Dominion Supplemental Projects

Transmission Expansion Advisory Committee
November 4, 2020

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-2020-0040

Process Stage: Need Meeting 11/04/2020

Project Driver: Customer Service

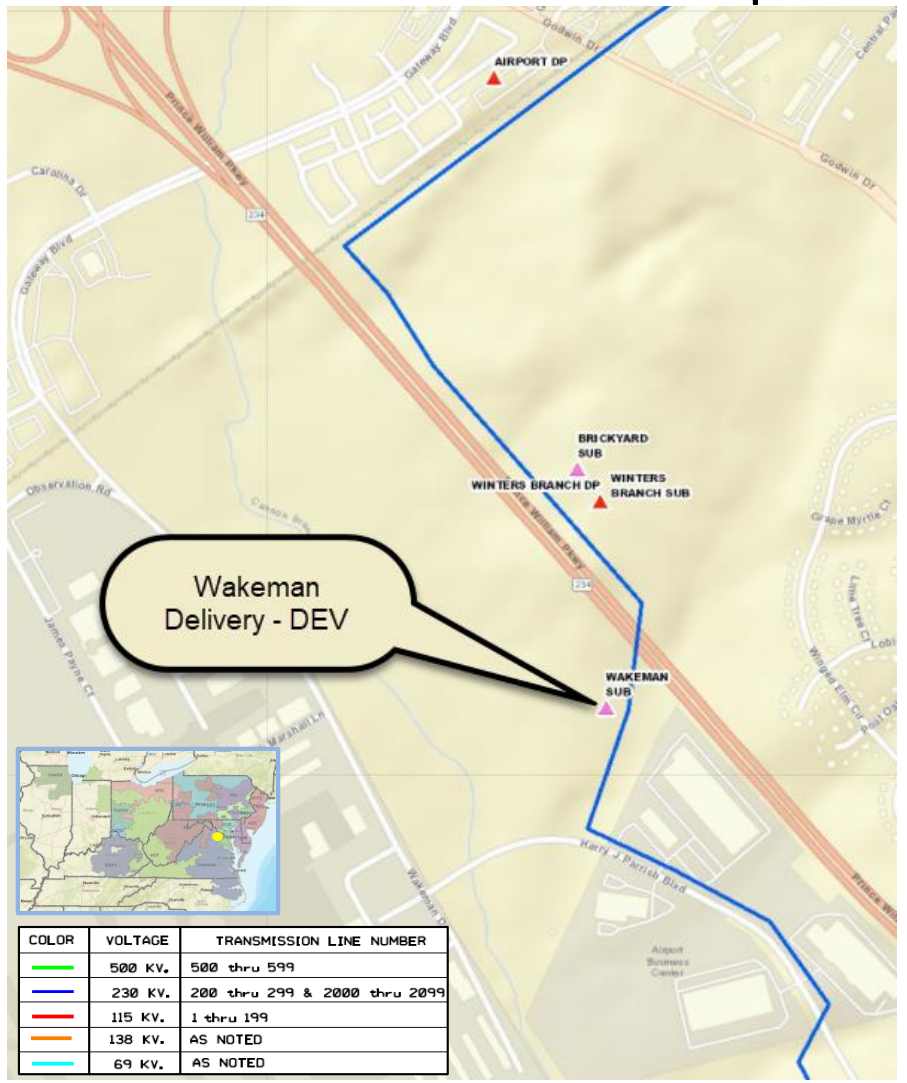
Specific Assumption References:

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 (Wakeman) to accommodate a new datacenter campus in Prince William County with a total load in excess of 100MW. Requested in-service date is 6/01/2022.

Initial In-Service Load	Projected 2025 Load
Summer: 5.0 MW	Summer: 179.1 MW



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2020-0041

Process Stage: Need Meeting 11/04/2020

Project Driver: Customer Service

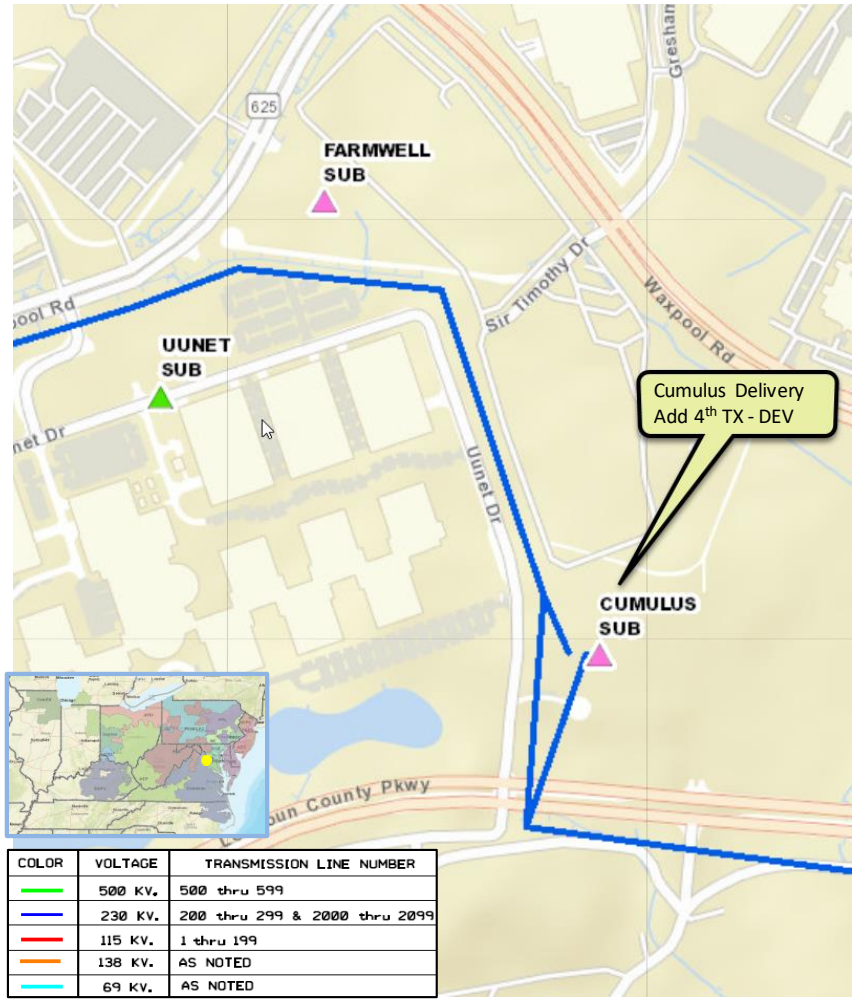
Specific Assumption References:

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 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.

Initial In-Service Load	Projected 2025 Load
Summer: 142.8 MW	Summer: 256.1 MW



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2020-0043

Process Stage: Need Meeting 11/04/2020

Project Driver: Customer Service

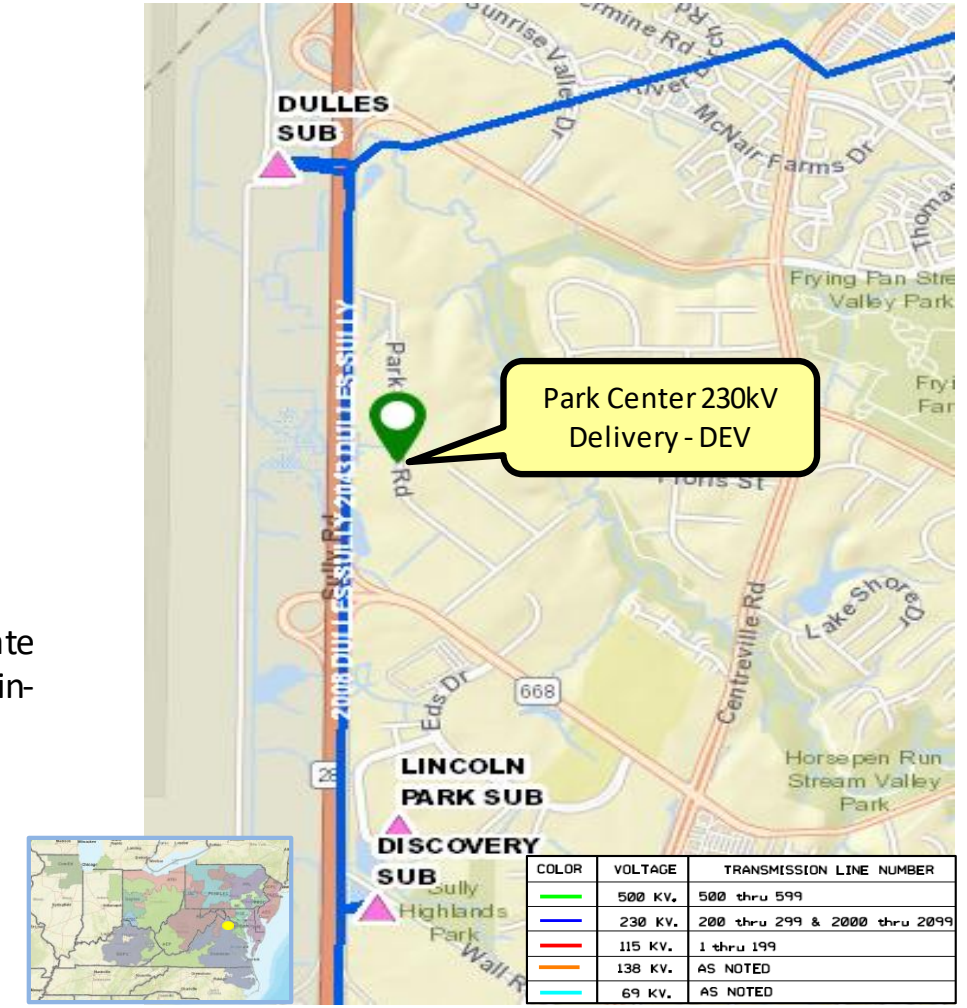
Specific Assumption References:

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 (Park Center) to accommodate a new datacenter campus in Fairfax County with a total load in excess of 100MW. Requested in-service date is 8/01/2024.

Initial In-Service Load	Projected 2025 Load
Summer: 29.0 MW	Summer: 41.0 MW



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

Need Number: DOM-2020-0044

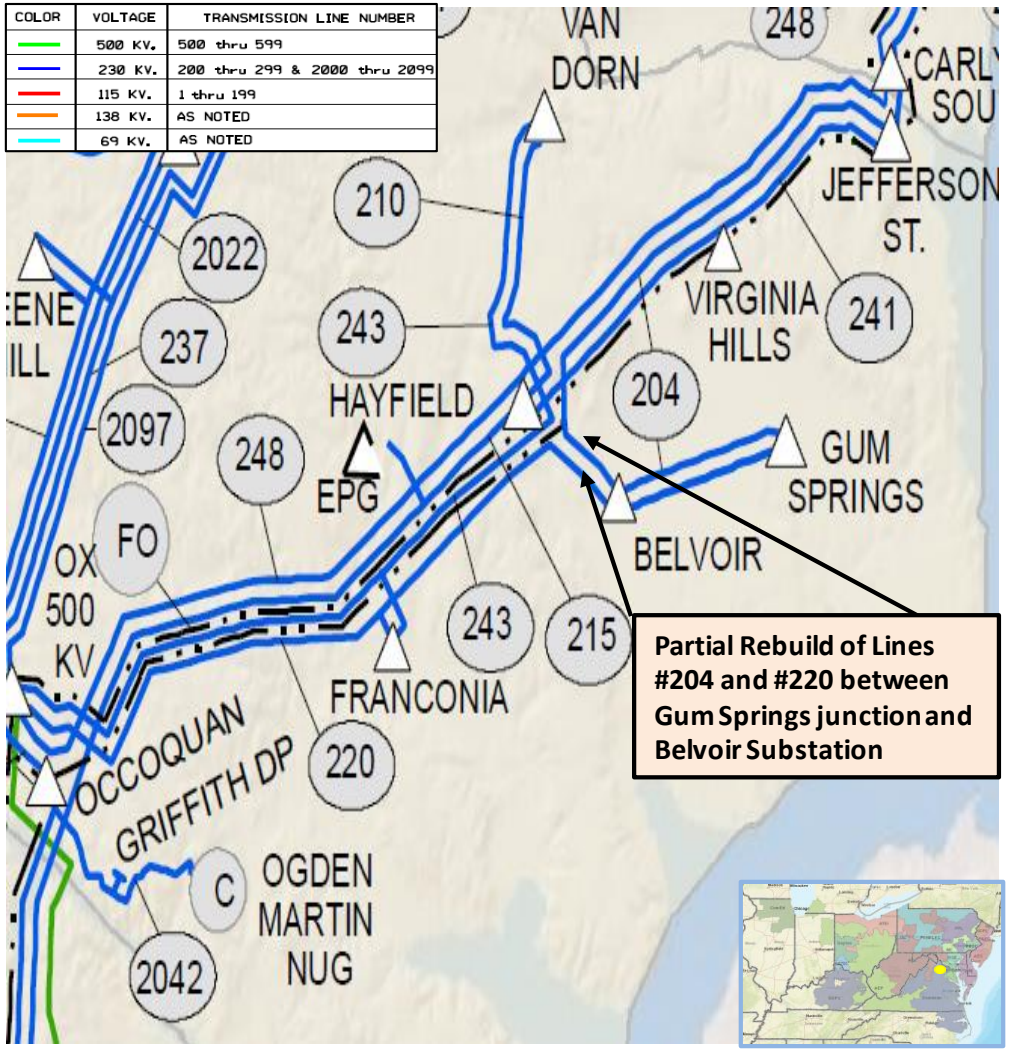
Process Stage: Need Meeting 11/04/2020

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 June 2020.

Problem Statement:
Dominion Energy has identified a need to replace 12 existing transmission towers that carry 230kV Lines #204 (Jefferson St-Gum Springs) and #220 (Ox-Gum Springs). The 12 towers include structures 204/29 to 204/40 and are located along an approximately 1.75 mile section of right-of-way between the Gum Springs junction and Belvoir Substation. The need for replacement is based on the Company's End of Life criteria.

- The structures identified for replacement are CORTEN lattice-type towers that were constructed in 1966 and have reached the end of their useful life.
- 11 of the towers are double circuit structures while structure 204/40, located at the Gum Springs junction, is a triple circuit structure.
- Both lines, #204 and #220, provide service to Belvoir Substation and Gum Springs Substation with approximately 83 MW and 113 MW of tapped load, respectively.



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 Customer Load Request

Need Number: DOM-2020-0019

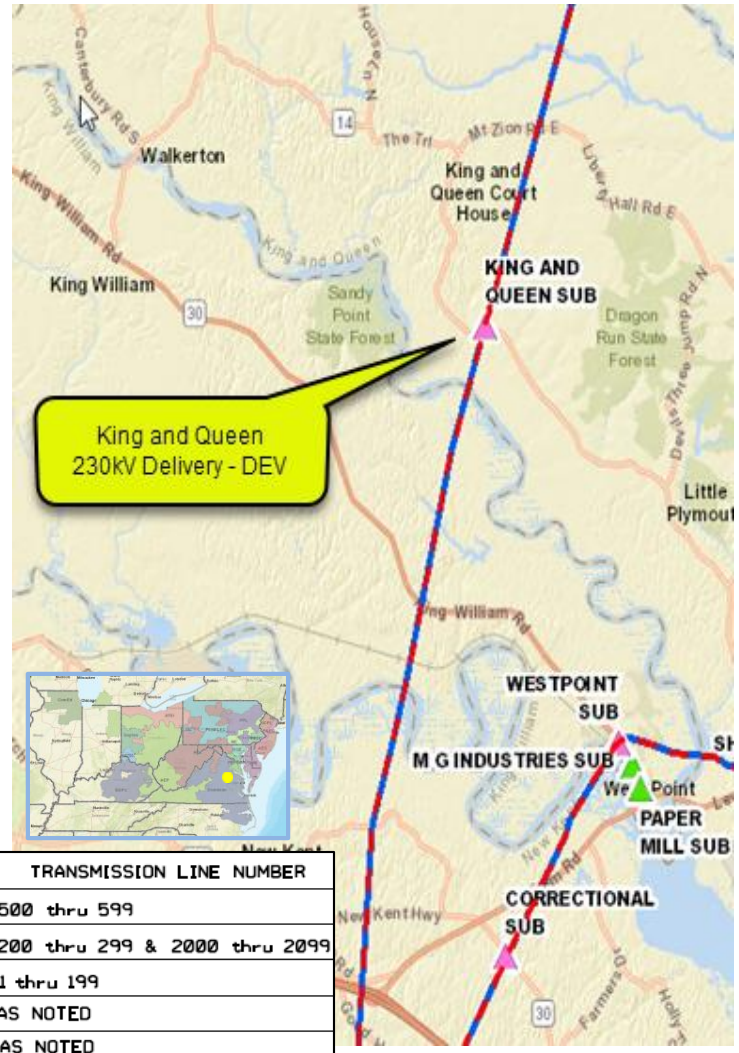
Process Stage: Solutions Meeting 11/04/2020

Previously Presented: Need Meeting 09/01/2020

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 (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.



Initial In-Service Load	Projected 2025 Load
Summer: 3.3 MW	Summer: 3.5 MW

Dominion Transmission Zone: Supplemental King and Queen 230kV Delivery - DEV

Need Number: DOM-2020-0019

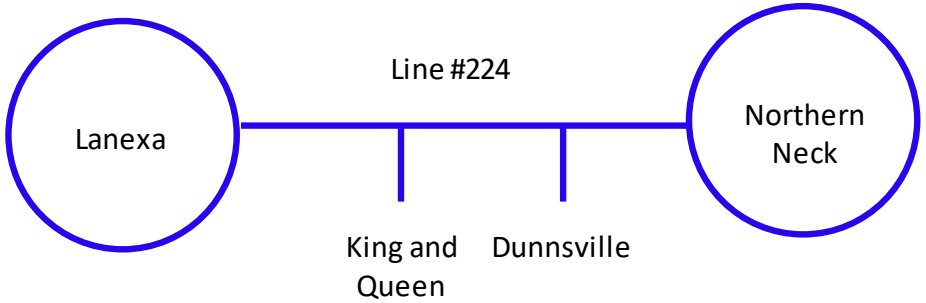
Process Stage: Solutions Meeting 11/04/2020

Proposed 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:
Transmission Est: $1.86M
Distribution Est: $4.71M

Alternatives Considered:
1) 34.5kV distribution approx. 1.2 miles under the Mattaponi River (approx. $6.15M)
2) Rebuild approx. 14 mile of distribution (approx. $10.5M)

(Note: Alternative #1, although estimated competitively to the proposed solution, was ruled out due to concerns with being able to construct a 34.5kV distribution circuit under the Mattaponi River; including environmental impacts, unforeseen cost increases, and potential delays due to permitting which could impact the in-service date of baseline upgrade project #B3223)



Projected In-service Date: 06/01/2023

Project Status: Engineering

Model:

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2020-0035

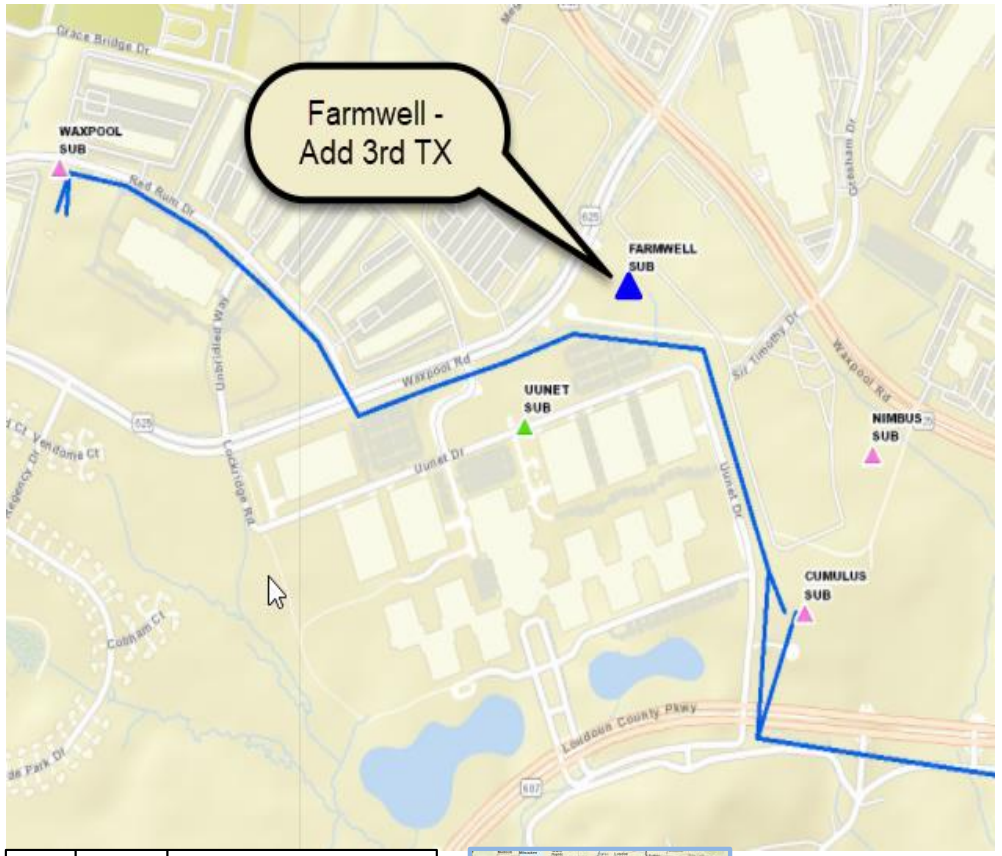
Process Stage: Solutions Meeting 11/04/2020

Previously Presented: Need Meeting 10/06/2020

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 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.



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

Initial In-Service Load	Projected 2025 Load
Summer: 136.3 MW	Summer: 228.2 MW

Dominion Transmission Zone: Supplemental Farmwell 230kV Delivery - Add 3rd TX - DEV

Need Number: DOM-2020-0035

Process Stage: Solutions Meeting 11/04/2020

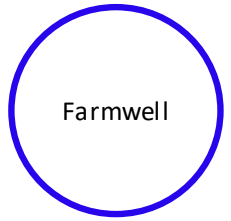
Proposed Solution:

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

Estimated Project Cost: $0.50 M

Alternatives Considered:

No feasible alternatives



Projected In-service Date: 01/01/2023

Project Status: Engineering

Model: 2025 RTEP

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

Need Number: DOM-2020-0028

Process Stage: Solution Meeting 11/04/2020

Previously Presented: Need Meeting 9/1/2020

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 and updated in June 2020

Problem Statement:
Dominion Energy has identified a need to replace 47 existing transmission towers (Staunton – Valley) of Line#293.

- The 293 line was constructed largely on wood H-frame structures in timeframe between 1971 and 1981. Approximately 17.8 miles of 21.27 miles of this line was constructed on wood H-frame structures and these structures 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: Supplemental 230kV Line #293 – EOL Rebuild

Need Number: DOM-2020-0028

Process Stage: Solutions Meeting 11/04/2020

Proposed Solution:
Approximately 17.8 miles involving wood H-frame structures and weathering steel Corten lattice towers will be replaced with steel monopoles and new conductor with a normal summer rating of 1047 MVA.

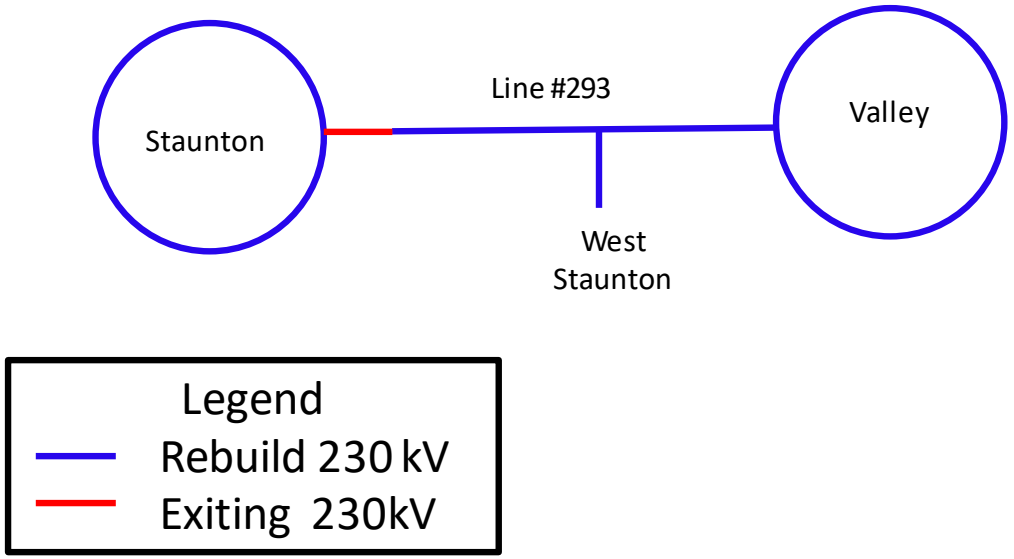
Estimated Project Cost: $35.6 M

Alternatives Considered:
No feasible alternatives

Projected In-service Date: 12/15/2024

Project Status: Conceptual

Model:



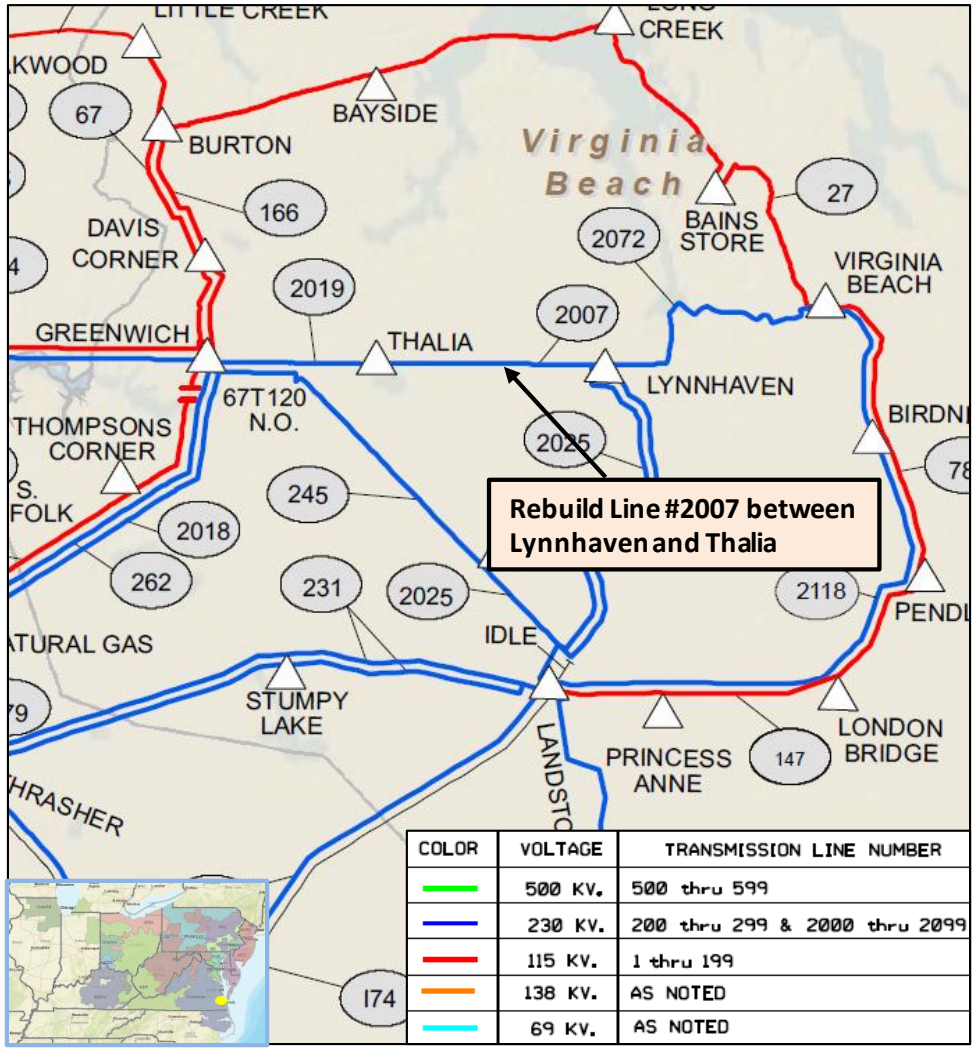
Dominion Transmission Zone: Supplemental Equipment Material Condition, Performance and Risk

Need Number: DOM-2020-0036
Process Stage: Solutions Meeting 11/04/2020
Previously Presented: Need Meeting 10/06/2020
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 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: Supplemental
Line #2007 End-of-Life Rebuild – Lynnhaven to Thalia

Need Number: DOM-2020-0036

Process Stage: Solutions Meeting 11/04/2020

Proposed 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.

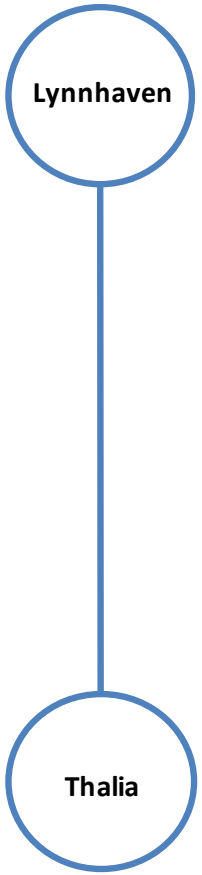
Estimated Project Cost: $7.0 M

Alternatives Considered:
No feasible alternatives

Project Target In-service Date: 12/31/2025

Project Status: Conceptual

Model:



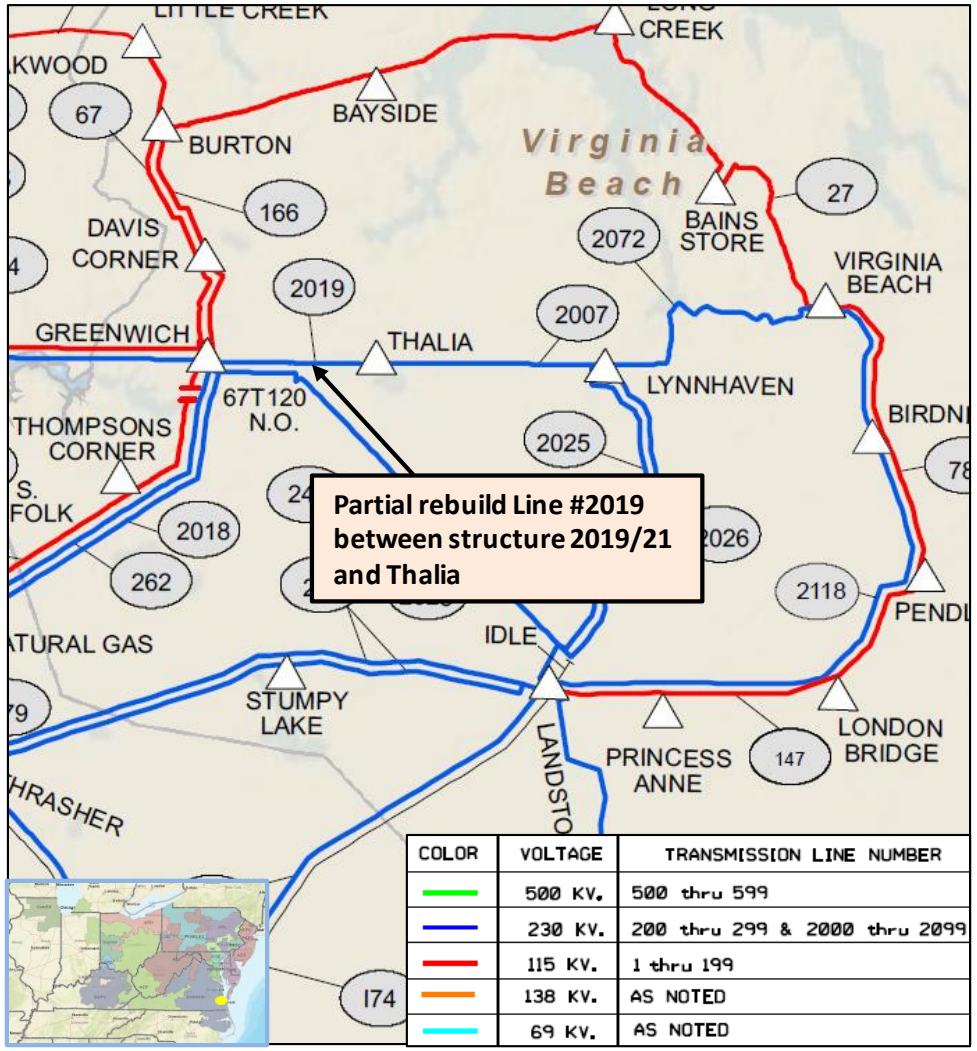
Dominion Transmission Zone: Supplemental Equipment Material Condition, Performance and Risk

Need Number: DOM-2020-0037
Process Stage: Solutions Meeting 11/04/2020
Previously Presented: Need Meeting 10/06/2020
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 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: Supplemental
Line #2019 End-of-Life Partial Rebuild – Thalia to Greenwich

Need Number: DOM-2020-0037

Process Stage: Solutions Meeting 11/04/2020

Proposed 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.

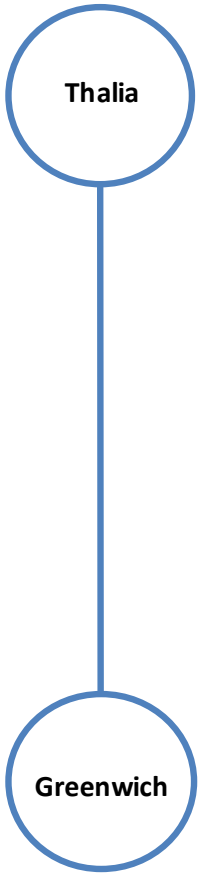
Estimated Project Cost: $3.0 M

Alternatives Considered:
No feasible alternatives

Project Target In-service Date: 12/15/2025

Project Status: Conceptual

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

10/23/2020 – V1 – Original version posted to pjm.com.

11/02/2020 – V2 – Removed Pacific Loop and Poland Loop DNH

11/04/2020 – V3 – Updated DOM-2020-0019 project cost, DOM-2020-0044 wording update.

12/07/2020 – V4 – Updated DOM-2020-0019 to include an estimated distribution cost to give perspective on the total project cost. A note was also added after the “Alternatives Considered” section to clarify why the proposed solution was selected over the alternative to run a distribution circuit under the Mattaponi River.