Submission of Supplemental Projects for Inclusion in the Local Plan

Dominion Transmission Zone M-3 Process
Enterprise 230 kV Delivery – Add 3rd TX – DEV

Need Number: DOM-2019-0020

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 05/16/2019

Solution – 10/17/2019

Project Driver:

Customer Service

Specific Assumption Reference:

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

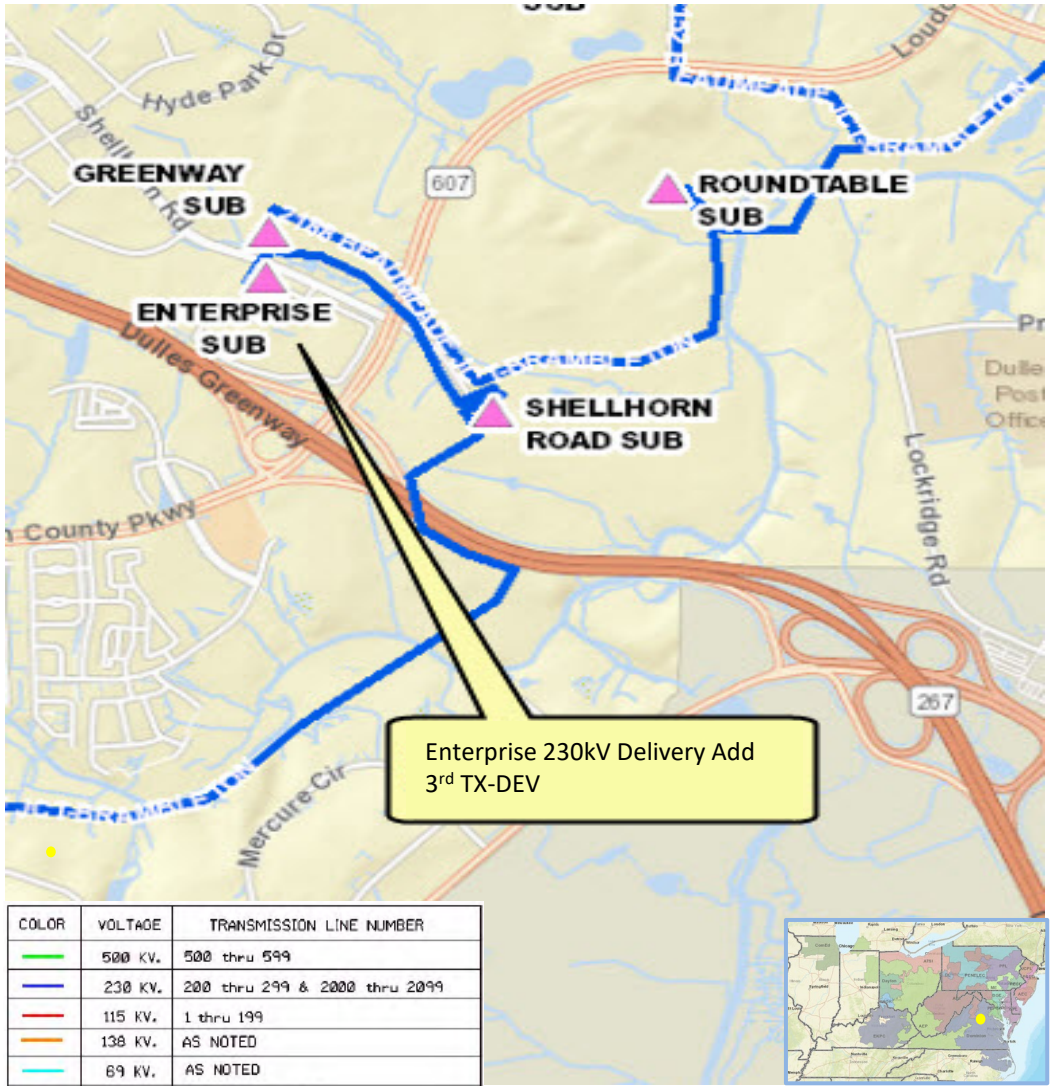
Problem Statement:

DEV Distribution has submitted a DP Request to add a 3rd, 84 MVA distribution transformer at Enterprise Substation in Loudoun County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested in-service date is 07/15/2020.

Projected 2024 load

Summer: 82.4 MW

Winter: 86.1 MW



Dominion Transmission Zone M-3 Process
Enterprise 230 kV Delivery – Add 3rd TX – DEV

Need Number: DOM-2019-0020

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

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

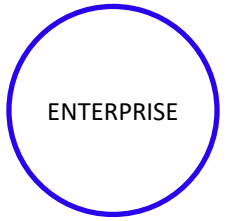
Estimated Cost: $0.25 M

Projected In-Service: 07/15/2020

Supplemental Project ID: s2129

Project Status: Engineering

Model: 2023 RTEP



Superseded – refer to slide #6

Dominion Transmission Zone M-3 Process
Poland Road 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2019-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

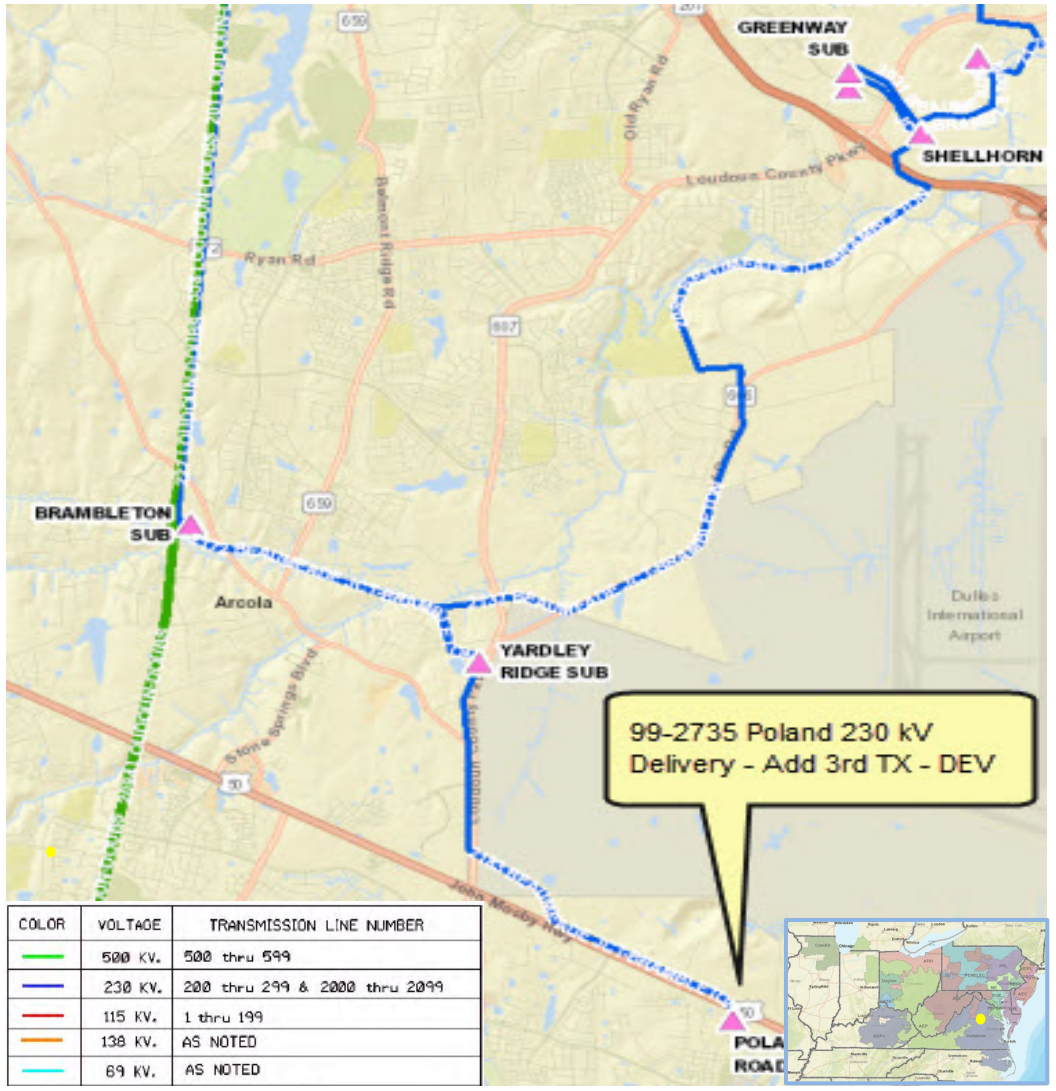
Previously Presented:
Need – 05/16/2019
Solution – 10/17/2019

Project Driver:
Customer Service

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

Problem Statement:
DEV Distribution has submitted a DP Request to add a 4th, 84 MVA distribution transformer at Poland Road Substation in Loudoun County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested in-service date is 12/31/2021.

Projected 2024 load
Summer: 293.0 MW
Winter: 286.0 MW



Superseded – refer to slide #7

Dominion Transmission Zone M-3 Process
Poland Road 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2019-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

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

Estimated Cost: $2.0 M

Projected In-Service: 12/31/2021

Supplemental Project ID: s2130

Project Status: Engineering

Model: 2023 RTEP

Dominion Transmission Zone M-3 Process
Poland Road 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2019-0022 - **UPDATE**

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 05/16/2019

Solution – 10/17/2019, 06/02/2020

Project Driver:

Customer Service

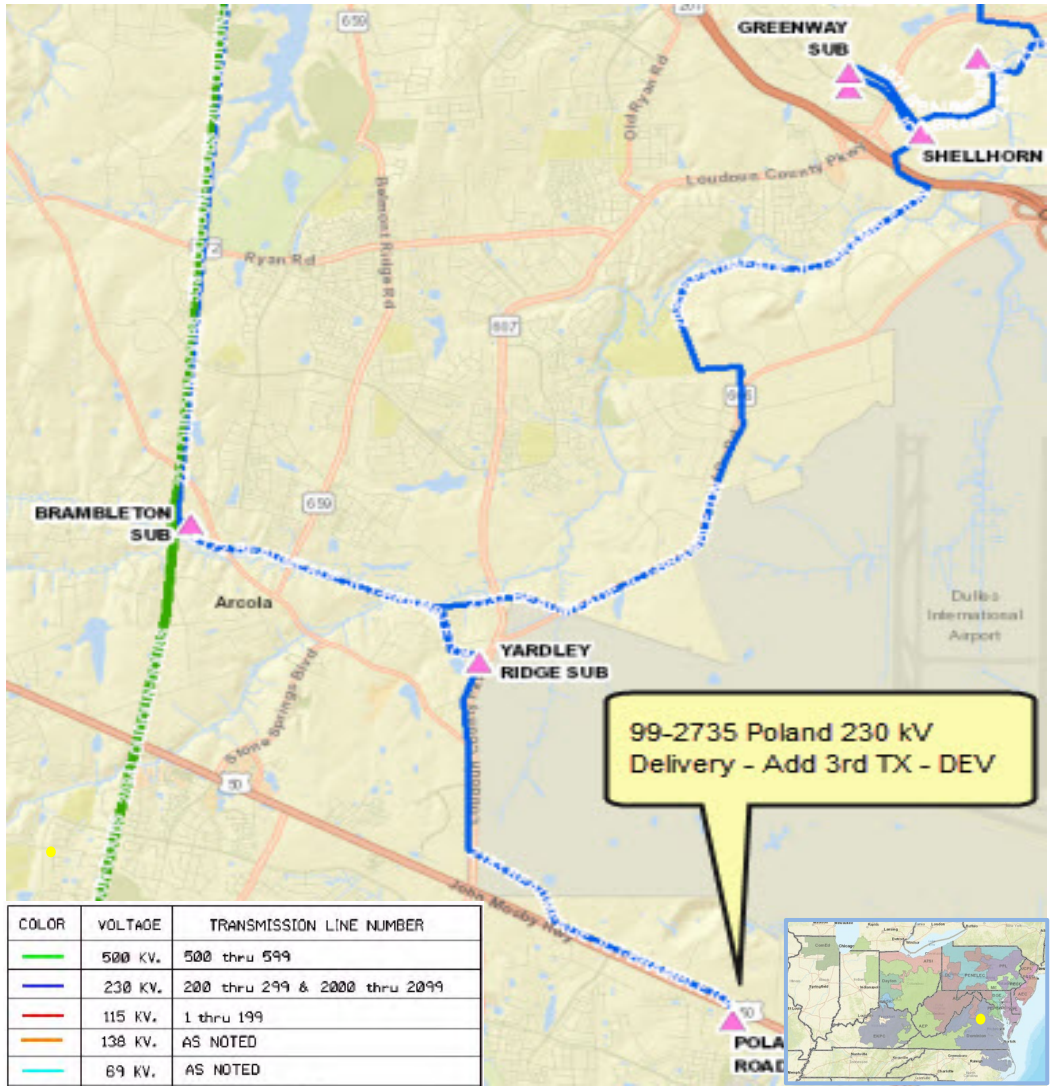
Specific Assumption Reference:

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

Problem Statement:

DEV Distribution has submitted a **revised** DP Request to add a 4th, 84 MVA distribution transformer at Poland Road Substation in Loudoun County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested **revised** in-service date is 9/1/2021.

Initial In-Service Load	Projected 2024 Load
Summer: 186.0 MW **(UPDATED)**	Summer: 214.0 MW **(UPDATED)**



Poland Road 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2019-0022 - **UPDATE**

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

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

Estimated Cost: $0.4 M **(UPDATED)**

Projected In-Service: 9/1/2021 **(UPDATED)**

Supplemental Project ID: s2130

Project Status: Engineering

Model: 2023 RTEP

Dominion Transmission Zone M-3 Process
Brickyard 230kV Delivery - DEV

Need Number: DOM-2019-0023

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

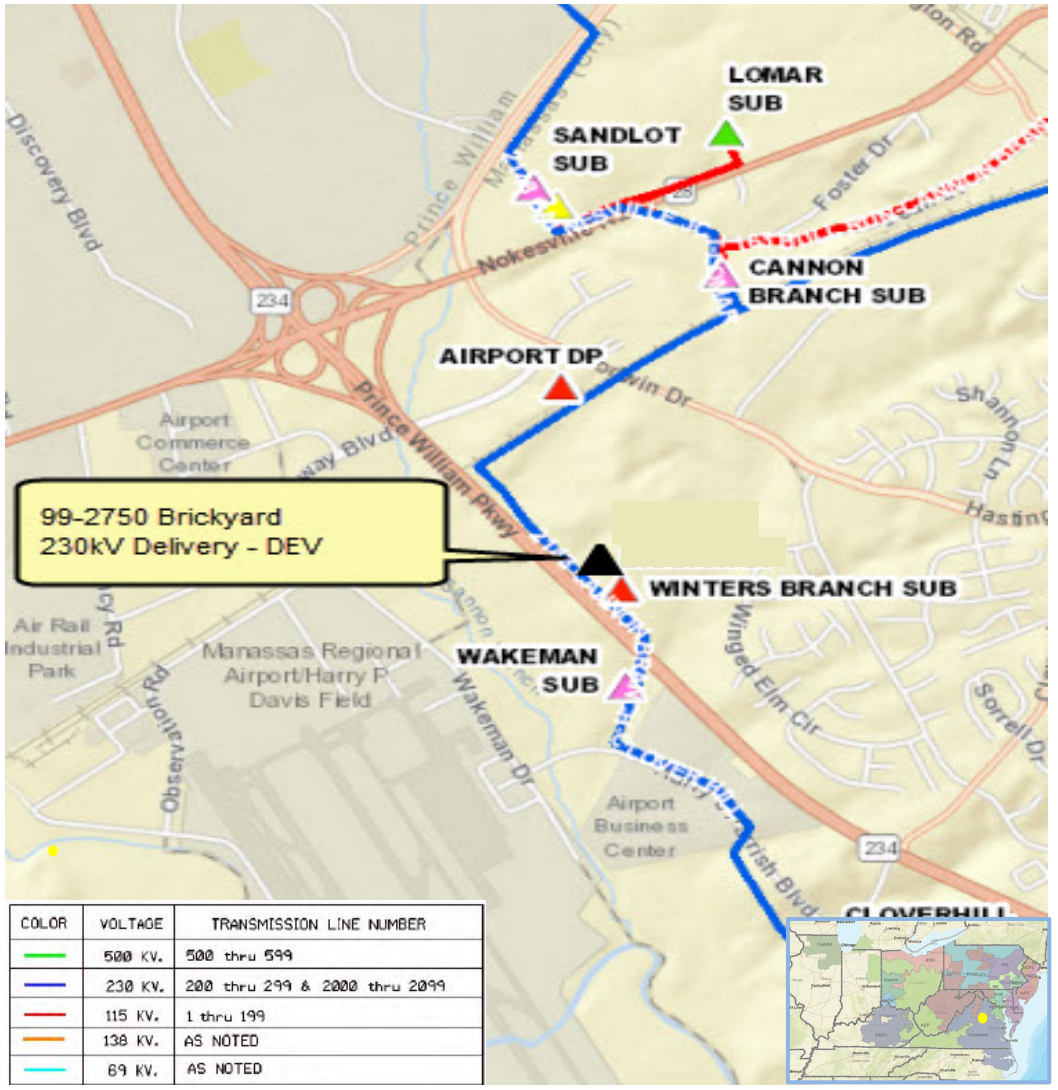
Previously Presented:
Need – 05/16/2019
Solution – 10/17/2019

Project Driver:
Customer Service

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

Problem Statement:
DEV Distribution has submitted a DP Request for a new substation (Brickyard) to support a new datacenter campus in Prince William County with a total load in excess of 100 MW. Requested in-service date is 12/15/2021.

Projected 2024 load
Summer: 52.0 MW
Winter: 40.0 MW



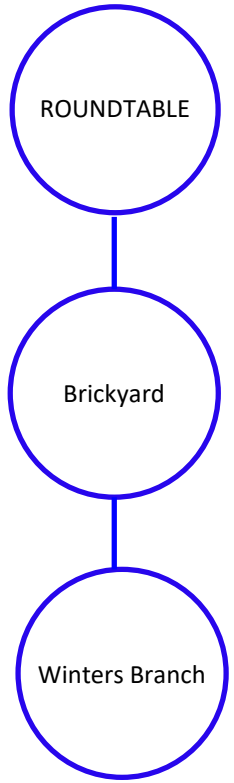
Dominion Transmission Zone M-3 Process
Brickyard 230kV Delivery - DEV

Need Number: DOM-2019-0023

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

Cut an existing 230kV line between Cannon Branch and Winters Branch Substations. At Brickyard, install four 230kV breakers to terminate the two lines. Install two 230kV circuit switchers and any necessary high side switches and bus work for two initial transformers.



Estimated Cost: $2.0 M

Projected In-Service: 05/15/2023

Supplemental Project ID: s2131

Project Status: Engineering

Model: 2023 RTEP

Superseded – refer to slide #12

Dominion Transmission Zone M-3 Process
Poland Road 230kV Delivery- Add 5th TX - DEV

Need Number: DOM-2019-0024

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 10/17/2019

Solution – 11/14/2019

Project Driver:

Customer Service

Specific Assumption Reference:

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

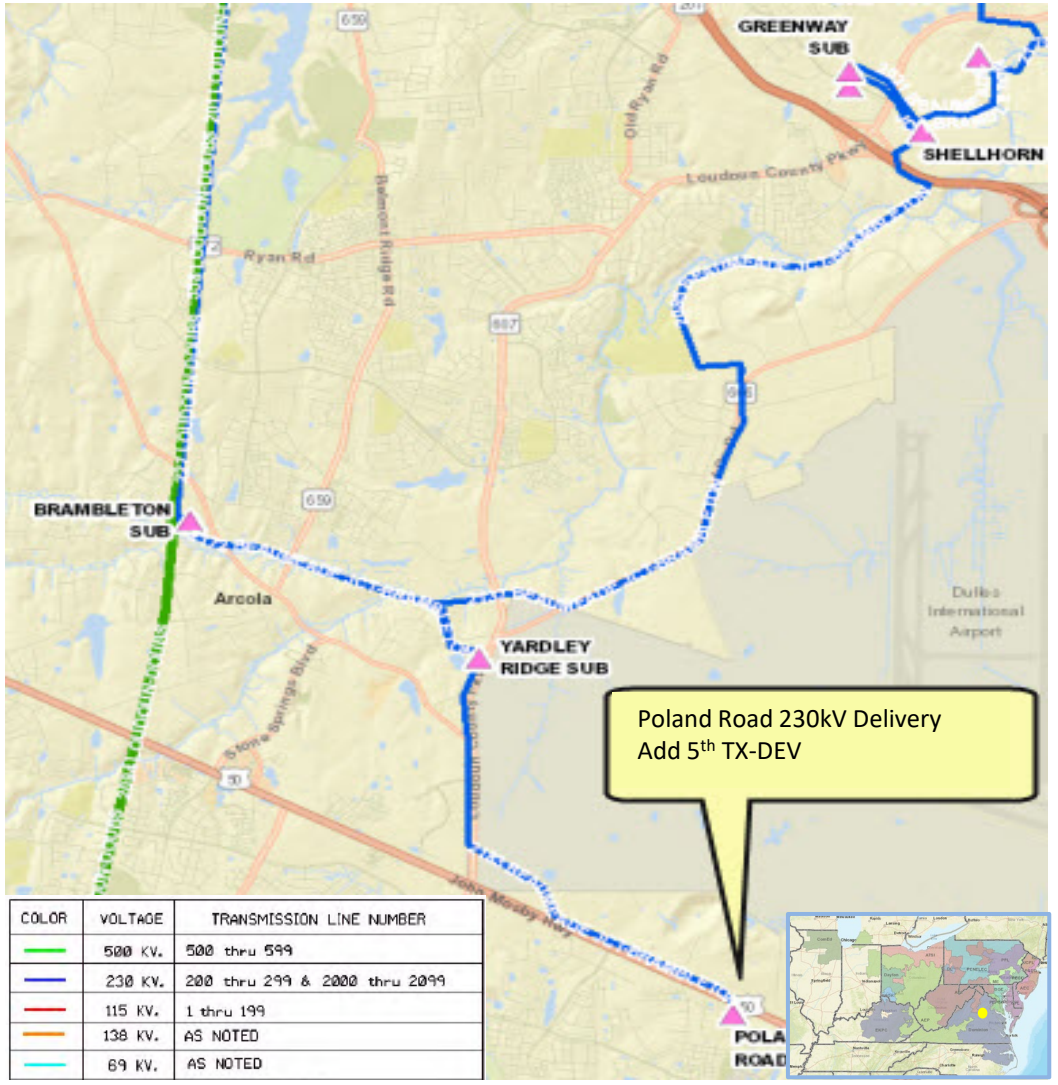
Problem Statement:

DEV Distribution has submitted a DP Request to add a 5th, 84 MVA distribution transformer at Poland Road Substation in Loudoun County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested in-service date is 10/15/2022.

Projected 2024 load

Summer: 293.0 MW

Winter: 286.0 MW



Superseded – refer to slide #13

Dominion Transmission Zone M-3 Process
Poland Road 230kV Delivery- Add 5th TX - DEV

Need Number: DOM-2019-0024

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

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

Estimated Cost: $0.4 M

Projected In-Service: 10/15/2022

Supplemental Project ID: s2132

Project Status: Engineering

Model: 2023 RTEP

Dominion Transmission Zone M-3 Process
Poland Road 230kV Delivery- Add 5th TX - DEV

Need Number: DOM-2019-0024 - **CANCELLED**

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 10/17/2019

Solution – 11/14/2019

Project Driver:

Customer Service

Specific Assumption Reference:

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

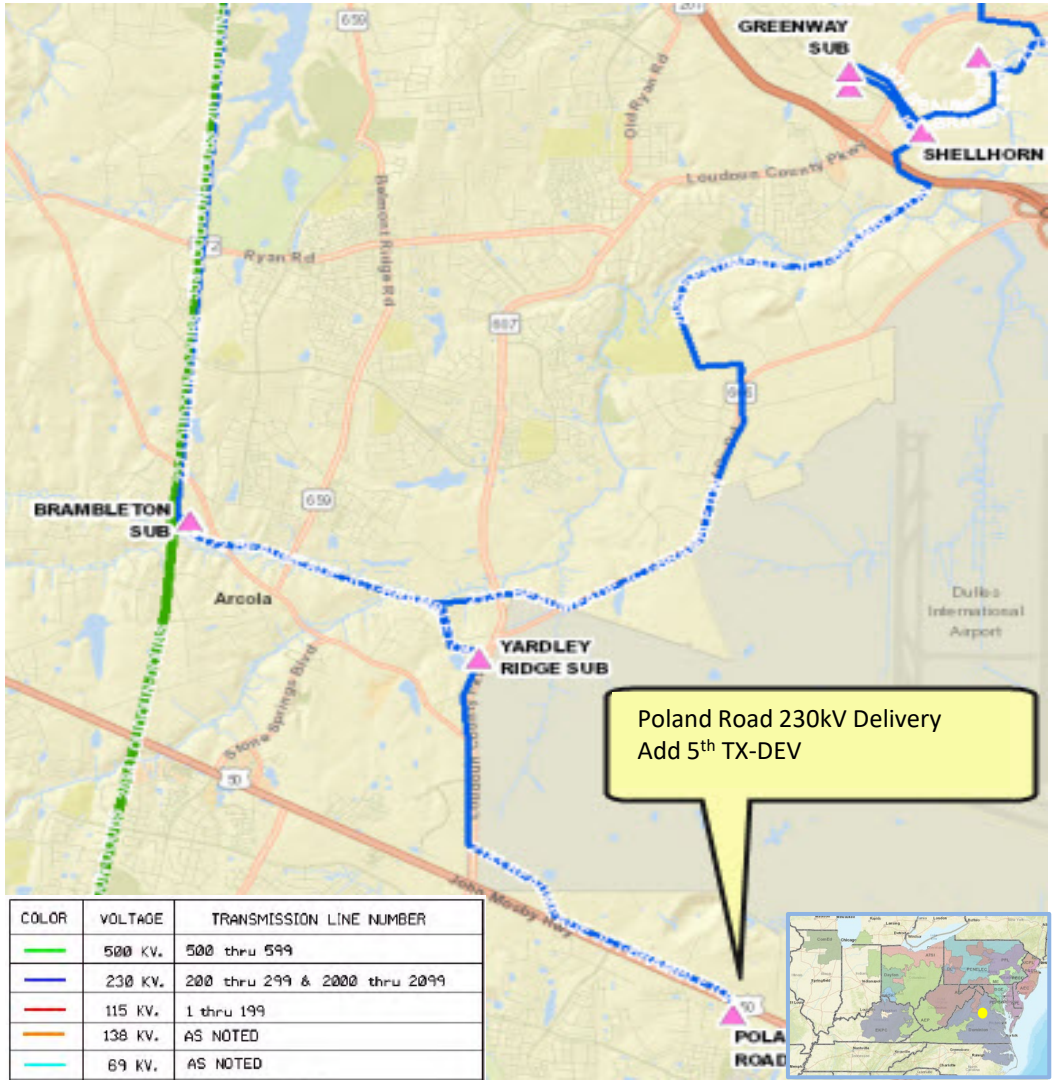
Problem Statement:

DEV Distribution has submitted a DP Request to add a 5th, 84 MVA distribution transformer at Poland Road Substation in Loudoun County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested in-service date is 10/15/2022.

Projected 2024 load

Summer: 293.0 MW

Winter: 286.0 MW



Poland Road 230kV Delivery- Add 5th TX - DEV

Need Number: DOM-2019-0024 - **CANCELLED**

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

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

Estimated Cost: $0.4 M

Projected In-Service: 10/15/2022

Supplemental Project ID: s2132

Project Status: Engineering

Model: 2023 RTEP

Dominion Transmission Zone M-3 Process
Dawsons Crossroads 115kV Delivery - DEV

Need Number: DOM-2019-0026

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 08/27/2019

Solution – 10/21/2019

Project Driver:

Customer Service

Specific Assumption Reference:

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

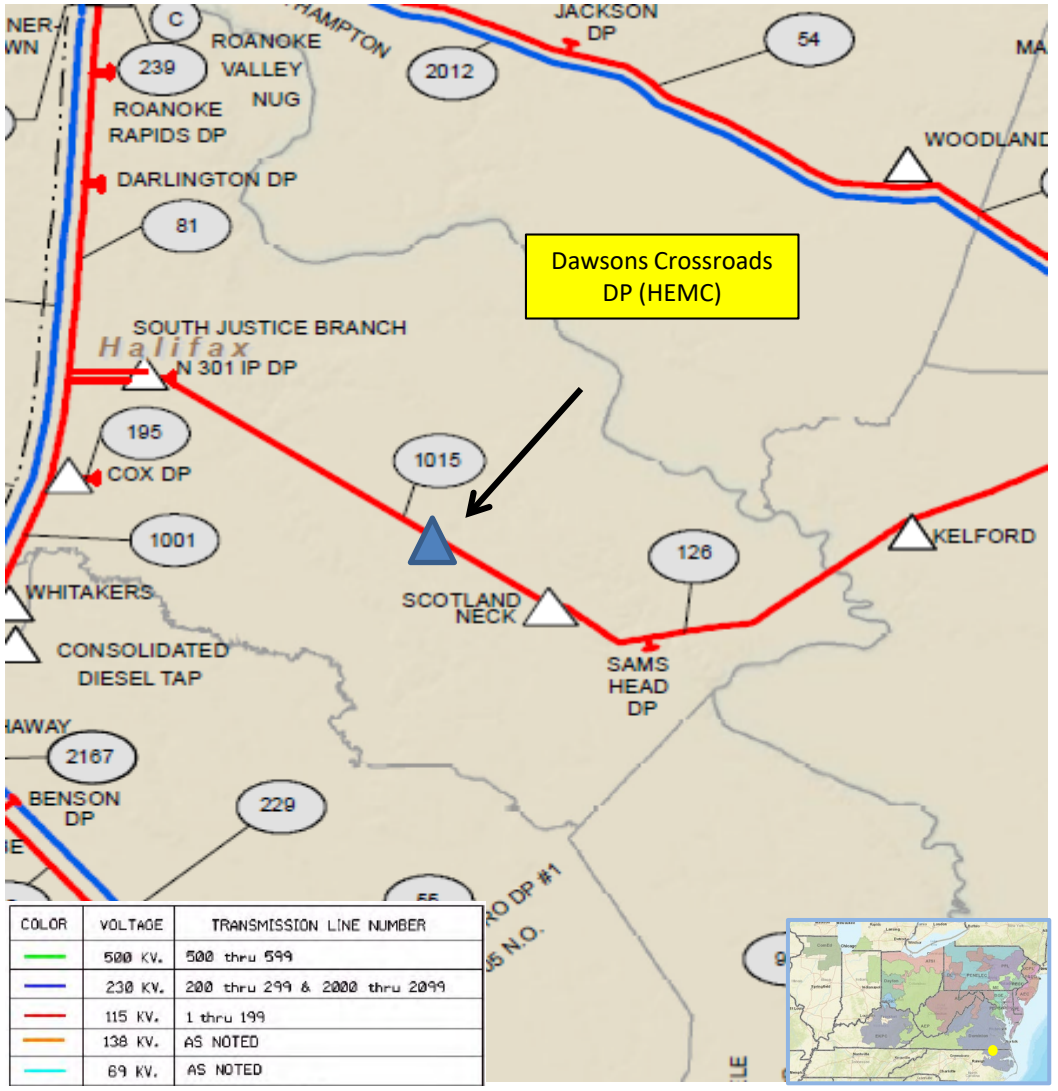
Problem Statement:

NCEMC has submitted a request on behalf of Halifax EMC (HEMC) for a new Delivery Point (Dawsons Crossroads) at Halifax, NC, to replace an existing distribution Delivery Point due to poor reliability. The customer requests service by November 1, 2020.

Projected 2024 load

Summer: 2.6 MW

Winter: 2.6 MW



Dominion Transmission Zone M-3 Process
Dawsons Crossroads 115kV Delivery - DEV

Need Number: DOM-2019-0026

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

Cut into line #1015 and install three line switches. Install a 115kV circuit switcher on the high side of the new transformer. Perform any necessary associated transmission level work to support this new substation.

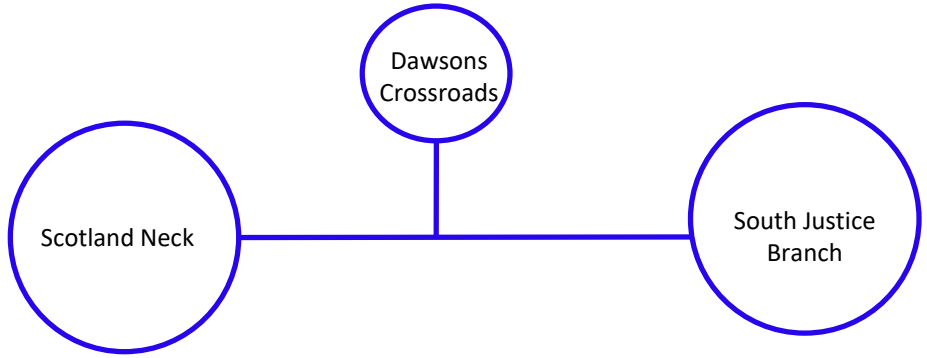
Estimated Cost: $0.7 M

Projected In-Service: 11/01/2020

Supplemental Project ID: s2133

Project Status: Engineering

Model: 2023 RTEP



Dominion Transmission Zone M-3 Process
Mt. Storm GIS Building Enhancement - DEV

Need Number: DOM-2019-0028

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 10/17/2019

Solution – 11/14/2019

Project Driver:

Contamination and Operational Flexibility

Specific Assumption Reference:

Dominion Energy Supplemental Project Drivers presented at the December 5, 2018 Southern Sub-Regional Meeting: II. Equipment Material Condition, Performance and Risk & III. Operational Flexibility and Efficiency.

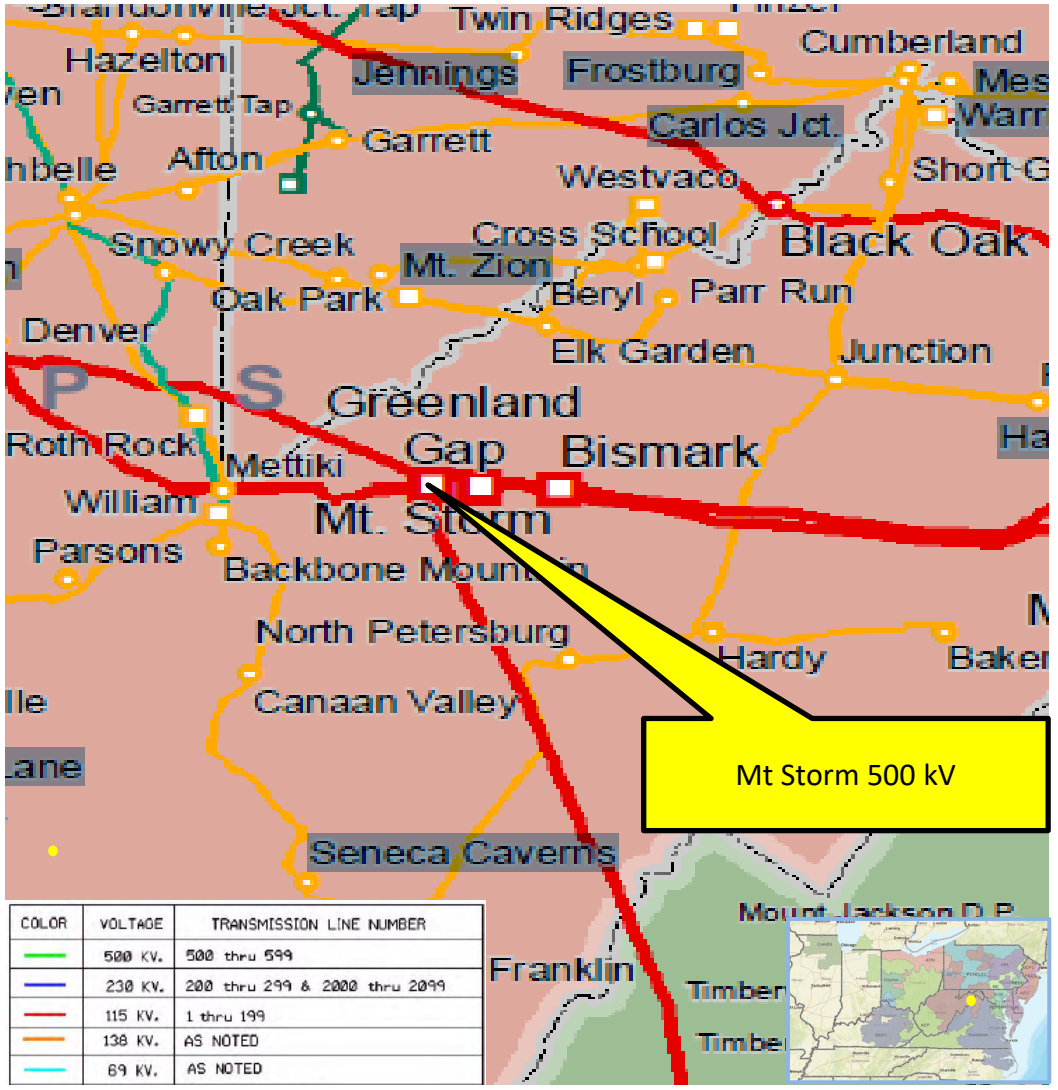
Problem Statement:

Ice and weather continue to be an issue at Mt Storm Substation that affects the operation and maintenance of the remaining outdoor equipment located in the substation. In 2014 half the existing 500 kV substation equipment was converted to GIS.

Projected 2024 load

Summer: N/A

Winter: N/A



Dominion Transmission Zone M-3 Process
Mt. Storm GIS Building Enhancement - DEV

Need Number: DOM-2019-0028

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

Install 2nd GIS building in the Mt Storm switchyard to house the breakers/switches for the Line #550, #536, Generators #2 and #3, and 500 kV Capbank(s) #1 and #2. Additionally, the existing GIS building will be expanded to include breakers/switches for the Line #529, #572 and Capbank #3.

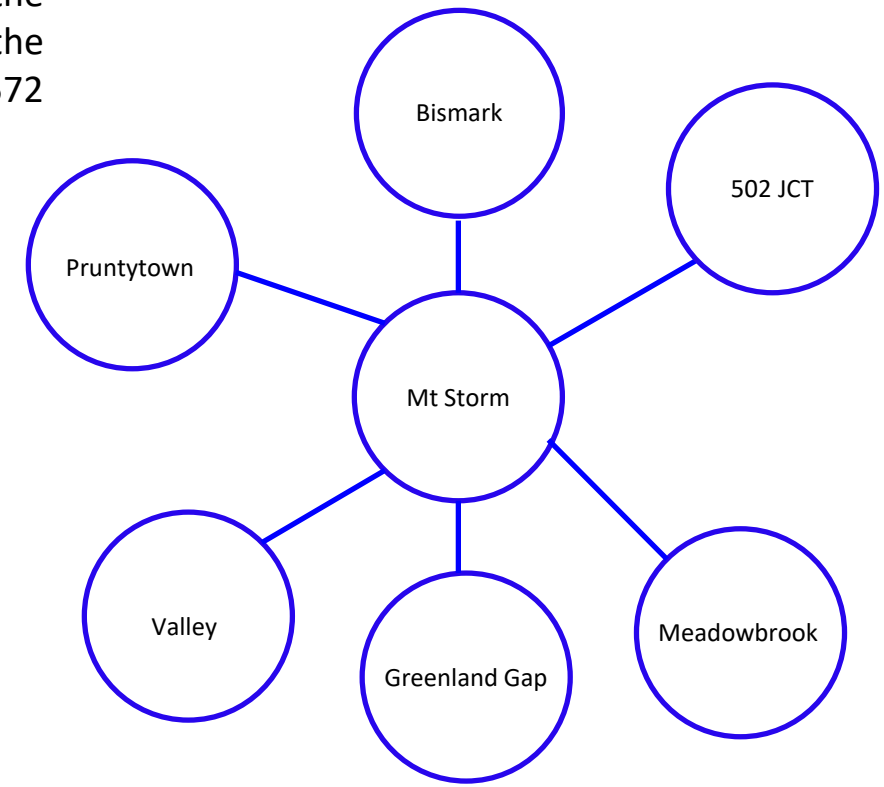
Estimated Cost: $69.0 M

Projected In-Service: 05/22/2022

Supplemental Project ID: s2134

Project Status: Engineering

Model: N/A



Dominion Transmission Zone M-3 Process
Lexington TX#4 Replacement - DEV

Need Number: DOM-2019-0030

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 09/24/2019

Solution – 10/21/2019

Project Driver:

Equipment Material Condition, Performance, and Risk

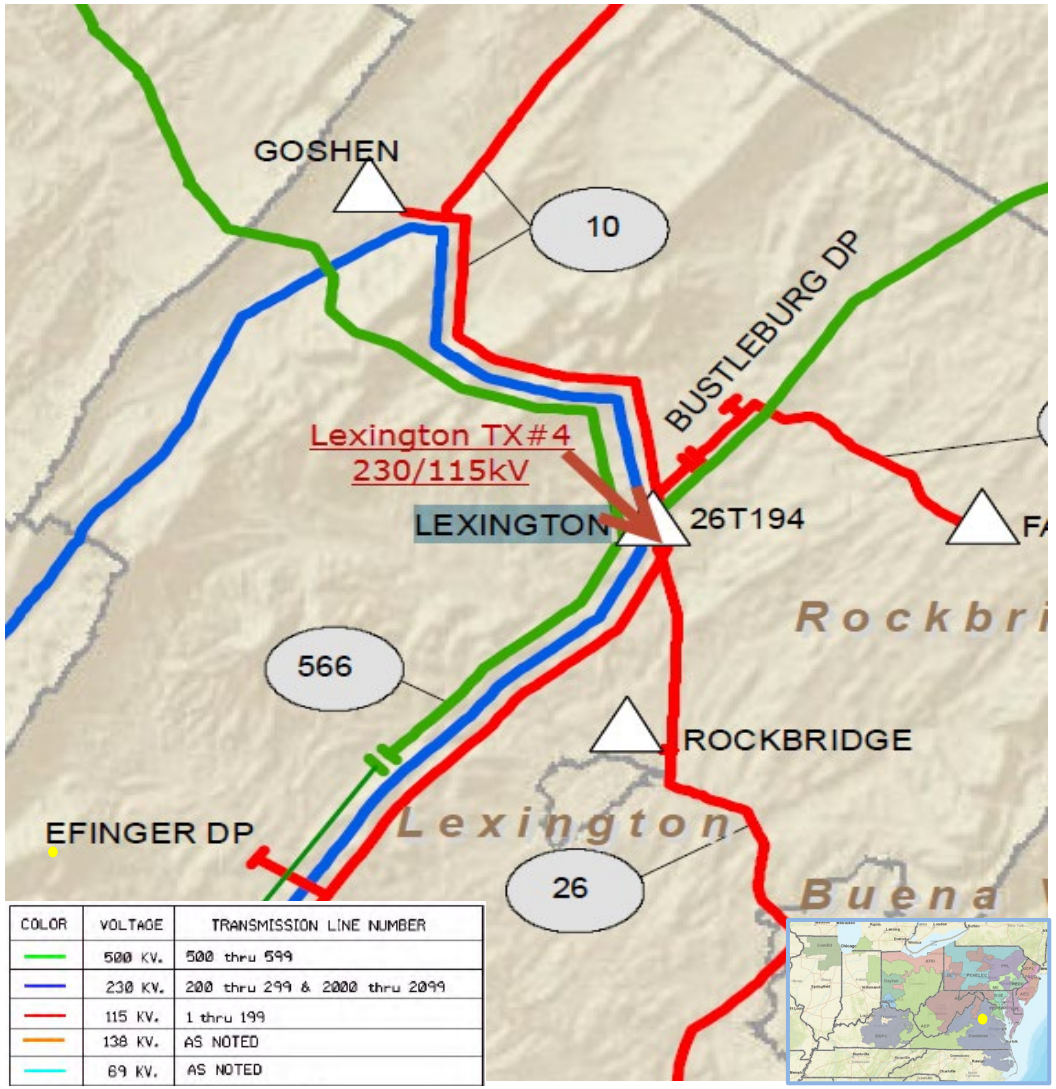
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2018

Problem Statement:

Lexington Tx#4 is a 168MVA 230/115kV transformer originally manufactured in 1986. This transformer is being replaced as part of our strategic transmission transformer replacement program as based on the results of our ongoing transformer health assessment (THA) process. Detailed drivers are:

- DGA indicates trending upward levels of Hydrogen, Methane, along with high levels of carbon monoxide and carbon dioxide since 1997. Oil was degasified in 2009 but gas trending continues.
- Reduced BIL ratings



Lexington TX#4 Replacement - DEV

Need Number: DOM-2019-0030

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

Replace the identified 168MVA 230/115kV transformer with a 168MVA 230/115kV transformer. Perform any associated transmission work.

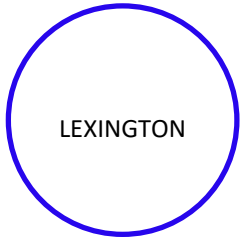
Estimated Cost: $3.0 M

Projected In-Service: 03/01/2020

Supplemental Project ID: s2135

Project Status: Construction

Model: 2023 RTEP



Dominion Transmission Zone M-3 Process
Gordonsville TX#3 Replacement - DEV

Need Number: DOM-2019-0031

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Previously Presented:

Need – 09/24/2019

Solution – 10/21/2019

Project Driver:

Equipment Material Condition, Performance, and Risk

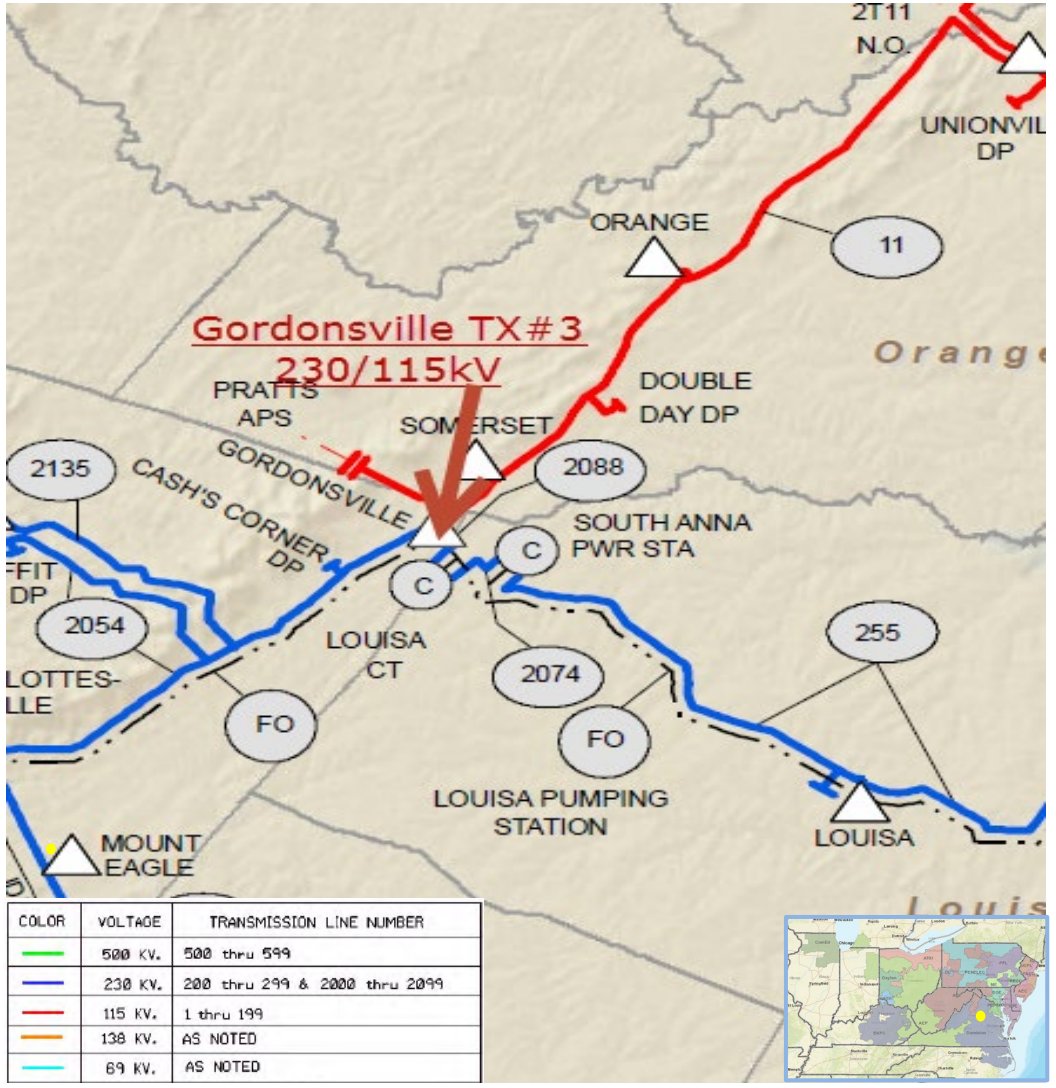
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2018

Problem Statement:

Gordonsville Tx#3 is a 224MVA 230/115kV transformer originally manufactured in 1990. This transformer is being replaced as part of our strategic transmission transformer replacement program as based on the results of our ongoing transformer health assessment (THA) process. Detailed drivers are:

- Transformer failed in service at Dooms in 1999, repaired / remanufactured in 2000 and returned to service in Gordonsville in 2005.
- Oil DGA indicates trending upward levels of Methane and Ethylene, along with high levels of carbon monoxide and carbon dioxide since returning to service.
- Reduced BIL ratings



Gordonsville TX#3 Replacement - DEV

Need Number: DOM-2019-0031

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/24/2020

Selected Solution:

Replace the identified 224MVA 230/115kV transformer with a 224MVA 230/115kV transformer. Perform any associated transmission work.

Estimated Cost: $3.5 M

Projected In-Service: 03/31/2020

Supplemental Project ID: s2136

Project Status: Construction

Model: 2023 RTEP

Dominion Transmission Zone M-3 Process
Coleman Creek 115kV DP - MEC

Need Number: DOM-2019-0025

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/11/2019

Solution – 02/11/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

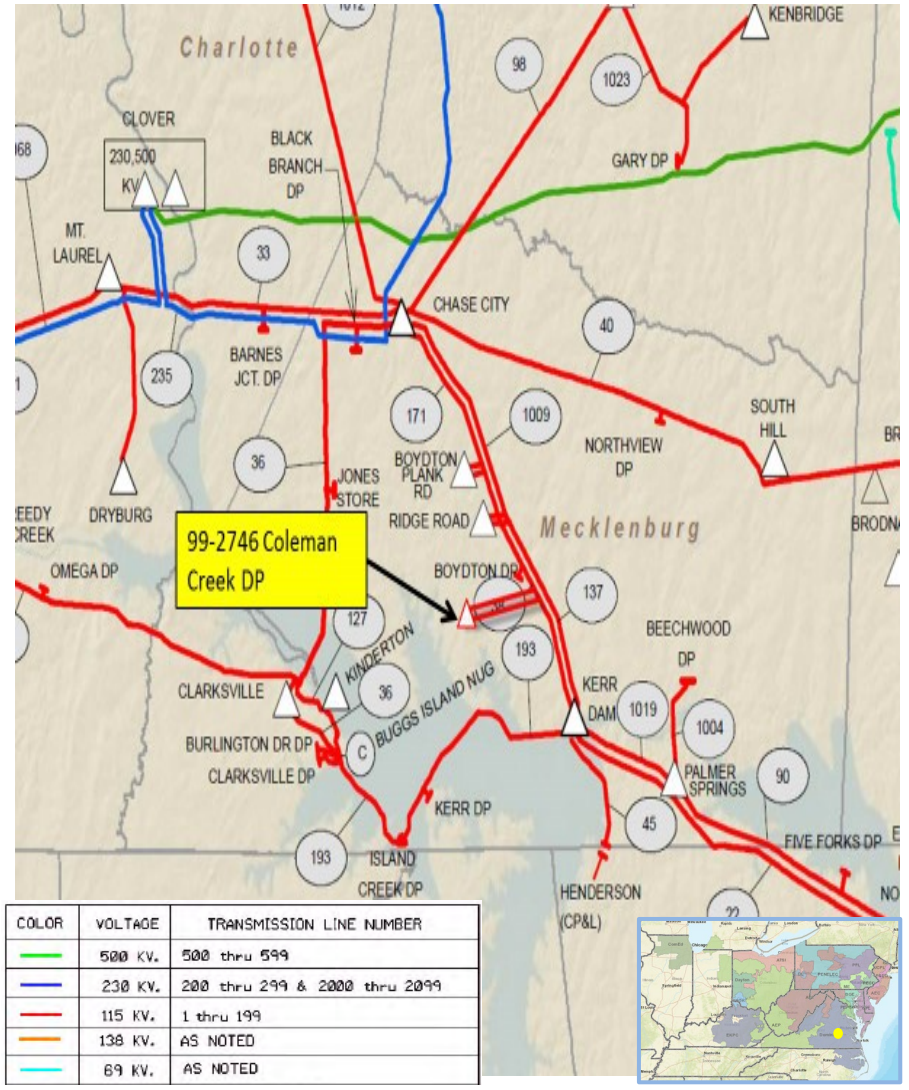
Problem Statement:

ODEC has submitted a request on behalf of Mecklenburg Electric Coop (MEC) for a new delivery point (Coleman Creek) at Boydton, VA, to support a new datacenter campus with a total load in excess of 100 MW. The customer requests service by August 1, 2020.

Projected 2025 load

Summer: 150.0 MW

Winter: 150.0 MW



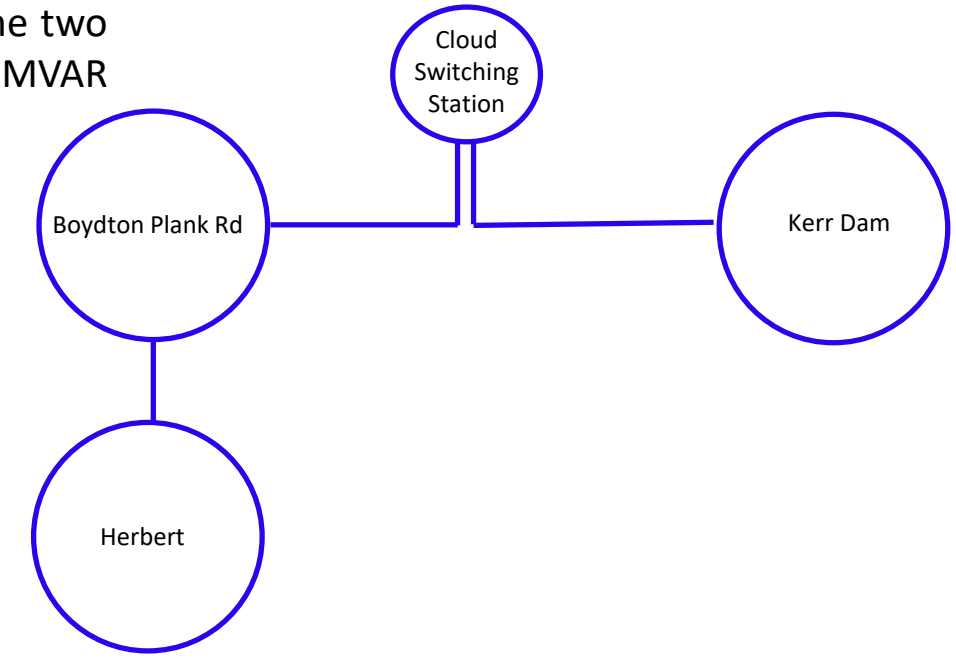
Dominion Transmission Zone M-3 Process
Coleman Creek 115kV DP - MEC

Need Number: DOM-2019-0025

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Obtain land and build a 115kV switching station adjacent to MEC's new Coleman Creek DP. Split Line #38 (Kerr Dam - Boydton Plank Rd), extend a double circuit 115kV line for approximately 1.76 miles (new right-of-way) and terminate both lines into the new switching station. The switching station will consist of one breaker separating the two new lines. Provide one 115 kV line to serve MEC's new DP. Additionally, a 33 MVAR capacitor bank will be required at Herbert to provide additional voltage support.



Estimated Cost: $16.0 M

Projected In-Service: 11/30/2020

Supplemental Project ID: s2320

Project Status: Construction

Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Chickahominy 500-230 kV TX #1

Need Number: DOM-2019-0027

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/11/2019

Solution – 02/04/2020

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 2018

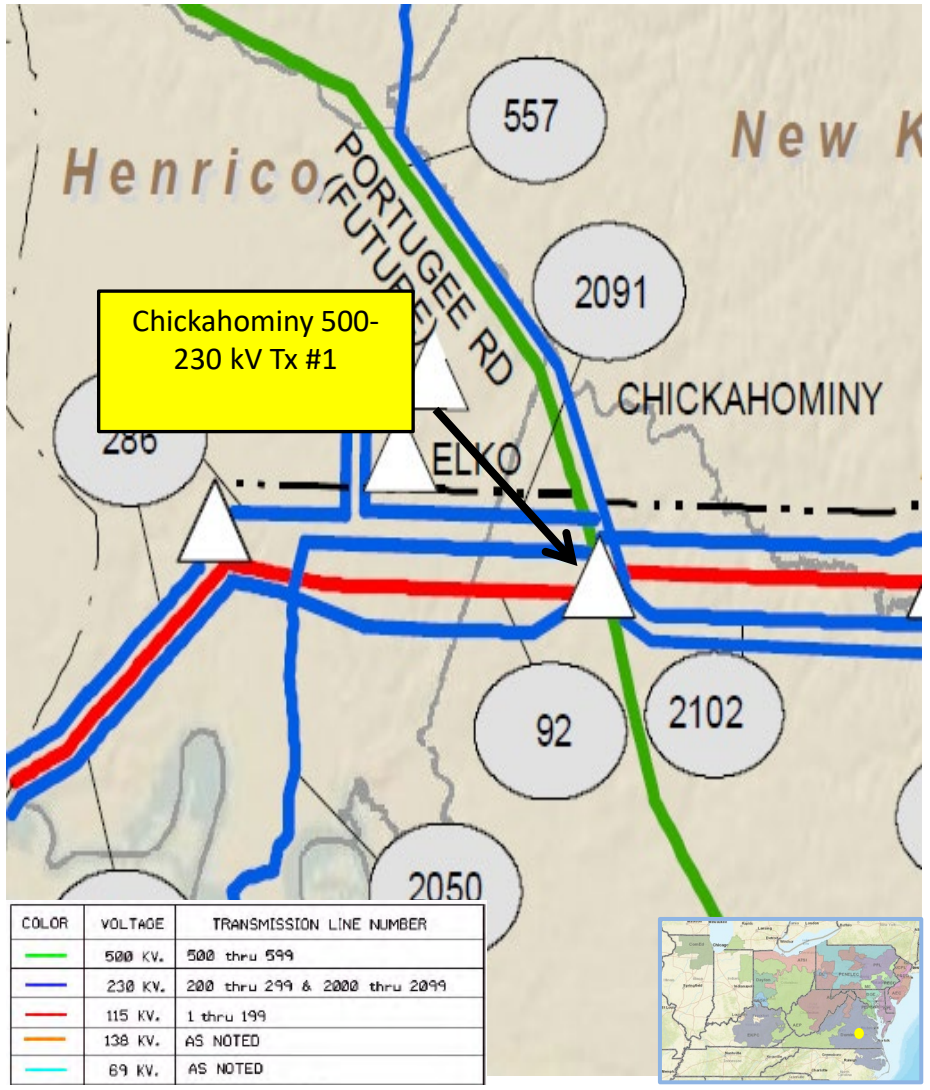
Problem Statement:

Chickahominy 500-230 kV 840 MVA transformer #1 needs to be replaced as a result of Dominion's ongoing transformer health assessment (THA) process. This process considers design characteristics, past electrical test results, dissolved gas-in-oil test results, age, ongoing maintenance issues, and past failures of similar designed transformers.

This transformer was manufactured in 1987 and is the last Westinghouse shell transformer on the Dominion System, these transformers have known issues.

Drivers for replacement are:

- Reduced BIL Ratings
- Previously remanufactured following failure
- Transformers of this manufacture are considered suspect due to previous transformer failures



Dominion Transmission Zone M-3 Process
Chickahominy 500-230 kV TX #1

Need Number: DOM-2019-0027

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:
Replace the three single phase banks and one spare bank with new units.

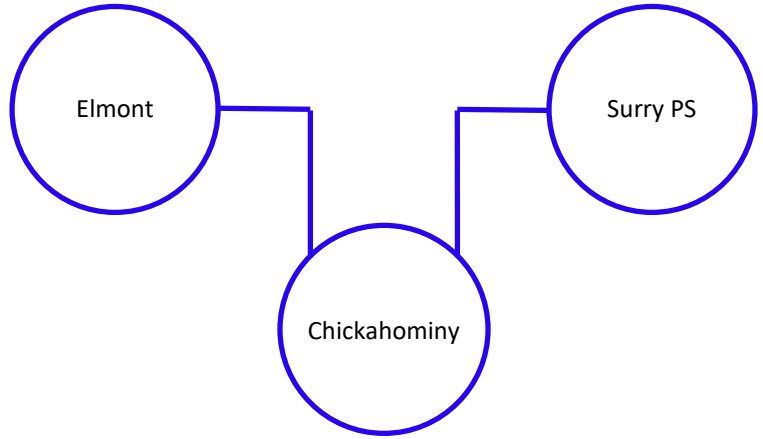
Estimated Cost: $12.4 M

Projected In-Service: 08/30/2019

Supplemental Project ID: s2319

Project Status: Complete

Model: 2024 RTEP



Dominion Transmission Zone M-3 Process
Cloverhill 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0001

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 02/04/2020

Solution – 03/10/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

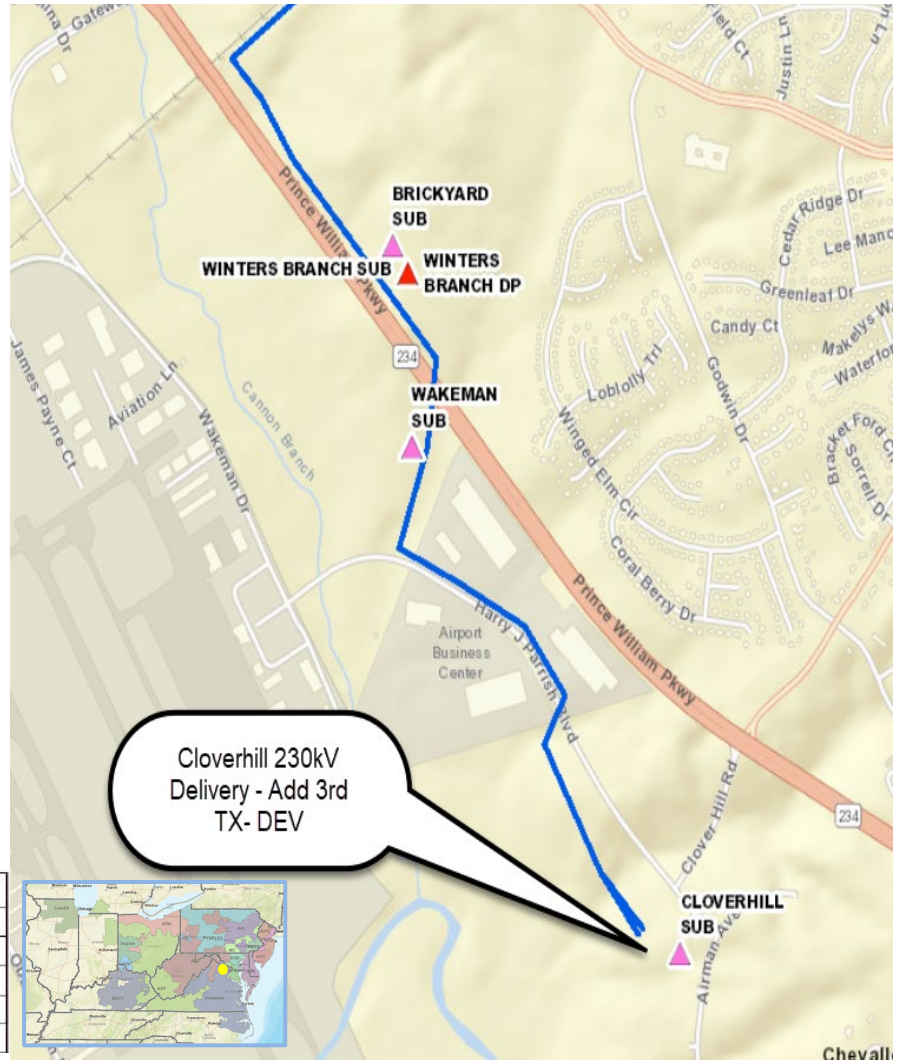
Problem Statement:

DEV Distribution has submitted a DP Request to add a 3rd, 84 MVA distribution transformer at Cloverhill Substation in Prince William County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested in-service date is 6/01/2022.

Projected 2025 load

Summer: 272.2 MW

Winter: 249.1 MW



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

Dominion Transmission Zone M-3 Process
Cloverhill 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0001

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

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

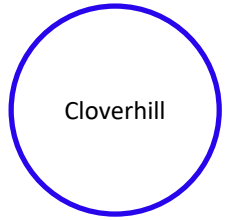
Estimated Cost: $0.25 M

Projected In-Service: 06/01/2022

Supplemental Project ID: s2321.1

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Varina 230kV Delivery - DEV

Need Number: DOM-2020-0002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – n/a; Pre-M3

Solution – 06/05/2008

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

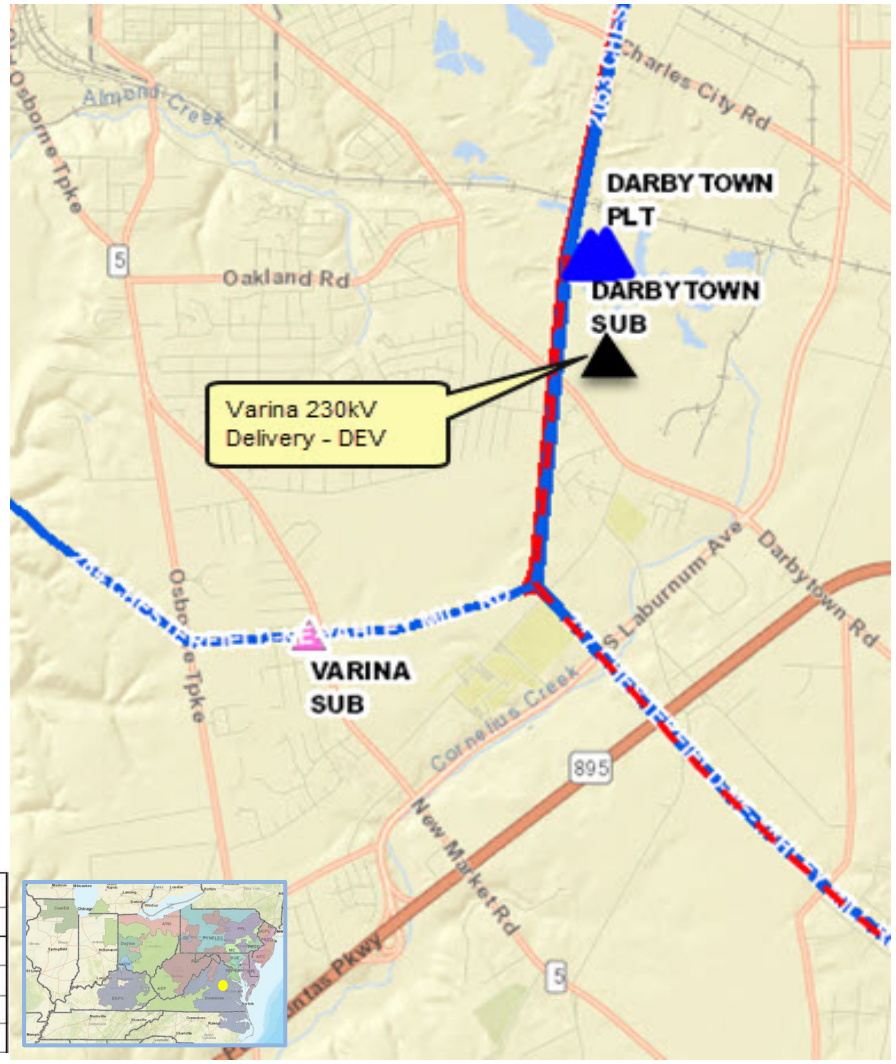
Problem Statement:

DEV Distribution has revised their request for a new 230kV Varina Substation in Henrico County with a total expected load less than 100MW. County opposition has pushed this station from its original location to a new site near Darbytown, on a different transmission corridor. Requested in-service date is 11/15/2021.

Projected 2025 load

Summer: 42.3 MW

Winter: 50.3 MW



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

Dominion Transmission Zone M-3 Process
Varina 230kV Delivery - DEV

Need Number: DOM-2020-0002

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:
Cut Line #217 (Chesterfield-Lakeside) and install three switches to create a tee-tap to feed the new Varina Substation. Install a 230kV circuit switcher on the high side of the new transformer. Perform any necessary associated transmission level work to support this new delivery location.

The previous solution involved cutting Line #284 (Basin-Northeast).

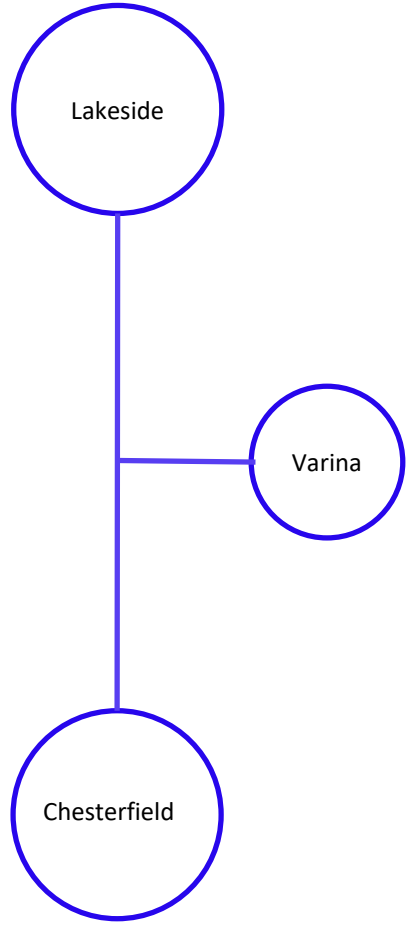
Estimated Cost: $1.0 M

Projected In-Service: 06/01/2022

Supplemental Project ID: s0140

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Aviator 230kV Delivery - DEV

Need Number: DOM-2020-0003

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 04/14/2020

Solution – 05/12/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

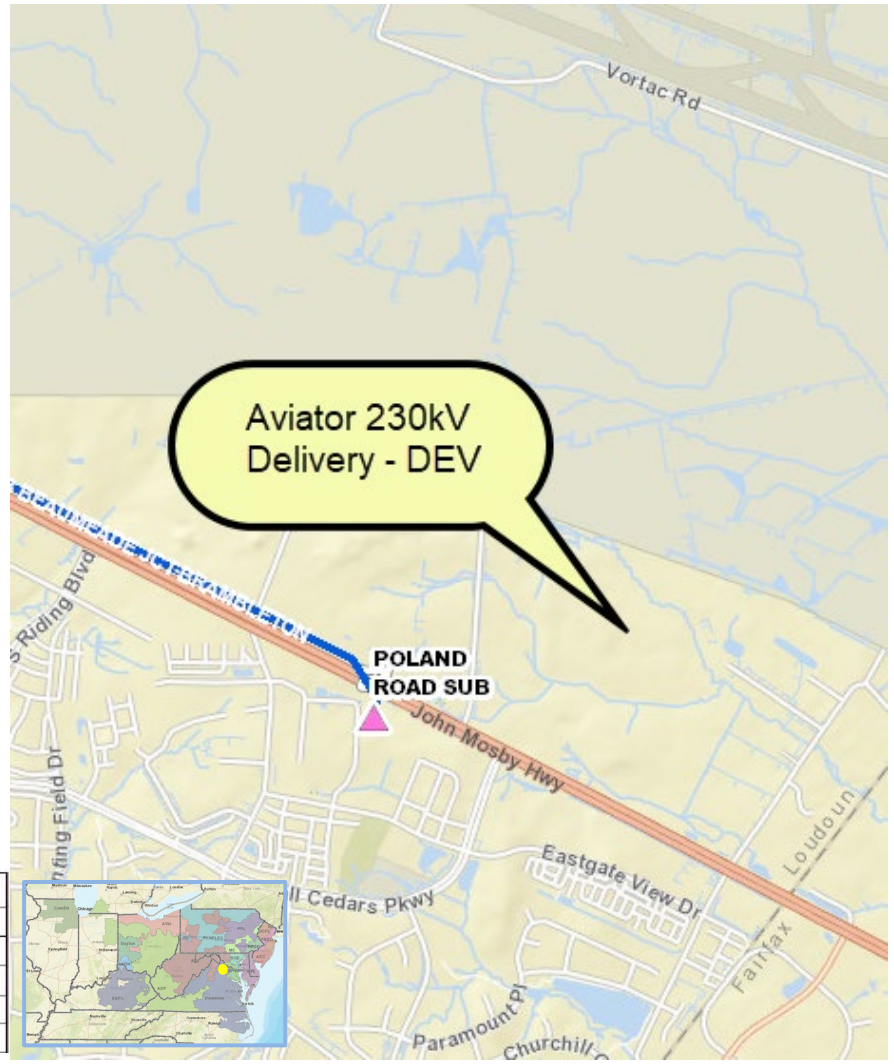
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Aviator) to accommodate a new datacenter campus in Loudoun County with a total load in excess of 100MW. Requested in-service date is 6/01/2023.

Projected 2025 load

Summer: 116.0 MW
Winter: 110.0 MW



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

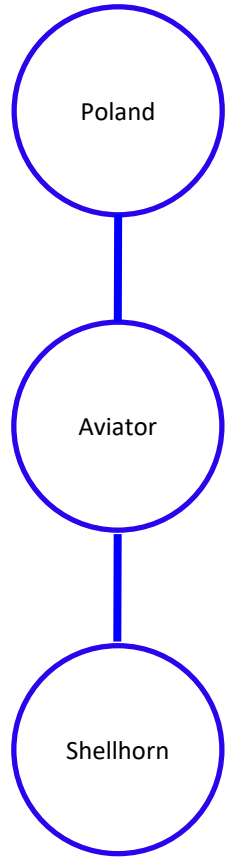
Aviator 230kV Delivery - DEV

Need Number: DOM-2020-0003

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Interconnect the new substation by cutting and extending Line #2137 (Poland-Shellhorn) approximately 0.5 miles to the proposed Aviator Substation. Terminate both ends into a four-breaker ring arrangement to create an Aviator-Poland line and an Aviator-Shellhorn line. Dominion's standard high ampacity conductor (bundled 768 ACSS; normal summer rating = 1572 MVA) will be used for the line extension.



Estimated Cost: $22.0 M

Projected In-Service: 06/01/2023

Supplemental Project ID: s2324.1

Project Status: Engineering

Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Winters Branch 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0004

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 04/14/2020

Solution – 05/12/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

Problem Statement:

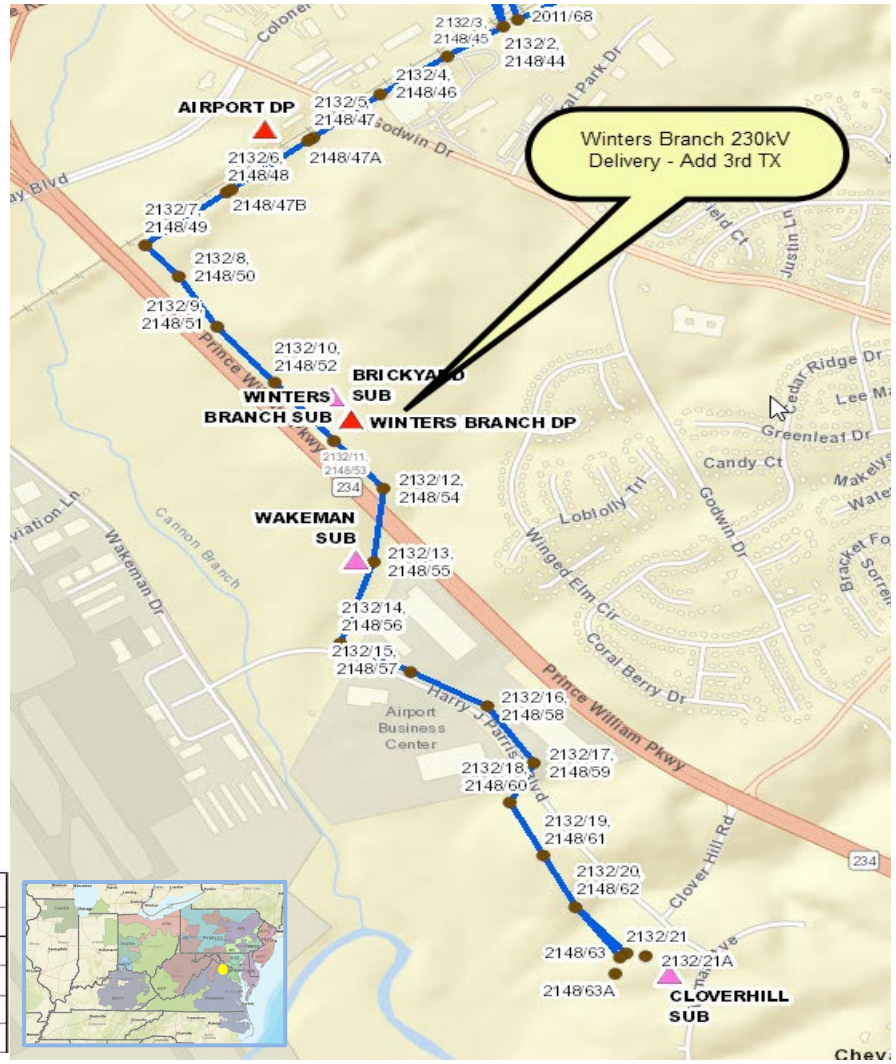
DEV Distribution has submitted a DP Request to add a 3rd, 84 MVA distribution transformer at Winters Branch Substation in Prince William County. The new transformer is being driven by continued datacenter load growth and alternate feed contract reservations. Requested in-service date is 01/01/2022.

Projected 2025 load

Summer: 216.5 MW

Winter: 202.4 MW

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



Dominion Transmission Zone M-3 Process
Winters Branch 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0004

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

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

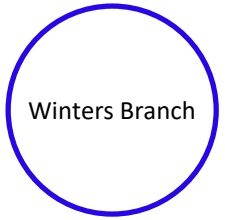
Estimated Cost: $0.25 M

Projected In-Service: 01/01/2022

Supplemental Project ID: s2321.2

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Winters Branch 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2020-0005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 04/14/2020

Solution – 05/12/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

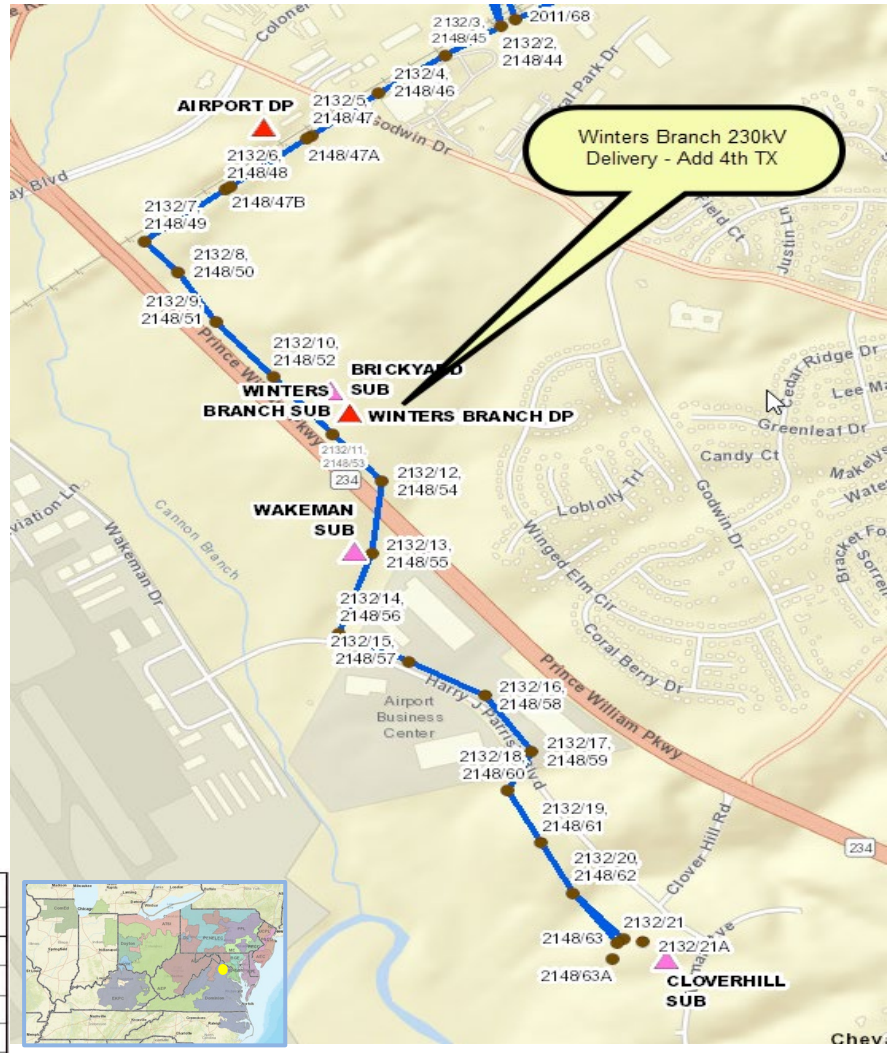
Problem Statement:

DEV Distribution has submitted a DP Request to add a 4th, 84 MVA distribution transformer at Winters Branch Substation in Prince William 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 03/01/2023.

Projected 2025 load

Summer: 216.5 MW

Winter: 202.4 MW



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

Winters Branch 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2020-0005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

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

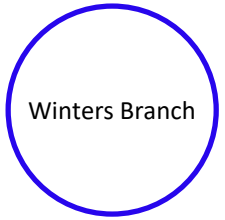
Estimated Cost: $0.25 M

Projected In-Service: 03/01/2023

Supplemental Project ID: s2321.3

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
North Anna 500 kV Breaker Replacement

Need Number: DOM-2020-0006

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 03/10/2020

Solution – 05/12/2020

Project Driver:

Equipment Material Condition, Performance, and Risk

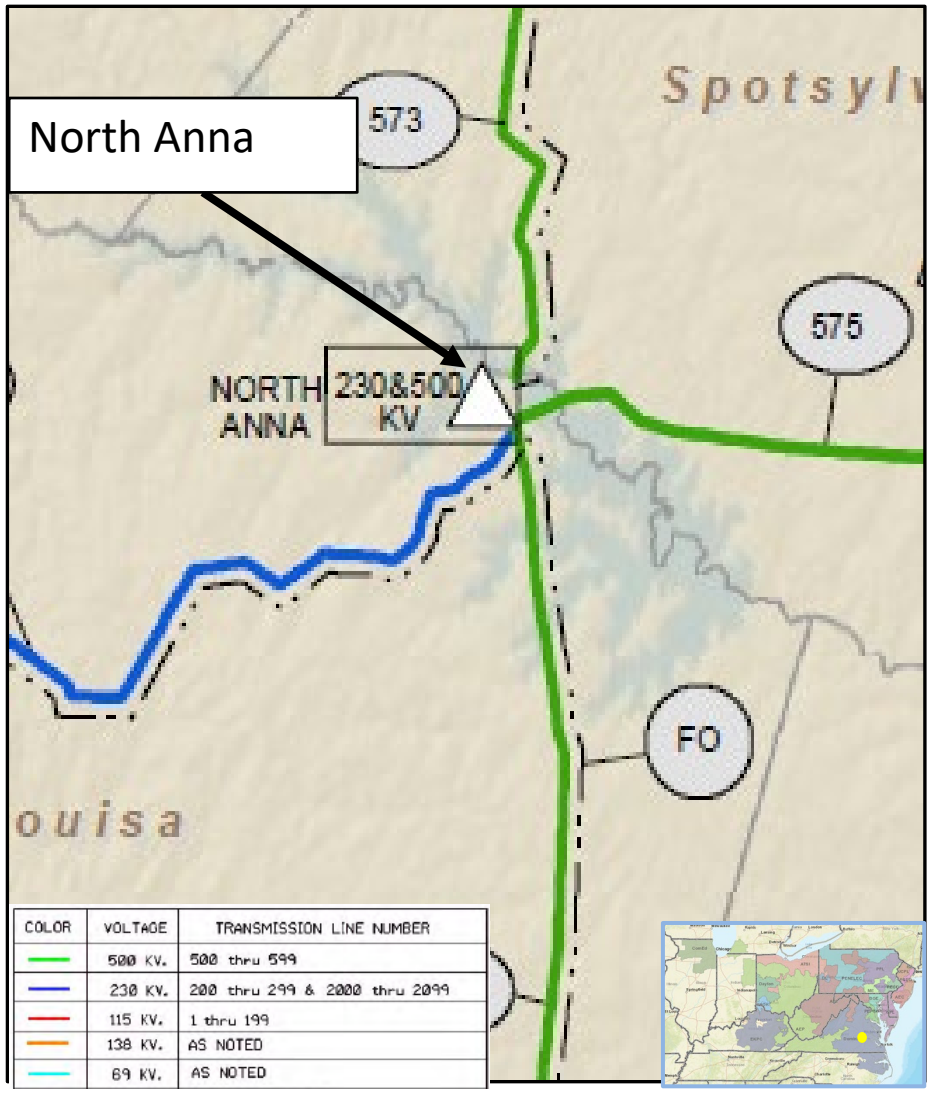
Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2019.

Problem Statement:

North Anna Station 500 kV Breakers 57302 & H602 are live tank breakers with external CTs and continue to have ongoing reliability issues. They were built in 2002.

No internal breaker condition monitoring is available with these type of breakers.



Dominion Transmission Zone M-3 Process
North Anna 500 kV Breaker Replacement

Need Number: DOM-2020-0006

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:
Replace breaker 57302 and H602 with current standard 500 kV Breakers.

No Ratings Change.

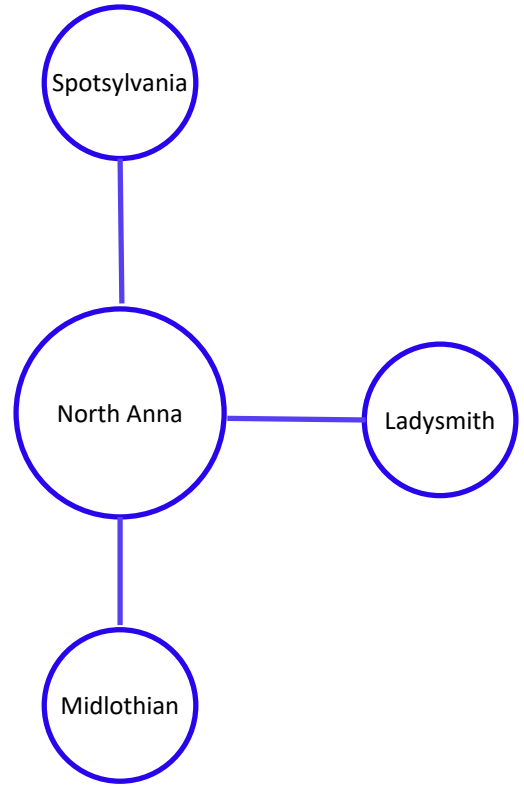
Estimated Cost: $3.4 M

Projected In-Service: 11/27/2020

Supplemental Project ID: s2325

Project Status: Construction

Model: 2025 RTEP



Buena Vista - Install Wave Trap and Switches; Reconductor Span

Need Number: DOM-2020-0007

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 03/20/2020

Solution – 04/16/2020

Project Driver:

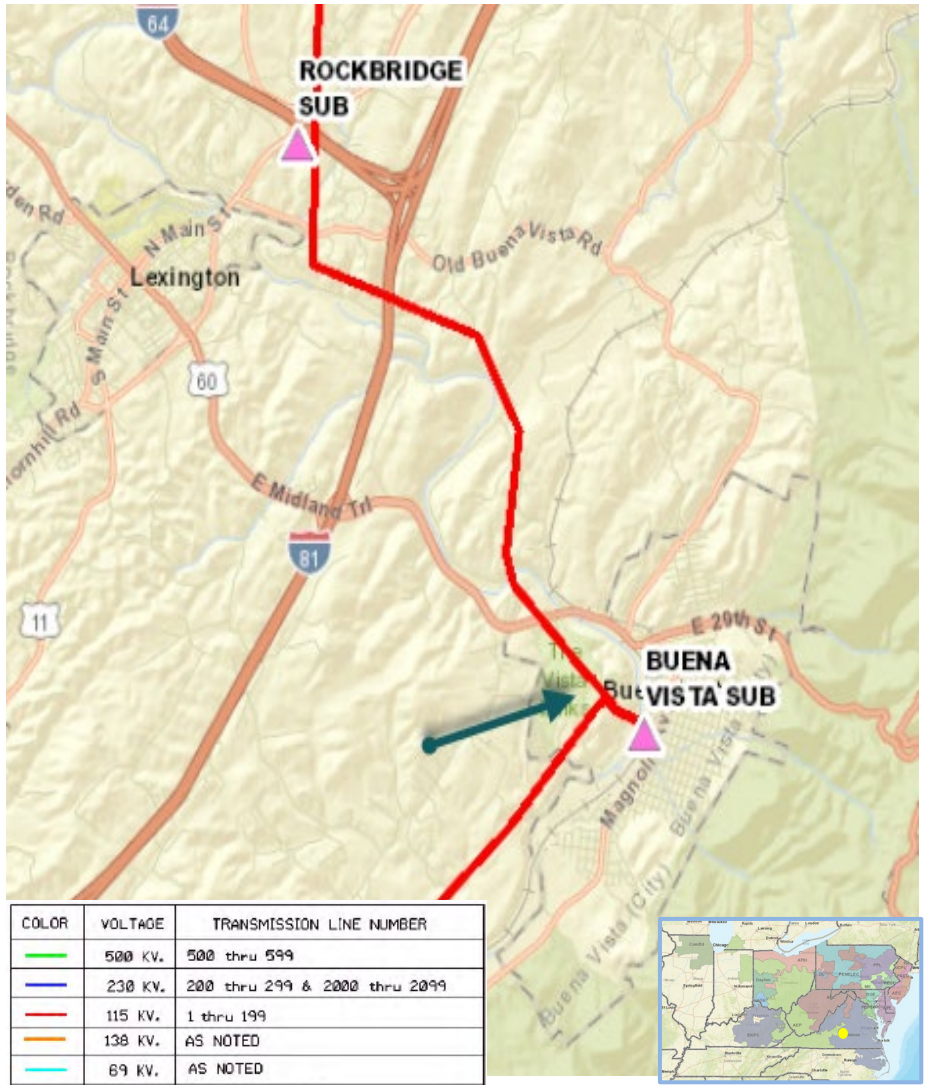
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2019.

Problem Statement:

- The two ground switch/MOAB schemes protecting Buena Vista transformers #1 and #2 need to be replaced to prevent transformer operations from impacting adjacent Rockbridge and James Lee Substations
- The two 800A wave traps located outside of Buena Vista Substation on structures 26/215A and 26/215B need to be replaced due to age (25 years)
- A single span (approx. 625') of 721 ACAR between structures 26/214 and 26/215 at Buena Vista Substation is the most limiting element affecting the rating of Line #26



Buena Vista - Install Wave Trap and Switches; Reconductor Span

Need Number: DOM-2020-0007

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

- Replace the ground switch/MOAB schemes on Buena Vista Transformers #1 and #2 with circuit-switchers
- Upgrade the 800A wave traps to 1200A at Buena Vista
- Replace the single span (approx. 625') 721 ACAR between structures 26/214 and 26/215 with 636 ACAR (24/7). The existing summer rating will increase from 180 MVA to 248 MVA

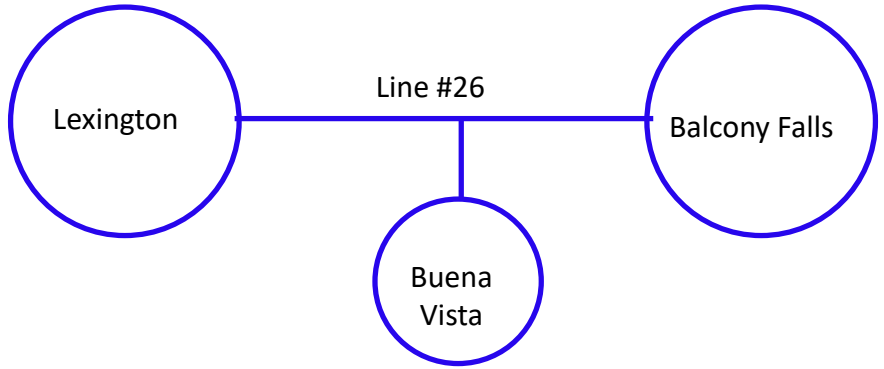
Estimated Cost: $0.63 M

Projected In-Service: 04/10/2020

Supplemental Project ID: s2322

Project Status: Complete

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Replace 115kV Line #51 Switch at Berkley Substation

Need Number: DOM-2020-0009

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 03/20/2020

Solution – 04/16/2020

Project Driver:

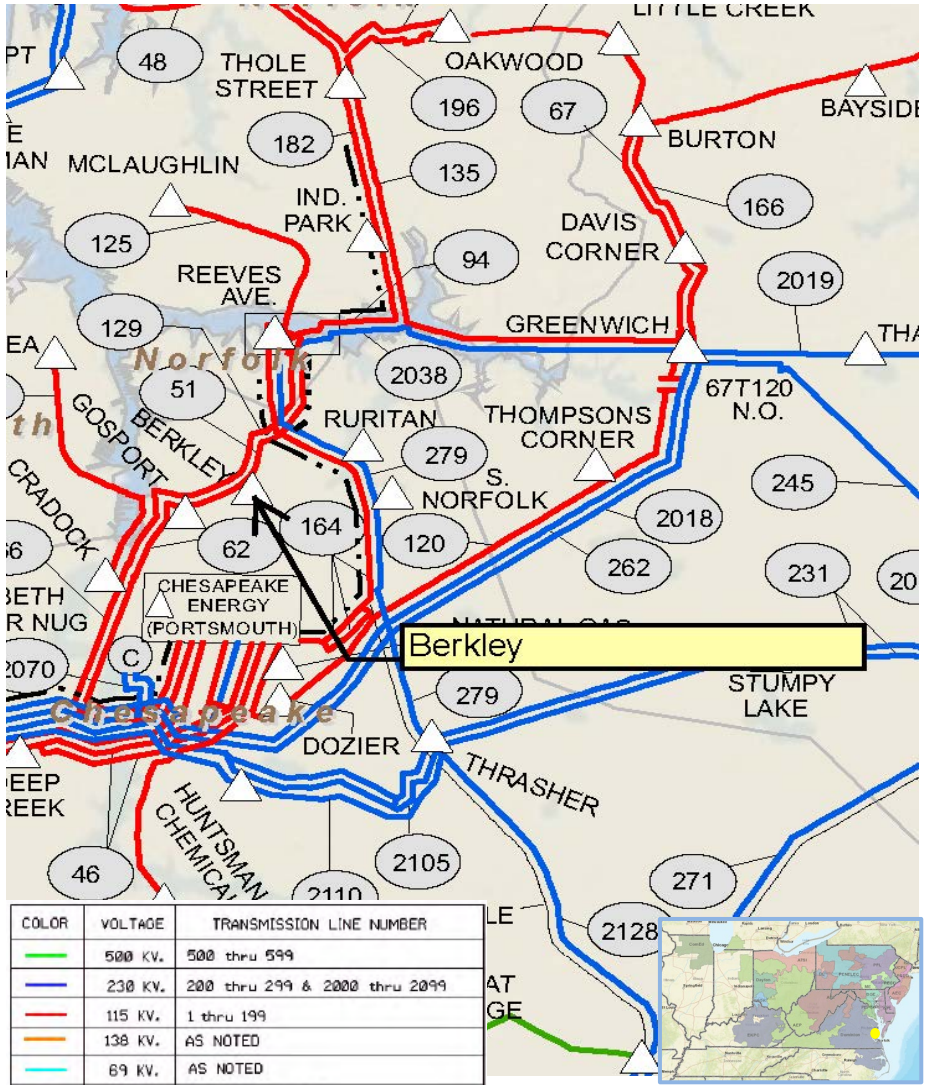
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2019.

Problem Statement:

A 115kV line switch at Berkley substation has been identified with operating issues. This switch on Line #51 is in-operable.



Dominion Transmission Zone M-3 Process
Replace 115kV Line #51 Switch at Berkley Substation

Need Number: DOM-2020-0009

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Replace the 1200 Amp 115kV line switch with a 2000 Amp switch. Perform related string bus work. Line #51 (Gosport-Berkley-ReevesAve) summer emergency ratings will be increased from 173 MVA to 239 MVA.

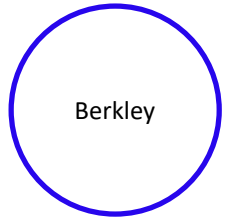
Estimated Cost: $0.20 M

Projected In-Service: 04/29/2020

Supplemental Project ID: s2323

Project Status: Complete

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Line #2010 Underground Relocation

Need Number: DOM-2020-0010

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 04/14/2020

Solution – 05/12/2020

Project Driver:

Other – Legislative requirement

Specific Assumption Reference:

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

Problem Statement:

Section 56-585.1:5 of the Virginia Code, which was enacted as part of the 2018 Grid Transformation and Security Act was amended recently by the General Assembly of Virginia and signed into Law by the Governor on March 4th 2020 to allow for additional projects to qualify for the underground transmission line pilot program authorized therein. Pursuant to this amendment, a Customer and Fairfax County have requested that the Company relocate a portion of Transmission Line #2010 between Spring Hill substation and Tysons Substation underground to enable construction of a planned mixed-use development which currently encroaches on the existing overhead transmission line.

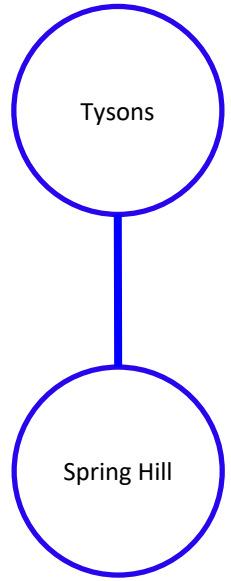
Dominion Transmission Zone M-3 Process
Line #2010 Underground Relocation

Need Number: DOM-2020-0010

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

In accordance with the legislation described, construct one 230kV underground (UG) line from Tysons Substation to a new substation named Springhill Substation to replace the portion of existing OH Line #2010. Install a 230kV, 50-100MVAR Variable Shunt Reactor at Tysons substation.



Estimated Cost: $40.0 M

Projected In-Service: 12/31/2025

Supplemental Project ID: s2326

Project Status: Conceptual

Model: 2025 RTEP

Dominion Transmission Zone M-3 Process
Wave Trap and Arresters Replacement at Buggs Island NUG Sub

Need Number: DOM-2020-0011

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 04/16/2020

Solution – 05/21/2020

Project Driver:

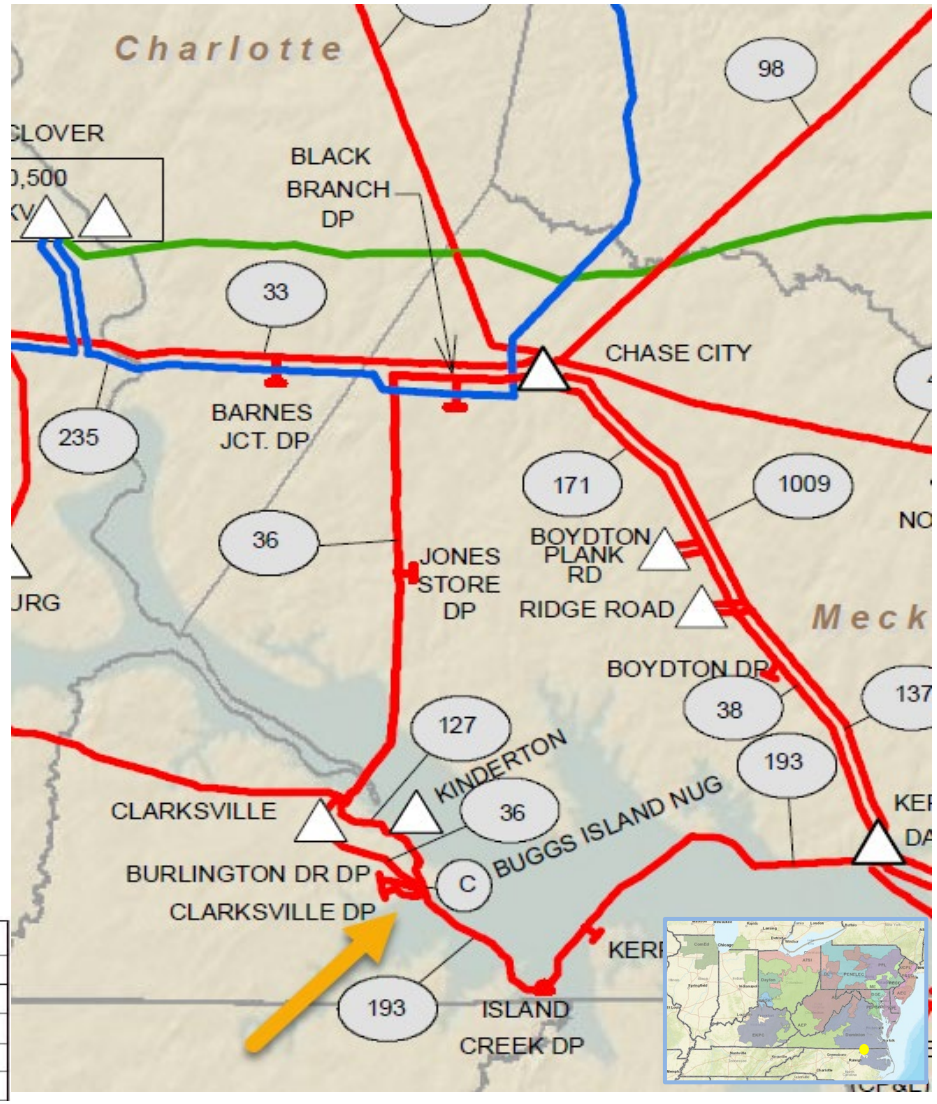
Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:

See details on Equipment Material Condition, Performance and Risk in Dominion's Planning Assumptions presented in December 2019.

Problem Statement:

Dominion Energy has identified a need to replace Line #36 wave trap and arresters at Buggs Island NUG Substation due to end of life.



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

Dominion Transmission Zone M-3 Process
Wave Trap and Arresters Replacement at Buggs Island NUG Sub

Need Number: DOM-2020-0011

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Replace Line #36 wavetrap and arresters at Buggs Island NUG Substation.

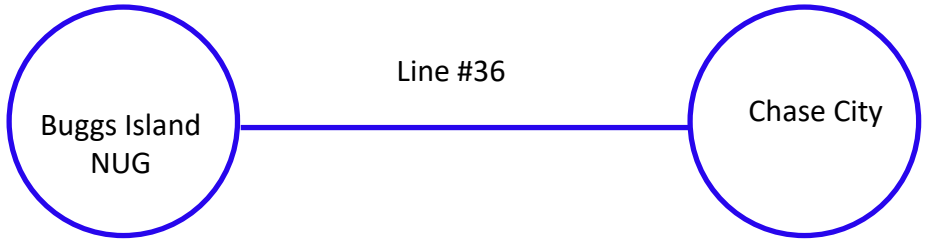
Estimated Cost: $0.20 M

Projected In-Service: 06/15/2020

Supplemental Project ID: s2327

Project Status: Complete

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Waxpool 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0012

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 05/12/2020

Solution – 06/02/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

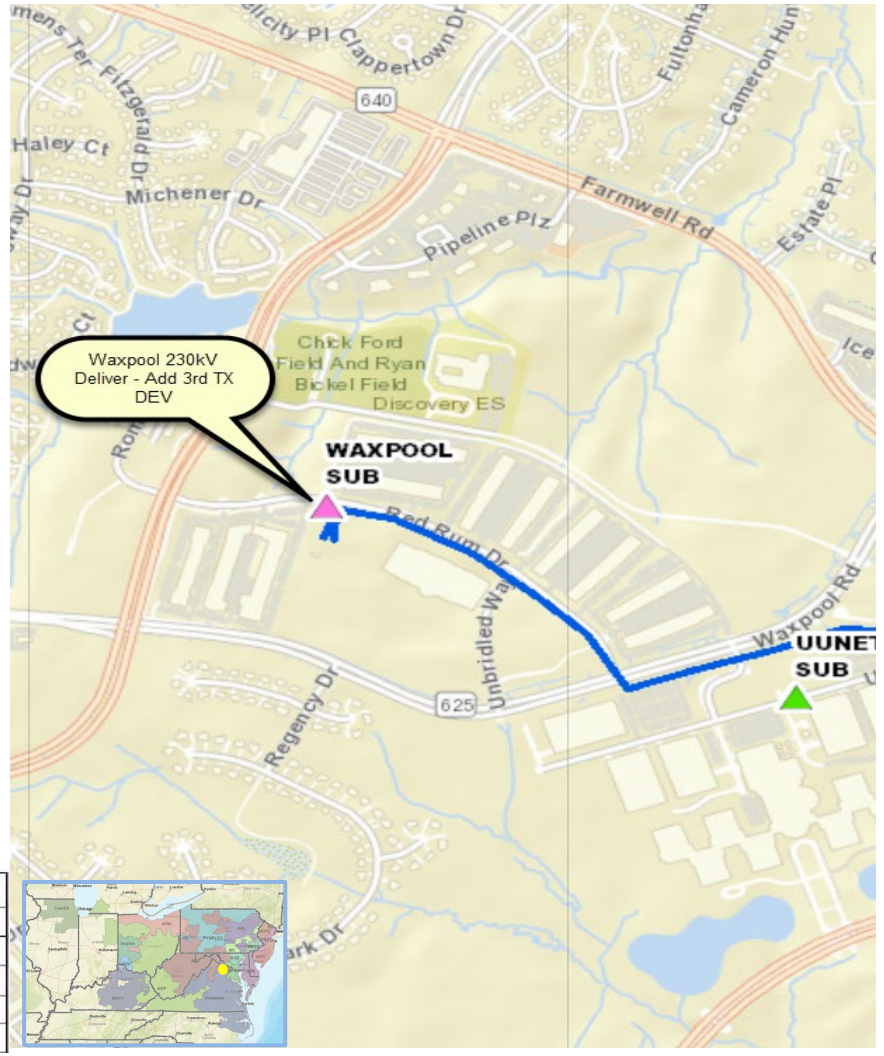
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request to add a 3rd, 112 MVA distribution transformer at Waxpool Substation in Loudoun County. The new transformer is being driven by continued load growth in the area. Requested in-service date is 10/01/2021.

Projected 2025 load

Summer: 217.5 MW
Winter: 213.0 MW



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

Dominion Transmission Zone M-3 Process
Waxpool 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0012

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

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

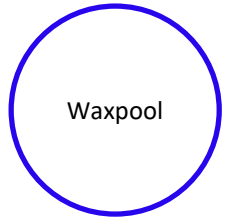
Estimated Cost: $0.5 M

Projected In-Service: 10/01/2021

Supplemental Project ID: s2328.1

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Lincoln Park 230kV Delivery - DEV

Need Number: DOM-2020-0013

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 05/12/2020

Solution – 06/02/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

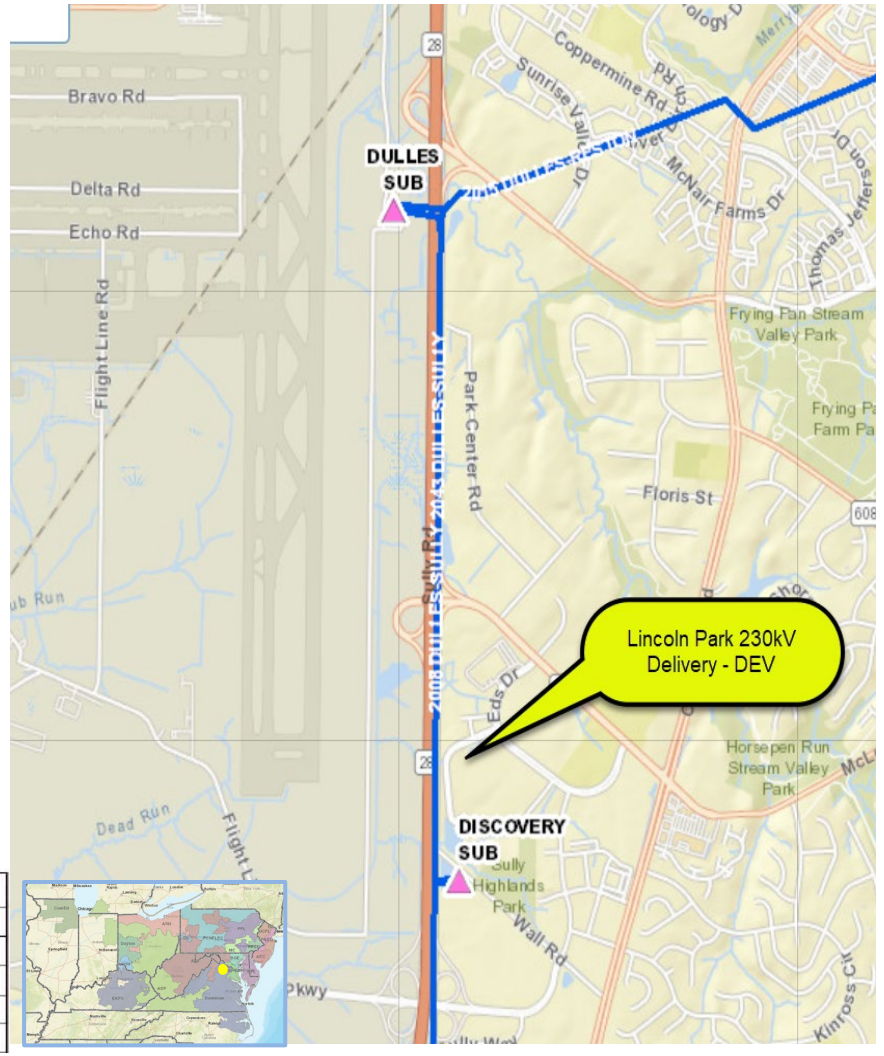
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Lincoln Park) to accommodate a new datacenter campus in Loudoun County with a total load in excess of 100MW. Requested in-service date is 9/01/2023.

Projected 2025 load

Summer: 52.0 MW
Winter: 34.0 MW



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

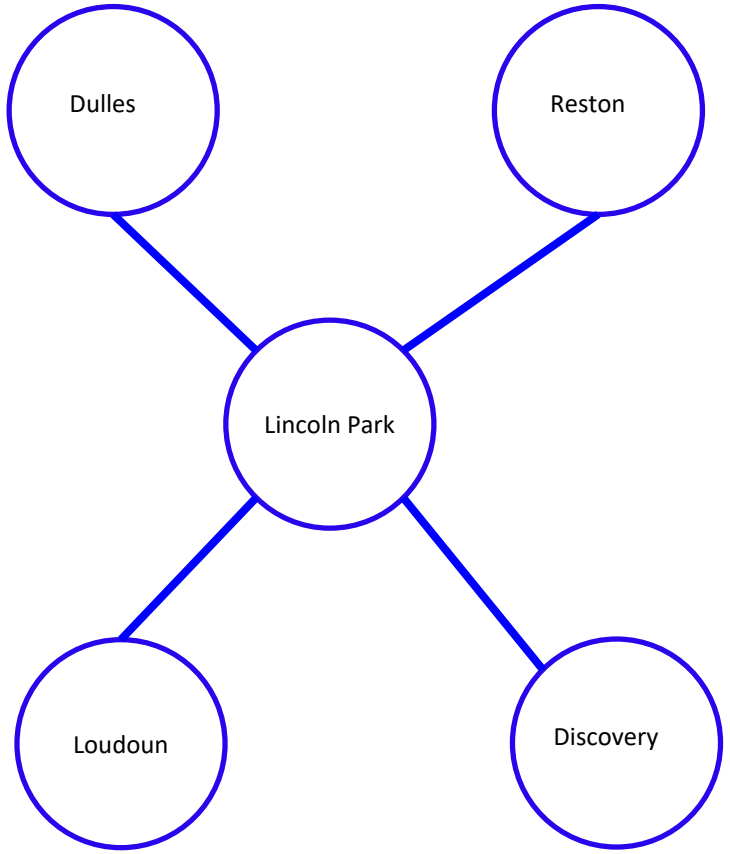
Dominion Transmission Zone M-3 Process
Lincoln Park 230kV Delivery - DEV

Need Number: DOM-2020-0013

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Interconnect the new substation by cutting and extending Line #2008 (Dulles-Loudoun) and Line #2143 (Discovery-Reston) to the proposed Lincoln Park Substation. Lines to terminate in a six-breaker ring arrangement.



Estimated Cost: $10.0 M

Projected In-Service: 09/01/2023

Supplemental Project ID: s2329.1

Project Status: Engineering

Model: 2025 RTEP

Need Number: DOM-2020-0013

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Project Driver:

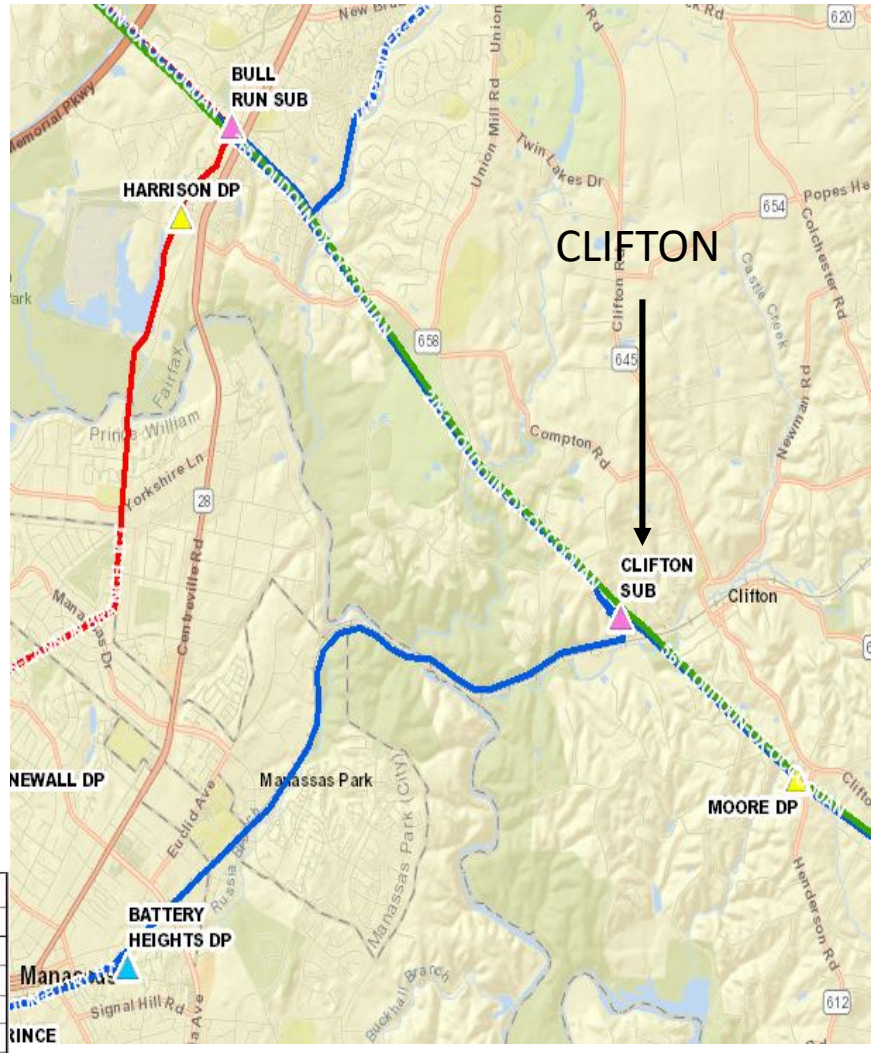
Customer Service (Do No Harm Analysis)

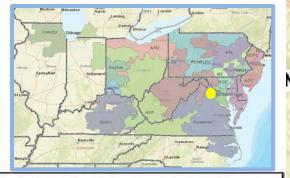
Specific Assumption References:

None.

Problem Statement:

A Lincoln Park do-no-harm short circuit analysis identified Clifton L282 breaker as being overdutied.





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

Need Number: DOM-2020-0013

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Replace 50KAIC Clifton L282 breaker with 63KAIC model.

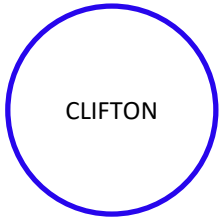
Estimated Cost: $0.467 M

Projected In-Service: 06/01/2025

Supplemental Project ID: s2329.2

Project Status: Engineering

Model: PJM 2025 Short Circuit case



Dominion Transmission Zone M-3 Process
Line #26 – Partial Rebuild Balcony Falls to Buena Vista

Need Number: DOM-2020-0014

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/16/2020

Solution – 08/13/2020

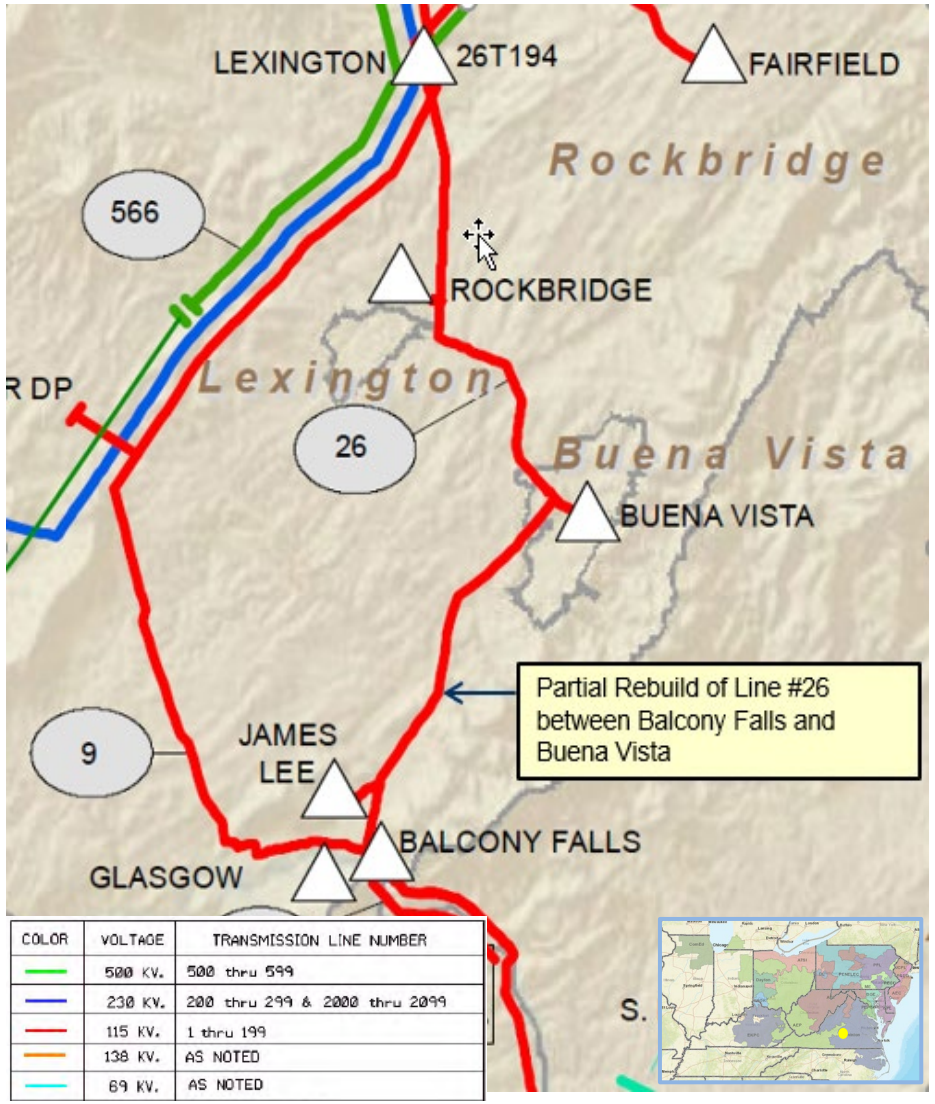
Project Driver:

Equipment Material Condition, Performance, and Risk

Specific Assumption Reference:
See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:
The 26 line extends 20.82 miles between Lexington to Balcony Falls. The **9.771 (was 7.63)** mile section between Balcony Falls and Buena Vista was constructed primarily on Blaw Knox structures in 1928 and includes ACSR conductor and 3#6 static. 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. Within this section there are 18 structure locations that need to be replaced due to condition which makes up more than 21.7% of the segment structures.

Removing this segment of Line #26 from service creates a violation of Dominion Energy's Transmission Planning Criteria whereby the loading on the resulting radial transmission line exceeds the 700 MW-Mile Exposure limit (MW-Mile = Peak MW X Radial Line Length).



Dominion Transmission Zone M-3 Process
Line #26 – Partial Rebuild Balcony Falls to Buena Vista

Need Number: DOM-2020-0014

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Rebuild approximately **9.771 (was 7.63)** miles of Line #26, between Balcony Falls and Buena Vista, to current 115kV standards and with a minimum rating of 261 MVA

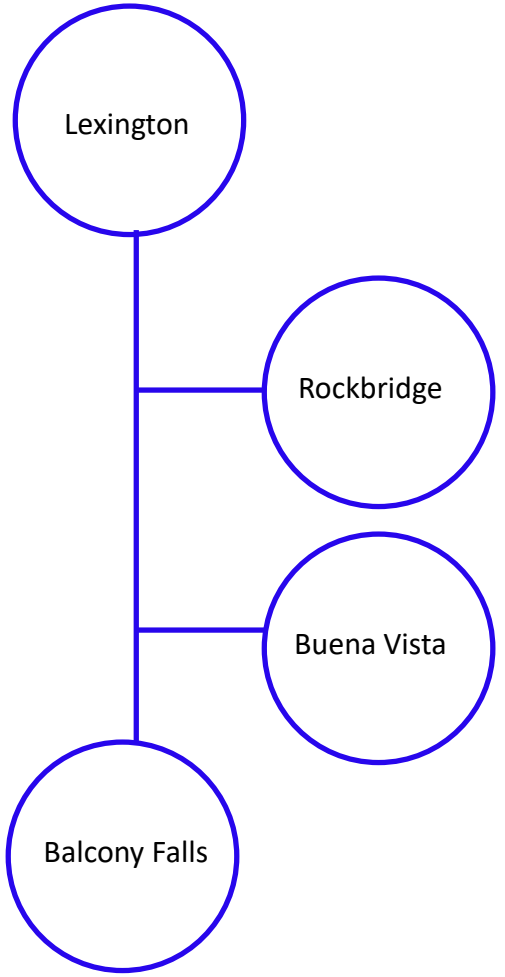
Estimated Cost: **$20 M (was $15.3 M)**

Projected In-Service: **12/31/2024 (was 12/31/2023)**

Supplemental Project ID: s2337

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Transformer Replacement at Remington CT

Need Number: DOM-2020-0015

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 05/21/2020

Solution – 06/16/2020

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.

Problem Statement:

Remington CT Tx#9 is a 224MVA, 230/115kV transformer originally manufactured in 1971 as a 200 MVA unit and remanufactured in 1996 as a 224 MVA unit. This transformer is being replaced on the results of our ongoing transformer health assessment (THA) process. Detailed drivers are:

- Oil DGA levels are trending upwards. Unit was exhibiting upward trending combustible gasses from 2001 to 2013 when oil was reprocessed, however gasses are continuing to trend upward even after oil processing.
- Reduced BIL ratings

Dominion Transmission Zone M-3 Process Transformer Replacement at Remington CT

Need Number: DOM-2020-0015

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Replace the identified 224MVA 230/115kV transformer with a 224MVA 230/115kV transformer. Perform any associated transmission work.

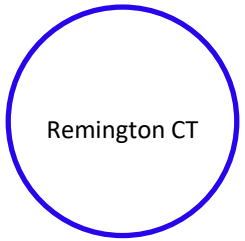
Estimated Cost: $3.6 M

Projected In-Service: 09/16/2020

Supplemental Project ID: s2330

Project Status: Complete

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Taussig 115kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0016

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 05/21/2020

Solution – 06/16/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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, 56 MVA distribution transformer at Taussig Substation in the City of Norfolk. The new transformer is being driven by new load from the Hampton Road Bridge Tunnel (HRBT) expansion. Requested in-service date is 05/31/2021.

Projected 2025 load

Summer: 74.2 MW

Winter: 72.5 MW

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

Dominion Transmission Zone M-3 Process
Taussig 115kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0016

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Install a 1200 Amp, 25kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Taussig.

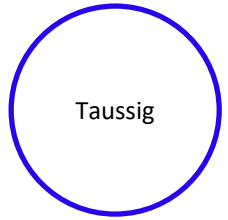
Estimated Cost: $0.5 M

Projected In-Service: 05/31/2021

Supplemental Project ID: s2331

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Mercury 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2020-0017

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 05/21/2020

Solution – 06/16/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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 2nd, 33.6 MVA distribution transformer at Mercury Substation in the City of Hampton. The new transformer is being driven by new load from the Hampton Road Bridge Tunnel (HRBT) expansion. Requested in-service date is 09/01/2023.

Projected 2025 load

Summer: 37.2 MW

Winter: 32.2 MW

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

Dominion Transmission Zone M-3 Process
Mercury 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2020-0017

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Install a 1200 Amp, 25kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Mercury.

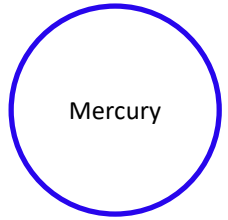
Estimated Cost: $0.5 M

Projected In-Service: 09/01/2023

Supplemental Project ID: s2332

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
St. Johns 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2020-0020

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 06/16/2020

Solution – 07/16/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

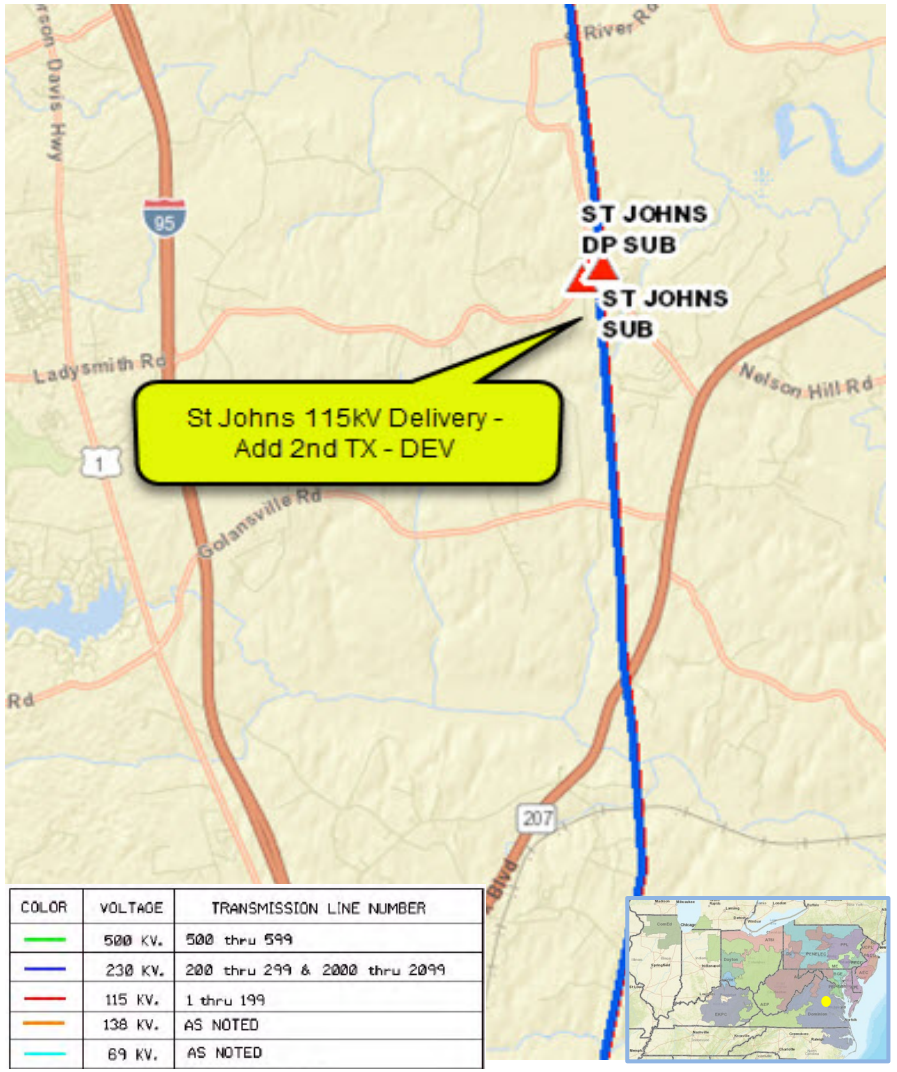
Problem Statement:

DEV Distribution has submitted a DP Request to add a 2nd, 12.5 MVA distribution transformer at St. Johns Substation in the Caroline County. The new transformer is needed to mitigate load loss for a transformer contingency. Requested in-service date is 11/15/2021.

Projected 2025 load

Summer: 6.8 MW

Winter: 11.9 MW



Dominion Transmission Zone M-3 Process
St. Johns 115kV Delivery- Add 2nd TX - DEV

Need Number: DOM-2020-0020

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Install a 1200 Amp, 25kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at St. Johns.

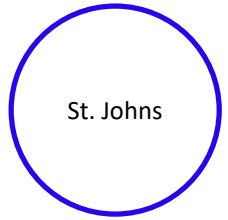
Estimated Cost: $0.5 M

Projected In-Service: 11/15/2021

Supplemental Project ID: s2333

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Pacific 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2020-0021

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/07/2020

Solution – 08/04/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

Problem Statement:

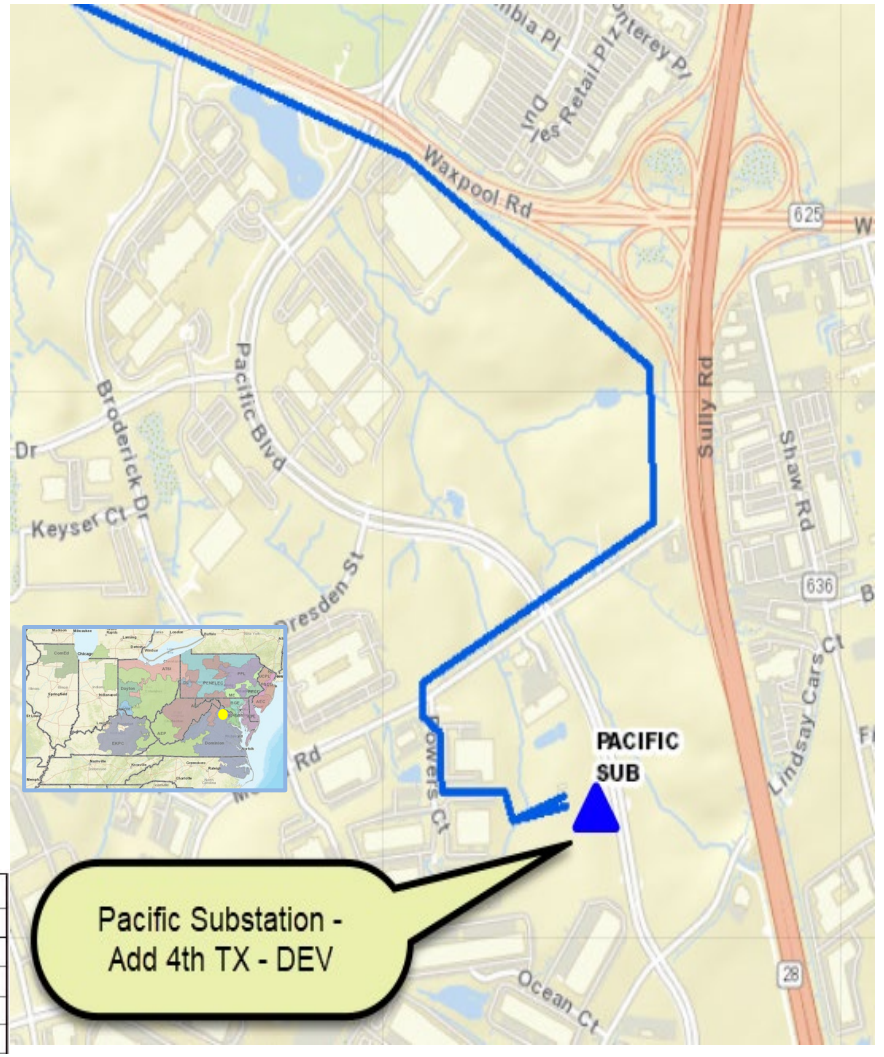
DEV Distribution has submitted a DP Request to add a 4th distribution transformer at Pacific Substation in Loudoun County. The new 112MVA transformer is being driven by continued load growth in the area and contingency loading for loss of one of the existing transformers. Requested in-service date is 12/15/2021.

Projected 2025 load

Summer: 252.0 MW

Winter: 242.5 MW

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



Dominion Transmission Zone M-3 Process
Pacific 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2020-0021

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

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

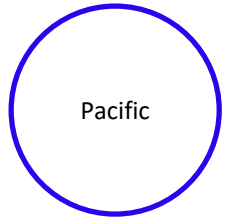
Estimated Cost: $0.4 M

Projected In-Service: 12/15/2021

Supplemental Project ID: s2328.2

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Cumulus 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/07/2020

Solution – 08/04/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

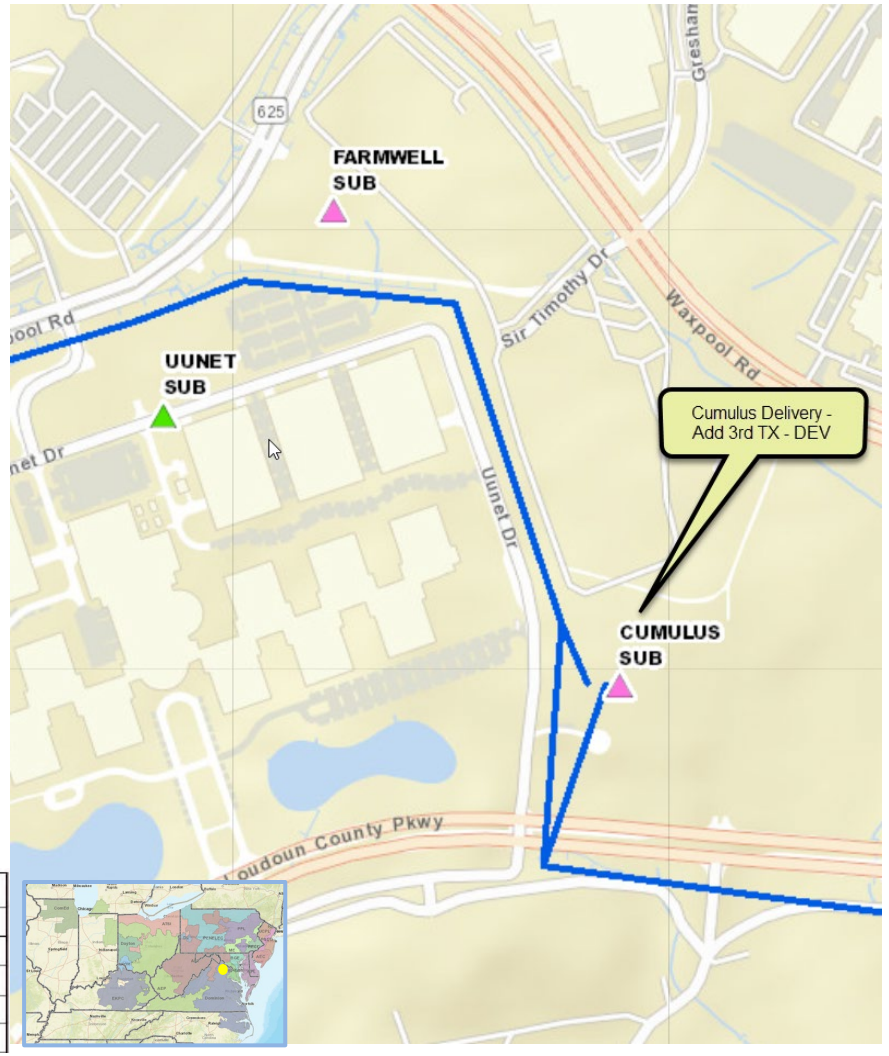
Problem Statement:

DEV Distribution has submitted a DP Request to add a 3rd distribution transformer at 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 03/01/2022.

Projected 2025 load

Summer: 252.0 MW

Winter: 230.5 MW



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

Dominion Transmission Zone M-3 Process
Cumulus 230kV Delivery- Add 3rd TX - DEV

Need Number: DOM-2020-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Install a 1200 Amp, 40kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Cumulus.

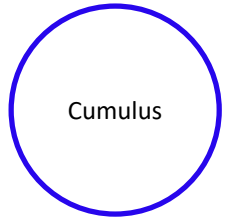
Estimated Cost: $0.4 M

Projected In-Service: 03/01/2022

Supplemental Project ID: s2328.3

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Dulles 230kV Delivery- Add 6th TX - DEV

Need Number: DOM-2020-0023

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/07/2020

Solution – 08/04/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

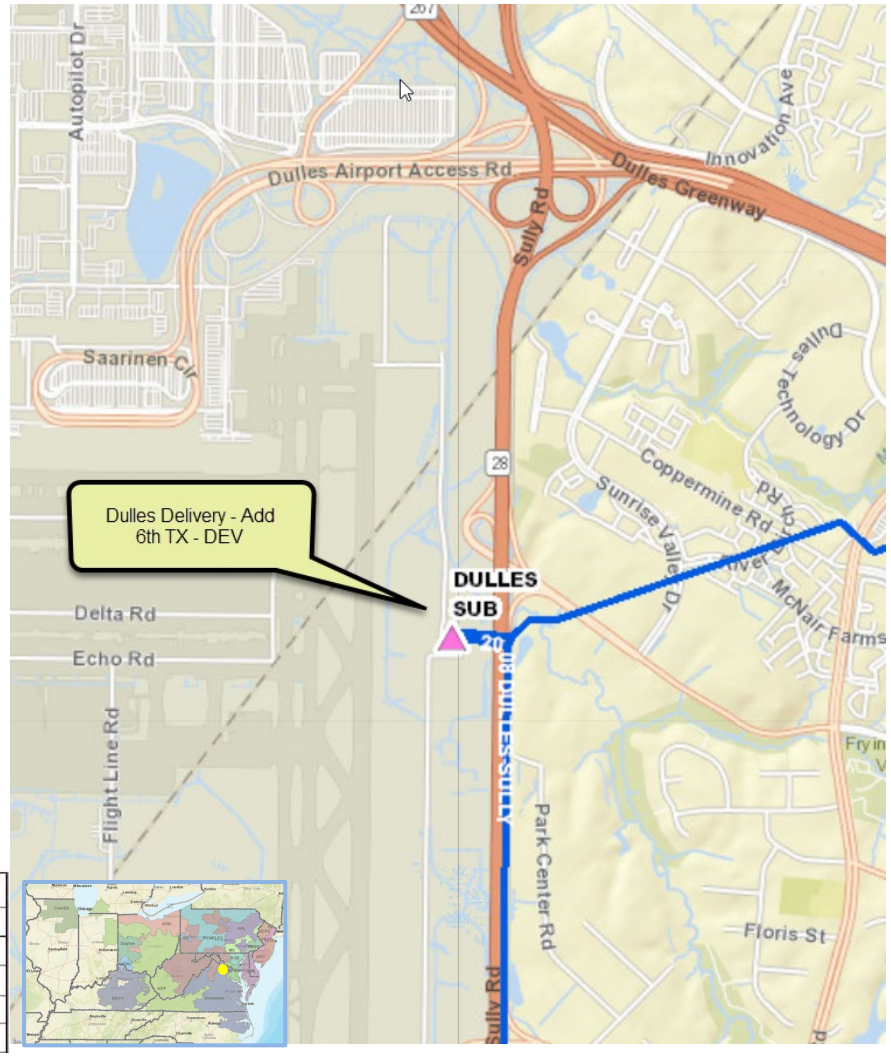
Problem Statement:

DEV Distribution has submitted a DP Request to add a 6th distribution transformer at Dulles Substation in Fairfax 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 08/01/2021.

Projected 2025 load

Summer: 241.3 MW

Winter: 224.9 MW



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

Dominion Transmission Zone M-3 Process
Dulles 230kV Delivery- Add 6th TX - DEV

Need Number: DOM-2020-0023

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Install a 3000 Amp switch, 1200 Amp, 40kAIC circuit switcher and associated equipment (bus, relaying, etc.) to feed the new transformer at Dulles.

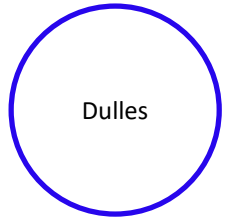
Estimated Cost: $0.6 M

Projected In-Service: 08/01/2021

Supplemental Project ID: s2335

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Waxpool 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2020-0024

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 07/07/2020

Solution – 08/04/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

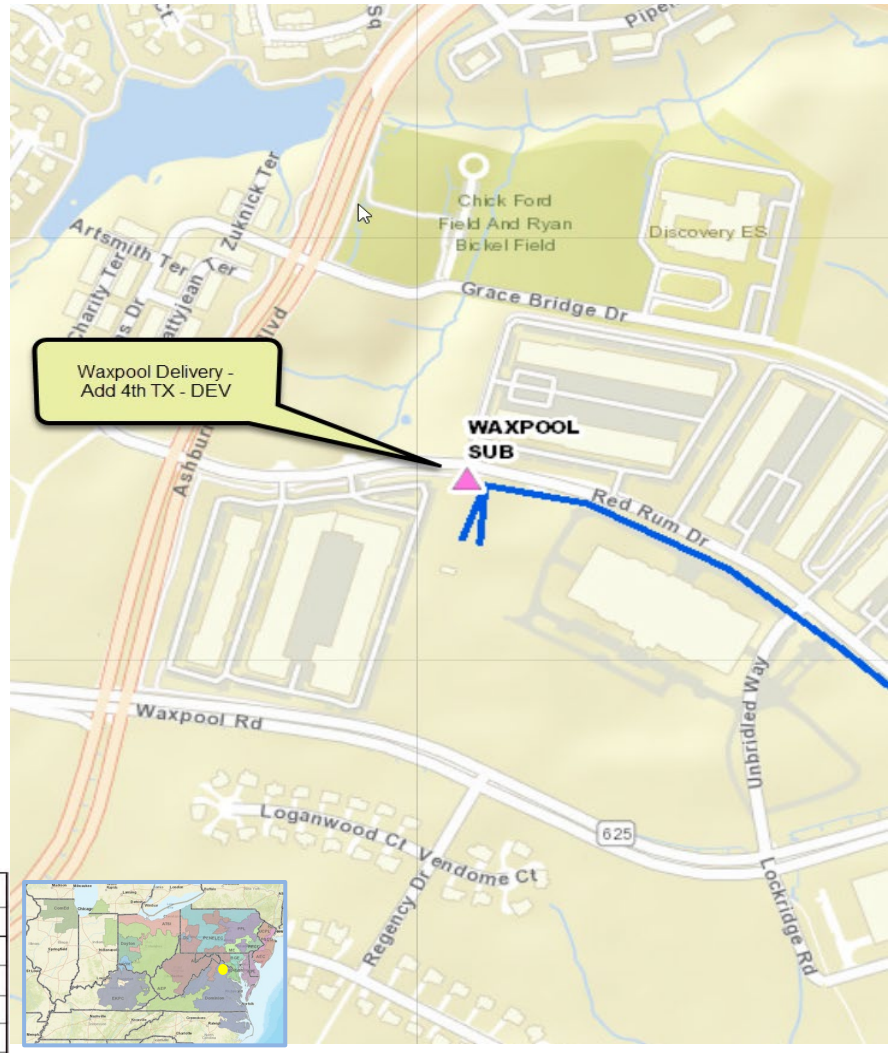
Problem Statement:

DEV Distribution has submitted a DP Request to add a 4th distribution transformer at Waxpool Substation in Loudoun County. The 84 MVA 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 04/01/2022.

Projected 2025 load

Summer: 223.6 MW

Winter: 217.4 MW



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

Dominion Transmission Zone M-3 Process
Waxpool 230kV Delivery- Add 4th TX - DEV

Need Number: DOM-2020-0024

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Install a 1200 Amp, 40kAIC circuit switcher and associated equipment (bus, switches, relaying, etc.) to feed the new transformer at Waxpool.

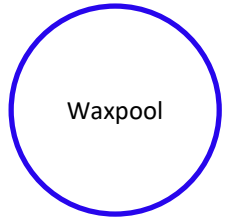
Estimated Cost: $0.4 M

Projected In-Service: 04/01/2022

Supplemental Project ID: s2336

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Main Post 115kV Delivery - DEV

Need Number: DOM-2020-0025

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 06/16/2020

Solution – 07/16/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

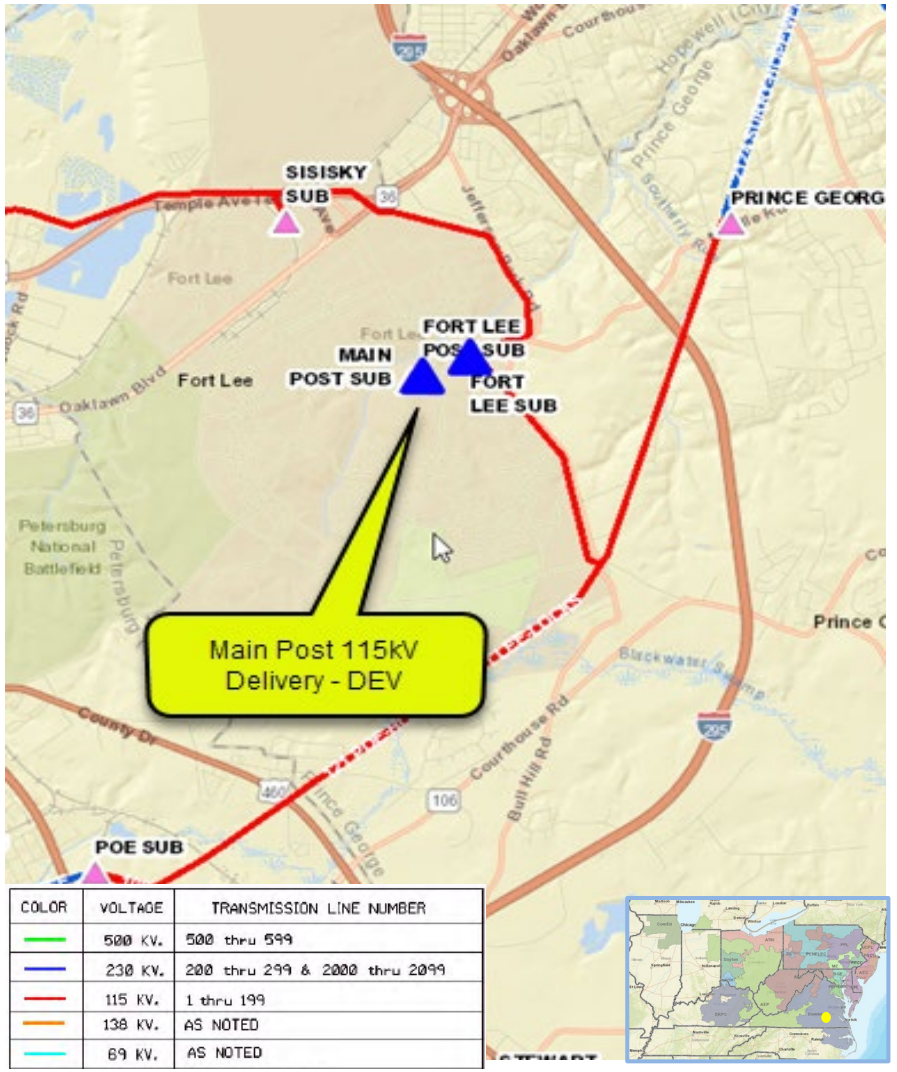
Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Main Post) to serve existing load (<100 MW) at Fort Lee Army Post in Prince George County. The Army has requested the new substation (on their property) to isolate their load from the regulated 13.2 kV circuits fed by Fort Lee Substation and will bear the full cost of the project. Requested in-service date is 03/15/2021.

Projected 2025 load

Summer: 30.0 MW

Winter: 20.1 MW



Dominion Transmission Zone M-3 Process
Main Post 115kV Delivery - DEV

Need Number: DOM-2020-0025

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:
Cut Line #97 (Harvell-Prince George) and build a double-circuit 115kV line (loop in-and-out) approximately 0.35 miles to the proposed new substation site. The new section of line will have a minimum rating of 260 MVA. The transmission cost includes high-side bus work at the substation, three 115kV switches, and two circuit switchers. As mentioned previously, the Army will bear the full cost of the project.

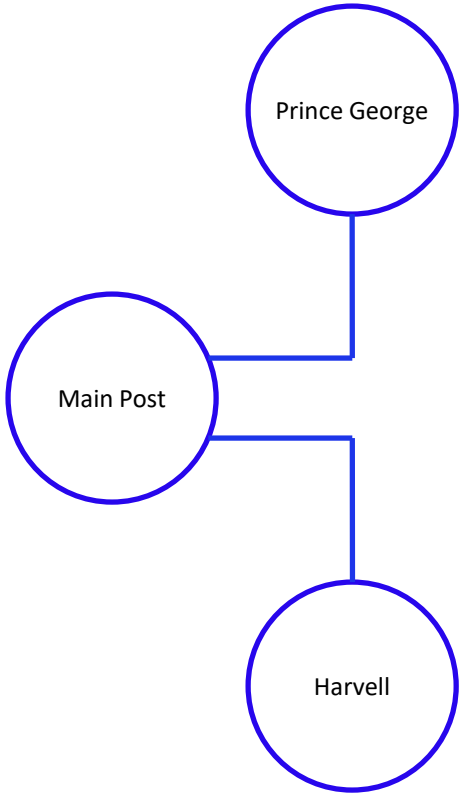
Estimated Cost: $4.0 M

Projected In-Service: 03/15/2021

Supplemental Project ID: s2334

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Line #2049 End-of-Life Rebuild

Need Number: DOM-2020-0030

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 09/01/2020

Solution – 10/06/2020

Project Driver:

Equipment Material Condition, Performance, and Risk

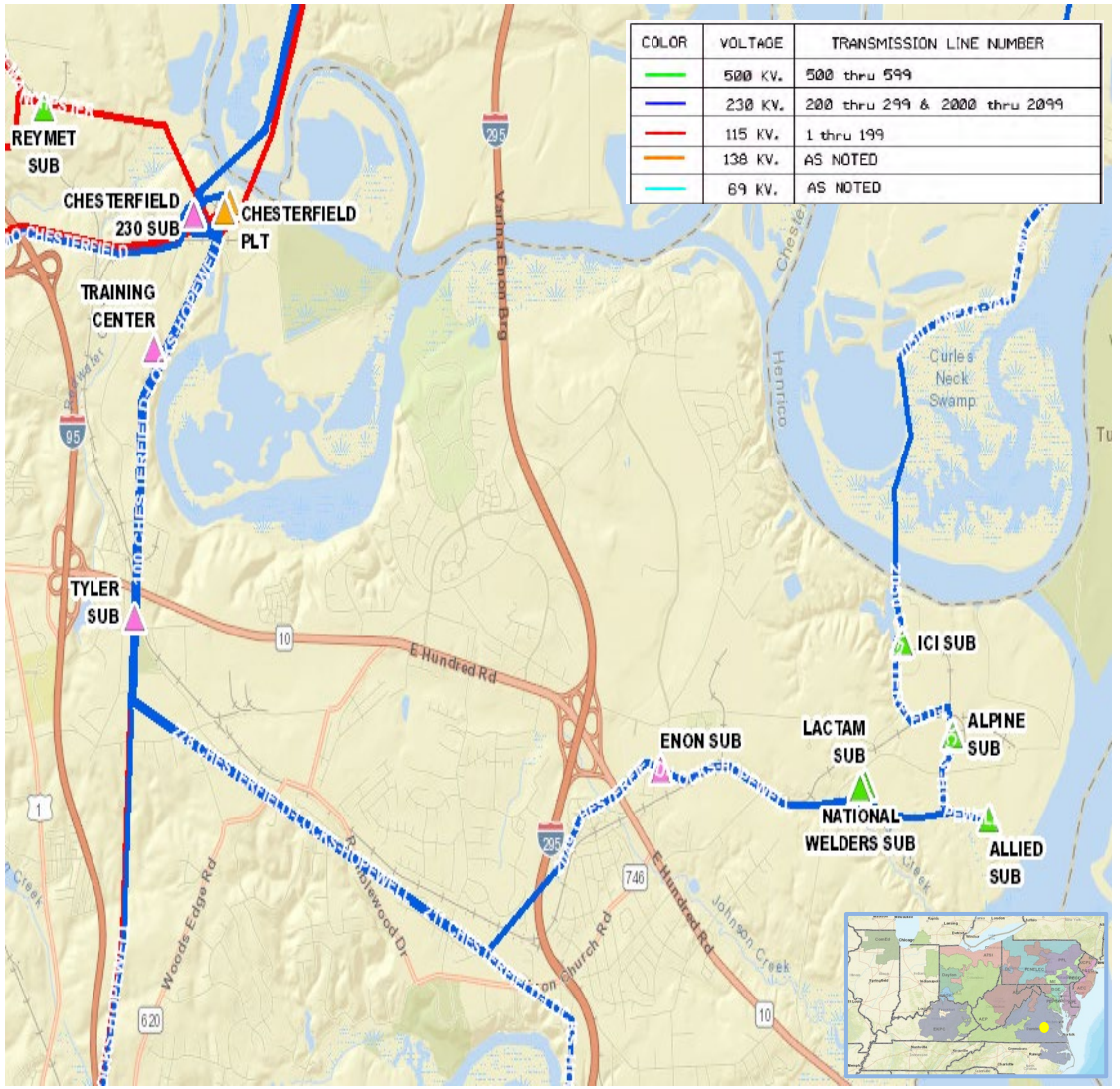
Specific Assumption Reference:

See details on Dominion Energy's End of Life Criteria in Dominion's Planning Assumptions presented in December 2019 and updated in June 2020.

Problem Statement:

Dominion Energy has identified a need to replace 16 existing transmission towers (Chesterfield – Enon segment) of Line#2049 (Chesterfield – Allied).

- Approximately 2.9 miles of 9.9 miles of this line was constructed on CORTEN structures and these structures are at the end of their useful life.
- The Line #2049 provides service to Enon and National Welders substations with approximately 33 MW and 15 MW tapped load.
- Removal of the Chesterfield – Enon segment will create a radial line exceeding Dominion's 700 MW/miles criteria.



Dominion Transmission Zone M-3 Process
Line #2049 End-of-Life Rebuild

Need Number: DOM-2020-0030

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

The 16 existing transmission CORTEN towers will be replaced with a single circuit weathering steel monopoles.

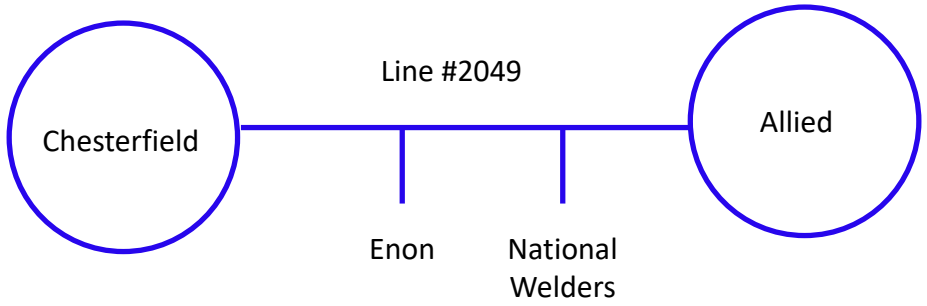
Estimated Cost: $4.8 M

Projected In-Service: 04/15/2022

Supplemental Project ID: s2338

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone M-3 Process
Sojourner 230kV Delivery - DEV

Need Number: DOM-2020-0031

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Previously Presented:

Need – 09/01/2020

Solution – 10/06/2020

Project Driver:

Customer Load Request

Specific Assumption Reference:

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

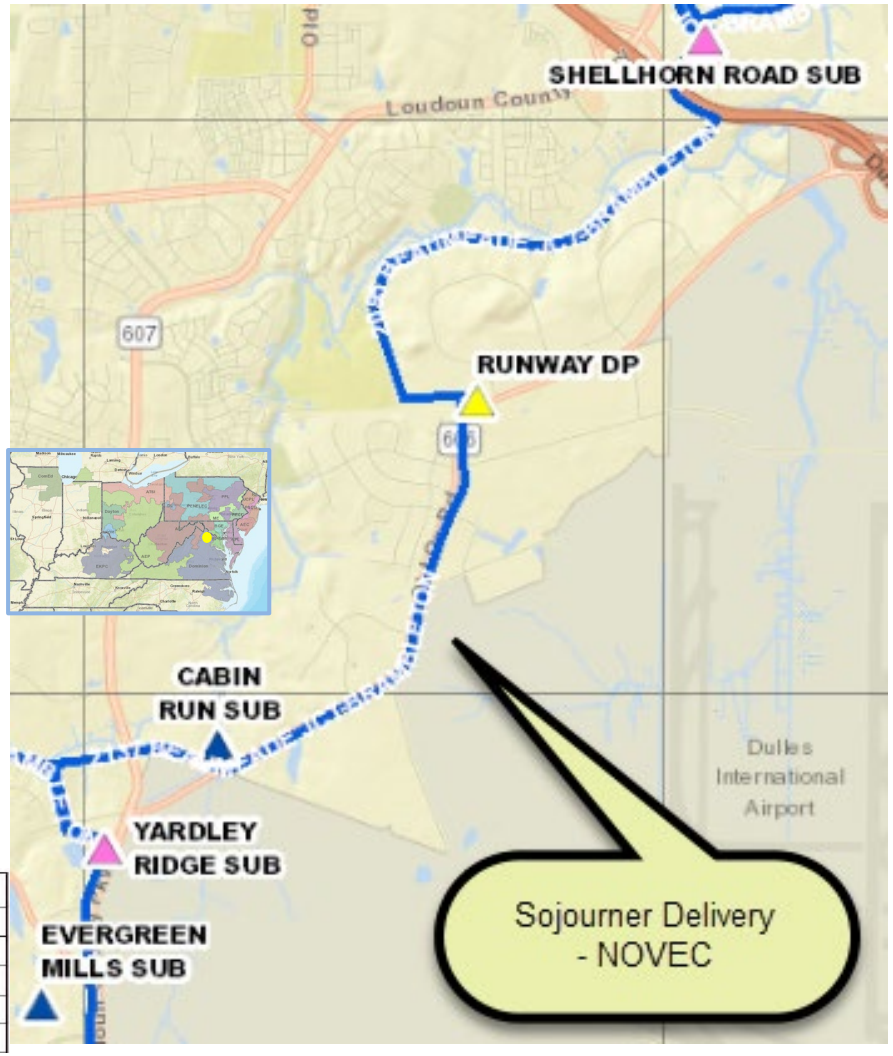
Problem Statement:

NOVEC has submitted a DP Request for a new substation (Sojourner) in Loudoun County with a total load in excess of 100MW by 2026. Requested in-service date is 03/15/2022.

Projected 2025 load

Summer: 80.0 MW

Winter: 95.8 MW



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

Dominion Transmission Zone M-3 Process
Sojourner 230kV Delivery - DEV

Need Number: DOM-2020-0031

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution:

Interconnect the new substation by cutting and extending Line #2137 (Aviator-Shellhorn to the proposed Sojourner Substation. Lines to terminate in a 230kV four-breaker ring arrangement with a provision to add two additional 230kV breakers for an ultimate of a six-breaker ring arrangement.

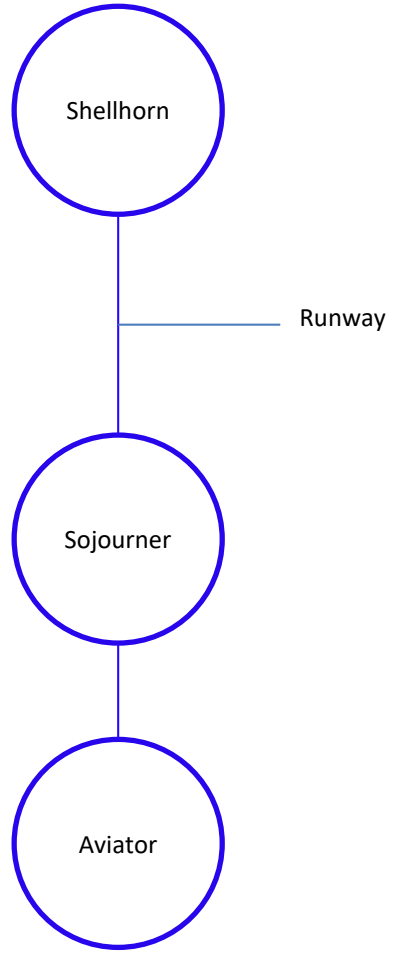
Estimated Cost: $8.0 M

Projected In-Service: 03/15/2022

Supplemental Project ID: s2339

Project Status: Engineering

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm (DNH) Analysis

Need Number: DOM-2020-0001, DOM-2020-0004, DOM-2020-0005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Project Driver: Do No Harm Analysis

Specific Assumption Reference:

None.

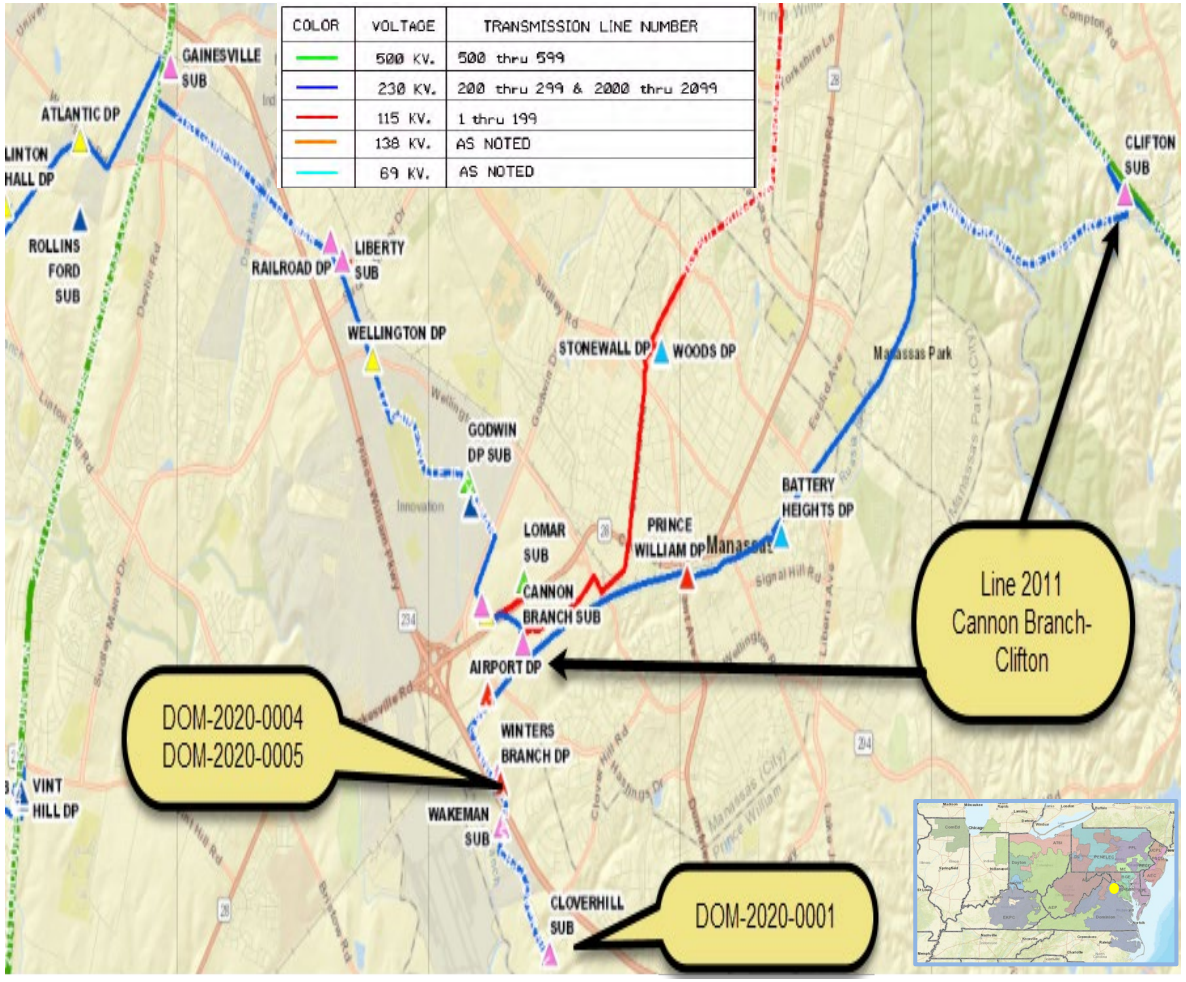
Problem Statement:

PJM has identified several N-1-1 contingencies that result in overloads associated with Line 2011 during the 2020 Do-No-Harm analysis.

For example the loss of Line 2151 (Gainesville-Railroad) and Line 2163 (Liberty-Vint Hill) creates overloads for Line 2011 segments:

- Segment 1 - Battery Heights-Clifton – (Existing rating of 797 MVA)
- Segment 2 - Battery Heights-Prince William (Existing rating of 876 MVA)
- Segment 3 -Prince William-Cannon Branch (Existing rating of 939 MVA)

The violations are caused by previously presented Supplemental Projects in the Dominion Zone in the area.



Dominion Transmission Zone: Supplemental Do No Harm (DNH) Analysis

Need Number: DOM-2020-0001, DOM-2020-0004, DOM-2020-0005

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution :

Re-conductor the 230kV Line 2011 from Clifton to Cannon Branch (7.54 miles) using a higher capacity conductor as well as terminal equipment upgrades to achieve an expected rating of 1574 MVA.

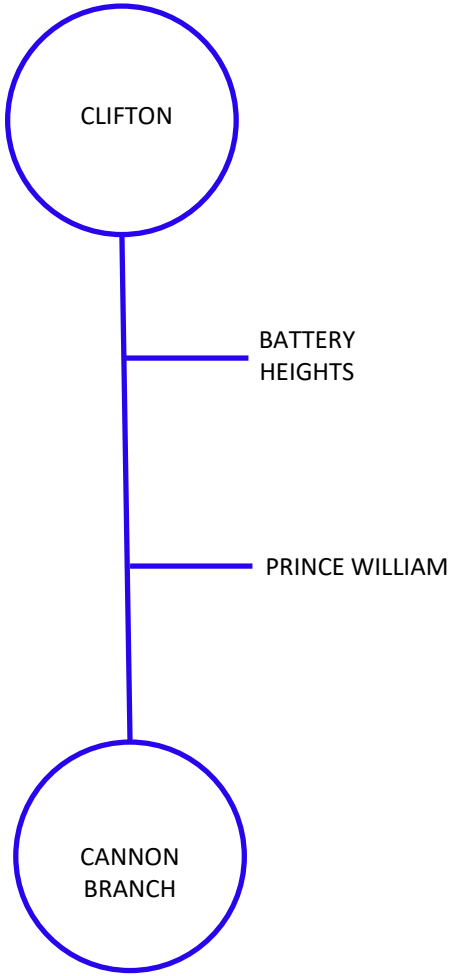
Estimated cost: $ 17.0M

Projected In-service Date: 12/31/2025

Supplemental Project ID: s2321.4

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm (DNH) Analysis

Need Number: DOM-2020-0012, DOM-2020-0021, DOM-2020-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Project Driver: Do No Harm Analysis

Specific Assumption Reference: None.

Problem Statement:

PJM has identified several N-1 and N-1-1 contingencies that result in overloads of Line 2152, Line 9173 and Line 9185 during the 2020 Do-No-Harm analysis.

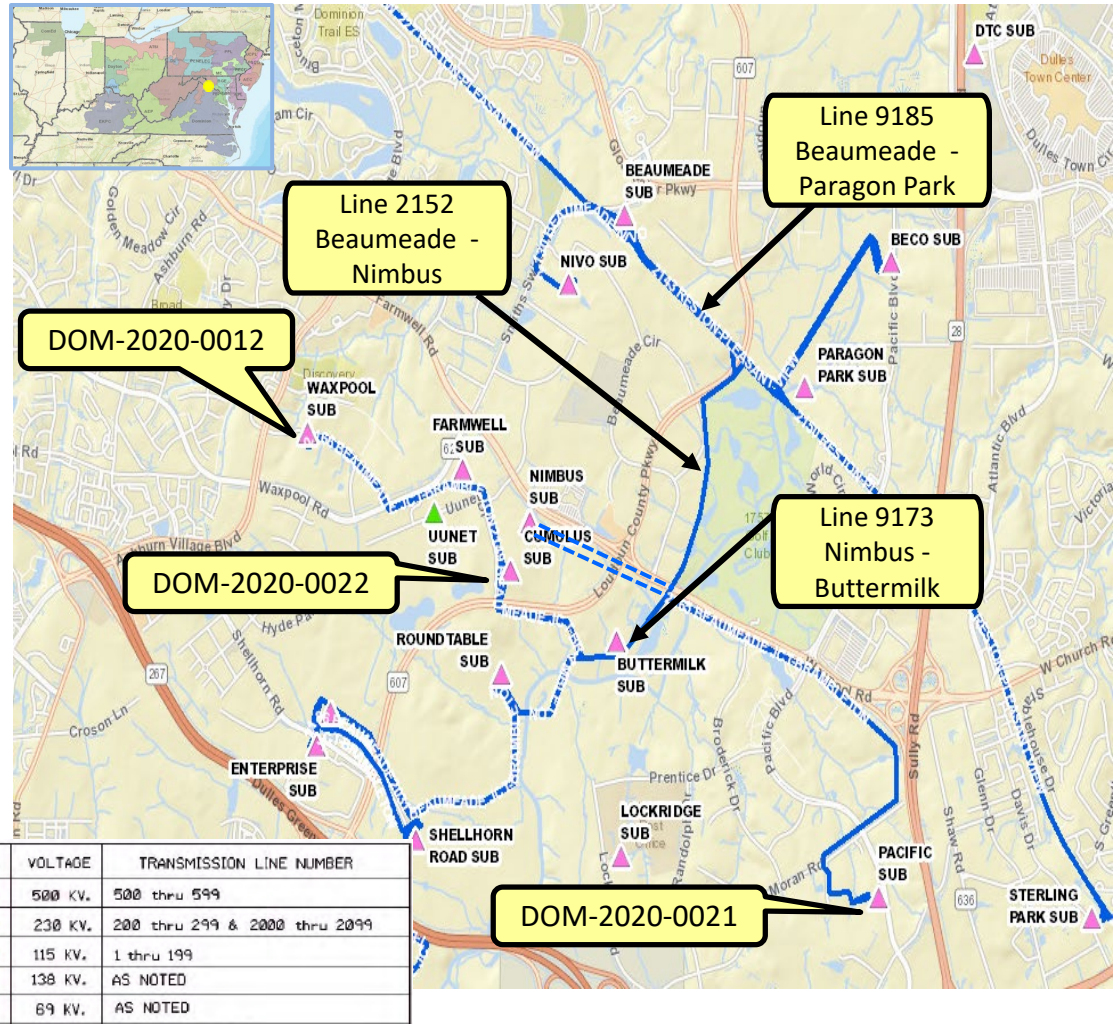
For example, the loss of Line 2172 (Brambleton – Evergreen Mills Line 1) and 2210 (Brambleton – Evergreen Mills Line 2) creates overloads of:

- Line 2152 (Beaumeade to Nimbus) – Current rating 876 MVA
- Line 9173 (Nimbus to Buttermilk) – Current rating 876 MVA

Another example is the loss of Line 2143 (Beaumeade – DTC) and 2152 (Beaumeade – Nimbus) creates overloads of:

- Line 9185 (Beaumeade to Paragon Park) – Current rating 765 MVA

The violations are caused by previously presented Supplemental Projects in the Dominion Zone in the area.



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2020-0012, DOM-2020-0021, DOM-2020-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution :

Re-conductor the 230kV Line 2152 from Beaumeade to Nimbus (2.16 miles), 230kV Line 9173 from Nimbus to Buttermilk (0.94 miles) and 230kV Line 9185 from Beaumeade to Paragon Park (1.0 miles) using a higher capacity conductor as well as terminal equipment upgrades to achieve an expected rating of 1574 MVA.

Estimated cost:

230kV Line 2152 Beaumeade to Nimbus - $ 6.0M (s2328.4)

230kV Line 9173 Nimbus to Buttermilk - $ 5.0M (s2328.5)

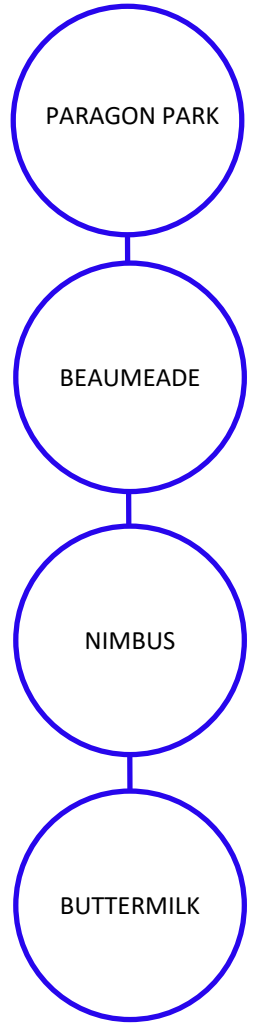
230kV Line 9185 Beaumeade to Paragon Park - $ 4.0M (s2328.6)

Projected In-service Date: 12/31/2025

Supplemental Project ID: s2328.4, s2328.5, s2328.6

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm (DNH) Analysis

Need Number: DOM-2020-0003, DOM-2020-00012, DOM-2020-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Project Driver: Do No Harm Analysis

Specific Assumption Reference: None.

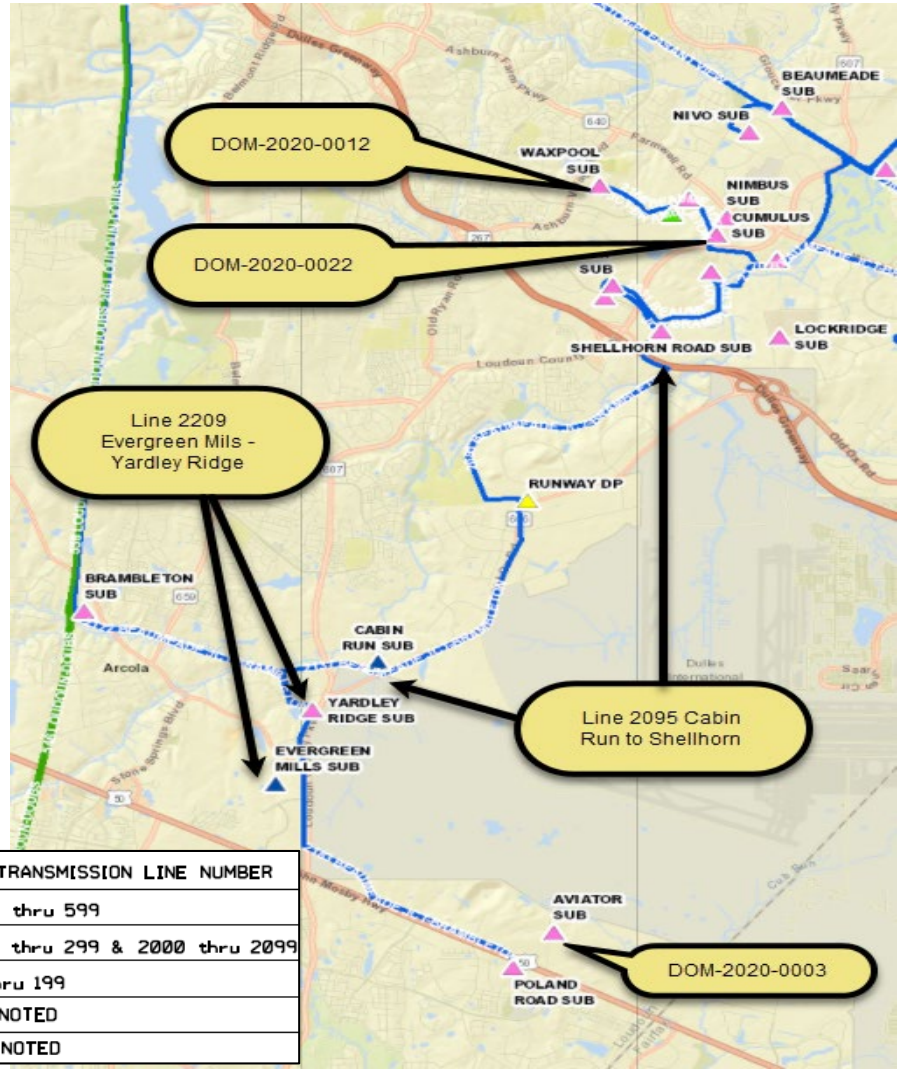
Problem Statement:

PJM has identified several N-1-1 contingencies that result in overloads associated with Line 2209 and Line 2095 during the 2020 Do-No-Harm analysis.

For example the loss of Line 227 (Beaumeade – Belmont) and 274 (Beaumeade-Pleasant View) creates overloads of:

- Line 2209 (Evergreen Mills to Yardley) – Current rating 1047 MVA
- Line 2095 (Cabin Run to Shellhorn) – Current rating 1047 MVA

The violations are caused by previously presented Supplemental Projects in the Dominion Zone in the area.



Dominion Transmission Zone: Supplemental Do No Harm (DNH) Analysis

Need Number: DOM-2020-0003, DOM-2020-00012, DOM-2020-0022

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 11/04/2020

Selected Solution :

Re-conductor the 230kV Line 2209 from Evergreen Mills to Yardley Ridge (0.16 miles) and 230kV Line 2095 from Cabin Run to Shellhorn (4.73 miles) using a higher capacity conductor as well as terminal equipment upgrades to achieve an expected rating of 1574 MVA.

Estimated cost:

230kV Line 2209 Evergreen Mills to Yardley Ridge - $ 5.0M (s2328.7)

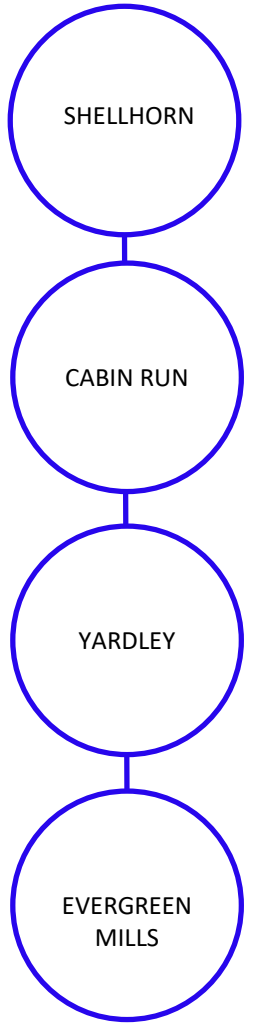
230kV Line 2095 Cabin Run to Shellhorn - $ 8.0M (s2328.8)

Projected In-service Date: 12/31/2025

Supplemental Project ID: s2328.7, s2328.8

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2020-0003 DNH

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/26/2021

Previously Presented: 02/09/2021

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:

PJM has identified a 300MW N-1-1 Load Drop violation for the loss of Line #9192 (Shellhorn to Sojourner) and Line #2183 (Evergreen Mills to Poland Road) during the 2020 Do-No-Harm analysis.

The violation was caused by Supplemental Project DOM-2020-0003 in the Dominion Zone.

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

Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2020-0003 DNH

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/26/2021

Selected Solution :

- Build a new substation (Takeoff) by cutting Line #2008 (Lincoln Park-Loudoun) and Line #265 (Bull Run-Sully). Terminate all lines in a 230kV breaker-and-a-half arrangement at Takeoff Substation. **(s2324.2)**
- Extend a new 230kV double-circuit line approx. 3 miles from Aviator to Takeoff. **(s2324.3)**
- Reconductor three 230kV lines using a standard high-capacity conductor.
  - Line segment between Loudoun and Takeoff (approx. 2.21 miles), **(s2324.4)**
  - Line segment between Lincoln Park and Takeoff (approx. 2.63 miles), **(s2324.5)** and
  - Line segment between Sully and Takeoff (approx. 1.16 miles). **(s2324.6)**
- Replace one 230kV breaker at Brambleton (SC102) **(s2324.7)** and three 69kV breakers at Davis Substation (178T186, 18622, T342) **(s2324.8)** with higher interrupting capabilities.

Estimated Cost: $74.9M (Total)

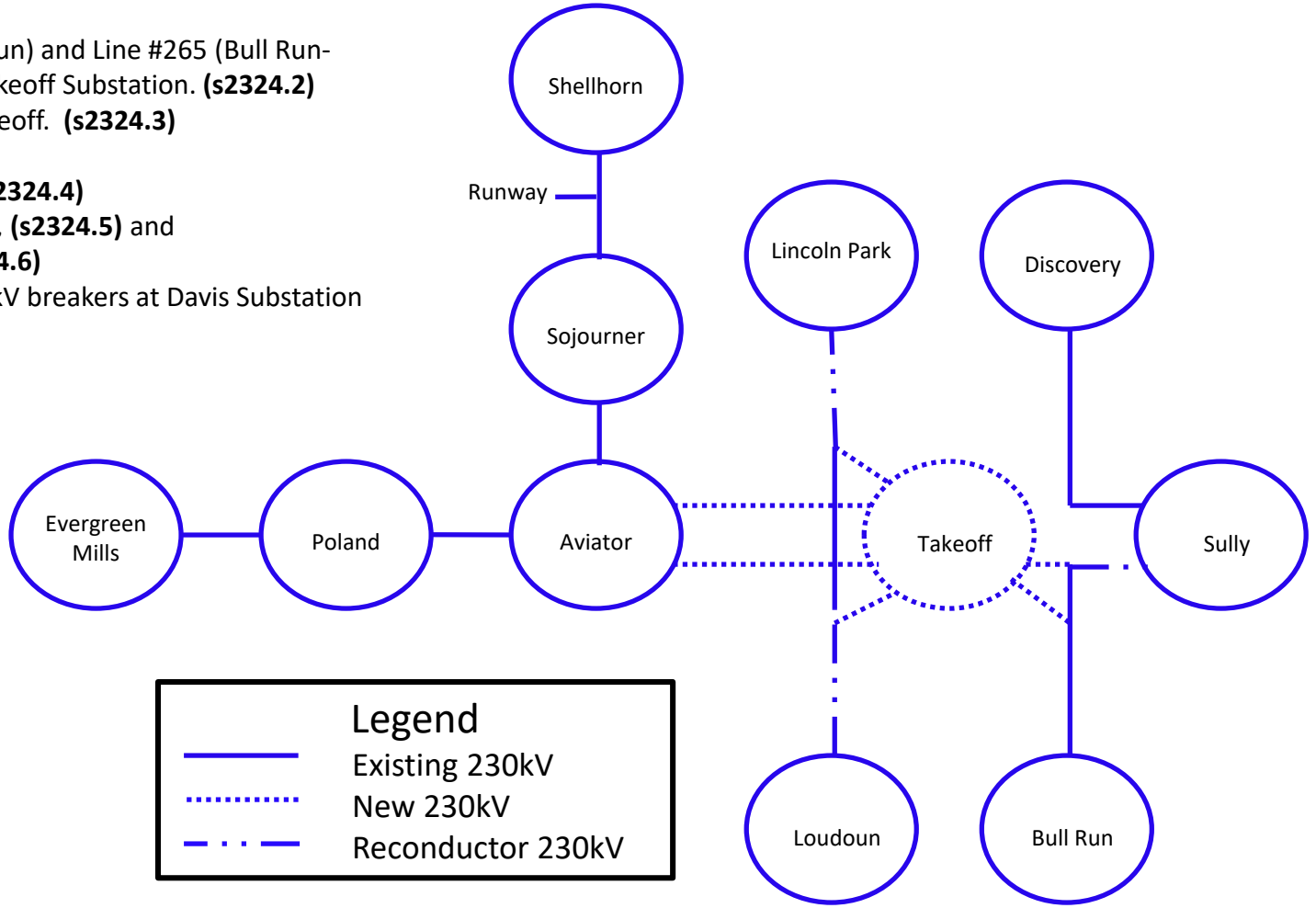
- Transmission Line $36M
- Substation $28M
- Reconductor $ 9M
- Breakers (Brambleton) $0.7M
- Breakers (Davis) $1.2M

Projected In-service Date: 12/31/2025

Supplemental Project ID: As noted above

Project Status: Conceptual

Model: 2025 RTEP



Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2020-0021 DNH

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/26/2021

Previously Presented: 02/09/2021

Supplemental Project Driver: Do No Harm Analysis

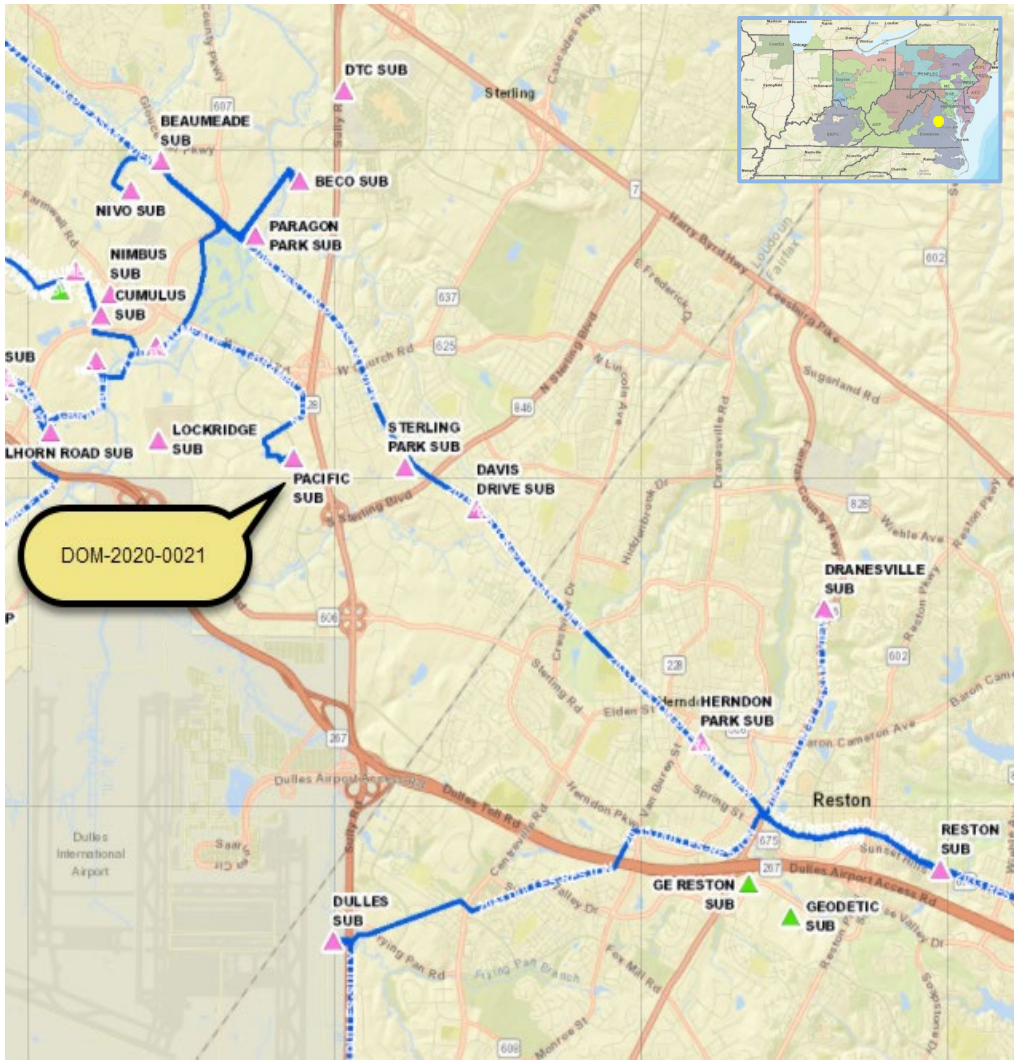
Specific Assumption Reference:

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

Problem Statement:

PJM has identified a 300MW N-1-1 Load Drop violation for the loss of Line 2170 (Buttermilk to Pacific) and Line 2165 (BECO to Pacific) during the 2020 Do-No-Harm analysis.

The violation was caused by Supplemental Project DOM-2020-0021 in the Dominion Zone.



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

Dominion Transmission Zone: Supplemental Do No Harm Analysis

Need Number: DOM-2020-0021 DNH

Process Stage: Submission of Supplemental Project for Inclusion in the Local Plan – 02/26/2021

Selected Solution :

Cut Line 2015 (Dulles-Reston) and extend a new double circuit 230kV line 3.5 miles to Global Plaza Substation creating line 2015 (Dulles to Global Plaza) and Line 9225 (Dulles to Reston).

Total estimated cost: $44M

Transmission Line $39M

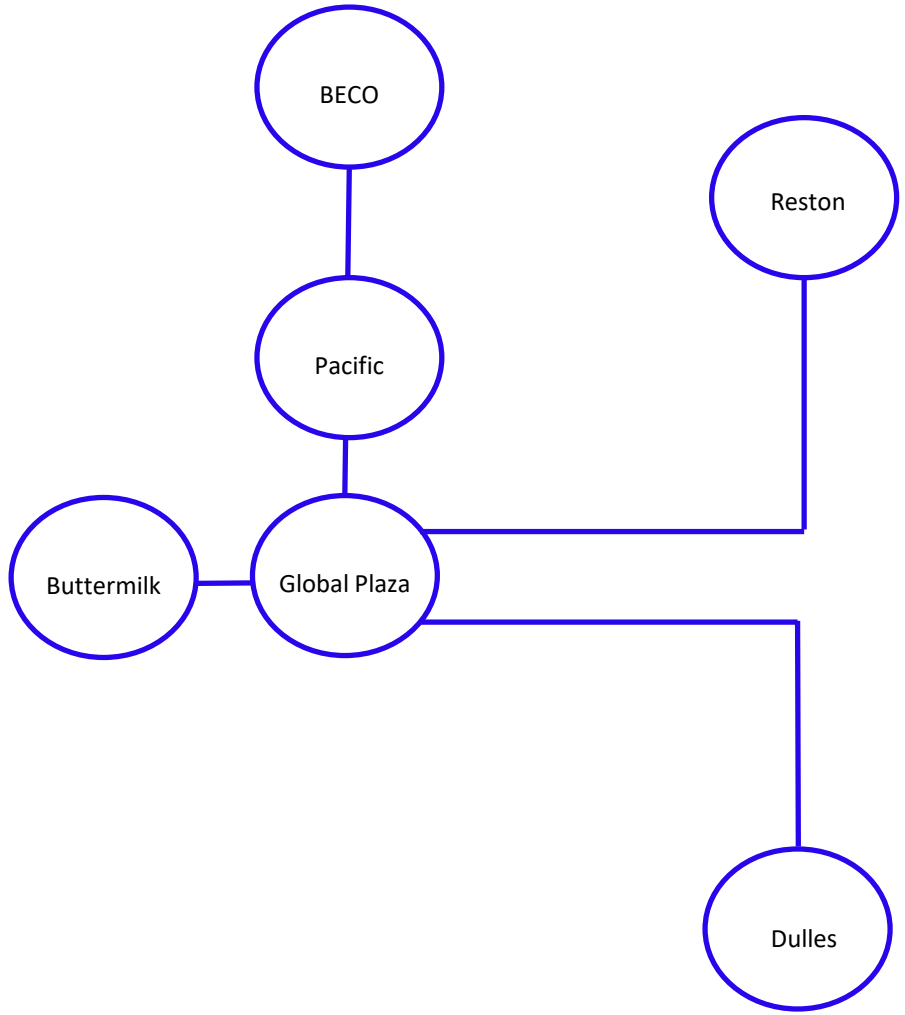
Substation $5M

Projected In-service Date: 12/31/2025

Supplemental Project ID: s2328.9

Project Status: Conceptual

Model: 2025 RTEP



Revision History

02/24/2020 – V1 – Local Plan posted to pjm.com for s2129, s2130, s2131, s2132, s2133, s2134, s2135, s2136
11/04/2020 – V2 – Local Plan posted to pjm.com for s2319 - s2339 along with revisions to s2130 & s2132.
12/28/2020 – V3 – Updated supplemental project s2337 to reflect the correct line length (and cost) being reconductored. Target date also revised due to CPCN application process. (Slides 52-53)
02/26/2021 – V4 – Local Plan posted to pjm.com for s2324.2-2324.8 & 2328.9.
03/17/2021 – V5 – Updated slide 73, Dominion Need: DOM-2020-0030 with the correct Supplemental ID, s2338.