

# Dominion Supplemental Projects

Transmission Expansion Advisory  
Committee  
May 11, 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 Customer Load Request

**Need Number:** DOM-2021-0028

**Process Stage:** Need Meeting 05/11/2021

**Project Driver:** Customer Service

**Specific Assumption References:**

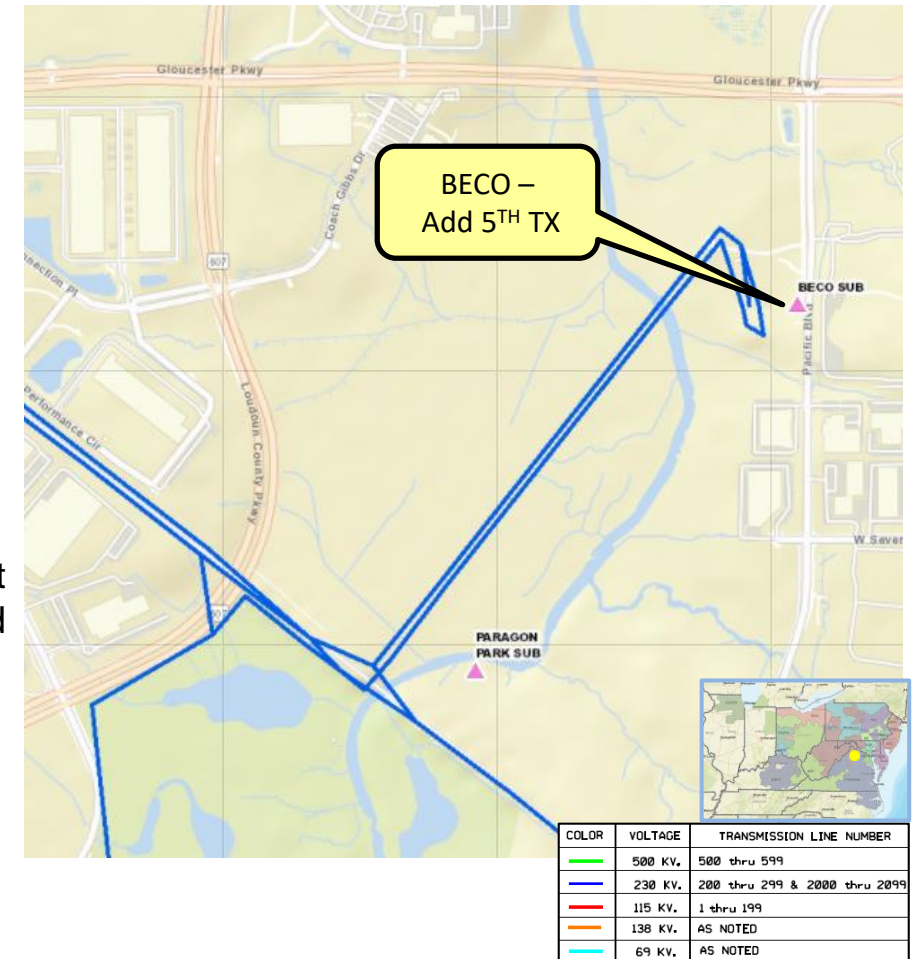
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

**Problem Statement:**

DEV Distribution has submitted a DP Request to add the 5<sup>th</sup> distribution transformer at BECO Substation in Loudoun County. The new transformer is being driven by continued load growth in the area.

Requested in-service date is 06/01/2022.

Initial In-Service Load	Projected 2026 Load
Summer: 299.0 MW	Summer: 250.0 MW



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0034

**Process Stage:** Need Meeting 05/11/2021

**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 (Racefield) in Loudoun County with a total load in excess of 100MW by 2029. Requested in-service date is 07/24/2023.

Initial In-Service Load	Projected 2026 Load
Summer: 10.0 MW	Summer: 60.5 MW



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

**Need Number:** DOM-2021-0040

**Process Stage:** Need Meeting 05/11/2021

**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:**

Fredericksburg TX#7 is a 168 MVA, 230/115/13.2 kV transformer bank that was manufactured in 1984. The original transformer failed in service and was rebuilt in 2001. This transformer bank has been identified for replacement based on Dominion's transformer health assessment (THA) process. Detailed drivers include:

- 37 service years in total (over 30 years). In service over 20 years after rebuild.
- Reduced BIL ratings (2 levels below current standard).
- Tertiary winding design not meeting current MVA requirement
- Legacy core steel technology with high loss
- Bushings have not yet been upgraded to polymer type for resiliency and safety, like the rest of 230/115 kV fleet.
- Transformer paint coating is degrading.
- Oil DGA shows high CO and CO2 levels since 2017 indicating potential breakdown of dielectric paper insulation on main current carrying conductors inside the transformer.
- THA score less than 80.



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

**Need Number:** DOM-2021-0041

**Process Stage:** Need Meeting 05/11/2021

**Project Driver:** Equipment Material Condition, Performance and Risk

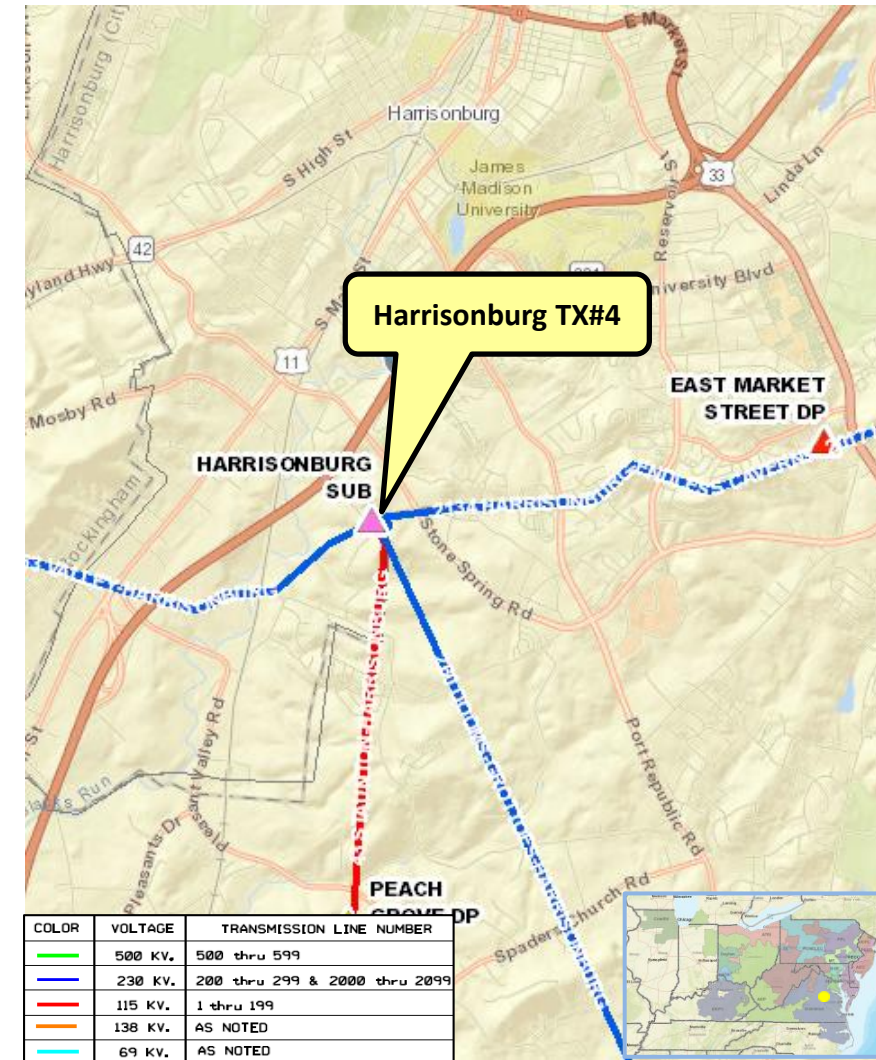
## Specific Assumption References:

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

## Problem Statement:

Harrisonburg TX#4 is a 112 MVA, 230/69/13.2 kV transformer bank consisting of three single-phase units that were manufactured in 1984. 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).
- Legacy core steel technology with high no-load loss.
- Degraded porcelain type bushings
- Oil DGA indicates high levels of Ethane and some Ethylene generated by high-energy arcing in two of the three units. These are signs of weakened or damaged insulations.
- Transformer paint coating is degrading.
- THA score less than 80 for two of the three single-phase units.



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

**Need Number:** DOM-2021-0043

**Process Stage:** Need Meeting 05/11/2021

**Project Driver:** Equipment Material Condition, Performance and Risk

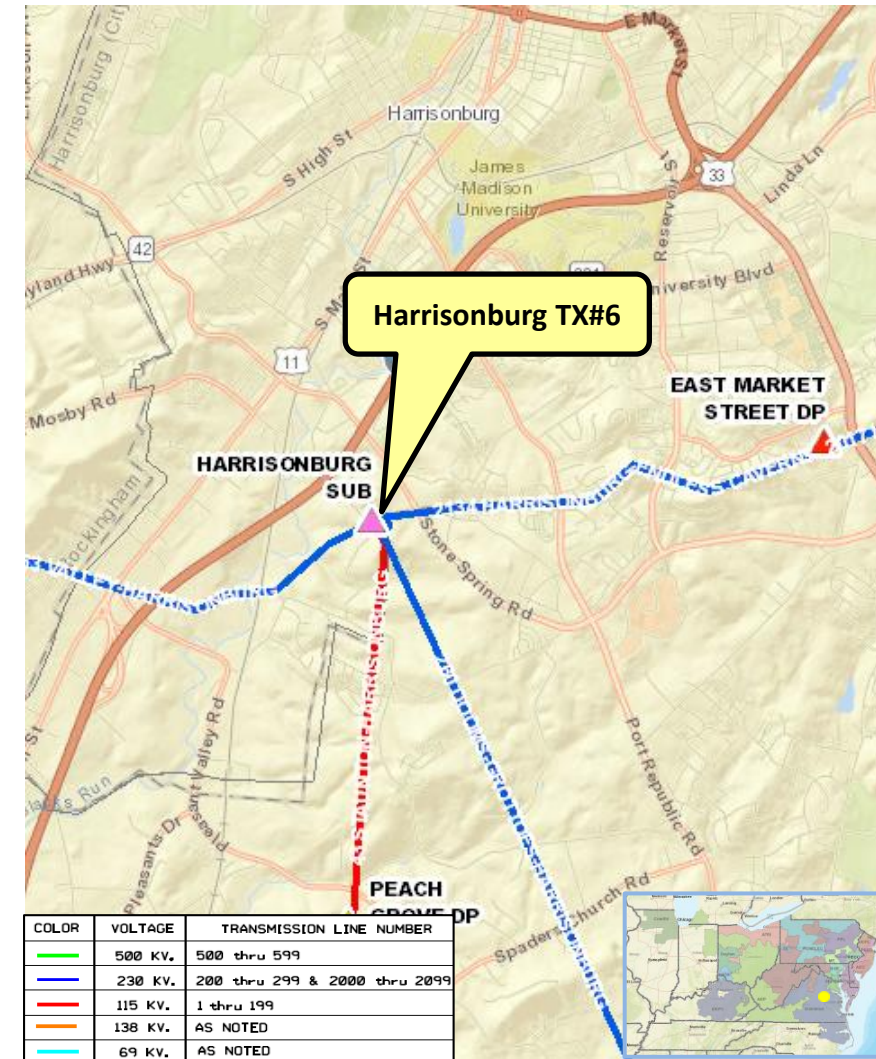
## Specific Assumption References:

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

## Problem Statement:

Harrisonburg TX#6 is a 112 MVA, 230/69/13.2 kV transformer bank consisting of three single-phase units that were manufactured in 1979. 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).
- Legacy core steel technology with high no-load loss.
- Degraded porcelain type bushings.
- Oil DGA indicates high levels of CO<sub>2</sub> in one unit; These are signs of deterioration of paper dielectric insulation.
- Transformer paint coating is degrading.
- THA score less than 80 for two of the three single-phase units.



# 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-2020-0040

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 11/04/2020

**Project Driver:** Customer Service

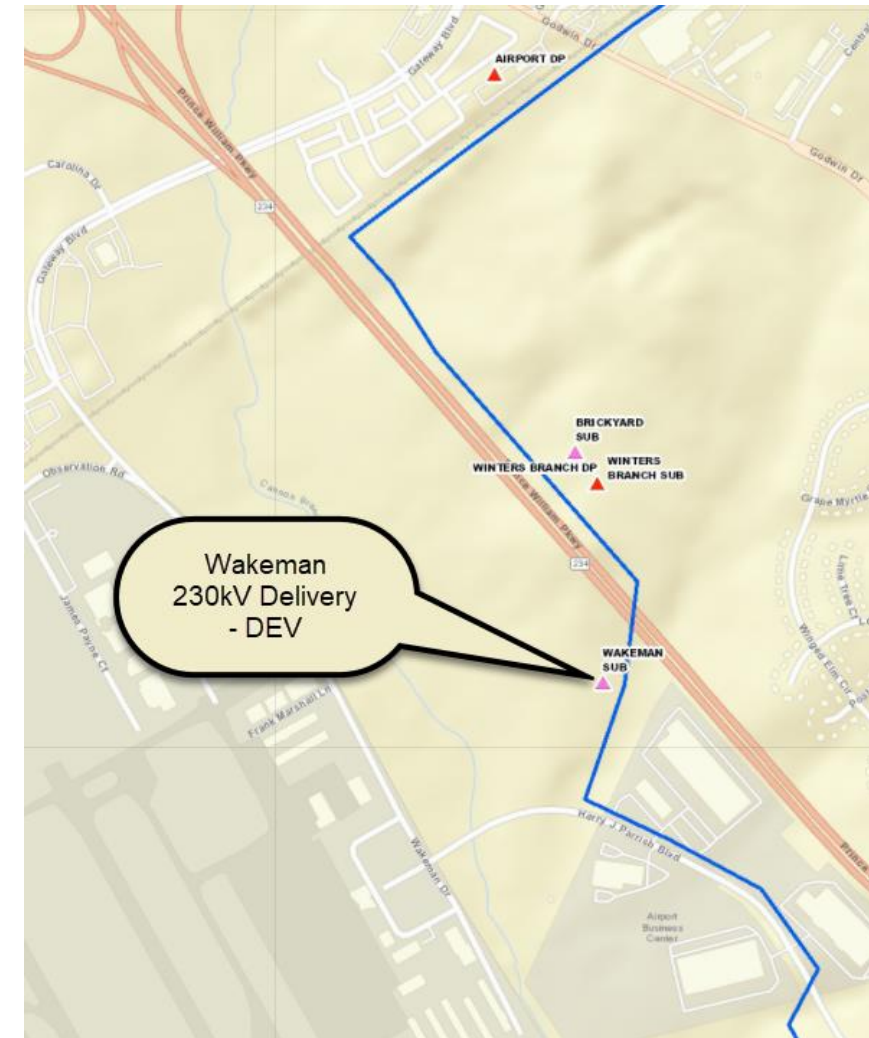
**Specific Assumption References:**

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 by 2024. Requested in-service date is 12/01/2022 (Update).

Initial In-Service Load	Projected 2026 Load
Summer: 5.0 MW	Summer: 196.25 MW



# Dominion Transmission Zone: Supplemental Wakeman 230kV Delivery - DEV

**Need Number:** DOM-2020-0040

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

Interconnect the new substation by cutting and extending Line #2132 (Cloverhill-Winters Branch) and Line #2148 (Cannon Branch-Cloverhill) to the proposed Wakeman Substation. Lines to terminate in a six-breaker ring arrangement.

**Estimated Project Cost:** \$11.0 M

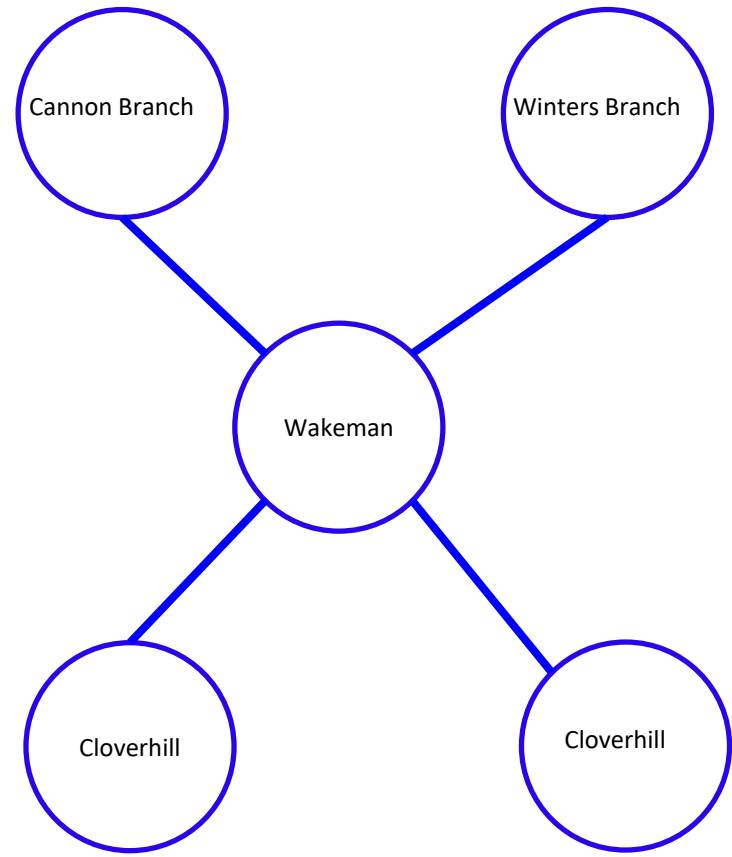
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 12/01/2022

**Project Status:** Engineering

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2020-0043

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 11/04/2020

**Project Driver:** Customer Service

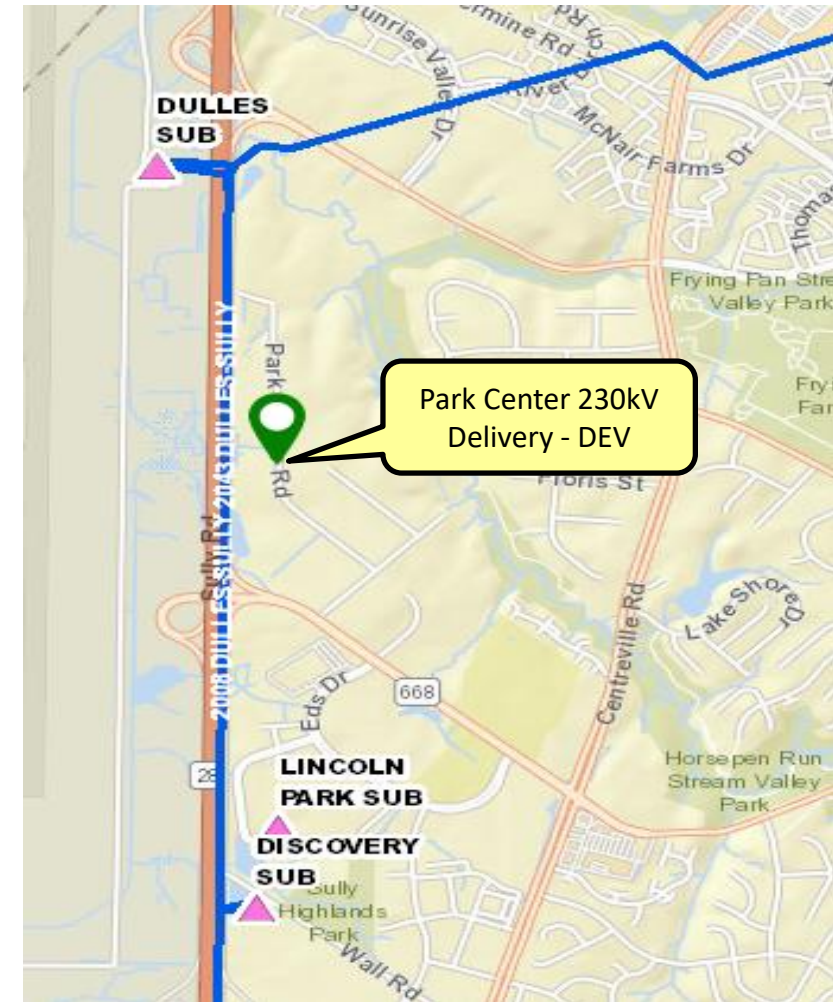
**Specific Assumption References:**

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 Park Center 230kV Delivery - DEV

**Need Number:** DOM-2020-0043

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

Interconnect the new substation by cutting and extending Line #2043 (Reston-Lincoln Park) to the proposed Park Center Substation. Terminate both ends into a four-breaker ring arrangement to create a Park Center-Reston line and a Park Center-Lincoln Park line.

**Estimated Project Cost:** \$10.0 M

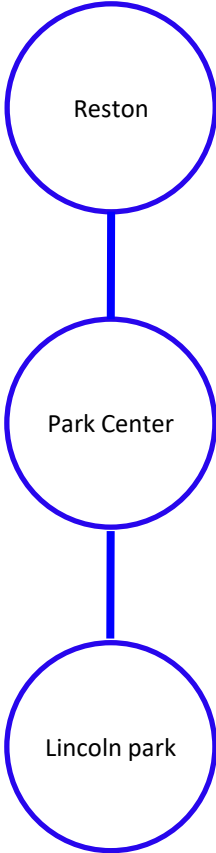
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 08/01/2024

**Project Status:** Engineering

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0003

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 04/06/2021

**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 to add transformers at Takeoff Substation to support a new datacenter campus in Fairfax County with a total load in excess of 100 MW. The new station will also support existing load in the immediate area. Requested in-service date is 06/15/2024.

Initial In-Service Load	Projected 2026 Load
Summer: 86.0 MW	Summer: 143.2 MW



# Dominion Transmission Zone: Supplemental Takeoff 230kV Delivery- Add Two TX's - DEV

**Need Number:** DOM-2021-0003

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

Install two 1200 Amp, 63kAIC circuit switchers and associated equipment (bus, switches, relaying, etc.) to feed the new transformers at Takeoff.

**Estimated Project Cost:** \$1.0 M

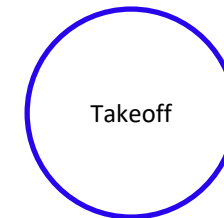
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 06/15/2024

**Project Status:** Engineering

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0018

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 04/06/2021

**Project Driver:** Customer Service

**Specific Assumption References:**

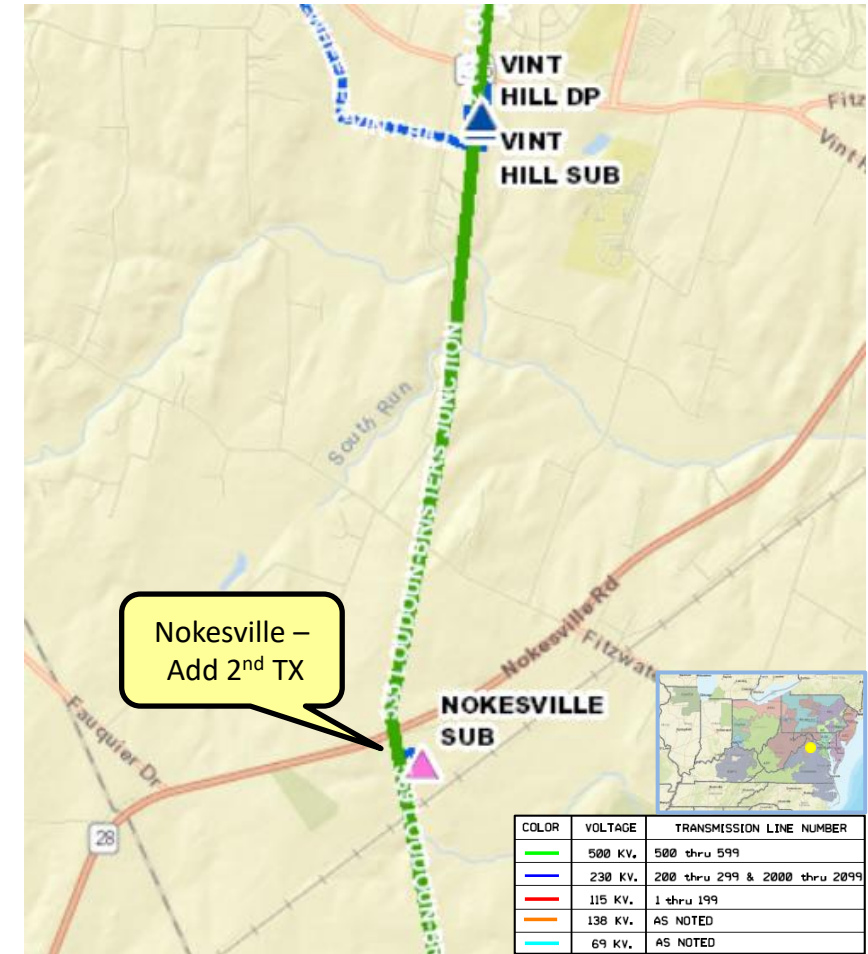
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

**Problem Statement:**

DEV Distribution has submitted a DP Request to add a 2<sup>nd</sup> distribution transformer at Nokesville Substation in Prince William County. The new transformer is being driven by continued load growth in the area.

Requested in-service date is 11/01/2022.

Initial In-Service Load	Projected 2026 Load
Summer: 27.2 MW	Summer: 63.3 MW



# Dominion Transmission Zone: Supplemental Nokesville - Add 2<sup>nd</sup> TX - DEV

**Need Number:** DOM-2021-0018

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

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

**Estimated Project Cost:** \$0.75 M

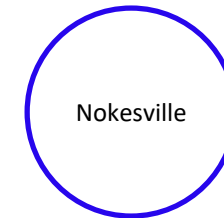
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 11/01/2022

**Project Status:** Engineering

**Model:** 2025 RTEP





# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0019

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 04/06/2021

**Project Driver:** Customer Service

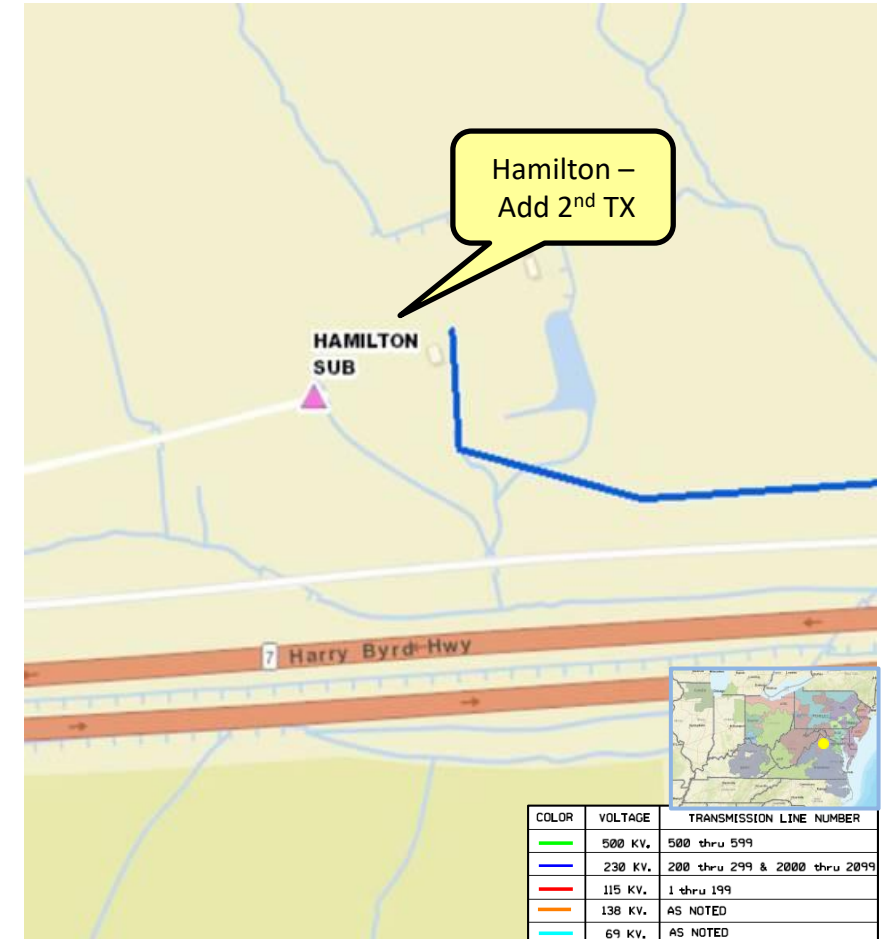
**Specific Assumption References:**

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 to add a 2<sup>nd</sup> distribution transformer at Hamilton Substation in Loudoun County. The new transformer is being driven by contingency loading for loss of the existing transformer. Requested in-service date is 12/01/2022.

Initial In-Service Load	Projected 2026 Load
Summer: 58.7 MW	Summer: 66.4 MW



# Dominion Transmission Zone: Supplemental Hamilton - Add 2<sup>nd</sup> TX - DEV

**Need Number:** DOM-2021-0019

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

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

**Estimated Project Cost:** \$0.75 M

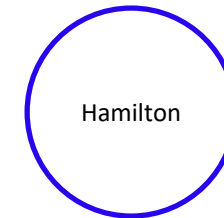
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 12/01/2022

**Project Status:** Engineering

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0020

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 04/06/2021

**Project Driver:** Customer Service

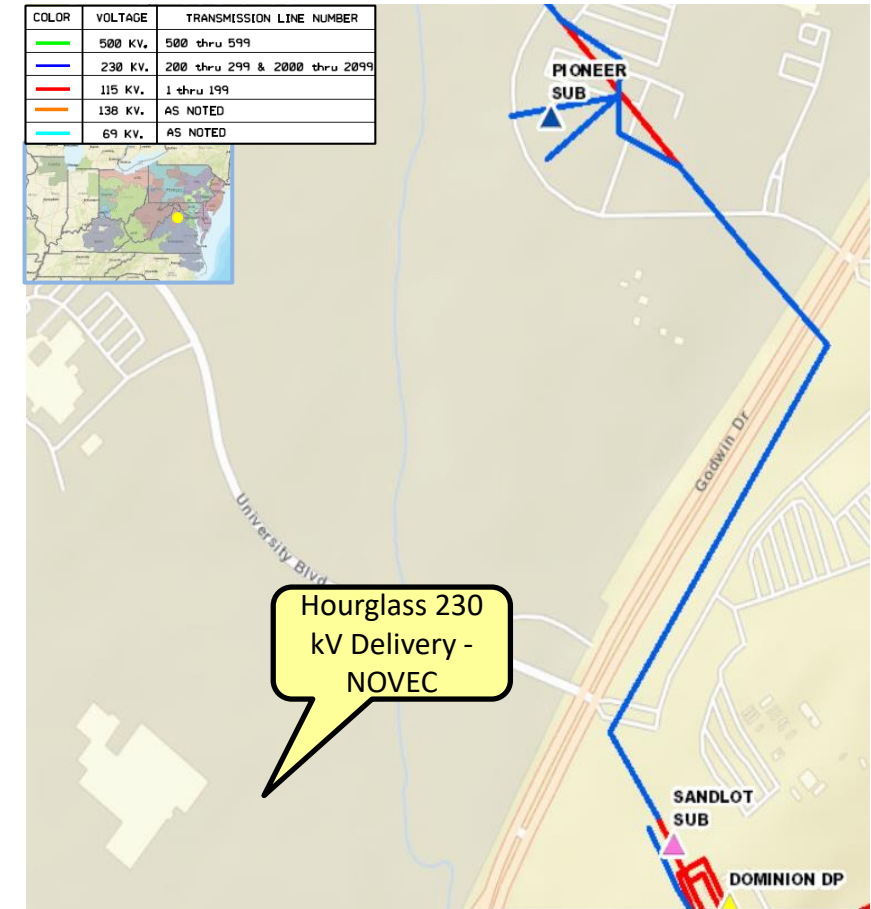
**Specific Assumption References:**

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 (Hourglass) to serve a data center complex in Prince William County with a total load in excess of 100 MW by 2025. Requested in-service date is 06/15/2023.

Initial In-Service Load	Projected 2026 Load
Summer: 10.0 MW	Summer: 114.7 MW



# Dominion Transmission Zone: Supplemental Hourglass 230kV Delivery – NOVEC

**Need Number:** DOM-2021-0020

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

Interconnect the new substation by cutting and extending Line #2196 (Pioneer - Sandlot) to the proposed Hourglass Substation. Terminate both ends into a 230 kV four-breaker ring arrangement with a provision to add two additional 230 kV breakers for an ultimate configuration of a six-breaker arrangement.

**Estimated Project Cost:** \$11.0 M

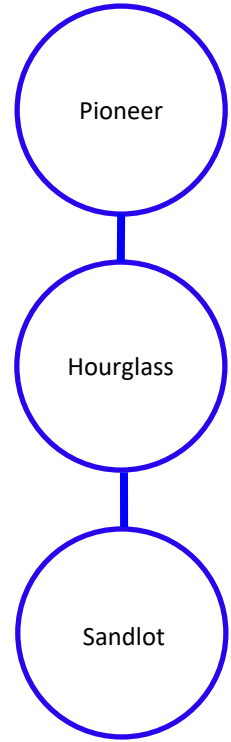
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 06/15/2023

**Project Status:** Engineering

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0032

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 04/06/2021

**Project Driver:** Customer Service

**Specific Assumption References:**

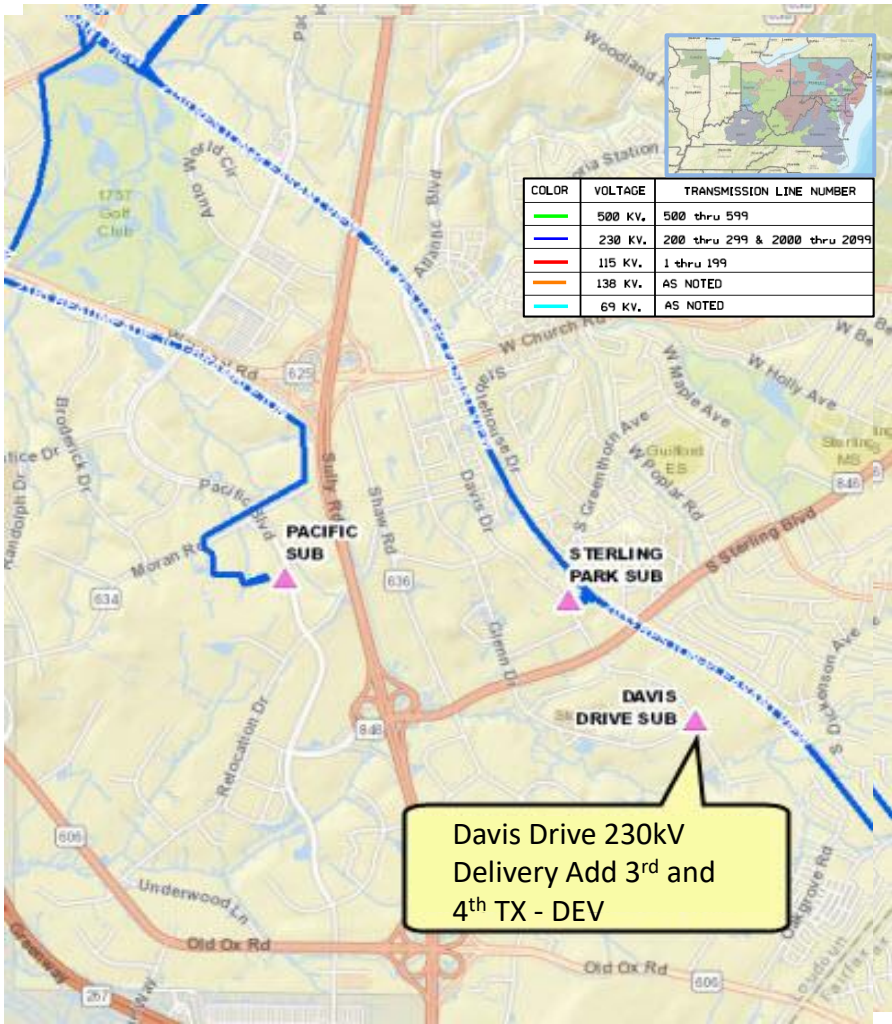
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

**Problem Statement:**

DEV Distribution has submitted a DP Request to add the 3<sup>rd</sup> and 4<sup>th</sup> distribution transformer at Davis Drive Substation in Loudoun County. The new transformer is being driven by continued load growth in the area.

Requested in-service date is 10/01/2022.

Initial In-Service Load	Projected 2026 Load
Summer: 175.0 MW	Summer: 224.0 MW



# Dominion Transmission Zone: Supplemental Davis Drive - Add 3<sup>rd</sup> and 4<sup>th</sup> TX - DEV

**Need Number:** DOM-2021-0032

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

Install two 1200 Amp, 50kAIC circuit switchers and associated equipment (bus, relaying, etc.) to feed the new transformer at Davis Drive.

**Estimated Project Cost:** \$1.0 M

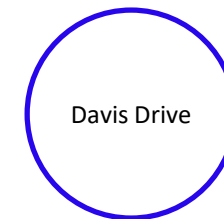
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 10/01/2022

**Project Status:** Engineering

**Model:** 2025 RTEP



# Dominion Transmission Zone: Supplemental Customer Load Request

**Need Number:** DOM-2021-0035

**Process Stage:** Solutions Meeting 05/11/2021

**Previously Presented:** Need Meeting 04/06/2021

**Project Driver:** Customer Service

**Specific Assumption References:**

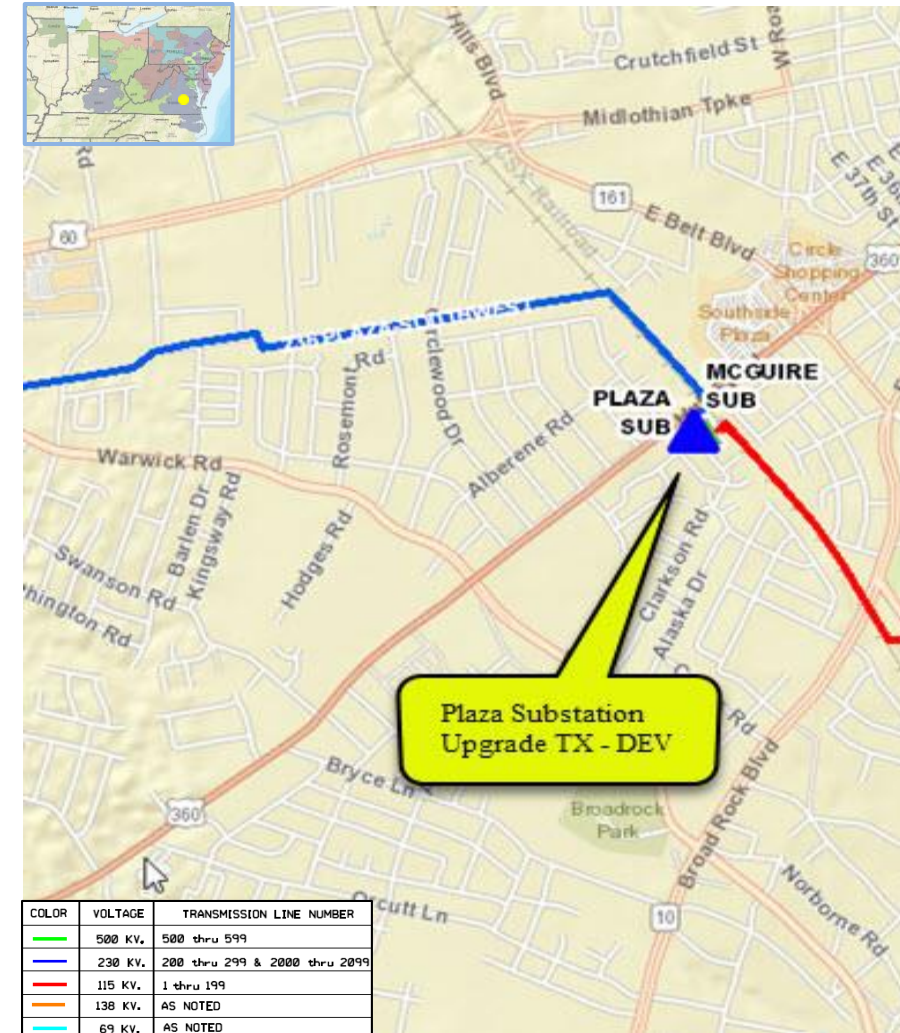
Customer load request will be evaluated per Dominion’s Facility Interconnection Requirements Document and Dominion’s Transmission Planning Criteria.

**Problem Statement:**

DEV Distribution has submitted a DP Request to upgrade the distribution transformer at Plaza Substation in the City of Richmond. The transformer upgrade is being driven by a poor Transformer Health Assessment (THA) score.

Requested in-service date is 12/31/2021.

Initial In-Service Load	Projected 2026 Load
Winter: 40.4 MW	Winter: 45.8 MW



# Dominion Transmission Zone: Supplemental Plaza 230kV Delivery - Upgrade TX - DEV

**Need Number:** DOM-2021-0035

**Process Stage:** Solutions Meeting 05/11/2021

**Proposed Solution:**

Install a 1200 Amp, 20 kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to support the new transformer at Plaza.

**Estimated Project Cost:** \$0.5 M

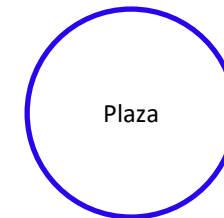
**Alternatives Considered:**

No feasible alternatives

**Projected In-service Date:** 12/31/2021

**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

04/30/2021 – V1 – Original version posted to pjm.com.

05/10/2021 – V2 – Minor corrections to slide 5, 14, and 22.