

# Dominion Supplemental Projects

Transmission Expansion Advisory  
Committee  
April 30, 2024

# Needs

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0032

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

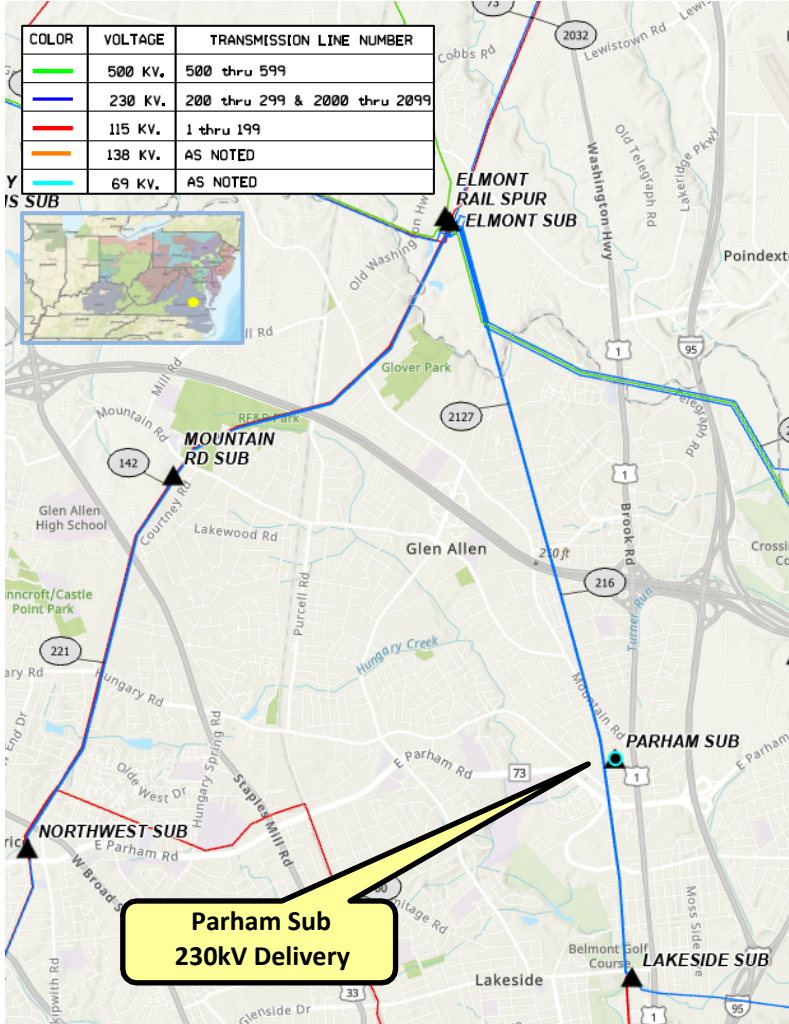
**Specific Assumption References:**

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 (Parham) to serve a mixed-use development in Henrico County with a total load under 100 MW. The requested in-service date is Q2 2026.

Initial In-Service Load	Projected 2029 Load
Summer: 43.37 MW Winter: 31.7 MW	Summer: 53.7 MW Winter: 41.7 MW



# Dominion Transmission Zone: Supplemental Operational Flexibility and Efficiency

**Need Number:** DOM-2024-0035

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Operational Flexibility and Efficiency

**Specific Assumption References:**

See details on Operational Flexibility and Efficiency in Dominion’s Planning Assumptions presented in December 2023.

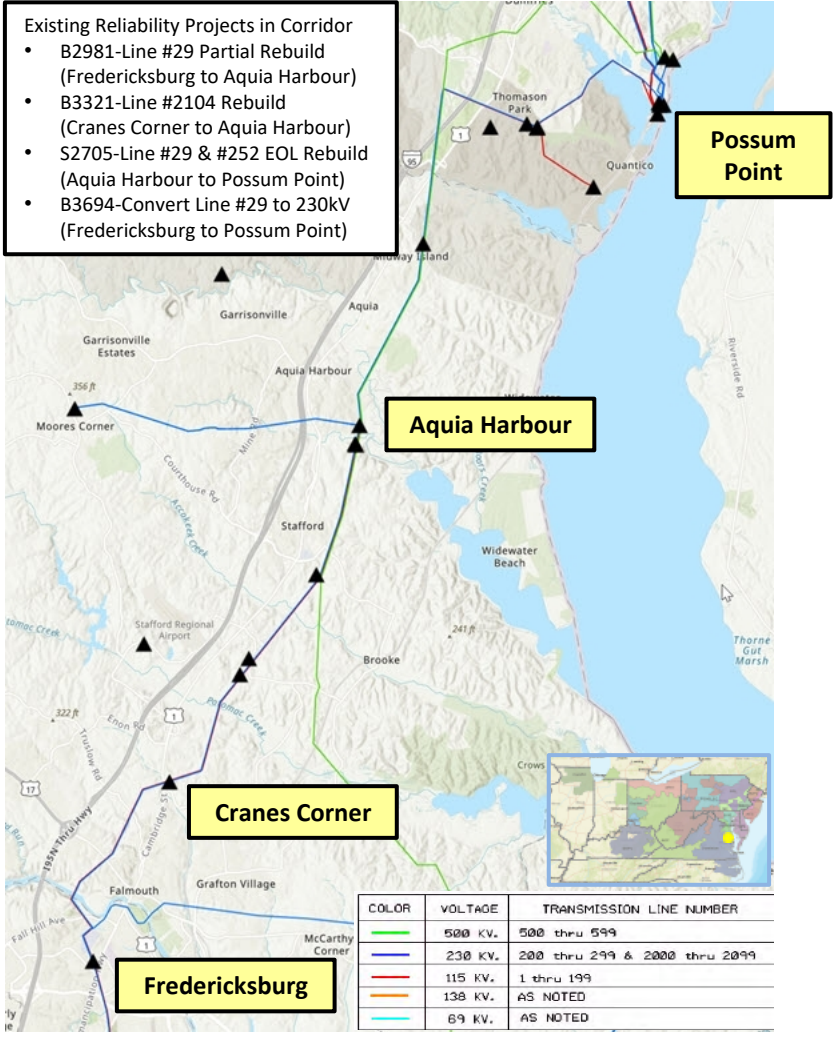
**Problem Statement (page 1 of 2):**

Multiple projects have been developed to address reliability violations in the Fredericksburg to Possum Point corridor, resulting in a majority of the corridor being rebuilt over the next 3-4 years so that two, 230kV transmission lines will be available to support existing network flows and to interconnect new customer load. These include baseline projects b2981, b3321, b3694 and supplemental project s2705. There is a need to reevaluate options to maximize use of the existing ROW and the planned upgrades while minimizing chances of wreck and rebuild work in the near future.

Delivery Point (DP) Requests for thirteen new substations to serve data center load in the corridor have been submitted by DEV Distribution and are in various stages of evaluation/development. Load projections for the DP’s currently indicate over 1700 MW of new load by year 2029, growing to over 3000 MW by year 2032.

Additionally, in the corridor south of Fredericksburg Substation, DP Requests for fourteen new substations have been received with projected loads exceeding 2000 MW by year 2029 and 3000 MW by year 2032.

Without diverse transmission sources to serve the new substations, it is anticipated that initial facility interconnections with the two, 230kV transmission lines will have to be reworked as additional transmission lines are required in the corridor to address new reliability violations. This is expected to result in customer interconnection delays, increased outage durations, and increased overall cost.



# Dominion Transmission Zone: Supplemental Operational Flexibility and Efficiency

**Need Number:** DOM-2024-0035

**Process Stage:** Need Meeting 04/30/2024

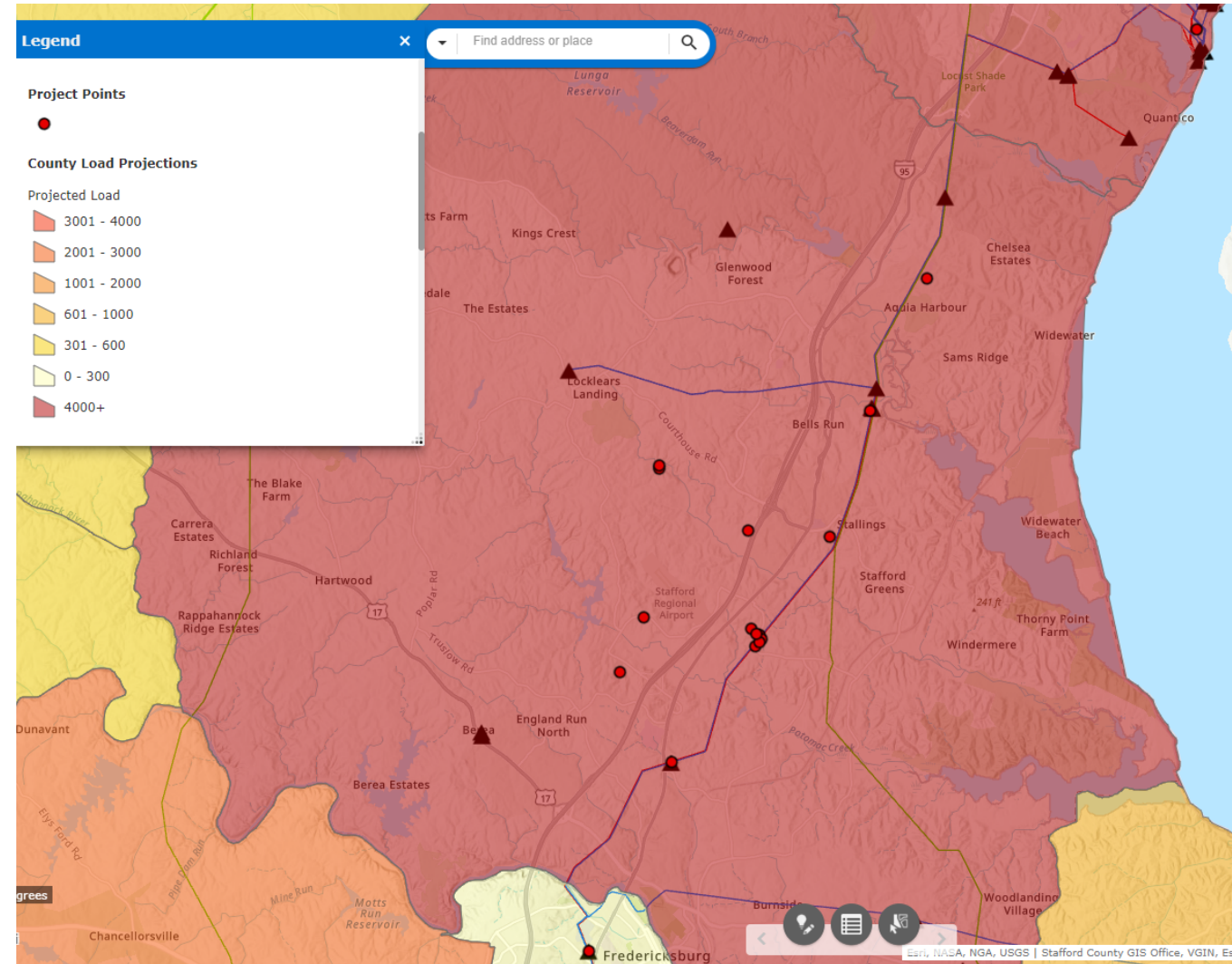
**Project Driver:** Operational Flexibility and Efficiency

## Specific Assumption References:

See details on Operational Flexibility and Efficiency in Dominion's Planning Assumptions presented in December 2023.

## Problem Statement (page 2 of 2):

	A	B	E	G	R	X
5	Need Presented 04/30/2024 TEAC					
6	Need Previously Presented					
7	DOM#	Project Name	Connect	Type	2029	2032
8	2023-18	Spartan Sub	5/2/2025	DP	110	110
9	2023-35	Caboose Sub	6/1/2026	DP	84	140
10	n/a	Widewater Sub	1/1/2027	EO	0	77
11	2024-28	Shady Hill	4/4/2027	DP	175	175
12	2024-05	Centreport Sub	7/1/2027	DP	136	136
13	2023-56	Alto Sub	7/1/2027	DP	213	213
14	2024-06	Woodcutters Sub	1/1/2028	DP	250	1000
15	2024-07	Surveyors	1/1/2028	DP	300	300
16	2024-29	Soprano Sub	4/1/2028	DP	116	255
17	2023-34	Freight Sub	8/5/2028	DP	40	140
18	2024-08	Baritone Sub	10/1/2028	DP	32	183
19	2024-34	Opera Sub	10/1/2029	DP	0	242
20	n/a	Classical Sub	7/1/2030	EO	0	155
21	2023-24	Locomotive Sub	11/4/2031	DP	116	255
22	n/a	Tenor Sub	7/1/2032	EO	0	6
23	2024-30	Mountain View Sub	4/1/2026	DP	181	181
24						
25			TOTAL		1753	3568



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2019-0021

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

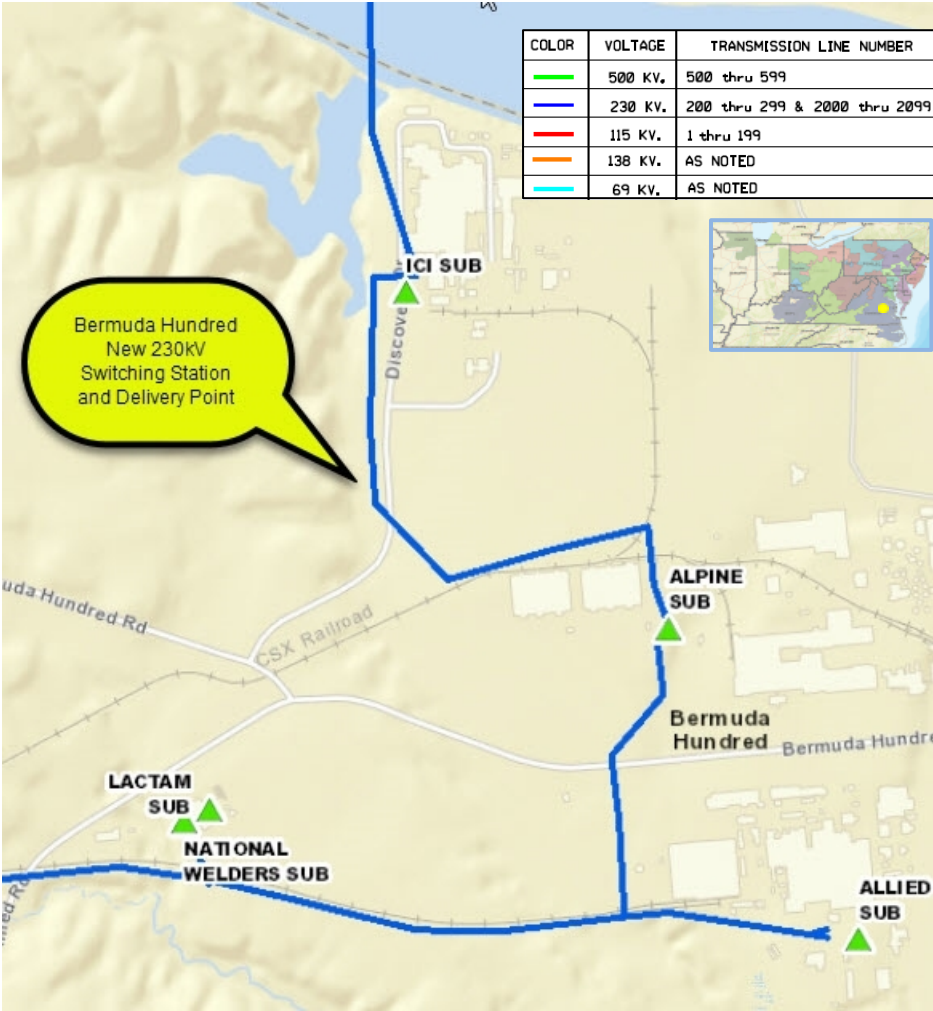
**Specific Assumption References:**

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 (Bermuda Hundred) to serve a data center in Chesterfield County with a total load in excess of 100 MW. The requested in-service date is Q4 2026.

Initial In-Service Load	Projected 2028 Load
Summer: 100.0 MW Winter: 0.0 MW	Summer: 300.0 MW Winter: 300.0 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0022

**Process Stage:** Need Meeting 04/30/2024

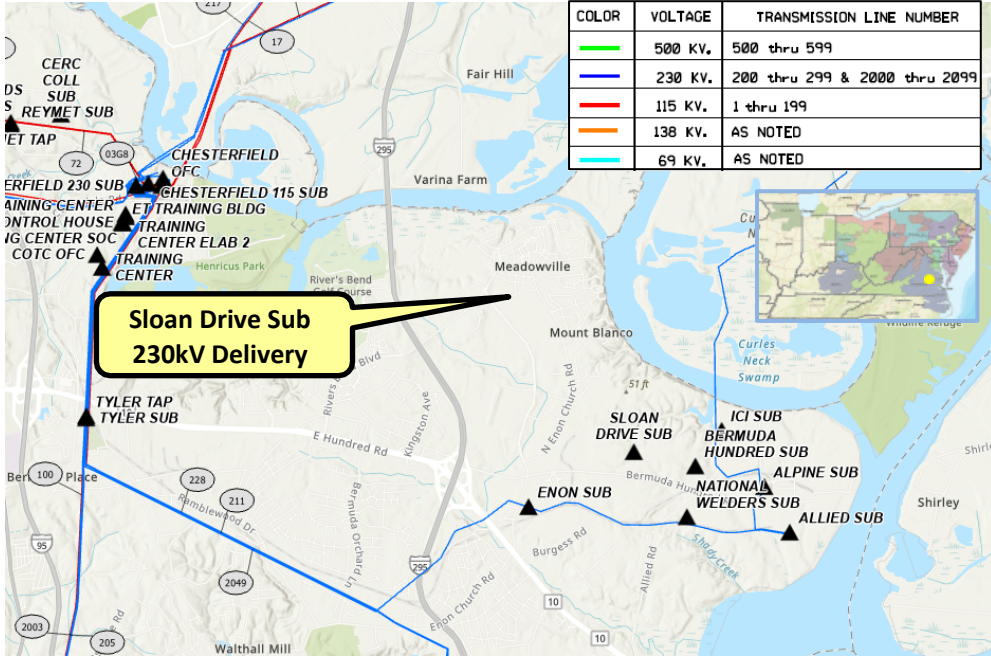
**Project Driver:** Customer Service

**Specific Assumption References:**

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 (Sloan Drive) to serve a data center in Chesterfield County with a total load in excess of 100 MW. The requested in-service date is Q2 2027.



Initial In-Service Load	Projected 2029 Load
Summer: 100.0 MW Winter: 0.0 MW	Summer: 100.0 MW Winter: 100.0 MW

# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0023

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

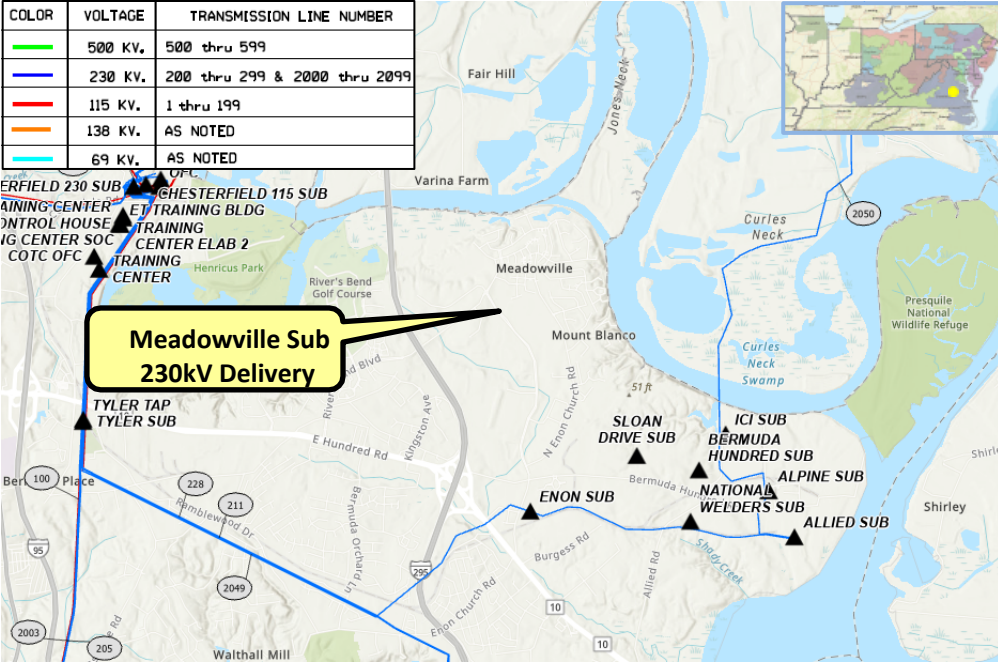
**Specific Assumption References:**

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 (Meadowville) to serve a data center in Chesterfield County with a total load in excess of 100 MW. The requested in-service date is 12/31/2027.

Initial In-Service Load	Projected 2029 Load
Summer: 80.0 MW Winter: 80.0 MW	Summer: 300.0 MW Winter: 300.0 MW





# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0024

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

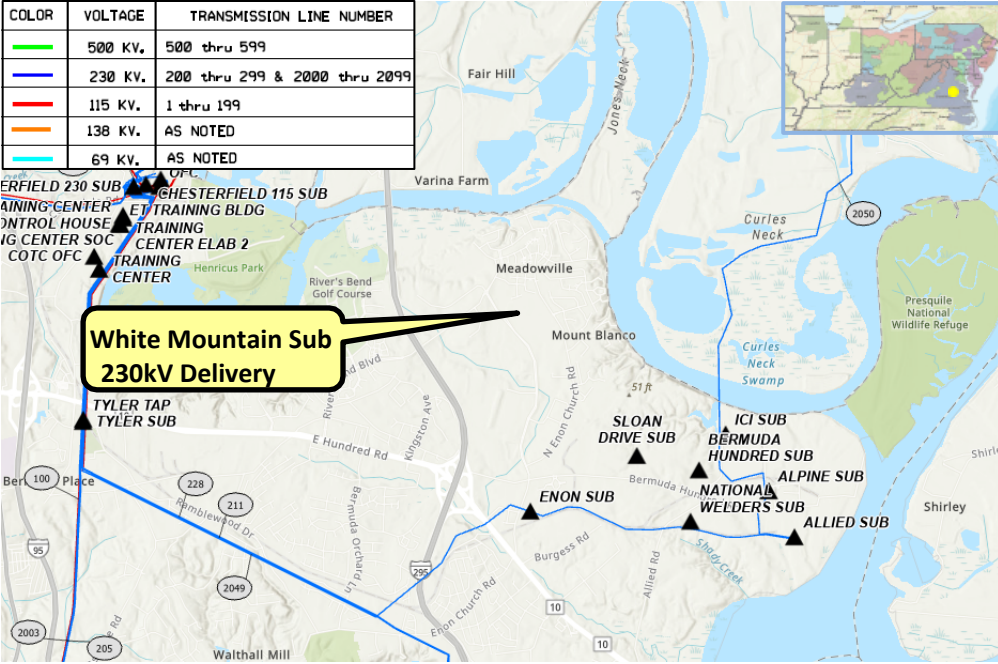
**Specific Assumption References:**

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 (White Mountain) to serve a data center in Chesterfield County with a total load in excess of 100 MW. The requested in-service date is 06/30/2028.

Initial In-Service Load	Projected 2029 Load
Summer: 100.0 MW Winter: 100.0 MW	Summer: 100.0 MW Winter: 100.0 MW



# Dominion Transmission Zone: Supplemental Equipment Material Condition, Performance and Risk

**Need Number:** DOM-2024-0025

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Equipment Material Condition, Performance Risk

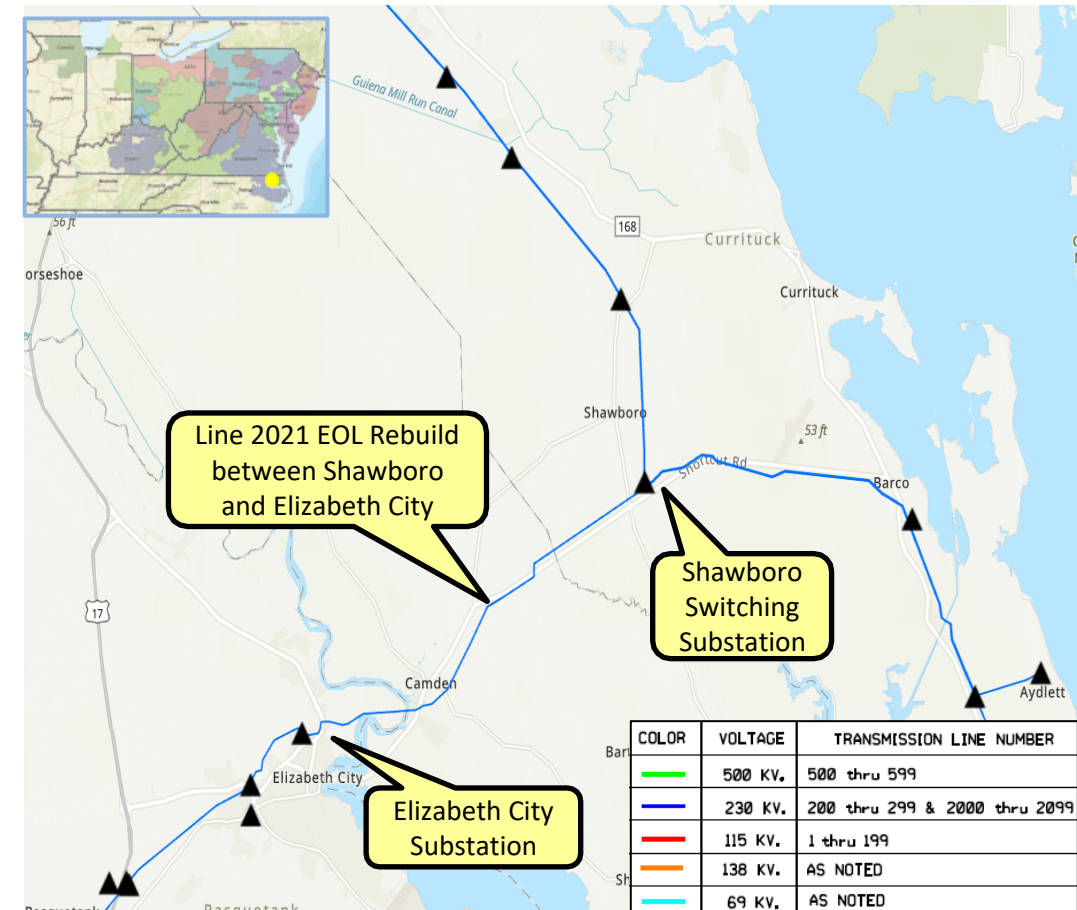
## Specific Assumption References:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2023.

## Problem Statement:

Dominion Energy has identified a need to replace approximately 10.3 miles of 230kV Line #2021 (Shawboro to Elizabeth City) to new 230kV standards based on the Company's End of Life criteria.

- Line #2021 was constructed on wood H-frame structures in 1975, with many in need of replacement due to deterioration.
- Industry guidelines indicate equipment life for steel structures is 40-60 years, wood structures is 35-55 years, conductor and connectors are 40-60 years, and porcelain insulators are 50 years.
- Reliability analysis with removal of Line #2021 shows these deficiencies -
  - Generation deliverability creates line thermal overloads for certain breaker failure contingencies
  - 300 MW load drop violations for N-1-1 and tower line contingencies



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0026

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

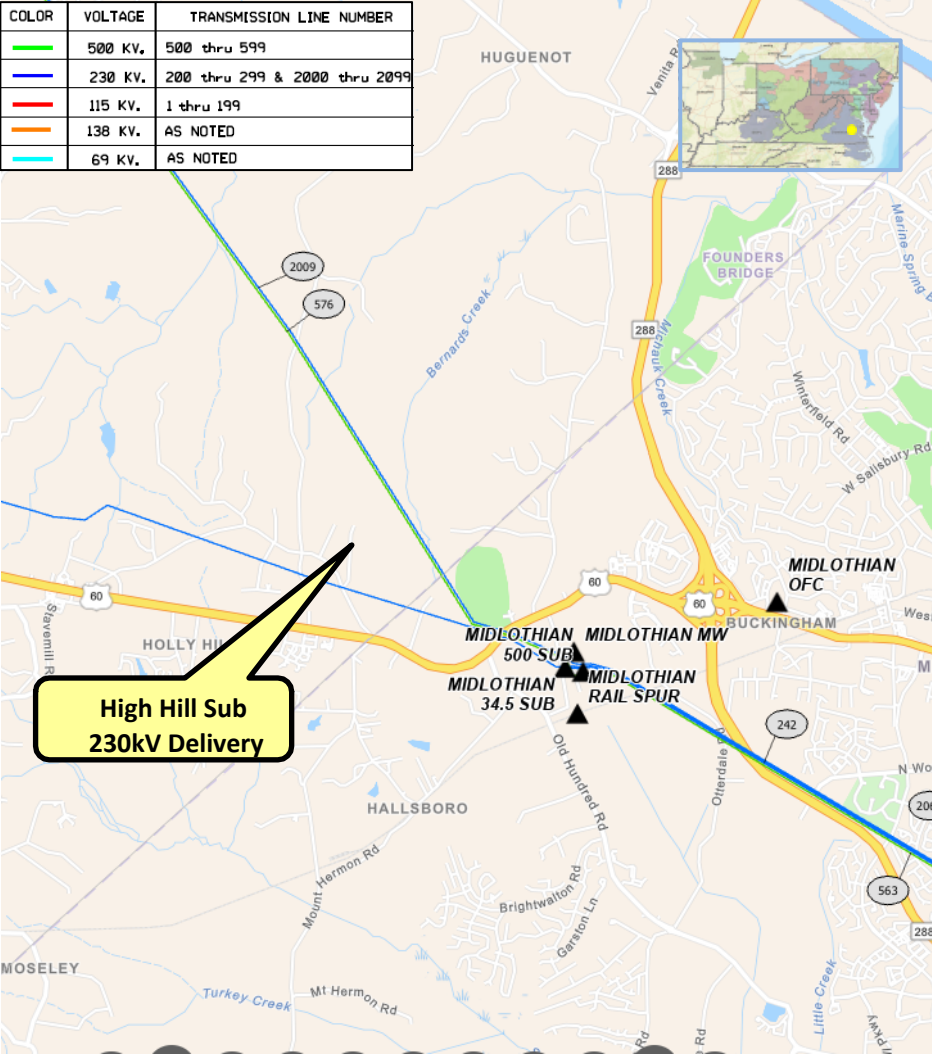
**Specific Assumption References:**

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 (High Hill) to serve a data center in Powhatan County with a total load in excess of 100 MW. The requested in-service date is 12/31/2028.

Initial In-Service Load	Projected 2029 Load
Summer: 91.0 MW Winter: 30.5 MW	Summer: 183.0 MW Winter: 121.8 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0031

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

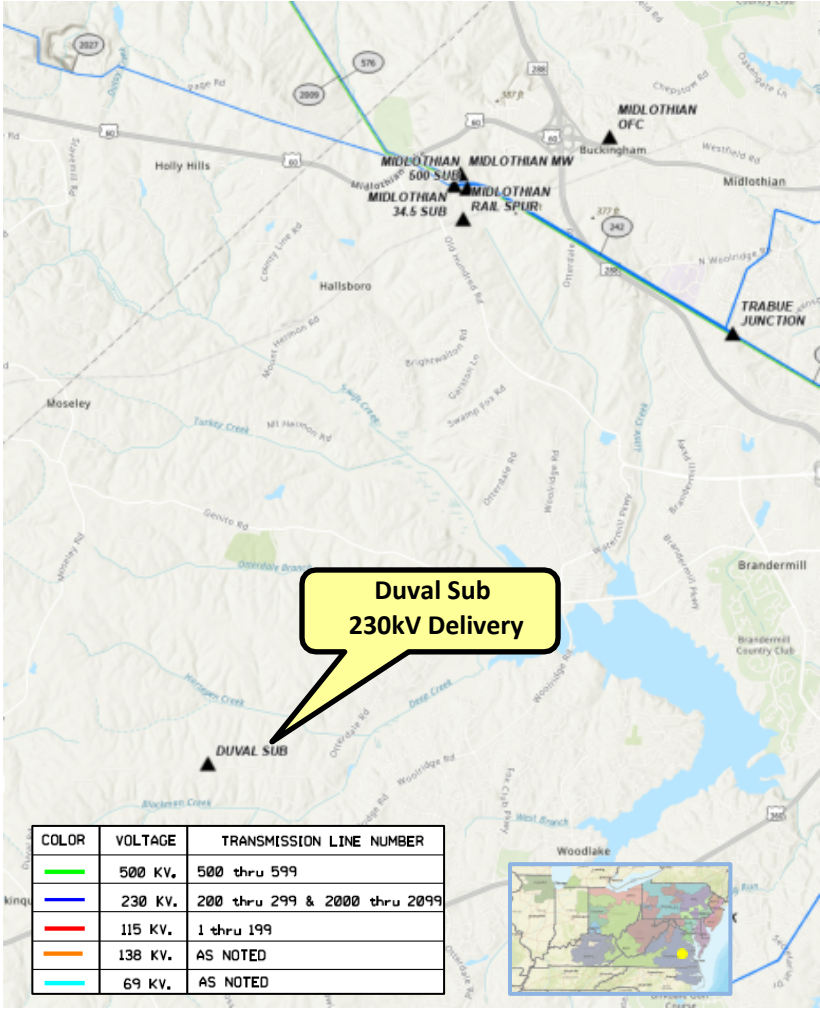
**Specific Assumption References:**

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 (Duval) to serve new residential and commercial load in Chesterfield County with a total load in excess of 100 MW. The requested in-service date is 5/01/2027.

Initial In-Service Load	Projected 2029 Load
Summer: 35.9 MW Winter: 31.0 MW	Summer: 76.1 MW Winter: 76.9 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0028

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

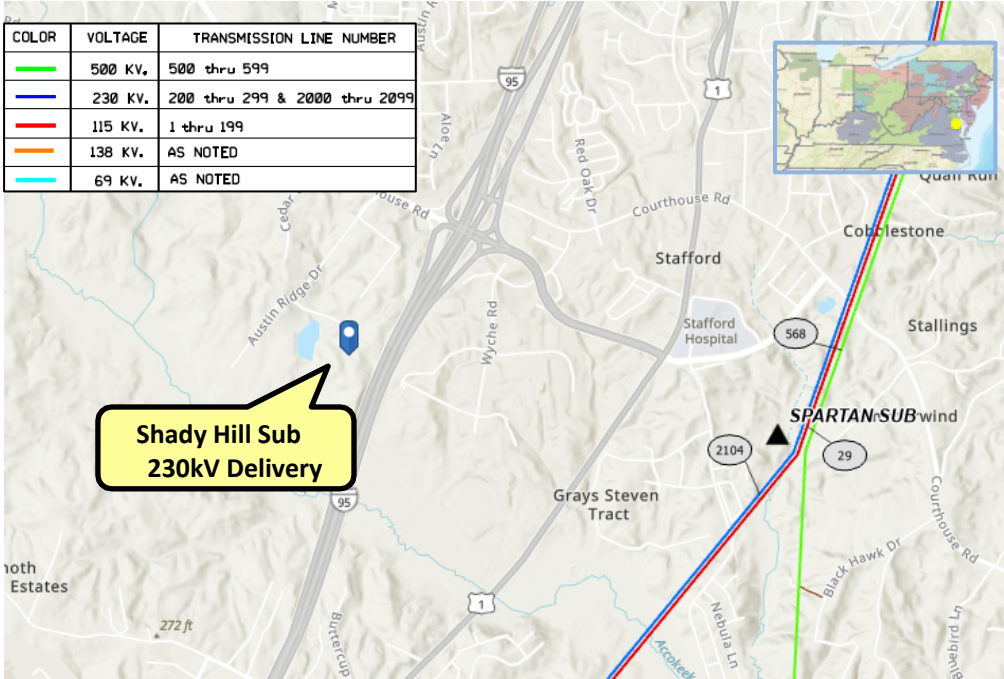
**Specific Assumption References:**

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 (Shady Hill) to serve a data center in Stafford County with a total load in excess of 100 MW. The requested in-service date is 4/01/2027.

Initial In-Service Load	Projected 2029 Load
Summer: 60.0 MW Winter: 120.0 MW	Summer: 175.0 MW Winter: 175.0 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0029

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

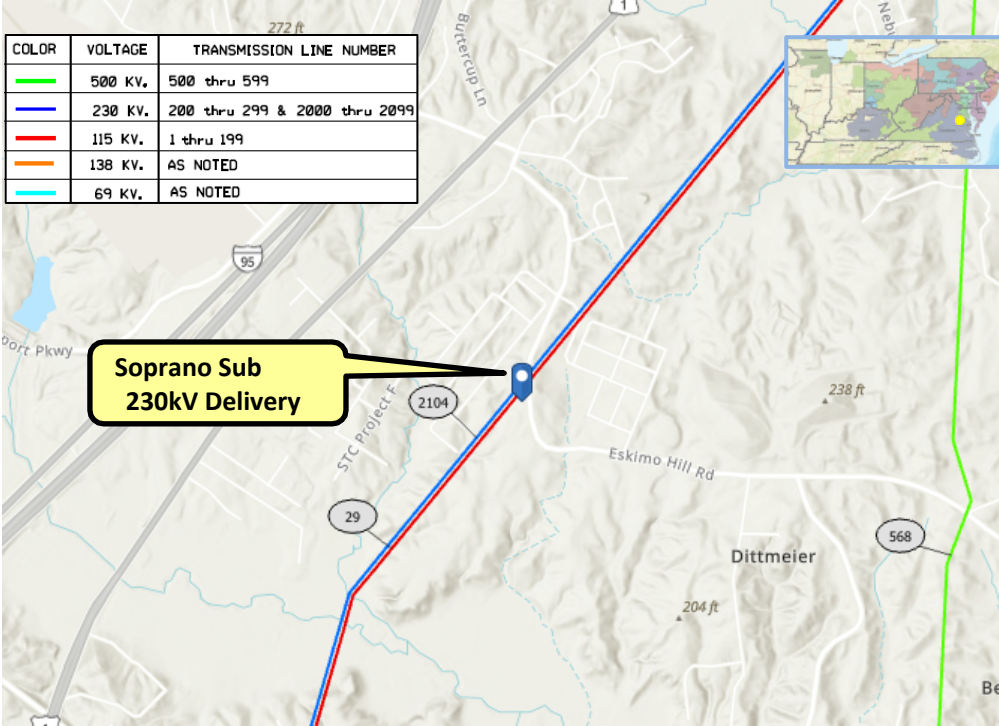
**Specific Assumption References:**

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 (Soprano) to serve a data center in Stafford County with a total load in excess of 100 MW. The requested in-service date is 4/1/2028.

Initial In-Service Load	Projected 2029 Load
Summer: 18.0 MW Winter: 0.0 MW	Summer: 116.0 MW Winter: 54.0 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0030

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

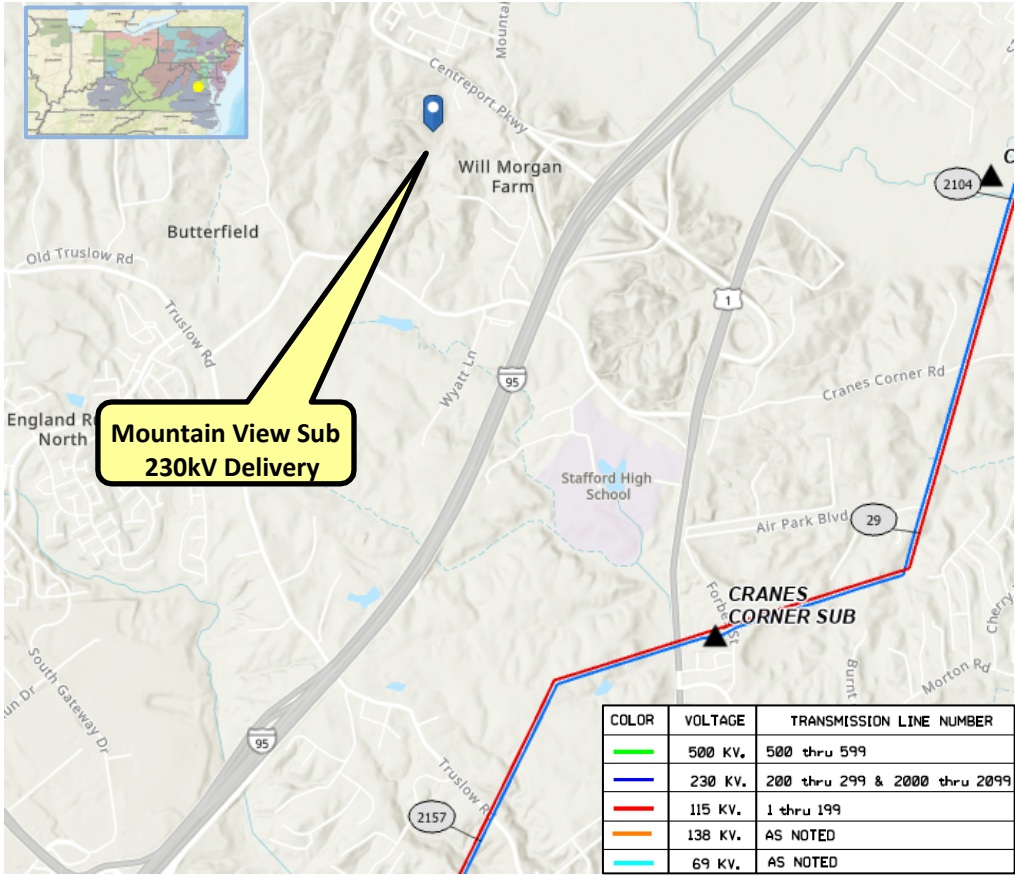
**Specific Assumption References:**

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 (Mountain View) to serve a data center in Stafford County with a total load in excess of 100 MW. The requested in-service date is 4/01/2026.

Initial In-Service Load	Projected 2029 Load
Summer: 63.0 MW Winter: 0.0 MW	Summer: 181.0 MW Winter: 181.0 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0033

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

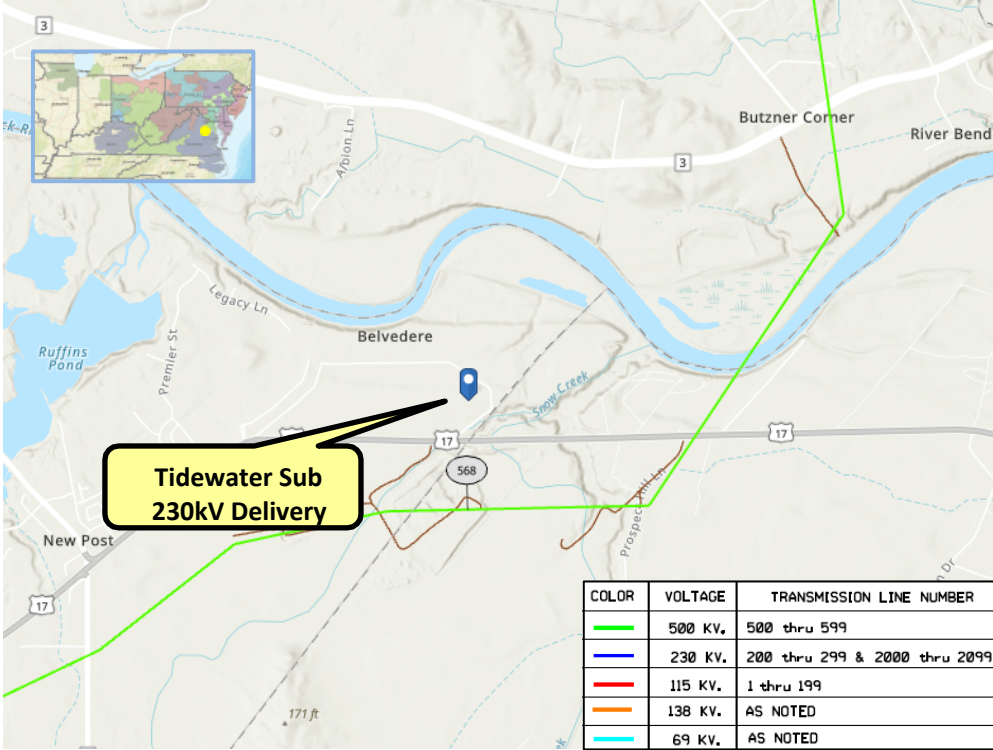
**Specific Assumption References:**

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 (Tidewater) to serve a data center in Spotsylvania County with a total load in excess of 100 MW. The requested in-service date is 3/15/2029.

Initial In-Service Load	Projected 2029 Load
Summer: 91.0 MW Winter: 34.0 MW	Summer: 210.0 MW Winter: 150.0 MW





# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2024-0034

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Customer Service

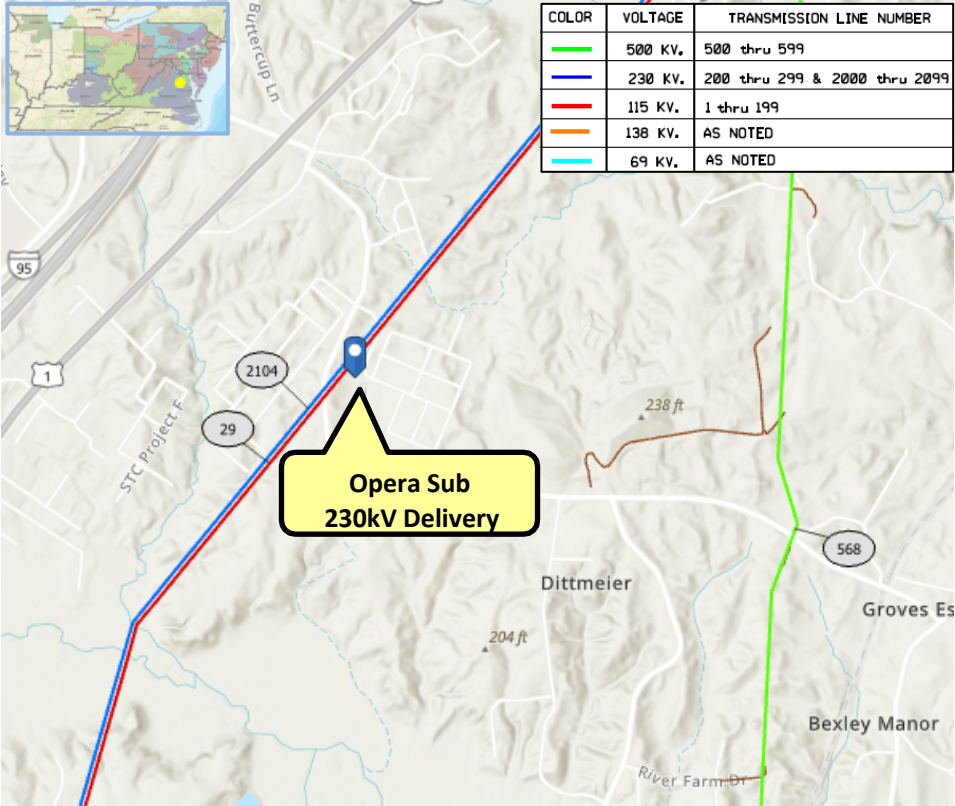
**Specific Assumption References:**

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 (Opera) to serve a data center in Stafford County with a total load in excess of 100 MW. The requested in-service date is 10/01/2029.

Initial In-Service Load	Projected 2029 Load
Summer: 54.0 MW Winter: 18.0 MW	Summer: 54.0 MW Winter: 18.0 MW



# Dominion Transmission Zone: Supplemental Operational Flexibility and Efficiency

**Need Number:** DOM-2024-0027

**Process Stage:** Need Meeting 04/30/2024

**Project Driver:** Operational Flexibility and Efficiency

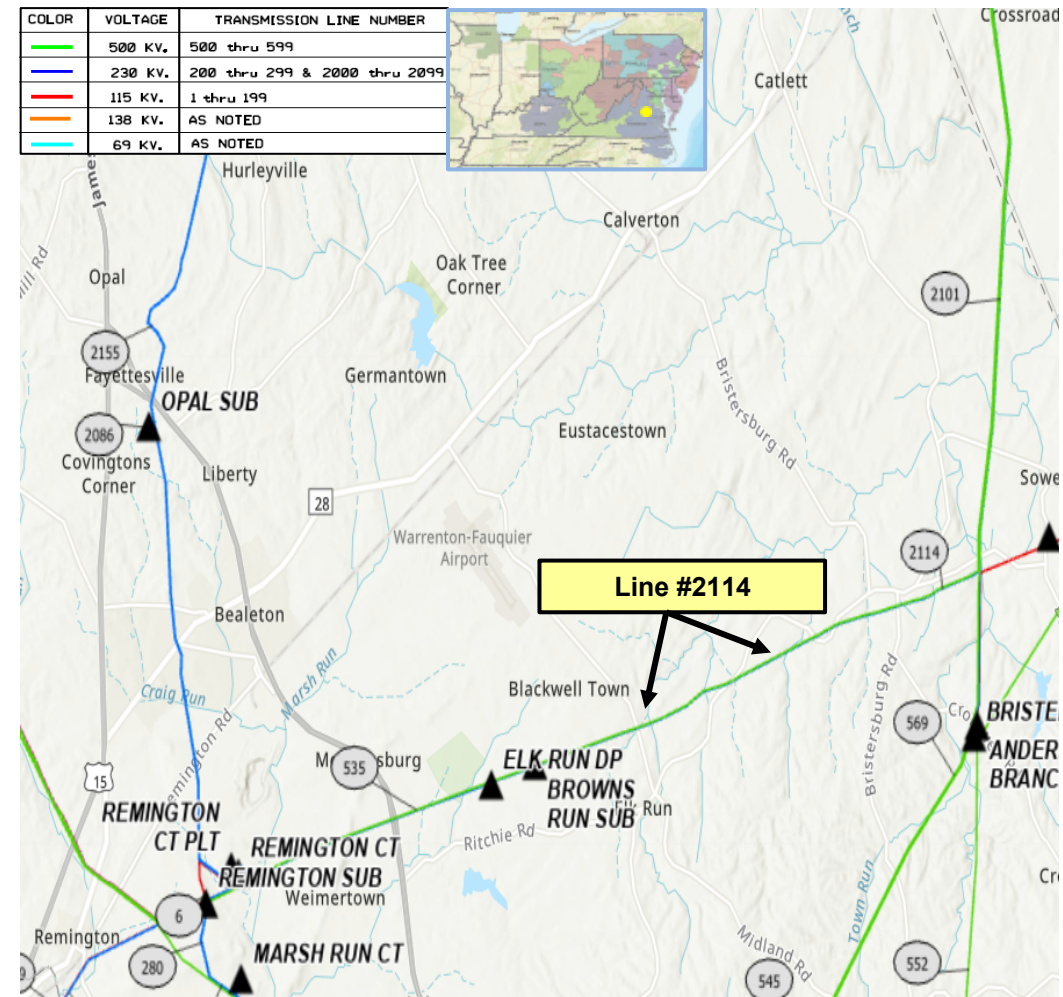
## Specific Assumption References:

See details on Operational Flexibility and Efficiency in Dominion’s Planning Assumptions presented in December 2023.

## Problem Statement:

Planning studies and Dominion Energy Operations Engineering studies have identified overloads on 230 kV Line #2114 (Remington CT – Elk Run – Rollins Ford) based on a 2021 DNH analysis in the 2026 RTEP model (L/O Line 569 (Loudoun – Morrisville)).

The Dominion Energy Operations team needs a temporary solution to meet load growth expectations while avoiding thermal overloading on Line #2114 and accordingly provide flexibility for future construction outages.



# Solutions

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

# Dominion Transmission Zone: Supplemental Do No Harm Analysis

**Need Number:** DOM-2022-0046-DNH & DOM-2022-0047-DNH **Update**

**Process Stage:** Solutions Meeting 04/30/2024

**Previously Presented:** Solutions Meeting 02/07/2023

**Project Driver:** Do No Harm Analysis

## Specific Assumption References:

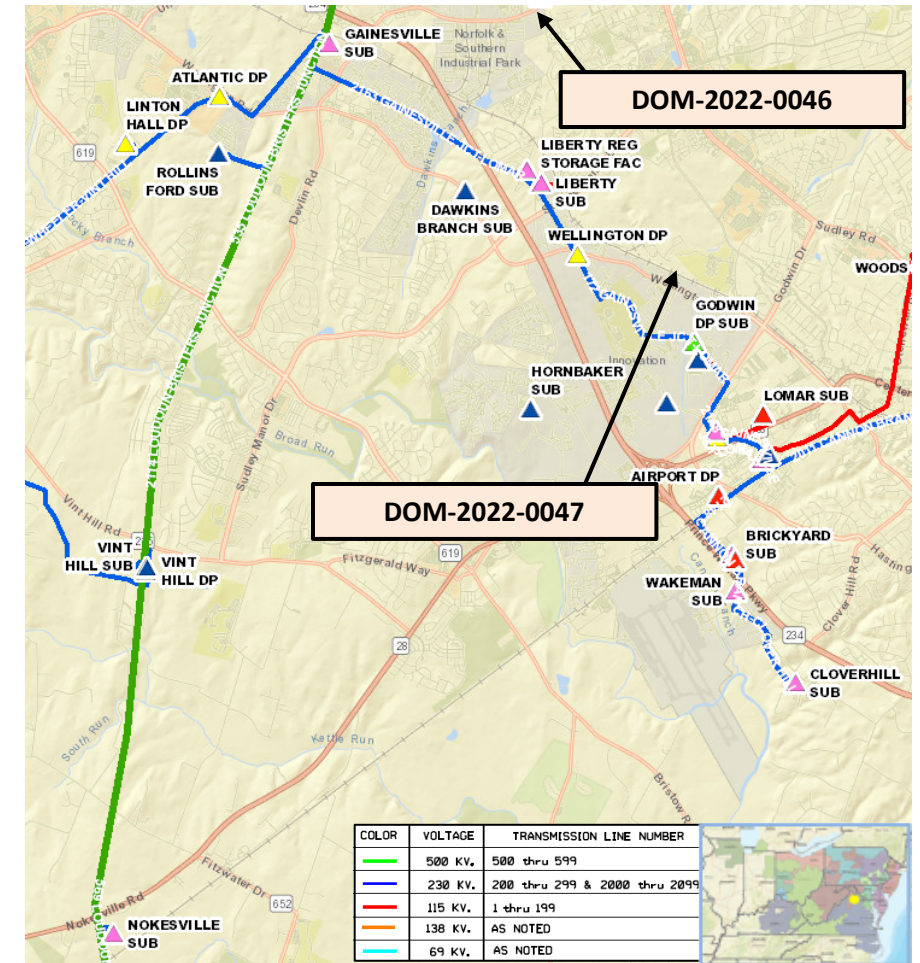
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

## Problem Statement:

PJM has identified N-1-1 thermal violations on the following separate facilities in the 2022 Do-No-Harm analysis:

- Line #2101 (Nokesville to Bristers Segment)
  - Contingency Scenario: DVP\_P1-2: LN 569 and DVP\_P1-2: LN 539
- Bristers 500-230 kV TX#1
  - Contingency Scenario: DVP\_P1-3: 8BRISTER-TX#1 and DVP\_P1-2: LN 539
- Bristers 500-230 kV TX#2
  - Contingency Scenario: DVP\_P1-3: 8BRISTER-TX#2 and DVP\_P1-2: LN 539

The violations are caused by previously presented Supplemental Projects DOM-2022-0046 and DOM-2022-0047 in the Dominion Zone.



# Dominion Transmission Zone: Supplemental Do No Harm Analysis

**Need Number:** DOM-2022-0046-DNH & DOM-2022-0047-DNH **Update**

**Process Stage:** Solutions Meeting 04/30/2024

## Proposed Solution (Part 2 of 2):

To address: Bristers 500-230 kV TX #1 & 2 Violation

- Install (2) 1400 MVA 500-230 kV transformer and associated 500 kV and 230 kV equipment (breakers, switches, leads) at Vint Hill Substation to supply the area with a 500 kV source
- Cut and loop 500 kV line #535 (Loudoun – Meadowbrook) and ~~#569 (Loudoun – Morrisville)~~ as the 500 kV sources into the proposed 500 kV ring bus. **Via approval during the 2022 Competitive Open Window #3, new Morrisville – Vint Hill and Vint Hill – Wishing Star 500 kV will be the 2<sup>nd</sup> 500 kV source**
- Vint Hill Substation will be expanded to the north of the existing site to accommodate the 500 kV ring required for the addition of the new transformers
- Existing terminations for 230 kV line #2174 (Wheeler – Vint Hill), line #2101 (Bristers – Vint Hill), and line #2163 (Liberty – Vint Hill) will be rearranged to terminate into the expanded Vint Hill Substation
- 230 kV line #2114 (Remington CT – Rollins Ford) will also be cut and looped into the expanded Vint Hill Substation due to spatial constraints along the existing right-of-way

**Estimated Project Cost:** ~~\$115-\$114.0M~~ (Total)

Transmission Line Cost: ~~\$5-\$4.0M~~

Substation Cost: \$110.0M

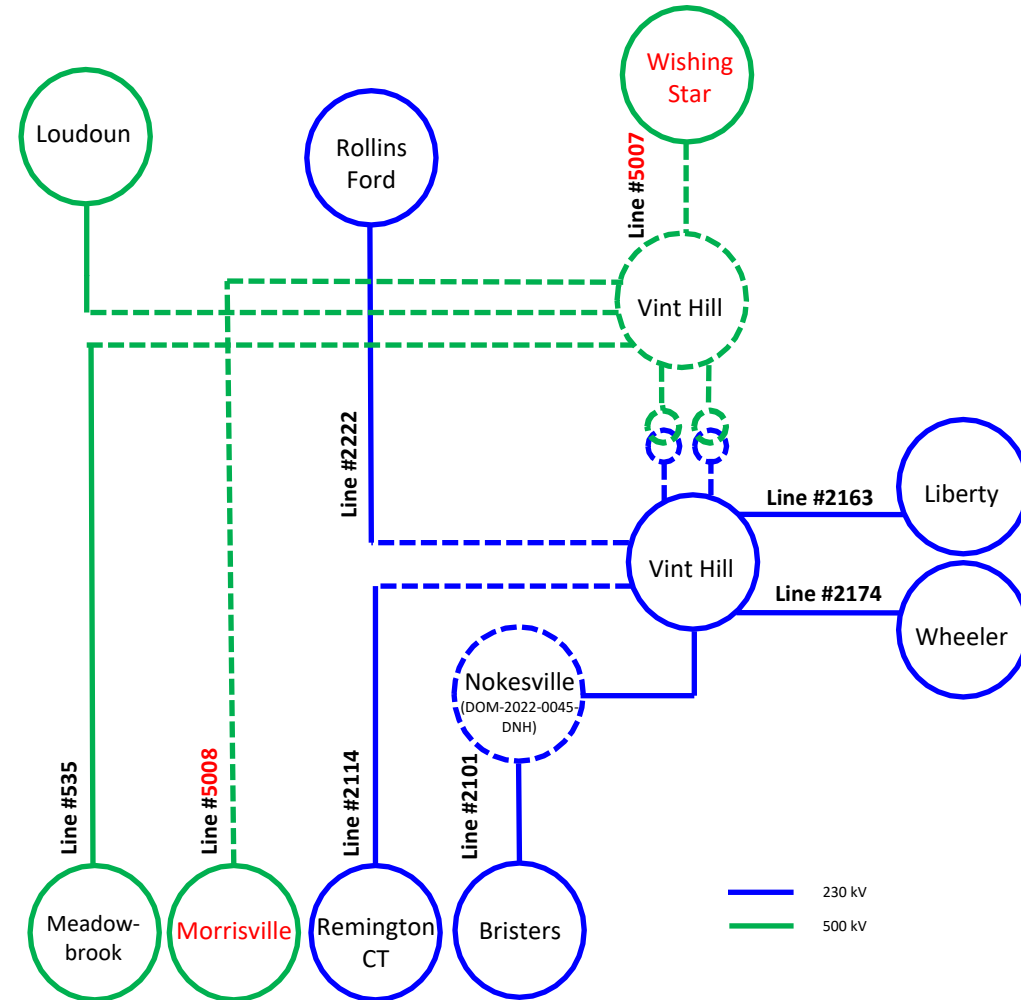
### Alternatives Considered:

No feasible alternatives

**Projected In-service Date:** 12/31/2027

**Project Status:** Conceptual

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Equipment Material Condition, Performance and Risk

**Need Number:** DOM-2021-0014

**Process Stage:** Solutions Meeting 04/30/2024 – **UPDATE**

**Previously Presented:** Solution Meeting 04/06/2021

**Project Driver:** Equipment Material Condition, Performance and Risk

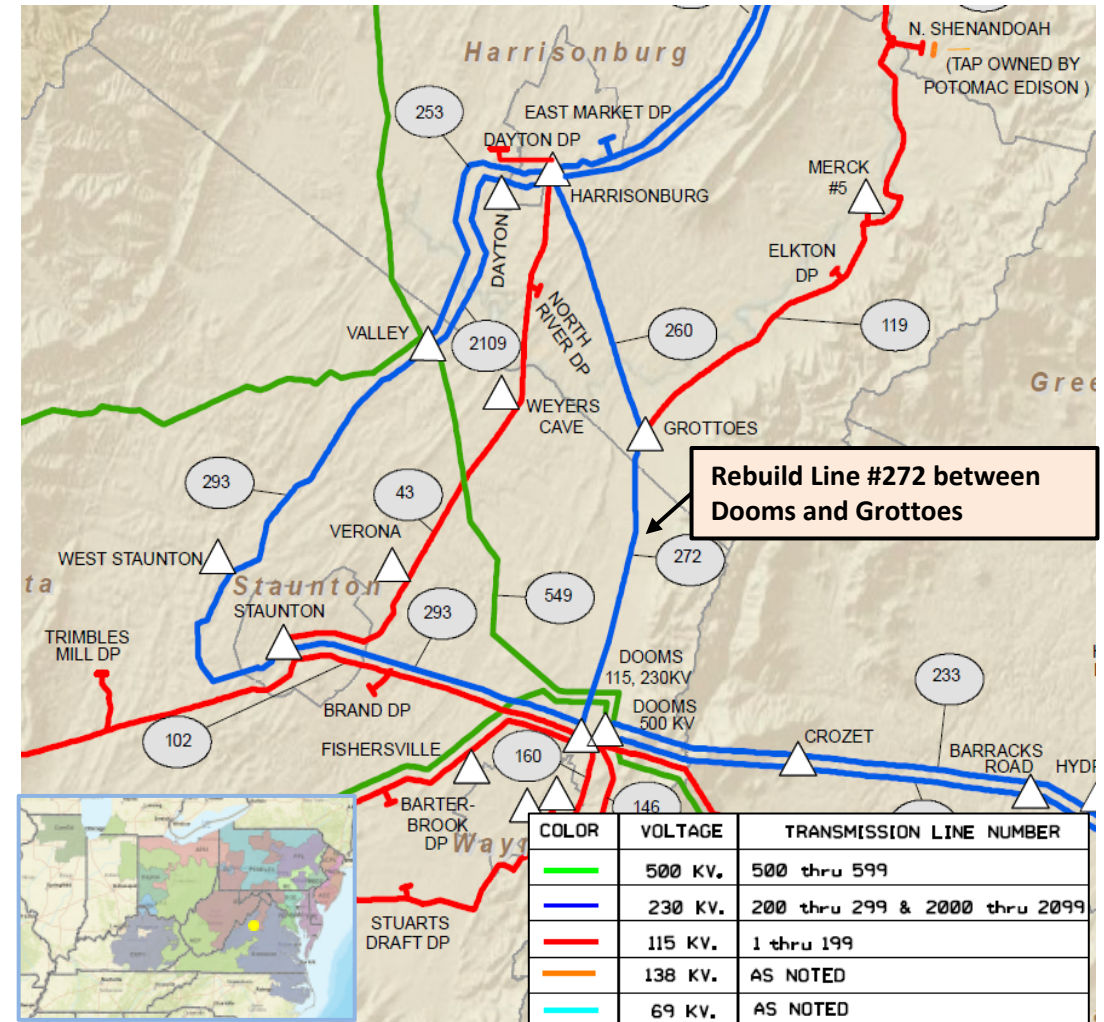
## Specific Assumption References:

See details on Equipment Material Condition, Performance and Risk in Dominion’s Planning Assumptions presented in December 2019.

## 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: Supplemental 230 kV Line #272 – EOL Rebuild

**Need Number:** DOM-2021-0014

**Process Stage:** Solutions Meeting 04/30/2024

**Proposed 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~~ **1573** MVA to meet current 230 kV standards.

**Estimated Project Cost:** ~~\$30.8~~ **34M**

**Alternatives Considered:**

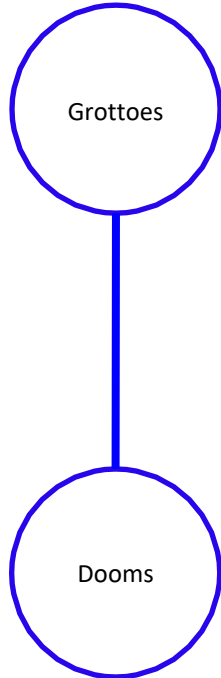
No feasible alternatives.

Without Line #272 in service, thermal violations were identified on Line #43 (Harrisonburg – Verona) for the loss of Line #253 (Harrisonburg – Valley) and Line #2109 (Dayton – Valley) in the Winter 2025 RTEP model.

**Projected In-service Date:** ~~12/31/2026~~ **12/31/2027**

**Project Status:** Conceptual

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Equipment Material Condition, Performance and Risk

**Need Number:** DOM-2024-0014

**Process Stage:** Solutions Meeting 04/30/2024

**Previously Presented:** Need Meeting 03/05/2024

**Project Driver:** Equipment Material Condition, Performance and Risk

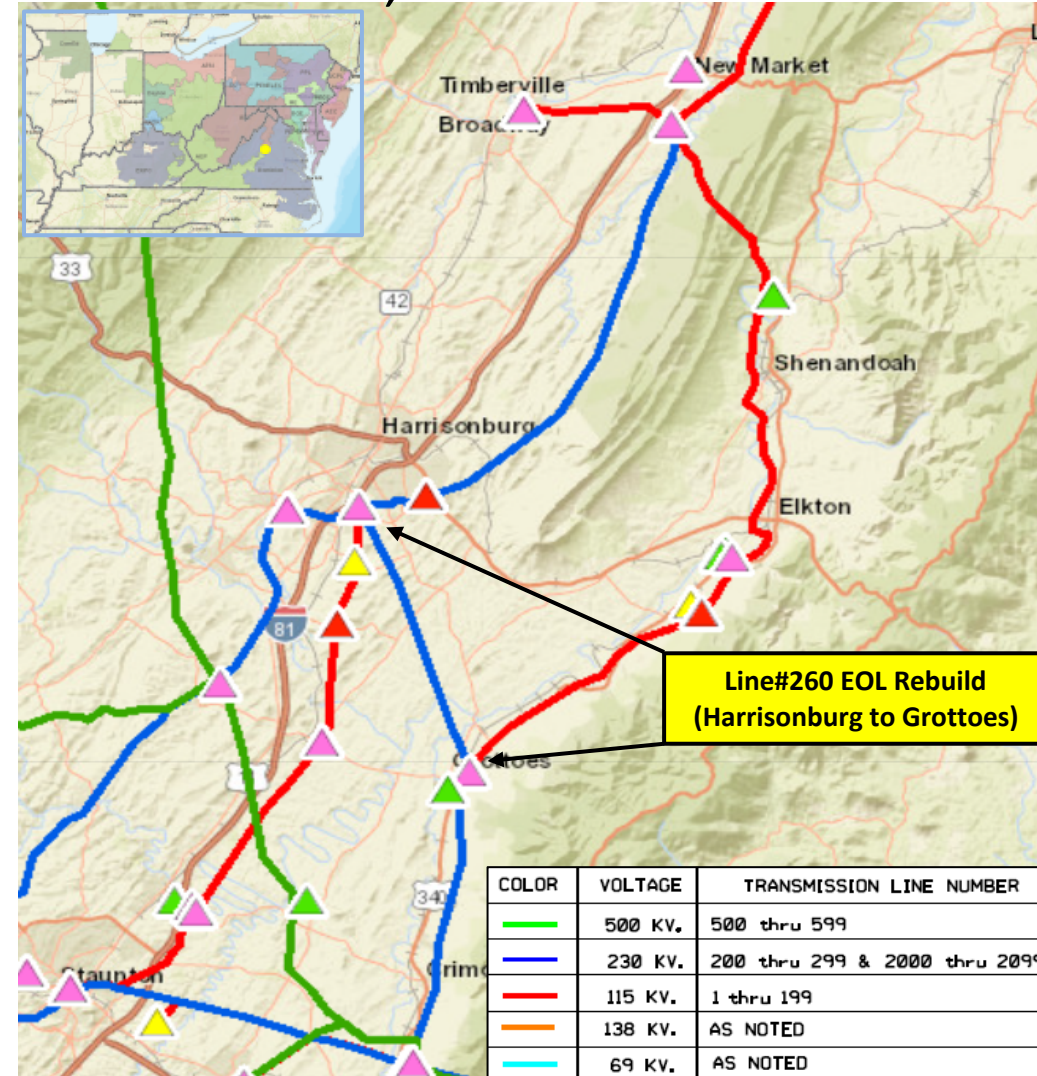
**Specific Assumption References:**

See details on Equipment Material Condition, Performance and Risk in Dominion’s Planning Assumptions presented in December 2023.

**Problem Statement:**

Dominion Energy has identified a need to replace approx. 10.6 miles of 230kV Line#260 from Harrisonburg to Grottoes based on the Company’s End of Life criteria.

- Line#260 from Harrisonburg to Grottoes was constructed on mostly wood structures all dating back in 1970, ACAR conductor and 3/8” static wire.
- A number of structures have been replaced, and additional wood structure replacement is identified because of wood structure issues.
- Industry guidelines indicate equipment life for steel structures is 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: Supplemental 230 kV Line #260 – EOL Rebuild

**Need Number:** DOM-2024-0014

**Process Stage:** Solutions Meeting 04/30/2024

**Proposed Solution:**

Approximately 10.6 miles (from Harrisonburg to Grottoes ) consisting of mostly wood structures will be replaced with weathering steel H-frame structures. New conductor with a normal summer rating of 1573 MVA will be used.

**Estimated Project Cost:** \$28 M

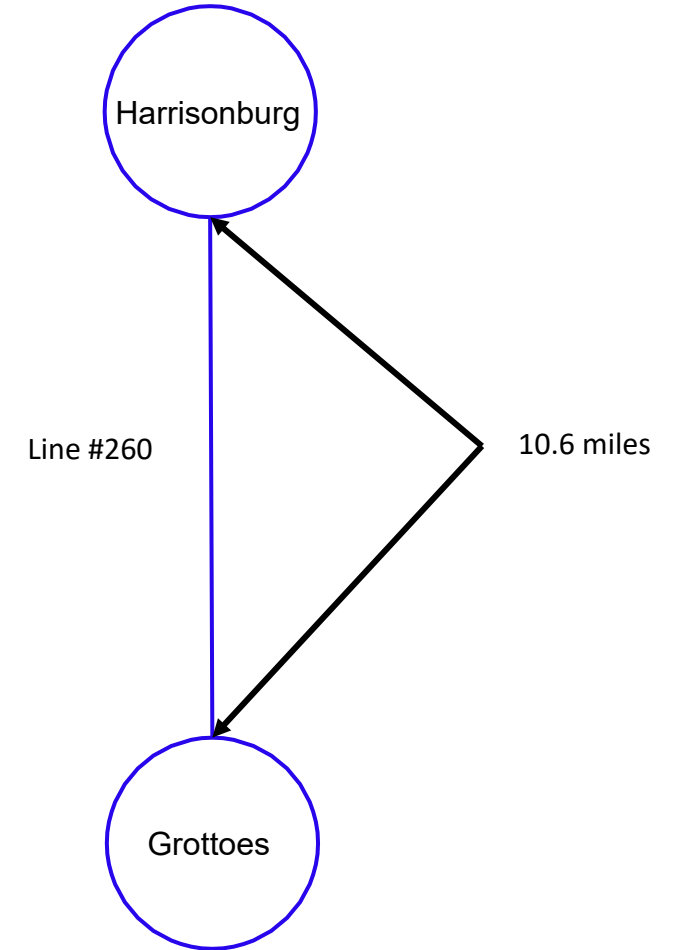
**Alternatives Considered:**

No feasible alternatives, end of life.

**Projected In-service Date:** 12/31/2027

**Project Status:** Conceptual

**Model:** 2028 RTEP



# Appendix

# High level M-3 Meeting Schedule

Assumptions	Activity	Timing
	Posting of TO Assumptions Meeting information	20 days before Assumptions Meeting
	Stakeholder comments	10 days after Assumptions Meeting
Needs	Activity	Timing
	TOs and Stakeholders Post Needs Meeting slides	10 days before Needs Meeting
	Stakeholder comments	10 days after Needs Meeting
Solutions	Activity	Timing
	TOs and Stakeholders Post Solutions Meeting slides	10 days before Solutions Meeting
	Stakeholder comments	10 days after Solutions Meeting
Submission of Supplemental Projects & Local Plan	Activity	Timing
	Do No Harm (DNH) analysis for selected solution	Prior to posting selected solution
	Post selected solution(s)	Following completion of DNH analysis
	Stakeholder comments	10 days prior to Local Plan Submission for integration into RTEP
	Local Plan submitted to PJM for integration into RTEP	Following review and consideration of comments received after posting of selected solutions

# Revision History

04/19/2024– V1 – Original version posted to pjm.com

04/30/2024– V2 – Corrected date in footer.