

Dominion Supplemental Projects

Transmission Expansion Advisory
Committee
April 01, 2025

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

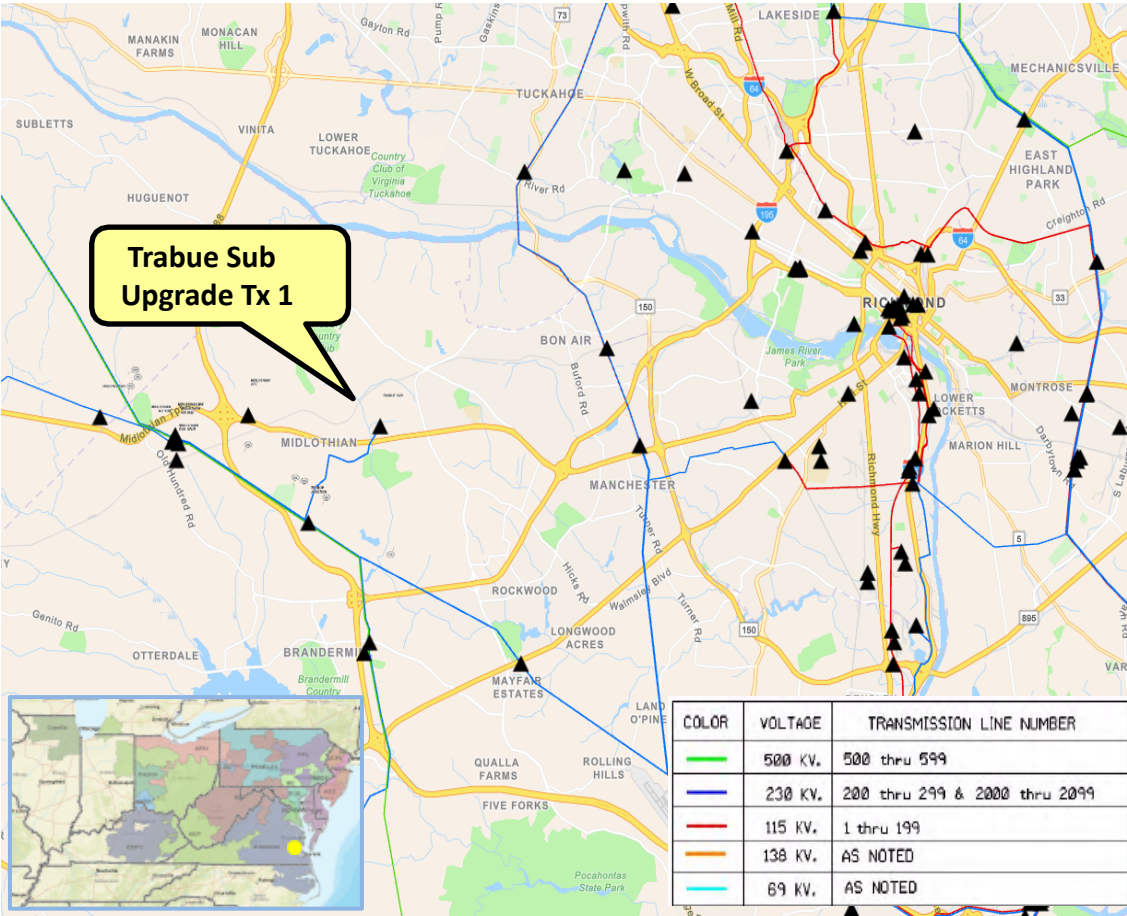
Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2025-0001
Process Stage: Solution Meeting 04/01/2025
Previously Presented: Need Meeting 03/04/2025
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 delivery point request to upgrade transformer 1 at Trabue Substation in Midlothian, VA. The upgrade is being driven by new customer load. The total load is in excess of 100 MW. The customer requests service by January 1, 2026.

Initial In-Service Load	Projected 2029 Load
Summer: 96 MW Winter: 75 MW	Summer: 100 MW Winter: 90 MW



Dominion Transmission Zone: Supplemental Trabue 230kV Delivery - DEV

Need Number: DOM-2025-0001

Process Stage: Solution Meeting 3/04/2025

Project Driver: Customer Service

Proposed Solution:

- Construct a four breaker 230kV ring bus at Trabue substation which is required by Dominion's Facility Interconnection Requirements for substation loads in excess of 100MW.
- Upgrade TX1 from 45 to 84 MVA.

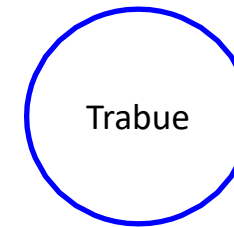
Estimated Project Cost: Substation: \$10.1M

Alternatives Considered: None, work is at an existing substation

Projected In-service Date: 1/1/2026

Project Status: Engineering

Model: 2029 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2025-0010

Process Stage: Solution Meeting 4/1/2024

Previously Presented: Need Meeting 3/4/2025

Project Driver: Customer Service

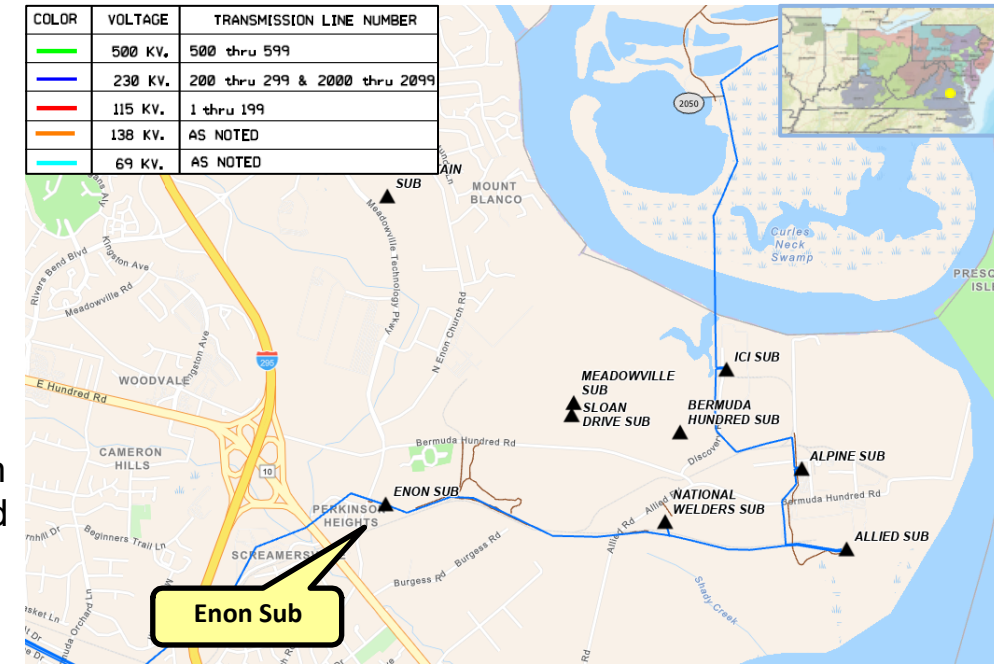
Specific Assumption References:

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 TX3 at existing Enon substation in Petersburg, VA. The new TX is being driven by new customer load. The requested in-service date is 03/01/2028.

Initial In-Service Load	Projected 2029 Load
Summer: 76.9 MW Winter: 64.9 MW	Summer: 88.9 MW Winter: 65.9 MW



Dominion Transmission Zone: Supplemental Enon 230kV Delivery - DEV

Need Number: DOM-2025-0010

Process Stage: Solution Meeting 4/01/2025

Project Driver: Customer Service

Proposed Solution:

- Install an 84 MVA transformer #3 and associated high side equipment

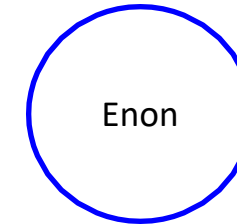
Estimated Project Cost: Substation: \$1.6M

Alternatives Considered: None, work is at an existing substation

Projected In-service Date: 3/1/2028

Project Status: Engineering

Model: 2029 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2024-0012

Process Stage: Solution Meeting 4/01/2025

Previously Presented: Need Meeting 02/06/2024

Project Driver: Customer Service

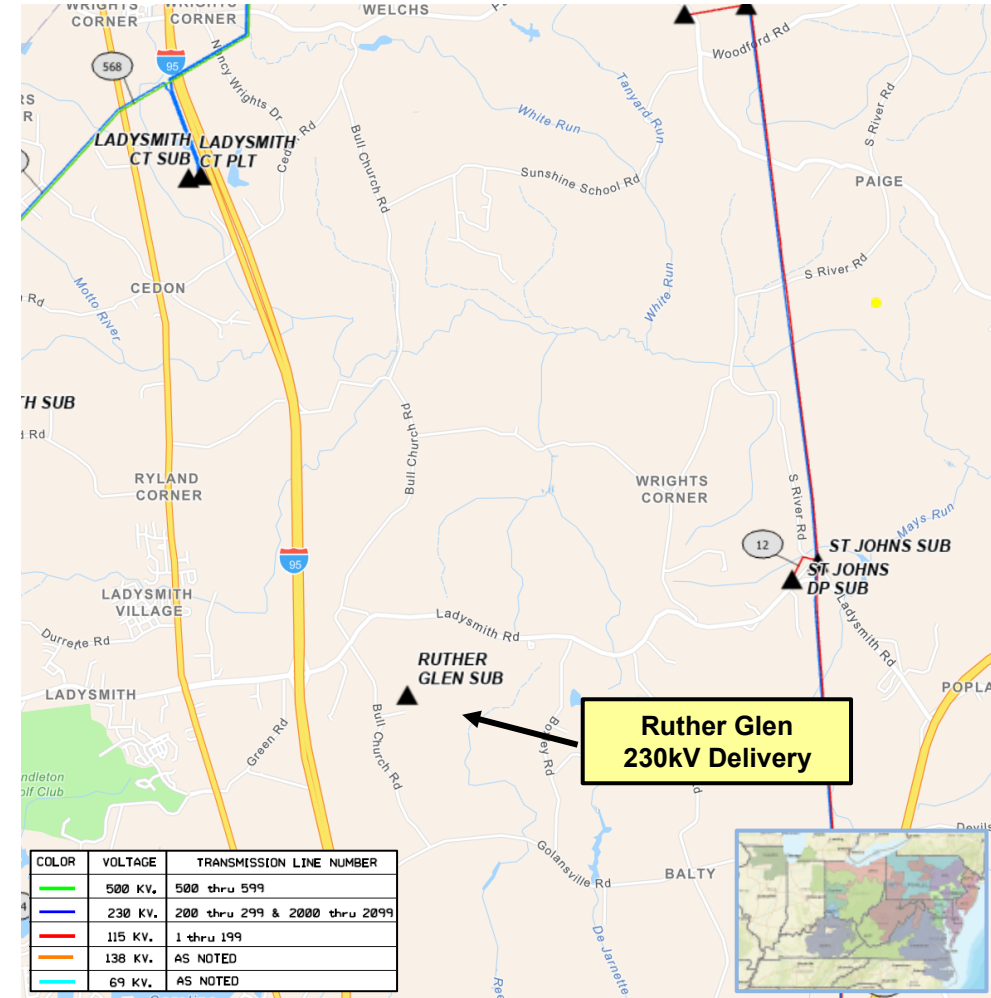
Specific Assumption References:

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

Problem Statement:

ODEC has submitted a DP request for a new 230 kV delivery point (Ruther Glen) to serve a data center customer in Caroline County VA with a total load in excess of 100 MW. Requested in-service date is 7/1/2027.

Initial In-Service Load	Projected 2029 Load
Summer: 170 MW Winter: 170 MW	Summer: 300 MW Winter: 300 MW



Dominion Transmission Zone: Supplemental Ruther Glen 230kV Delivery - DEV

Need Number: DOM-2024-0012

Process Stage: Solution Meeting 4/01/2025

Project Driver: Customer Service

Proposed Solution:

- Construct new Ruther Glen 230kV substation with 6 breaker ring bus configuration.
- Cut existing 230kV Line 256 (Ladysmith CT to Four Rivers) and extend double circuit 230kV lines approximately three miles to proposed Ruther Glen substation.

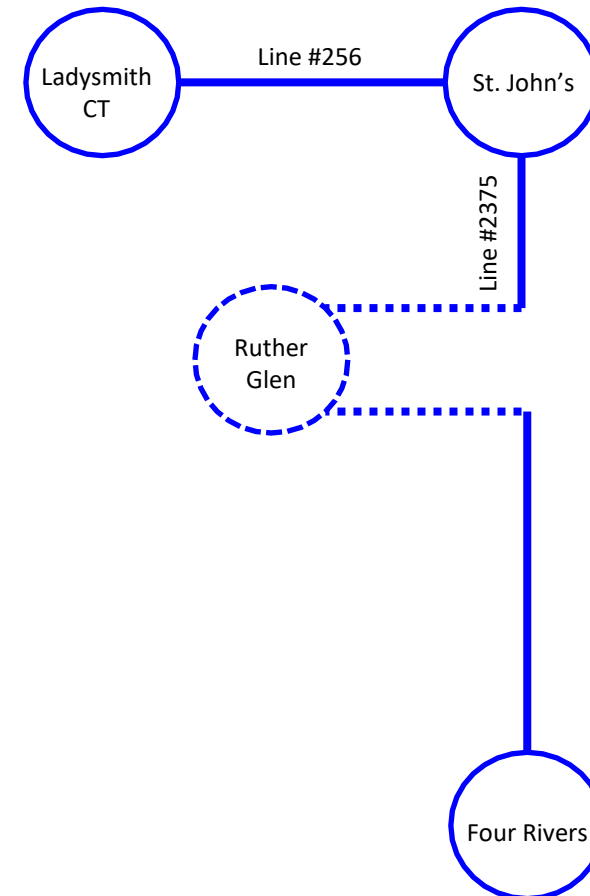
Estimated Project Cost: Transmission Lines: \$32M; Substation: \$15M

Alternatives Considered: None, Line 256 is the closest source to proposed site

Projected In-service Date: 7/1/2027

Project Status: Engineering

Model: 2029 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0055

Process Stage: Solution Meeting 4/01/2025

Previously Presented: Need Meeting 12/05/2023

Project Driver: Customer Service

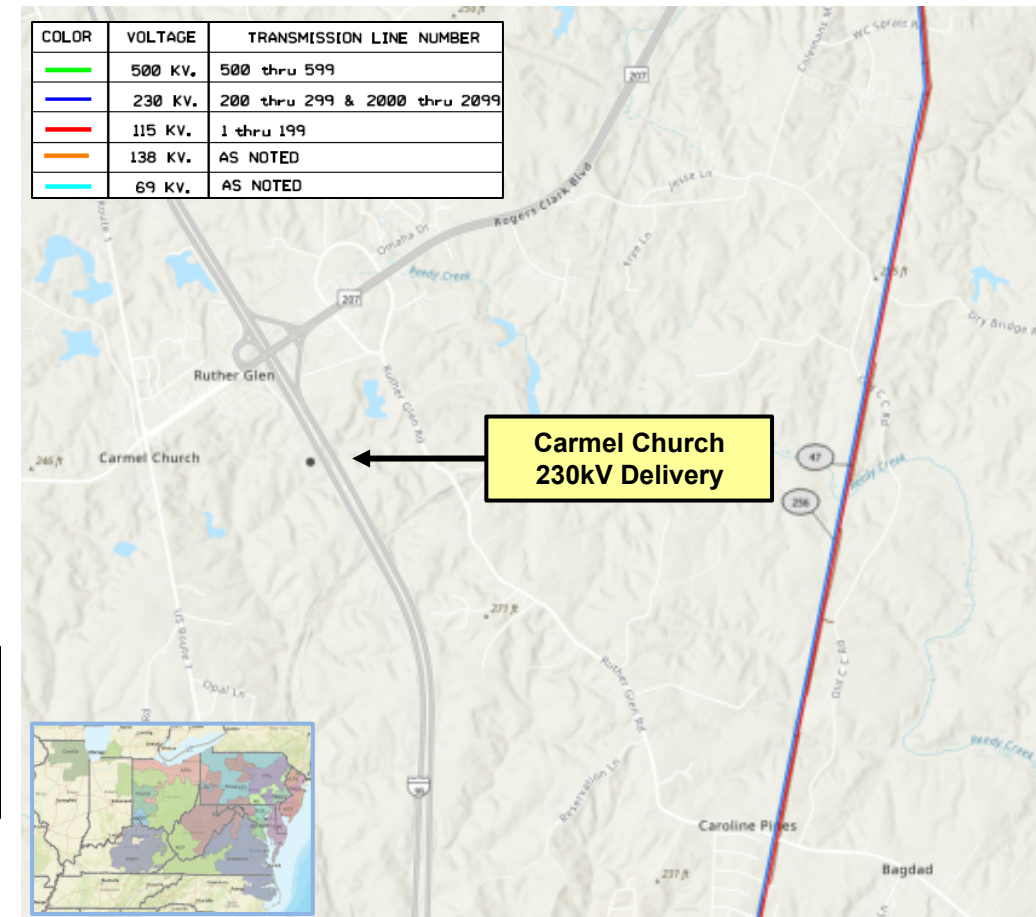
Specific Assumption References:

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

Problem Statement:

ODEC has submitted a DP request for a new 230 kV delivery point (Carmel Church Sub) to serve a data center customer in Caroline County with a total load in excess of 100 MW. Requested in-service date is 7/1/2027.

Initial In-Service Load	Projected 2029 Load
Summer: 18.0 MW Winter: 18.0 MW	Summer: 125.0 MW Winter: 125.0 MW



Dominion Transmission Zone: Supplemental Carmel Church 230kV Delivery - DEV

Need Number: DOM-2023-0055

Process Stage: Solution Meeting 4/01/2025

Project Driver: Customer Service

Proposed Solution:

- Construct new Carmel Church 230kV substation with 4 breaker ring bus configuration.
- Cut existing 230kV Line 256 (Ladysmith CT to Four Rivers) and extend double circuit 230kV transmission lines for approximately two miles to proposed Carmel Church substation.

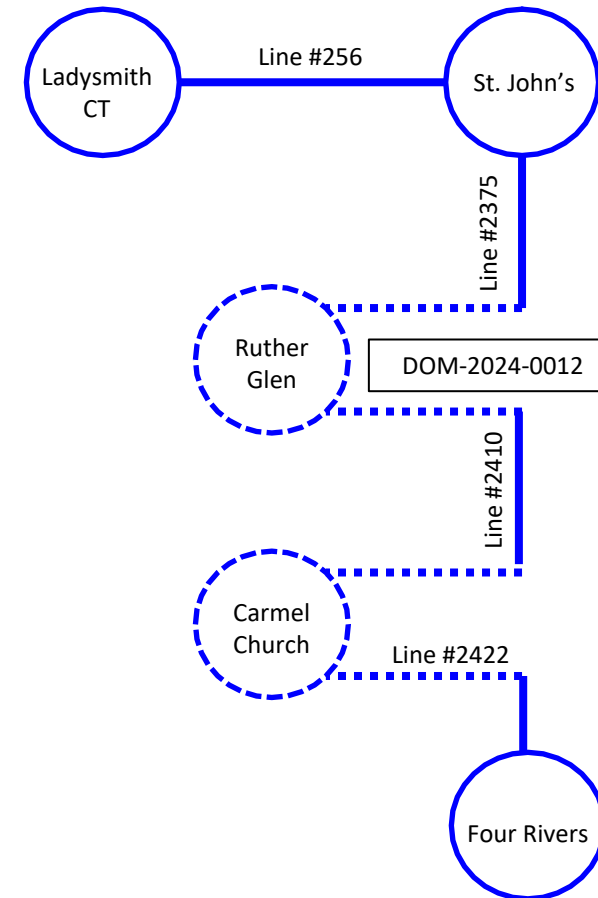
Estimated Project Cost: Transmission Lines: \$25M; Substation: \$15M

Alternatives Considered: None, Line 256 is the closest source to proposed site

Projected In-service Date: 7/1/2027

Project Status: Engineering

Model: 2029 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0016

Process Stage: Solutions Meeting 04/01/2025

Previously Presented: Need Meeting 03/07/2023

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:

Rappahannock Electric Cooperative (REC) has submitted a DP Request for a new substation (New Post) to serve a data center in Spotsylvania County with a total load in excess of 100 MW. The requested in-service date is 05/01/2025.

Initial In-Service Load	Projected 2030 Load
Summer: 33.0 MW	Summer: 248.0 MW



Dominion Transmission Zone: Supplemental New Post 230kV Delivery - DEV

Need Number: DOM-2023-0016

Process Stage: Solutions Meeting 10/08/2024

Proposed Solution:

- Construct New Post 230 kV switching station with 4-breaker ring bus configuration.
- Cut Line #2090 (Fredericksburg – Ladysmith CT) and extend double-circuit 230kV lines for approx. 0.3 miles to New Post Switching Station.

Estimated Project Cost: \$27.0 M (Total)

Transmission Line \$ 9M

230kV Substation \$18M

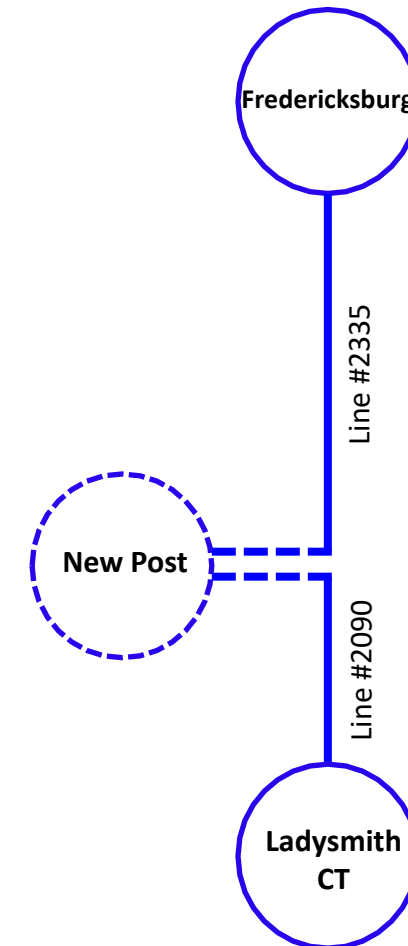
Alternatives Considered:

None. Project will cut a 230kV line in the closest transmission corridor.

Projected In-service Date: 05/31/2025

Project Status: Engineering

Model: 2029 RTEP



Dominion Transmission Zone: Supplemental

Need Number: DOM-2023-0053 ~~Hunters Ridge~~ Lee's Hill

Process Stage: Solutions Meeting 04/01/2025

Previously Presented: Need Meeting 12/05/2023

Project Driver: Customer Service

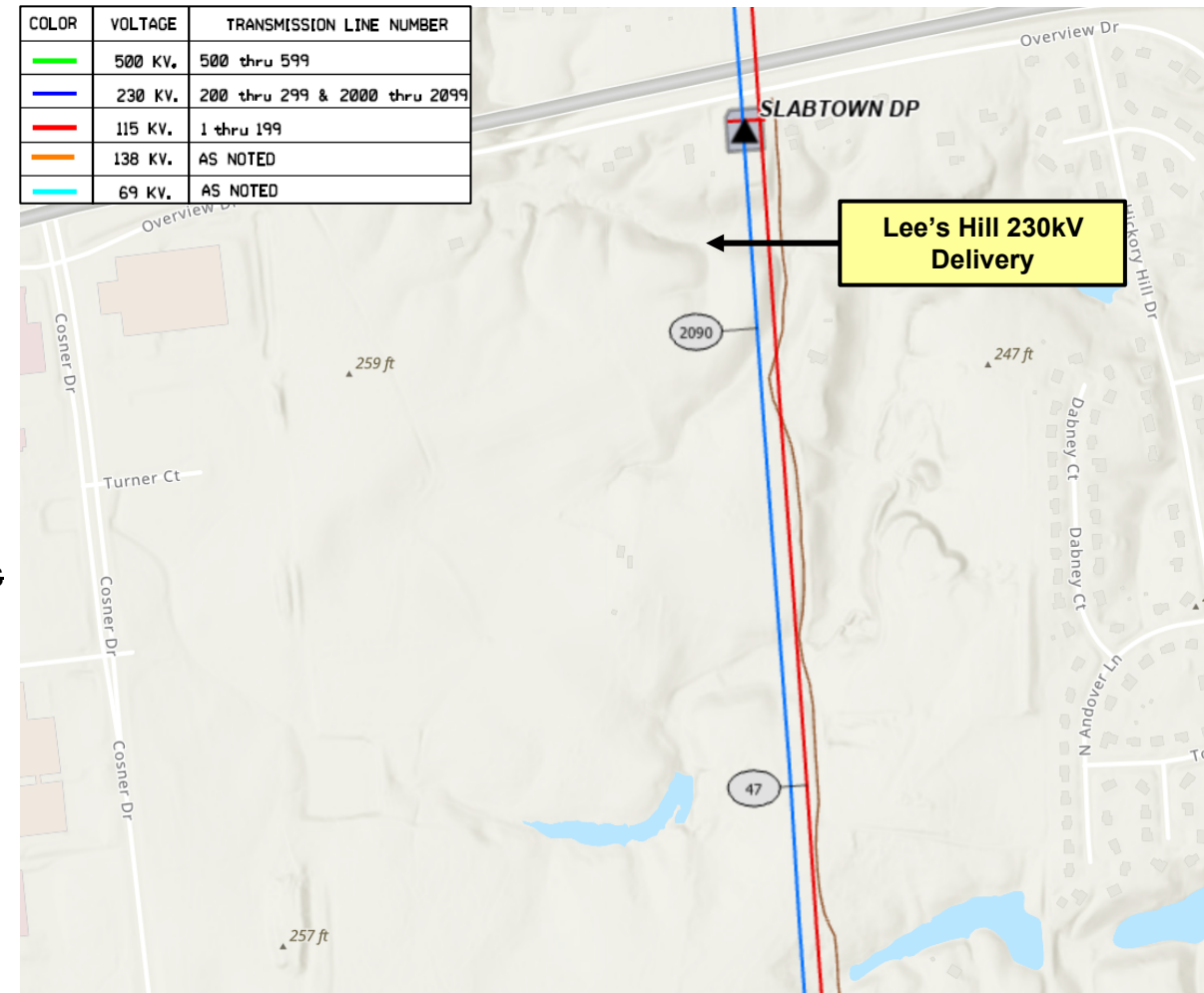
Specific Assumption References:

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

Problem Statement:

ODEC has submitted a DP request for a new 230 kV delivery point (~~Hunters Ridge~~ Lee's Hill Sub) to serve a data center customer in Spotsylvania County with a total load in excess of 100 MW. Requested in-service date is ~~10/01/2025~~ 12/15/2025.

Initial In-Service Load	Projected 2030 Load
Summer: 0 MW Winter: 55 MW	Summer: 300 MW Winter: 300 MW



Dominion Transmission Zone: Supplemental Lee's Hill 230kV Delivery - DEV

Need Number: DOM-2023-0053

Process Stage: Solutions Meeting 04/01/2025

Proposed Solution:

- Construct Lee's Hill 230 kV switching station with 4-breaker ring bus configuration.
- Cut the existing 230kV Line from Fredericksburg to New Post and extend double-circuit 230kV lines for approx. 0.1 miles to Lee's Hill Switching Station.

Estimated Project Cost: \$16.0 M (Total)

Transmission Line	\$ 6M
230kV Substation	\$10M

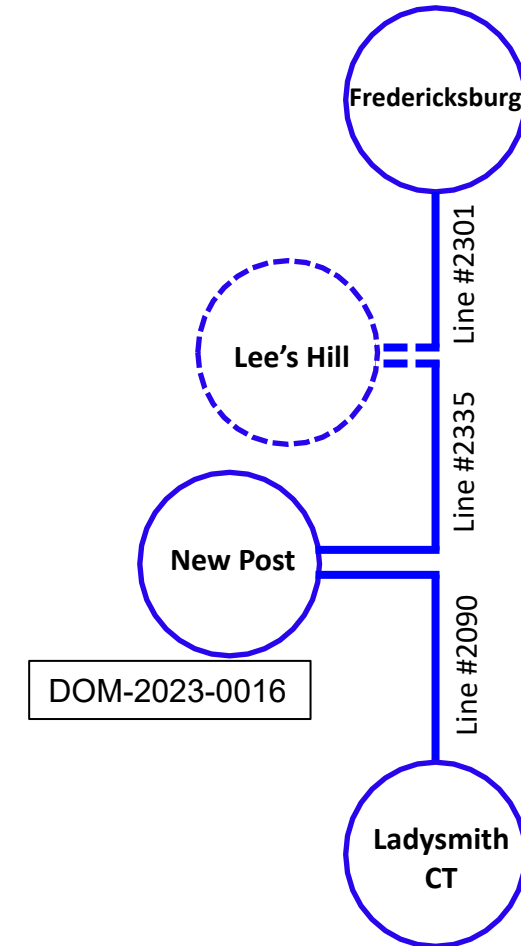
Alternatives Considered:

None. Project will cut a 230kV line in the closest transmission corridor.

Projected In-service Date: 12/15/2025

Project Status: Engineering

Model: 2029 RTEP



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2023-0016, 0053, 0055, 2024-0012 - DNH

Meeting Date: 04/01/2025

Process Stage: Solutions Meeting 04/01/2025

Supplemental Project Driver: Do No Harm Analysis

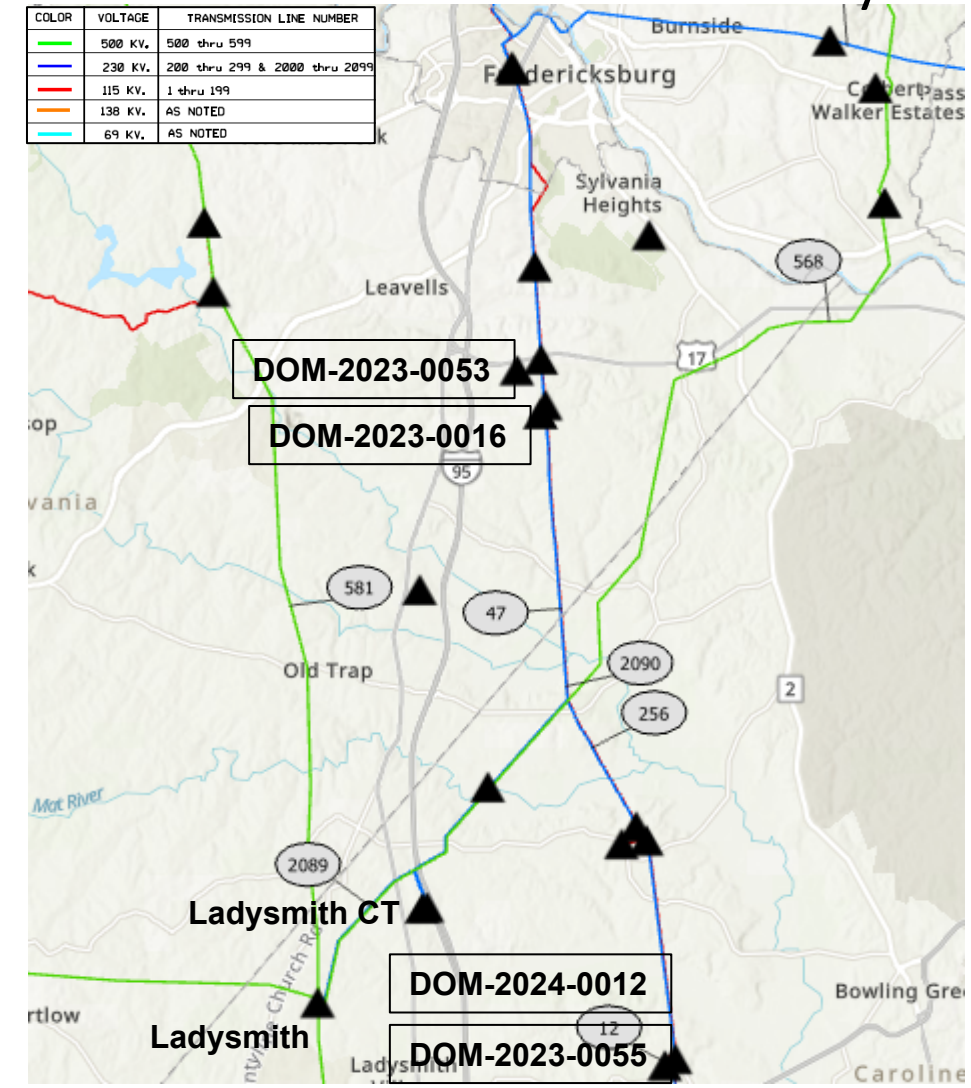
Specific Assumption Reference:

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

Problem Statement:

DEV has identified multiple violations on 230 kV Line #2090 (Ladysmith CT - Fredericksburg) and #256 (Ladysmith CT – Four Rivers) via the 2025 Do-No-Harm analysis:

- 300 MW Load Drop Violation
 - Contingency Scenario: Loss of 230 kV Line #2301 (Fredericksburg – Lee's Hill) and 230 kV Line #2090 (Ladysmith CT – New Post)
 - Contingency Scenario: Loss of 230 kV Line #256 (Ladysmith CT – Ruther Glen) and 230 kV Line #2032 (Elmont – Four Rivers)
- N-1 Thermal Violation (Generator Deliverability)
 - Contingency Scenario: Loss of Line #568 (Possum Point – Ladysmith)
 - Contingency Scenario: Loss of Line #581 (Chancellor – Ladysmith)



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2023-0016, 0053, 0055, 2024-0012 - DNH

Meeting Date: 04/01/2025

Process Stage: Solutions Meeting 04/01/2025

Proposed Solution - Phase1 (01/2028):

1. Rebuild approximately 6.5 miles of the existing 230kV Line #2090 between Summit DP and Fredericksburg Sub with double-circuit structures using a higher capacity conductor and associated substation equipment to achieve a minimum normal summer rating of 1573 MVA.
2. Reconductor the first circuit of the Line #2089 from Ladysmith to Ladysmith CT for approximately 4 miles to achieve a minimum normal summer rating of 1573 MVA. Reconductor the second circuit of the Line #2089 from Ladysmith to Structure #2089/19 for approximately 3.3 miles to achieve a minimum normal summer rating of 1573 MVA. The rest of the Line #2089 on one side of the structures remains idle from Structure #2089/19 to Ladysmith CT Station.
3. Construct a new 230kV Line from Structure #2089/19 to Structure #2090/106 for approx. 4.5 miles using double-circuit structures. Install the second circuit between existing Structure #2090/107, New Post Sub, Lee's Hill Sub, and Fredericksburg Sub by utilizing the vacant arms positions on the double-circuit structures in the corridor. The termination points of the new line will be Ladysmith, New Post, Lee's Hill, and Allman.
4. Install two 500kV, 150 MVar Capacitor Banks At Ladysmith Sub.

Proposed Solution – Phase2 (07/2029):

1. Expand Kraken 500kV Switching Station by cutting the existing 230kV Lines #2090 and #256, and future 230kV Line from Ladysmith to Allman constructed in Phase1.
2. Rebuild Line #256 from St. Johns to Four Rivers for approx. 14.9 miles using double circuit monopoles. One circuit will be installed initially.
3. Rebuild Line #2032 from Four Rivers to Elmont for approx. 9 miles using double circuit monopoles. One circuit will be installed initially.
4. Wreck the 115kV Lines #47 (Fredericksburg-Four Rivers), #1008 (Pinewood-Four Rivers), #73 (Four Rivers-Elmont), 1013 (Pinewood-N. Doswell)
Construct a new double circuit 230kV from Kraken to Allman.
Construct a new 230kV circuit from Kraken to Elmont for approx. 31mi using double circuit monopoles. One circuit will be installed initially.
Pinewood station should be converted to 230kV four-breaker ring station.
5. Cut the Converted 230kV line near St. Johns and extend a double-circuit 230kV to Ruther Glen Sub.
6. Necessary changes to the customer delivery points will be considered.

TO Alternatives Considered :

No feasible alternatives

Estimated cost: \$ 450.0 M (\$ 300M T-Line; \$ 150M Substation)

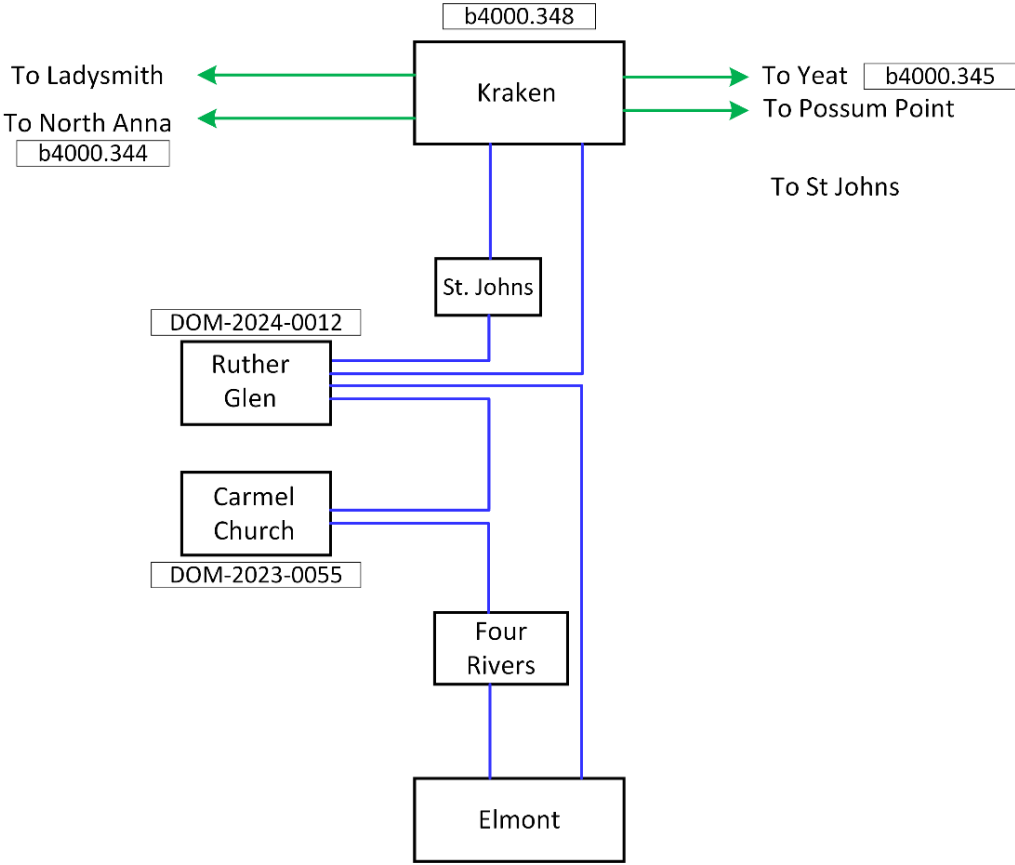
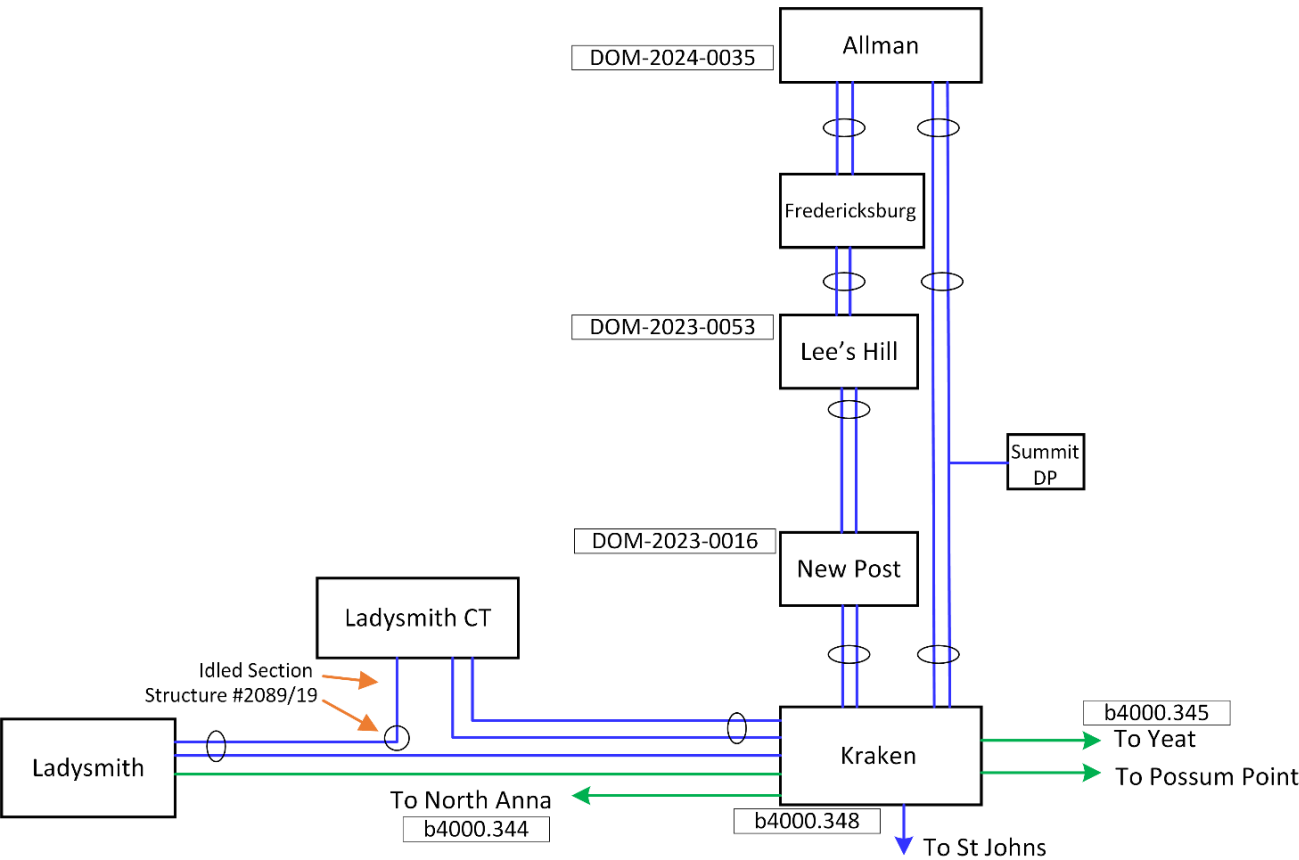
Projected In-service Date: 07/01/2029

Project Status: Conceptual

Model: 2029 RTEP

Dominion Transmission Zone: Supplemental Do No Harm Analysis

One-line Diagram:



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

03/21/2025 – V1 – Original version posted to pjm.com