

Dominion Supplemental Projects

Transmission Expansion Advisory
Committee
February 7, 2023

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-2023-0001

Process Stage: Need Meeting 02/07/2023

Project Driver: Customer Service

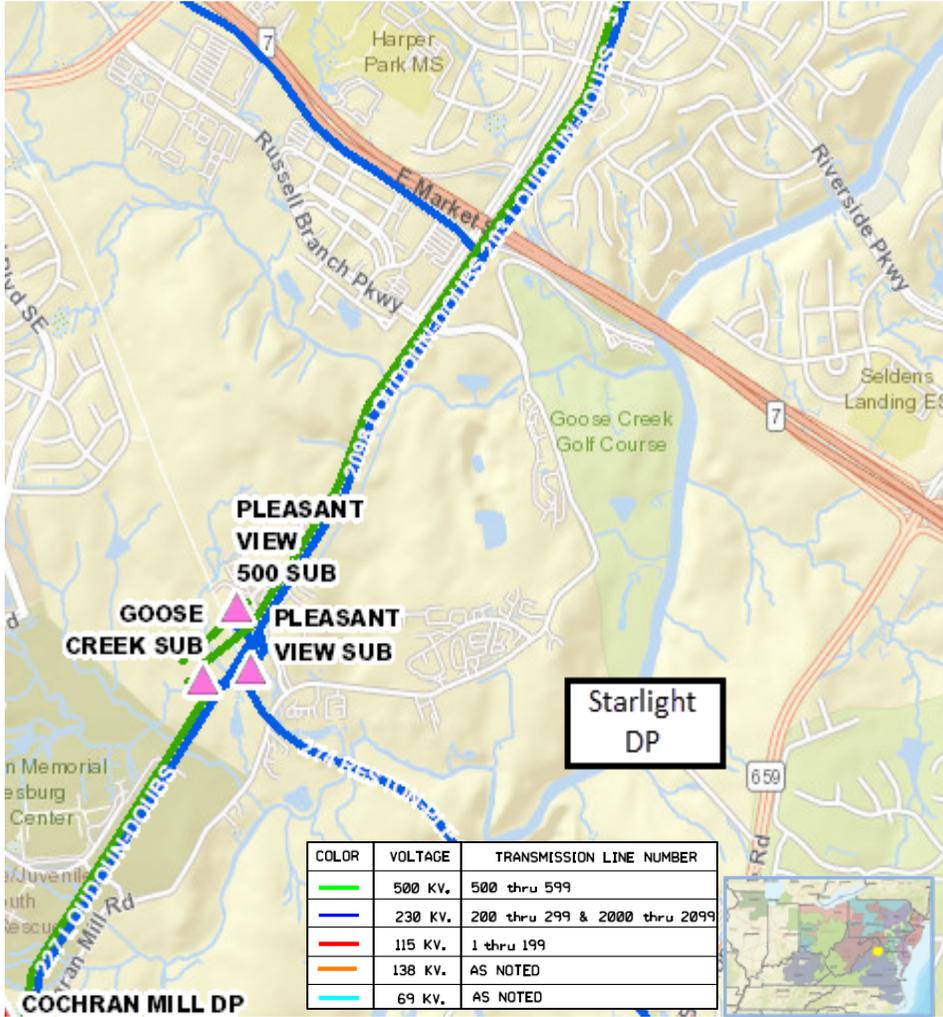
Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP Request for a new substation (Starlight) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 6/01/2028.

| | |
|-------------------------|---------------------|
| Initial In-Service Load | Projected 2028 Load |
| Summer: 10.0 MW | Summer: 10.0 MW |



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0002

Process Stage: Need Meeting 02/07/2023

Project Driver: Customer Service

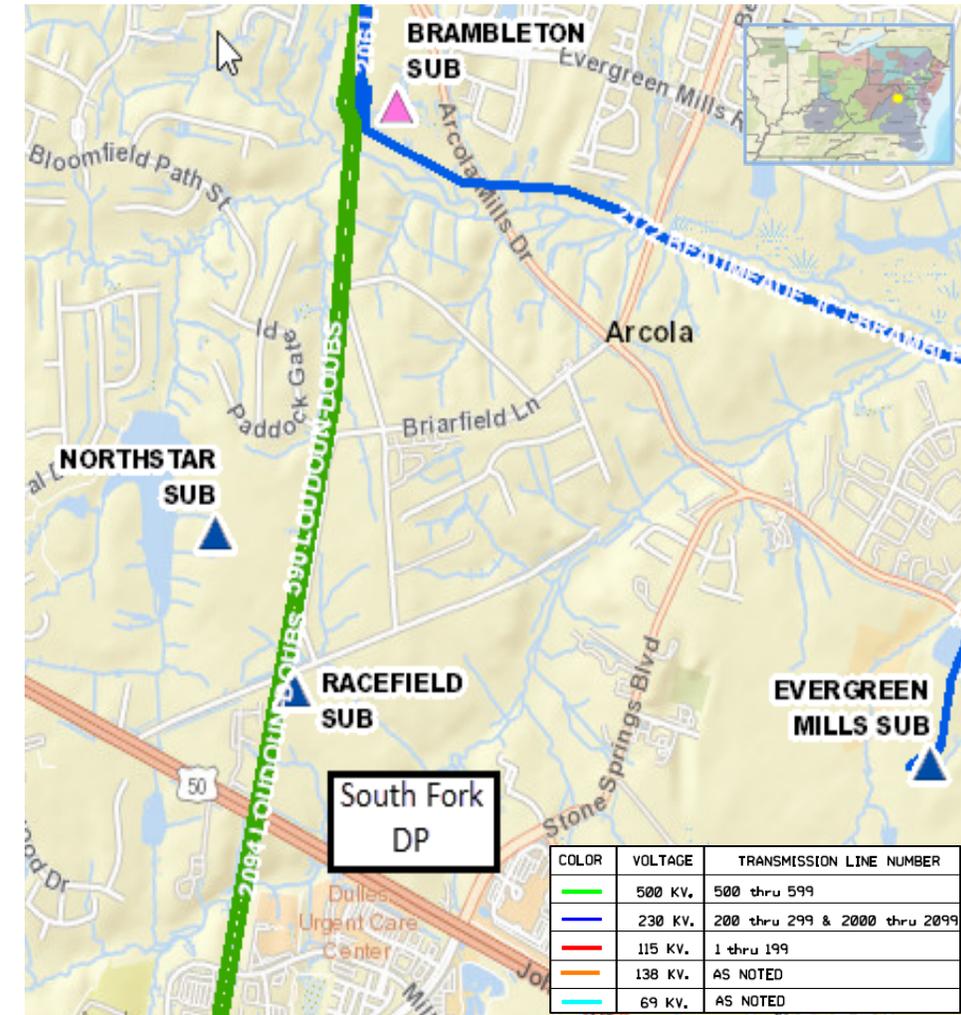
Specific Assumption References:

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

Problem Statement:

NOVEC has submitted a DP Request for a new substation (South Fork) in Loudoun County. Requested in-service date is 3/31/2025.

| | |
|-------------------------|---------------------|
| Initial In-Service Load | Projected 2028 Load |
| Summer: 33.2 MW | Summer: 38.0 MW |



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0003

Process Stage: Need Meeting 02/07/2023

Project Driver: Customer Service

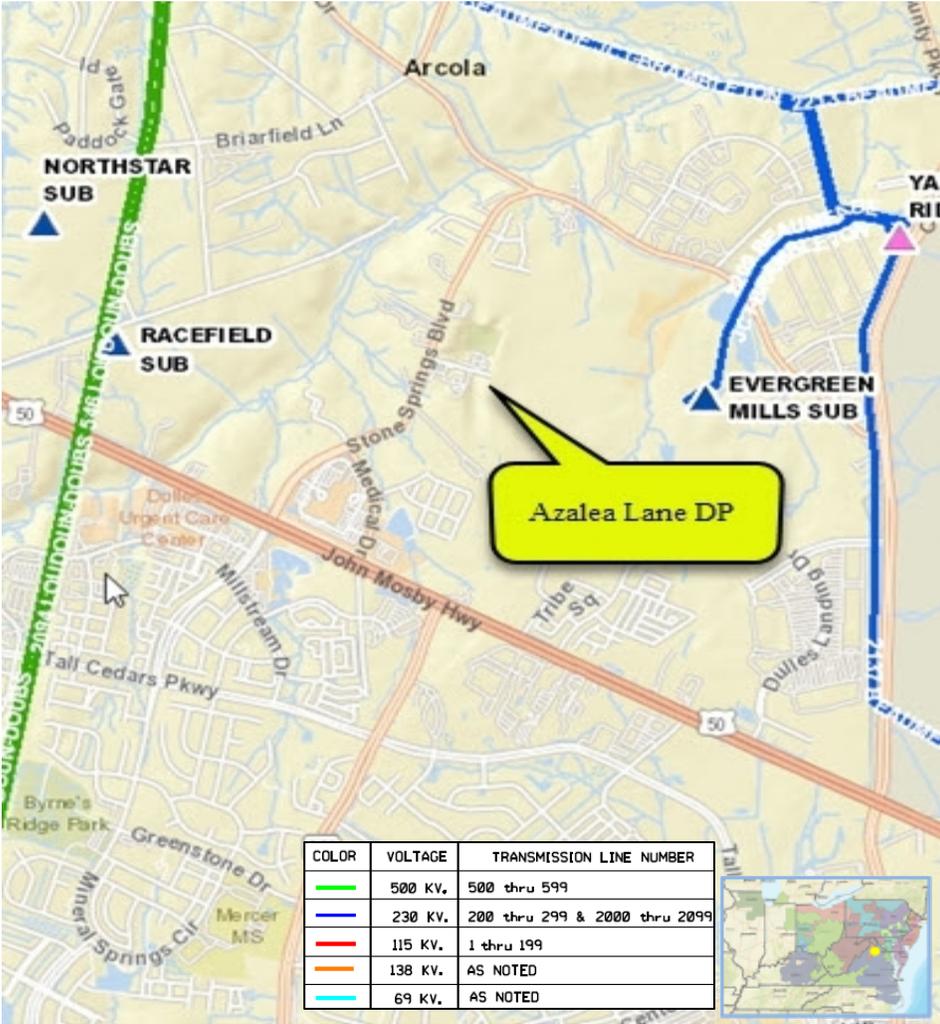
Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP Request for a new substation (Azalea Lane) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 8/1/2026.

| | |
|-------------------------|---------------------|
| Initial In-Service Load | Projected 2028 Load |
| Summer: 90.0 MW | Summer: 108.0 MW |



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0004

Process Stage: Need Meeting 02/07/2023

Project Driver: Customer Service

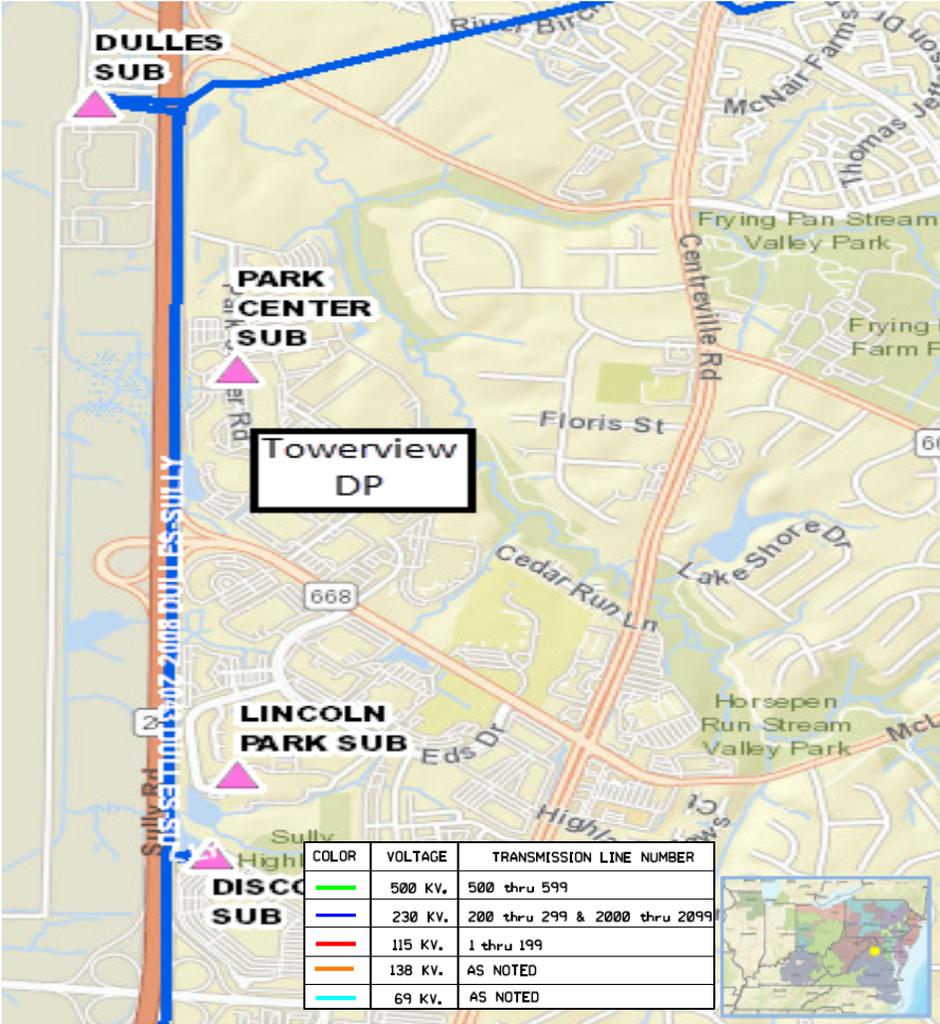
Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP Request for a new substation (Towerview) in Fairfax County with a total load in excess of 100MW. Requested in-service date is 6/01/2026.

| | |
|-------------------------|---------------------|
| Initial In-Service Load | Projected 2028 Load |
| Summer: 6.0 MW | Summer: 114.0 MW |



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0005

Process Stage: Need Meeting 02/07/2023

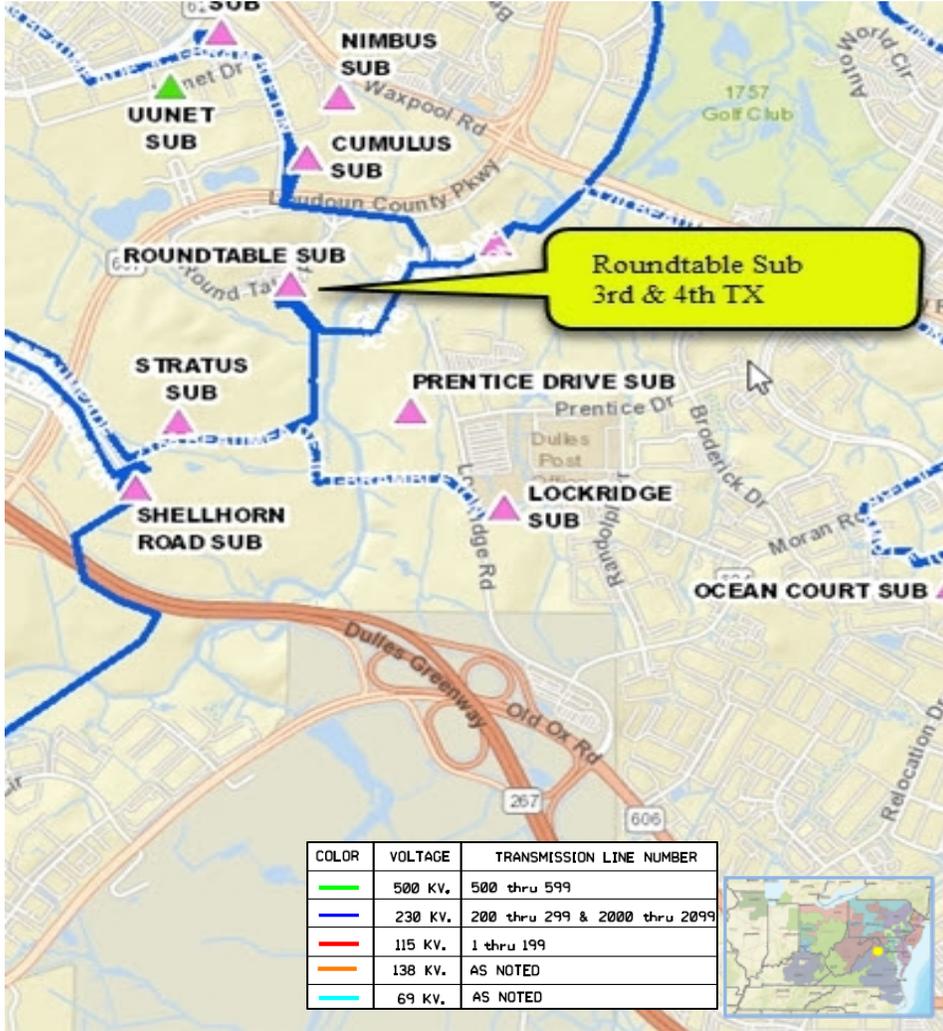
Project Driver: Customer Service

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 to add the 3rd and 4th distribution transformers at Roundtable Substation in Loudoun County. The new transformers are 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 12/15/2024.



| | |
|-------------------------|---------------------|
| Initial In-Service Load | Projected 2028 Load |
| Summer: 124.5 MW | Summer: 141.0 MW |

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-2020-0026-DNH (Rollins Ford)

Process Stage: Solution Meeting 02/07/2023 – DNH Update

Previously Presented: Solution Meeting 06/08/2021

Existing Supplemental: s2340.1; s2340.2

Problem Statement:

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

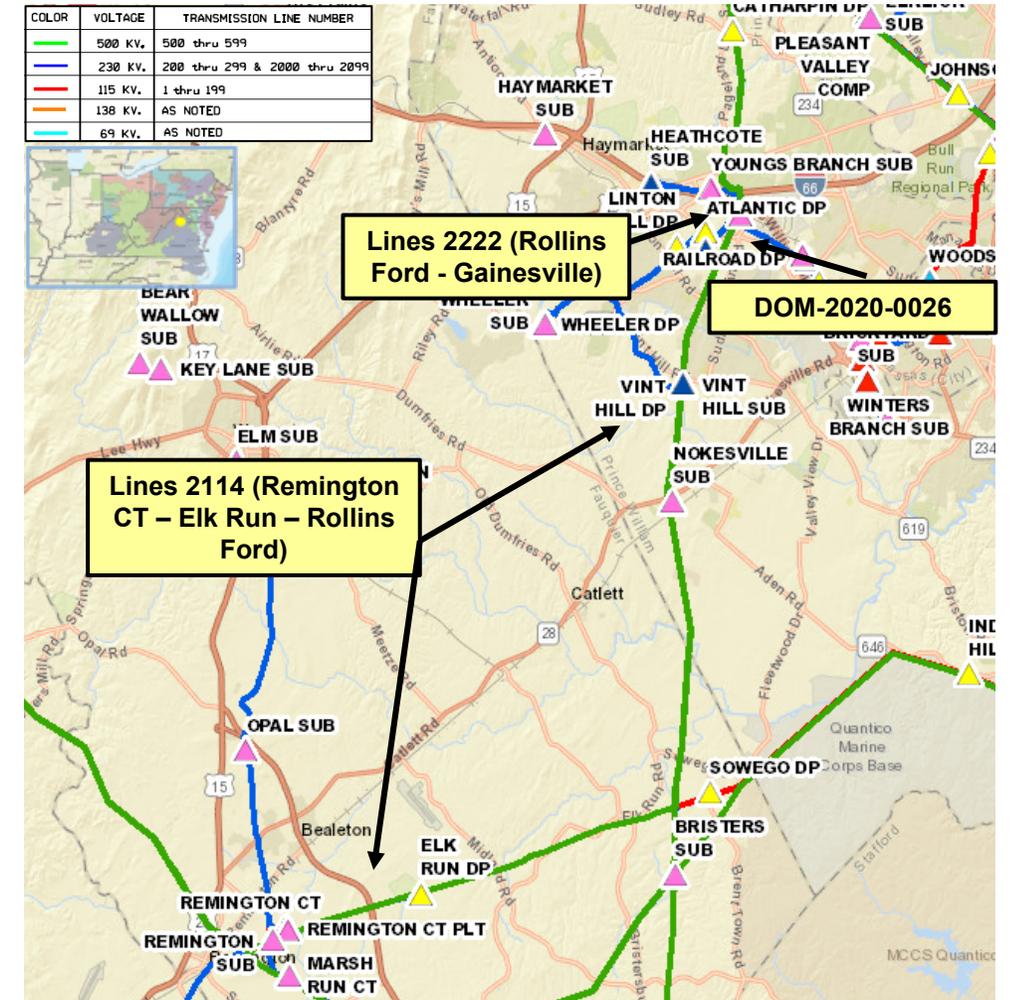
For example, the loss of Line 569 (Loudoun – Morrisville) under contingency DVP-P1-2: LN 569 creates overloads of:

- 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.

Updated Criteria Evaluation:

PJM had also identified overlapping thermal violations in the 2026 Summer RTEP model from Remington CT to Gainesville. The reconductor portion of the previously proposed supplemental solution was submitted and approved as a part of the PJM 2021 Reliability Open Window #1 (b3689.1).



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Previous Solution (Approved as baseline b3689.1):

Solution Approved as Baseline b3689.1:

Re-conductor the segments of 230kV Line 2114 from Remington CT to Elk Run (approx. 3.46 miles) and Elk Run to Rollins Ford (approx. 19.71 miles) using a higher capacity conductor to achieve an expected rating of 1573 MVA.

Re-conductor approx. 1.11 miles of 230kV Line 2222 from Rollins Ford to Gainesville using a higher capacity conductor to achieve an expected rating of 1573 MVA.

Proposed Solution:

At Remington CT, upgrade (2) 230 kV circuit breakers and terminal equipment (switches, leads, etc.) to 4000 A 230 kV standards.

At Gainesville, upgrade (2) 230 kV circuit breakers and terminal equipment (switches, leads, etc.) to 4000 A 230 kV standards.

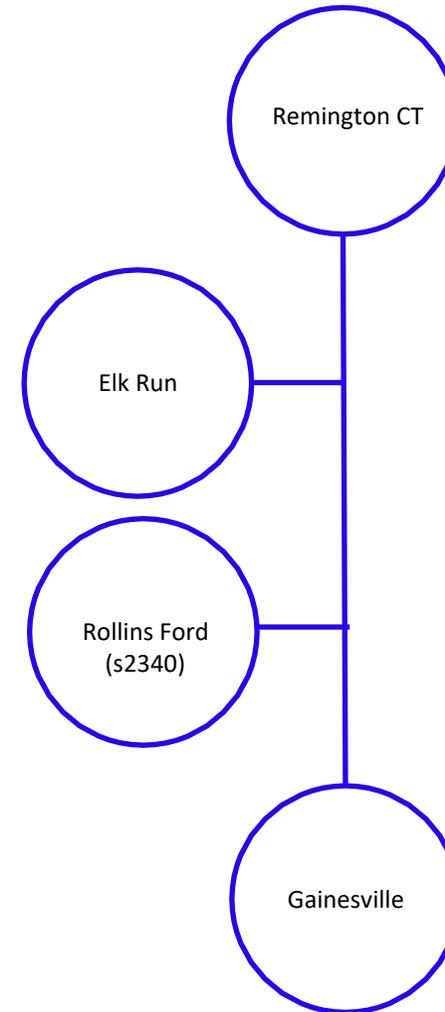
Estimated cost:

At Remington CT (s2340.1) - **\$1.5M** (Previously \$35.0M for Line #2114)

At Gainesville (s2340.2) - **\$8.0M** (Previously \$2.0M for Line #2222)

Projected In-service Date: 12/31/2026 (Previously 12/31/2025)

Project Status: Conceptual



Dominion Transmission Zone: Supplemental Do No Harm Analysis

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

Process Stage: Solutions Meeting 02/07/2023

Project Driver: Do No Harm Analysis

Specific Assumption References:

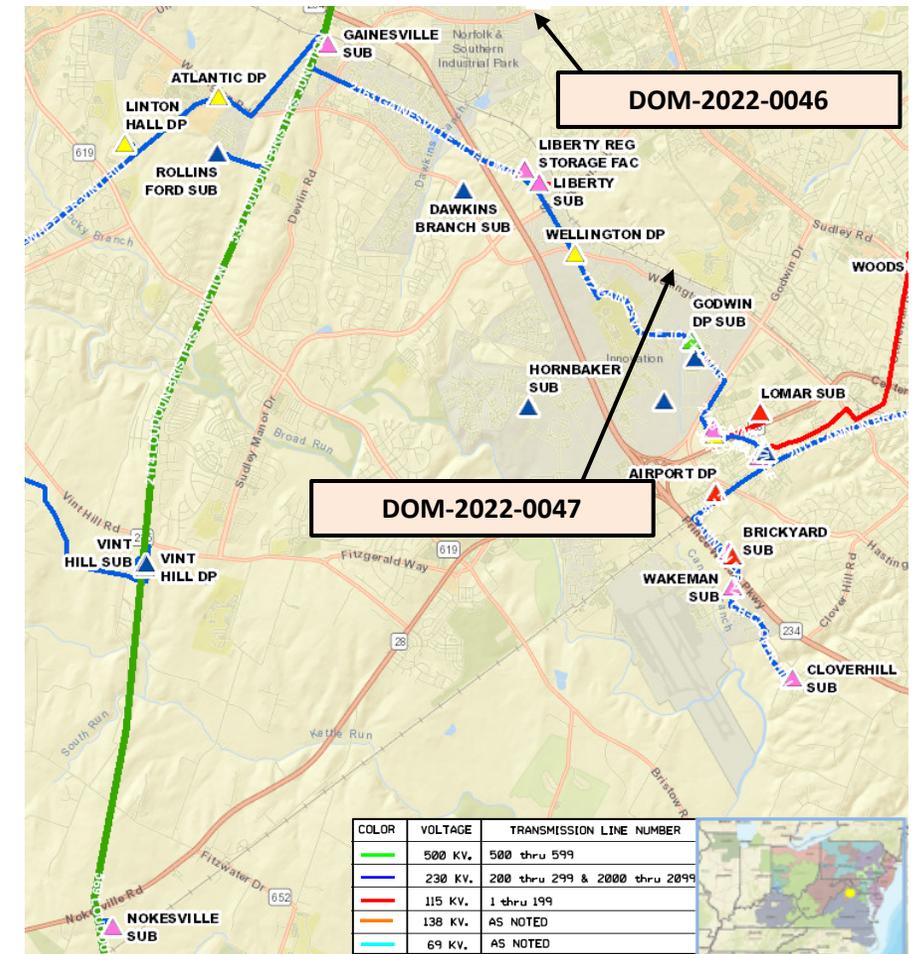
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

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

Process Stage: Solutions Meeting 02/07/2023

Proposed Solution (Part 1 of 2):

To address: 230 kV Line Violation

- Reconductor approximately 9.2 miles of Line #2101 (Nokesville to Bristers) using a higher capacity conductor as well as terminal equipment upgrades to achieve a minimum normal summer conductor rating of 1573 MVA.

Estimated Project Cost: \$23.0M

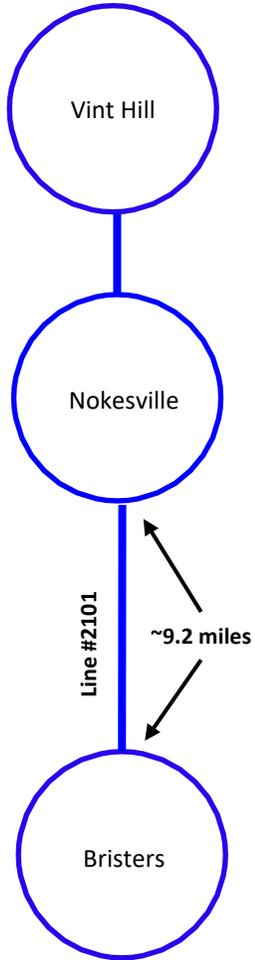
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 12/31/2027

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm Analysis

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

Process Stage: Solutions Meeting 02/07/2023

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
- 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: \$115.0M (Total)

Transmission Line Cost: \$5.0M

Substation Cost: \$110.0M

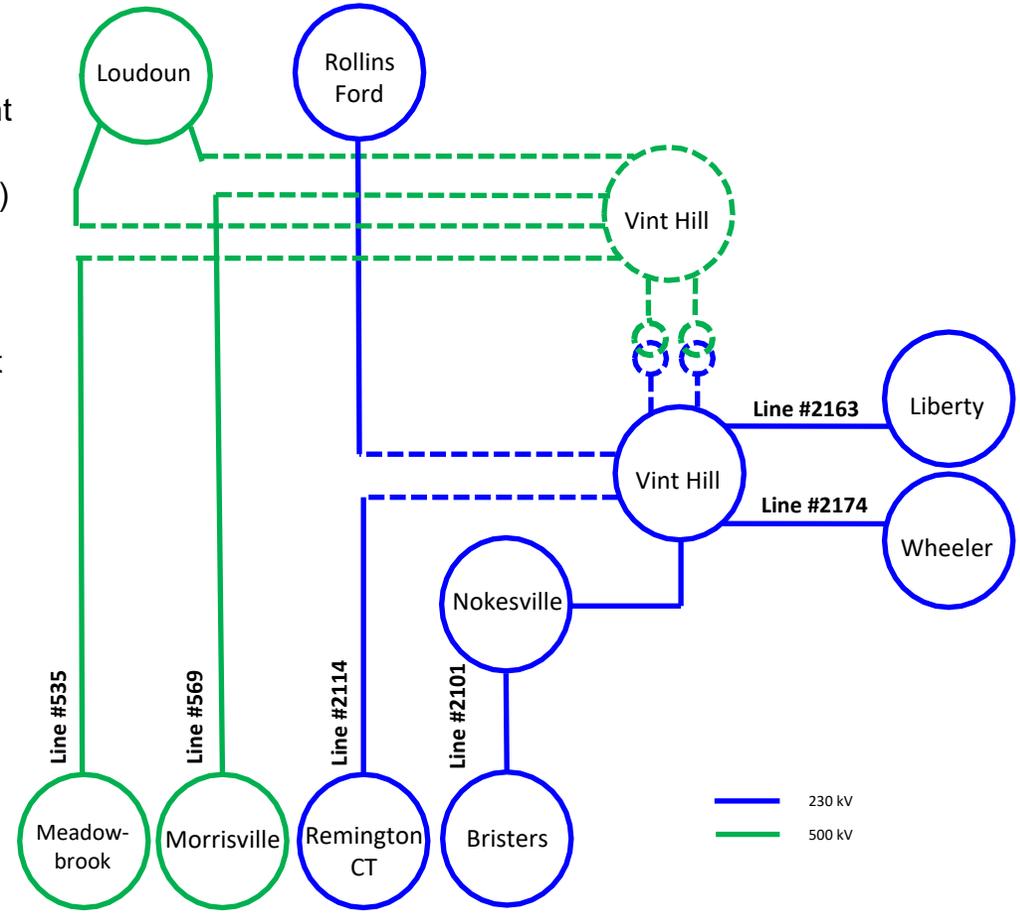
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 12/31/2027

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Operational Flexibility and Efficiency

Need Number: DOM-2022-0057

Process Stage: Solutions Meeting 02/07/2023

Previously Presented: 11/01/2022

Project Driver: Operational Flexibility and Efficiency

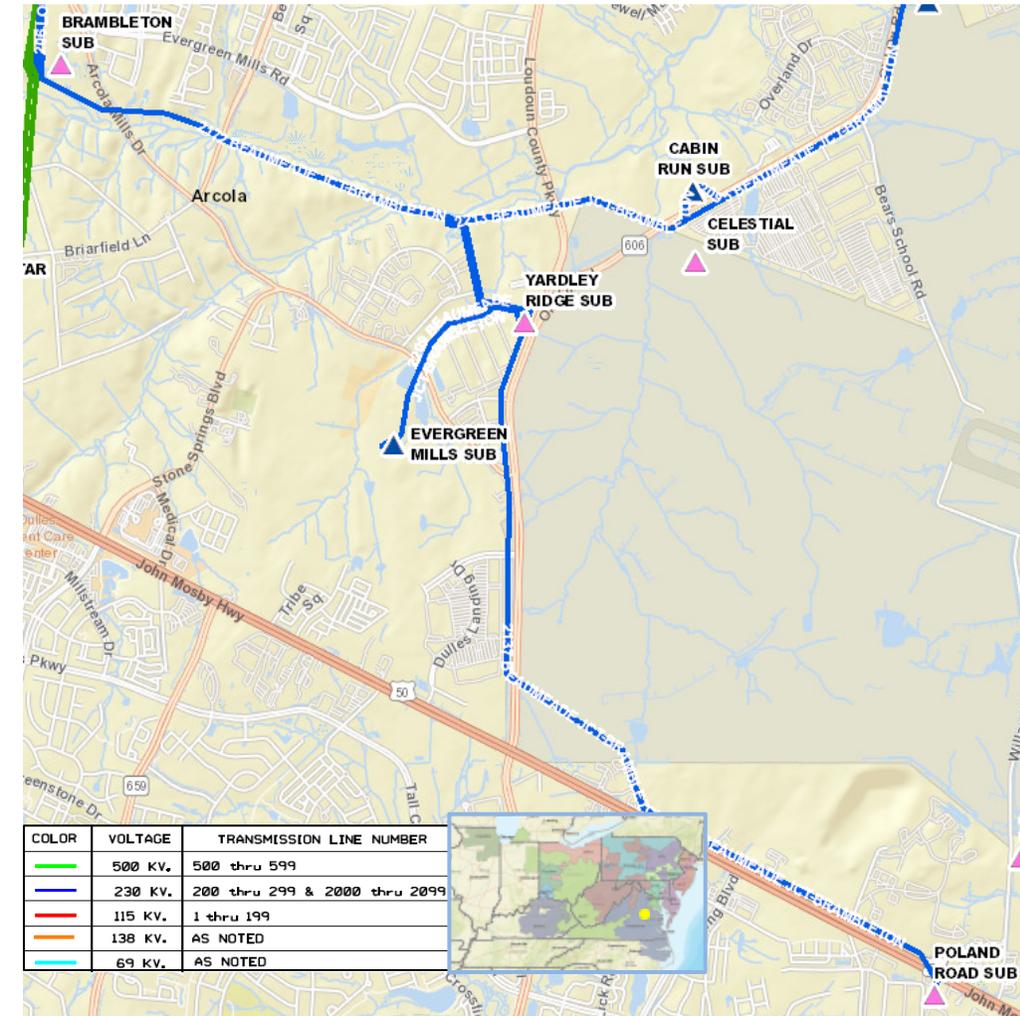
Specific Assumption References:

See details on Operational Flexibility and Efficiency in Dominion’s Planning Assumptions presented in December 2021.

Problem Statement:

Near-term planning studies and Dominion Energy Operations Engineering studies have identified overloads on 230 kV Line #2172 (Brambleton – Evergreen Mills) for the loss of Line #2183 (Brambleton – Poland Road).

The Dominion Energy Operations team needs a temporary solution to avoid this overload on Line #2172 and accordingly provide flexibility for future construction outages.



Dominion Transmission Zone: Supplemental Operational Flexibility and Efficiency

Need Number: DOM-2022-0057

Process Stage: Solutions Meeting 02/07/2023

Proposed Solution:

Install approximately 2.2 Ω series reactor at Evergreen Mills station on terminal of Line #2172.

Estimated Project Cost: \$3 M

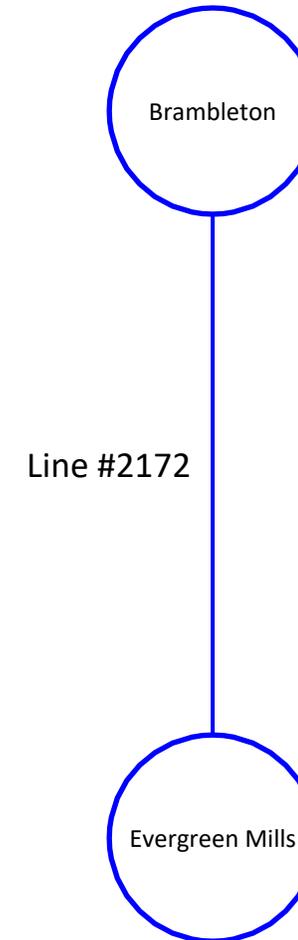
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 6/01/2023

Project Status: Engineering

Model: 2023 RTEP



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

Need Number: DOM-2022-0060

Process Stage: Solution Meeting 02/07/2023

Previously Presented: Need Meeting 12/06/2022

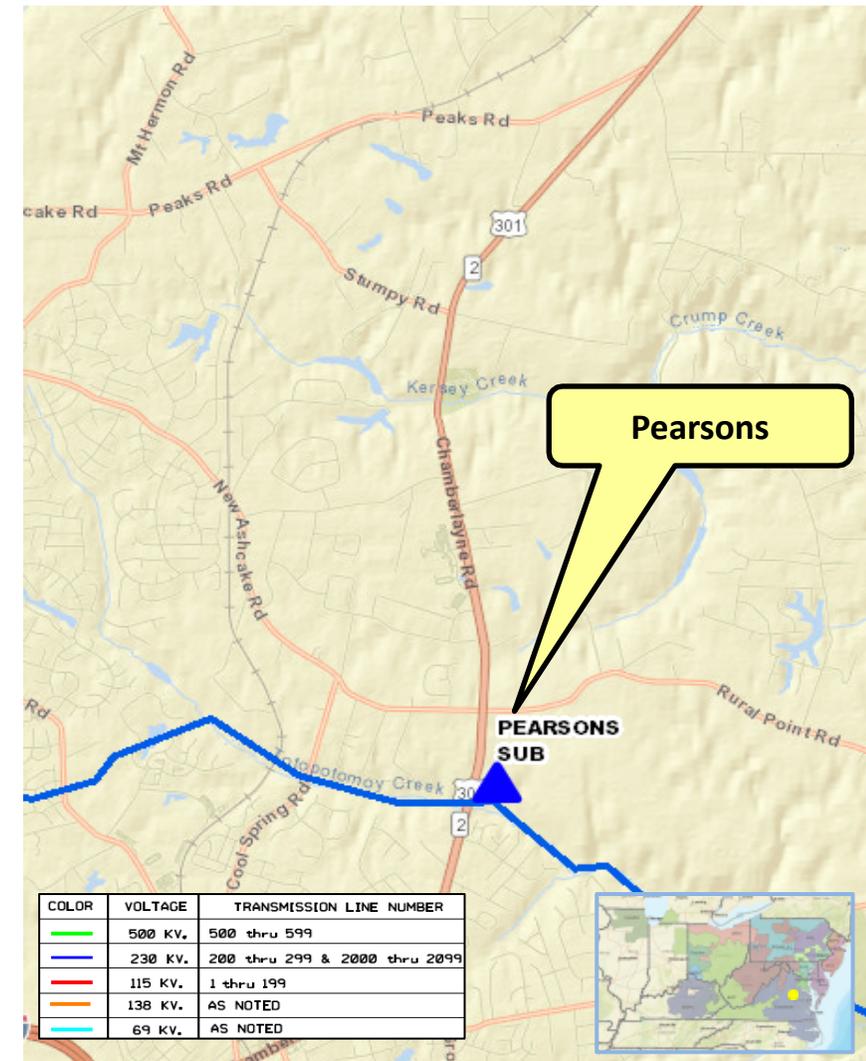
Project Driver: Equipment Material Condition, Performance and Risk

Specific Assumption References:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2021.

Problem Statement:

Dominion Energy has identified a need to replace two 230kV switches at Pearsons substation (207576 & 207579). These switches have become inoperable and can only be operated de-energized.



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

Need Number: DOM-2022-0060

Process Stage: Solution Meeting 02/07/2023

Proposed Solution:

Replace the following 230kV switches 207576 and 207579 at Pearsons substation with 3000A switches on the existing backbone. The Pearsons to Elmont segment of Line #2075 Normal, Emergency and Load Dump ratings will increase as follows:

- Summer – From (876, 956, 1163) to (1047, 1047, 1204) MVA
- Winter – From (1068, 1123, 1334) to (1160, 1160, 1334) MVA

Estimated Project Cost: \$ 0.473M

Alternatives Considered: None

Projected In-Service Date: 4/18/2023

Project Status: Engineering

Model: 2027 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

01/27/2023 – V1 – Original version posted to pjm.com