

Dominion Supplemental Projects

Transmission Expansion Advisory
Committee
October 5, 2021

Solution Slides

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2018-0013 (Update)

Process Stage: Solutions Meeting 10/05/2021

Previously Presented: Solutions Meeting 05/16/2019

Project Driver: Customer Service

Specific Assumption References:

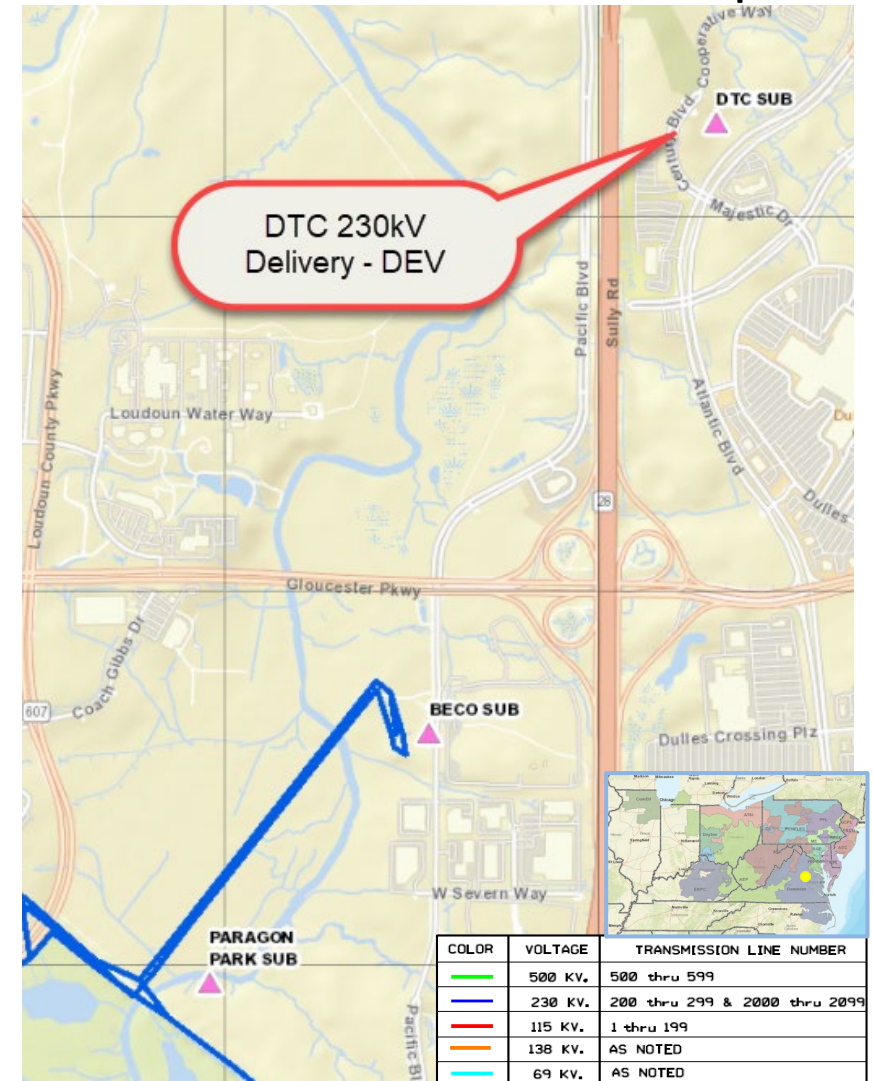
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (DTC) to accommodate a new datacenter campus in Loudoun County with a total load in excess of 100 MW. The new substation will be configured to accommodate five 84 MVA transformers with two transformers installed initially. Requested in-service date is ~~11/15/2021~~ 06/30/2024. In-service date changed due to permitting, routing, and land acquisition delays.

Initial In-Service Load	Projected 2024 2026 Load
Summer: 46.5 122.0 MW	Summer: 130.3 263.5 MW

*Load projections updated



Dominion Transmission Zone: Supplemental DTC 230kV Delivery - DEV

Need Number: DOM-2018-0013 (Update)

Process Stage: Solutions Meeting 10/05/2021

Proposed Solution to Interconnect Customer Load:

Interconnect the new substation by cutting and extending Line #2143 (Beaumeade-BECO) approximately 1.5 miles to the proposed DTC Substation. Terminate both ends into a six-breaker ring bus arrangement with four breakers installed to create a Beaumeade-DTC line and a BECO-DTC line. Install two 230kV circuit switchers and any necessary high side switches and bus work for the new transformers.

Estimated Project Cost: ~~\$25.0M~~-\$41.0M (Total)

DTC Substation - \$10.0M

Line Extension - \$15.0 M

~~DTC Land Purchase - \$16.0M (Land cost was not included as part of previous estimate)~~

Alternatives Considered:

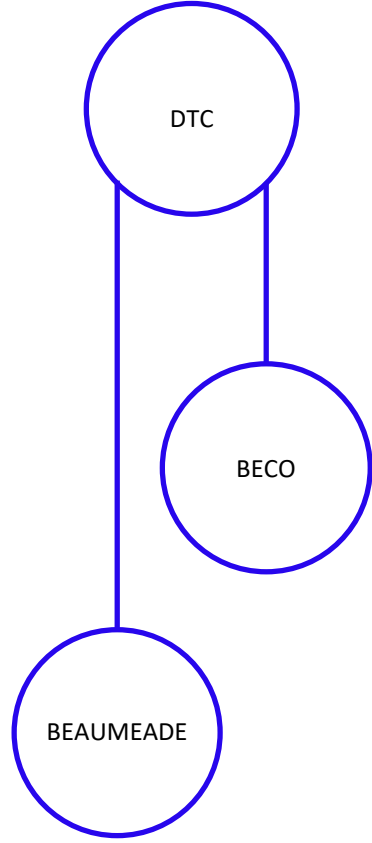
No feasible alternatives

Projected In-service Date:

Customer Service – 06/30/2024

Project Status: Engineering

Model: 2025 RTEP



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

Need Number: DOM-2021-0044

Process Stage: Solution Meeting 10/05/2021

Previously Presented: Need Meeting 08/31/2021

Project Driver: Equipment Material Condition, Performance and Risk

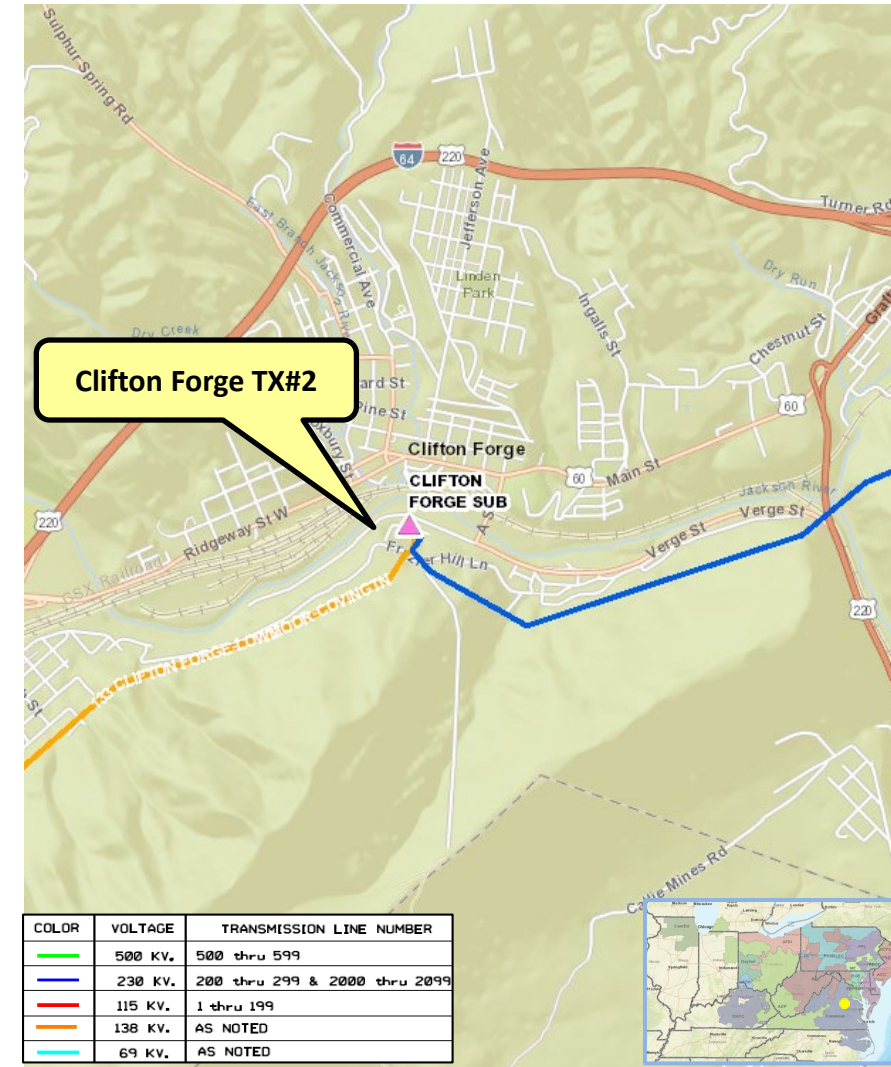
Specific Assumption References:

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

Problem Statement:

Clifton Forge TX#2 is a 250 MVA, 230/138/13.2 kV three-phase auto transformer bank that was manufactured in 1996. This transformer bank has been identified for replacement based on the results of Dominion's transformer health assessment (THA) process. Detailed drivers include:

- Age (approaching 30 years old).
- Reduced BIL ratings (2 levels below standard).
- Degraded porcelain type bushings.
- Oil DGA shows elevated levels of CO and CO2 indicating potential degradation of dielectric paper insulation.
- Mechanical design issue was observed with conservator tank mounting (tank began to collapse and start pulling away from the tank anchor points).
- THA score less than 80.



Dominion Transmission Zone: Supplemental Replace Clifton Forge TX#2 - DEV

Need Number: DOM-2021-0044

Process Stage: Solutions Meeting 10/05/2021

Proposed Solution:

Replace Clifton Forge TX#2 with a new three-phase, 230/138/13.2 kV, 250 MVA unit. Include other ancillary equipment (arresters, switches, relays, etc.) as needed.

Estimated Project Cost: \$3 M

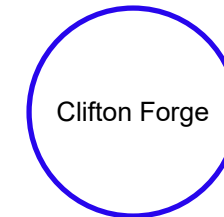
Alternatives Considered:

None

Projected In-service Date: 05/31/2023

Project Status: Engineering

Model: 2025 RTEP



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

Need Number: DOM-2021-0058

Process Stage: Solution Meeting 10/05/2021

Project Driver: Equipment Material Condition, Performance and Risk

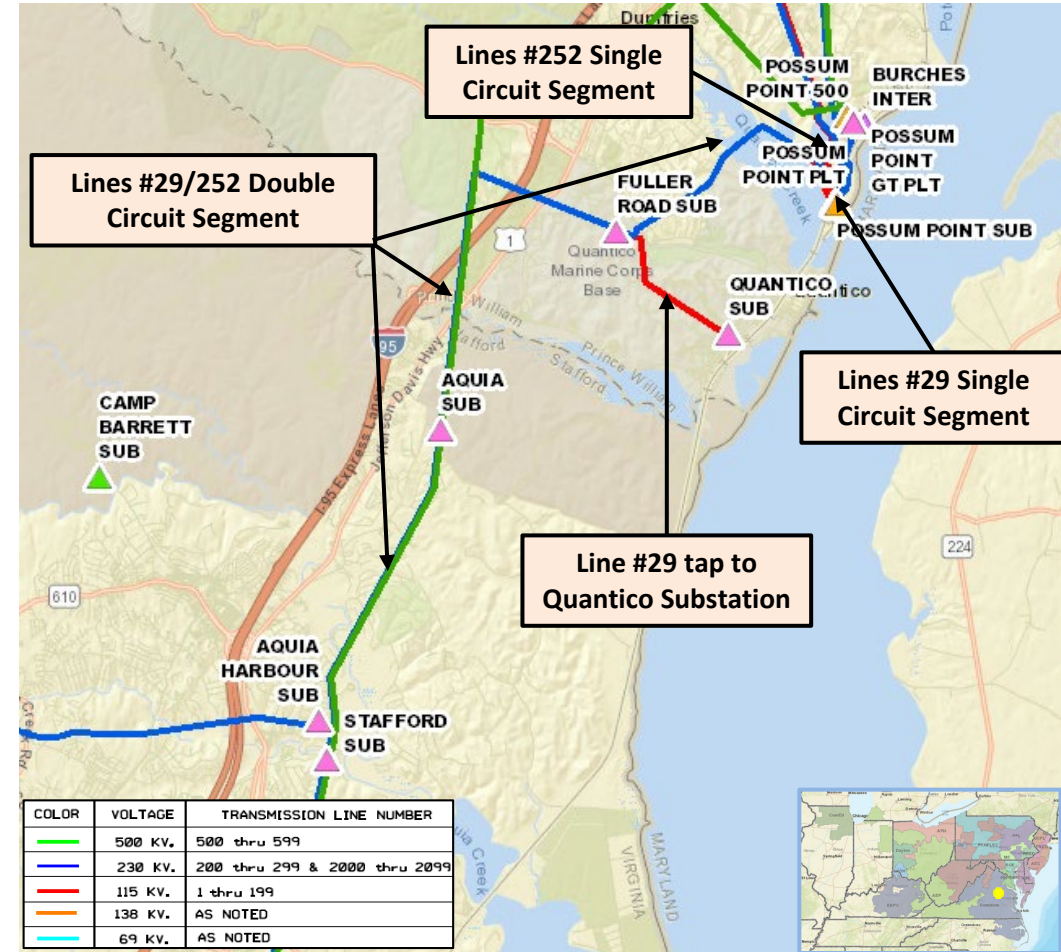
Specific Assumption References:

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

Problem Statement:

Dominion Energy has identified the need to rebuild approximately 12.0 miles of 115kV Line #29 and 230kV Line #252 between Aquia Harbour Switching Station to Possum Point and the approximately 1.7 miles of 115kv tap line to Quantico Substation based on the Company's End of Life Criteria.

- Lines #29 and #252 were mostly constructed on double circuit CORTEN steel structures in 1978. The 115 kV tap line to Quantico Substation was constructed on wood structures in 1978.
- A recent field inspection indicated continued degradation of structures where steel members are delaminating and cracking, and wood structures are showing woodpecker damages.
- 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 CORTEN steel structures is often cited.
- Line #29 is the only feed to the customers at Quantico Substation.



Dominion Transmission Zone: Supplemental Line #29 and Line #252 EOL Rebuild

Need Number: DOM-2021-0058

Process Stage: Solutions Meeting 10/05/2021

Proposed Solution:

- Using current 230kV standards and a minimum summer emergency rating of 1047 MVA, wreck and rebuild approximately 12 miles of double circuit Lines #252 and #29 from Aquia Harbour Switching Station to Possum Point.
- At Possum Point, upgrade the wave trap on Line #252 to 3000A.
- At Aquia Substation, upgrade the Line #252 switches and leads to 3000A.
- At Aquia Harbour Switching Station, upgrade the Line #252 wave trap and a circuit breaker switch to 3000A.

Estimated Project Cost: \$38.0 M

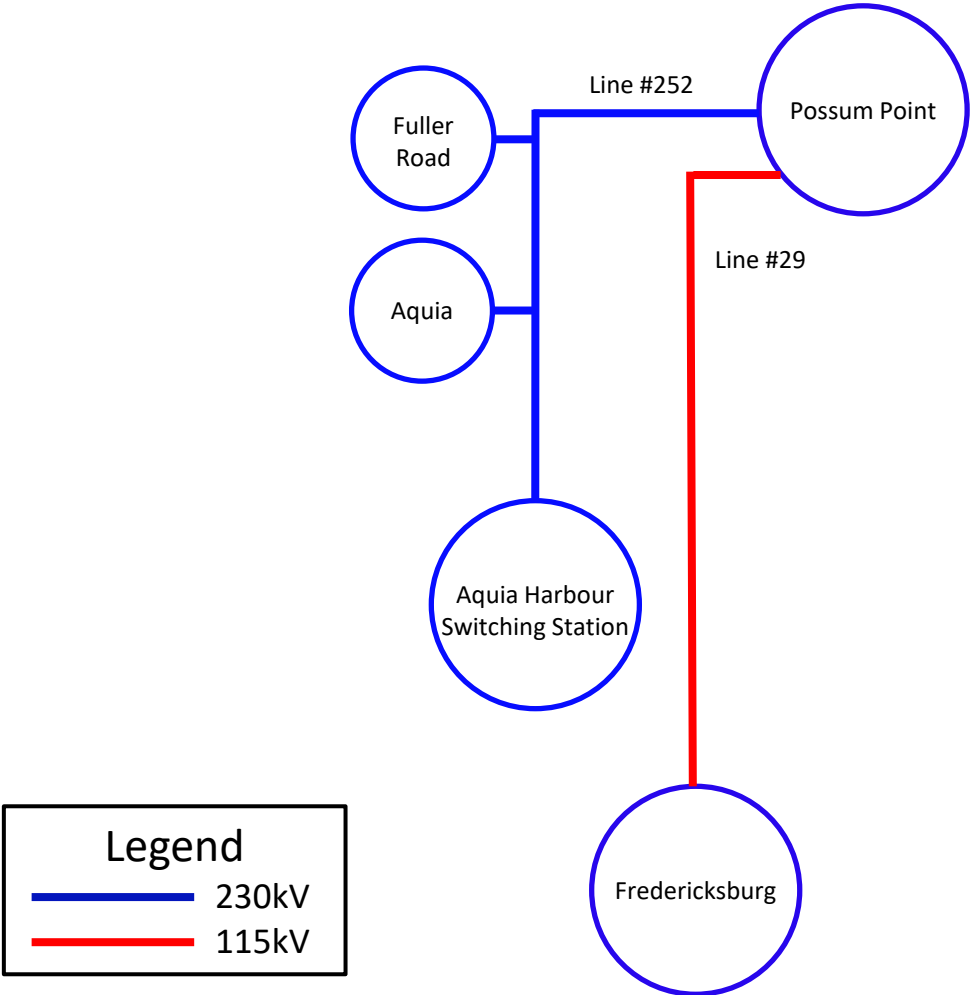
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 06/01/2026

Project Status: Engineering

Model: 2025 RTEP



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

Need Number: DOM-2021-0060

Process Stage: Solution Meeting 10/05/2021

Previously Presented: Need Meeting 08/31/2021

Project Drivers: 1) Operational Flexibility and Efficiency
2) Customer Service

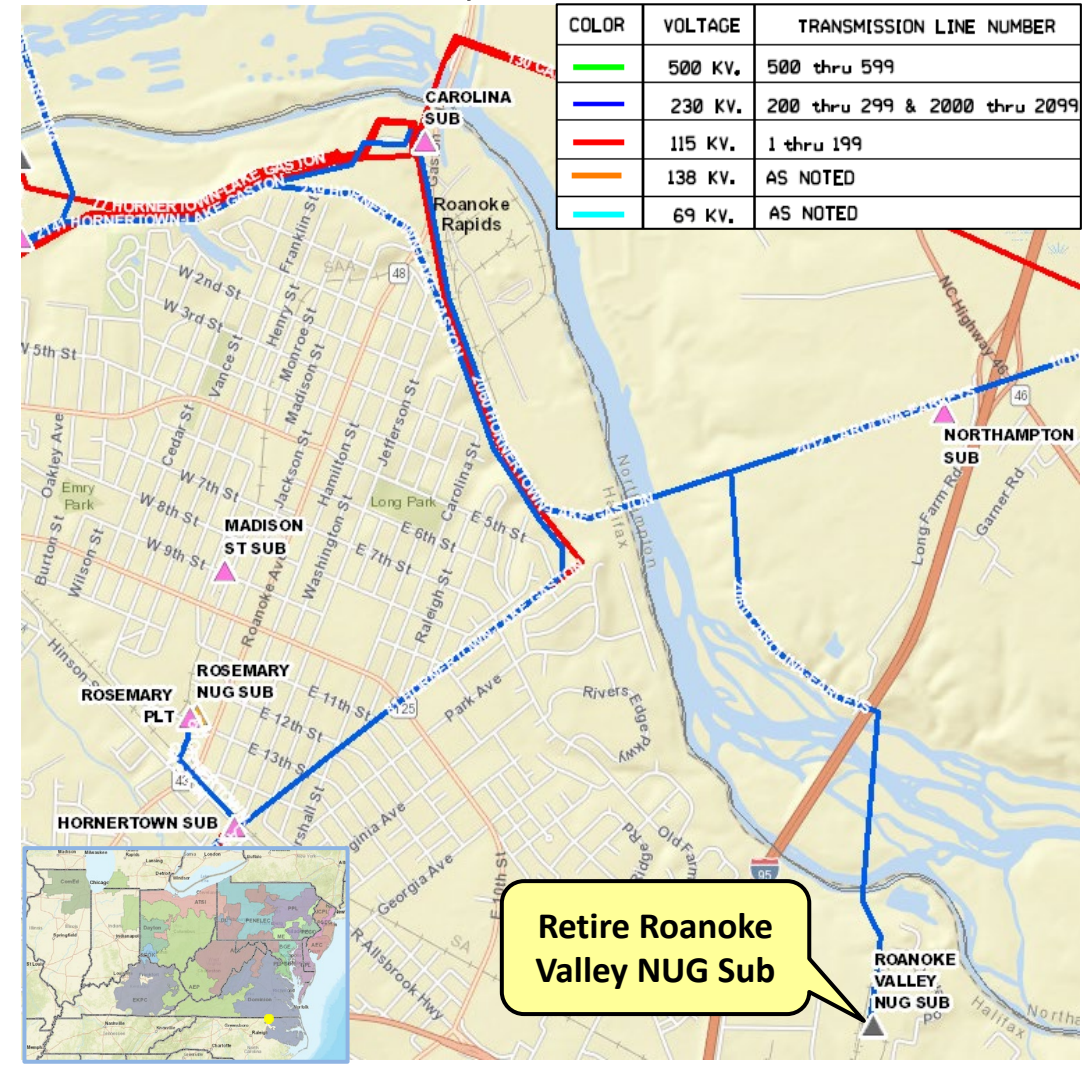
Specific Assumption References:

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 retire Roanoke Valley NUG 230kV Sub and to remove a portion of the double circuit Lines #2012 and #2060.

- No load at Roanoke Valley NUG 230kV Sub post retirement of the generator. The assets are no longer required, need continuous maintenance and pose risk to reliability.
- DE Distribution has a customer locating on the property



Dominion Transmission Zone: Supplemental Retire Roanoke Valley NUG Sub

Need Number: DOM-2021-0060

Process Stage: Solutions Meeting 10/05/2021

Proposed Solution:

Retire Roanoke Valley NUG (RVN) Sub and remove the four (4) structures between RVN Sub and structure 2012/1D,2060/27. Connect Line #2012 with Line #2060 at the junction point (structure 2012/13A,2060/13A) creating Line #2012 from Earleys to Carolina. The remaining portion of double circuit Line #2012/2060 will be kept as idle line.

Estimated Project Cost: \$1.2 M

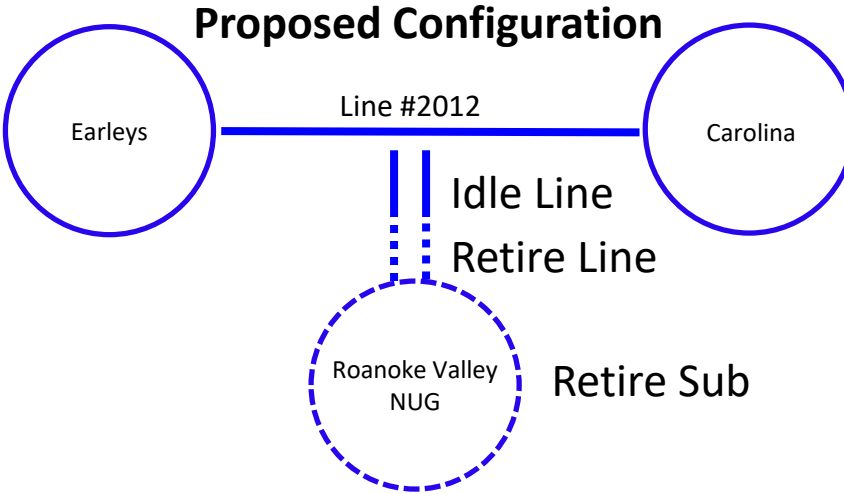
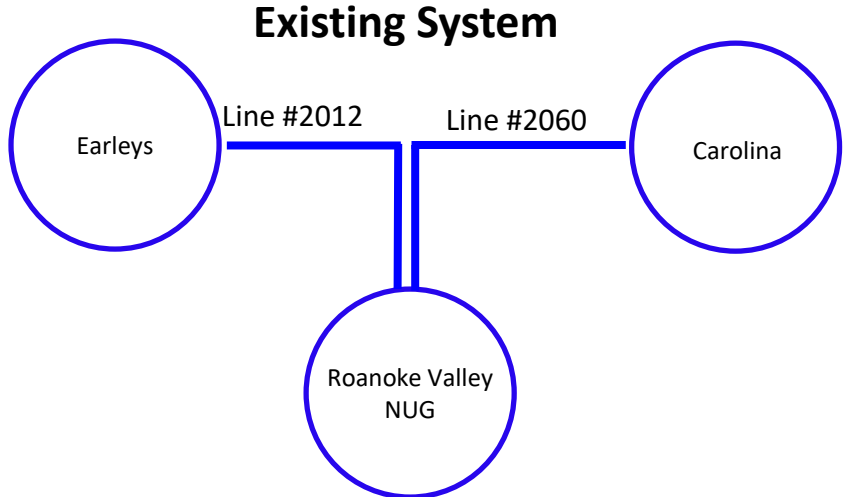
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 03/31/2022

Project Status: Engineering

Model: 2025 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

09/22/2021 – V1 – Original version posted to pjm.com.

10/4/2021 – V2 – Correction on slide 6.