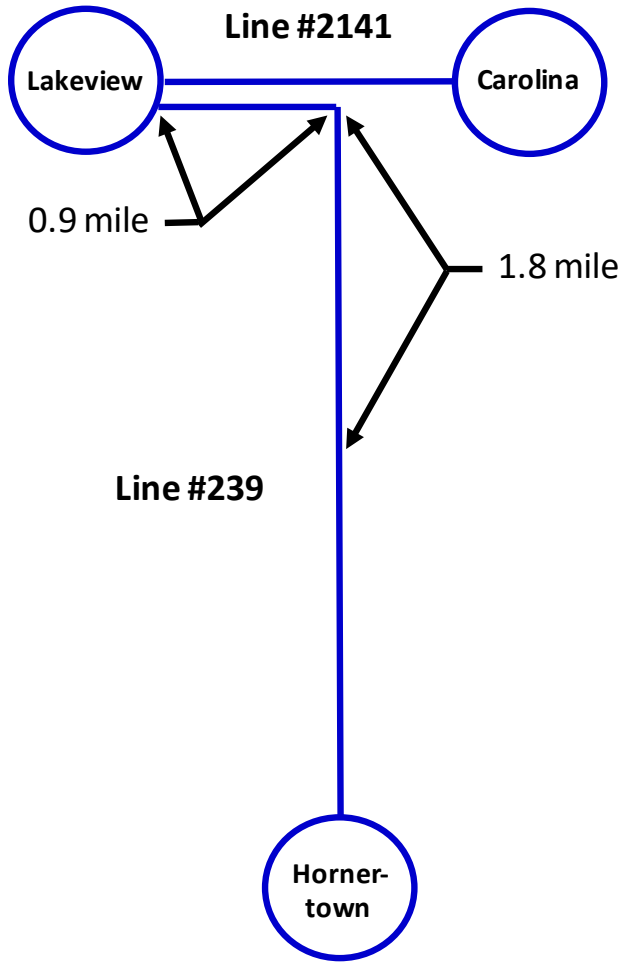
Need Number: DOM-2021-0025
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Rebuild approximately 1.8 miles single circuit segment of Line #239 to current 230kV standards. The normal summer rating of this line segment will be 1047MVA.

Rebuild approximately 0.9 mile double circuit segment of Line #239 and Line #2141 to current 230kV standards. The normal summer rating of the line segments will be 1047MVA.

Estimated Cost: $5.0M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2612
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115 kV Partial Line #83 – EOL Rebuild

Need Number: DOM-2021-0026
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 04/14/2021

Solution – 07/12/2021

Project Driver:

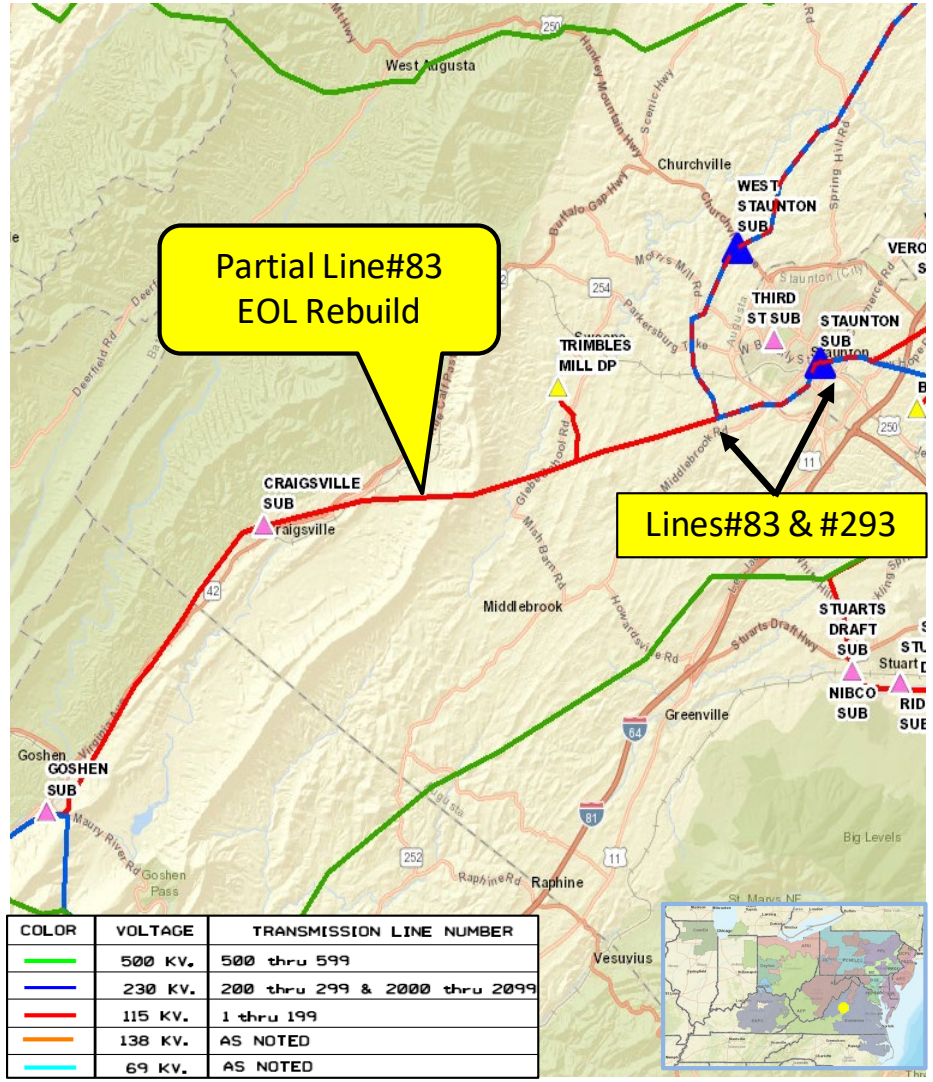
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace approx. 14.6 miles of 115kV Line #83 from Craigsville to the junction where 115kV Line #83 transitions to double-circuit with 230kV Line #293.

- Line #83 was originally constructed in 1925 consisting of lattice steel towers, ACSR conductor and 3/8" static wire.
- Line #83 has a history of poor operational performance with many operations and lock-outs.
- The remaining segment of Line #83 that shares a common structure with Line #293 will be rebuilt as a part of project DOM-2020-0028.
- Industry guidelines indicate equipment life for steel structures 40-60 years, wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



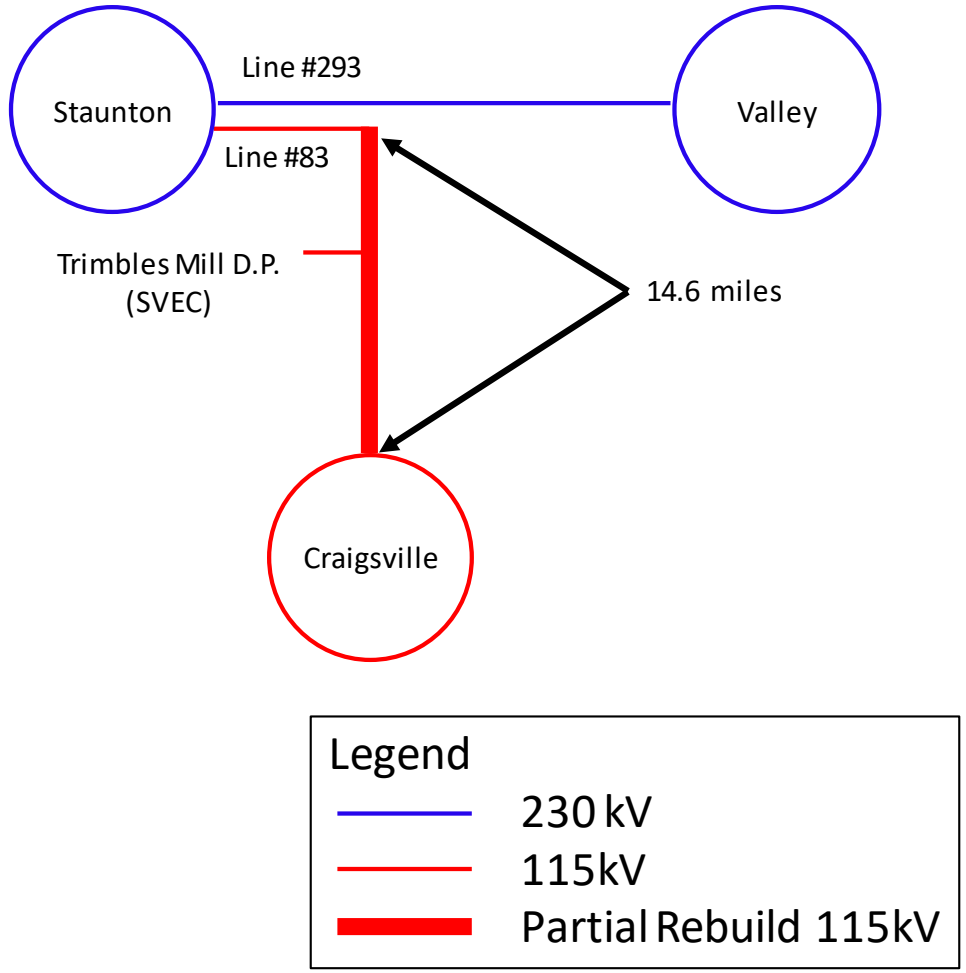
Dominion Transmission Zone M-3 Process
115 kV Partial Line #83 – EOL Rebuild

Need Number: DOM-2021-0026
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Approximately 14.6 miles consisting of lattice steel towers will be replaced with appropriate structures. New conductor with a normal summer rating of 262 MVA will be used.

Estimated Cost: $23.0M
Projected In-Service: 12/31/2023
Supplemental Project ID: s2624
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
New Station to Retire Line #5 Fork Union to Cunningham DP Segment

Need Number: DOM-2021-0027

Process Stage:

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

Previously Presented:

Need – 04/14/2021

Solution – 08/13/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

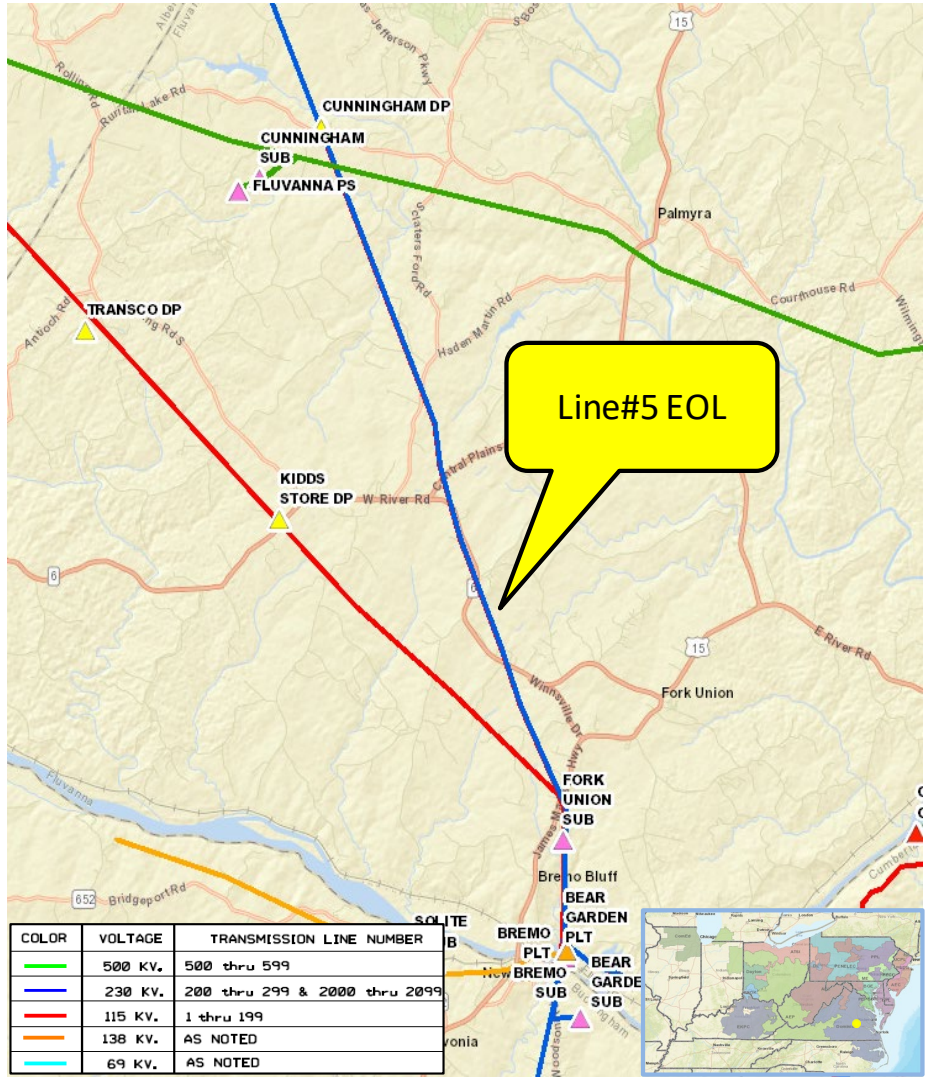
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace the entire 12.6 miles of 115kV Line #5 (Bremo to Cunningham DP) based on the Company's End of Life criteria.

- The line was constructed on mostly wood H-Frame structures all dating back to 1930. The ACSR conductor was installed in the 1950's.
- A number of structures have been replaced and continued deterioration is expected.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



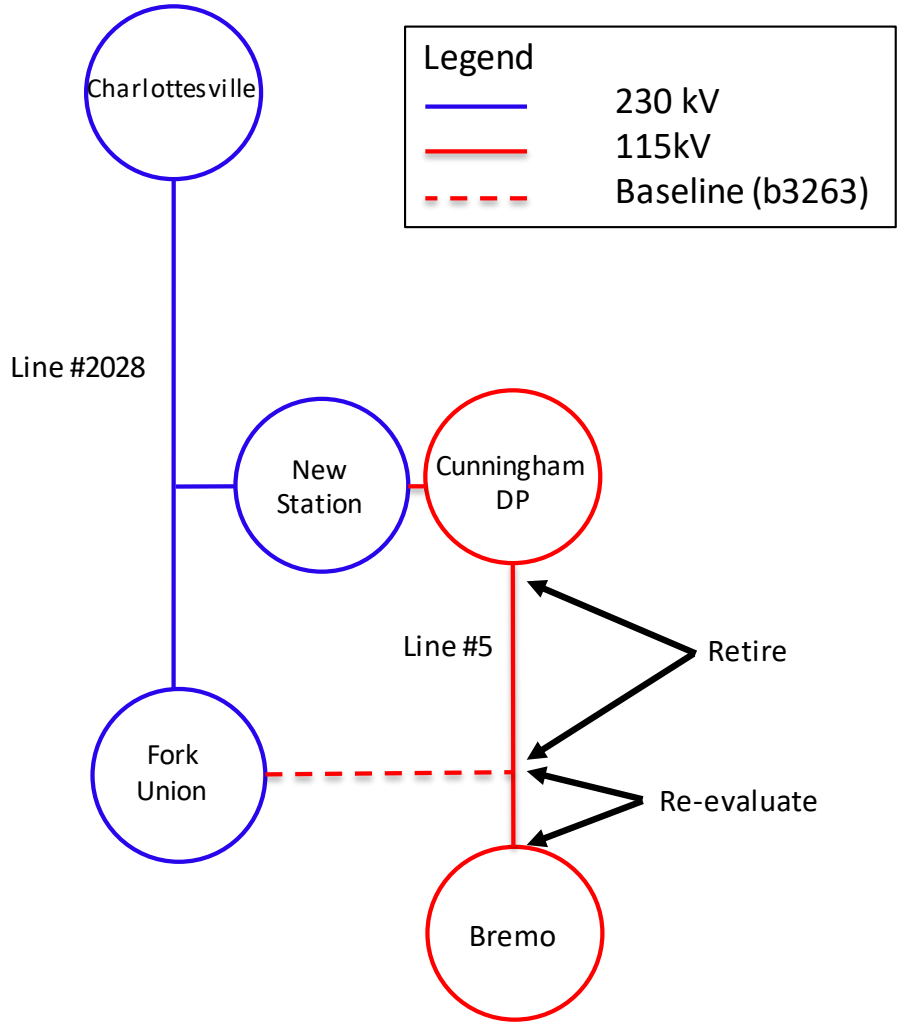
Dominion Transmission Zone M-3 Process
New Station to Retire Line #5 Fork Union to Cunningham DP Segment

Need Number: DOM-2021-0027
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

- Build a new 230/115kV switching station connecting to 230kV network Line #2028 (Fork Union to Charlottesville), and provide a 115kV source from the new station to serve Cunningham DP.
- After Cunningham DP is moved to the new source, the 11-mile segment of 115kV Line #5 from Fork Union to Cunningham DP will be retired.
- Re-evaluate the 1.6-miles segment of 115kV Line #5 from Bremo to Fork Union for future end-of-life rebuild.

Estimated Cost: $16.3M
Projected In-Service: 06/30/2023
Supplemental Project ID: s2615
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115kV Line #45 – EOL Rebuild

Need Number: DOM-2021-0029
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 05/20/2021

Solution – 08/13/2021

Project Driver:

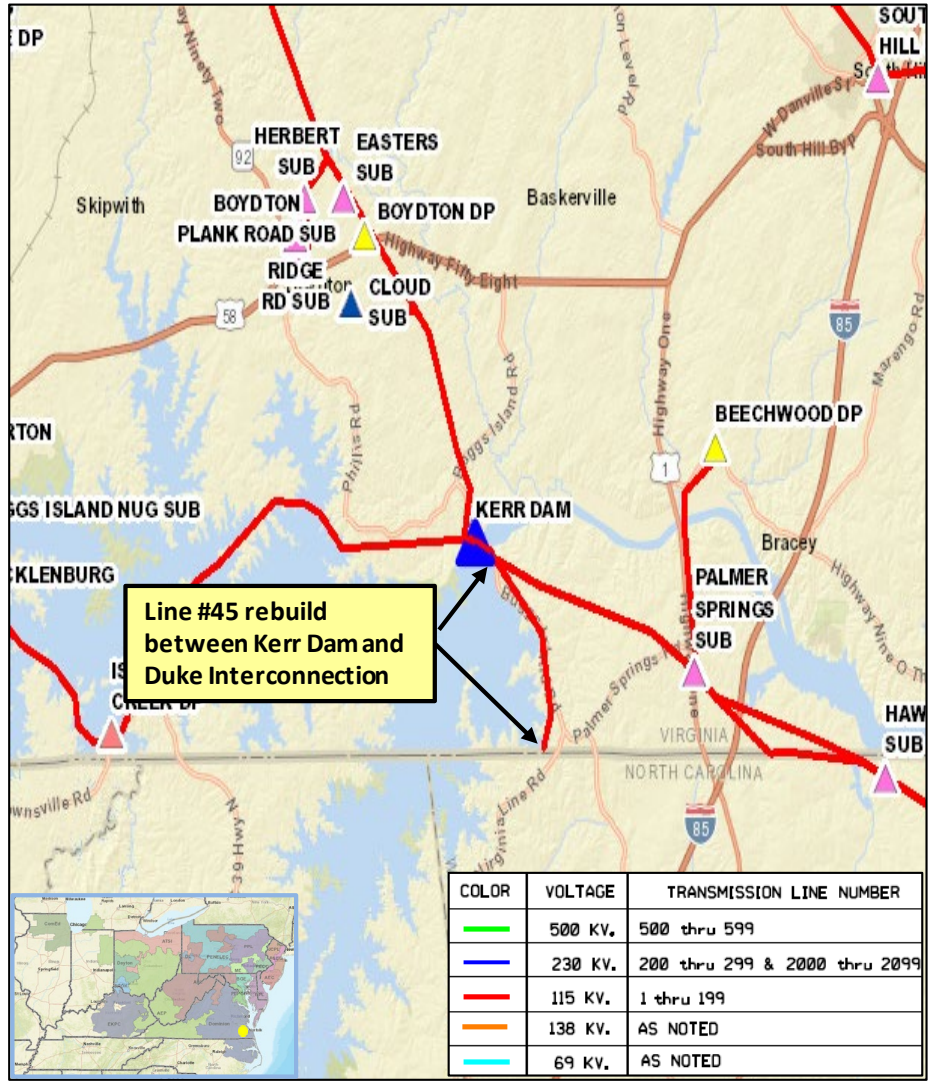
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace approximately 4.7 miles of 115kV Line #45 (Kerr Dam to Duke Interconnection) based on the Company's End of Life criteria.

- Line #45 constructed on wood H-frame structures in 1930 (90+ years old). The line has ACSR conductor and 3/8 inch static steel.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



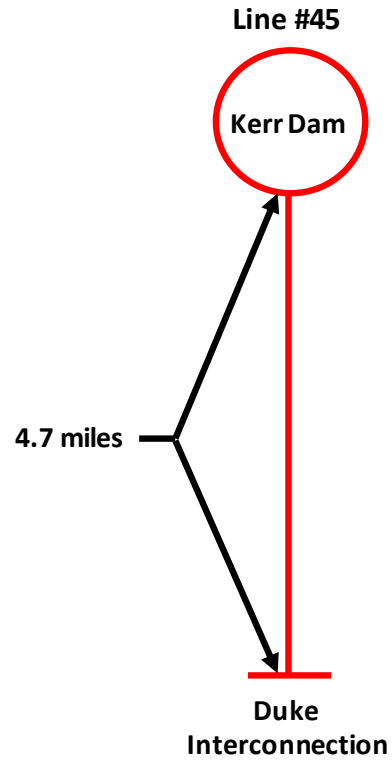
Dominion Transmission Zone M-3 Process
115kV Line #45 – EOL Rebuild

Need Number: DOM-2021-0029
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Rebuild approximately 4.7 miles Line #45 between Kerr Dam to Duke Interconnection with current 115kV standards construction practices. New conductor with a minimum normal summer rating of 262 MVA will be used.

Estimated Cost: $11.0M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2614
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
115kV Line #96 – EOL Rebuild

Need Number: DOM-2021-0030
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 04/14/2021

Solution – 08/13/2021

Project Driver:

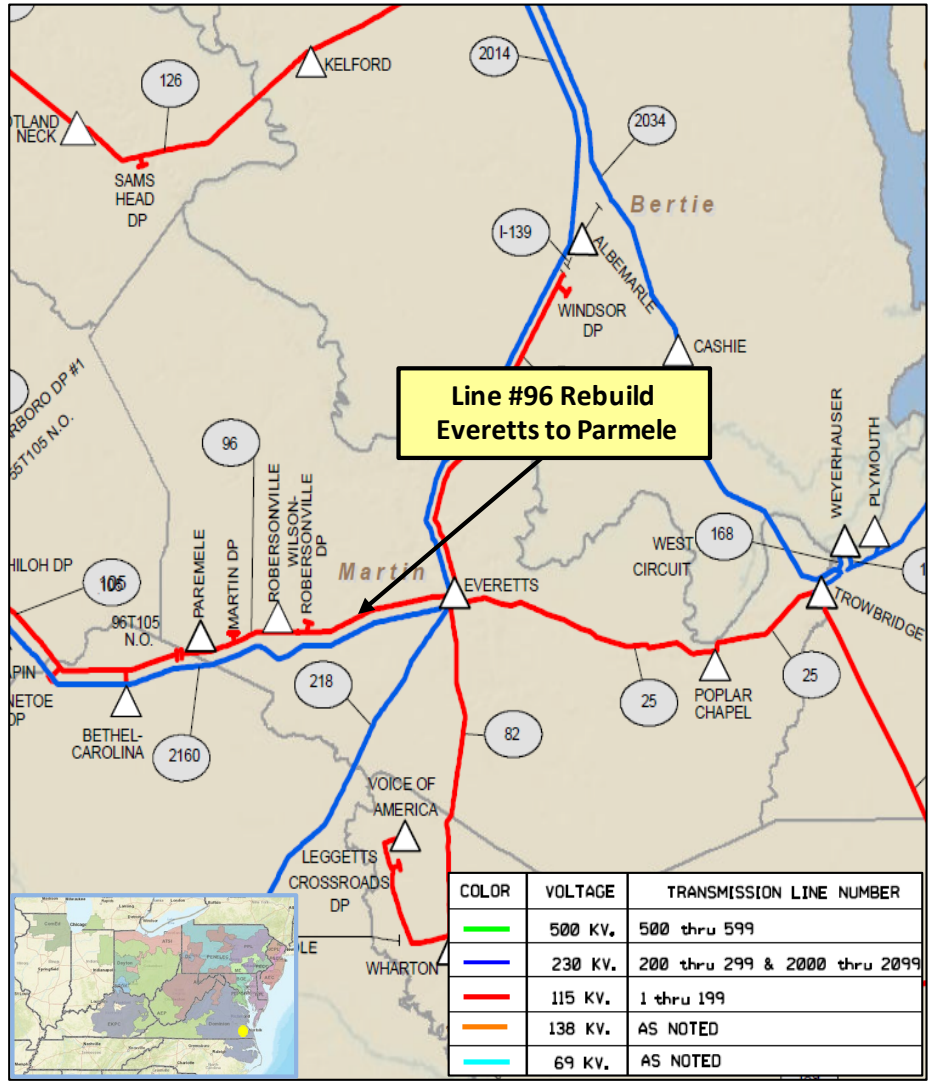
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Dominion Energy has identified a need to replace approximately 12.4 miles of 115kV Line #96 (Everetts to Parmele) based on the Company's End of Life criteria.

- Line #96 was constructed on wood pole structures dating back to 1963.
- A number of structures have been replaced and continue to experience deterioration. Conductor failure has occurred over the last 10 years.
- Industry guidelines indicate equipment life for wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.



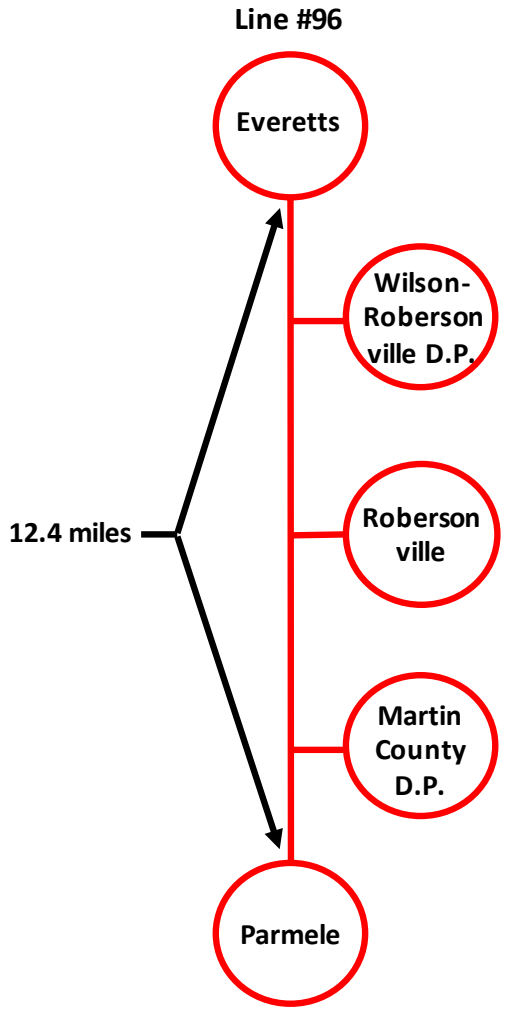
Dominion Transmission Zone M-3 Process
115kV Line #96 – EOL Rebuild

Need Number: DOM-2021-0030
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Rebuild approximately 12.4 miles Line #96 between Everetts and Parmele with current 115kV standards construction practices. New conductor with a minimum normal summer rating of 262 MVA will be used.

Estimated Cost: $27.0M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2618
Project Status: Conceptual
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Sinai 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2021-0033

Process Stage:

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

Previously Presented:

Need – 05/20/2021

Solution – 08/13/2021

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.

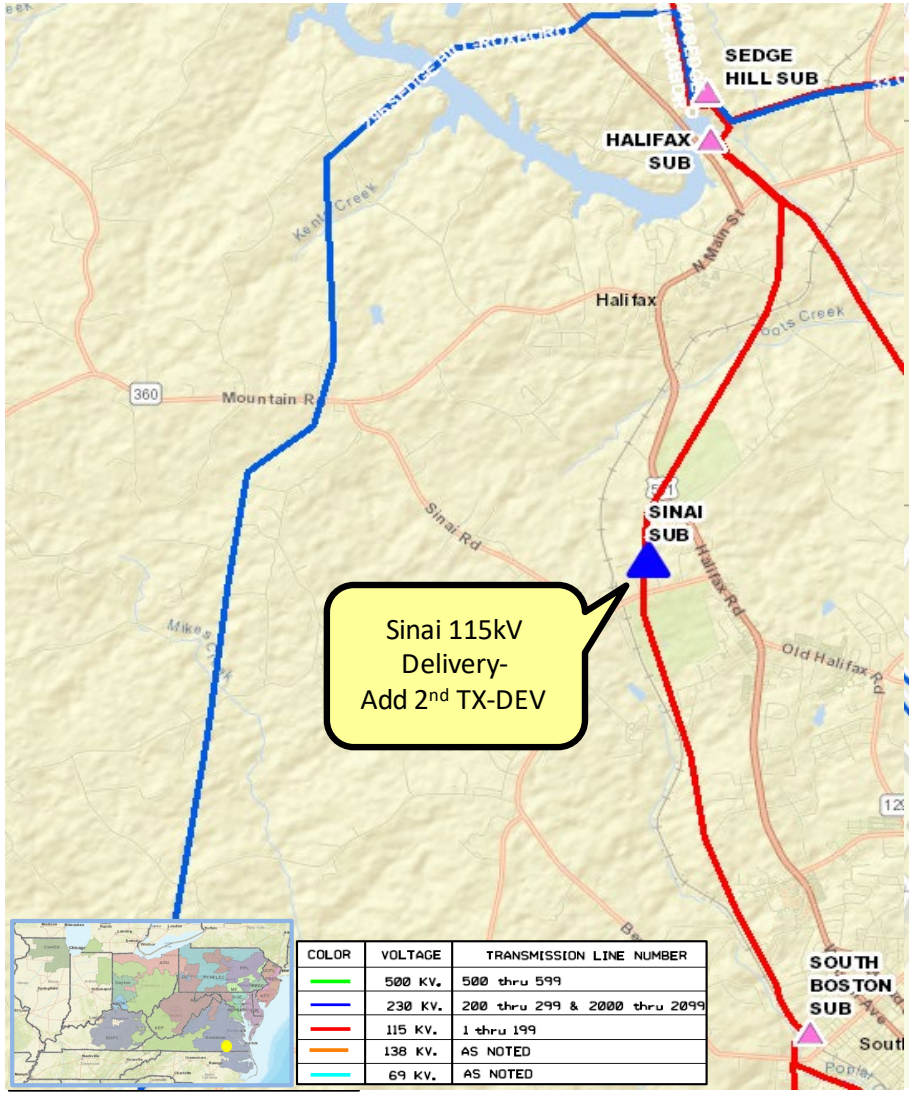
Problem Statement:

DEV Distribution has submitted a DP Request to add a 2nd, 33.6 MVA distribution transformer at Sinai Substation in Halifax County, Virginia. The new transformer is needed for load growth as well as to mitigate load loss for a transformer contingency. Requested in-service date is 11/15/2022.

Projected 2026 load

Summer: 18.8 MW

Winter: 25.2 MW



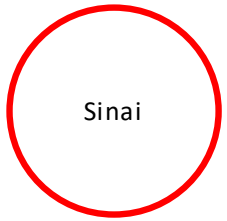
Dominion Transmission Zone M-3 Process
Sinai 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2021-0033
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Install a 1200 Amp, 25kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Sinai.

Estimated Cost: $0.5 M
Projected In-Service: 11/15/2022
Supplemental Project ID: s2629
Project Status: Engineering
Model: 2025 RTEP



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

Need Number: DOM-2021-0034
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 05/11/2020

Solution – 06/08/2021

Project Driver:

Customer Service

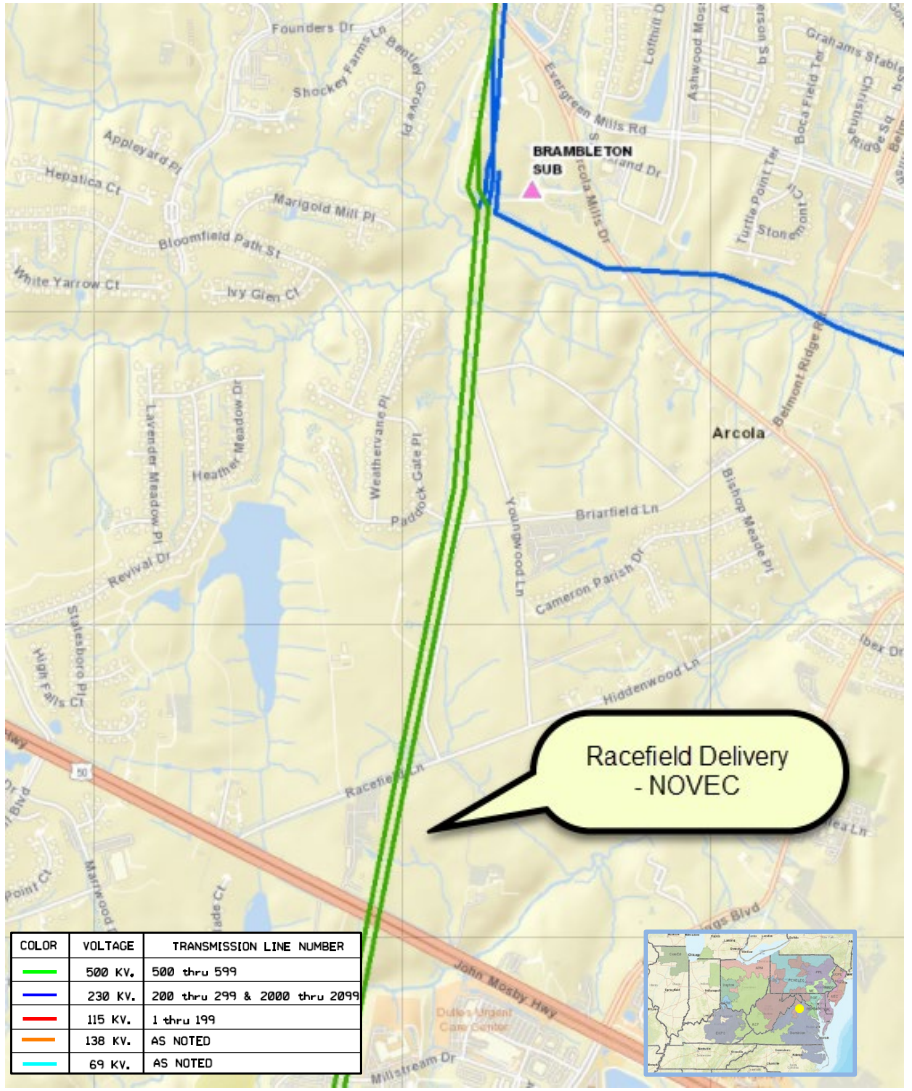
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

NOVEC has submitted a DP Request for a new substation (Racefield) in Loudoun County with a total load in excess of 100MW by 2029. Requested in-service date is 07/24/2023.

Projected 2026 load

Summer: 43.0 MW
Winter: 40.0 MW



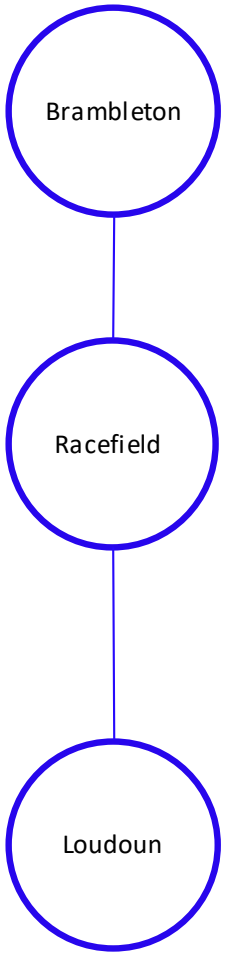
Dominion Transmission Zone M-3 Process
Racefield 230kV Delivery - DEV

Need Number: DOM-2021-0034
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Interconnect the new substation by cutting and extending Line #2094 (Brambleton-Loudoun) to the proposed Racefield Substation. Lines to terminate in a 230kV four-breaker ring arrangement.

Estimated Cost: $12.0 M
Projected In-Service: 07/24/2023
Supplemental Project ID: s2628
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Plaza 230kV Delivery - Upgrade TX - DEV

Need Number: DOM-2021-0035
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 04/06/2020

Solution – 05/11/2021

Project Driver:

Customer Service

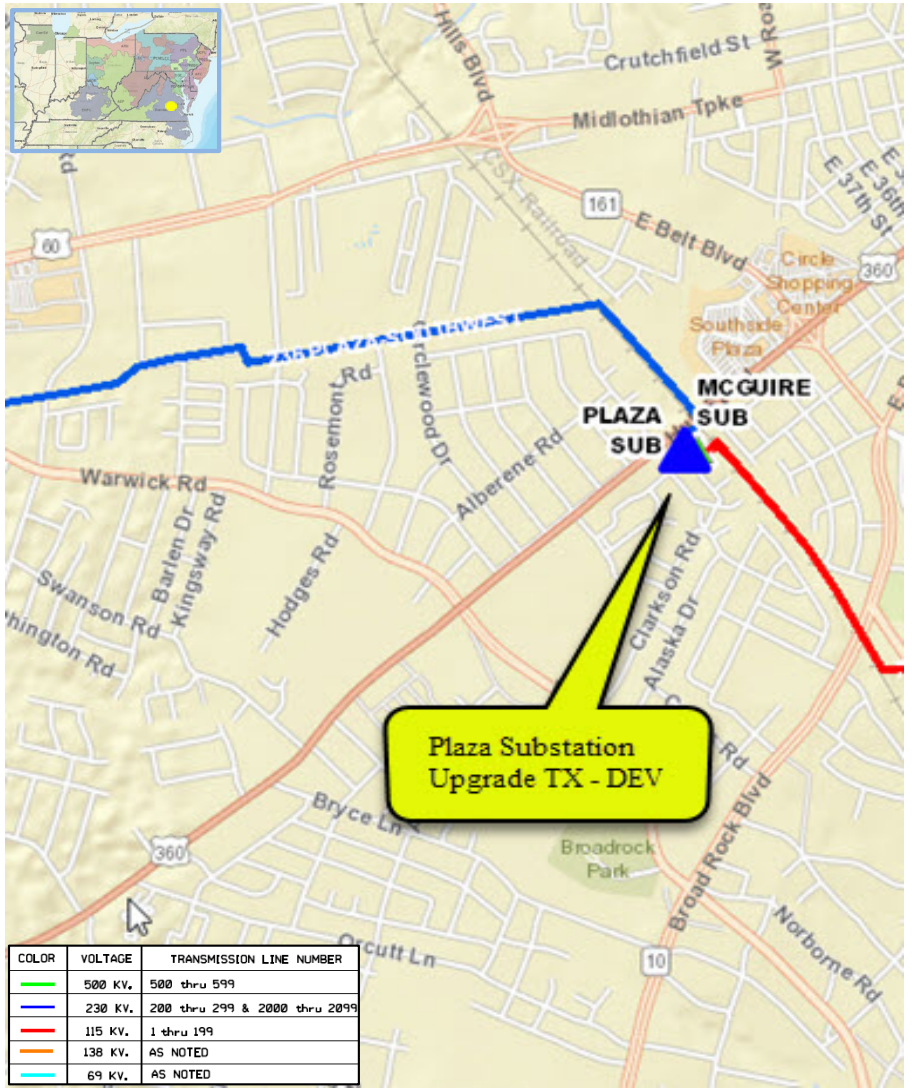
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request to upgrade the distribution transformer at Plaza Substation in the City of Richmond. The transformer upgrade is being driven by a poor Transformer Health Assessment (THA) score. Requested in-service date is 12/31/2021.

Projected 2026 load

Summer: 40.0 MW
Winter: 45.8 MW



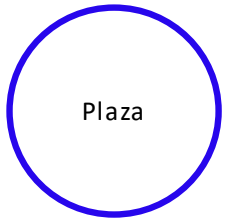
Dominion Transmission Zone M-3 Process
Plaza 230kV Delivery - Upgrade TX - DEV

Need Number: DOM-2021-0035
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Install a 1200 Amp, 20 kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to support the new transformer at Plaza.

Estimated Cost: $0.5 M
Projected In-Service: 12/31/2021
Supplemental Project ID: s2627
Project Status: Engineering
Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Replace Fredericksburg TX #7 - DEV

Need Number: DOM-2021-0040

Process Stage:

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

Previously Presented:

Need – 05/11/2021

Solution – 06/08/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

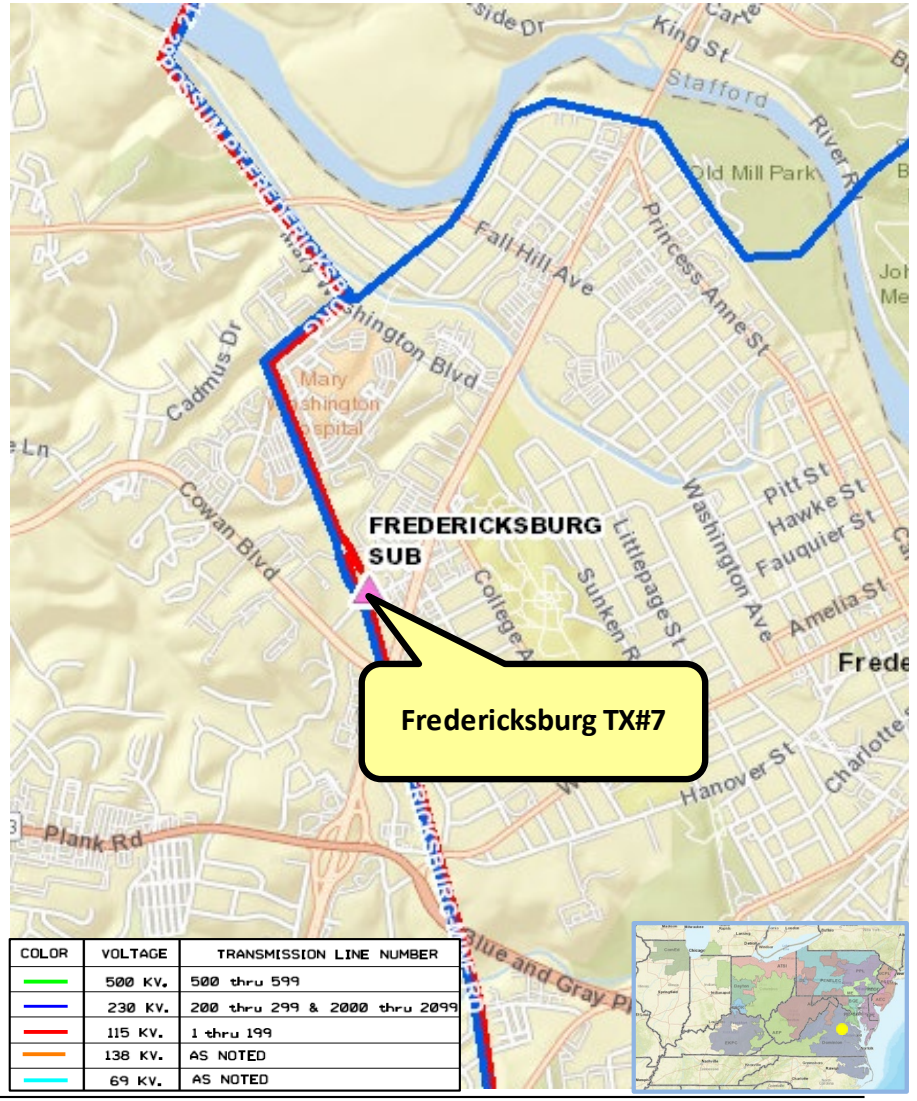
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Fredericksburg Tx#7 is a 168 MVA, 230/115/13.2 kV transformer bank manufactured in 1984. The original transformer failed in service and was rebuilt in 2001. This transformer bank has been identified for replacement based on Dominion's transformer health assessment (THA) process. Detailed drivers include:

- 37 service years in total (over 30 years). In service over 20 years after rebuild. THA score less than 80.
- Reduced BIL ratings (2 levels below current standard). Tertiary winding design not meeting current MVA requirement
- Legacy core steel technology with high loss. Bushings have not yet been upgraded to polymer type for resiliency and safety, like the rest of 230/115 kV fleet.
- Transformer paint coating is degrading.
- Oil DGA shows high CO and CO2 levels since 2017 indicating potential breakdown of dielectric paper insulation on main current carrying conductors inside the transformer.



Dominion Transmission Zone M-3 Process
Replace Fredericksburg TX #7 - DEV

Need Number: DOM-2021-0040
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:
Replace Fredericksburg TX#7 with a new three-phase, 230-115kV, 224 MVA unit. Replace high side switches, H744M and H644M, with new circuit breakers or switchers to provide fault interruption capability. Upgrade high side bus relay panels to current standards. Include any other ancillary equipment (arresters, switches, relays, etc.) as needed.

Estimated Cost: $4.0 M
Projected In-Service: 11/30/2023
Supplemental Project ID: s2604
Project Status: Conceptual
Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Replace Harrisonburg TX#4 - DEV

Need Number: DOM-2021-0041

Process Stage:

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

Previously Presented:

Need – 05/11/2021

Solution – 06/08/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

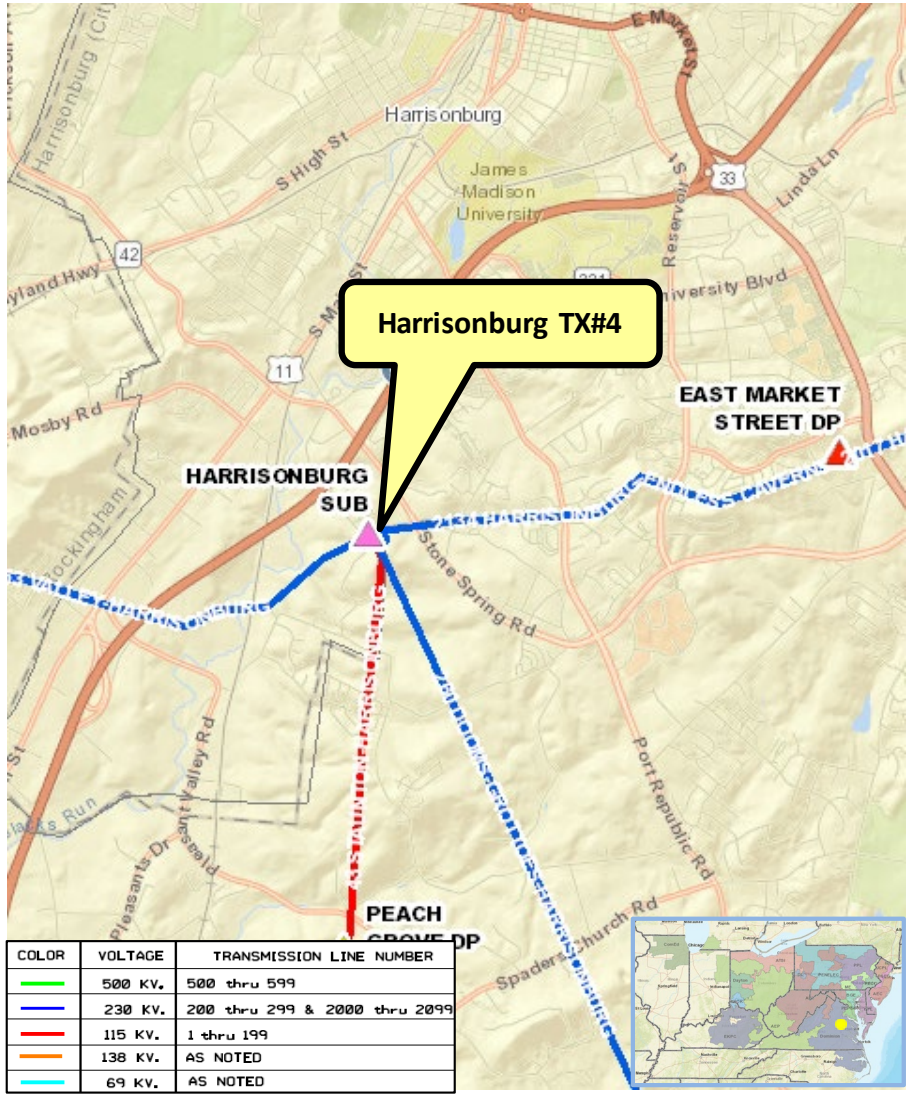
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Harrisonburg TX#4 is a 112 MVA, 230/69/13.2 kV transformer bank consisting of three single-phase units that were manufactured in 1984. This transformer bank has been identified for replacement based on the results of Dominion's transformer health assessment (THA) process. Detailed drivers include:

- Age (>30 years old). THA score less than 80 for two of the three single-phase units.
- Reduced BIL ratings (3 levels below standard).
- Legacy core steel technology with high no-load loss.
- Degraded porcelain type bushings
- Oil DGA indicates high levels of Ethane and some Ethylene generated by high-energy arcing in two of the three units. These are signs of weakened or damaged insulations.
- Transformer paint coating is degrading.



Dominion Transmission Zone M-3 Process
Replace Harrisonburg TX#4 - DEV

Need Number: DOM-2021-0041
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace Harrisonburg TX#4 with a new three-phase, 230/69/13.2 kV, 168 MVA unit. Include other ancillary equipment (arresters, switches, relays, etc.) as needed.

Estimated Cost: $3.2 M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2606
Project Status: Engineering
Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Replace Edinburg TX#3 - DEV

Need Number: DOM-2021-0042

Process Stage:

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

Previously Presented:

Need – 05/20/2021

Solution – 06/15/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

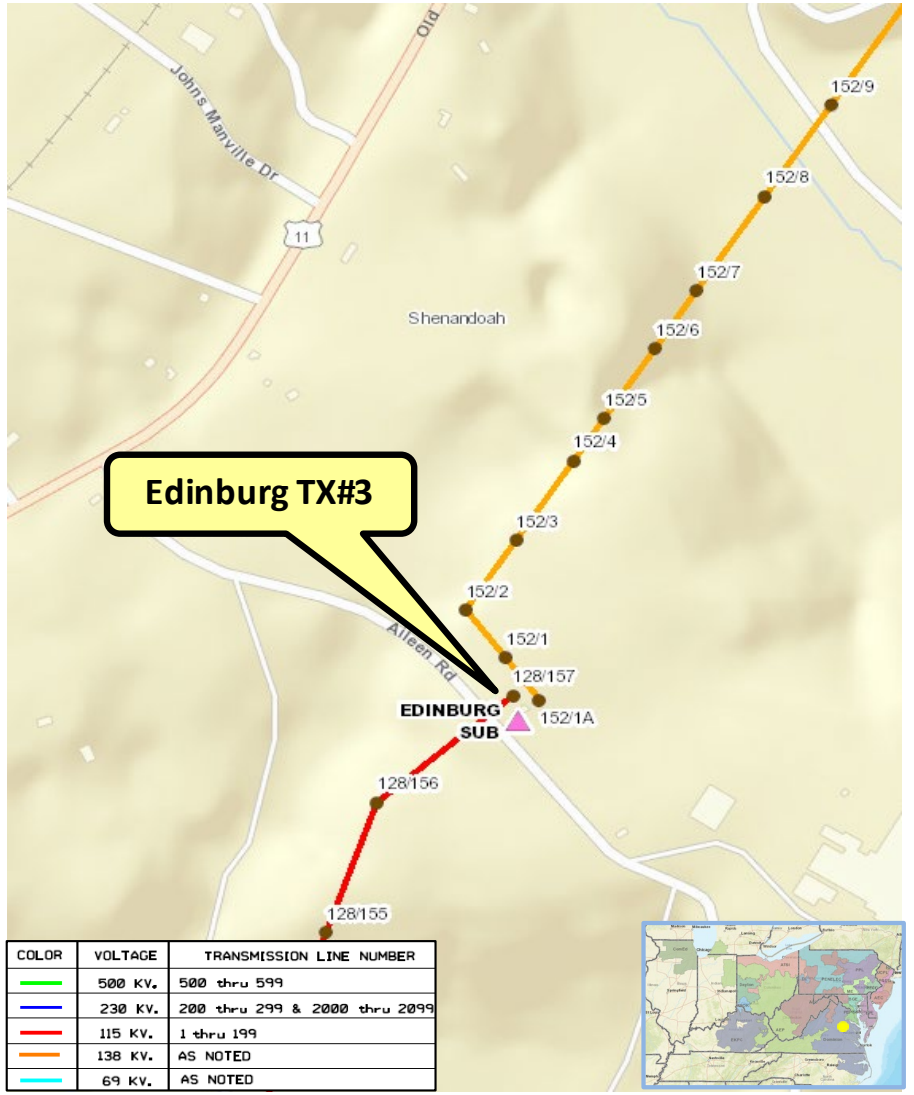
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Edinburg TX#3 is a 112 MVA, 138/115/13.2 kV transformer bank that was manufactured in 1986. This transformer bank has been identified for replacement based on the results of Dominion's transformer health assessment (THA) process. Detailed drivers include:

- Age (>30 years old).
- Reduced BIL ratings (2 levels below standard).
- Tertiary winding design not meeting current MVA requirement for loading.
- Degraded porcelain type bushings.
- Oil DGA indicates high CO and CO2 levels; potential break down of dielectric paper insulation on main current carrying conductors inside the transformer.
- Transformer paint is not in good shape.
- THA score less than 80.



Dominion Transmission Zone M-3 Process
Replace Edinburg TX#3 - DEV

Need Number: DOM-2021-0042
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace Edinburg TX#3 with a new three-phase, 138/115/13.2 kV, 112 MVA unit.
Include other ancillary equipment (arresters, switches, relays, etc.) as needed.

Estimated Cost: $3.0 M
Projected In-Service: 12/31/2022
Supplemental Project ID: s2603
Project Status: Engineering
Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Replace Harrisonburg TX#6 - DEV

Need Number: DOM-2021-0043

Process Stage:

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

Previously Presented:

Need – 05/11/2021

Solution – 06/08/2021

Project Driver:

Equipment Material Condition, Performance, and Risk

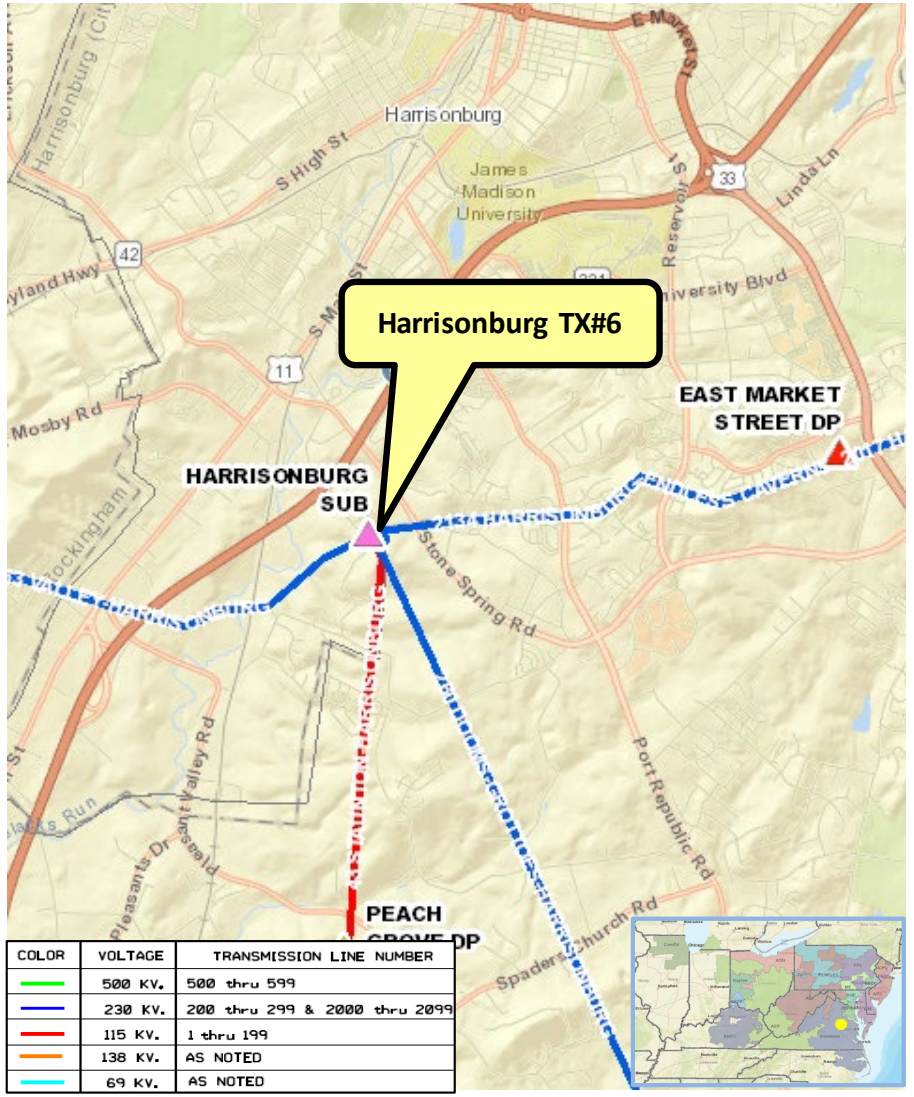
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2020.

Problem Statement:

Harrisonburg TX#6 is a 112 MVA, 230/69/13.2 kV transformer bank consisting of three single-phase units that were manufactured in 1979. This transformer bank has been identified for replacement based on the results of Dominion's transformer health assessment (THA) process. Detailed drivers include:

- Age (>30 years old).
- Reduced BIL ratings (3 levels below standard).
- Legacy core steel technology with high no-load loss.
- Degraded porcelain type bushings.
- Oil DGA indicates high levels of CO_2 in one unit; These are signs of deterioration of paper dielectric insulation.
- Transformer paint coating is degrading.
- THA score less than 80 for two of the three single-phase units.



Dominion Transmission Zone M-3 Process
Replace Harrisonburg TX#6 - DEV

Need Number: DOM-2021-0043
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

Replace Harrisonburg TX#6 with a new three-phase, 230/69/13.2 kV, 168 MVA unit. Include other ancillary equipment (arresters, switches, relays, etc.) as needed.

Estimated Cost: $3.2 M
Projected In-Service: 12/31/2023
Supplemental Project ID: s2607
Project Status: Engineering
Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
NIVO - Add 4th TX - DEV

Need Number: DOM-2021-0048
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Previously Presented:

Need – 07/13/2021

Solution – 08/10/2021

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 to add the 4th distribution transformer at NIVO Substation in Loudoun County. The new transformer is being driven by continued load growth in the area. Requested in-service date is 09/01/2022.

Projected 2026 load

Summer: 158.0 MW
Winter: 157.0 MW

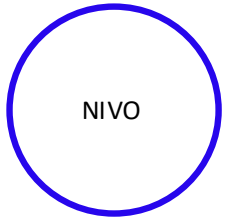
Dominion Transmission Zone M-3 Process
NIVO - Add 4th TX - DEV

Need Number: DOM-2021-0048
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 11/12/2021

Selected Solution:

- Expand the substation to include a 4-breaker 230kV ring bus arrangement to comply with the Company's Facility Interconnection Requirements (Section 7.2).
- Install a 1200 Amp, 50kAIC circuit switcher and associated equipment (bus, relaying, etc.) to feed the new transformer at NIVO.

Estimated Cost: $7.0 M
Projected In-Service: 09/01/2022
Supplemental Project ID: s2619
Project Status: Engineering
Model: 2025 RTEP



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.

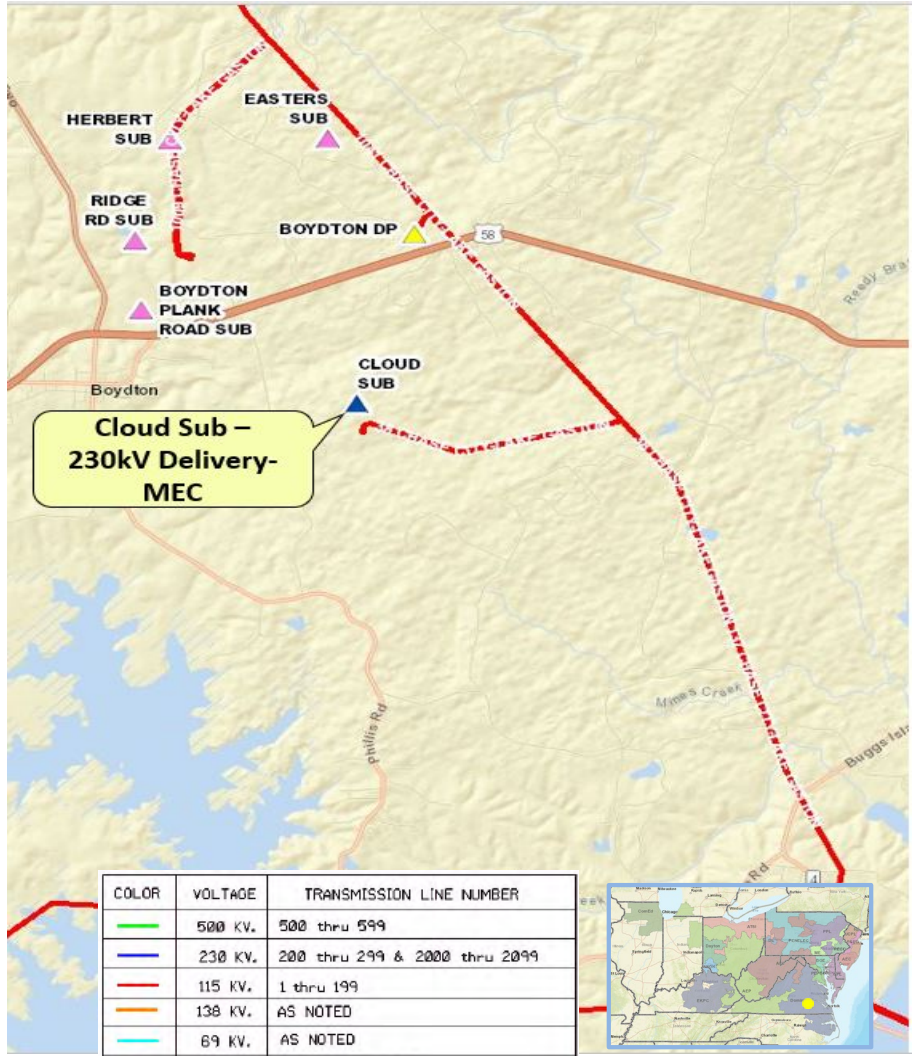
Problem Statement:

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



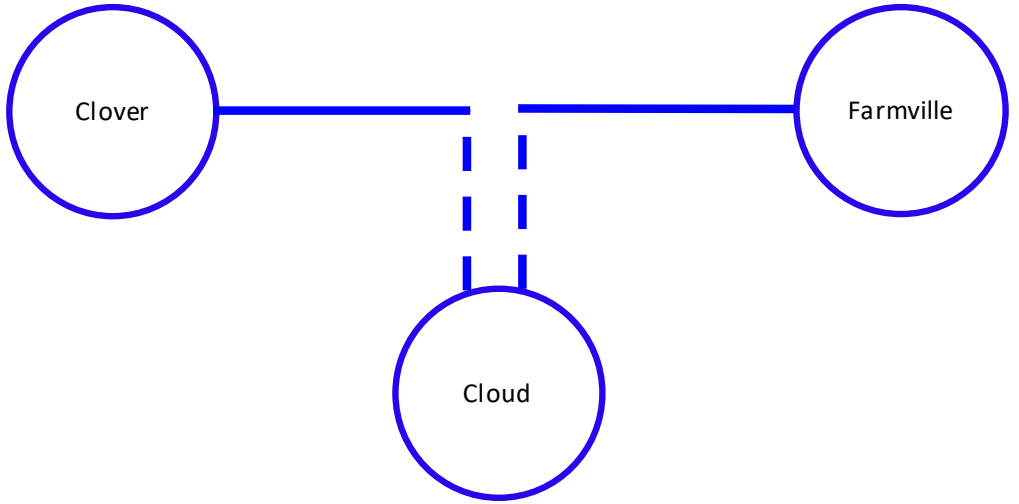
Dominion Transmission Zone M-3 Process
Cloud 230kV Delivery - MEC

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.

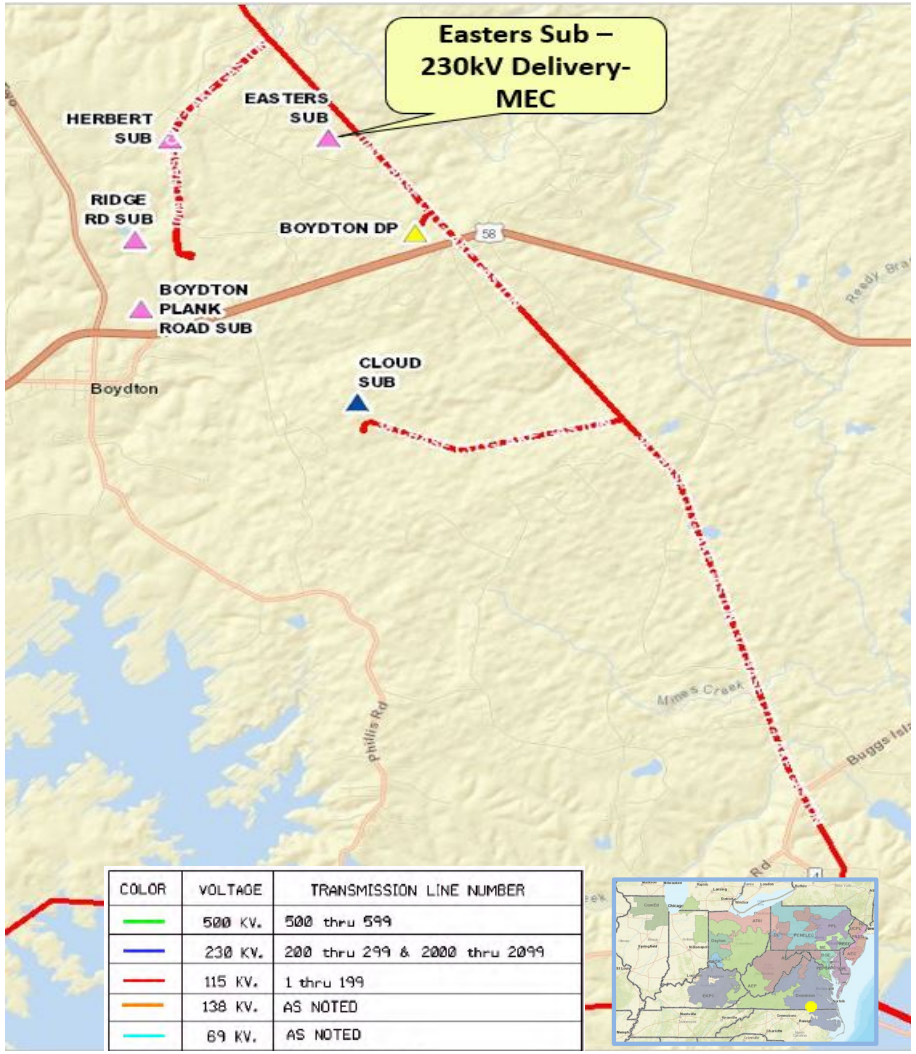
Problem Statement:

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)

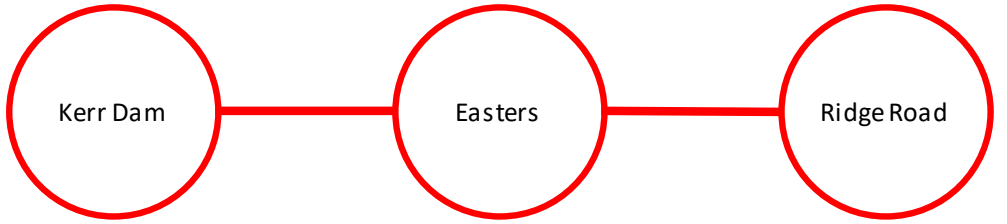
Projected In-Service: 11/01/2021 (Stage 1); 06/01/2024 (Stage 2)

Supplemental Project ID: s2602.1

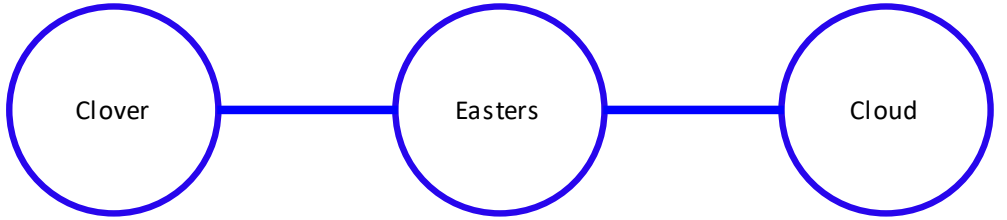
Project Status: Engineering

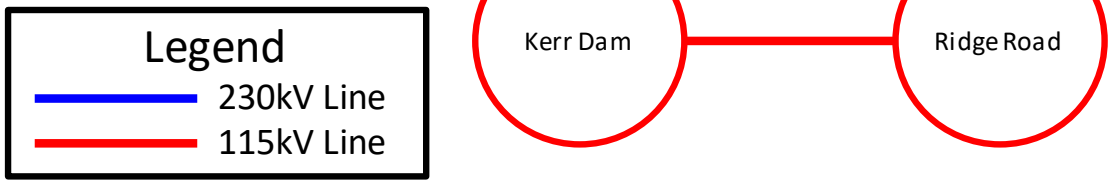
Model: 2025 RTEP

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.

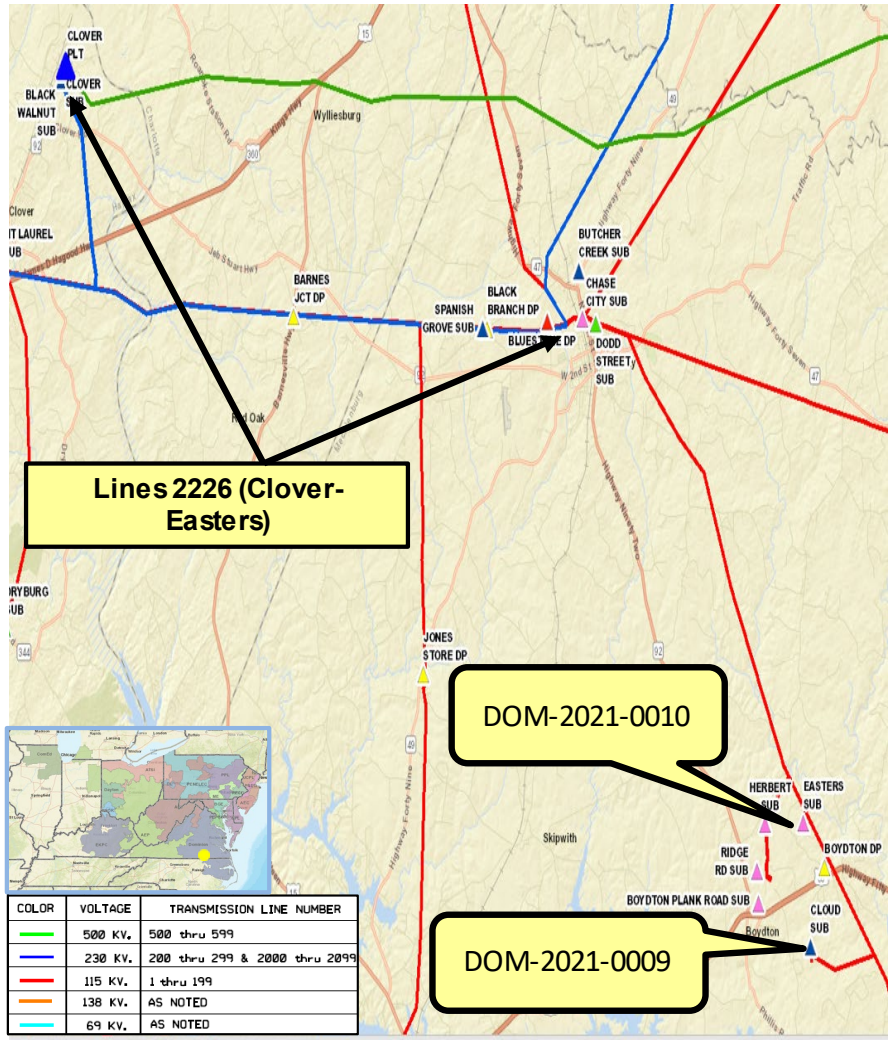
Problem Statement:

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 566 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.

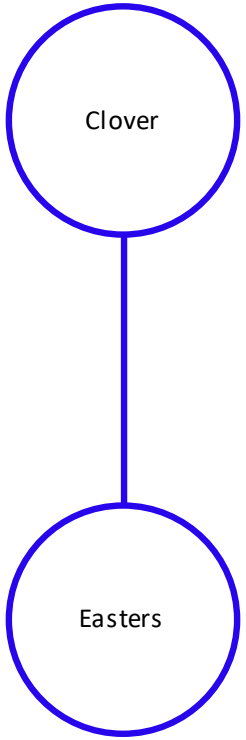


Dominion Transmission Zone M-3 Process
Do No Harm (DNH) Analysis

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.

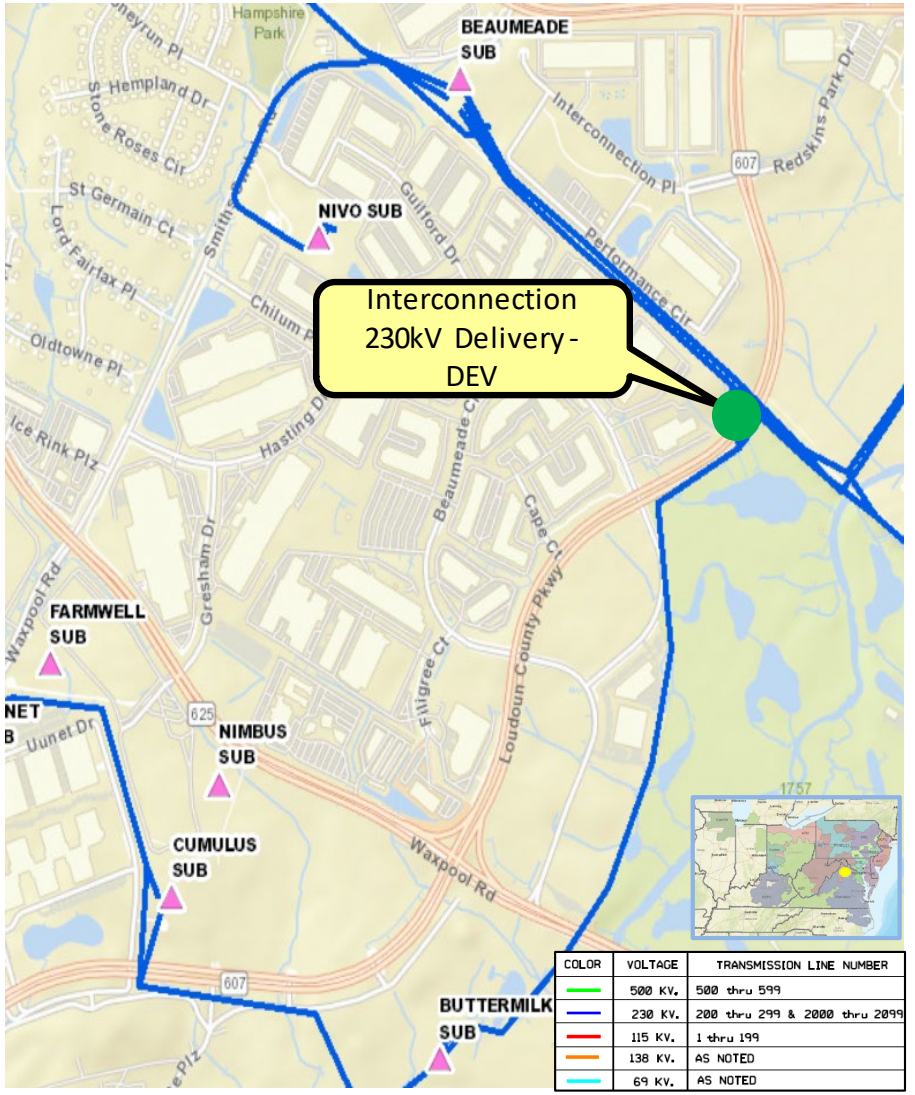
Problem Statement:

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



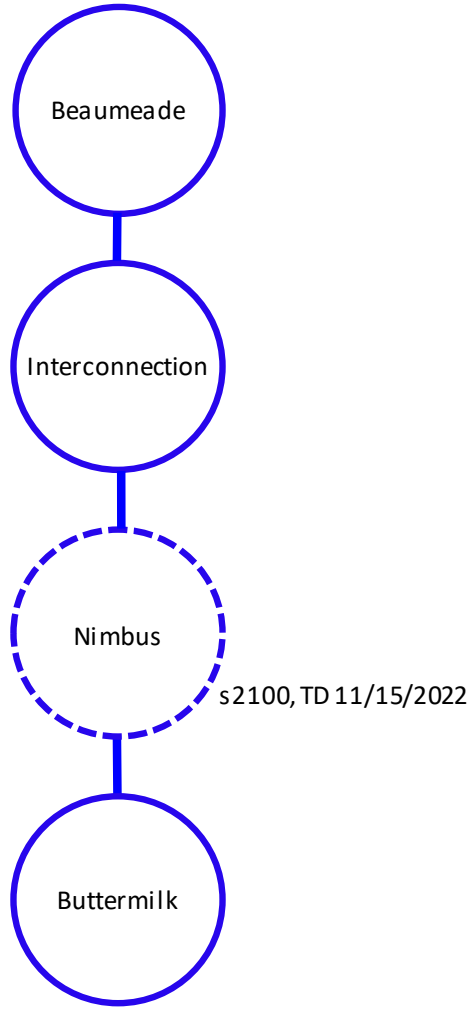
Dominion Transmission Zone M-3 Process Interconnection 230kV Delivery - DEV

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:

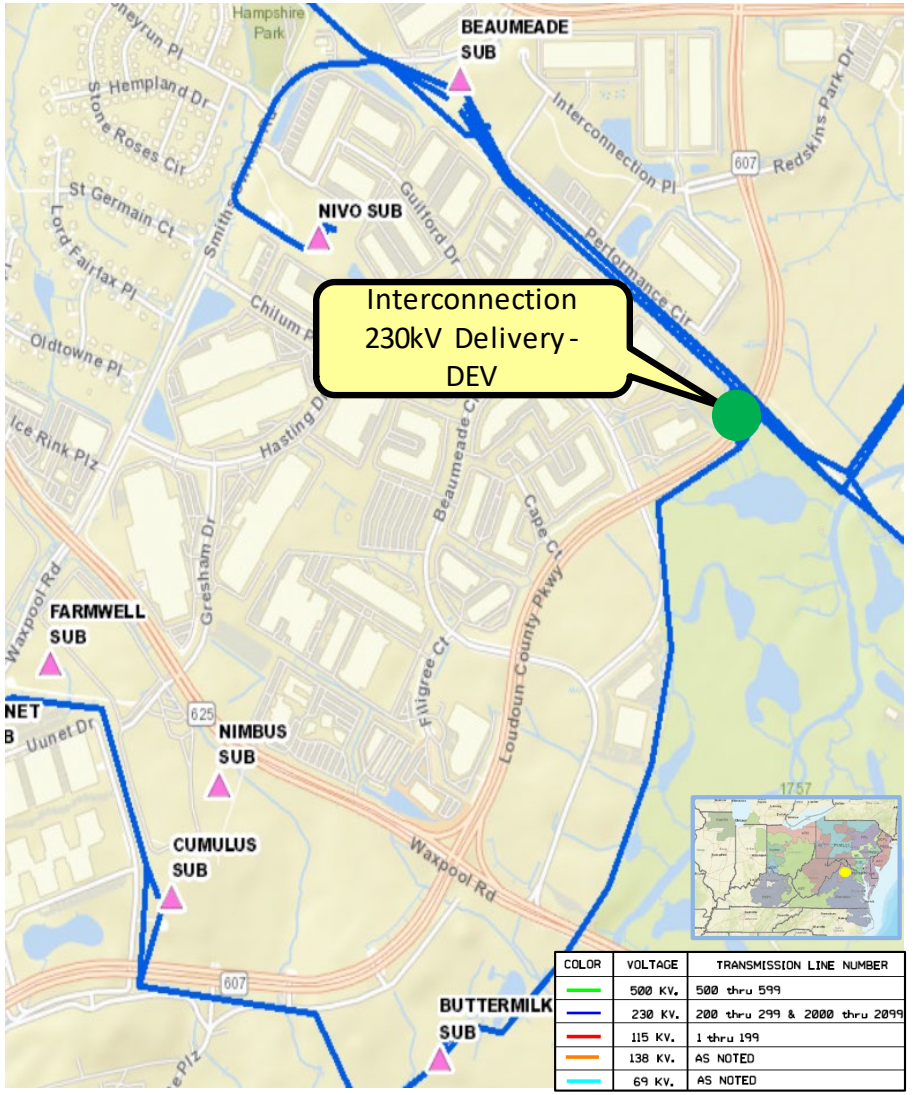
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

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

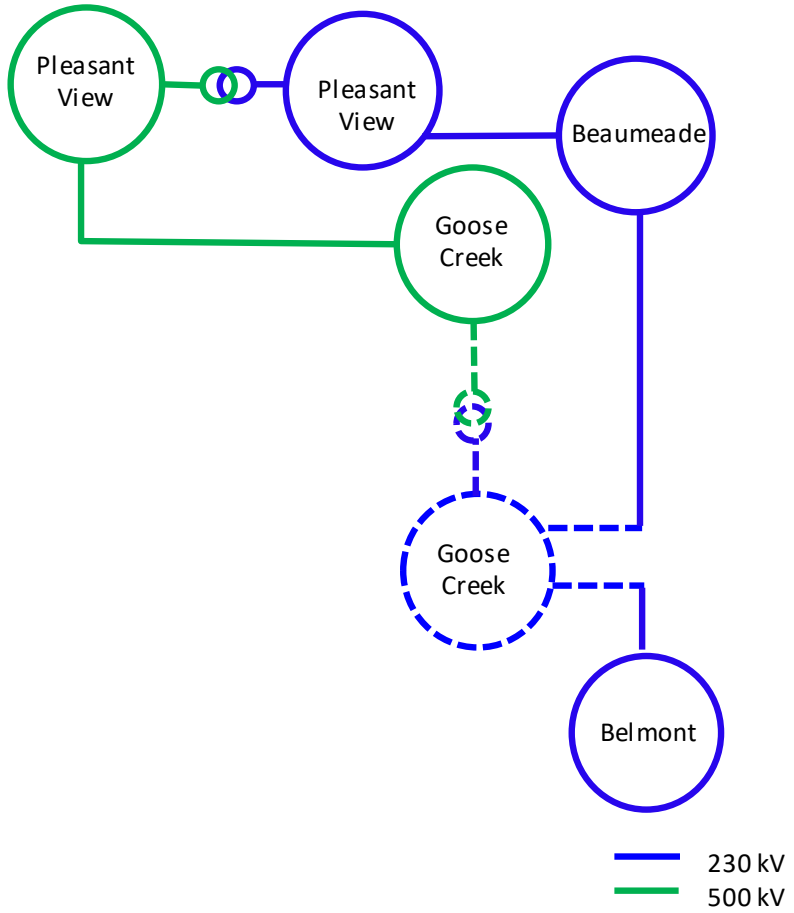
Process Stage:

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

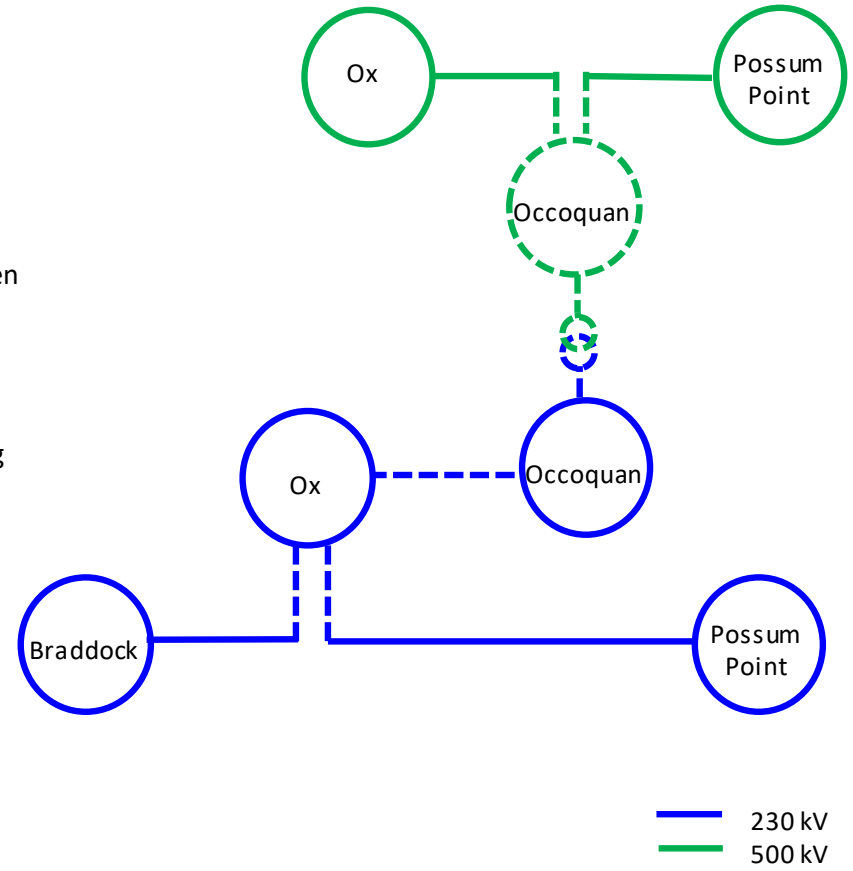
Process Stage:

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

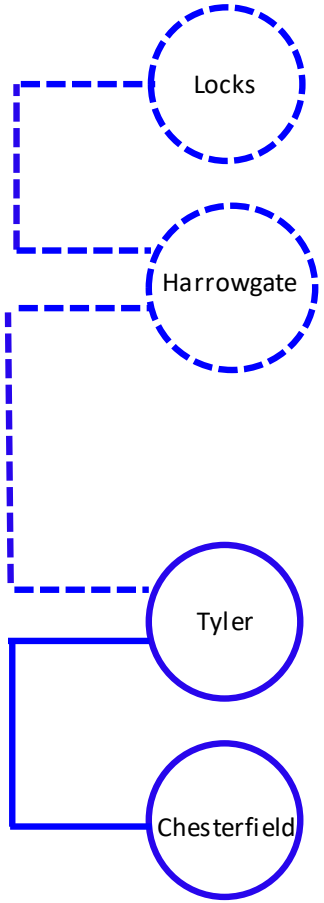
Projected In-Service: 12/15/2026

Supplemental Project ID: s2609.8

Project Status: Engineering

Model: 2025 RTEP

Line #205



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:

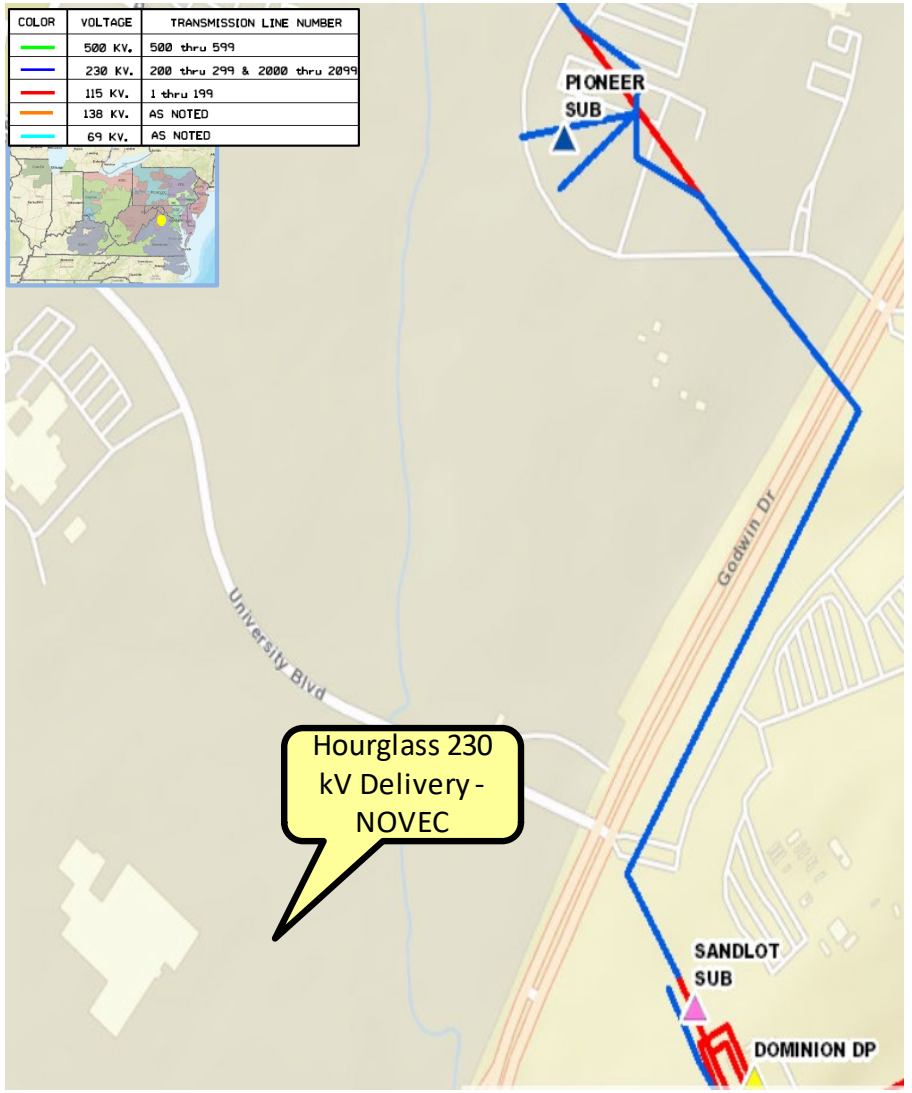
NOVEC has submitted a DP Request for a new substation (Hourglass) to serve a data center complex in Prince William County with a total load in excess of 100 MW by 2025.

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

Projected 2026 load

Summer: 114.7 MW

Winter: 114.6 MW

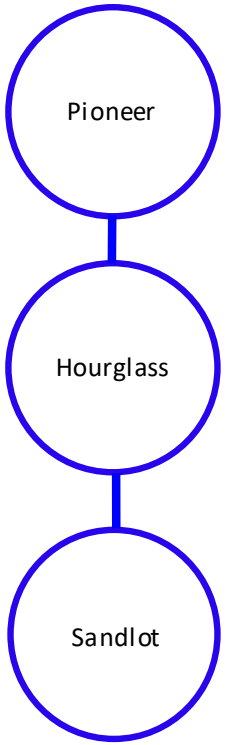


Dominion Transmission Zone M-3 Process
Hourglass 230kV Delivery – NOVEC

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:

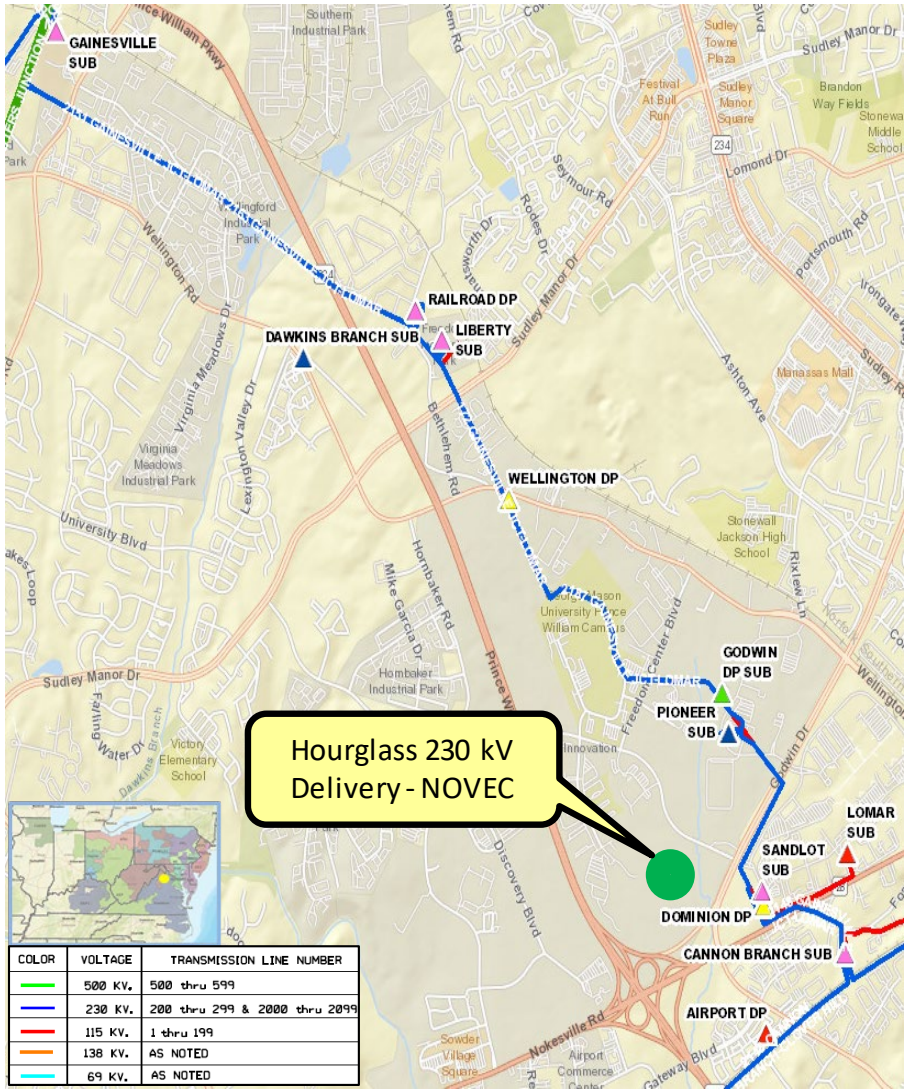
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

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

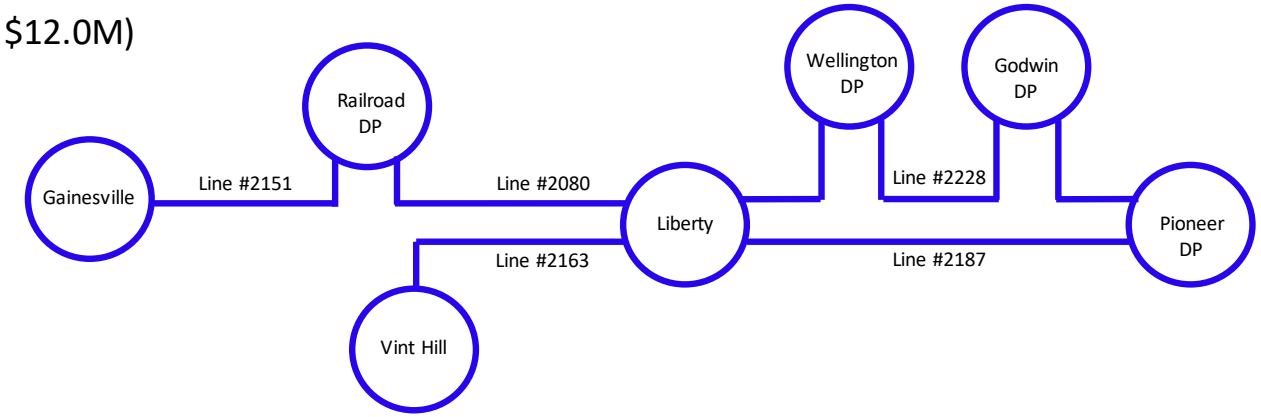
Need Number: DOM-2021-0020-DNH
Process Stage:
Submission of Supplemental Project for Inclusion in the Local Plan – 12/10/2021

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



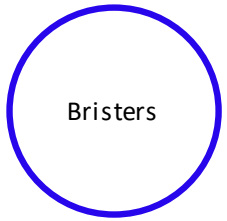
Dominion Transmission Zone M-3 Process
Do No Harm (DNH) Analysis

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

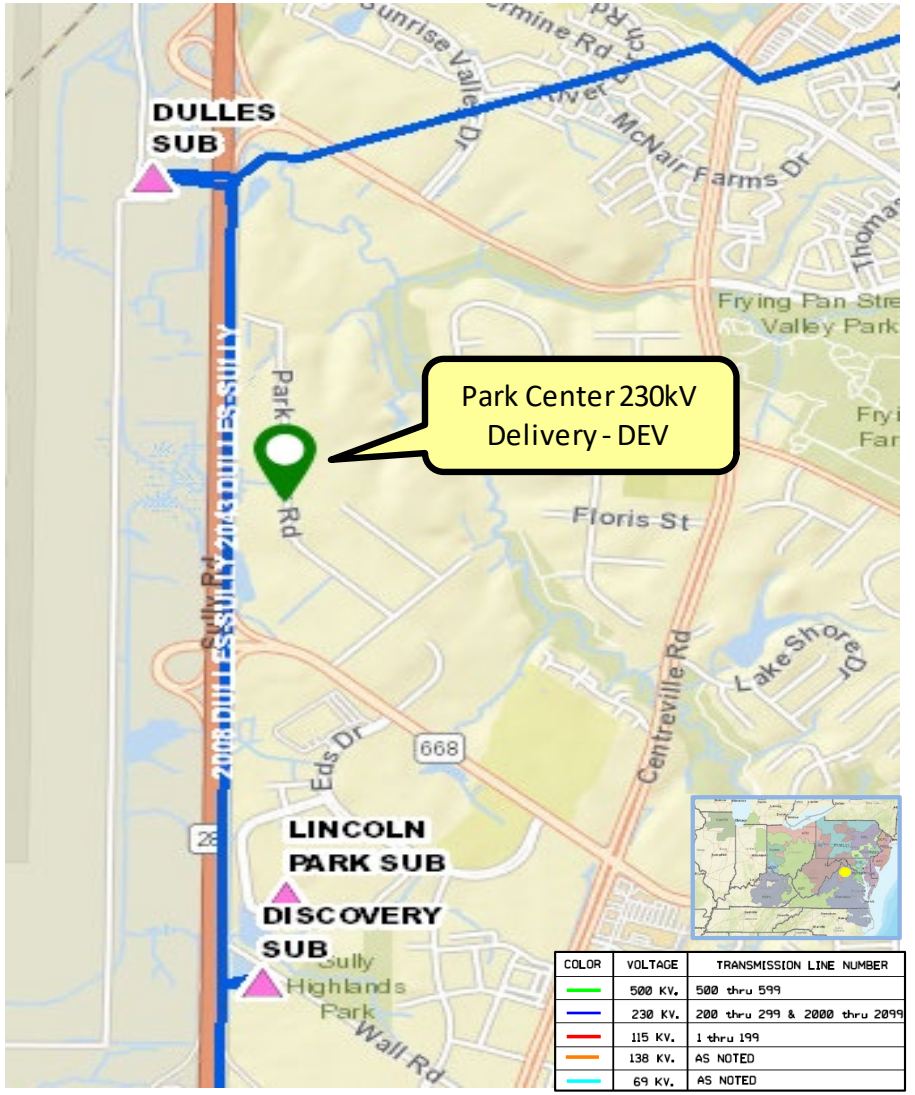
Specific Assumption Reference:
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

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



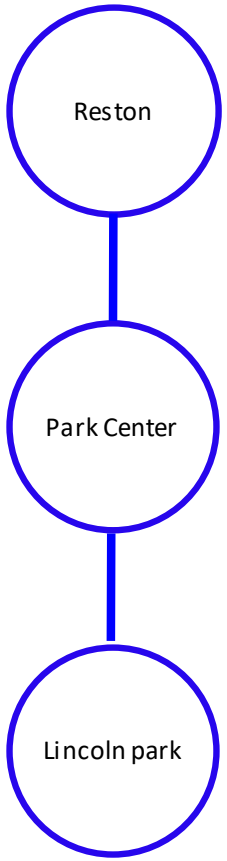
Dominion Transmission Zone M-3 Process
Park Center 230kV Delivery - DEV

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.

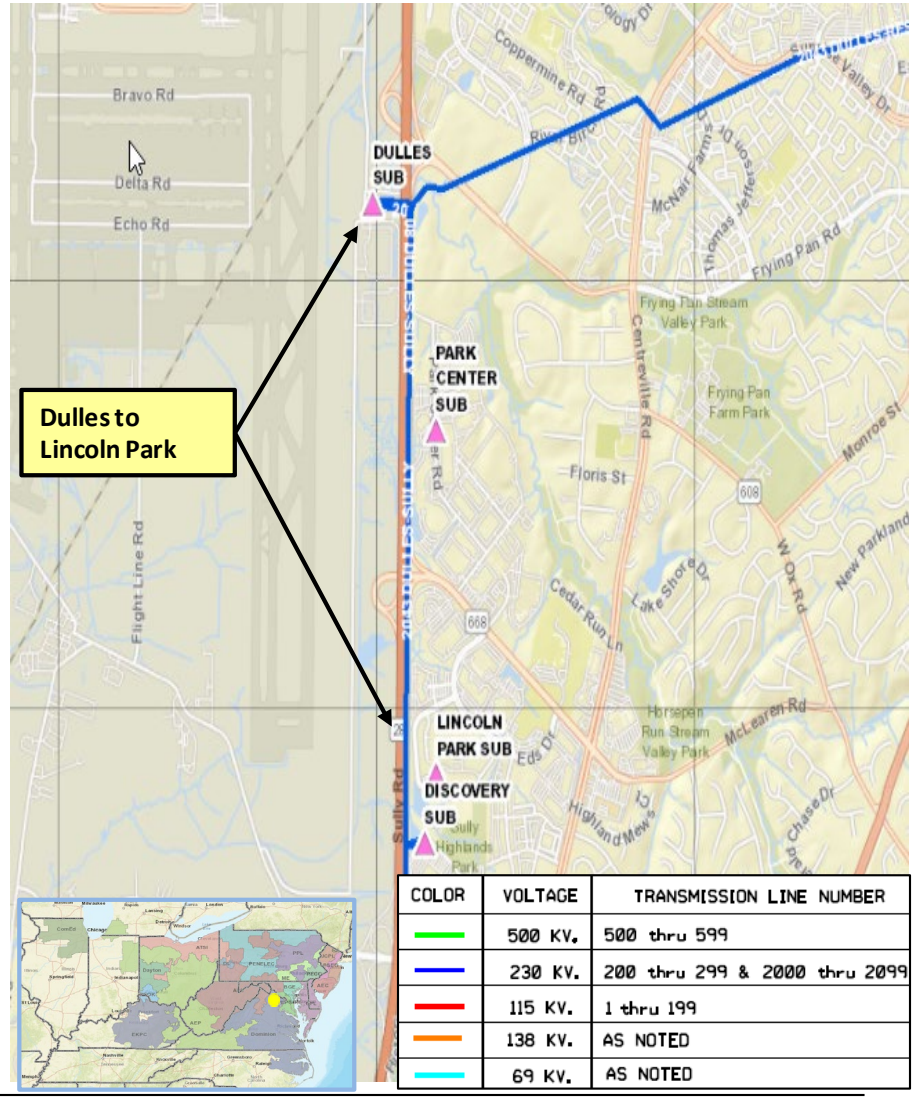
Problem Statement:

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.

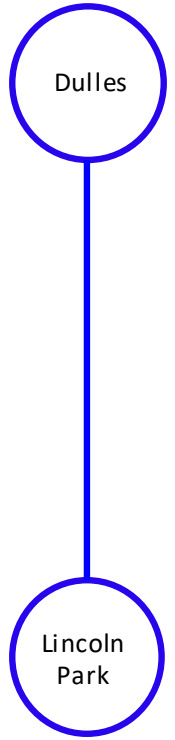


Dominion Transmission Zone M-3 Process
Do No Harm (DNH) Analysis

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

Revision History

07/01/2021 – V1 – Local Plan posted to pjm.com for s2340, s2341, s2495-s2507.
11/12/2021 – V2 – Local Plan posted to pjm.com for s2598-s2600, s2603-s2607, s2610-s2621, s2623-s2630.1, s2630.2.
11/18/2021 – V3 – Updated DOM-2021-0024 (s2599) on slide 65 to reflect the corrected breaker rating and cost information: (40kA -> 50kA & $4.5M -> $5.5M).
12/28/2021 – V4 – Local Plan posted to pjm.com for s2601, s2602.1-s2602.2, s2609.1-s2609.9, s2608.1-s2608.7, s2622.1-s2622.2.
01/03/2022 – V5 – Updated DOM-2021-0016-DNH (s2609.4) on slide 103 to reflect the corrected transformer rating: (1400MVA -> 1440MVA).