Dominion Supplemental Projects

Transmission Expansion Advisory Committee
March 9, 2021

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 Equipment Material Condition, Performance and Risk

Need Number: DOM-2021-0006

Process Stage: Need Meeting 03/09/2021

Project Driver: Equipment Material Condition, Performance and Risk

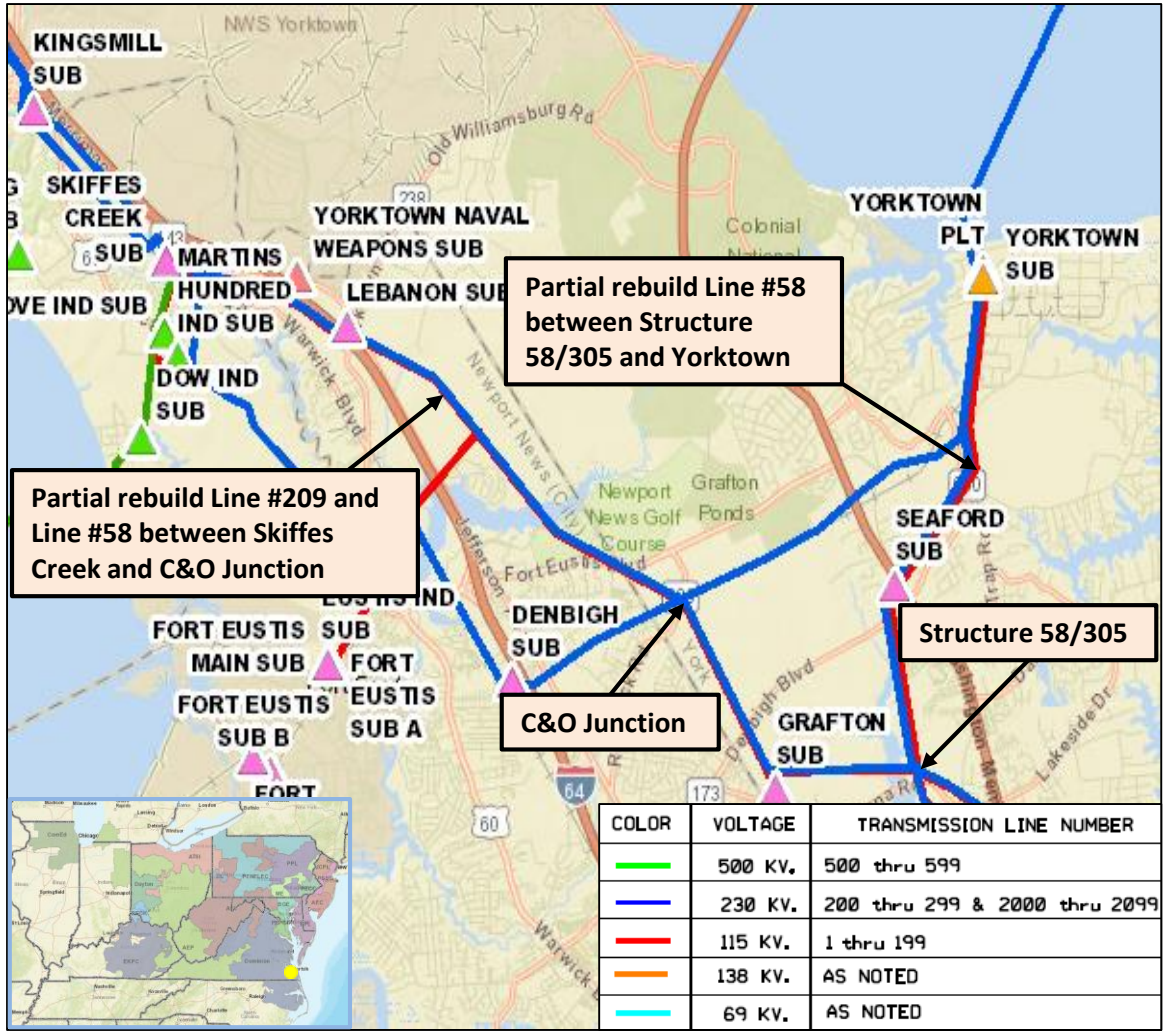
Specific Assumption References:

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

Need Number: DOM-2021-0007

Process Stage: Need Meeting 03/09/2021

Project Driver: Equipment Material Condition, Performance and Risk

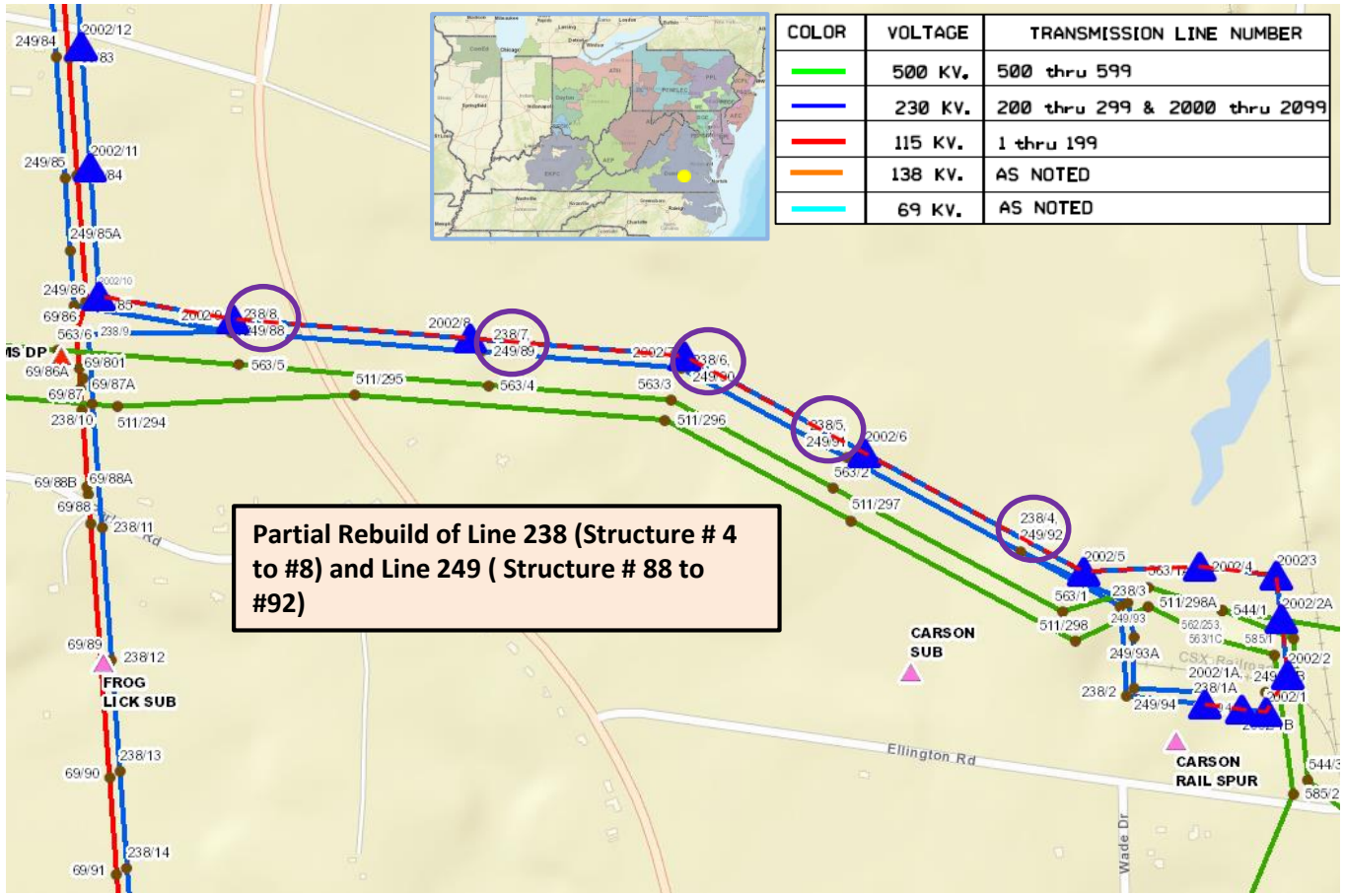
Specific Assumption References:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 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). The structures were noted to be subject to extensive deterioration. Continued degradation of the steel components and connections on these towers has severely reduced their structural integrity.
- 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: Supplemental Equipment Material Condition, Performance and Risk

Need Number: DOM-2021-0008

Process Stage: Need Meeting 03/09/2021

Project Driver: Equipment Material Condition, Performance and Risk

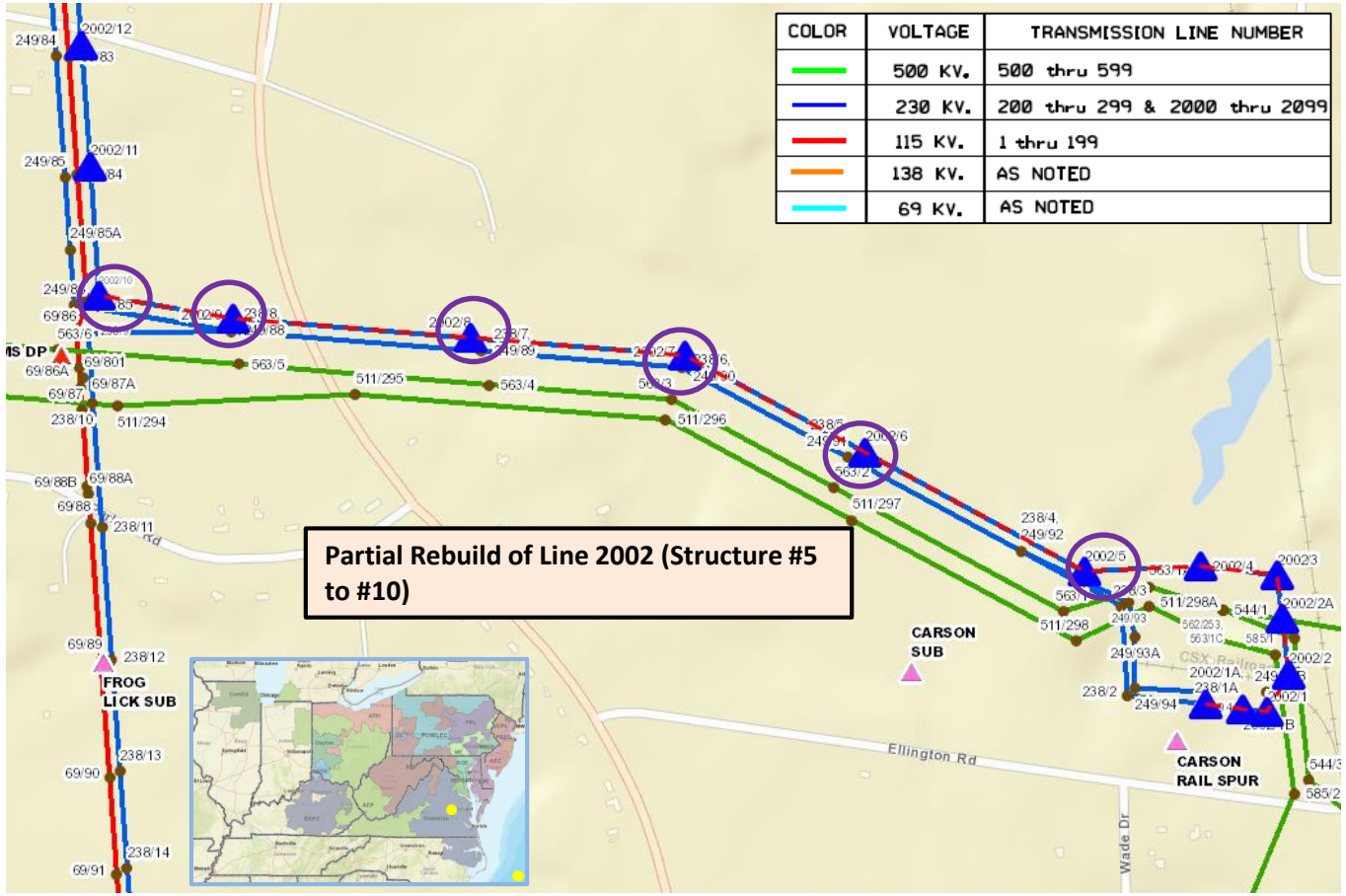
Specific Assumption References:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 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 #05 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). The structures were noted to be subject to extensive deterioration. 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.
- 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: Supplemental Equipment Material Condition, Performance and Risk

Need Number: DOM-2021-0014

Process Stage: Need Meeting 03/09/2021

Project Driver: Equipment Material Condition, Performance and Risk

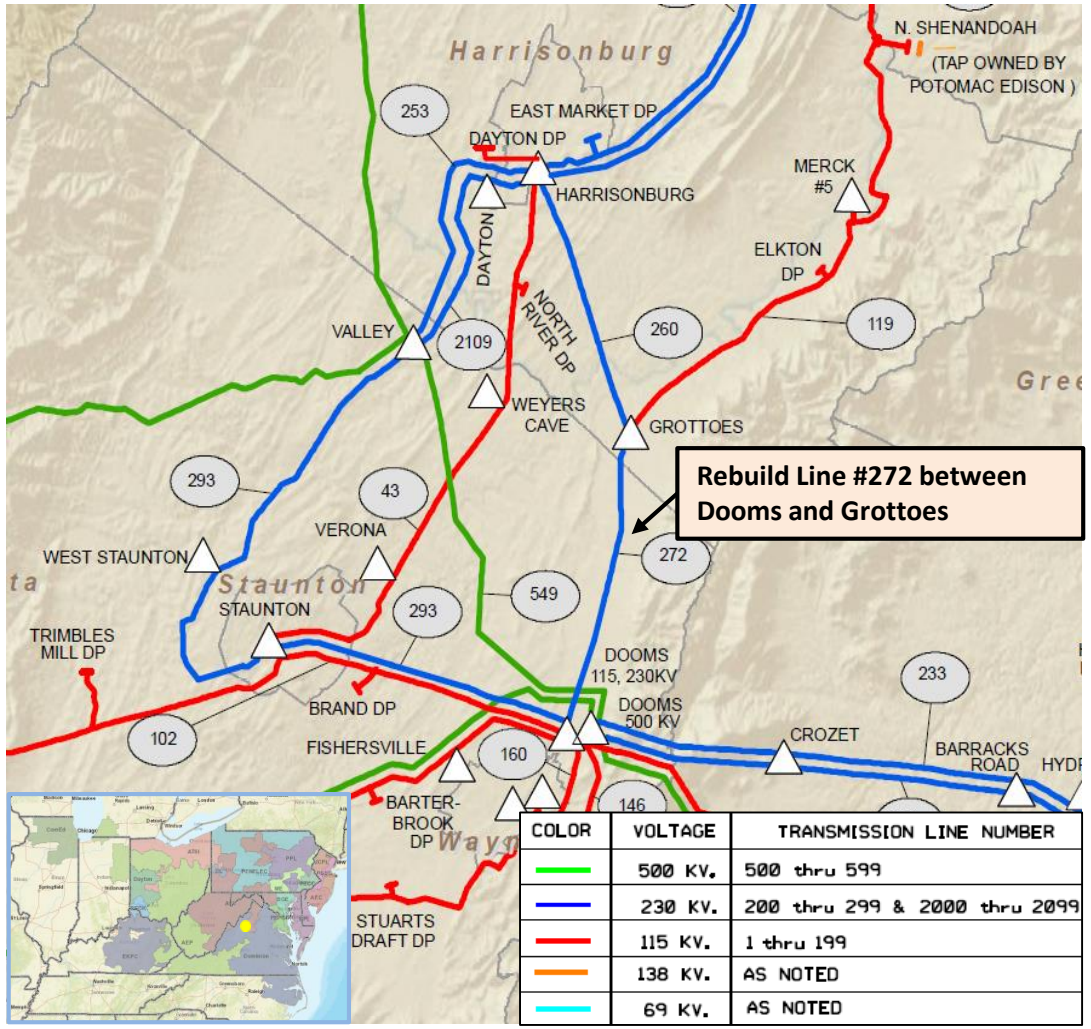
Specific Assumption References:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 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: Supplemental Customer Load Request

Need Number: DOM-2021-0016

Process Stage: Need Meeting 03/09/2021

Project Driver: Customer Service

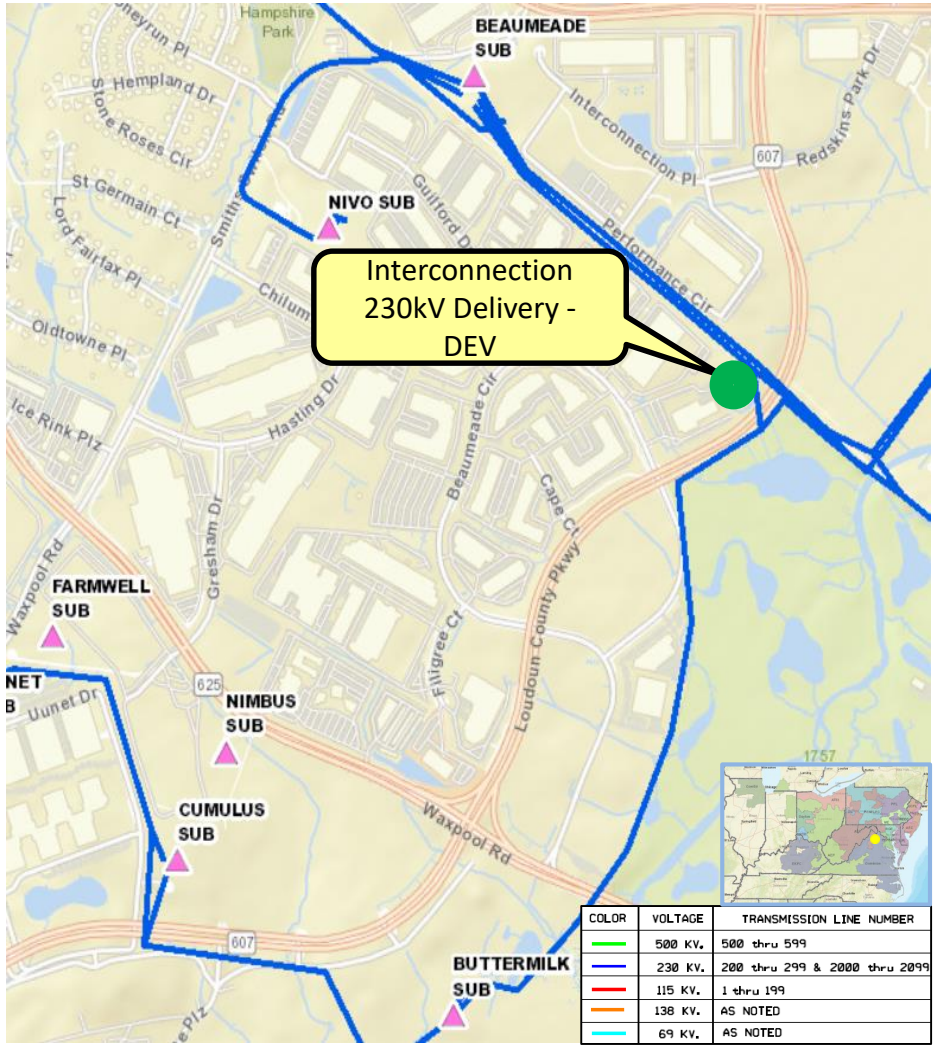
Specific Assumption References:

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 (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.

Initial In-Service Load	Projected 2026 Load
Summer: 180.3 MW	Summer: 208.3 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 Equipment Material Condition, Performance and Risk

Need Number: DOM-2021-0005

Process Stage: Solution Meeting 03/09/2021

Previously Presented: Need Meeting 01/06/2021

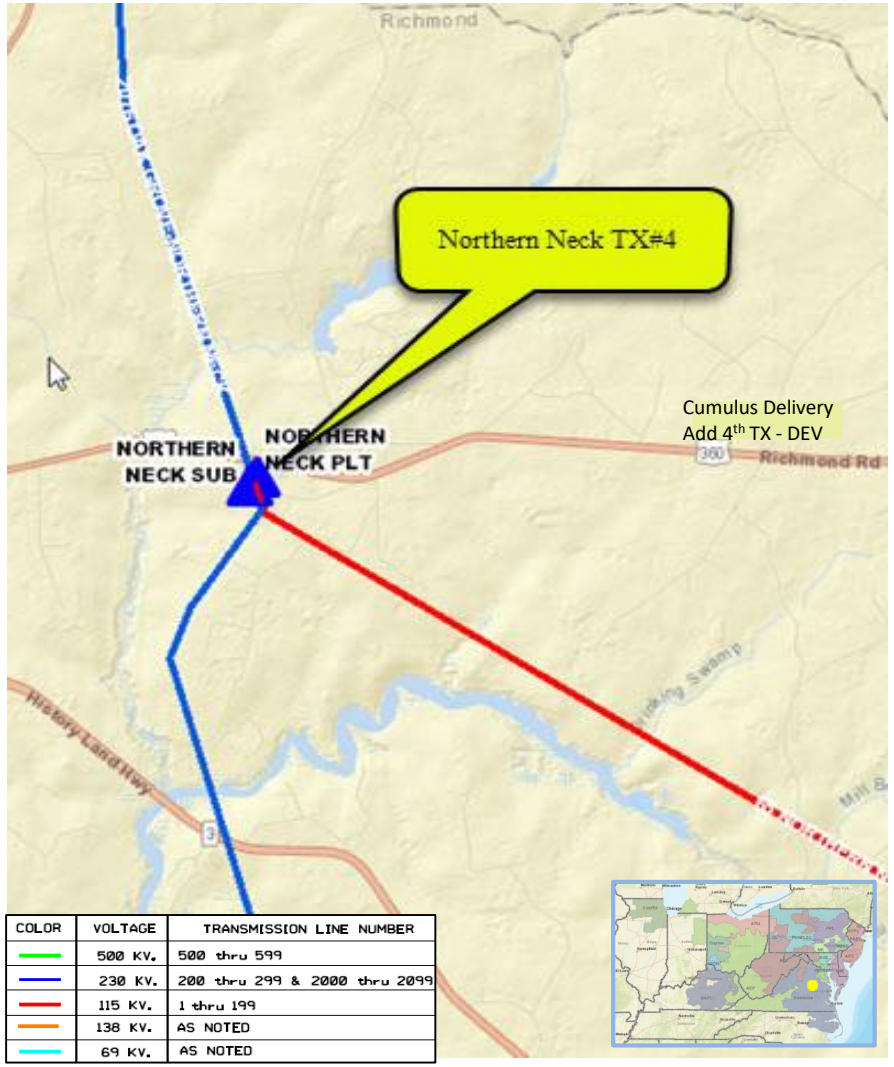
Project Driver: Equipment Material Condition, Performance and Risk – End-Of-Life

Specific Assumption References:
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: Supplemental
Replace Northern Neck TX#4 - DEV

Need Number: DOM-2021-0005

Process Stage: Solutions Meeting 03/09/2021

Proposed 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 Project Cost: $1.7 M

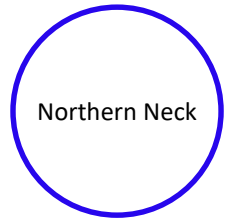
Alternatives Considered:

None

Projected In-service Date: 08/19/2021

Project Status: Engineering

Model: 2026 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2021-0012

Process Stage: Solutions Meeting 03/09/2021

Previously Presented: Need Meeting 02/09/2021

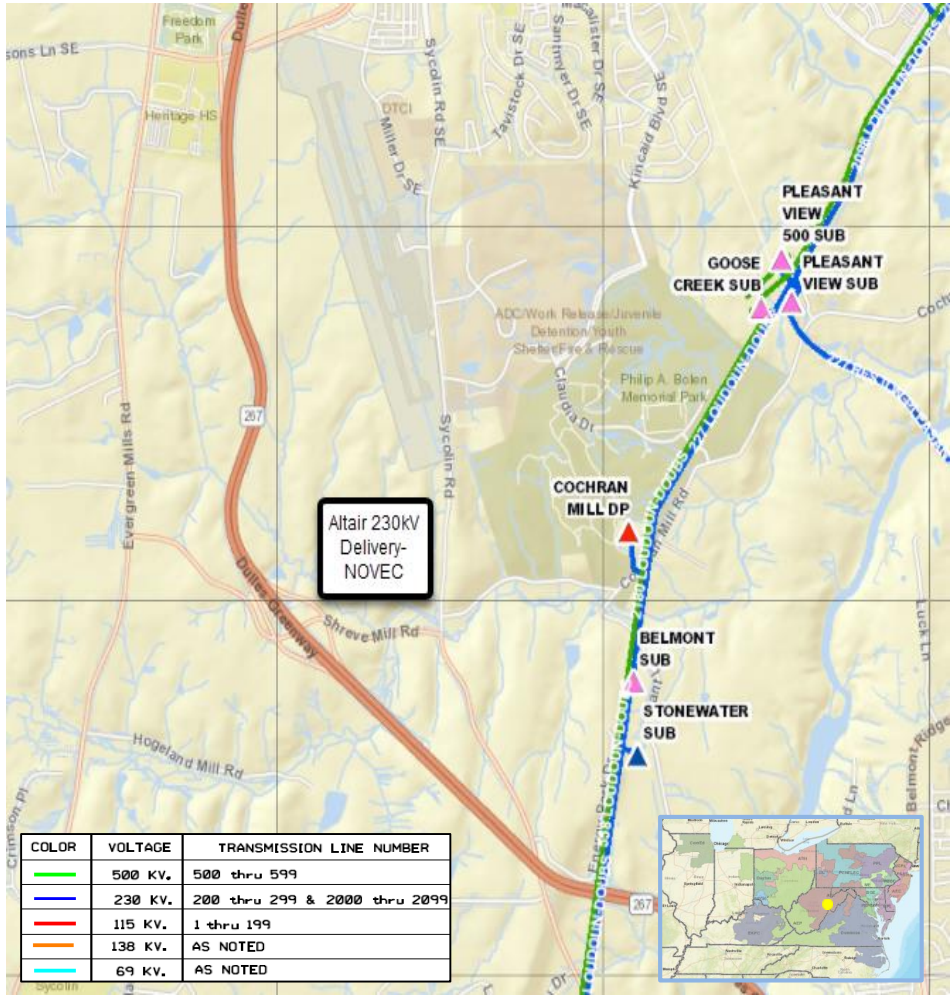
Project Driver: Customer Service

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 (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.



Initial In-Service Load	Projected 2026 Load
Summer: 80.0 MW	Summer: 107.0 MW

Dominion Transmission Zone: Supplemental Altair 230kV Delivery - NOVEC

Need Number: DOM-2021-0012

Process Stage: Solutions Meeting 03/09/2021

Proposed 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 Project Cost: $15.0 M

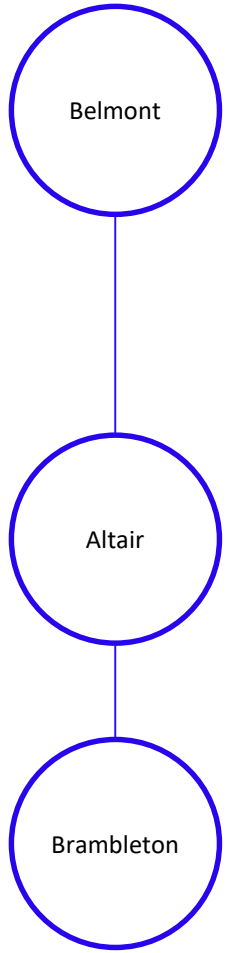
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 09/01/2024

Project Status: Engineering

Model:



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

2/26/2021 – V1 – Original version posted to pjm.com.

3/1/2021 – V1 – Update to DOM-2021-0006 Need