Dominion Supplemental Projects

Transmission Expansion Advisory Committee
June 6, 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-2023-0032

Process Stage: Need Meeting 06/06/2023

Project Driver: Customer Service

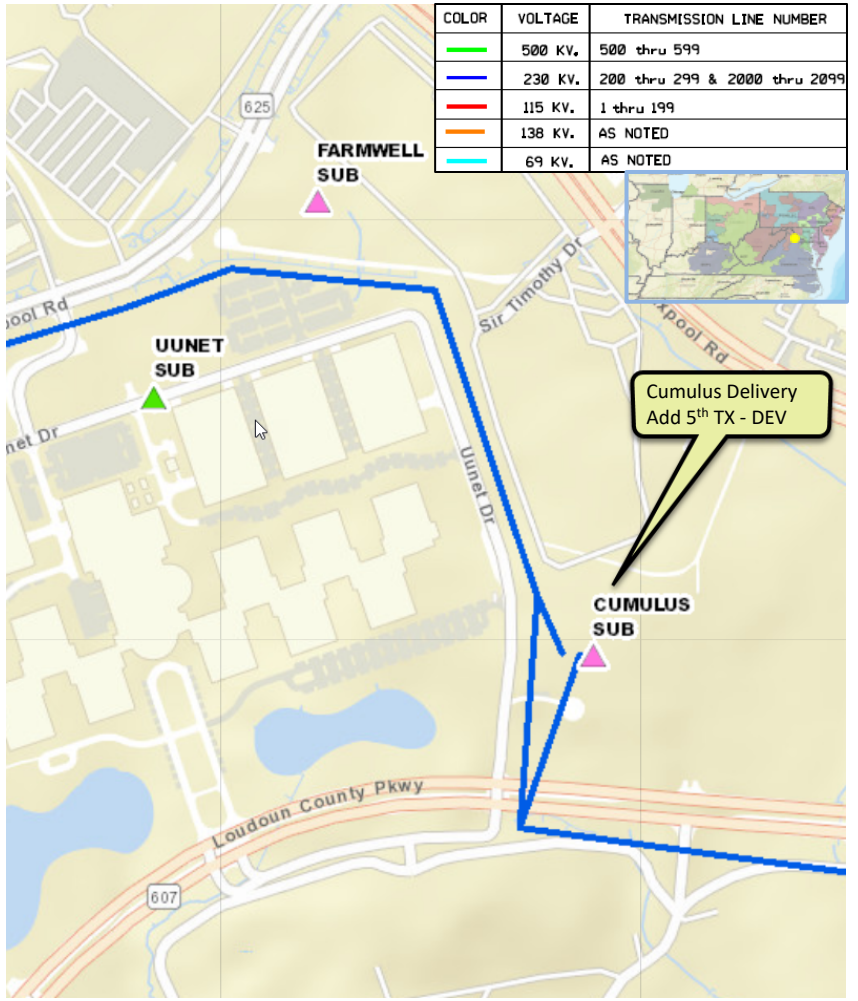
Specific Assumption References:

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 a 5th 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 06/01/2025.

Initial In-Service Load	Projected 2028 Load
Summer: 130.4 MW Winter: 90.4 MW	Summer: 268.2 MW Winter: 260.3 MW



Solutions

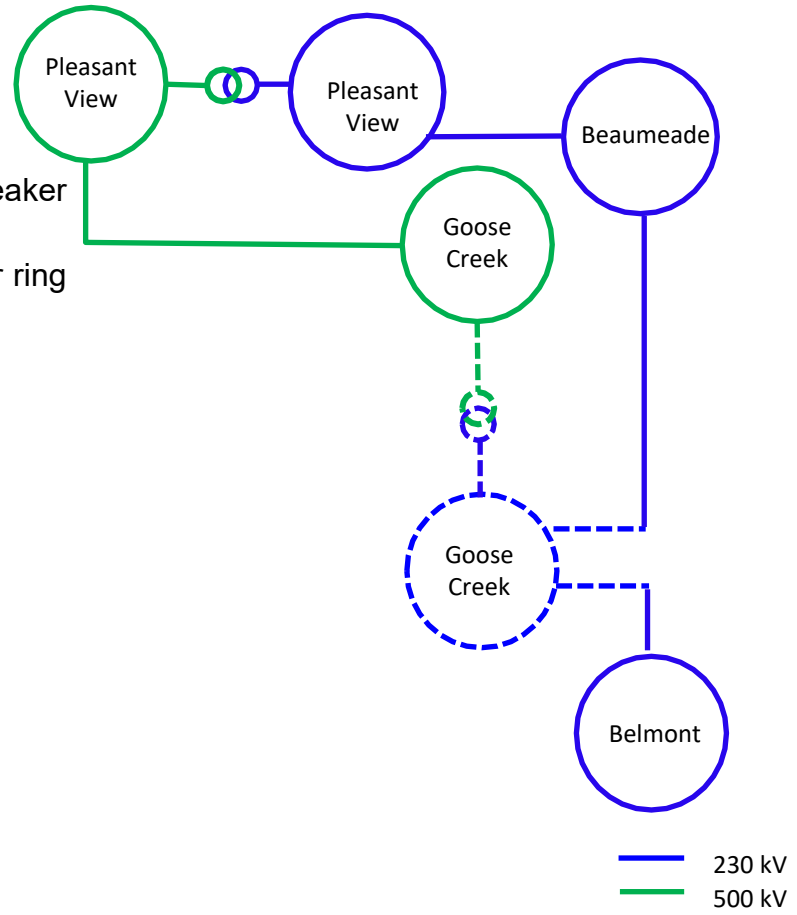
Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2021-0016-DNH Update
Process Stage: Solutions Meeting 06/06/2023
Previously Presented: Solutions Meeting 11/30/2021

Pleasant View 500-230kV Transformer

- Install (1) ~~1440~~ **840** MVA 500-230 kV transformer at Goose Creek Substation.
  - Extend the existing 500kV ring bus at Goose Creek Substation to be set up for a future six-breaker ring arrangement. One breaker to be installed initially creating a five-breaker ring bus.
  - Install a new 230kV ring bus at Goose Creek Substation to be set up for a future four-breaker ring arrangement. Three 230kV breakers to be installed initially.
- Cut and extend line #227 (Belmont to Beaumeade) into Goose Creek Substation.



Estimated Project Cost: $40.0 M
Transmission Line Cost: $5.0 M
Substation Cost: $35 M

Alternatives Considered:
No feasible alternatives

Projected In-service Date: ~~12/15/2026~~ 12/15/2023
Project Status: Engineering
Model: 2025 RTEP
Reason for change:

- Inability to procure 1440 MVA transformer to address real-time operational constraints.
- Provide operational flexibility for securely operating the system under various outage scenarios.

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0043

Process Stage: Solutions Meeting 06/06/2023

Previously Presented: Need Meeting 06/07/2022

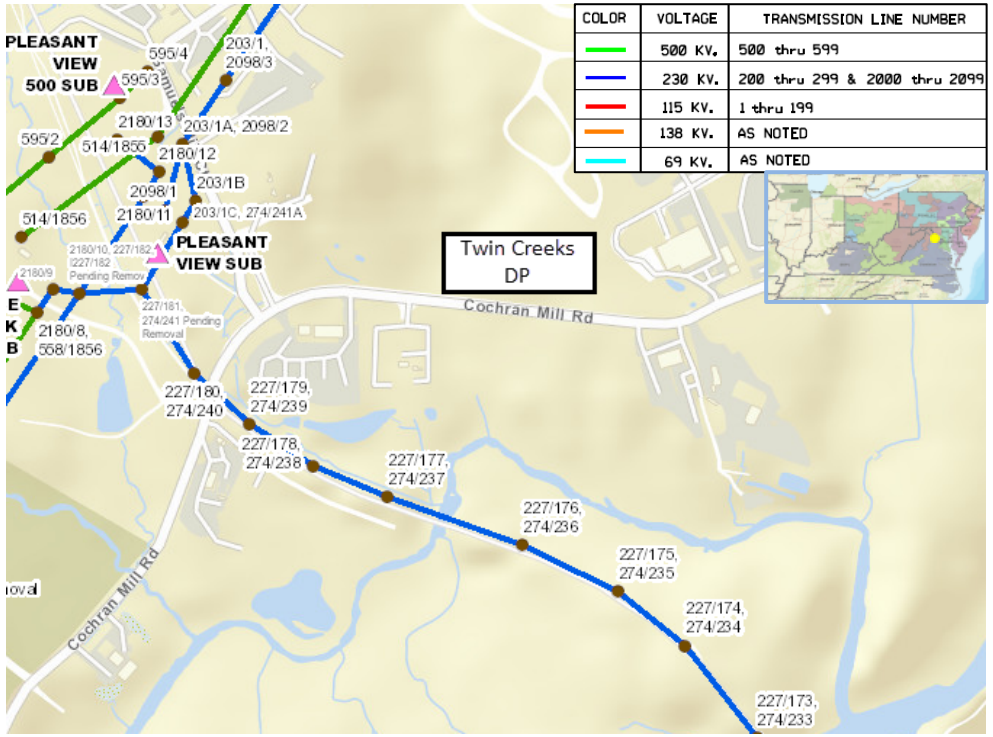
Project Driver: Customer Service

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 (Twin Creeks) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 12/31/2024.



Initial In-Service Load	Projected 2028 Load
Summer: 84.0 MW Winter: 36.0 MW	Summer: 209.2 MW Winter: 183.0 MW

Dominion Transmission Zone: Supplemental Twin Creeks 230kV Delivery - DEV

Need Number: DOM-2022-0043

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by cutting and extending Line #203 (Pleasant View – Edwards Ferry) to the proposed Twin Creeks Substation. Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $20.0 M

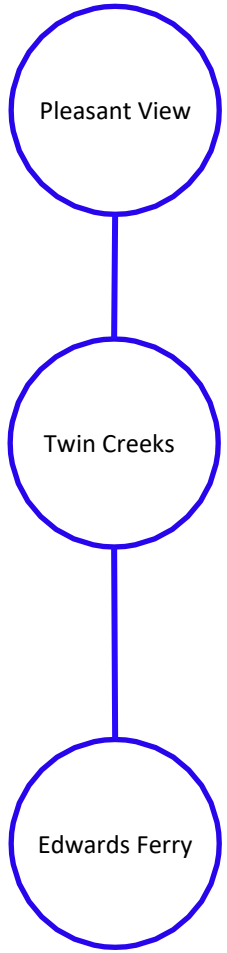
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 12/31/2024

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0042

Process Stage: Solutions Meeting 06/06/2023

Previously Presented: Need Meeting 06/07/2022

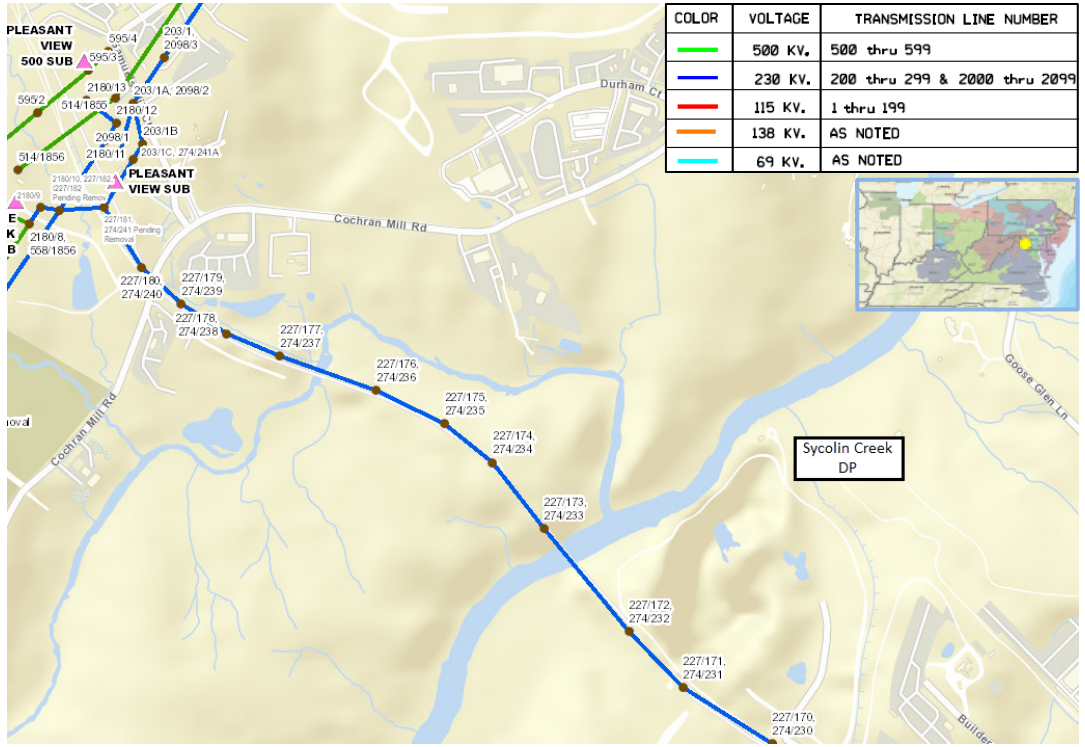
Project Driver: Customer Service

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 (Sycolin Creek) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 06/15/2026.



Initial In-Service Load	Projected 2028 Load
Summer: 12.0 MW Winter: 0.0 MW	Summer: 136.0 MW Winter: 100.0 MW

Dominion Transmission Zone: Supplemental Sycolin Creek 230kV Delivery - DEV

Need Number: DOM-2022-0042

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by constructing two 230kV lines approximately 1.0 mile from Twin Creeks Substation to proposed Sycolin Creek Substation.

Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $28.0 M

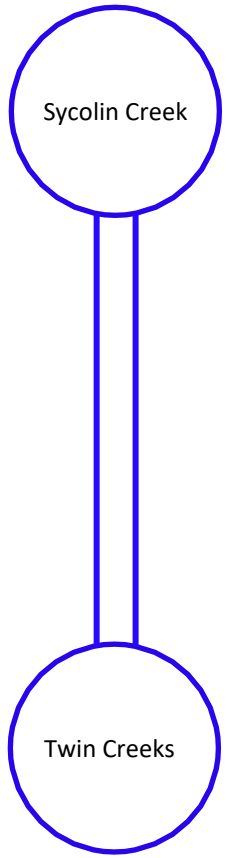
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 06/15/2026

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0017

Process Stage: Need Meeting 03/07/2023

Project Driver: Customer Service

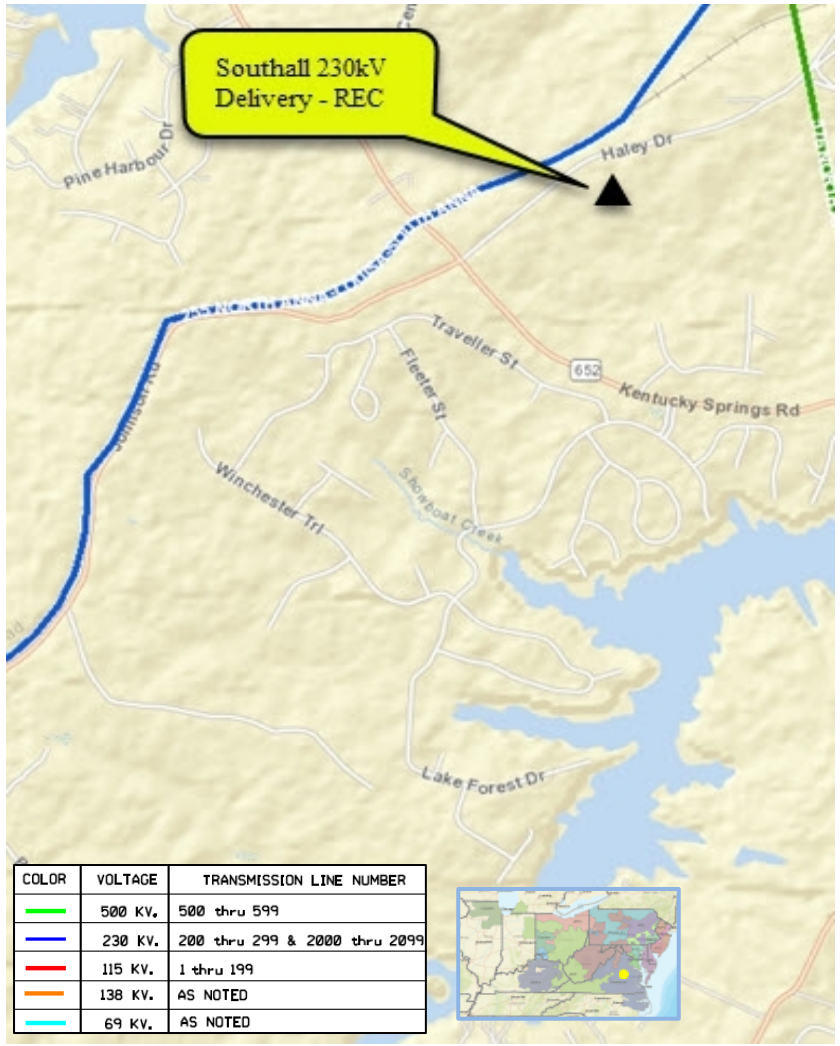
Specific Assumption References:

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 (Southall) to serve a data center in Louisa County with a total load in excess of 100 MW. The requested in-service date is 05/01/2025.

Initial In-Service Load	Projected 2028 Load
Summer: 11.0 MW Winter: 11.0 MW	Summer: 220.0 MW Winter: 193.0 MW



Dominion Transmission Zone: Supplemental Southall 230kV Delivery - REC

Need Number: DOM-2023-0017

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by cutting and extending Line #255 (North Anna - Desper) to the proposed Southall Substation. Lines to terminate in a 230kV four-breaker ring arrangement with an ultimate arrangement of a six-breaker ring.

Estimated Project Cost: $55 M

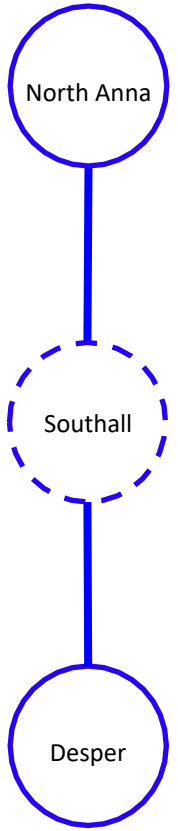
Alternatives Considered:

None – The switching station is next to Line #255.

Projected In-service Date: 05/01/2025

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0022

Process Stage: Need Meeting 03/07/2023

Project Driver: Customer Service

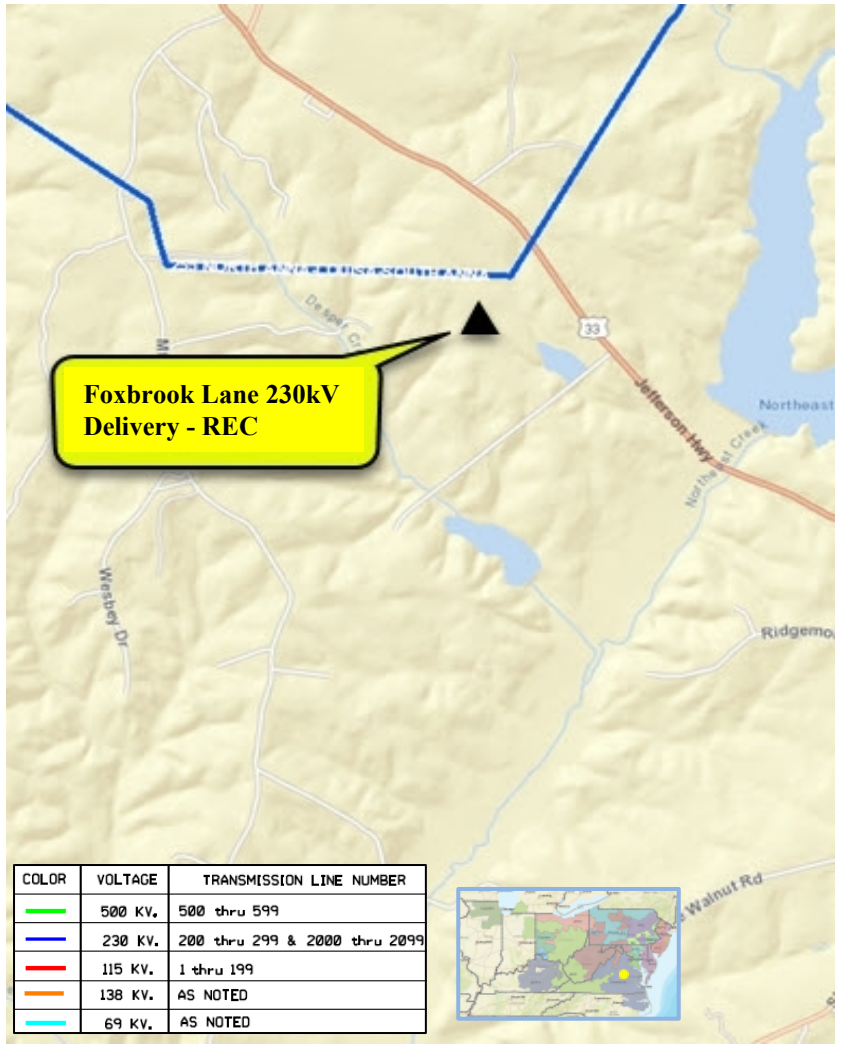
Specific Assumption References:

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 (~~Central Louisa~~ Foxbrook Lane) to serve a data center in Louisa County with a total load in excess of 100 MW. The requested in-service date is 05/01/2026.

Initial In-Service Load	Projected 2028 Load
Summer: 11.0 MW Winter: 11.0 MW	Summer: 138.0 MW Winter: 105.0 MW



Dominion Transmission Zone: Supplemental Foxbrook Lane 230kV Delivery - REC

Need Number: DOM-2023-0022

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by cutting and extending Line #255 (North Anna - Desper) to the proposed Foxbrook Lane Substation. Lines to terminate in a 230kV four-breaker ring arrangement with an ultimate arrangement of a six-breaker ring.

Estimated Project Cost: $55 M

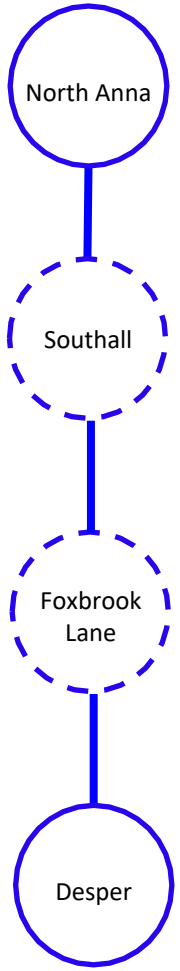
Alternatives Considered:

None – The switching station is next to line #255.

Projected In-service Date: 05/01/2026

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0012
Process Stage: Solutions Meeting 06/06/2023
Previously Presented: Need Meeting 03/07/2023
Project Driver: Customer Service

Specific Assumption References:

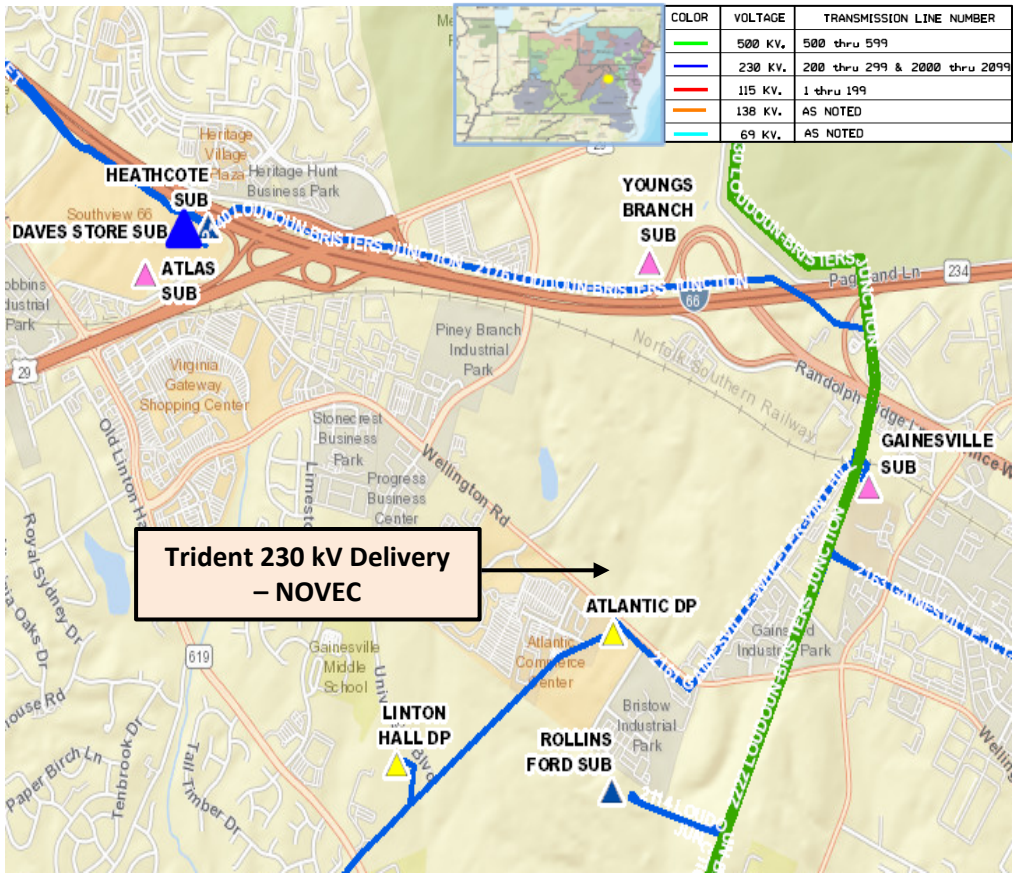
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

NOVEC has submitted a DP Request for a new substation (Trident) to serve a data center complex in Bristow with a total load in excess of 100 MW.

Requested in-service date is 09/01/2025.

Initial In-Service Load	Projected 2028 Load
Summer: 3.75 MW Winter: 3.75 MW	Summer: 153.3 MW Winter: 125.3 MW



Dominion Transmission Zone: Supplemental Trident 230kV Delivery - NOVEC

Need Number: DOM-2023-0012

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by cutting and extending Line #2161 (Gainesville – Wheeler) to the proposed Trident Substation. Lines to terminate into a 230 kV six-breaker ring arrangement.

Estimated Project Cost: $15.75 M

Transmission Cost: $0.75M

Substation Cost: $15M

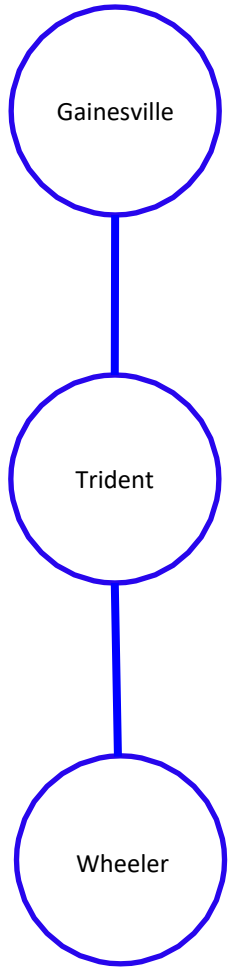
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 09/01/2025

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0009
Process Stage: Solutions Meeting 06/06/2023
Previously Presented: Need Meeting 03/07/2023
Project Driver: Customer Service

Specific Assumption References:

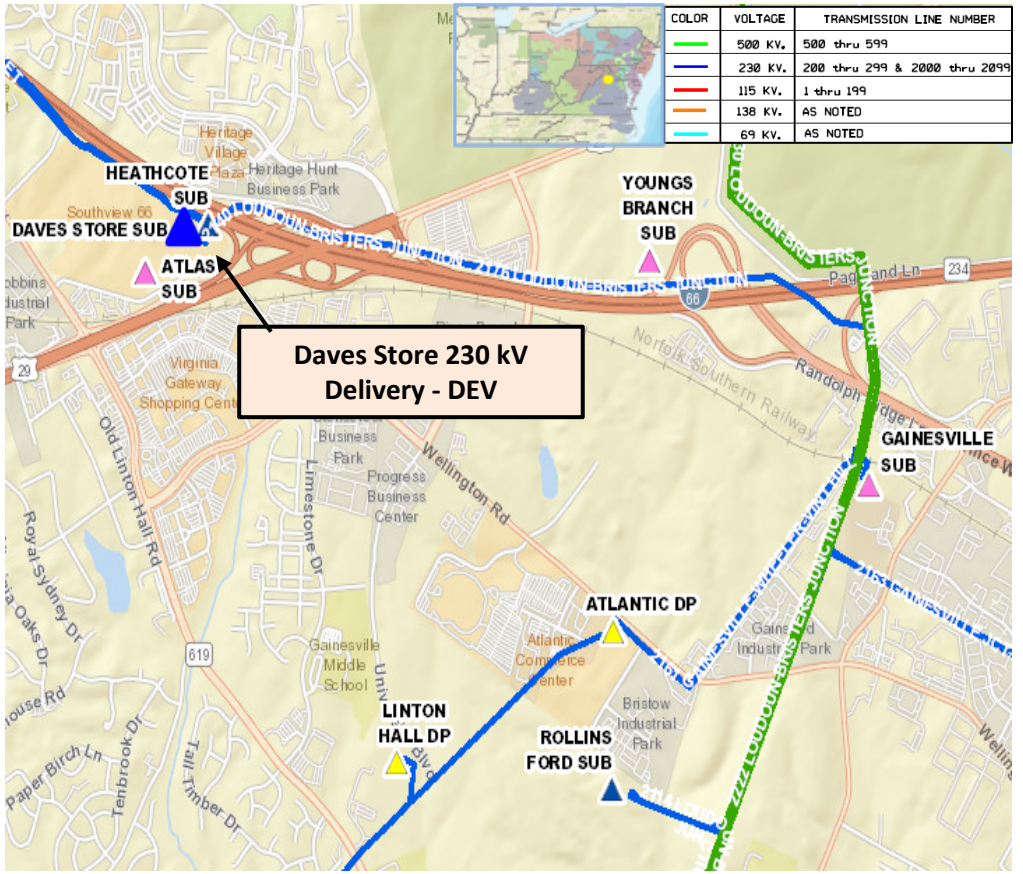
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Daves Store) to serve a data center complex in Gainesville with a total load in excess of 100 MW.

Requested in-service date is 06/01/2025.

Initial In-Service Load	Projected 2028 Load
Summer: 90.0 MW Winter: 0.0 MW	Summer: 264.0 MW Winter: 228.0 MW



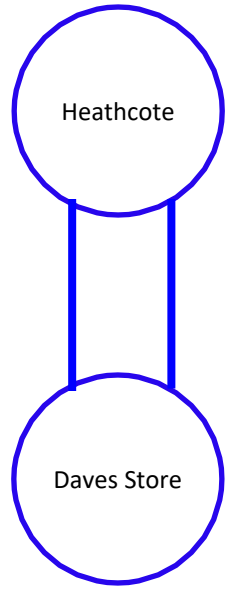
Dominion Transmission Zone: Supplemental Daves Store 230kV Delivery - DEV

Need Number: DOM-2023-0009

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by extending approximately 300’ of 230 kV GIL from the existing Heathcote substation to the proposed Daves Store Substation. Lines to terminate into a GIS 230 kV four-breaker arrangement expandable to an ultimate of eight 230 kV GIS breakers in a breaker-and-a-half scheme.



Estimated Project Cost: $40.0 M

Alternatives Considered:

Extend (2) OH 230 kV lines from Heathcote to the proposed Daves Store Substation.

- Not chosen due to spatial requirements to expand onto non-Dominion owned property. Surrounding properties contained significant environment challenges which would delay construction target date.

Projected In-service Date: 06/01/2025

Project Status: Engineering

Model: 2027 RTEP

Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2023-0009-DNH

Process Stage: Solutions Meeting 06/06/2023

Project Driver: Do No Harm Analysis

Specific Assumption References:

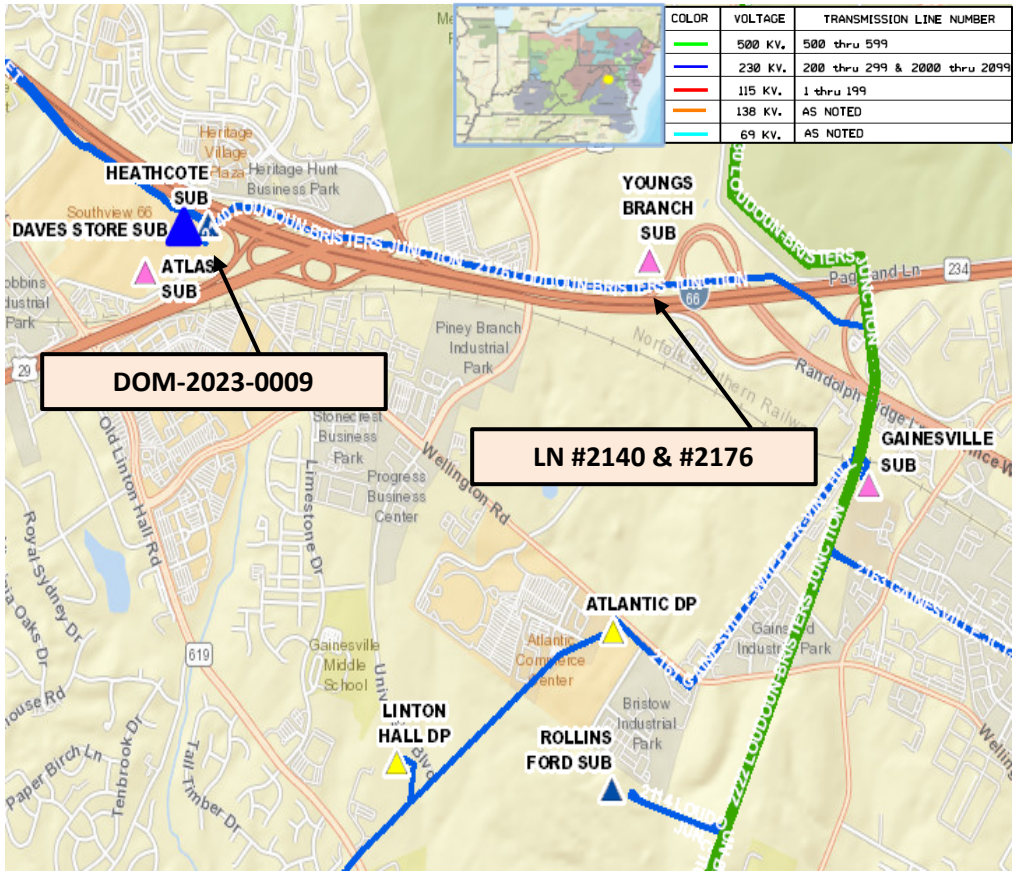
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

PJM has identified a 300 MW load drop violation due to the loss of the following separate facilities in the 2023 Do-No-Harm analysis:

- Daves Store + Youngs Branch + Catharpin DP
  - N-1-1 Contingency Scenario: DVP_P1-2: LN 2140 and DVP_P1-2: LN 2176

The violations are caused by previously presented Supplemental Project DOM-2023-0009 in the Dominion Zone.



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2023-0009-DNH

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

- Extend approximately 1.7 miles of double-circuit 230 kV lines from Trident to Daves Store Substation.
- Install associated 230 kV terminal equipment at Trident and Daves Store.
- New ROW will be required.

Estimated Project Cost: $33.5M (Total)

Transmission Line Cost: $13.5M

Real Estate Cost: $18.5M

Substation Cost: $1.5M

Alternatives Considered:

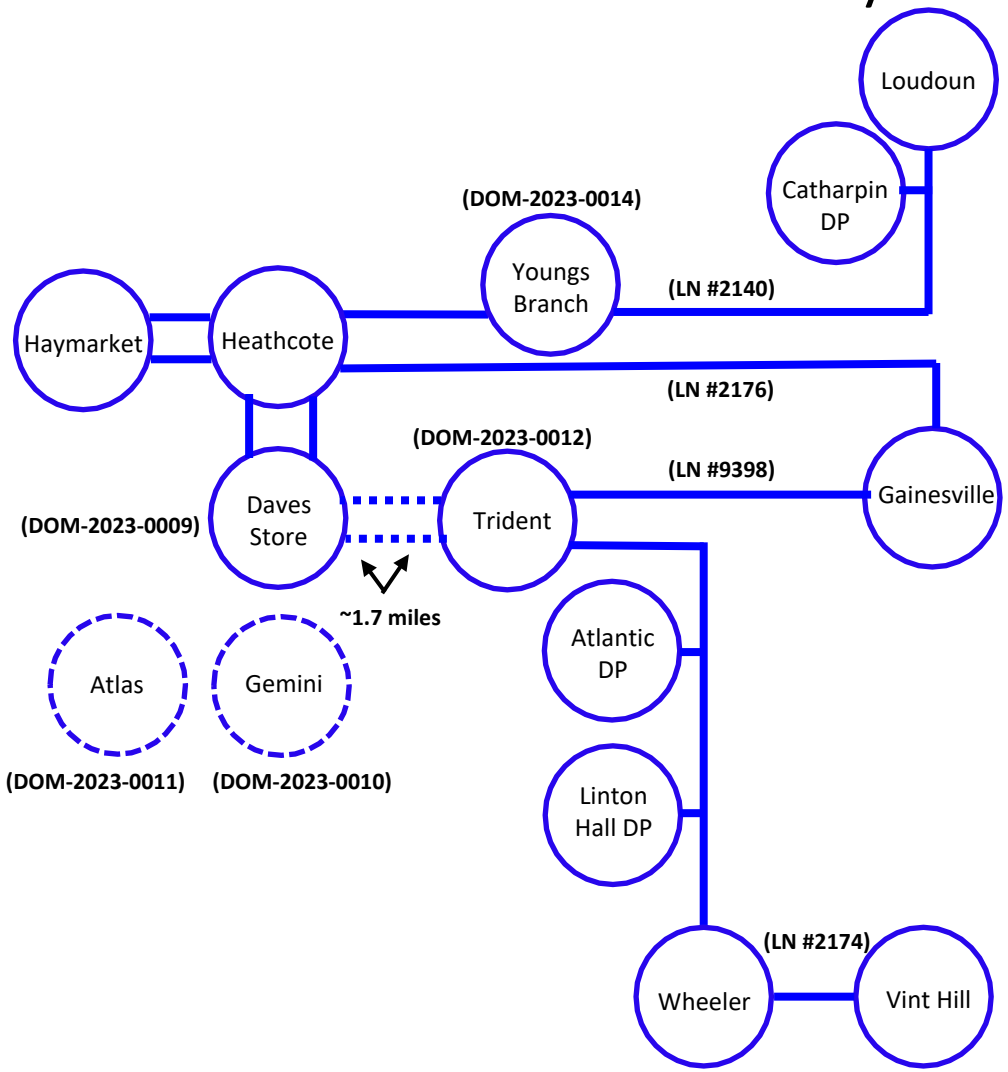
Extend approximately 1.7 miles of single-circuit 230 kV only from Trident to Daves Store Substation.

- Not chosen due to avoidance of:
  - Future thermal capacity constraints of a single conductor (via L/O LN #2174 (Wheeler – Vint Hill) and LN #9398 (Gainesville – Trident); via L/O LN #2140 (Loudoun – Youngs Branch) and LN #2176 (Gainesville – Youngs Branch)

Projected In-service Date: 12/31/2026

Project Status: Conceptual

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0010
Process Stage: Solutions Meeting 06/06/2023
Previously Presented: Need Meeting 03/07/2023
Project Driver: Customer Service

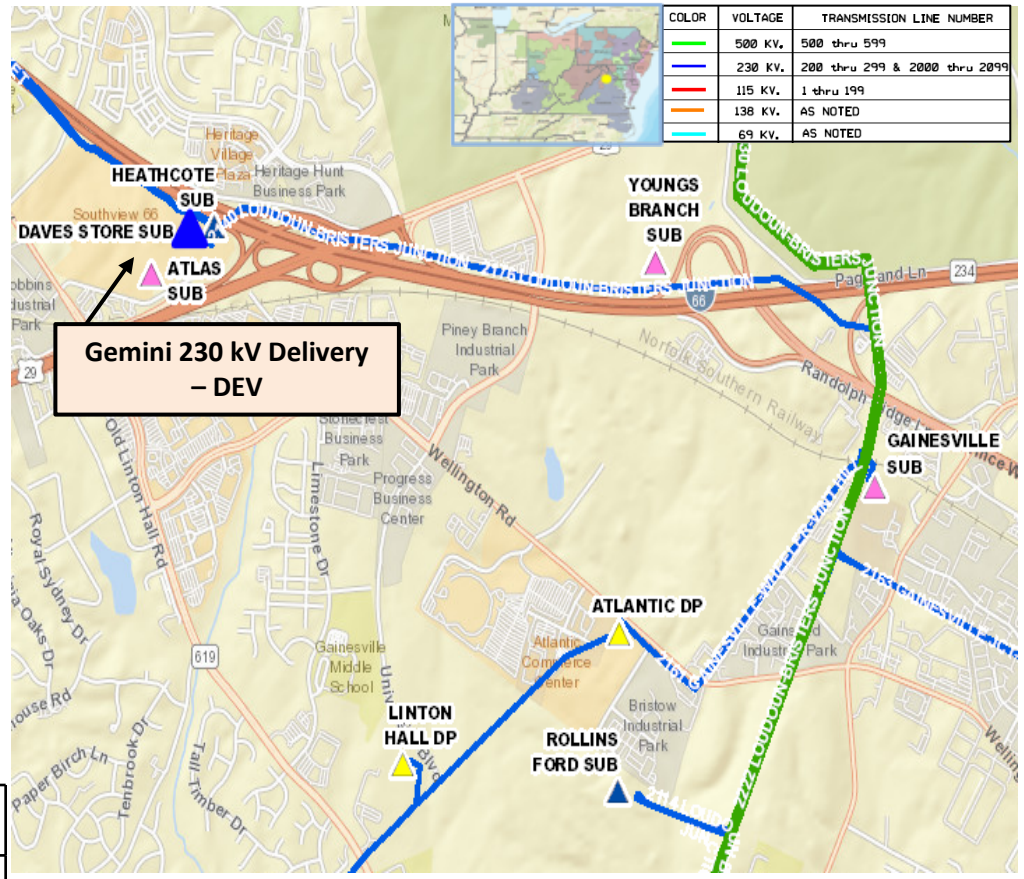
Specific Assumption References:

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

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Gemini) to serve a data center complex in Gainesville with a total load in excess of 100 MW.

Requested in-service date is 08/01/2026.



Initial In-Service Load	Projected 2028 Load
Summer: 75.0 MW Winter: 0.0 MW	Summer: 258.0 MW Winter: 210.0 MW

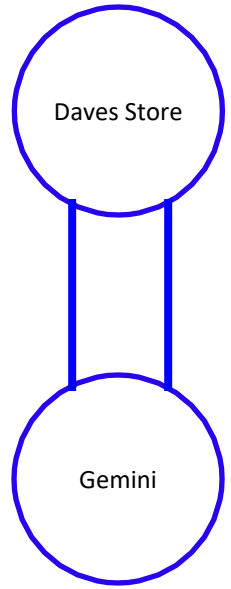
Dominion Transmission Zone: Supplemental Gemini 230kV Delivery - DEV

Need Number: DOM-2023-0010

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by extending approx. 600’ of (2) new 230 kV lines from Daves Store to the proposed Gemini Substation. Lines to terminate into a 230 kV four-breaker arrangement with an ultimate of six.



Estimated Project Cost: $15.3M

Transmission Cost: $0.3M

Substation Cost: $15M

Alternatives Considered:

No feasible alternatives

Projected In-service Date: 08/01/2026

Project Status: Engineering

Model: 2027 RTEP

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0011
Process Stage: Solutions Meeting 06/06/2023
Previously Presented: Need Meeting 03/07/2023
Project Driver: Customer Service

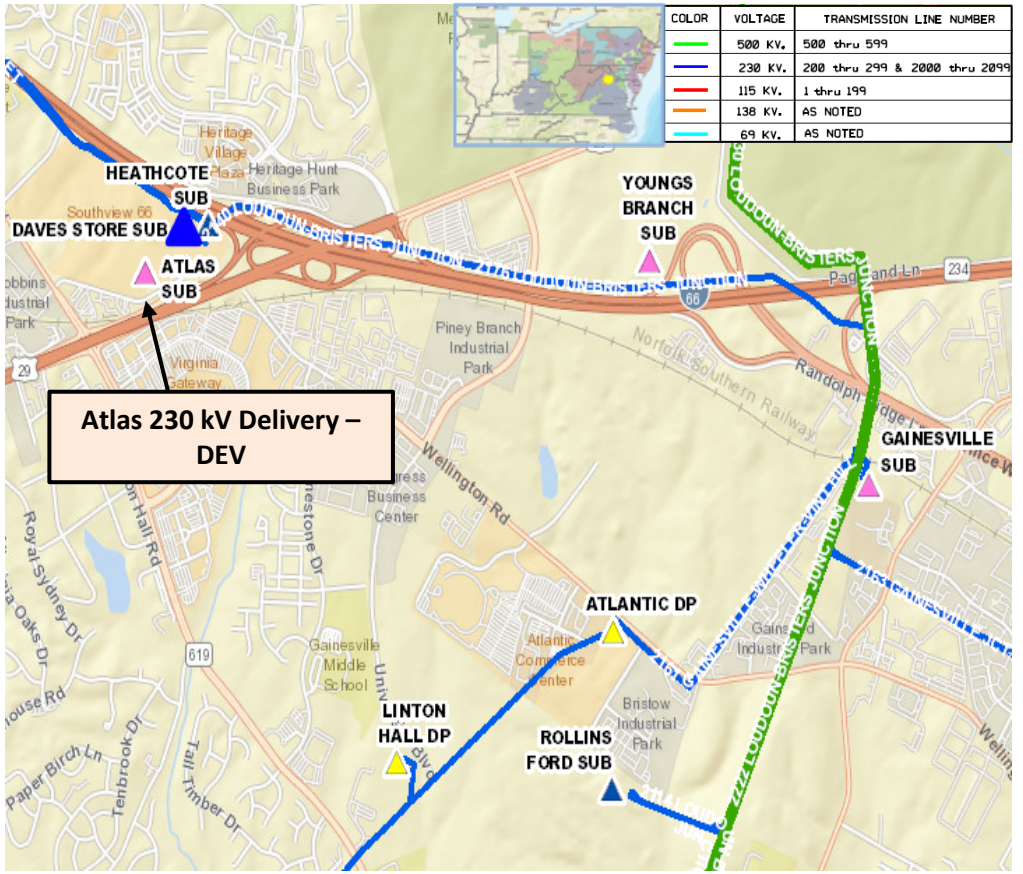
Specific Assumption References:

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

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Atlas) to serve a data center complex in Gainesville with a total load in excess of 100 MW.

Requested in-service date is 04/01/2028.



Initial In-Service Load	Projected 2028 Load
Summer: 70.0 MW Winter: 0.0 MW	Summer: 70.0 MW Winter: 0.0 MW

Dominion Transmission Zone: Supplemental Atlas 230kV Delivery - DEV

Need Number: DOM-2023-0011

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by extending approx. 450' of (1) new 230 kV line from Gemini to the proposed Atlas Substation. Re-terminate (1) of the 230 kV segments from Daves Store to Trident (DOM-2023-0009-DNH) into Atlas, extending the segment by approx. 1200'. The 230 kV lines will terminate into a 230 kV four-breaker arrangement expandable to an ultimate of six.

Estimated Project Cost: $15.4 M

Transmission Cost: $0.4M

Substation Cost: $15M

Alternatives Considered:

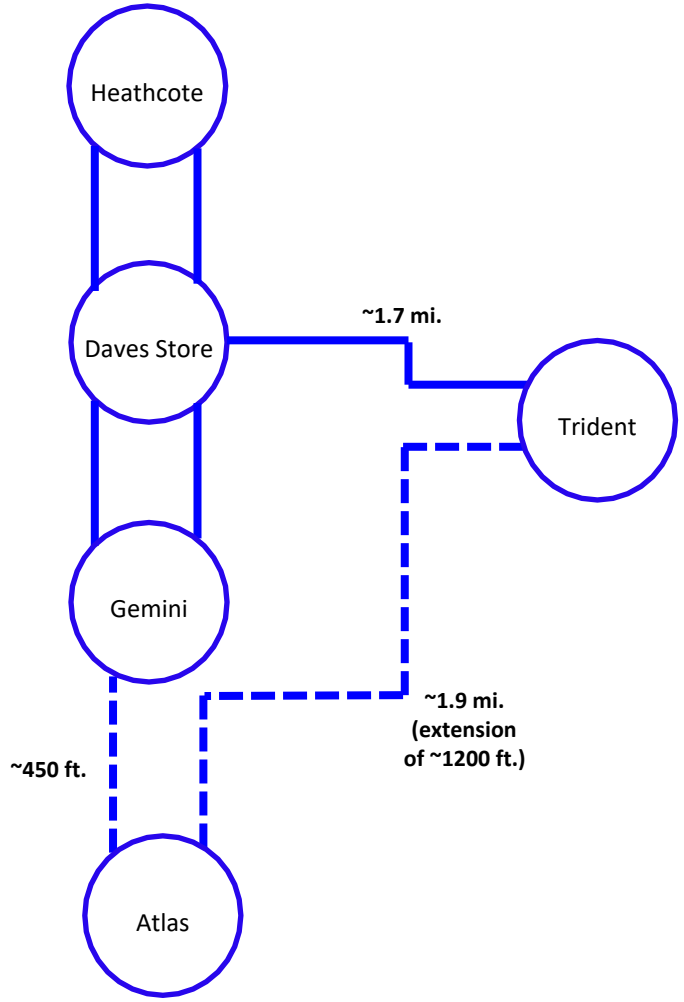
Extend (2) 230 kV lines from Gemini to the proposed Atlas Substation.

- Not chosen due to avoidance of future 300 MW load drop violation (Gemini + Atlas via L/O (2) 230 kV lines from Daves Store to Gemini)

Projected In-service Date: 04/01/2028

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

05/25/2023 – V1 – Original version posted to pjm.com