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September 19, 2024

BY ELECTRONIC FILING

Mr. Bernard Logan, Clerk
c/o Document Control Center
State Corporation Commission
1300 East Main Street
Tyler Building – 1st Floor
Richmond, Virginia 23219

Application of Virginia Electric and Power Company
for approval and certification of electric transmission facilities:
230 kV Centreport Loop and Centreport Substation
Case No. PUR-2024-00170

Dear Mr. Logan:

Please find enclosed for electronic filing in the above-captioned proceeding the application for approval of electric transmission facilities on behalf of Virginia Electric and Power Company (the "Company"). This filing contains the Application, Appendix, Direct Testimony, DEQ Supplement, and Routing Study, including attachments.

As indicated in Section II.A.12.b of the Appendix, an electronic copy of the map of the Virginia Department of Transportation "General Highway Map" for Stafford County, as well as the digital geographic information system ("GIS") map required by § 56-46.1 of the Code of Virginia, which is Attachment II.A.2 to the Appendix, were provided via an e-room to the Commission's Division of Public Utility Regulation on September 17, 2024.

Please do not hesitate to call if you have any questions regarding the enclosed.

Highest regards,

Vishwa B. Link

Enclosures

cc: William H. Chambliss, Esq.
Mr. David Essah (without enclosures)

Mr. Neil Joshipura (without enclosures)
Mr. Michael A. Cizenski (without enclosures)
David J. DePippo, Esq.
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Dominion Energy®

Application, Appendix, DEQ Supplement, Routing Study, Direct Testimony and Exhibits of Virginia Electric and Power Company

Before the State Corporation Commission of Virginia

230 kV Centreport Loop and Centreport Substation

Application No. 341

Case No. PUR-2024-00170

Filed: September 19, 2024

Volume 1 of 3

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Centreport Loop and Centreport Substation

Application No. 341

Case No. PUR-2024-00170

Filed: September 19, 2024

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2024-00170
	)	
For approval and certification of electric transmission facilities: 230 kV Centreport Loop and Centreport Substation	)	

APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY FOR APPROVAL AND CERTIFICATION OF ELECTRIC TRANSMISSION FACILITIES: 230 kV CENTREPORT LOOP AND CENTREPORT SUBSTATION

Pursuant to § 56-46.1 of the Code of Virginia ("Va. Code") and the Utility Facilities Act, Va. Code § 56-265.1 *et seq.*, Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), by counsel, files with the State Corporation Commission of Virginia (the "Commission") this application for approval and certification of electric transmission facilities (the "Application"). In support of its Application, Dominion Energy Virginia respectfully states as follows:

1. Dominion Energy Virginia is a public service corporation organized under the laws of the Commonwealth of Virginia furnishing electric service to the public within its Virginia service territory. The Company also furnishes electric service to the public in portions of North Carolina. Dominion Energy Virginia's electric system—consisting of facilities for the generation, transmission, and distribution of electric energy—is interconnected with the electric systems of neighboring utilities and is a part of the interconnected network of electric systems serving the continental United States. By reason of its operation in two states and its interconnections with other utilities, the Company is engaged in interstate commerce.

2. In order to perform its legal duty to furnish adequate and reliable electric service,

Dominion Energy Virginia must, from time to time, replace existing transmission facilities or construct new transmission facilities in its system. The electric facilities proposed in this Application are necessary so that Dominion Energy Virginia can continue to provide reliable electric service to its customers, consistent with applicable reliability standards.

3. In this Application, in order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company proposes in Stafford County, Virginia, to:

(i) Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104[1] at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop").[2] From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop will be constructed on new 100-foot-wide right-of-way.[3] The Centreport

[1] Currently, a separate application for approval and certification of electric transmission facilities is pending before the Commission, which among other things includes the rebuild of the approximately 8.0 miles of Line #2104, the installation of Structure #2104/5456 (which will be used to cut-in the proposed Centreport Loop), the rebuild of approximately 3.8 miles of Aquia Harbour-Fredericksburg Line #2157, and the partial rebuild and conversion of approximately 12.5 miles of Aquia Harbour-Fredericksburg Line #29 to 230 kV operation. If approved as proposed, Lines #2104 and #2157 (among others) will switch positions in the existing transmission corridor such that Line #2104 will be on the eastern side of the corridor prior to entering Cranes Corner Substation and Line #2157 will be on the eastern side of the corridor after existing Cranes Corner Substation. See Application of Virginia Electric and Power Company for approval and certification of electric facilities: Fredericksburg-Aquia Harbour Lines #29, #2104, and #2157 Partial Rebuild, Case No. PUR-2024-00035, Application (filed March 14, 2024) (referred to herein as the "Aquia Harbour-Fredericksburg Rebuild"). The installation of Structure #2104/5456 as part of the Aquia-Harbour-Fredericksburg Rebuild will allow the Company to avoid replacing a new structure supporting the rebuilt Line #2104, while also reducing the outage time needed to connect the proposed Centreport Loop to Line #2104. If approved by the Commission, the Aquia Harbour-Fredericksburg Rebuild is anticipated to be in-service by December 31, 2026. The Company notes that in the event the Commission approves a different route for the Centreport Loop, the cut-in structure will be installed at the appropriate cut-in location on either Line #2104 or Line #2157 as part of the Aquia Harbour-Fredericksburg Rebuild.

[2] As part of a separate project, Line #2104 will be cut into the future Spartan Substation in May 2025, resulting in (i) Aquia Harbour-Spartan Line #2297 and (ii) Cranes Corner-Spartan Line #2104. *See* Appendix Attachment I.A.3. Accordingly, at the time Line #2104 is cut-in for purposes of this Project, it will be named Cranes Corner-Spartan Line #2104. However, for purposes of this filing, the Company refers to the existing line, Aquia Harbour-Cranes Corner Line #2104, as the line being cut-in. See Appendix Attachment I.A.2.

[3] As noted in the Appendix, the Project requires 100-foot-wide new right-of-way for the approximately 2.5-mile route. The Company proposes, however, to seek to acquire 160-foot-wide new right-of-way for the entirety of the route. The

Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.[4]

(ii) Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

4. The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia (the "Stafford Load Area"). Specifically, to serve the Customer's projected load identified in the delivery point ("DP") request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in the Stafford Load Area, the Company is proposing the Project.

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additional 60-foot width of new right-of-way will accommodate installation of anticipated future double circuit 230 kV lines supported by double circuit monopoles side-by-side with the proposed Centreport Loop within the route corridor to serve another new substation in the vicinity of the proposed Project, currently named Mountain View Substation. See Appendix Section I.B. To be clear, only the 100-foot-wide right-of-way will be cleared and utilized for the proposed Project. The future Mountain View Substation has separate load growth drivers and is distinct from the need for the proposed Project, as described in Appendix Section I.B. Dominion Energy Virginia asks that Commission not prohibit the Company from voluntarily obtaining the full right-of-way—at 160 feet wide as described above—with the understanding that the Company would not condemn for permanent right-of-way greater than the proposed 100-foot width needed for the proposed Project. This approach is consistent with the approach approved by the Commission in recent proceedings. *See, e.g., Application of Virginia Electric and Power Company for approval and certification of electric facilities: 230 kV Altair Loop and Altair Switching Station*, Case No. PUR-2022-00197, Final Order at 10-11 (June 7, 2023)*; Application of Virginia Electric and Power Company for approval and certification of electric facilities: DTC 230 kV Line Loop and DTC Substation*, Case No. PUR-2021-00280, Final Order at 13 (July 7, 2022). To the extent that the Company's Project is approved as proposed, the Company believes that it is reasonable and prudent to construct the Centreport Loop within the right-of-way in a manner that will allow for the future construction of the additional circuits (*see* Appendix Attachment II.A.5.a), and the Company will seek Commission approval to construct the anticipated double circuit 230 kV lines in the future.

[4] Apparent power, measured in megavolt amperes ("MVA"), is made up of real power (megawatt or "MW") and reactive power (megavolt ampere reactive or "MVAR"). The power factor ("pf") is the ratio of real power to apparent power. For loads with a high pf (approaching unity), including data centers, real power will approach apparent power and the two can be used interchangeably. Load loss criteria specify real power (MW) units because that represents the real power that will be dropped; however, MVA is used to describe the equipment ratings to handle the apparent power, which includes the real and reactive load components.

5. The Company's existing Aquia Harbour, Cranes Corner, Fredericksburg, Garrisonville, and Possum Point Substations are the primary sources of distribution power in the Stafford Load Area, with the Cranes Corner and Garrisonville Substations being the closest substations to the Customer's data center development. However, the Cranes Corner and Garrisonville Substations do not have adequate capacity to serve the Customer's total projected load identified in the DP request. As a result, connecting the Customer's projected load to either the Cranes Corner Substation or the Garrisonville Substation would result in substation transformer overloads. Accordingly, to serve this planned data center block load and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards, the Company is proposing to construct the Centreport Loop and Centreport Substation. With the proposed Project, the existing system transformers are not overloaded, and reliability criteria are met.

6. The Company identified an approximately 2.5-mile overhead proposed route for the Centreport Loop (the "Proposed Route" or "Route 2"), an approximately 3.5-mile overhead alternative route ("Alternative Route 1"), an approximately 2.3-mile overhead alternative route ("Alternative Route 3"), and an approximately 2.2-mile overheard alternative route ("Alternative Route 4"), all of which the Company is proposing for Commission consideration and notice. Discussion of the Proposed Route and Alternative Routes, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

7. The Company selected Route 2 as the Proposed Route for the Centreport Loop as it avoids or reasonably minimizes adverse impact to the greatest extent reasonably practicable on the scenic assets, historic and cultural resources, and environment of the area concerned. While

this route has the potential to clear the most forested wetlands, it is routed farther from Potomac Creek, crosses fewer NHD-mapped waterbodies, crosses Potomac Creek only once and reduces paralleling of Potomac Creek to 0.2 mile. The Proposed Route is collocated with Centreport Parkway for 0.4 mile, and through the coordination with affected developers, it also collocates with industrial developments for approximately 0.8 mile, thereby minimizing conflict between current and planned land uses where practicable, consistent with Guideline #1 in Attachment 1 to the *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*. Additionally, this collocation allows for forest clearing within the right-of-way adjacent to planned developments that also will clear forested land, eliminating fragmentation of forested habitat that would occur through the selection of Alternative Routes 1, 3, and 4.

8. In accordance with the Company's Facility Interconnection Requirements ("FIR")[5] document and to reliably serve the Customer, the proposed Centreport Substation will be constructed with five 112 MVA 230-34.5 kV transformers, a 230 kV ring bus with a four circuit breaker configuration, and other associated equipment. The proposed Centreport Substation will be designed to accommodate future growth in the area with an ultimate build-out to a 230 kV ring bus with a six circuit breaker configuration. The total area of the Centreport Substation is approximately 5.0 acres.

9. The desired in-service target date for the proposed Project is July 1, 2027. The Company estimates it will take approximately 24 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission.

[5] The Company's mandatory electric transmission planning criteria ("Planning Criteria") can be found in Attachment 1 of the Company's FIR document (effective January 1, 2024), pursuant to Facility Connection ("FAC") Standard FAC-001 (R1, R3), which is available online at https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-connection-requirements.pdf?la=en&rev=f280781e90cf47f69ea526c944c9c347&hash=82DD2567D0B033C47536134B8C4D5C5E.

Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by June 27, 2025. Should the Commission issue a final order by June 27, 2025, to accommodate long-lead materials procurement, the Company estimates that construction should begin around September 2026, and be completed by July 1, 2027. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due to labor shortages or materials/supply issues. This schedule also is contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to obtain property rights for substation use without the need for additional litigation.

10. In addition, the Company is monitoring actively regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how they could potentially impact construction timing associated with time of year restrictions ("TOYRs"). The U.S. Fish and Wildlife Service ("USFWS") previously indicated that it planned to issue final NLEB guidance to replace the interim guidance by April 1, 2024; however, the interim guidance has been extended by USFWS until late summer 2024. The Company is tracking actively updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS.

11. The Company is also monitoring potential regulatory changes associated with the

potential up-listing of the Tricolored bat ("TCB"). On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the Endangered Species Act. USFWS extended its Final Rule issuance target from September 2023 to September 2024. The Company is tracking actively this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

12. Any adjustments to this Project schedule resulting from these or similar challenges could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target date (*i.e.*, July 1, 2027) and an authorization sunset date (*i.e.*, July 1, 2028) for energization of the Project.

13. The estimated conceptual cost of the Project utilizing the Proposed Route is approximately $50.5 million, which includes approximately $34.1 million for transmission-related work and approximately $16.4 million for substation-related work (2024 dollars).[6]

14. Based on consultations with the Virginia Department of Environmental Quality ("DEQ"), the Company has developed a supplement ("DEQ Supplement") containing information designed to facilitate review and analysis of the proposed facilities by the DEQ and other relevant agencies. The DEQ Supplement is attached to this Application.

15. Based on the Company's experience, the advice of consultants, and a review of published studies by experts in the field, the Company believes that there is no causal link to

[6] These total Project costs are inclusive of projected real estate costs that the Company anticipates will be required to acquire the property and/or easements for the Proposed Route and substation. Additionally, the total Project costs include excess facilities charges that will be collected from Customer (*see* Section I.C of the Appendix). The total Project costs exclude costs associated with minor substation-related work described in Section II.C of the Appendix.

harmful health or safety effects from electric and magnetic fields generated by the Company's existing or proposed facilities. Section IV of the Appendix provides further details on Dominion Energy Virginia's consideration of the health aspects of electric and magnetic fields.

16. Section V of the Appendix provides a proposed route description for public notice purposes and a list of federal, state, and local agencies and officials that the Company has or will notify about the Application.

17. In addition to the information provided in the Appendix, the DEQ Supplement, and the Environmental Routing Study, this Application is supported by the pre-filed direct testimony of Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Mohammad Othman, Tracey McDonald, and Matt L. Teichert filed with this Application.

18. Finally, Dominion Energy Virginia requests that, to the extent the Commission modifies the deadline for responses to interrogatories and requests for production of documents in 5 VAC 5-20-260, the Commission grant the parties seven calendar days in order to afford the Company adequate time to provide comprehensive responses to discovery.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission:

(a) direct that notice of this Application be given as required by § 56-46.1 of the Code of Virginia;

(b) approve pursuant to § 56-46.1 of the Code of Virginia the construction of the Project; and,

(c) grant a certificate of public convenience and necessity for the Project under the Utility Facilities Act, § 56-265.1 *et seq.* of the Code of Virginia.

VIRGINIA ELECTRIC AND POWER COMPANY

By: *[s] Vishwa B. Link*
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Counsel for Applicant Virginia Electric and Power Company

September 19, 2024

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF
VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Centreport Loop and Centreport Substation

Application No. 341

Appendix

Containing Information in Response to
"Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia"

Case No. PUR-2024-00170

Filed: September 19, 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY

In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company") proposes in Stafford County, Virginia, to:

(i) Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104[1] at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop").[2] From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop will be constructed on new 100-foot-wide right-of-way.[3] The Centreport Loop will be supported primarily by double circuit weathering

[1] Currently, a separate application for approval and certification of electric transmission facilities is pending before the Commission, which among other things includes the rebuild of the approximately 8.0 miles of Line #2104, the installation of Structure #2104/5456 (which will be used to cut-in the proposed Centreport Loop), the rebuild of approximately 3.8 miles of Aquia Harbour-Fredericksburg Line #2157, and the partial rebuild and conversion of approximately 12.5 miles of Aquia Harbour-Fredericksburg Line #29 to 230 kV operation. If approved as proposed, Lines #2104 and #2157 (among others) will switch positions in the existing transmission corridor such that Line #2104 will be on the eastern side of the corridor prior to entering Cranes Corner Substation and Line #2157 will be on the eastern side of the corridor after existing Cranes Corner Substation. *See Application of Virginia Electric and Power Company for approval and certification of electric facilities: Fredericksburg-Aquia Harbour Lines #29, #2104, and #2157 Partial Rebuild*, Case No. PUR-2024-00035, Application (filed March 14, 2024) (referred to herein as the "Aquia Harbour-Fredericksburg Rebuild"). The installation of Structure #2104/5456 as part of the Aquia-Harbour-Fredericksburg Rebuild will allow the Company to avoid replacing a new structure supporting the rebuilt Line #2104, while also reducing the outage time needed to connect the proposed Centreport Loop to Line #2104. If approved by the Commission, the Aquia Harbour-Fredericksburg Rebuild is anticipated to be in-service by December 31, 2026. The Company notes that in the event the Commission approves a different route for the Centreport Loop, the cut-in structure will be installed at the appropriate cut-in location on either Line #2104 or Line #2157 as part of the Aquia Harbour-Fredericksburg Rebuild. *See infra*, n. 28.

[2] As part of a separate project, Line #2104 will be cut into the future Spartan Substation in May 2025, resulting in (i) Aquia Harbour-Spartan Line #2297 and (ii) Cranes Corner-Spartan Line #2104. *See* Attachment I.A.3. Accordingly, at the time Line #2104 is cut-in for purposes of this Project, it will be named Cranes Corner-Spartan Line #2104. However, for purposes of this filing, the Company refers to the existing line, Aquia Harbour-Cranes Corner Line #2104, as the line being cut-in. See Attachment I.A.2.

[3] As noted herein, the Project requires 100-foot-wide new right-of-way for the approximately 2.5-mile route. The Company proposes, however, to seek to acquire 160-foot-wide new right-of-way for the entirety of the route. The additional 60-foot width of new right-of-way will accommodate installation of anticipated future double circuit 230 kV lines supported by double circuit monopoles side-by-side with the proposed Centreport Loop within the route corridor to serve another new substation in the vicinity of the proposed Project, currently named Mountain View Substation. See Section I.B. To be clear, only the 100-foot-wide right-of-way will be cleared and utilized for the proposed Project. The future Mountain View Substation has separate load growth drivers and is distinct from the need for the proposed Project, as described in Section I.B. Dominion Energy Virginia asks that the State Corporation Commission ("Commission") not prohibit the Company from voluntarily obtaining the full right-of-way—at 160 feet wide as described above—with the understanding that the Company would not condemn for permanent right-of-way greater than the proposed 100-foot width needed for the proposed Project. This approach is consistent with the

steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.[4]

(ii) Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia (the "Stafford Load Area"). Specifically, to serve the projected load identified in the delivery point ("DP") request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in the Stafford Load Area, the Company is proposing the Project.

The Company's existing Aquia Harbour, Cranes Corner, Fredericksburg, Garrisonville, and Possum Point Substations are the primary sources of distribution power in the Stafford Load Area, with the Cranes Corner and Garrisonville Substations being the closest substations to the Customer's data center development. However, the Cranes Corner and Garrisonville Substations do not have adequate capacity to serve the Customer's total projected load identified in the DP request. As a result, connecting the Customer's projected load to either the Cranes Corner Substation or the Garrisonville Substation would result in substation transformer overloads. Accordingly, to serve this planned data center block load and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards, the Company is proposing to construct the Centreport Loop and Centreport Substation. With the proposed Project, the existing system transformers are not overloaded, and reliability criteria are met.

The Company identified an approximately 2.5-mile overhead proposed route for the Centreport Loop (the "Proposed Route" or "Route 2"), an approximately 3.5-mile overhead alternative route ("Alternative Route 1"), an approximately 2.3-mile overhead alternative route ("Alternative Route 3"), and an approximately 2.2-mile overhead alternative route ("Alternative Route 4"), all of which

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approach approved by the Commission in recent proceedings. *See, e.g., Application of Virginia Electric and Power Company for approval and certification of electric facilities: 230 kV Altair Loop and Altair Switching Station*, Case No. PUR-2022-00197, Final Order at 10-11 (June 7, 2023)*; Application of Virginia Electric and Power Company for approval and certification of electric facilities: DTC 230 kV Line Loop and DTC Substation*, Case No. PUR-2021-00280, Final Order at 13 (July 7, 2022). To the extent that the Company's Project is approved as proposed, the Company believes that it is reasonable and prudent to construct the Centreport Loop within the right-of-way in a manner that will allow for the future construction of the additional circuits (*see* Attachment II.A.5.a), and the Company will seek Commission approval to construct the anticipated double circuit 230 kV lines in the future.

[4] Apparent power, measured in megavolt amperes ("MVA"), is made up of real power (megawatt or "MW") and reactive power (megavolt ampere reactive or "MVAR"). The power factor ("pf") is the ratio of real power to apparent power. For loads with a high pf (approaching unity), including data centers, real power will approach apparent power and the two can be used interchangeably. Load loss criteria specify real power (MW) units because that represents the real power that will be dropped; however, MVA is used to describe the equipment ratings to handle the apparent power, which includes the real and reactive load components.

the Company is proposing for Commission consideration and notice. Discussion of the Proposed Route and Alternative Routes, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and discussed in more detail in the Environmental Routing Study (or "Routing Study") included with the Application.

In accordance with the Company's Facility Interconnection Requirements ("FIR")[5] document and to reliably serve the Customer, the proposed Centreport Substation will be constructed with five 112 MVA 230-34.5 kV transformers, a 230 kV ring bus with a four circuit breaker configuration, and other associated equipment. The proposed Centreport Substation will be designed to accommodate future growth in the area with an ultimate build-out to a 230 kV ring bus with a six circuit breaker configuration. The total area of the Centreport Substation is approximately 5.0 acres.

The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $50.5 million, which includes approximately $34.1 million for transmission-related work and approximately $16.4 million for substation-related work (2024 dollars).[6]

The desired in-service target date for the proposed Project is July 1, 2027. The Company estimates it will take approximately 24 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by June 27, 2025. Should the Commission issue a final order by June 27, 2025, to accommodate long-lead materials procurement, the Company estimates that construction should begin around September 2026, and be completed by July 1, 2027. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due to labor shortages or materials/supply issues. This schedule is also contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to obtain property rights for substation use without the need for additional litigation.

In addition, the Company is actively monitoring regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how they could potentially impact construction timing associated with time of year restrictions ("TOYRs"). The U.S. Fish and Wildlife Service ("USFWS") previously indicated that it planned to issue final NLEB guidance to replace the

[5] The Company's mandatory electric transmission planning criteria ("Planning Criteria") can be found in Attachment 1 of the Company's FIR document (effective January 1, 2024), pursuant to Facility Connection ("FAC") Standard FAC-001 (R1, R3), which is available online at https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-connection-requirements.pdf?la=en&rev=f280781e90cf47f69ea526c944c9c347&hash=82DD2567D0B033C47536134B8C4D5C5E.

[6] These total Project costs are inclusive of projected real estate costs that the Company anticipates will be required to acquire the property and/or easements for the Proposed Route and substation. Additionally, the total Project costs include excess facilities charges that will be collected from Customer (*see infra,* Section I.C). The total Project costs exclude costs associated with minor substation-related work described in Section II.C.

interim guidance by April 1, 2024; however, the interim guidance has been extended by USFWS until late summer 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS.

The Company is also monitoring potential regulatory changes associated with the potential up-listing of the Tricolored bat ("TCB"). On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the Endangered Species Act ("ESA"). USFWS extended its Final Rule issuance target from September 2023 to September 2024. The Company is actively tracking this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

Any adjustments to this Project schedule resulting from these or similar challenges could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target date (*i.e.*, July 1, 2027) and an authorization sunset date (*i.e.*, July 1, 2028) for energization of the Project.

I. NECESSITY FOR THE PROPOSED PROJECT

A. State the primary justification for the proposed project (for example, the most critical contingency violation including the first year and season in which the violation occurs). In addition, identify each transmission planning standard(s) (of the Applicant, regional transmission organization ("RTO"), or North American Electric Reliability Corporation) projected to be violated absent construction of the facility.

Response: The Project is necessary to provide electric service requested by the Customer to serve a new data center development in Stafford County, Virginia, to maintain reliable service for the overall load growth in the Project area, and to comply with mandatory NERC Reliability Standards. See Attachment I.A.1 for an overview map of the proposed Project along the Proposed Route, the Company's existing electric transmission facilities located in the vicinity of the Customer's data center development in Stafford County, and a general boundary of the Stafford Load Area.

Dominion Energy Virginia's transmission system is responsible for providing transmission service (i) for redelivery to the Company's retail customers; (ii) to Appalachian Power Company, Old Dominion Electric Cooperative, Northern Virginia Electric Cooperative, Central Virginia Electric Cooperative, and Virginia Municipal Electric Association for redelivery to their retail customers in Virginia; and, (iii) to North Carolina Electric Membership Corporation and North Carolina Eastern Municipal Power Agency for redelivery to their customers in North Carolina (collectively, the "DOM Zone"). The Company needs to be able to maintain the overall, long-term reliability of its transmission system to meet its customers' evolving power needs in the future.

Dominion Energy Virginia is part of the PJM Interconnection, LLC ("PJM") regional transmission organization ("RTO"), which provides service to a large portion of the eastern United States. PJM is currently responsible for ensuring the reliability and coordinating the movement of electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. This service area has a population of approximately 65 million and, on August 2, 2006, set a record high of 165,563 MW for summer peak demand, of which Dominion Energy Virginia's load portion was approximately 19,256 MW. On July 28, 2023, the Company set a record high of 21,993 MW for summer peak demand. On December 24, 2022, the Company set a winter and all-time record demand of 22,189 MW. Based on the 2024 PJM Load Forecast, the DOM Zone is expected to grow with average growth rates of 5.6% summer and 5.1% winter over the next 10 years compared to the PJM average of 1.7% and 2.0% over the same period for the summer and winter, respectively.[7]

Dominion Energy Virginia is also part of the Eastern Interconnection transmission

[7] A copy of the 2024 PJM Load Report is available at the following: https://www.pjm.com/-/media/library/reports-notices/load-forecast/2024-load-report.ashx. *See, in particular,* page 3 (PJM) and pages 28, 35, 39 (DOM Zone).

grid, meaning its transmission system is interconnected, directly or indirectly, with all of the other transmission systems in the United States and Canada between the Rocky Mountains and the Atlantic coast, except for Quebec and most of Texas. All of the transmission systems in the Eastern Interconnection are dependent on each other for moving bulk power through the transmission system and for reliability support. Dominion Energy Virginia's service to its customers is extremely reliant on a robust and reliable regional transmission system.

NERC has been designated by the Federal Energy Regulatory Commission ("FERC") as the electric reliability organization for the United States. Accordingly, NERC requires that the planning authority and transmission planner develop planning criteria to ensure compliance with NERC Reliability Standards. Mandatory NERC Reliability Standards require that a transmission owner ("TO") develop facility interconnection requirements that identify load and generation interconnection minimum requirements for a TO's transmission system, as well as the TO's reliability criteria.[8]

Federally mandated NERC Reliability Standards constitute minimum criteria with which all public utilities must comply as components of the interstate electric transmission system. Moreover, the Energy Policy Act of 2005 mandates that electric utilities must follow these NERC Reliability Standards and imposes fines on utilities found to be in noncompliance up to $1.3 million a day per violation.

PJM's Regional Transmission Expansion Plan ("RTEP") is the culmination of a FERC-approved annual transmission planning process that includes extensive analysis of the electric transmission system to determine any needed improvements.[9] PJM's annual RTEP is based on the effective criteria in place at the time of the analyses, including applicable standards and criteria of NERC, PJM, and local reliability planning criteria, among others.[10] Projects identified through the RTEP process are developed by the TO in coordination with PJM, and are presented at the Transmission Expansion Advisory Committee ("TEAC") meetings prior to inclusion in the RTEP, which is then presented for approval to the PJM Board of Managers (the "PJM Board").

Outcomes of the RTEP process include three types of transmission system upgrades or projects: (i) baseline upgrades are those that resolve a system reliability criteria violation, which can include planning criteria from NERC, ReliabilityFirst, SERC Reliability Corporation, PJM, and TOs; (ii) network upgrades are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission, or long-term firm transmission service requests; and (iii) supplemental projects are projects initiated by the TO in

[8] *See* Facility Connection ("FAC") Standard FAC-001-4 (effective June 14, 2022), which can be found at https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-001-4.pdf.

[9] PJM Manual 14B (effective December 20, 2023) focuses on the RTEP process and can be found at https://www.pjm.com/-/media/documents/manuals/m14b.ashx.

[10] *See* PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria. *See supra*, n. 9, for the weblink.

order to interconnect new customer load, address degraded equipment performance, improve operational flexibility and efficiency, and increase infrastructure resilience. The Project is classified as a supplemental project initiated by the TO in order to interconnect new customer load. While supplemental projects are included in the RTEP, the PJM Board does not actually approve such projects. See Section I.J for a discussion of the PJM process as it relates to this Project.

As discussed in more detail below, the Project is needed to provide electric service requested by a Customer for its data center development in Stafford County, as well as serve overall load growth in the Stafford Load Area.

NEED FOR THE PROJECT

The combination of competitive collocation/cloud environment, fiber connectivity, strategic geographic location, low risk of business disruptions, affordable and reliable power, and the business climate in Virginia has created the largest market for data center capacity in the United States.

On November 29, 2023, the Company's Distribution Planning group submitted a delivery point ("DP") request to the Transmission Planning group for construction of a new substation (*i.e.*, the Centreport Substation) to serve the Customer's planned data center development as well as other load growth in Stafford County, Virginia. The Customer's data center development is located to the south of Centreport Parkway, north of Mountain View Road, and west of Oakenwold Lane. See Attachment I.A.1. While the Customer initially requested energization of its data center development in July 2025, based on the construction timeline of the Project, the DP request identified a projected summer peak of 4 MW in 2027, with a total projected Customer load of 262 MW at full build out in 2037, and an energization date of July 1, 2027.

In order to meet the Customer's initial ramp up schedule for its data center development in 2025 and 2026, the Company determined that bridging power could be offered to the Customer temporarily to serve the development from the Company's existing Cranes Corner Substation.[11] Specifically, Cranes Corner Substation Circuit #407 initially will provide 7 MVA, followed by Cranes Corner Substation Circuit #415 providing 11 MVA in 2025 and 2026 and until such time as the Project is energized in July 2027. At that time, the full load will be transferred to the proposed Centreport Substation. See Section I.C for the Customer's projected load identified in the DP request.

The Company's existing Aquia Harbour, Cranes Corner, Fredericksburg, Garrisonville, and Possum Point Substations are the primary sources of distribution

[11] The Company notes that the availability of temporary bridging power to serve the Customer initially from Cranes Corner Substation is contingent upon completion of other projects in the area. The projected summer peak of 4 MW in 2027 identified in the DP request assumes that no bridging is available and the Customer will not be served until the Project is completed.

power in the Stafford Load Area, with the Cranes Corner and Garrisonville Substations being the closest substations to the Customer's data center development. However, the Cranes Corner and Garrisonville Substations do not have adequate capacity to serve the Customer's total projected load identified in the DP request. As a result, connecting the Customer's projected load to either the Cranes Corner Substation or the Garrisonville Substation would result in substation transformer overloads.

Accordingly, to serve this planned data center block load and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards, the Company is proposing to construct the Centreport Loop and Centreport Substation. With the proposed Project, the existing system transformers are not overloaded, and reliability criteria are met.

Attachment I.A.2 provides the existing one-line diagram of the area transmission system in the Stafford Load Area as of July 2024. Attachment I.A.3 provides the one-line diagram of the area transmission system as of May 2025.[12] Attachment I.A.4 provides a one-line diagram of the transmission system in the Stafford Load Area after the proposed Project is energized on July 1, 2027, which includes all baseline and supplemental projects in the Project area that have been submitted to PJM as of July 2024.[13]

THE PROPOSED PROJECT

Centreport Loop

To construct the new Centreport Loop, the Company proposes to cut the existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456 and extend a new double circuit overhead 230 kV transmission line approximately 2.5 miles to the proposed Centreport Substation. The cut-in and construction of the Project will result in the Centreport Loop, including: (i) 230 kV Centreport-Cranes Corner Line #2379 (approximately 4.1 miles) and (ii) 230 kV Centreport-Spartan Line #2104 (approximately 6.1 miles). After completion of the Project, the 230 kV lines in the Project area will be renumbered as follows:

New 230 kV Line Numbers at Project Completion
Centreport-Spartan Line #2104
Centreport-Cranes Corner Line #2379
Possum Point-Spartan Line #2297
Fuller Road-Possum Point Line #252
Aquia Harbour-Fuller Road Line #2309
Aquia Harbour-Fredericksburg Line #2305

[12] This includes the future Spartan Substation. *See supra*, n. 2.

[13] Note that Attachment I.A.4 reflects completion of the Aquia Harbour-Fredericksburg Rebuild. *See supra*, n. 1.

From the cut-in location on existing Line #2104 within the existing right-of-way, the Centreport Loop will extend approximately 2.5 miles within a 100-foot-wide new right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA. The proposed Centreport Loop will be constructed to source the new proposed Centreport Substation, as there is no existing transmission infrastructure source that can feed the proposed substation.

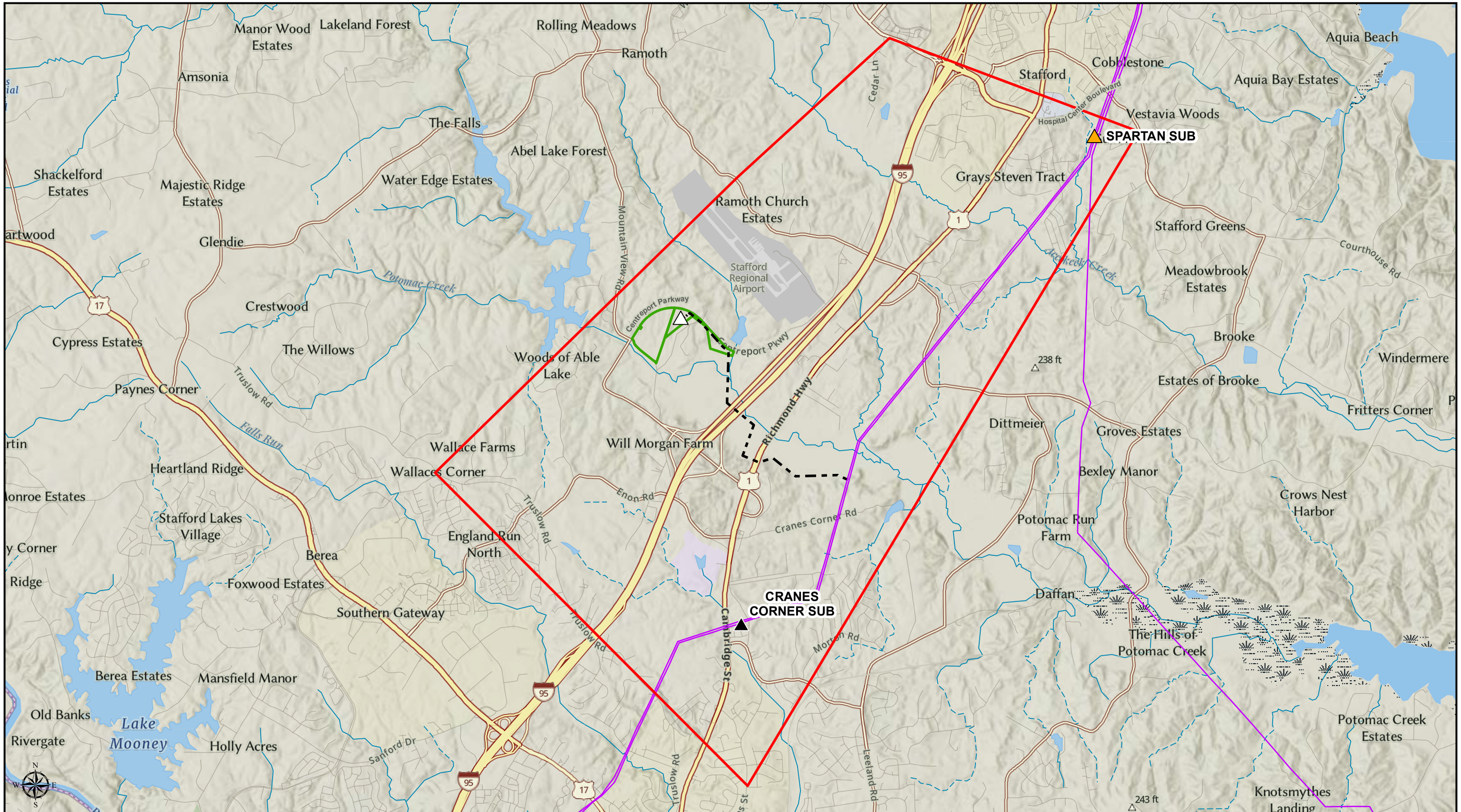
The Company identified an approximately 2.5-mile overhead Proposed Route for the Centreport Loop, an approximately 3.5-mile overhead Alternative Route 1, an approximately 2.3-mile overhead Alternative Route 3, and an approximately 2.2-mile overhead Alternative Route 4. The Company is proposing all of these routes for Commission consideration and notice. Discussion of the Proposed Route and Alternative Routes, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and discussed in more detail in the Routing Study included with the Application.

Centreport Substation

As part of the Project, the Company proposes to construct the new 230-34.5 kV Centreport Substation in Stafford County, Virginia, on property to be obtained by the Company. See Section II.C for a description of the substation, as well as a one-line diagram and general arrangement.

***

In summary, the proposed Project will provide electric service requested by the Customer, maintain reliable service for the overall load growth in the area, and comply with mandatory NERC Reliability Standards.



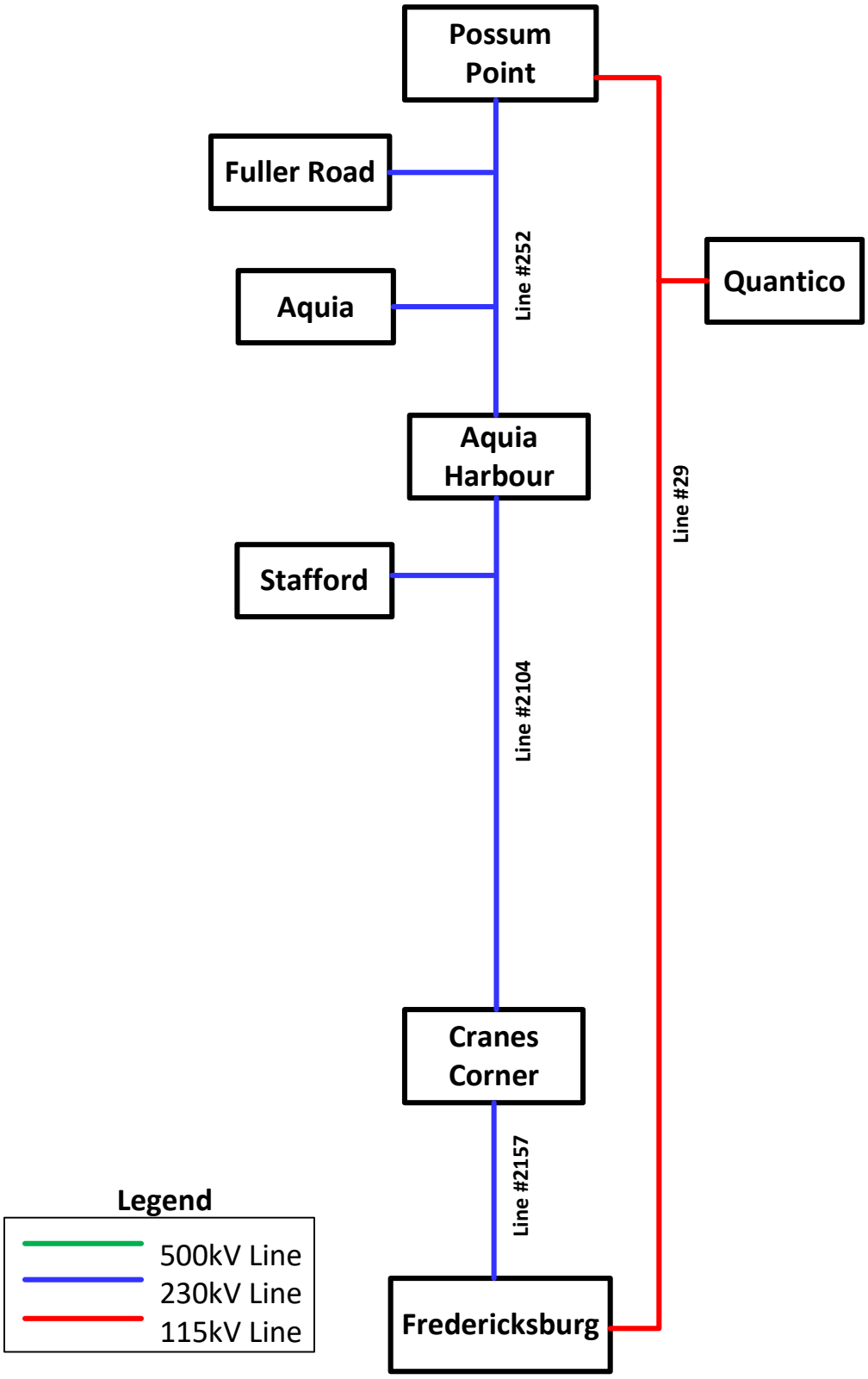
- Proposed Substation
- Future Substation
- Existing Substation
- Dominion Exsiting Transmission Line
- Proposed Route (Centreport Loop)
- Customer Data Center Parcels
- Stafford Load Area

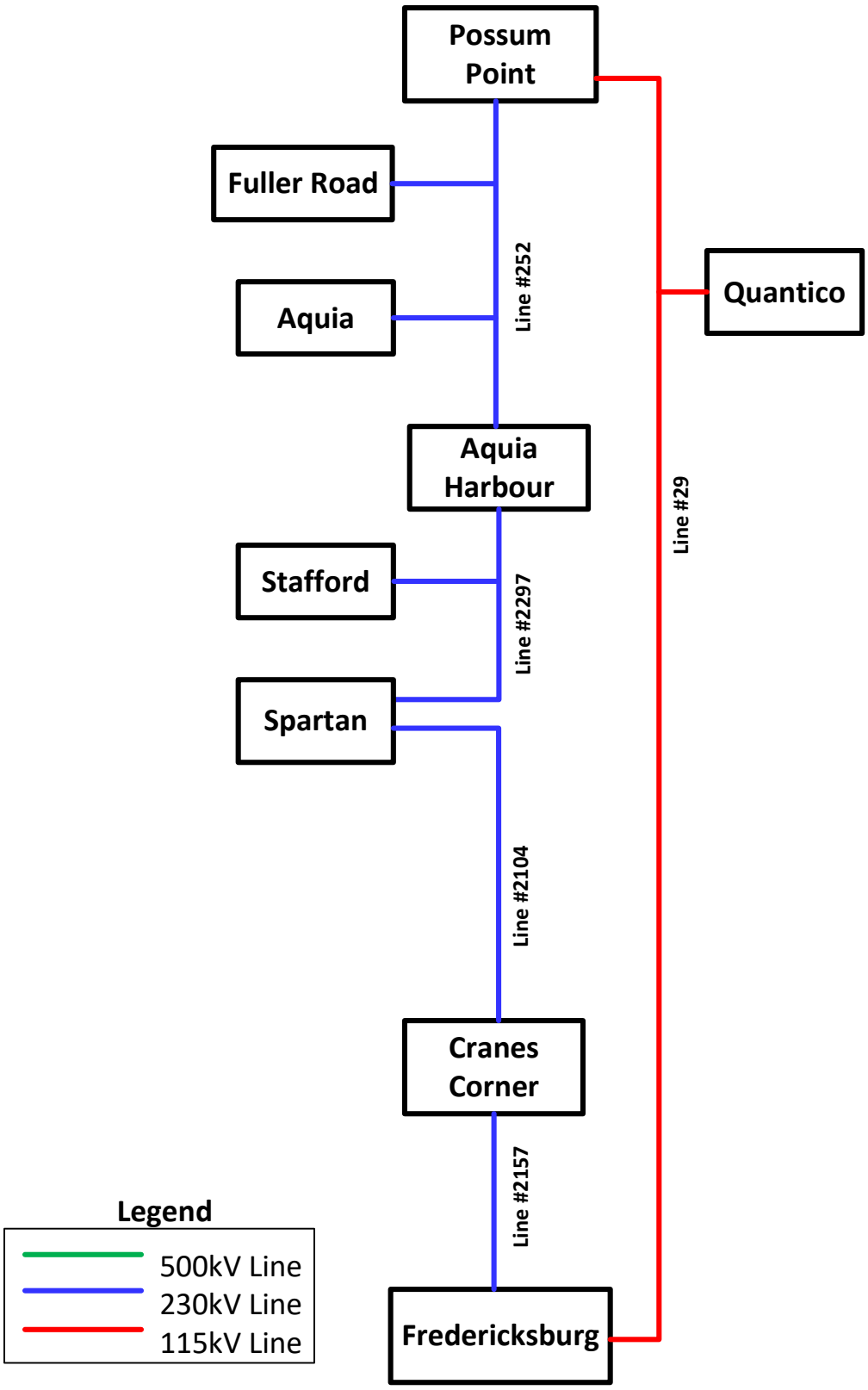
0 1,500 3,000
Feet
1:48,000

Attachment I.A.1
Project Overview
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy


Possum Point
Fuller Road
Aquia
Line #252
Quantico
Aquia Harbour
Line #29
Stafford
Line #2104
Cranes Corner
Line #2157
Fredericksburg
Legend
500kV Line
230kV Line
115kV Line


Possum Point
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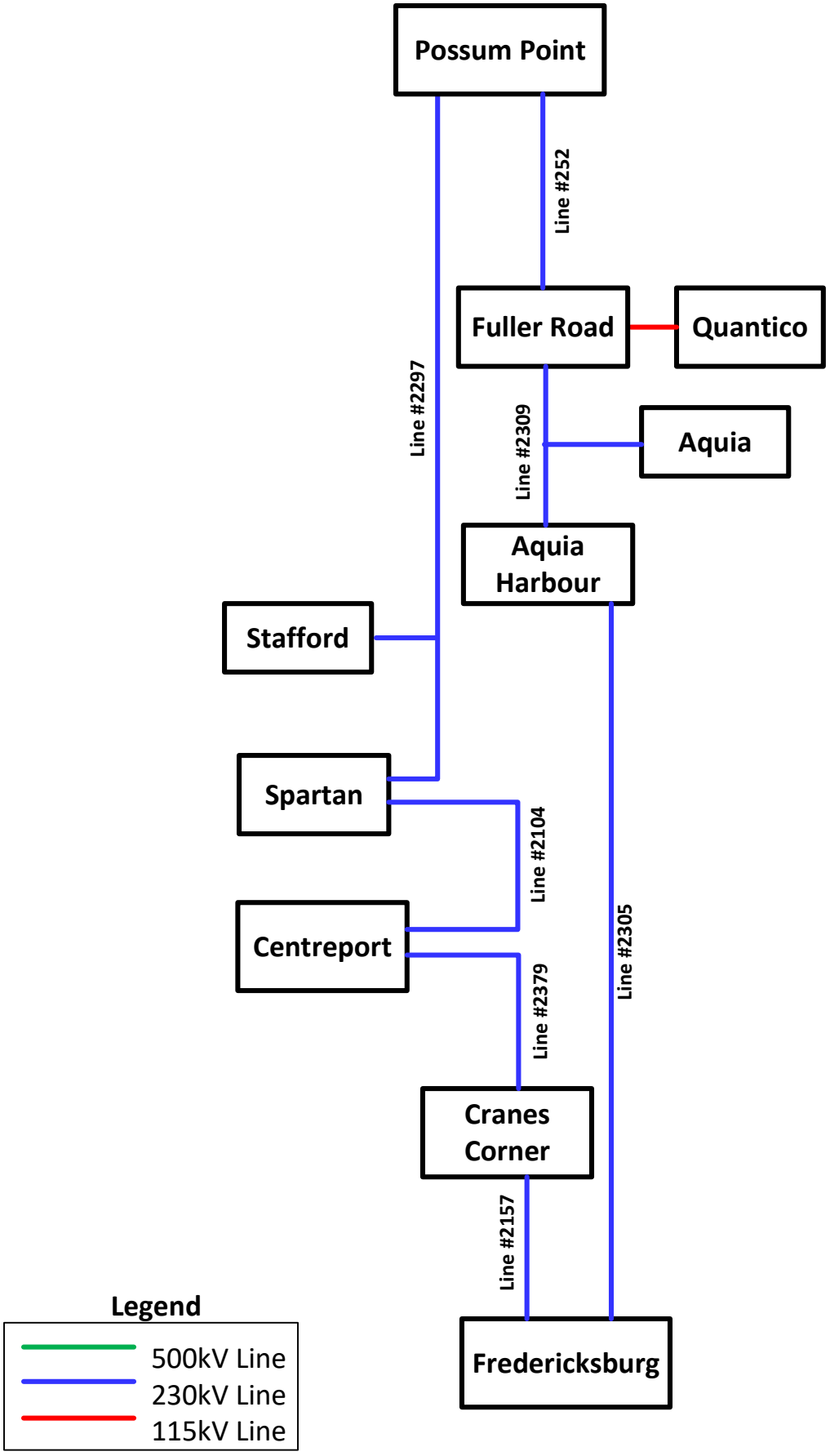
Cranes Corner
Line #2157
Fredericksburg
Legend
500kV Line
230kV Line
115kV Line


Possum Point
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Stafford
Spartan
Line #2104
Centreport
Line #2379
Line #2305
Cranes Corner
Line #2157
Fredericksburg
Legend
500kV Line
230kV Line
115kV Line

I. NECESSITY FOR THE PROPOSED PROJECT

B. Detail the engineering justifications for the proposed project (for example, provide narrative to support whether the proposed project is necessary to upgrade or replace an existing facility, to significantly increase system reliability, to connect a new generating station to the Applicant's system, etc.). Describe any known future project(s), including but not limited to generation, transmission, delivery point or retail customer projects, that require the proposed project to be constructed. Verify that the planning studies used to justify the need for the proposed project considered all other generation and transmission facilities impacting the affected load area, including generation and transmission facilities that have not yet been placed into service. Provide a list of those facilities that are not yet in service.

Response: **Engineering Justification for Project**

Detail the engineering justifications for the proposed project (for example, provide narrative to support whether the proposed project is necessary to upgrade or replace an existing facility, to significantly increase system reliability, to connect a new generating station to the Applicant's system, etc.).

See Section I.A of the Appendix.

Known Future Projects

Describe any known future project(s), including but not limited to generation, transmission, delivery point or retail customer projects, that require the proposed project to be constructed.

The proposed Project is needed to serve the Customer's data center development and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards, as described in Section I.A.

In addition to the proposed Project, the Company received a separate DP request in the vicinity of the proposed Project for another new substation, currently named Mountain View Substation. The future Mountain View Substation is generally located within the same load area as the proposed Project; however, it has its own unique load growth drivers and initially does not require construction of the proposed Project. That said, if the need arises in the future, the Company potentially could connect the Mountain View Substation to the Centreport Substation. When the total combined load at Centreport Substation and Mountain View Substation exceeds 300 MW in the future, a third 230 kV source will be required to connect the substations to the area transmission system in order to mitigate a potential 300 MW load loss under an N-1-1 scenario. The Company anticipates that construction of the third 230 kV source may require construction of an additional switching station within the Project area to address a potential 300 MW load violation when the additional load materializes. A slide identifying the need for the future Mountain View Substation was presented to PJM during the

TEAC meeting on April 30, 2024. See Attachment I.B.1.[14] The solution slide has not been presented to PJM at this time.

Additionally, in June 2024, the Company's Distribution Planning group was advised of another new data center development in the Project vicinity. The Distribution Planning group submitted a DP request to the Transmission Planning group that includes a request for two new substations to be named Wyatt Substation and Wren Substation. Like the Mountain View Substation, the future Wyatt and Wren Substations are generally located within the same load area as the proposed Project; however, they have their own unique load growth drivers and initially do not require construction of the proposed Project. That said, if the need arises in the future, the Company potentially could connect the Wyatt and Wren Substations to the Centreport Substation. Specifically, when the total combined load at the Centreport, Mountain View, Wyatt, and Wren Substations exceeds 300 MW in the future, a third 230 kV source will be required to connect the substations in order to mitigate a potential 300 MW load loss under an N-1-1 scenario. The Company anticipates that construction of the third 230 kV source may require construction of an additional switching station within the Project area to address a potential 300 MW load violation when the additional load materializes. The Company has not presented slides for the Wyatt and Wren Substations to PJM at this time.

Planning Studies

Verify that the planning studies used to justify the need for the proposed project considered all other generation and transmission facilities impacting the affected load area, including generation and transmission facilities that have not yet been placed into service.

Distribution

For this Project, the Company's Distribution Planning group first analyzed the Customer's load information for the data center development. Based on the load, the Distribution Planning group determined that it was not feasible to serve this amount of load from any of the Company's primary sources of distribution power in the Stafford Load Area, which include the Aquia Harbour, Cranes Corner, Garrisonville, Fredericksburg, or Possum Point Substations. Specifically, the Company determined that connecting the Customer's total projected load to either the existing Cranes Corner Substation or Garrisonville Substation would result in transformer overloads and violations of the NERC 300 MW reliability criteria, as discussed in Section I.C.

Transmission

In order to maintain reliable service to the Company's customers and to comply

[14] Note that the Company has not yet validated a targeted in-service date for Mountain View at this time.

with mandatory NERC Reliability Standards, specifically FAC-001,[15] the Company's FIR document addresses the interconnection requirements of generation, transmission, and electricity end-user facilities. The purpose of the NERC FAC standards is to avoid adverse impacts on reliability by requiring that each TO establish facility connection and performance requirements in accordance with FAC-001, and the TO's and end-users meet and adhere to the established facility connection and performance requirements in accordance with FAC-002.[16]

NERC Reliability Standards TPL-001 requirements R2, R5, and R6 require PJM, the Planning Coordinator ("PC"), and the TO have criteria. PJM's planning criteria outlined in Attachment D of Manual 14B requires the Company, as a TO, to follow NERC and Regional Planning Standards and criteria as well as the TO Standards filed in Dominion Energy Virginia's FERC 715 filings. The Company's FERC 715 filing contains the Dominion Energy Virginia Transmission Planning Criteria in Attachment 1 of the FIR document.

The four major criteria considered as part of this Project were:

1) Four-breaker ring bus arrangement is required for load interconnections in excess of 100 MW (Company's FIR V21.0, Section 4.3.2);
2) The amount of direct-connected load at any substation is limited to 300 MW (Company's Transmission Planning Criteria Attachment 1, Section C.2.8);
3) N-1-1 contingencies load loss is limited to 300 MW (PJM Manual 14B Section 2.3.8, Attachment D, Attachment D 1, Attachment F); and
4) The minimum load levels within a 10-year planning horizon for the direct interconnection to existing transmission lines is 30 MW for a 230 kV delivery (Company's FAC-001 Section 4.3, Load Criteria – End User).

The Project is being constructed as double circuit 230 kV circuits to comply with Section 4.3.2 of the Company's FIR, which requires a four-breaker-ring bus arrangement and two 230 kV transmission sources for load interconnections in excess of 100 MW.

Facilities List

Provide a list of those facilities that are not yet in service.

See Attachment I.A.2 and Attachment I.A.4, respectively, for the existing and planned transmission infrastructure for the Stafford Load Area, which includes all baseline and supplemental projects in the Project area that have been submitted to PJM as of July 2024. See Attachment I.G.1 for existing and future transmission facilities in the area of the proposed Project.

[15] *See supra*, n. 8.

[16] *See* https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-002-2.pdf.

Dominion Supplemental Projects

Transmission Expansion Advisory Committee
April 30, 2024

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-2024-0030

Process Stage: Need Meeting 04/30/2024

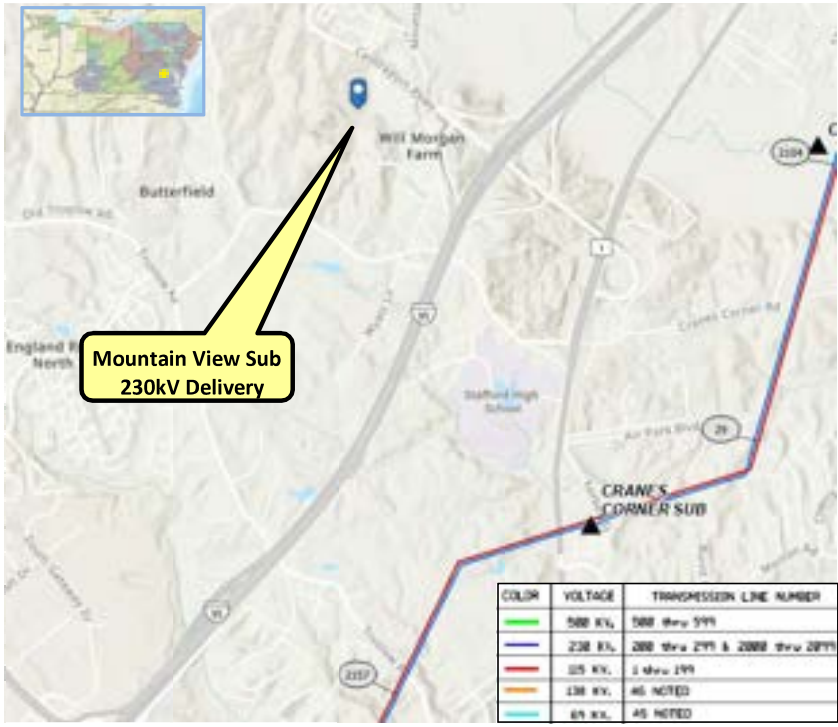
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV Distribution has submitted a DP Request for a new substation (Mountain View) to serve a data center in Stafford County with a total load in excess of 100 MW. The requested in-service date is 4/01/2026.



Initial In-Service Load	Projected 2029 Load
Summer: 63.0 MW Winter: 0.0 MW	Summer: 181.0 MW Winter: 181.0 MW

I. NECESSITY FOR THE PROPOSED PROJECT

C. Describe the present system and detail how the proposed project will effectively satisfy present and projected future electrical load demand requirements. Provide pertinent load growth data (at least five years of historical summer and winter peak demands and ten years of projected summer and winter peak loads where applicable). Provide all assumptions inherent within the projected data and describe why the existing system cannot adequately serve the needs of the Applicant (if that is the case). Indicate the date by which the existing system is projected to be inadequate.

Response: The Stafford Load Area in central Virginia where the Customer's new data center development is located is in Stafford County, Virginia. For purposes of this Application, the Stafford Load Area is defined generally as the area in south-central Stafford County to the east of the Stafford Regional Airport, bounded by Courthouse Road/Hospital Center Boulevard to the north, the existing Line #2104 to the east, Truslow Road to the south, and Centreport Parkway to the west. See Attachment I.A.1 for a map of the general location of the data center development that comprises the need for the Project and the Stafford Load Area, and Attachment I.G.1 for the Company's transmission facilities in the area of the proposed Project.

The Company's existing Aquia Harbour, Cranes Corner, Fredericksburg, Garrisonville, and Possum Point Substations are the primary sources of distribution power in the Stafford Load Area. The total load at the Customer's new data center development is projected to be approximately 262 MVA[17] at full build-out. Adding the load from the Customer's planned data center development to those existing substations would result in overload conditions and NERC transmission system reliability criteria violations, as discussed below. As a result, the proposed Centreport Substation is needed to provide the primary source of distribution power for the Customer's new data center development.

Attachment I.C.1 shows loading (MVA) at Cranes Corner and Garrisonville Substations, as follows:

- Attachment I.C.1.a shows existing historical and projected summer peak loading at the Cranes Corner and Garrisonville Substations with existing area load and without any of the Customer's projected load. As shown in Attachment I.C.1.a, the combined total load of the Cranes Corner Substation TX #1 (84 MVA nameplate) and TX #2 (75 MVA nameplate) are more than 50% loaded as of 2023 (85 MVA). Similarly, the combined total load of the Garrisonville Substation TX #1 (84 MVA nameplate) and TX #2 (84

[17] Distribution load forecasts for data centers typically involve use of customer-requested load ramps to project load growth based on historical knowledge of the customer requesting service for the new data center. The data center customer typically requests the full maximum capacity that their data center building can support to ensure they are able to fully utilize or lease their building investment. The Company has applied a diversification factor to the Customer's block load request to project load at full build out.

MVA nameplate) are more than 28% loaded as of 2023 (47.3 MVA).

- Attachment I.C.1.b shows historical and projected summer peak loading at the Cranes Corner Substation, with the Customer's bridging load from Cranes Corner in 2025 and 2026[18] and the Customer's full projected load in 2027, and without the Centreport Substation. Attachment I.C.1.b also shows historical and projected summer peak loading at Garrisonville Substation, with bridging load from another area project, as well as the Customer's full projected load in 2027, and without the Centreport Substation.

- Attachment I.C.1.c shows projected loading at the proposed Centreport Substation with the Customer's full projected load at the time the Centreport Substation is energized (2027).

Note that all of the Section I.C attachments include only normal feed circuits to the Company's customers; they do not include any alternate feed loads. To be clear, that means there are no circuits normally open that serve as alternate feeds for the Customer or for other customers with existing alternate feed arrangements shown in the Section I.C attachments. Also note that the load tables in the Section I.C attachments show actual and projected peak loading in MVA based on the Customer's load projections inclusive of existing project load in the Stafford Load Area.

For this Project, the Customer has requested that each of its data center buildings include a totally independent, redundant distribution feed. This is referred to as an alternate feed. At any customer's request, the Company will endeavor to design a distribution configuration that provides for a back-up source of power should the normal feed have an outage. The estimated cost of this alternate feed arrangement is then compared to the normal arrangement of service, and the difference in cost is collected through an excess facilities charge. The Customer's business plan relies on the requested alternate feed plan to meet the non-outage demands of the data center build-out. Therefore, the Company plans to serve the Customer's data center buildings with both normal feed circuits and alternate feed circuits. This essentially doubles the required substation transformer capacity that the Customer will contract for and doubles the number of distribution circuits required compared to providing normal feed service only.

Each substation transformer has a normal overload ("NOL") rating that cannot be exceeded. These distribution circuits each have a thermal overload rating that is based on the type of equipment and the configuration of the equipment in the field. To prevent overloads that could cause equipment damage or failure, the maximum capacity limits of the distribution circuits and the substation transformers cannot be exceeded.

[18] Temporarily exceeding the NERC limit over 100 MVA is acceptable for the short term if there is a plan for a permanent solution, which in this case will be the energization of the proposed Centreport Substation.

To ensure reliability to its customers, the Company maintains a substation transformer contingency plan. Because of the negative impact to customers due to the outage duration if a substation transformer were to fail, the Company creates a switching plan that allows customer load to be picked up on other equipment for the loss of any substation transformer. There are various switching methods that can be used for these substation transformer contingency plans. If the contingency plan creates overloads in other equipment because of the switching, new substation capacity, such as constructing the proposed Centreport Substation, is necessary.

The Company's mandatory transmission Planning Criteria in Attachment 1 of the FIR document restricts total substation loading to no more than 300 MW. If the projected load inside a given substation will exceed 300 MW, the Company must create a project that eliminates the overload, such as constructing a new substation like the proposed Centreport Substation. See Section I.B.

Additionally, the Company's FIR document requires a four-breaker ring bus arrangement for load interconnections in excess of 100 MW. Because both the Cranes Corner and Garrisonville Substations were constructed without a four breaker ring bus arrangement, their load is restricted to 100 MW based on the FIR document and restricted to tapped lines of 100 MW or less based on NERC tapped line load criteria.[19] As shown in Attachment I.C.1.b—which includes the Customer's bridging and full projected load at Cranes Corner Substation, and includes other area project bridging and the Customer's full projected load at Garrisonville Substation—the Cranes Corner and Garrisonville Substations exceed 100 MW beginning in 2025 and 2029, respectively, in violation of Company and NERC standards.

Moreover, transformers at the Cranes Corner and Garrisonville Substations are overloaded beginning in 2029 as shown in Attachment I.C.1.b in excess of their nameplate ratings. Specifically, at Cranes Corner Substation, TX #2 (89.0 MVA) is overloaded beginning in 2029 and TX #1 (99.9 MVA) is overloaded beginning in 2030; at Garrisonville Substation, TX #1 (85.1 MVA) is overloaded beginning in 2029. Any bridging power offered after 2026 in excess of the proposed 18 MVA would require additional distribution infrastructure.

Further, no bridging is available at Garrisonville Substation for two primary reasons. First, the available capacity at Garrisonville Substation is already committed to serving other area loads, as well as a 10 MVA bridging circuit for another data center project in the area. Second, as discussed above, the Company's contingency plan requires that the Garrisonville Substation be capable of picking up other circuit or substation loads in the event of a transformer failure, which it could not do if the Customer's bridging load were added to the substation.

Based on the stated projected overloads shown in Attachment I.C.1.b, the violations and overloads that result from adding the Customer's bridging and full projected load to the Cranes Corner Substation or the Customer's full projected load to the

[19] *But see supra*, n. 18.

Garrisonville Substation will be avoided by limiting bridging capacity available to the Customer to a total of 18 MVA from Cranes Corner Substation until the proposed Centreport Substation is energized in 2027 to feed the Customer's full data center projected load.

Accordingly, the Centreport Loop and Substation are needed to serve the Customer's full load at its data center development. The proposed Project provides the most comprehensive solution for resolving the identified thermal and NERC criteria violations by 2027; provides service requested by the Customer; and maintains the structural integrity and reliability of the transmission system for the overall load growth in the Stafford Load Area. See Sections I.A. and I.B.

Table I.C.1.a																		
Cranes Corner Sub Area																		
Cranes Corner Substation (Loads contain Area Load only)																		
			2019 Actual Summer Peak Loading (MVA)	2020 Actual Summer Peak Loading (MVA)	2021 Actual Summer Peak Loading (MVA)	2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Summer Projection (MVA)	2025 Summer Projection (MVA)	2026 Summer Projection (MVA)	2027 Summer Projection (MVA)	2028 Summer Projection (MVA)	2029 Summer Projection (MVA)	2030 Summer Projection (MVA)	2031 Summer Projection (MVA)	2032 Summer Projection (MVA)	2033 Summer Projection (MVA)	2034 Summer Projection (MVA)
Substation Total			85.3	87.4	84.4	82.0	85.3	87.0	88.7	90.5	92.2	94.6	96.5	98.4	100.4	102.4	104.5	106.6
Substation Total Calculation for 100 MW or Less NERC Tapped Line Load Criteria			81.0	83.0	80.2	77.9	81.0	82.6	84.2	86.0	87.6	89.9	91.7	93.4	95.3	97.3	99.3	101.3
Transformer	Nameplate	NOL																
TX #1	84	92.4	39.3	40.5	37.4	38	37.8	39.0	40.2	41.4	42.6	43.9	45.2	46.6	48.0	49.4	50.9	52.4
TX #2	75	82.5	46	46.9	47	44	47.5	48.0	48.5	49.1	49.6	50.7	51.3	51.8	52.4	53.0	53.6	54.2
Garrisonville Sub Area																		
Garrisonville Substation (Loads contain Area Load only)																		
			2019 Actual Summer Peak Loading (MVA)	2020 Actual Summer Peak Loading (MVA)	2021 Actual Summer Peak Loading (MVA)	2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Summer Projection (MVA)	2025 Summer Projection (MVA)	2026 Summer Projection (MVA)	2027 Summer Projection (MVA)	2028 Summer Projection (MVA)	2029 Summer Projection (MVA)	2030 Summer Projection (MVA)	2031 Summer Projection (MVA)	2032 Summer Projection (MVA)	2033 Summer Projection (MVA)	2034 Summer Projection (MVA)
Substation Total			47.4	47.0	47.4	49.7	47.3	47.0	64.7	65.3	66.0	66.6	67.3	68.0	68.6	69.3	70.0	70.7
Substation Total Calculation for 100 MW or Less NERC Tapped Line Load Criteria			45.0	44.7	45.0	47.2	44.9	44.7	61.4	62.1	62.7	63.3	63.9	64.6	65.2	65.9	66.5	67.2
Transformer	Nameplate	NOL																
TX #1	84	92.4	47.4	47	47.4	49.7	47.3	47.0	47.5	47.9	48.4	48.9	49.4	49.9	50.4	50.9	51.4	51.9
TX #2	84	92.4	0	0	0	0	0	0	17.2	17.4	17.5	17.7	17.9	18.1	18.3	18.4	18.6	18.8

Table I.C.1.b																		
Cranes Corner Sub Area									Tx # 1 and Tx # 2 are Overloaded in 2030 and 2029 respecitvely. Substation exceed NERC 100MW requirement in 2025, bowever temporary overloads due to bridging (2025-2026) are typically acceptable if a plan to mitigate violation is available. Substation was built without having the four-breaker ring bus required for loads over 100MW and based on tapped lines of 100MW or less.									
Cranes Corner Substation (Loads contain Area Load, Bridging, and Customer Load)																		
			2019 Actual Summer Peak Loading (MVA)	2020 Actual Summer Peak Loading (MVA)	2021 Actual Summer Peak Loading (MVA)	2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Summer Projection (MVA)	2025 Summer Projection (MVA)	2026 Summer Projection (MVA)	2027 Summer Projection (MVA)	2028 Summer Projection (MVA)	2029 Summer Projection (MVA)	2030 Summer Projection (MVA)	2031 Summer Projection (MVA)	2032 Summer Projection (MVA)	2033 Summer Projection (MVA)	2034 Summer Projection (MVA)
Substation Total			85.3	87.4	84.4	82.0	85.3	87.0	106.7	108.5	125.2	128.0	167.9	209.1	230.5	233.3	235.3	237.5
Substation Total Calculation for 100 MW or Less NERC Tapped Line Load Criteria			81.0	83.0	80.2	77.9	81.0	82.6	102.2	104.0	119.8	122.4	161.3	201.4	222.3	224.8	226.8	228.8
Transformer	Nameplate	NOL																
TX #1	84	92.4	39.3	40.5	37.4	38.0	37.8	39.0	40.2	41.4	57.1	58.6	78.9	99.9	111.0	112.8	114.3	115.8
TX #2	75	82.5	46.0	46.9	47.0	44.0	47.5	48.0	66.5	67.1	68.1	69.4	89.0	109.2	119.5	120.4	121.0	121.6
Garrisonville Sub Area													Tx # 1 is Overloaded in 2029. Substation exceeds NERC 100MW requirement. Substation was built without having the four-breaker ring bus required for loads over 100MW and based on tapped lines of 100MW or less.					
Garrisonville Substation (Loads contain Area Load, bridging and customer load)																		
			2019 Actual Summer Peak Loading (MVA)	2020 Actual Summer Peak Loading (MVA)	2021 Actual Summer Peak Loading (MVA)	2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Summer Projection (MVA)	2025 Summer Projection (MVA)	2026 Summer Projection (MVA)	2027 Summer Projection (MVA)	2028 Summer Projection (MVA)	2029 Summer Projection (MVA)	2030 Summer Projection (MVA)	2031 Summer Projection (MVA)	2032 Summer Projection (MVA)	2033 Summer Projection (MVA)	2034 Summer Projection (MVA)
Substation Total			47.4	47.0	47.4	49.7	47.3	47.0	64.7	65.3	66.0	100.0	138.6	178.7	198.8	200.2	200.9	201.6
Substation Total Calculation for 100 MW or Less NERC			45.0	44.7	45.0	47.2	44.9	44.7	61.4	62.1	62.7	95.8	133.5	172.6	192.1	193.4	194.1	194.7
Transformer	Nameplate	NOL																
TX #1	84.0	92.4	47.4	47.0	47.4	49.7	47.3	47.0	47.5	47.9	48.4	65.6	85.1	105.2	115.5	116.3	116.8	117.3
TX #2	84.0	92.4	0.0	0.0	0.0	0.0	0.0	0.0	17.2	17.4	17.5	34.4	53.6	73.4	83.3	83.9	84.1	84.2

Table I.C.1.c															
								Energization of Centreport Substation							
Centreport Sub															
			2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Projected Summer Peak Loading (MVA)	2025 Projected Summer Peak Loading (MVA)	2026 Projected Summer Peak Loading (MVA)	2027 Projected Summer Peak Loading (MVA)	2028 Projected Summer Peak Loading (MVA)	2029 Projected Summer Peak Loading (MVA)	2030 Projected Summer Peak Loading (MVA)	2031 Projected Summer Peak Loading (MVA)	2032 Projected Summer Peak Loading (MVA)	2033 Projected Summer Peak Loading (MVA)	2034 Projected Summer Peak Loading (MVA)
Substation Total			0.00	0.00	0.00	0.00	0.00	33.00	66.72	142.72	221.43	260.30	261.73	261.73	261.73
Substation Total Calculation for 300 MW NERC Limit			0.00	0.00	0.00	0.00	0.00	33.00	66.72	142.72	221.43	260.30	261.73	261.73	261.73
Transformer	Nameplate	NOL													
TX #1	112	120	0.00	0.00	0.00	0.00	0.00	31.00	40.72	52.72	64.72	65.43	65.43	65.43	65.43
TX #2	112	120	0.00	0.00	0.00	0.00	0.00	2.00	22.00	46.00	64.72	65.43	65.43	65.43	65.43
TX #3	112	120	0.00	0.00	0.00	0.00	0.00	0.00	2.00	22.00	46.00	64.72	65.43	65.43	65.43
TX #4	112	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	20.00	32.00	32.72	32.72	32.72
TX #5	112	120	0.00	0.00	0.00	0.00	0.00	0.00	2.00	14.00	26.00	32.72	32.72	32.72	32.72

I. NECESSITY FOR THE PROPOSED PROJECT

D. If power flow modeling indicates that the existing system is, or will at some future time be, inadequate under certain contingency situations, provide a list of all these contingencies and the associated violations. Describe the critical contingencies including the affected elements and the year and season when the violation(s) is first noted in the planning studies. Provide the applicable computer screenshots of single-line diagrams from power flow simulations depicting the circuits and substations experiencing thermal overloads and voltage violations during the critical contingencies described above.

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

E. Describe the feasible project alternatives, if any, considered for meeting the identified need including any associated studies conducted by the Applicant or analysis provided to the RTO. Explain why each alternative was rejected.

Response: The Company considered transmission and distribution electrical alternatives to the proposed Project, as described below.

Transmission Alternative

Converted Line #29 (Line #2305)

Under this transmission alternative scenario, the Company would cut Line #29 (Line #2305) once converted to 230 kV operation, instead of existing Line #2104 ore rebuilt Line #2157, which are in the same corridor.[20] However, existing 115 kV Line #29 will be located in the middle of the rebuilt right-of-way transmission corridor, which would require replacement and/or installation of numerous structures in order for the proposed transmission line to cross under other existing transmission lines (*i.e.*, either Line #2104 or Line #2157) in the corridor. Accordingly, the Company rejected this transmission alternative.

Distribution Alternatives

Cranes Corner Substation

Under this distribution alternative scenario, the Cranes Corner Substation, as the closest source substation to the Customer's data center development, would serve the full load of the development. However, as discussed in Sections I.A and I.C, if the Customer's projected load at full build out (262 MW) were connected to the Cranes Corner Substation, the existing distribution substation equipment would overload, as the two existing transformers are more than 50% loaded as of 2023 (85 MVA). See Attachment 1.C.1.a. Connecting the Customer's full projected load to Cranes Corner Substation alone would result in (i) substation transformer thermal overloads, and (ii) violation of the Company's transmission system reliability criteria set forth in the FIR document. See also Section I.C. Accordingly, the Company rejected this distribution alternative.

Garrisonville Substation

Under this distribution alternative scenario, the Garrisonville Substation, as the next closest source substation to the Customer's data center development, would serve the full load of the development. However, as discussed in Sections I.A and I.C, if the Customer's projected load at full build out (262 MW) were connected to the Garrisonville Substation, the existing distribution substation equipment would overload, as the two existing transformers are more than 28% loaded as of 2023

[20] *See supra*, n. 1.

(47.3 MVA). See Attachment 1.C.1.a. Connecting the Customer's requested load to Garrisonville Substation alone would result in (i) substation transformer thermal overloads, and (ii) violation of the Company's transmission system reliability criteria set forth in the FIR document. See Section I.C. Accordingly, the Company rejected this distribution alternative.

Analysis of Demand-Side Resources:

Pursuant to the Commission's November 26, 2013, Order entered in Case No. PUE-2012-00029,[21] and its November 1, 2018, Final Order entered in Case No. PUR-2018-00075,[22] the Company is required to provide analysis of demand-side resources ("DSM") incorporated into the Company's planning studies. DSM is the broad term that includes both energy efficiency ("EE") and demand response ("DR"). In this case, the Company has identified a need for the proposed Project in order to provide requested service consistent with mandatory NERC Reliability Standards, while maintaining the overall long-term reliability of its transmission system.[23] Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs because PJM only dispatches DR when the system is under stress (*i.e.*, a system emergency). Accordingly, while existing DSM is considered to the extent the load forecast accounts for it, DR that has been bid into PJM's capacity market is not a factor in this particular application because of the identified need for the Project. Based on these considerations, the evaluation of the Project demonstrated that despite accounting for DSM consistent with PJM's methods, the Project is necessary.

Incremental DSM also will not eliminate the need for the Project. As discussed in Section I.C, the need is based on the Company's obligation to interconnect the Customer's new data center development consistent with the FIR document and mandatory NERC Reliability Standards. As reflected in Section I.A, the Customer's projected load fully built out is approximately 262 MW. By way of comparison, the Company achieved demand savings of 276.5 MW (net) / 350.0 MW (gross) from its DSM Programs in 2023.

[21] *Application of Virginia Electric and Power Company d/b/a Dominion Virginia Power for approval and certification of electric facilities: Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek-Whealton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station*, Case No. PUR-2012-00029, Final Order (Nov. 26, 2023).

[22] *Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq.*, Case No. PUR-2018-00075, Final Order (Nov. 1, 2018).

[23] While the PJM load forecast does not directly incorporate DR, its load forecast incorporates variables derived from Itron that reflect EE by modeling the stock of end-use equipment and its usages. Further, because PJM's load forecast considers the historical non-coincident peak ("NCP") for each load serving entity ("LSE") within PJM, it reflects the actual load reductions achieved by DSM programs to the extent an LSE has used DSM to reduce its NCPs.

I. NECESSITY FOR THE PROPOSED PROJECT

F. Describe any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed project, including the number of circuits and normal and emergency ratings of the facilities.

Response: Not applicable.[24]

[24] *But see supra*, n. 1.

I. NECESSITY FOR THE PROPOSED PROJECT

G. Provide a system map, in color and of suitable scale, showing the location and voltage of the Applicant's transmission lines, substations, generating facilities, etc., that would affect or be affected by the new transmission line and are relevant to the necessity for the proposed line. Clearly label on this map all points referenced in the necessity statement.

Response: See Attachment I.G.1.

CENTREPORT 230 kV SUBSTATION PROJECT

- 115 kV Transmission Line
- 230 kV Transmission Line
- 500 kV Transmission Line
- ▲ Switching Station, Substation, DP

0 0.38 0.75 1.5 2.25 3 Miles

POSSUM POINT SUB
FULLER ROAD SUB
QUANTICO SUB
AQUIA SUB
AQUIA HARBOUR SUB
GARRISONVILLE SUB
SPARTAN SUB (future)
CENTREPORT SUB (Proposed)
SOPRANO SUB (Future)
BARITONE SUB (Future)
TENOR SUB (Future)
ALTO SUB (Future)
OPERA SUB (Future)
CLASSICAL SUB (Future)
MOUNTAIN VIEW SUB (Future)
WREN SUB (Future)
WYATT SUB (Future)
CRANES CORNER SUB
FREDERICKSBURG SUB

I. NECESSITY FOR THE PROPOSED PROJECT

H. Provide the desired in-service date of the proposed project and the estimated construction time.

Response: The desired in-service target date for the proposed Project is July 1, 2027.

The Company estimates it will take approximately 24 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by June 27, 2025. Should the Commission issue a final order by June 27, 2025, the Company estimates that construction should begin around September 2026, and be completed by July 1, 2027. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due to labor shortages or materials/supply issues. This schedule is also contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to obtain property rights for substation use without the need for additional litigation.

In addition, the Company is actively monitoring regulatory changes and requirements associated with the NLEB and how they could potentially impact construction timing associated with TOYRs. The USFWS previously indicated that it planned to issue final NLEB guidance to replace the interim guidance by April 1, 2024; the interim guidance has been extended by USFWS until late summer 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS.

The Company is also monitoring potential regulatory changes associated with the potential up-listing of the TCB. On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the ESA. USFWS recently extended its Final Rule issuance target from September 2023 to September 2024. The Company is actively tracking this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

Any adjustments to this Project schedule resulting from these or similar challenges

could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target date (*i.e.*, July 1, 2027) and an authorization sunset date (*i.e.*, July 1, 2028) for energization of the Project.

I. NECESSITY FOR THE PROPOSED PROJECT

I. Provide the estimated total cost of the project as well as total transmission-related costs and total substation-related costs. Provide the total estimated cost for each feasible alternative considered. Identify and describe the cost classification (e.g. "conceptual cost," "detailed cost," etc.) for each cost provided.

Response: The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $50.5 million, which includes approximately $34.1 million for transmission-related work and approximately $16.4 million for substation-related work (2024 dollars).[25]

A breakdown of the estimated conceptual costs for transmission-related work associated with the Proposed and Alternative Routes are provided below. The substation-related costs are the same for the Alternative Routes as those identified along the Proposed Route (Route 2).

Proposed Route (Route 2): $34.1 million

Alternative Route 1: $40.6 million

Alternative Route 3: $30.0 million

Alternative Route 4: $35.0 million

[25] *See supra*, n. 6.

I. NECESSITY FOR THE PROPOSED PROJECT

J. If the proposed project has been approved by the RTO, provide the line number, regional transmission expansion plan number, cost responsibility assignments, and cost allocation methodology. State whether the proposed project is considered to be a baseline or supplemental project.

Response: The Project is classified as a supplemental project (Supplemental Project DOM-2024-0005) initiated by the TO in order to interconnect new customer load. The Project was submitted to PJM at the February 6, 2024 TEAC Meeting, and the solution slide was submitted to PJM at the August 6, 2024 TEAC Meeting. See Attachment I.J.1 and Attachment I.J.2, respectively. While the Company has not received a Supplemental ID# for this Project, the Project as originally submitted to PJM will be included in the 2029 RTEP model.

The Project is presently 100% cost allocated to DOM Zone.

Dominion Supplemental Projects

Transmission Expansion Advisory Committee
February 6, 2024

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

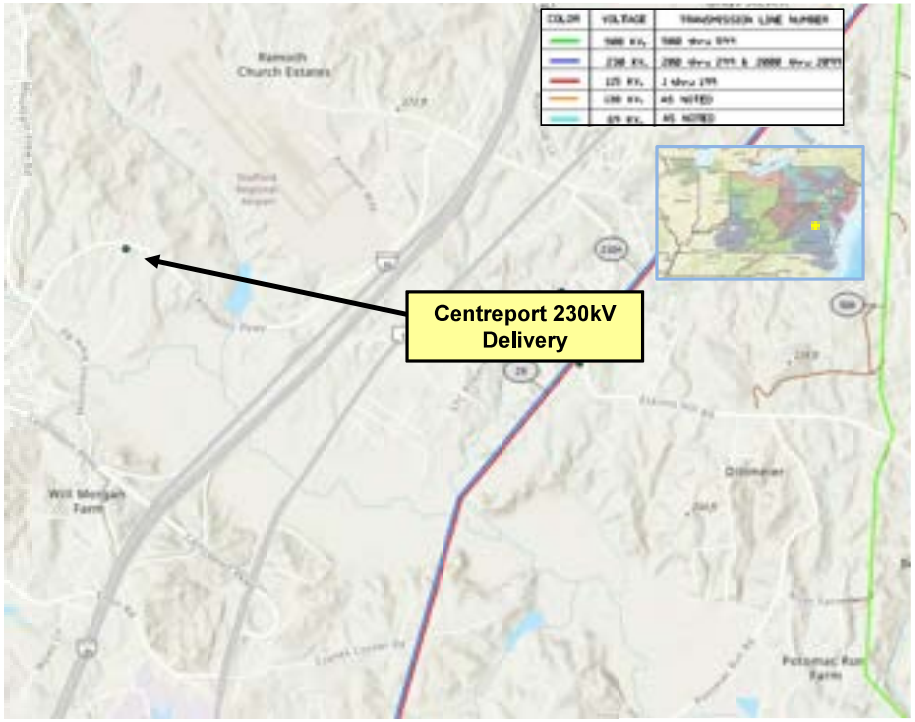
Need Number: DOM-2024-0005
Process Stage: Need Meeting 02/06/2024
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP request for a new 230 kV delivery point (Centreport) to serve a data center customer in Stafford VA with a total load in excess of 100 MW. Requested in-service date is 6/30/2027.



Initial In-Service Load	Projected 2028 Load
Summer: 4 MW Winter: 0 MW	Summer: 48 MW Winter: 48 MW

Dominion Supplemental Projects

Transmission Expansion Advisory Committee
August 6, 2024

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

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Dominion Transmission Zone: Supplemental Customer Load Request

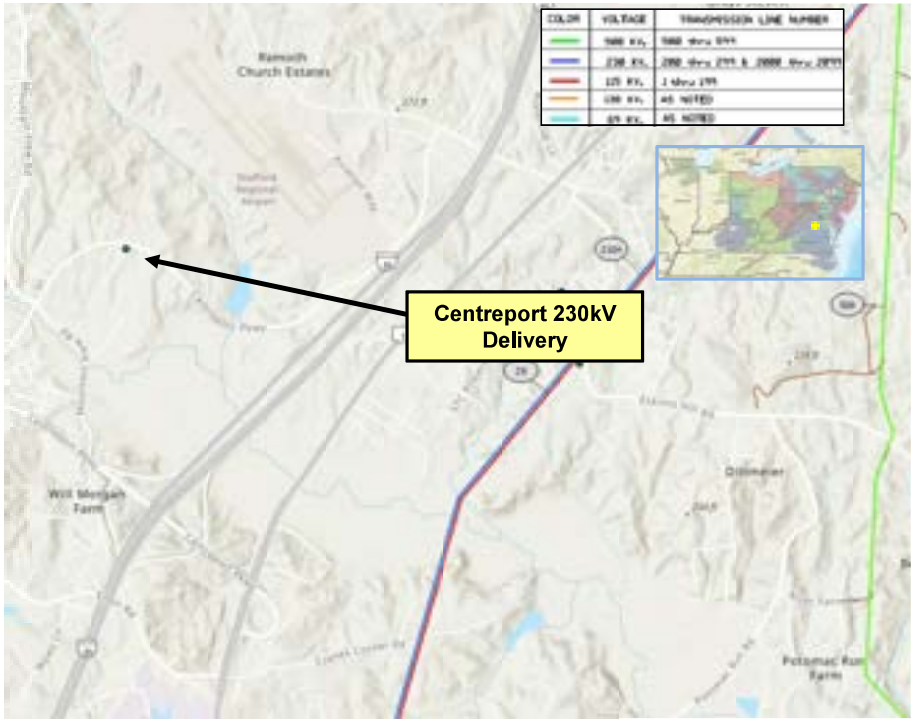
Need Number: DOM-2024-0005
Process Stage: Need Meeting 02/06/2024
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP request for a new 230 kV delivery point (Centreport) to serve a data center customer in Stafford VA with a total load in excess of 100 MW. Requested in-service date is 07/01/2027.



Initial In-Service Load	Projected 2029 Load
Summer: 4 MW Winter: 0 MW	Summer: 136 MW Winter: 88 MW

Dominion Transmission Zone: Supplemental Centreport 230kV Delivery - DEV

Need Number: DOM-2024-0005

Process Stage: Solutions Meeting 08/06/2024

Proposed Solution:

- Construct Centreport 230 kV switching station with 4-breaker ring bus configuration.
- Cut Line #2104 (Spartan – Cranes Corner) and extend double-circuit 230kV lines for approx. 2.5 miles to Centreport Switching Station.

Estimated Project Cost: $30.0 M (Total)

Transmission Line	$12M
230kV Substation	$18M

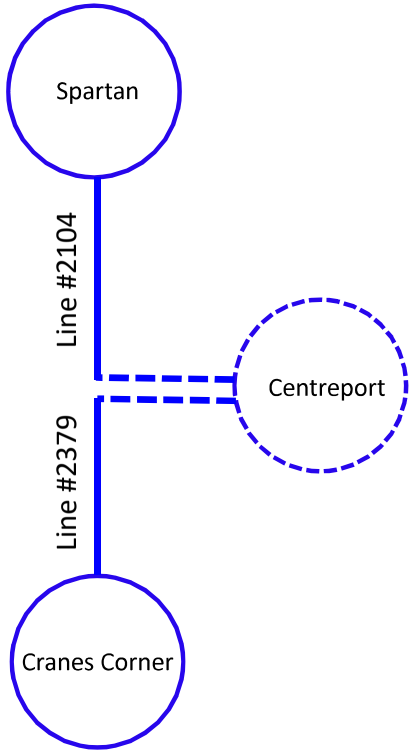
Alternatives Considered:

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

Projected In-service Date: 07/01/2027

Project Status: Conceptual

Model: 2029 RTEP



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I. NECESSITY FOR THE PROPOSED PROJECT

K. If the need for the proposed project is due in part to reliability issues and the proposed project is a rebuild of an existing transmission line(s), provide five years of outage history for the line(s), including for each outage the cause, duration and number of customers affected. Include a summary of the average annual number and duration of outages. Provide the average annual number and duration of outages on all Applicant circuits of the same voltage, as well as the total number of such circuits. In addition to outage history, provide five years of maintenance history on the line(s) to be rebuilt including a description of the work performed as well as the cost to complete the maintenance. Describe any system work already undertaken to address this outage history.

Response: Not applicable. See Section I.A.

I. NECESSITY FOR THE PROPOSED PROJECT

L. If the need for the proposed project is due in part to deterioration of structures and associated equipment, provide representative photographs and inspection records detailing their condition.

Response: Not applicable. See Sections I.A and I.C.

I. NECESSITY FOR THE PROPOSED PROJECT

M. In addition to the other information required by these guidelines, applications for approval to construct facilities and transmission lines interconnecting a Non-Utility Generator ("NUG") and a utility shall include the following information:

1. The full name of the NUG as it appears in its contract with the utility and the dates of initial contract and any amendments;

2. A description of the arrangements for financing the facilities, including information on the allocation of costs between the utility and the NUG;

3. a. For Qualifying Facilities ("QFs") certificated by Federal Energy Regulatory Commission ("FERC") order, provide the QF or docket number, the dates of all certification or recertification orders, and the citation to FERC Reports, if available;

b. For self-certificated QFs, provide a copy of the notice filed with FERC;

4. Provide the project number and project name used by FERC in licensing hydroelectric projects; also provide the dates of all orders and citations to FERC Reports, if available; and

5. If the name provided in 1 above differs from the name provided in 3 above, give a full explanation.

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

N. Describe the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations and other ground facilities associated with the proposed project.

Response: The proposed Project will serve the Customer in the Stafford Load Area generally depicted in Attachment I.A.1. See Sections I.A and I.C. The Project also may be used to support future load in the area.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

1. Provide the length of the proposed corridor and viable alternatives.

Response: The approximate lengths of the Proposed and Alternative Routes for the Centreport Loop are as follows:

Proposed Route (Route 2): 2.5 miles

Alternative Route 1: 3.5 miles

Alternative Route 3: 2.3 miles

Alternative Route 4: 2.2 miles

See Section II.A.9 for an explanation of the Company's route selection process, as well as the Environmental Routing Study referenced therein. Also, see Attachment II.A.1 for an overview of Proposed and Alternative Routes.

CENTREPORT SUB

CRANES CORNER SUB

Woods of Able Lake

Peacock Station

Wallace Farms

Butterfield

Will Morgan Farm

Wallaces Corner

England Run North

Chapel View

Stafford High School

Dittmeier

322 ft

217 ft

204 ft

Centreport Pkwy

Mountain View Rd

Eskimo Hill Rd

Truslow Rd

Lyons Blvd

Plantation Dr

Enon Rd

Wyatt Ln

Cranes Corner Rd

Air Park Blvd

Potomac Run Rd

Cherry Laurel Dr

Cambridge

95

1

Route Alternative Lengths

- Proposed Route (Route 2) - 2.5 miles
- Alternative Route 1 - 3.5 miles
- Alternative Route 3 - 2.3 miles
- Alternative Route 4 - 2.2 miles

OH WV KY Virginia TN

Project Location

- Existing Substation
- Proposed Substation
- Dominion Exsiting Transmission Line

Route Alternatives

- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4

0 750 1,500

Feet

1:20,000

Attachment II.A.1
Route Overview
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

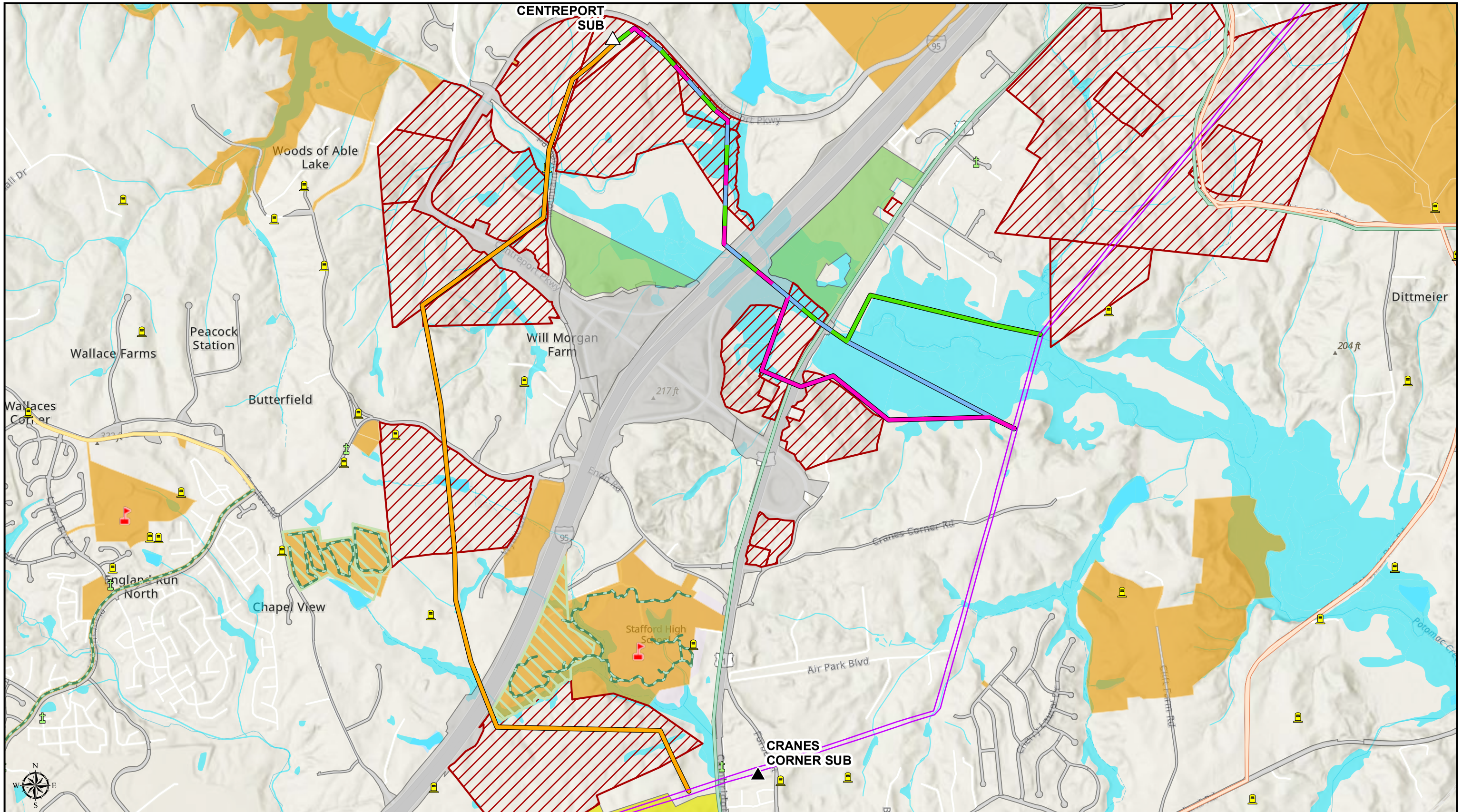
II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

2. Provide color maps of suitable scale (including both general location mapping and more detailed GIS-based constraints mapping) showing the route of the proposed line and its relation to: the facilities of other public utilities that could influence the route selection, highways, streets, parks and recreational areas, scenic and historic areas, open space and conservation easements, schools, convalescent centers, churches, hospitals, burial grounds/cemeteries, airports and other notable structures close to the proposed project. Indicate the existing linear utility facilities that the line is proposed to parallel, such as electric transmission lines, natural gas transmission lines, pipelines, highways, and railroads. Indicate any existing transmission ROW sections that are to be quitclaimed or otherwise relinquished. Additionally, identify the manner in which the Applicant will make available to interested persons, including state and local governmental entities, the digital GIS shape file for the route of the proposed line.

Response: See Attachment II.A.2. No portion of the right-of-way is proposed to be quitclaimed or relinquished.

Dominion Energy Virginia will make the digital Geographic Information System shape file available to interested persons upon request to the Company's legal counsel as listed in the Project Application.



- Existing Substation
- Proposed Substation
- Dominion Exsiting Transmission Line

Route Alternatives

- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4
- Public Schools
- Stafford County Cemeteries
- Places of Worship
- DWR Birding Wildlife Trail
- State Existing Trail
- Managed Trail
- Stafford County Trail
- Stafford County Parks Community Place
- Planned Devlopment
- Northern Virginia Conservation Trust Easement
- Virginia Outdoors Foundation Easement
- Public Lands/County Owned Land
- Virginia Department of Trasnportation Right-of-Way
- Wetland

0 750 1,500
Feet
1:20,000

Attachment II.A.2
Constraints Map
Centreport 230 kV Electric Transmission Project

Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

3. Provide a separate color map of a suitable scale showing all the Applicant's transmission line ROWs, either existing or proposed, in the vicinity of the proposed project.

Response: See Attachment I.G.1 for existing transmission line rights-of-way and Attachment II.B.3.d for proposed and future transmission line rights-of-way in the Project area.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

4. To the extent the proposed route is not entirely within existing ROW, explain why existing ROW cannot adequately service the needs of the Applicant.

Response: There is no existing electric transmission right-of-way that connects the proposed Centreport Substation to the existing transmission system that is adequate to accommodate the Project as proposed.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

5. Provide drawings of the ROW cross section showing typical transmission line structure placements referenced to the edge of the ROW. These drawings should include:

a. ROW width for each cross section drawing;

b. Lateral distance between the conductors and edge of ROW;

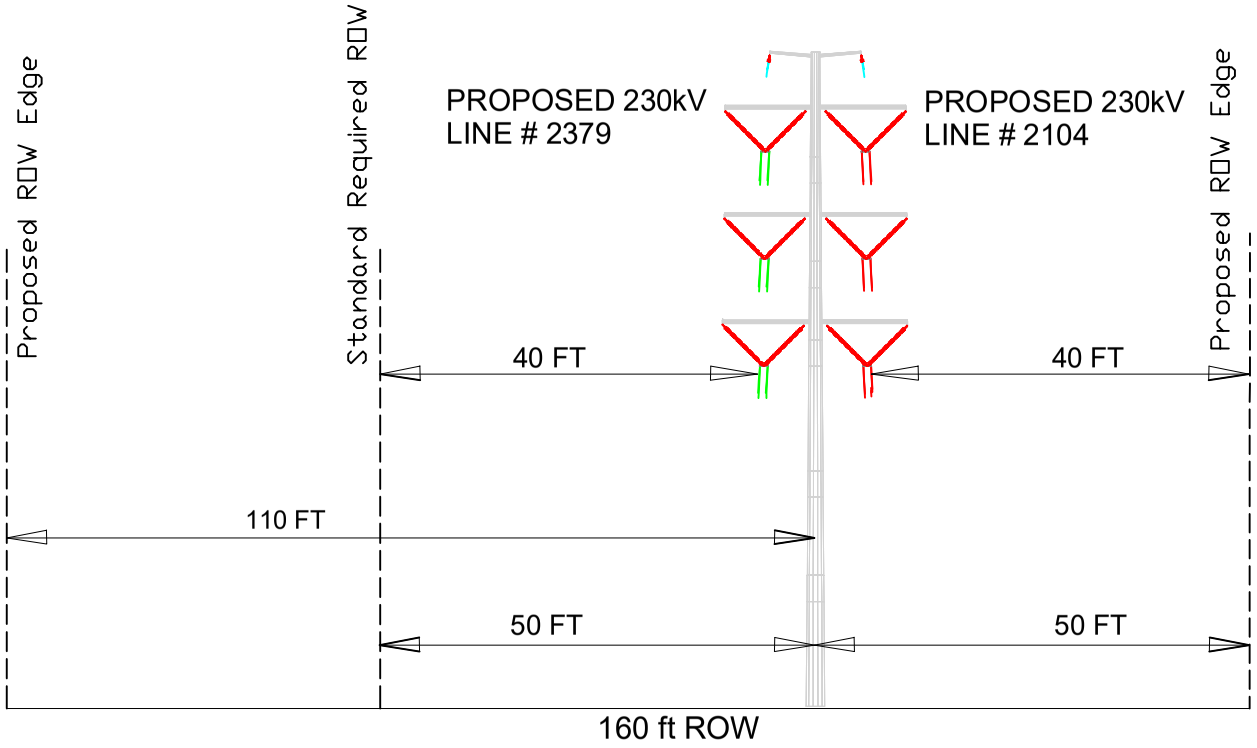
c. Existing utility facilities on the ROW; and

d. For lines being rebuilt in existing ROW, provide all of the above (i) as it currently exists, and (ii) as it will exist at the conclusion of the proposed project.

Response: See Attachments II.A.5.a.

For additional information on the structures, see Section II.B.3.

NOTE: REQUIRED ROW FOR CENTERPORT LOOP DOUBLE CIRCUIT MONOPOLE LINE IS 100'.
ROW OF 160' IS TO ACCOMMODATE FUTURE DEVELOPMENT ON CORRIDOR FOR NEW SUBSTATION REQUESTED IN THE AREA.



PROPOSED ROW CONFIGURATION

Attachment II.A.5.a

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 2379/1 (2104/1)-2379/20 (2104/20) TYPICAL RIGHT OF WAY LOOKING TOWARDS CENTREPORT SUBSTATION	II.A.5.a DRAWN BY: SDH

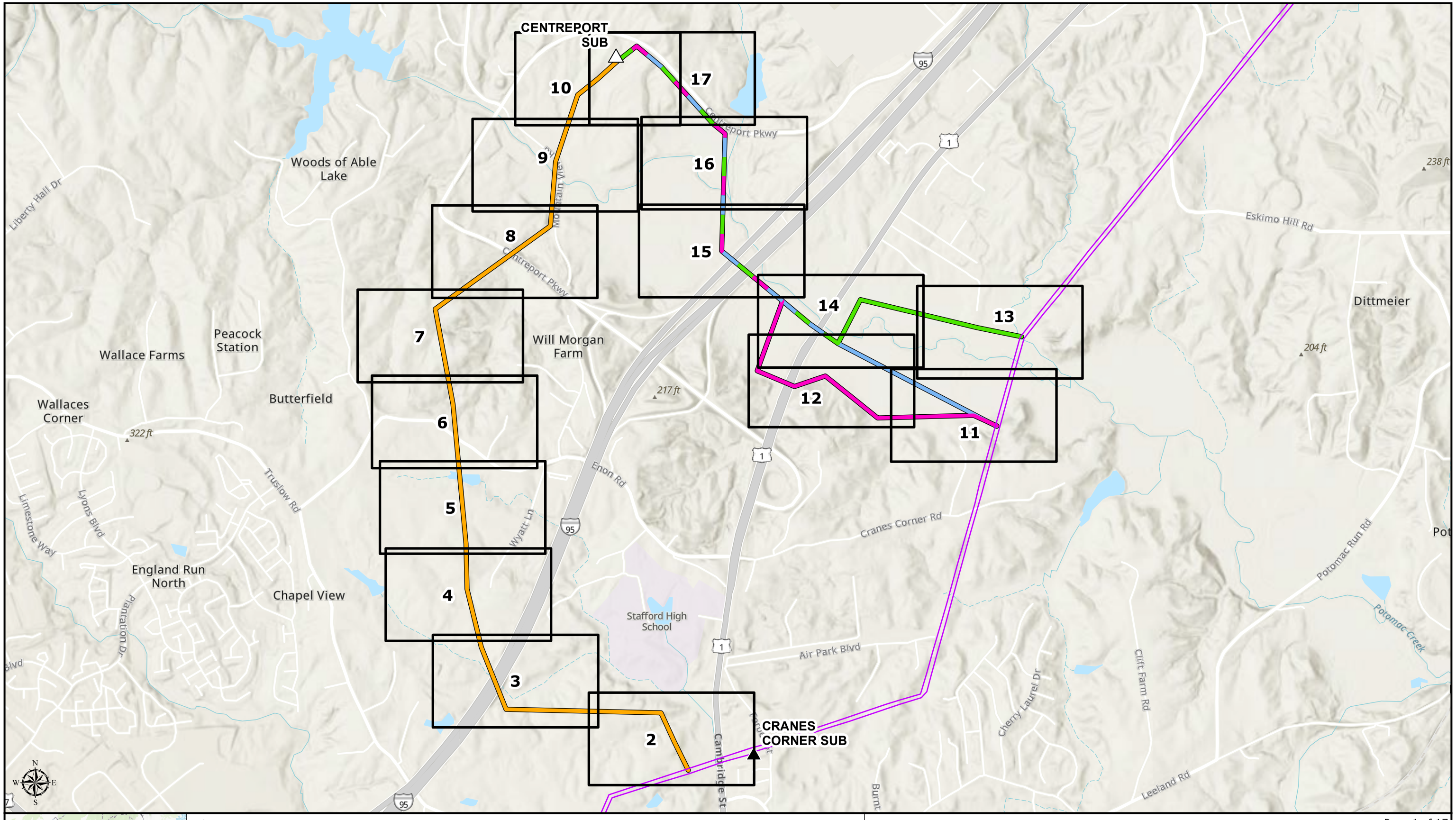
II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

6. Detail what portions of the ROW are subject to existing easements and over what portions new easements will be needed.

Response: As discussed in Section II.A.4, there is no existing electric transmission right-of-way that connects the proposed Centreport Substation to the existing transmission system. See Attachment II.A.6.

Accordingly, the entire right-of-way of the Proposed Route for the Centreport Loop will require easements for a new-build transmission line.



- Existing Substation
- Proposed Substation
- Dominion Exsiting Transmission Line
- Index Page

Route Alternatives

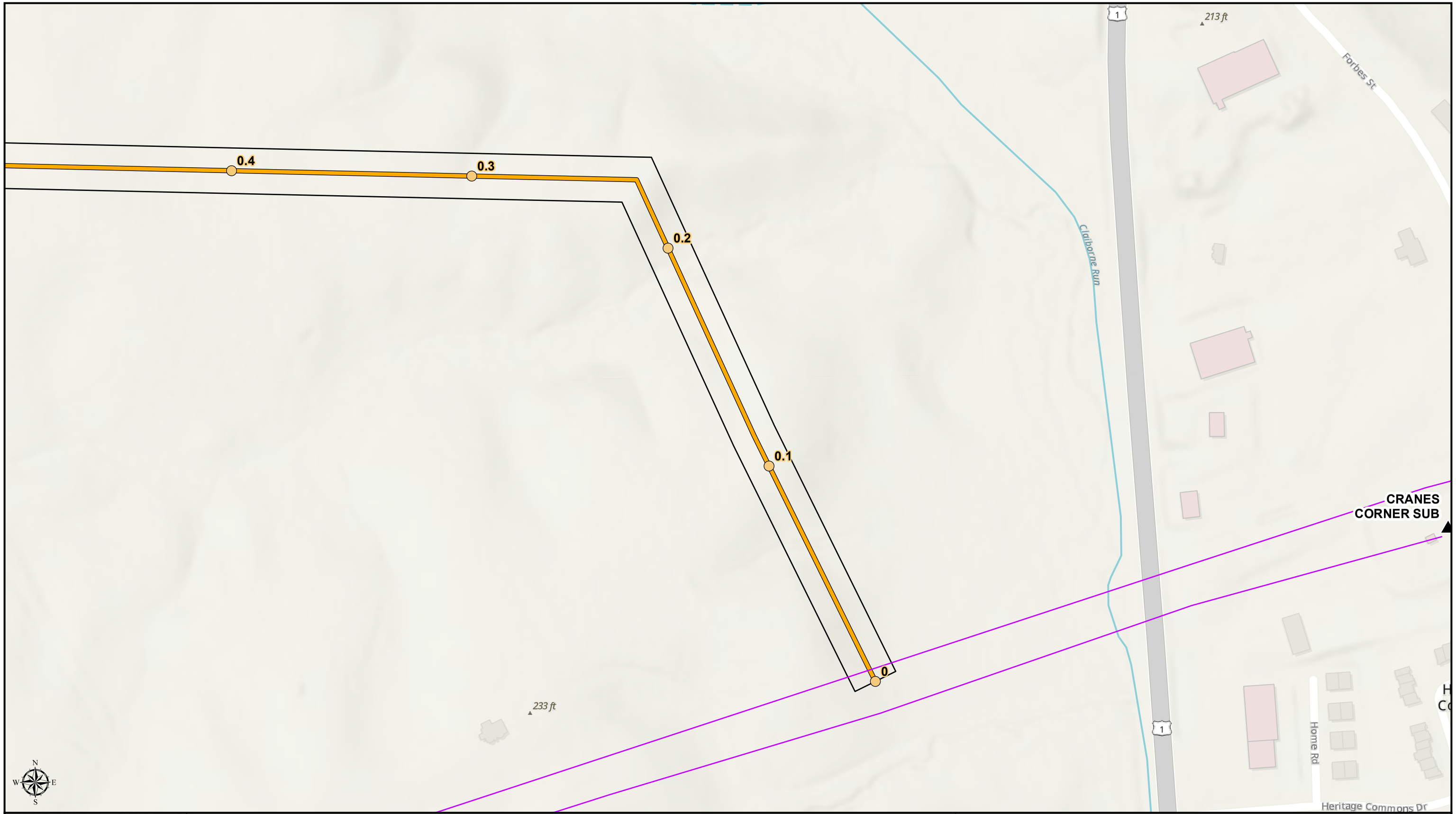
- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4

0 750 1,500
Feet
1:21,000

Attachment II.A.6 Index
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Existing Substation
Dominion Exsiting Transmission Line

Milepost
Alternative Route 1

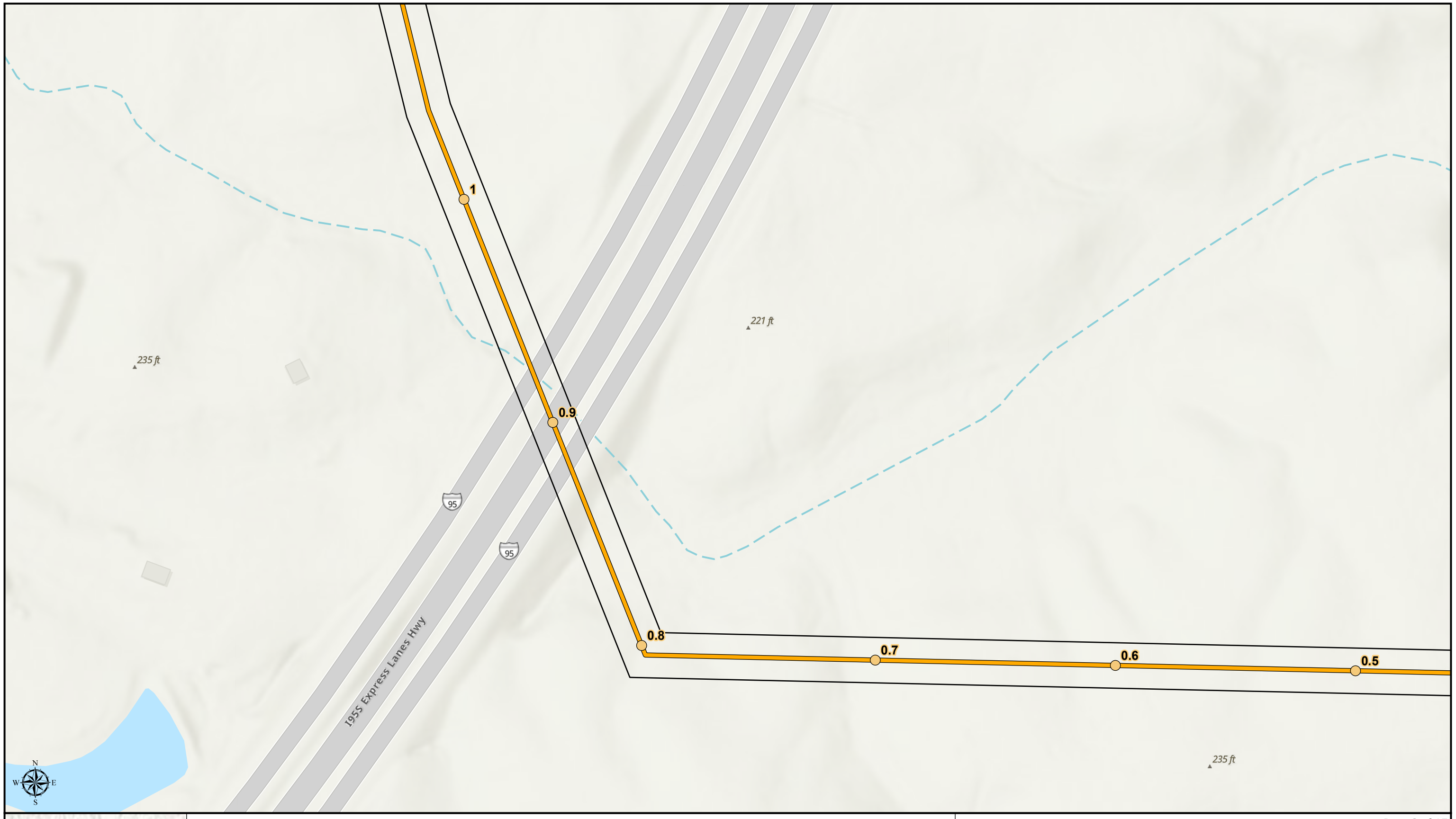
Route Alternatives
Alternative Route 1
100ft Right-of-Way

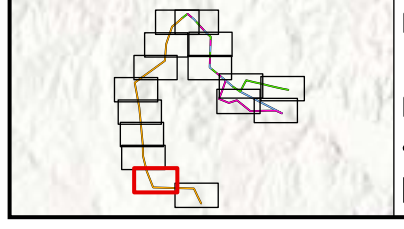
0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy





Milepost

Alternative Route 1

Route Alternatives

Alternative Route 1

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

Centreport 230 kV Electric Transmission Project

Dominion Energy Virginia

Stafford County, Virginia

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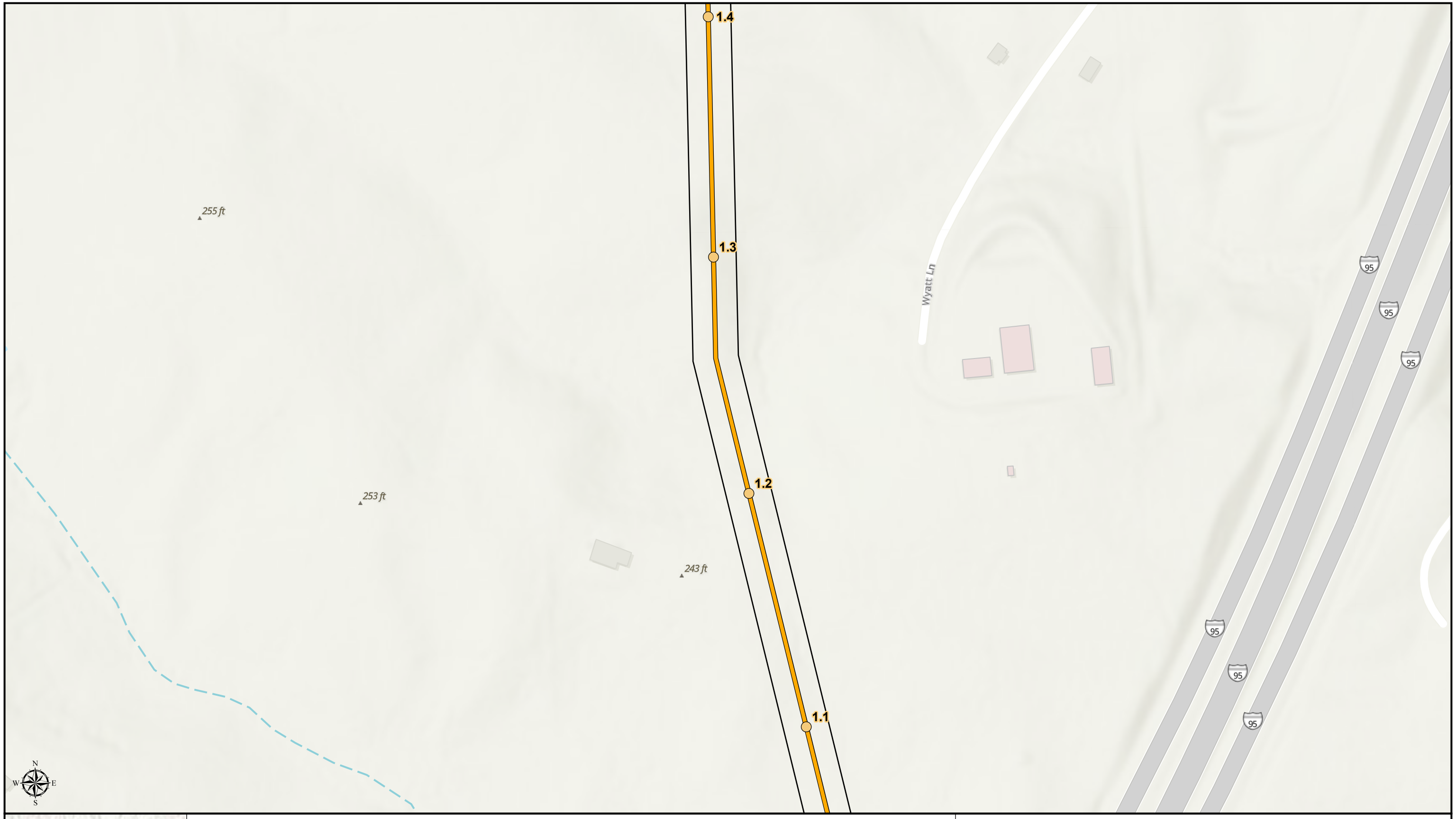
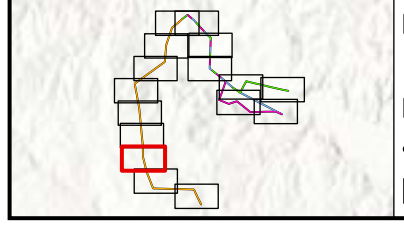
Dominion Energy





Milepost

Alternative Route 1

Route Alternatives

Alternative Route 1

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

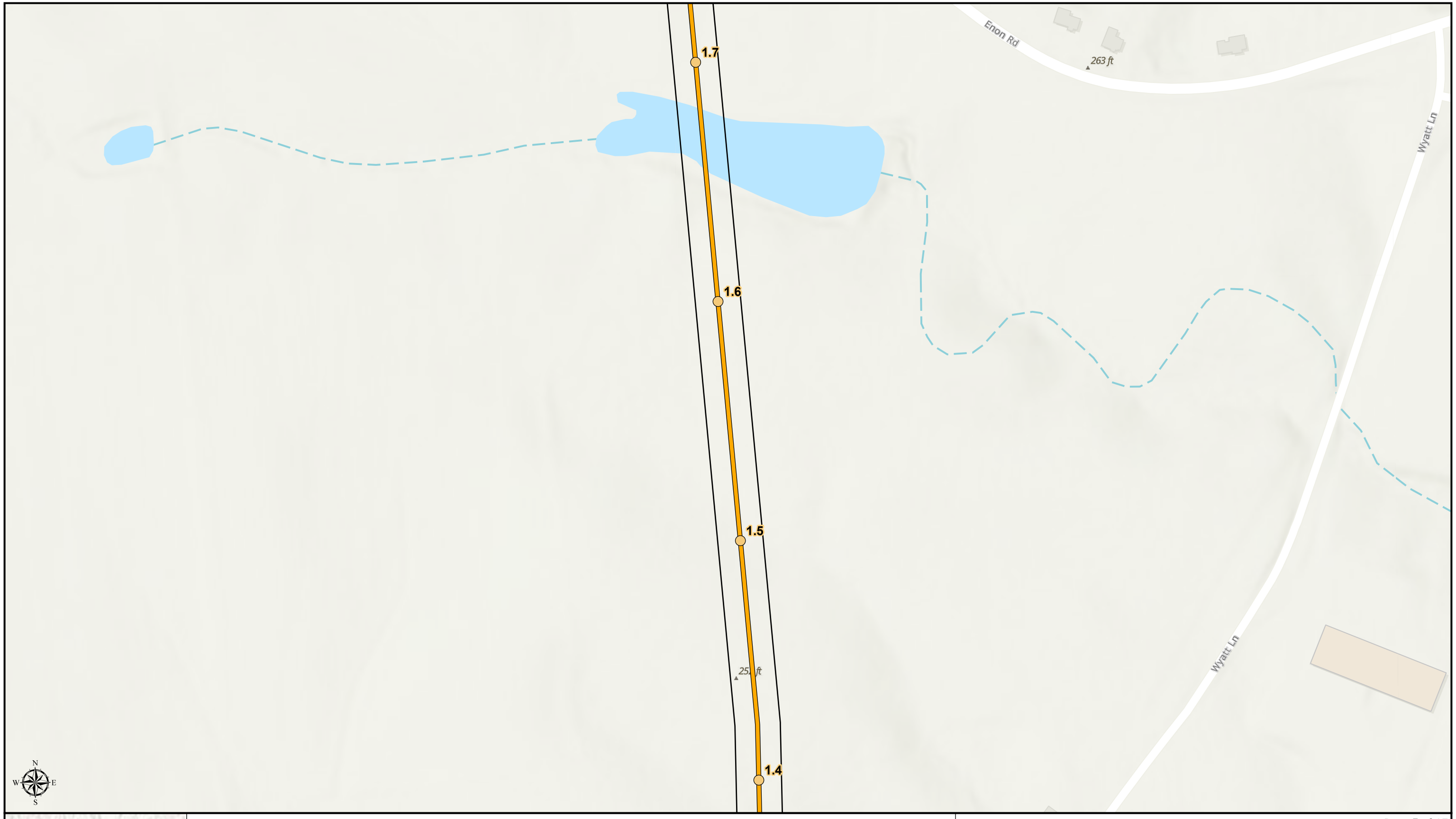
Centreport 230 kV Electric Transmission Project

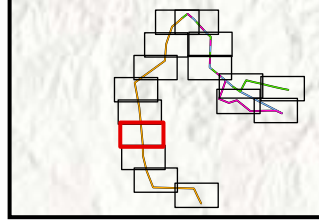
Dominion Energy Virginia

Stafford County, Virginia

ERM

Dominion Energy





Milepost

Alternative Route 1

Route Alternatives

Alternative Route 1

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

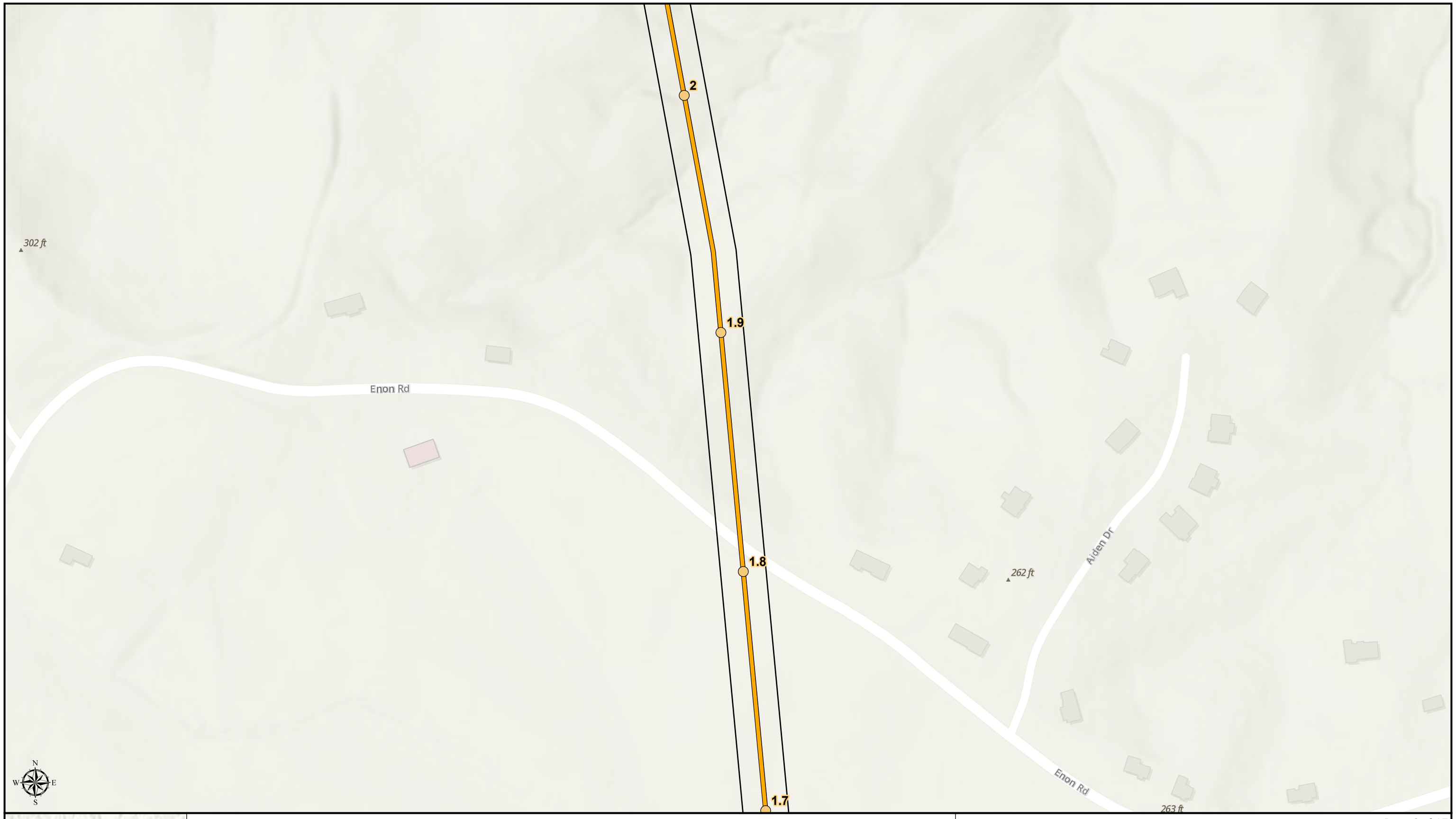
Centreport 230 kV Electric Transmission Project

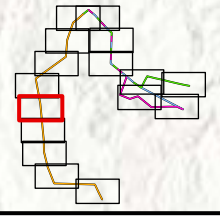
Dominion Energy Virginia

Stafford County, Virginia

ERM

Dominion Energy





Milepost

Alternative Route 1

Route Alternatives

Alternative Route 1

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

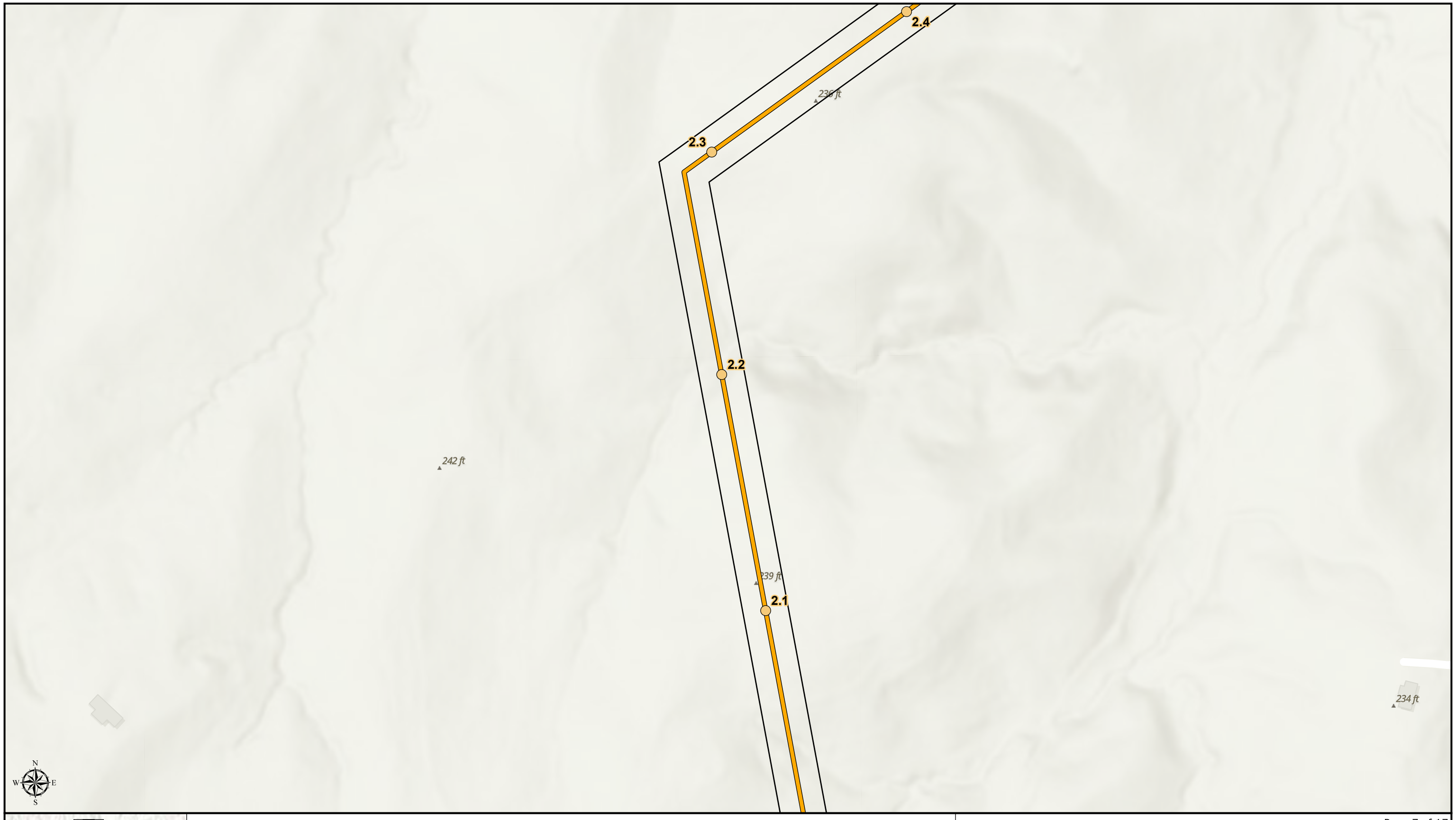
Centreport 230 kV Electric Transmission Project

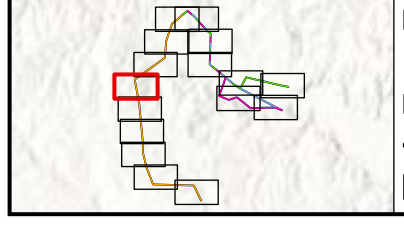
Dominion Energy Virginia

Stafford County, Virginia

ERM

Dominion Energy





Milepost

Alternative Route 1

Route Alternatives

Alternative Route 1

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

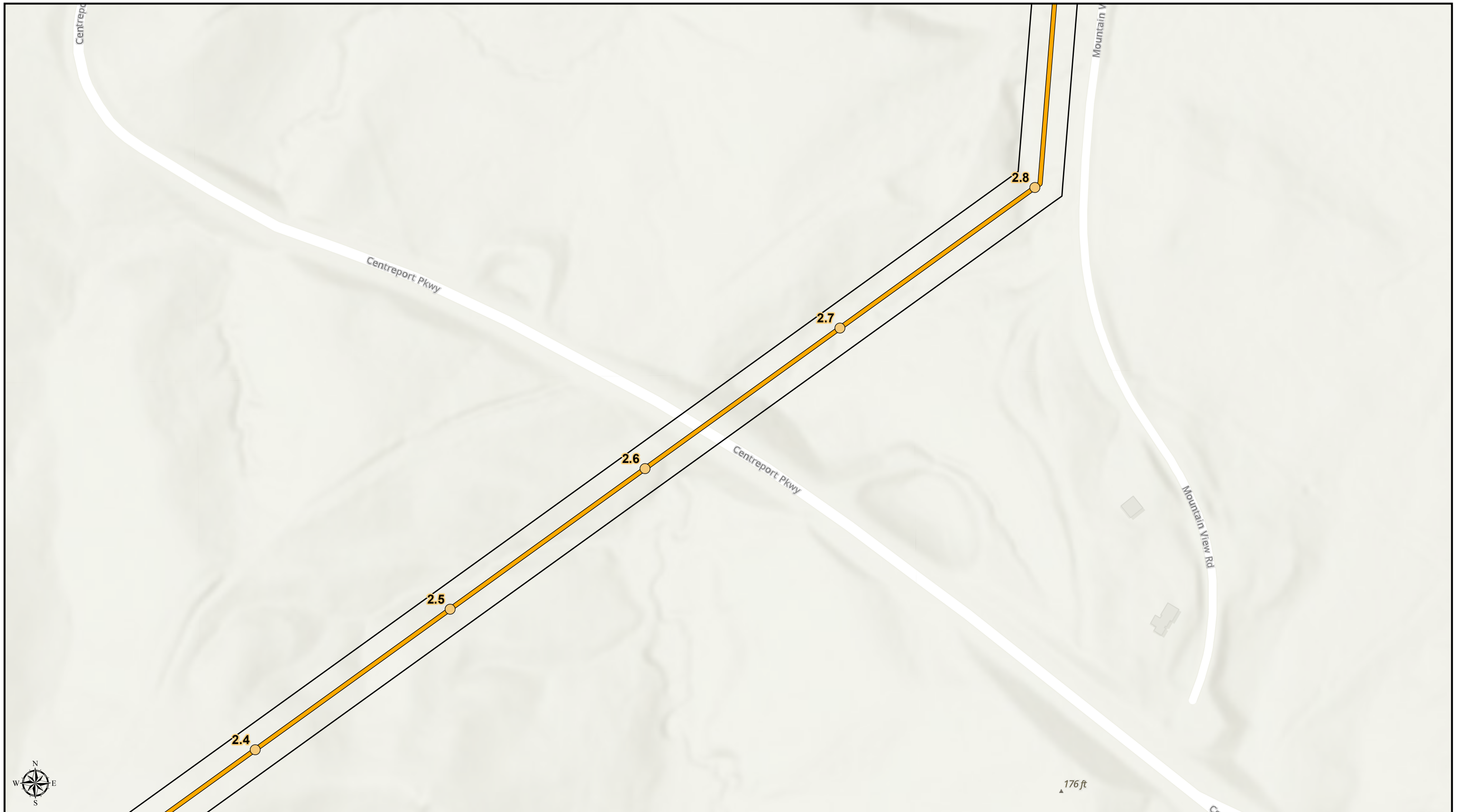
Centreport 230 kV Electric Transmission Project

Dominion Energy Virginia

Stafford County, Virginia

ERM

Dominion Energy



Milepost
- Alternative Route 1

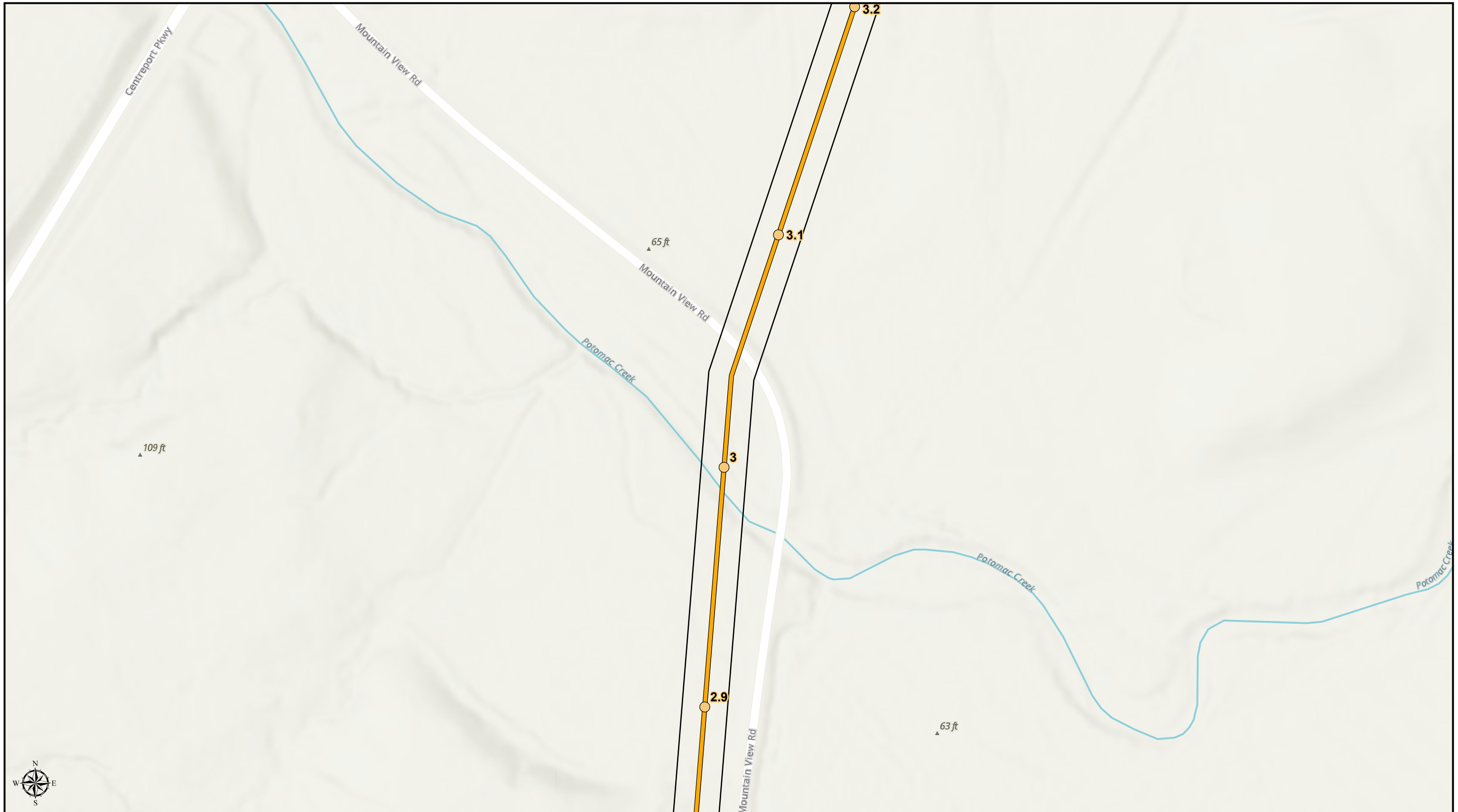
Route Alternatives
- Alternative Route 1
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Milepost
- Alternative Route 1

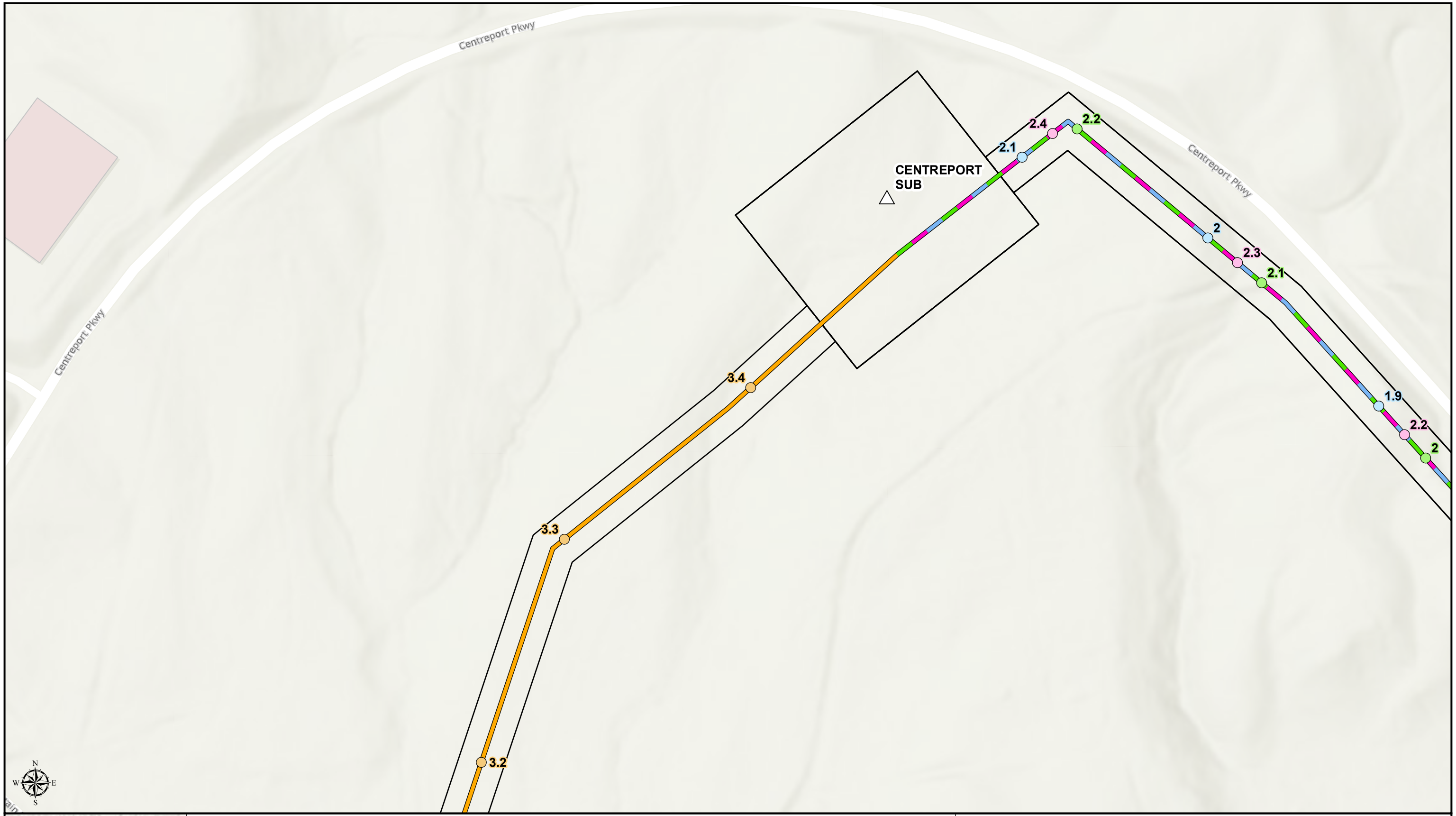
Route Alternatives
- Alternative Route 1
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Proposed Substation

Milepost

Proposed Route (Route 2)

Alternative Route 1

Alternative Route 3

Alternative Route 4

Route Alternatives

Proposed Route (Route 2)

Alternative Route 1

Alternative Route 3

Alternative Route 4

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

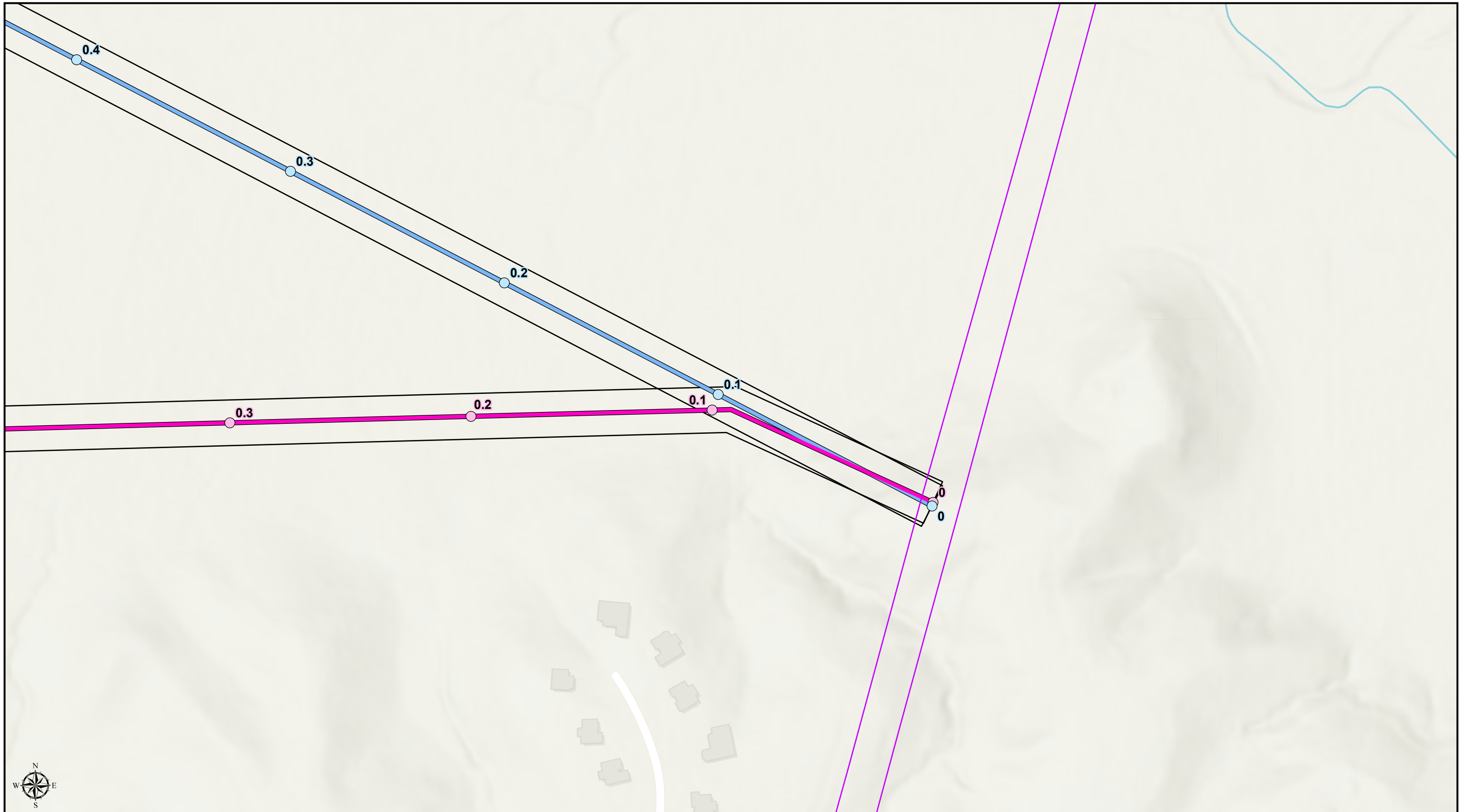
Centreport 230 kV Electric Transmission Project

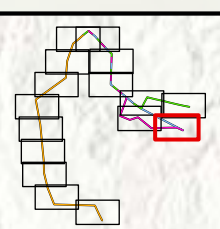
Dominion Energy Virginia

Stafford County, Virginia

ERM

Dominion Energy





Dominion Exsiting Transmission Line

Milepost

- Proposed Route (Route 2)
- Alternative Route 4

Route Alternatives

- Proposed Route (Route 2)
- Alternative Route 4
- 100ft Right-of-Way

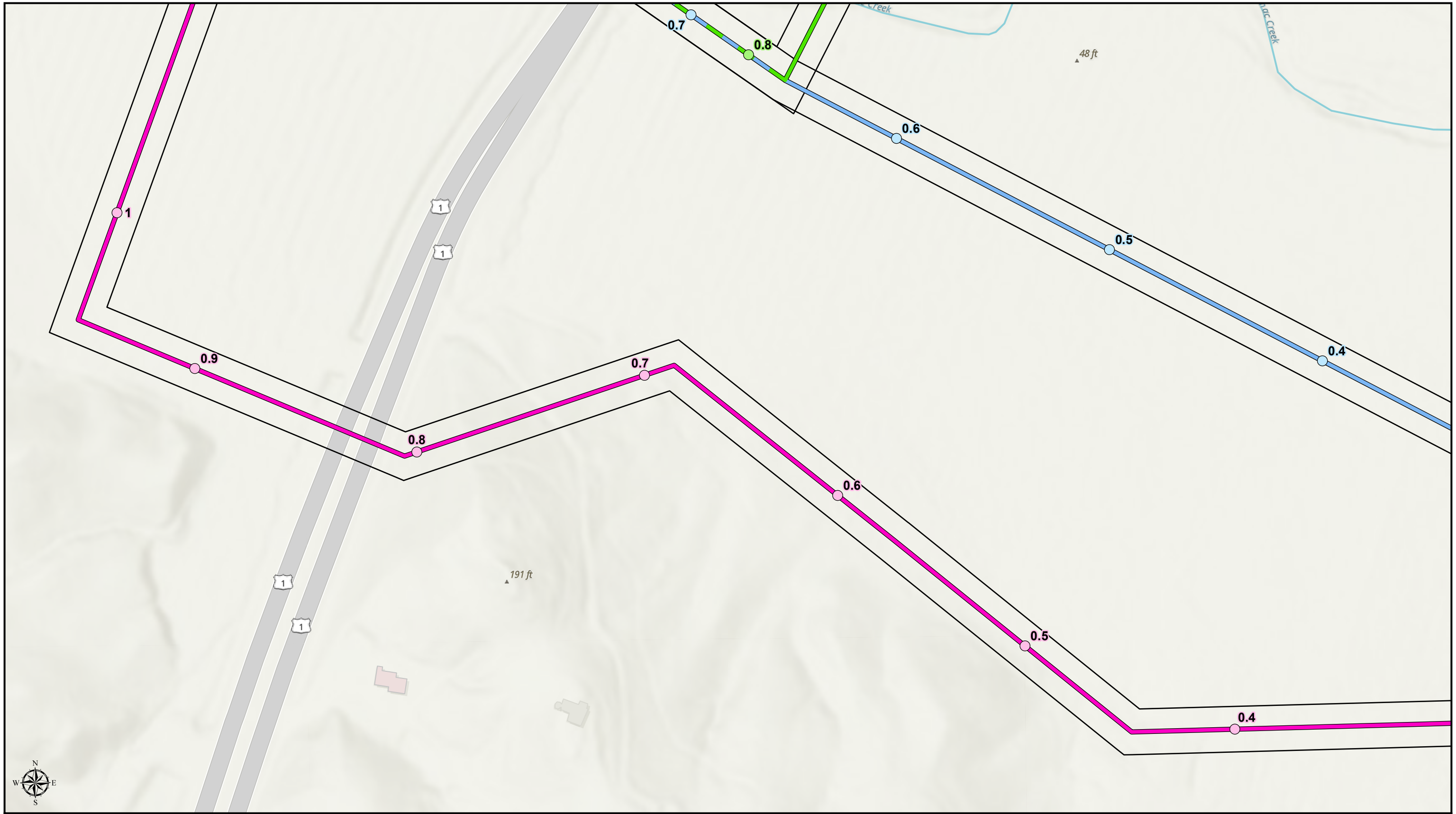
0 100 200
Feet

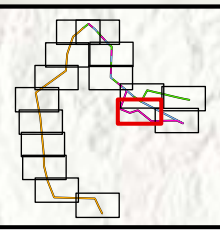
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy





Milepost
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4

Route Alternatives
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

Dominion Exsiting Transmission Line

Milepost

Alternative Route 3

Route Alternatives

Alternative Route 3

100ft Right-of-Way

0 100 200

Feet

1:2,400

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

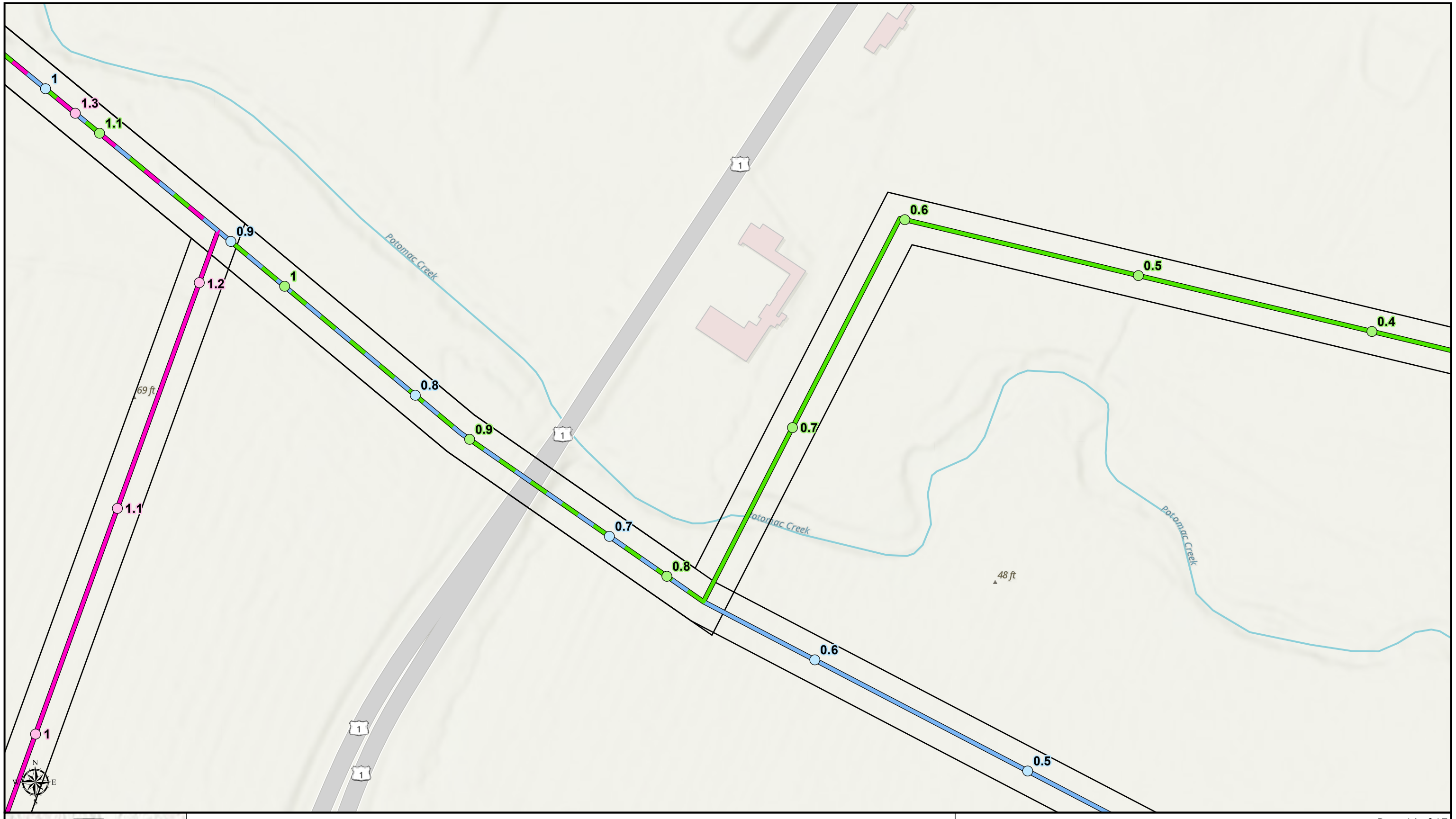
Centreport 230 kV Electric Transmission Project

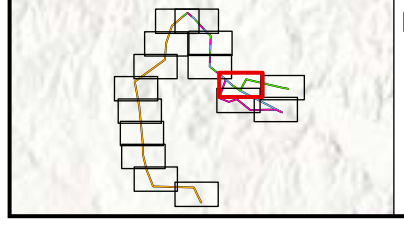
Dominion Energy Virginia

Stafford County, Virginia

ERM

Dominion Energy





Milepost
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4

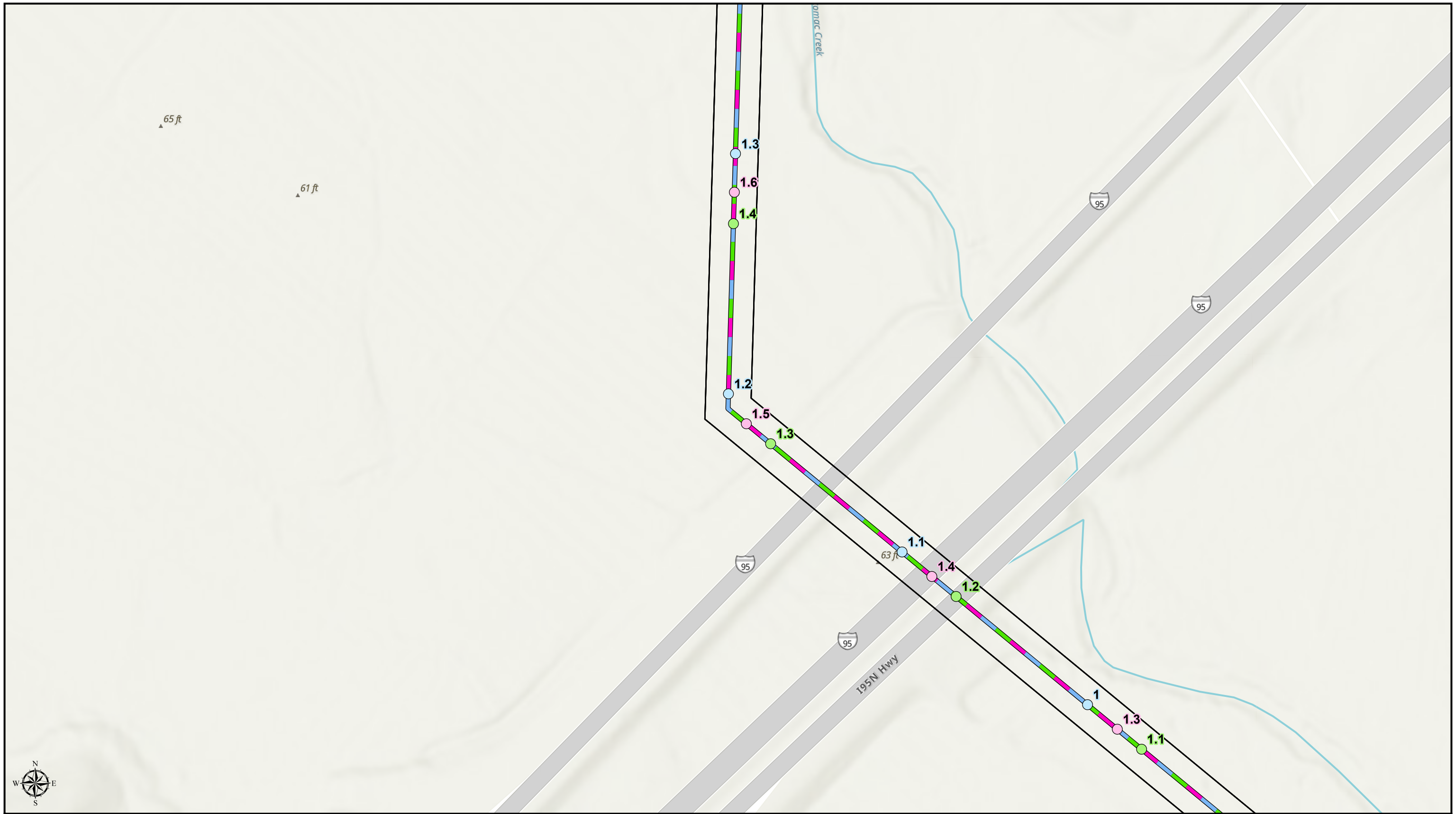
Route Alternatives
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Milepost
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4

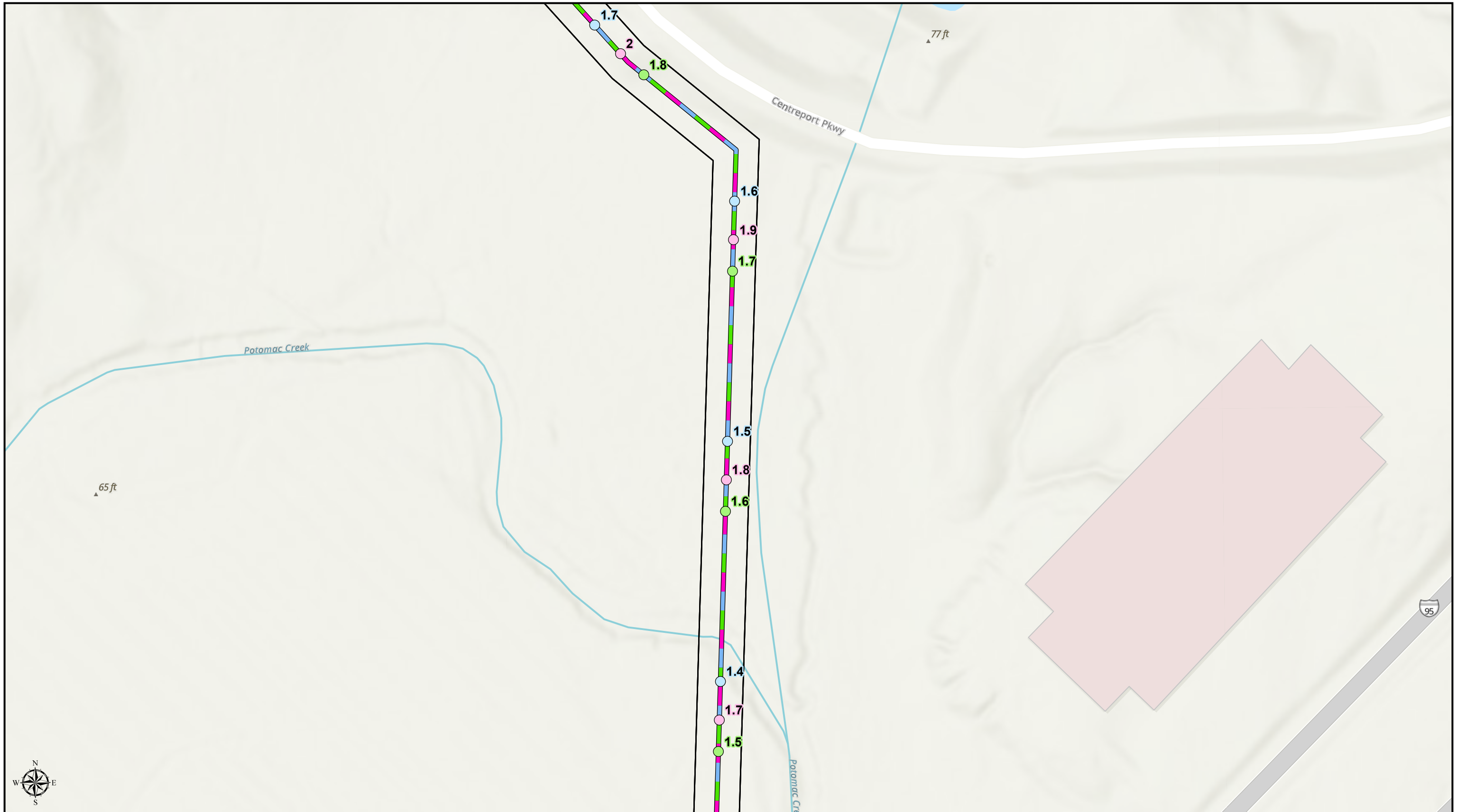
Route Alternatives
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Milepost
- Proposed Route (Route 2)
- Alternative Route 3
- Alternative Route 4

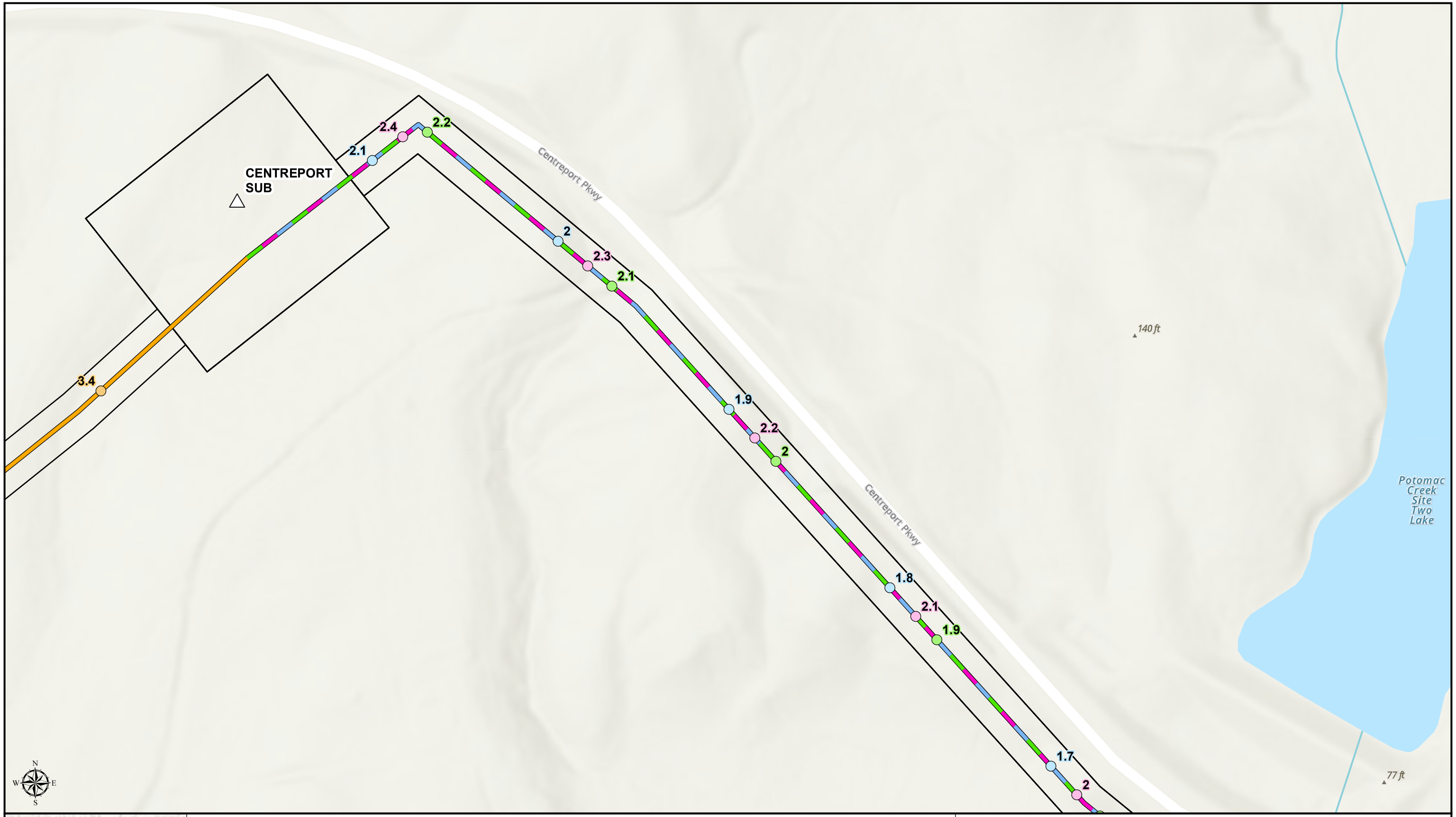
Route Alternatives
- Proposed Route (Route 2)
- Alternative Route 4
- Alternative Route 3
- Alternative Route 4
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Proposed Substation

Milepost

- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4

Route Alternatives

- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

7. Detail the proposed ROW clearing methods to be used and the ROW restoration and maintenance practices planned for the proposed project.

Response: The right-of-way for the Proposed Route will be 100 feet wide.[26] Based on anticipated conditions, tree clearing would be required along a portion of the Proposed Route.

Trimming of tree limbs along the edge of the right-of-way also may be conducted to support construction activities for the Project. For any such minimal clearing within the right-of-way where development has already occurred, trees will be cut to no more than three inches above ground level. Trees located outside of the right-of-way that are tall enough to potentially impact the transmission facilities, commonly referred to as "danger trees," may also need to be cut. Danger trees will be cut to be no more than three inches above ground level, limbed, and will remain where felled. Debris that is adjacent to homes will be disposed of by chipping or removal. In other areas, debris may be mulched or chipped as practicable. Danger tree removal will be accomplished by hand in wetland areas and within 100 feet of streams, if applicable. Care will be taken not to leave debris in streams or wetland areas. Matting will be used for heavy equipment in these areas. Erosion control devices will be used where applicable on an ongoing basis during all clearing and construction activities accompanied by weekly Virginia Stormwater Management Program inspections.

Erosion control will be maintained and temporary stabilization for all soil disturbing activities will be used until the right-of-way has been restored. Upon completion of the Project, the Company will restore the right-of-way utilizing site rehabilitation procedures outlined in the Company's *Standards & Specifications for Erosion & Sediment Control and Stormwater Management for Construction and Maintenance of Linear Electric Transmission Facilities* that was approved by the Virginia Department of Environmental Quality ("DEQ"). Time of year and weather conditions may affect when permanent stabilization takes place.

This right-of-way will continue to be maintained on a regular cycle to prevent interruptions to electric service and provide ready access to the right-of-way in order to patrol and make emergency repairs. Periodic maintenance to control woody growth will consist of hand cutting, machine mowing and/or herbicide application.

[26] *See supra*, n. 3.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

8. Indicate the permitted uses of the proposed ROW by the easement landowner and the Applicant.

Response: Any non-transmission use will be permitted that:

- Is in accordance with the terms of the easement agreement for the right-of-way;
- Is consistent with the safe maintenance and operation of the transmission lines;
- Will not restrict future line design flexibility; and
- Will not permanently interfere with future construction.

Subject to the terms of the easement, examples of typical permitted uses include but are not limited to:

- Agriculture
- Hiking Trails
- Fences
- Perpendicular Road Crossings
- Perpendicular Utility Crossings
- Residential Driveways
- Wildlife / Pollinator Habitat

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

9. Describe the Applicant's route selection procedures. Detail the feasible alternative routes considered. For each such route, provide the estimated cost and identify and describe the cost classification (e.g. "conceptual cost," "detailed cost," etc.). Describe the Applicant's efforts in considering these feasible alternatives. Detail why the proposed route was selected and other feasible alternatives were rejected. In the event that the proposed route crosses, or one of the feasible routes was rejected in part due to the need to cross, land managed by federal, state, or local agencies or conservation easements or open space easements qualifying under §§ 10.1-1009 – 1016 or §§ 10.1-1700 – 1705 of the Code (or a comparable prior or subsequent provision of the Code), describe the Applicant's efforts to secure the necessary ROW.

Response: The Company's route selection for a new transmission line typically begins with identification of the project "origin" and "termination" points provided by the Company's Transmission Planning Department. This is followed by the development of a study area for the project. The study area represents a circumscribed geographic area from which potential routes suitable for a transmission line can be identified.

For the Project, the Company retained the services of Environmental Resources Management ("ERM") to help collect information within the study area, identify potential routes, perform a routing analysis, and document the routing efforts in an Environmental Routing Study.

The study area encompasses an area containing the Project origin and termination points, and is bounded by the following features:

- Eskimo Hill Road and Natts Court Road to the north;
- Stafford Regional Airport, Centreport Parkway, and the Company's existing transmission lines to the east; and
- Truslow Road and the Company's existing transmission lines to the south and west.

The Company considered the facilities required to construct and operate the new infrastructure, the length of new right-of-way that would be required for the Project, the amount of existing development in the area, the potential for environmental impacts and impacts on communities, and cost. After review of the new build options, the Company identified one electrical option for the Project, which is located entirely within Stafford County, Virginia.

ERM initially identified four potential cut-in locations and five potential route alternatives. The northernmost cut-in option and its associated route were eliminated due to structure height restrictions associated with the Stafford Regional Airport and routing constraints associated with the proposed Stafford Technology Center. A second route that crossed through the Interstate 95-Centreport Parkway interchange was eliminated due to the requirement to place structures within the Virginia Department of Transportation ("VDOT")-owned right-of-way and within the interchange itself. There were also limitations from the proposed Centreport Village residential development along Centreport Parkway.

As discussed in more detail below and in the Environmental Routing Study, ERM ultimately identified four viable overhead route alternatives for the proposed Centreport Loop between the proposed Centreport Substation and potential cut-in locations, three along the Company's existing Line #2104 and one along existing Line #2157.

Ultimately, the Company selected Route 2 as the Proposed Route, with Alternative Routes 1, 3, and 4 as viable alternatives. All of the route alternatives are located entirely within Stafford County. The transmission-related estimated conceptual costs associated with the route alternatives are provided in Section I.I.

Proposed and Alternative Routes

Proposed Route (Route 2)

The Proposed Route would involve constructing a new double circuit overhead 230 kV transmission line on double circuit monopoles in a new 100-foot-wide right-of-way by cutting the Company's existing Line #2104 at Structure #2104/5456 and extending approximately 2.5 miles to the proposed Centreport Substation.

From the cut-in location, which is approximately 0.3 mile northeast of the intersection of the existing Line #2104 and Cranes Corner Road, the Proposed Route heads west/northwest for approximately 0.8 mile across forested land, generally parallel to Potomac Creek, approximately 0.2 mile south, and adjacent to the north side of the proposed Cranes Corner Tech Center northeast of the intersection of Richmond Highway and Centerport Parkway. The route then heads northwest for 0.1 mile, crossing Richmond Highway and paralleling the south side of a warehouse currently under construction. The Proposed Route next turns north, following the west side of the under-construction warehouse for approximately 0.3 mile, then heads northwest for approximately 0.3 mile, paralleling Potomac Creek for about 0.2 mile through forested lands before crossing Interstate 95. The route next turns and heads north for about 0.4 mile passing through a mix of forested and agricultural land and crossing Potomac Creek. It then follows the south side of Centreport Parkway for about 0.5 mile, before turning southwest to enter the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

The Proposed Route measures approximately 2.5 miles long. The right-of-way for

the Proposed Route (29.4 acres) and the proposed Centreport Substation site (5.0 acres) would encompass a combined 34.5 acres.[27]

All 11 parcels crossed by the Proposed Route are privately owned. Land use along the Proposed Route right-of-way (inclusive of the proposed Centreport Substation) consists of 27.5 acres of forested land, 1.3 acres of developed land, 5.5 acres of open space, and 0.1 acre of open water.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of the Proposed Route and the proposed Centreport Substation will encompass approximately 45.8% (15.8 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of the approximately 15.8 acres, the majority (12.0 acres) consists of forested wetlands. The Proposed Route crosses six waterbodies, of which five are mapped by the National Hydrography Dataset ("NHD"), including one perennial waterbody (Potomac Creek) and four unnamed, intermittent streams. Additionally, ERM identified one unmapped waterbody, which appears to be a stormwater control feature, using recent (2023) aerial imagery.

Importantly, the Proposed Route (Route 2) supports future efficient load growth as it has the potential to eliminate or reduce the length of future connection lines to anticipated future load growth customers in the area, such as the planned Cranes Corner Tech Center.

Alternative Route 1

Alternative Route 1 would involve constructing a new double circuit overhead 230 kV transmission line on double circuit monopoles in a new 100-foot-wide right-of-way by cutting the Company's existing Line #2157 at Structure #2157/1716.[28] and extending approximately 3.5 miles to the proposed Centreport Substation.

From the cut-in location, which is approximately 0.1 mile west of the intersection of existing Line #2157 and Cambridge Street, Alternative Route 1 heads northwest for about 0.2 mile and then turns west for 0.6 mile, crossing forested land and passing adjacent to County-owned property to the northeast. The route then turns north, crosses Interstate 95, and extends north for approximately 1.5 miles through forested land, crossing Enon Road. Then, the route turns northeast for 0.5 mile through forested land and crosses Centreport Parkway. It then turns north to parallel the west side of Mountain View Road for about 0.2 mile, crossing Potomac Creek near the intersection of Mountain View Road and Oakenwold Lane. At the crossing of Mountain View Road, the route heads north/northeast for about 0.4 mile

[27] Sum may not equal the totals due to rounding.

[28] Whereas Routes 2, 3, and 4 cut into Line #2104 as the easternmost 230 kV line in the existing transmission corridor at their respective cut-in locations, as part of the Aquia Harbour-Fredericksburg Rebuild, the existing transmission corridor at the Route 1 cut-in location south of Cranes Corner Substation will be rebuilt such that Line #2157 will be on the eastern side of the corridor. Accordingly, Alternative Route 1 will cut into Line #2157 at Structure #2157/1716. *See supra*, n. 1.

through forested land before entering the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

Alternative Route 1 measures approximately 3.5 miles long. The right-of-way for Alternative Route 1 (41.7 acres) and the proposed Centreport Substation site (5.0 acres) would encompass a combined 46.7 acres.

All 17 parcels crossed by Alternative Route 1 are privately owned. Based on recent aerial imagery, land use along the Alternative Route 1 right-of-way (inclusive of the proposed Centreport Substation) consists of 43.1 acres of forested land, 1.2 acres of agricultural land (farmland), 1.3 acres of developed land, 0.6 acre of open space, and 0.4 acre of open water.

Based on ERM's desktop wetland and waterbody analysis, Alternative Route 1's right-of-way and the proposed Centreport Substation will encompass approximately 20.1% (9.4 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of the approximately 9.4 acres, the majority (8.2 acres) consists of forested wetlands. Route 1 crosses nine waterbodies, of which seven are mapped by the NHD, including three perennial waterbodies (Potomac Creek, an unnamed, perennial tributary to Potomac Creek, and a lake/pond), and four unnamed, intermittent streams. Additionally, ERM identified two unnamed, unclassified streams within the right-of-way using recent (2023) aerial imagery.

Alternative Route 3

Alternative Route 3 would involve constructing a new double circuit overhead 230 kV transmission line on double circuit monopoles in a new 100-foot-wide right-of-way by cutting the Company's existing Line #2104 at Structure #2104/5458 and extending approximately 2.3 miles to the proposed Centreport Substation.

From the cut-in location, which is about 0.1 mile north/northeast of the intersection of the existing Line #2104 and Potomac Creek, Alternative Route 3 initially heads west/northwest for about 0.6 mile, paralleling the north side of Potomac Creek through partially forested, partially open land. It then turns south/southwest for approximately 0.2 mile, parallel to and east of Richmond Highway and crossing Potomac Creek. Alternative Route 3 then turns northwest for about 0.2 mile, paralleling the south side of Potomac Creek. At this point, Alternative Route 3 intersects the Proposed Route and follows the same alignment for the remaining 1.3 miles before entering the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

Alternative Route 3 measures approximately 2.3 miles long. The right-of-way for Alternative Route 3 (27.2 acres) and the proposed Centreport Substation site (5.0 acres) would encompass a combined 32.2 acres.

All 7 parcels crossed by Alternative Route 3 are privately owned. Land use along

the Alternative Route 3 right-of-way (inclusive of the proposed Centreport Substation) currently consists of 18.9 acres of forested land, 11.9 acres of open space, 1.2 acres of developed land, and 0.2 acre of open water.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Alternative Route 3 and the proposed Centreport Substation will encompass approximately 49.4% (15.9 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of the approximately 15.9 acres, the majority (9.8 acres) consists of forested wetlands. Alternative Route 3 crosses nine waterbodies, of which eight are mapped by the NHD, including three perennial waterbody crossings (including two crossings of Potomac Creek and one unnamed, perennial tributary to Potomac Creek) and five unnamed, intermittent streams. Additionally, ERM identified one unmapped open waterbody, which appears to be a stormwater control feature, using recent (2023) aerial imagery.

Alternative Route 4

Alternative Route 4 would involve constructing a new double circuit overhead 230 kV transmission line on double circuit monopoles in a new 100-foot-wide right-of-way by cutting the Company's existing Line #2104 at Structure #2104/5456 and extending approximately 2.2 miles to the proposed Centreport Substation.

Alternative Route 4 provides an alternative to the alignment of Alternative Route 3 between the cut-in location and Richmond Highway. This reduces the length of the route and number of angle structures and eliminates a crossing of Potomac Creek, though it passes through a greater amount of forested wetlands.

Alternative Route 4 begins approximately 0.3 mile north of Cranes Corner Road, cutting the Company's existing Line #2104 at Structure #2104/5456 and extending approximately 0.6 mile northwest, roughly parallel but south of Potomac Creek. On the south side of Potomac Creek, just east of Richmond Highway, Alternative Route 4 shares an alignment with Alternative Route 3, crossing Richmond Highway and Interstate 95 before angling northwest across Potomac Creek. At Centreport Parkway, the route turns west and follows the road for approximately 0.5 mile before terminating at the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

Route 4 measures approximately 2.2 miles long. The right-of-way for Route 4 (25.6 acres) and the proposed Centreport Substation site (5.0 acres) would encompass a combined 30.6 acres.

All seven parcels crossed by Alternative Route 4 are privately owned. Land use along the Alternative Route 4 right-of-way (inclusive of the proposed Centreport Substation) currently consists of 24.2 acres of forested land, 5.1 acres of open space, 1.2 acre of developed land, and 0.1 acre of open water.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Alternative Route 4 and the proposed Centreport Substation will encompass

approximately 47.4% (14.5 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of the approximately 14.5 acres, the majority (11.0 acres) consists of forested wetlands. Alternative Route 4 crosses six waterbodies, of which five are mapped by the NHD, including one perennial waterbody (Potomac Creek) and four unnamed, intermittent streams. Additionally, ERM identified one unmapped open waterbody, which appears to be a stormwater control feature, using recent (2023) aerial imagery.

Summary of Route Analysis

Of the route alternatives, Alternative Route 3 is the shortest and Alternative Routes 3 and 4 would cross the fewest parcels. The Proposed Route (Route 2) would cross four more parcels, but would collocate with or cross planned developments for six of the parcels (including two belonging to the Customer). There are no homes within 100 feet of any of the route alternatives. Alternative Route 1 and the Proposed Route (Route 2), both have one residence within 250 feet of the proposed centerline. Alternative Route 3 crosses the fewest acres of forested land, followed by the Proposed Route (Route 2) and Alternative Route 4.

Based on this analysis, the Company selected Route 2 as the Proposed Route for the Centreport Loop as it avoids or reasonably minimizes adverse impact to the greatest extent reasonably practicable on the scenic assets, historic and cultural resources, and environment of the area concerned. While this route has the potential to clear the most forested wetlands, it is routed farther from Potomac Creek, crosses fewer NHD-mapped waterbodies, crosses Potomac Creek only once and reduces paralleling of Potomac Creek to 0.2 mile. The Proposed Route is collocated with Centreport Parkway for 0.4 mile, and through the coordination with affected developers, it also collocates with industrial developments for approximately 0.8 mile, thereby minimizing conflict between current and planned land uses where practicable, consistent with Guideline #1 in Attachment 1 to the *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*. Additionally, this collocation allows for forest clearing within the right-of-way adjacent to planned developments that also will clear forested land, eliminating fragmentation of forested habitat that would occur through the selection of Alternative Routes 1, 3, and 4.

See Sections 4 and 5 5 of the Environmental Routing Study for a discussion of resources and comparison of impacts by each route.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

10. Describe the Applicant's construction plans for the project, including how the Applicant will minimize service disruption to the affected load area. Include requested and approved line outage schedules for affected lines as appropriate.

Response: The Company plans to construct the Project in a manner that minimizes outage times on existing Line #2104. Assuming the Commission issues a final order by June 27, 2025, and construction commences around September 2026, the cutting of Line #2104 will require an outage from spring 2027 to summer 2027. As noted in Section I.H of the Appendix, the Company estimates that construction of the Project will be completed by July 1, 2027.

The Company intends to complete this work during requested outage windows, as described above. However, as with all outage scheduling, these timeframes may change depending on whether PJM approves the outages and other relevant considerations allow for it. It is customary for PJM to hold requests for outages and approve only shortly before the outages are expected to occur and, therefore, the requested outages are subject to change. Therefore, the Company will not have clarity on whether this work will be done as requested until very close in time to the requested outages. If PJM approves different outage dates, the Company will continue to diligently pursue timely completion of this work.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way ("ROW")

11. Indicate how the construction of this transmission line follows the provisions discussed in Attachment 1 of these Guidelines.

Response: Attachment 1 to these Guidelines provides a tool routinely used by the Company in routing its transmission line projects.

The Company utilized Guideline #1 (To the extent permitted by the property interest involved, rights-of-way should be selected with the purpose of minimizing conflict between the rights-of-way and present and prospective uses of the land on which they are to be located) by meeting with landowners and developers and minimizing conflict between the proposed right-of-way and present and prospective uses of the land on which the proposed Project is to be located.

The proposed Project is consistent with Guideline #2 (where practical, rights of-way should avoid sites listed on the National Register of Historic Places ("NRHP")), as it will have no impact to any site listed on the NRHP. A Stage I Pre-Application Analysis prepared by ERM on behalf of the Company is included with the Routing Study as Appendix G and was submitted to the Virginia Department of Historic Resources ("VDHR") on September 18, 2024.

The Company communicated with local, state, and federal agencies and relevant private organizations prior to filing this Application consistent with Guideline #4 (where government land is involved the applicant should contact the agencies early in the planning process). In particular, the Company consulted with Stafford County, the Stafford Regional Airport, and VDOT. See Sections III and V of this Appendix.

The Company follows recommended construction methods in the Guidelines on a site-specific basis for typical construction projects (Guidelines #8, #10, #11, #15, #16, #18, and #22).

The Company follows recommended guidelines in clearing right-of-way, constructing facilities, and maintaining rights-of-way after construction. Moreover, secondary uses of right-of-way that are consistent with the safe maintenance and operation of facilities are permitted.

II. DESCRIPTION OF THE PROPOSED PROJECT

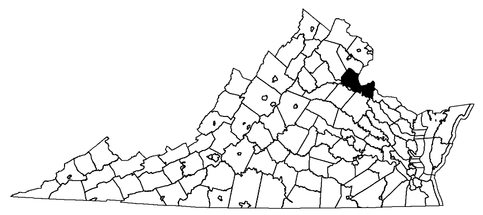
A. Right-of-way ("ROW")

12. a. Detail counties and localities through which the line will pass. If any portion of the line will be located outside of the Applicant's certificated service area: (1) identify each electric utility affected; (2) state whether any affected electric utility objects to such construction; and (3) identify the length of line(s) proposed to be located in the service area of an electric utility other than the Applicant; and

b. Provide three (3) color copies of the Virginia Department of Transportation "General Highway Map" for each county and city through which the line will pass. On the maps show the proposed line and all previously approved and certificated facilities of the Applicant. Also, where the line will be located outside of the Applicant's certificated service area, show the boundaries between the Applicant and each affected electric utility. On each map where the proposed line would be outside of the Applicant's certificated service area, the map must include a signature of an appropriate representative of the affected electric utility indicating that the affected utility is not opposed to the proposed construction within its service area.

Response: a. The 2.5-mile proposed Project is located entirely within Stafford County, Virginia, and Dominion Energy Virginia's service territory.

b. An electronic copy of the VDOT "General Highway Map" for Stafford County has been marked as required and submitted with the Application. A reduced copy of the map is provided as Attachment II.A.12.b.



MAP DATE: 7/26/2024

King George & Stafford County Road Map

This digital map depicts the Virginia Electric and Power Company ("Company") transmission facilities in this county as approved by the Virginia State Corporation Commission ("SCC"), and any proposed transmission facilities in this county, as of 7/26/2024. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.

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VIRGINIA ELECTRIC AND POWER COMPANY PLANS TO BUILD TRANSMISSION LINES AND SUBSTATIONS AS SHOWN IN BLACK DASHES ON THIS MAP.

NORTHERN NECK ELECTRIC COOPERATIVE IS NOT OPPOSED TO SUCH CONSTRUCTION IN ITS SERVICE TERRITORY.

SIGNATURE

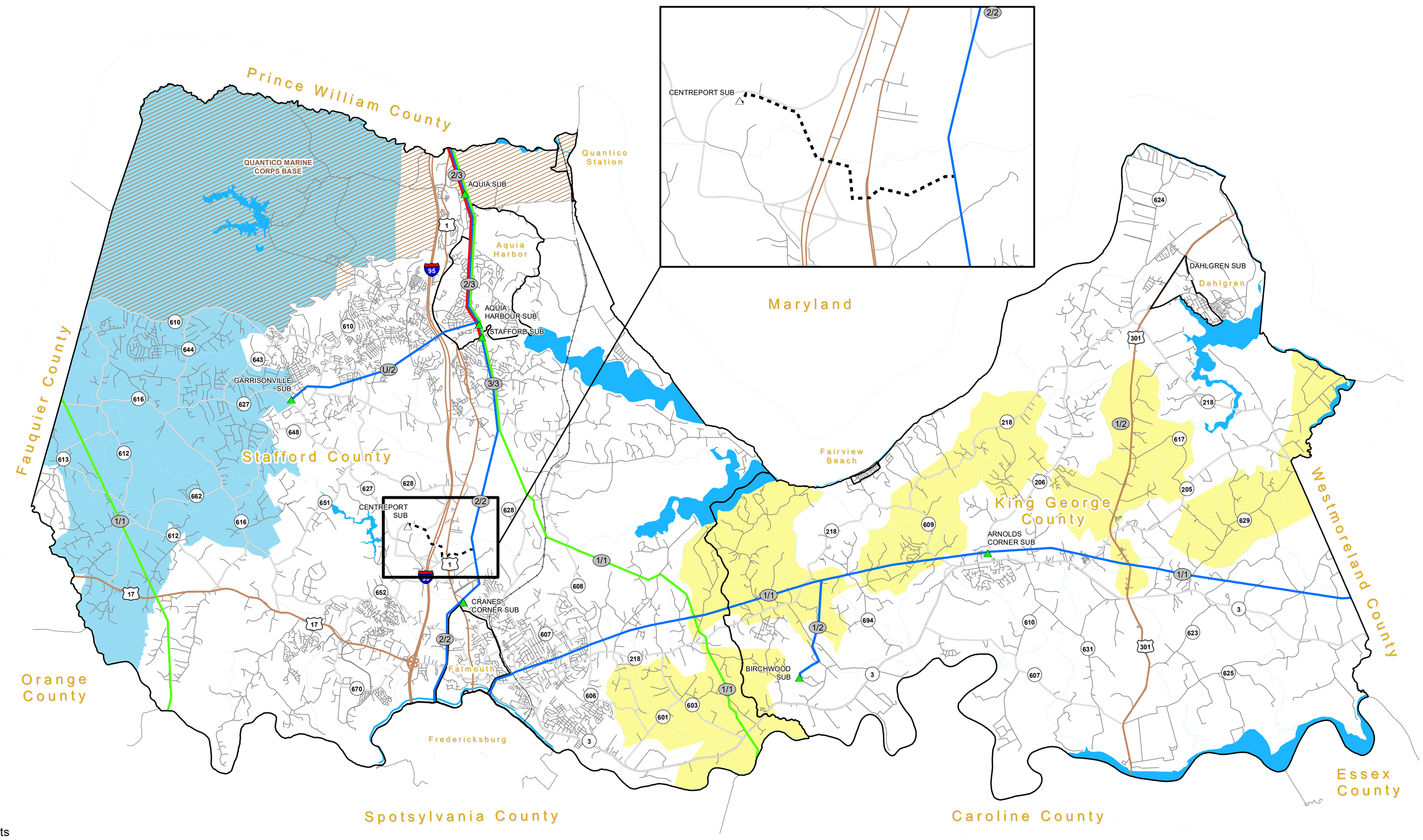
DATE TITLE

Legend

- Proposed 230 kV Transmission Line
- (1/1) Number of Lines of Structures/Number of Circuits
- △ Proposed Substation
- ▲ Existing Substation
- 115 kV
- 230 kV
- 500 kV

Provider Service Territory

- NNEC
- NOVEC
- VEPCO



Miles
2 1 0 2 4 6

*VDOT and other road data obtained from Navteq and County data, current as of August 2011.

King George & Stafford

Attachment II.A.12.b

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

1. Detail the number of circuits and their design voltage, initial operational voltage, any anticipated voltage upgrade, and transfer capabilities.

Response: The proposed Centreport Loop will be designed and operated at 230 kV with no anticipated voltage upgrade and have a transfer capability of 1,573 MVA.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

2. Detail the number, size(s), type(s), coating and typical configurations of conductors. Provide the rationale for the type(s) of conductor(s) to be used.

Response: The proposed Centreport Loop will include three-phase twin-bundled 768.2 ACSS/TW/HS type conductor arranged as shown in Attachments II.B.3.a-c. The twin-bundled 768.2 ACSS/TW/HS conductors are a Company standard for new 230 kV construction.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

3. With regard to the proposed supporting structures over each portion of the ROW for the preferred route, provide diagrams (including foundation reveal) and descriptions of all the structure types, to include:

a. mapping that identifies each portion of the preferred route;

b. the rationale for the selection of the structure type;

c. the number of each type of structure and the length of each portion of the ROW;

d. the structure material and rationale for the selection of such material;

e. the foundation material;

f. the average width at cross arms;

g. the average width at the base;

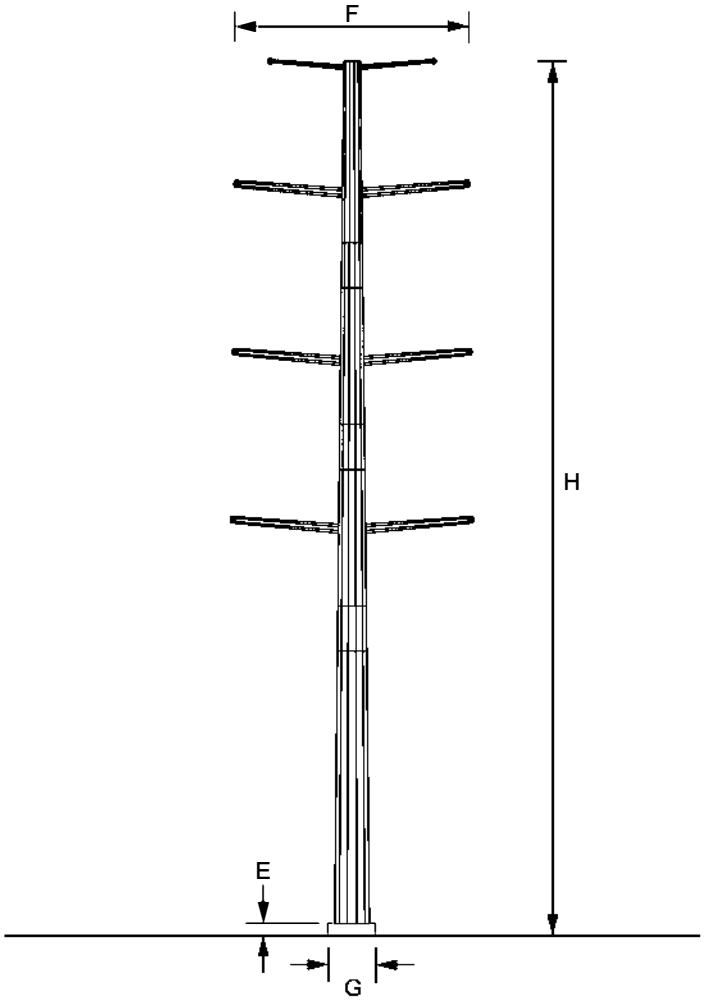
h. the maximum, minimum and average structure heights;

i. the average span length; and

j. the minimum conductor-to-ground clearances under maximum operating conditions.

Response: See Attachments II.B.3. a-c for subparts (b)-(j).

For subpart (a), see Attachment II.B.3.d for approximate mapping of the proposed structures along the Proposed Route, which is subject to change during final engineering.



TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

A. STRUCTURE MAPPING	N/A
B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION
C. LENGTH OF R/W (STRUCTURE QTY):	2.5 MILES (4 STRUCTURES) - SEE NOTE 1
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR STRUCTURE MATERIAL:	MATCH CURRENT STANDARDS AND EXISTING STRUCTURES IN THE AREA
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	85' 125' 105'
I. AVERAGE SPAN LENGTH (RANGE):	687' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

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Dominion Energy
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Glen Allen, VA 23060

LINES 2104, 2379

TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

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ATTACHMENT NO.

II.B.3.a

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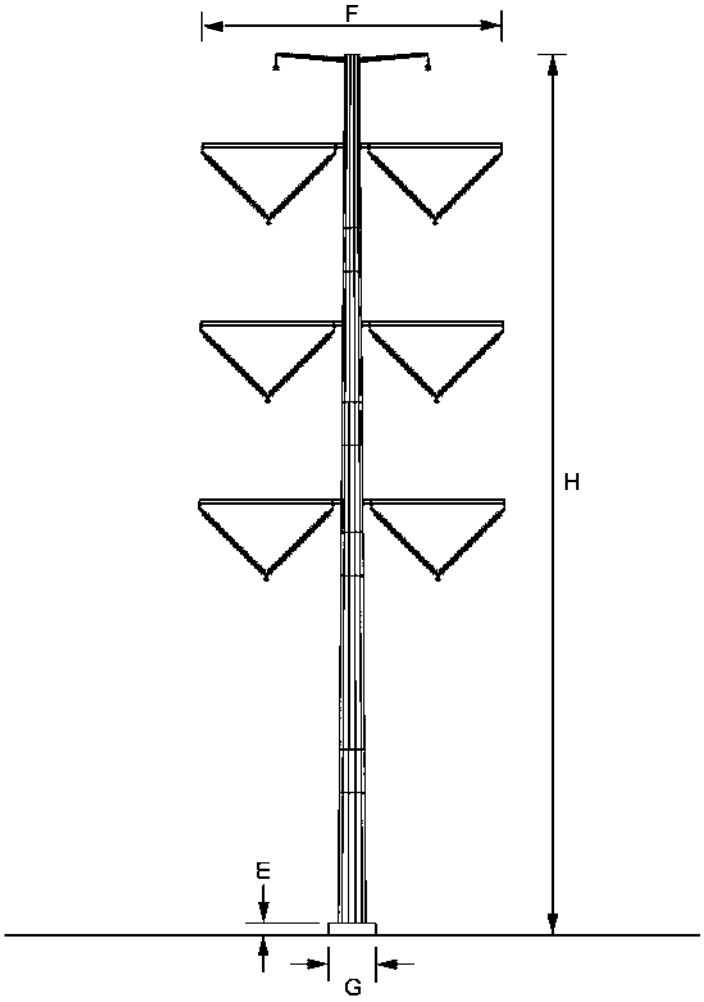

TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (V-STRING)

A. STRUCTURE MAPPING	N/A
B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; V-STRING INCREASES CLEARANCES AND OPTMIZES EXISTING ROW USAGE
C. LENGTH OF R/W (STRUCTURE QTY):	2.5 MILES (10 STRUCTURES) - SEE NOTE 1
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR STRUCTURE MATERIAL:	MATCH CURRENT STANDARDS AND EXISTING STRUCTURES IN THE AREA
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	34.5'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	110' 135' 115'
I. AVERAGE SPAN LENGTH (RANGE):	623' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

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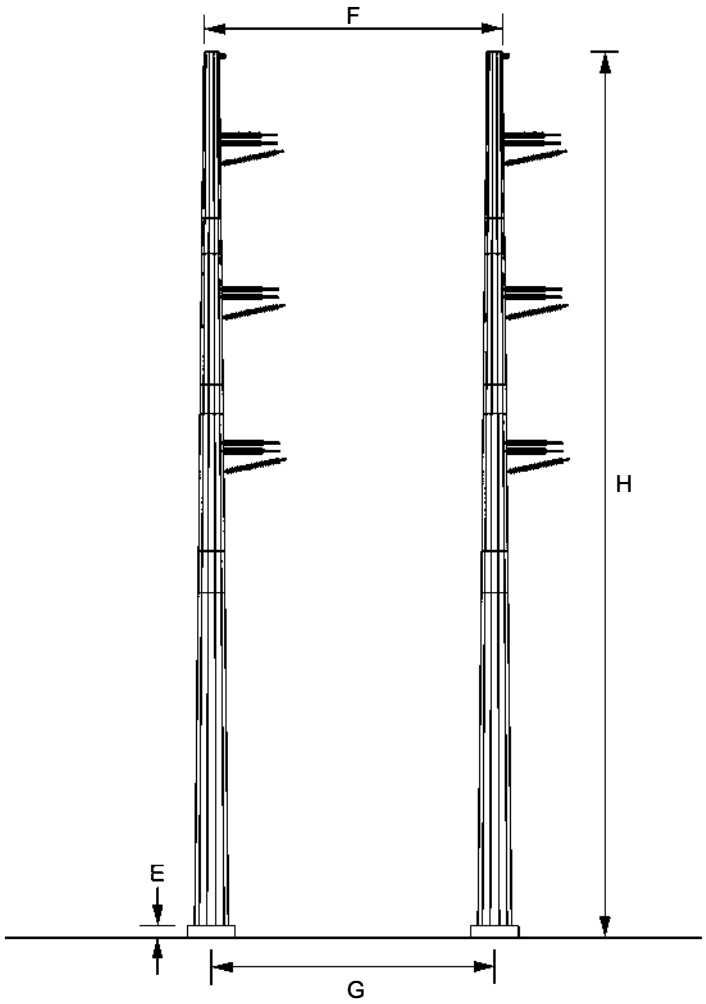
TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (V-STRING)

ATTACHMENT NO.

II.B.3.b

DRAWN BY: SDH



TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

A. STRUCTURE MAPPING	N/A
B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; 2-POLES USED FOR HEAVY ANGLES TO OPTIMIZE POLE/FOUNDATION SIZE AND COST
C. LENGTH OF R/W (STRUCTURE QTY):	2.5 MILES (5 STRUCTURES) - SEE NOTE 1
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR STRUCTURE MATERIAL:	MATCH CURRENT STANDARDS AND EXISTING STRUCTURES IN THE AREA
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	36'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	100' 100' 100'
I. AVERAGE SPAN LENGTH (RANGE):	502' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN

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5000 Dominion Blvd.
Glen Allen, VA 23060

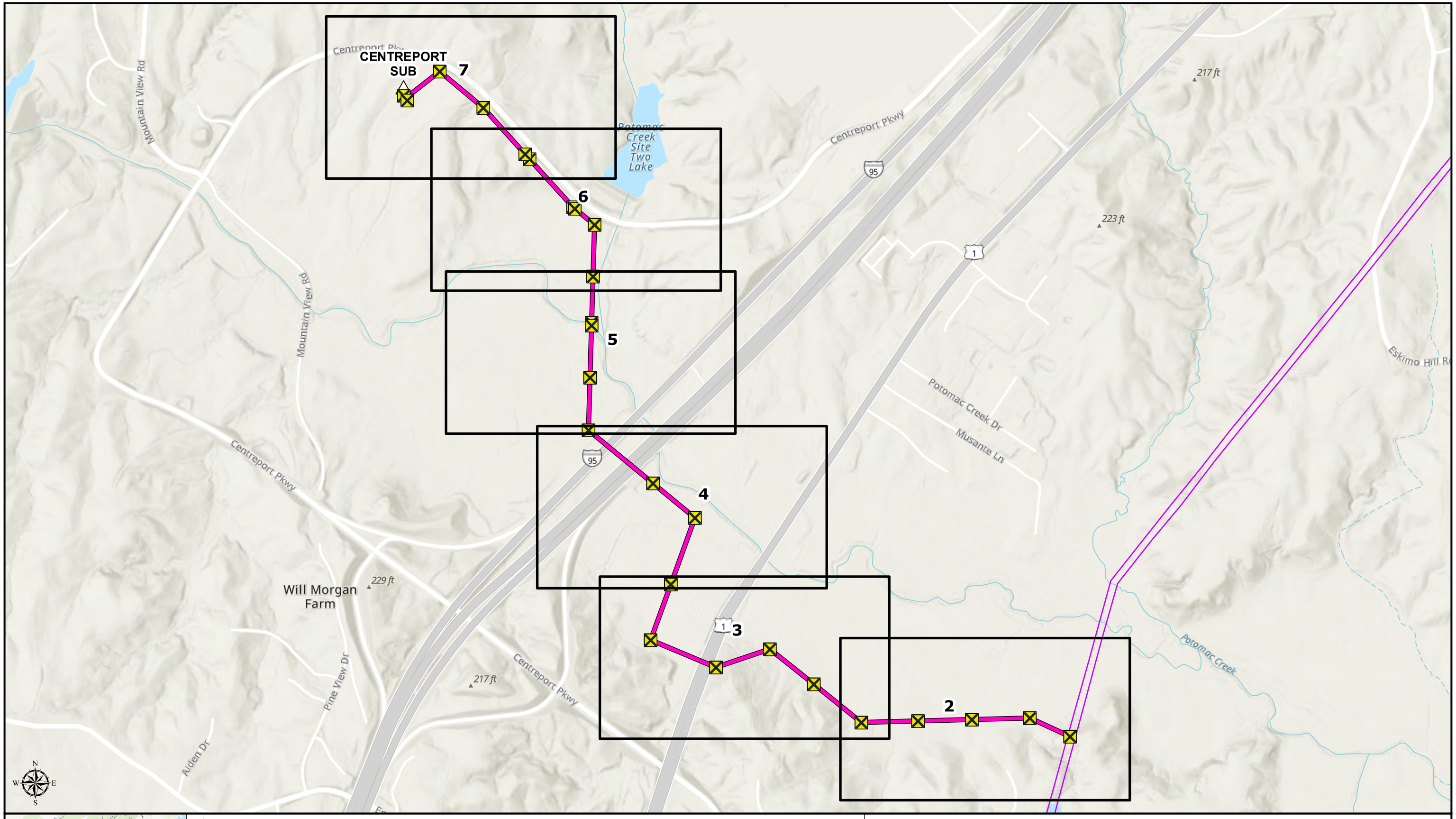
LINES 2104, 2379

TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.c

DRAWN BY: SDH



Proposed Substation
Dominion Exsiting Transmission Line
Proposed Structure Location
Proposed Route (Route 2)
Index Page

0 450 900
Feet
1:12,000

Attachment II.B.3.d Index
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

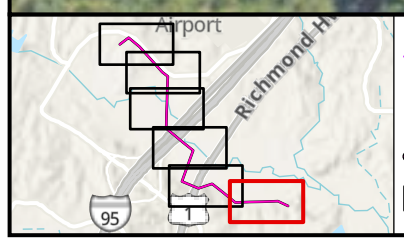
ERM

Dominion Energy

The proposed approximate structure heights and locations are from the conceptual design created to estimate the cost of the proposed Project along this section and are subject to change based on final engineering design.

2379/4
2379/3
2379/2
2379/1
2104/5456

Structure #	Height (ft)
2379/1	100
2379/2	110
2379/3	110
2379/4	100
2104/5456	100



Dominion Exsiting Transmission Line
Proposed Structure Location
Proposed Route (Route 2)
100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.B.3.d
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

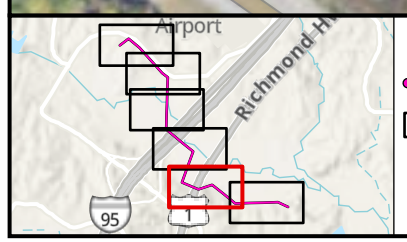
ERM

Dominion Energy

The proposed approximate structure heights and locations are from the conceptual design created to estimate the cost of the proposed Project along this section and are subject to change based on final engineering design.

2379/9
2379/8
2379/7
2379/6
2379/5
2379/4
Richmond Hwy
Richmond Hwy
1
1
1

Structure #	Height (ft)
2379/4	100
2379/5	110
2379/6	120
2379/7	130
2379/8	100
2379/9	110



Proposed Structure Location
Proposed Route (Route 2)
100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.B.3.d
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

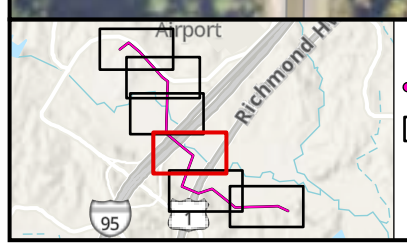
ERM

Dominion Energy

The proposed approximate structure heights and locations are from the conceptual design created to estimate the cost of the proposed Project along this section and are subject to change based on final engineering design.

2379/12
2379/11
2379/10
2379/9
95
136
Richmond Hwy
Potomac Creek

Structure #	Height (ft)
2379/9	110
2379/10	110
2379/11	125
2379/12	140

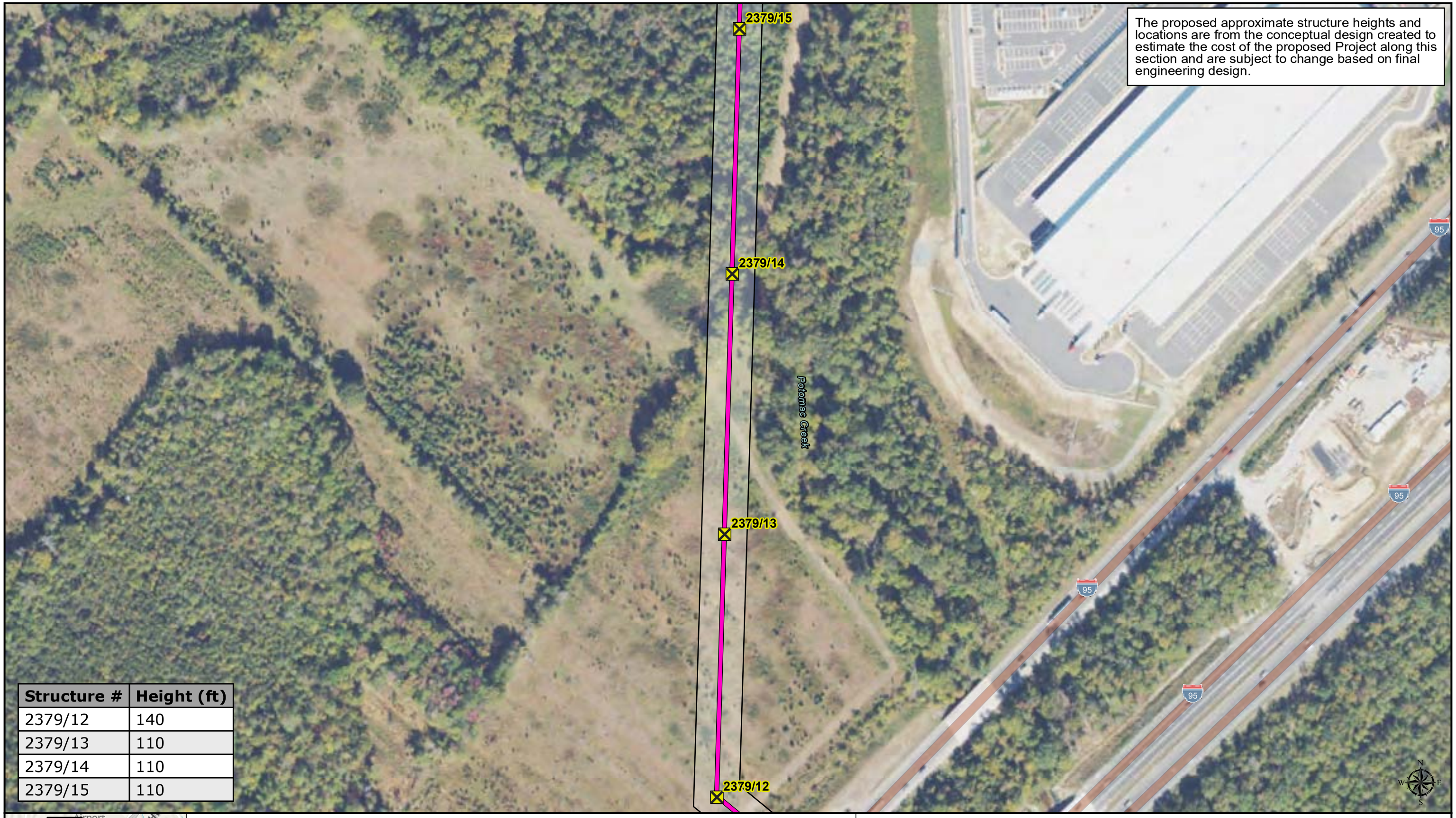


Proposed Structure Location
Proposed Route (Route 2)
100ft Right-of-Way

0 100 200
Feet
1:2,400

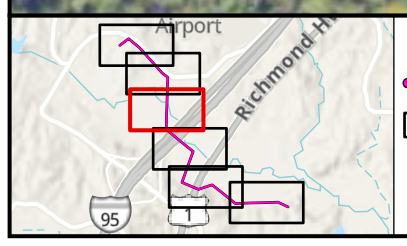
Attachment II.B.3.d
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM
Dominion Energy



The proposed approximate structure heights and locations are from the conceptual design created to estimate the cost of the proposed Project along this section and are subject to change based on final engineering design.

Structure #	Height (ft)
2379/12	140
2379/13	110
2379/14	110
2379/15	110



Proposed Structure Location
Proposed Route (Route 2)
100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.B.3.d
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

The proposed approximate structure heights and locations are from the conceptual design created to estimate the cost of the proposed Project along this section and are subject to change based on final engineering design.

Potomac Creek Site Two Lake

2379/18

2379/17

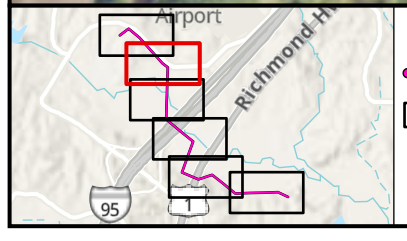
2379/16

2379/15

Centreport Pkwy

Potomac Creek

Structure #	Height (ft)
2379/15	110
2379/16	100
2379/17	105
2379/18	135



Proposed Structure Location
Proposed Route (Route 2)
100ft Right-of-Way

0 100 200
Feet
1:2,400

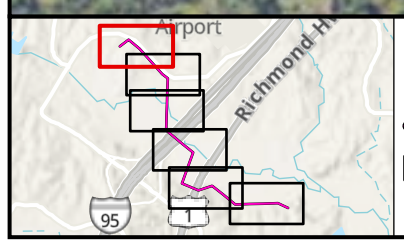
Attachment II.B.3.d
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

The proposed approximate structure heights and locations are from the conceptual design created to estimate the cost of the proposed Project along this section and are subject to change based on final engineering design.

Structure #	Height (ft)
2379/18	135
2379/19	120
2379/20	100
2379/21	95



- Proposed Substation
- Proposed Structure Location
- Proposed Route (Route 2)
- 100ft Right-of-Way

0 100 200
Feet
1:2,400

Attachment II.B.3.d
Structure Locations Along the Proposed Route
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

4. With regard to the proposed supporting structures for all feasible alternate routes, provide the maximum, minimum and average structure heights with respect to the whole route.

Response: The approximate structure heights along the Proposed and Alternative Routes are provided in the table below, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Route	Minimum (ft.)	Maximum (ft.)	Average (ft.)
Proposed Route (Route 2)	100	140	112
Alternative Route 1	100	185	120
Alternative Route 3	85	140	111
Alternative Route 4	95	140	111

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

5. For lines being rebuilt, provide mapping showing existing and proposed structure heights for each individual structure within the ROW, as proposed in the application.

Response: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

6. Provide photographs for [a] typical existing facilities to be removed, [b] comparable photographs or representations for proposed structures, and [c] visual simulations showing the appearance of all planned transmission structures at identified historic locations within one mile of the proposed centerline and in key locations identified by the Applicant.

Response: [a] Not applicable.

[b] See Attachment II.B.6.b.i-iv for representative photographs of the proposed structures.

[c] Visual simulations showing the appearance of the proposed transmission structures at identified historic locations within 1.0 mile of the proposed centerline of the Proposed and Alternative Routes are provided. See Attachment II.B.6.c for a map of the simulation locations, the existing views at the historic locations, and simulated proposed views. These simulations were created using Geographic Information Systems modeling to depict whether the proposed structures will be visible from the identified historic locations. The historic locations evaluated are described below. See also the Stage I Pre-Application Analysis Report contained in Appendix G of the Routing Study.

Historic Property	Viewpoint	Comments
Buzzard's Roost (VDHR ID# 089-0013)	KOP 003H	The Proposed Route and Alternative Routes 1, 3, and 4 will have no more than a Minimal Impact on 089-0013.
Glencairne (VDHR ID# 089-0020)	KOP 017	Alternative Route 1 will have no more than a Moderate Impact on 089-0020.
Oakenwold (VDHR ID# 089-0157)	KOP 003H	The Proposed Route and Alternative Routes 1, 3, and 4 will have No Impact on 089-0157.

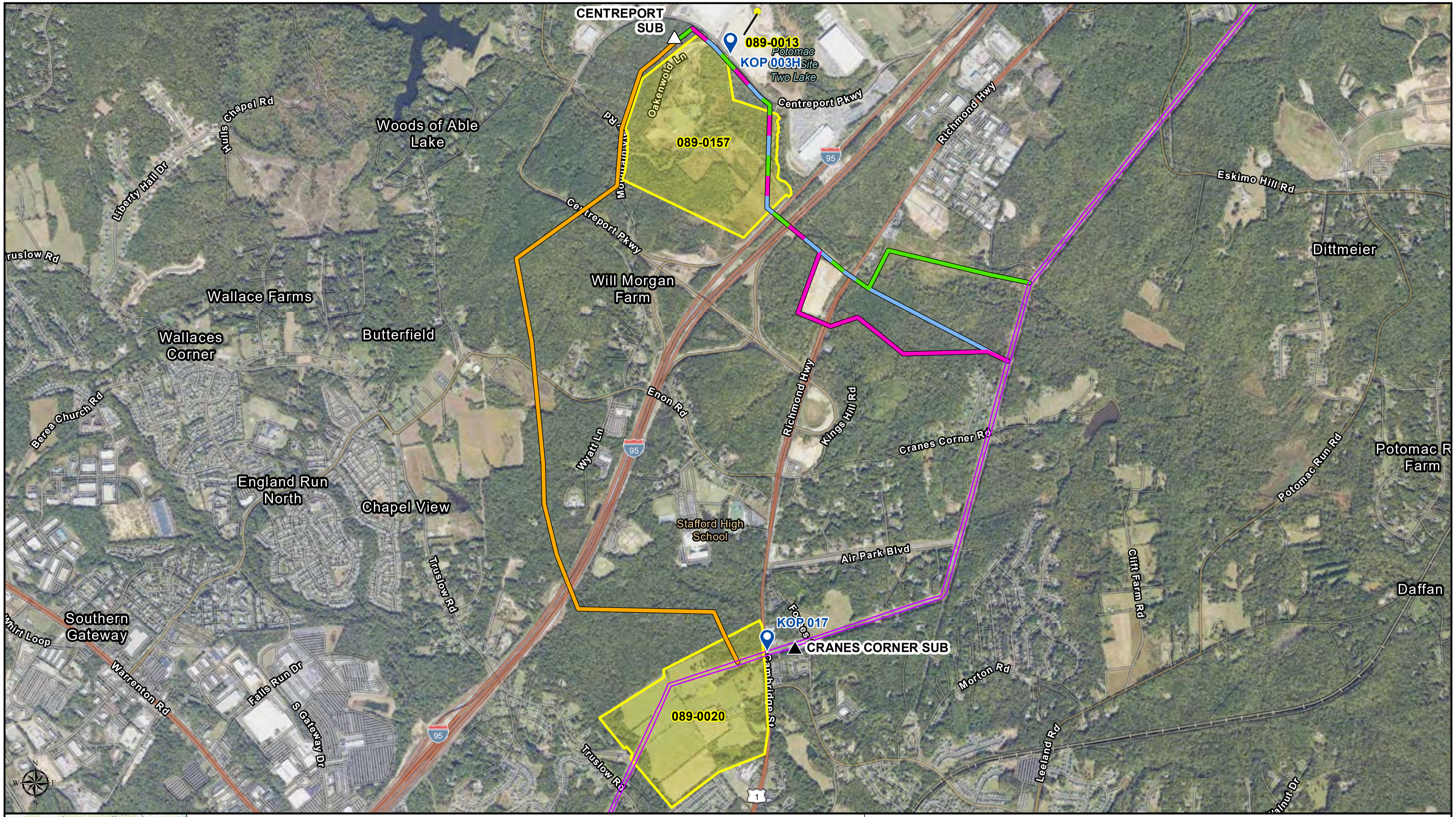
See Attachment III.B.3 for visual simulations and renderings of key locations evaluated.

Double Circuit Engineered 2-Pole Double Deadend Structure

Double Circuit Engineered Monopole Double Deadend Structure

Double Circuit Engineered Monopole Suspension Structure (V-String)

Double Circuit Engineered Monopole Suspension Structure (V-String)



- Existing Substation
- Proposed Substation
- Dominion Exsiting Transmission Line

Route Alternatives

- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4
- Key Observation Point
- Architecture Resource

0 750 1,500
Feet
1:24,000

Attachment II.B.6.c Page 1 of 18

Overview Map of Routes Showing Visual Simulation Locations and Associated Aboveground Historic Resources

Centreport 230 kV Electric Transmission Project

Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

Figure 1. Aerial photograph depicting land use and photo view for 089-0013.

Existing View

Proposed view showing hidden transmission line structures

104

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	224 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	1350 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

VIEWPOINT CONTEXT

Figure 2
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

Pre-Application Analysis
Centreport

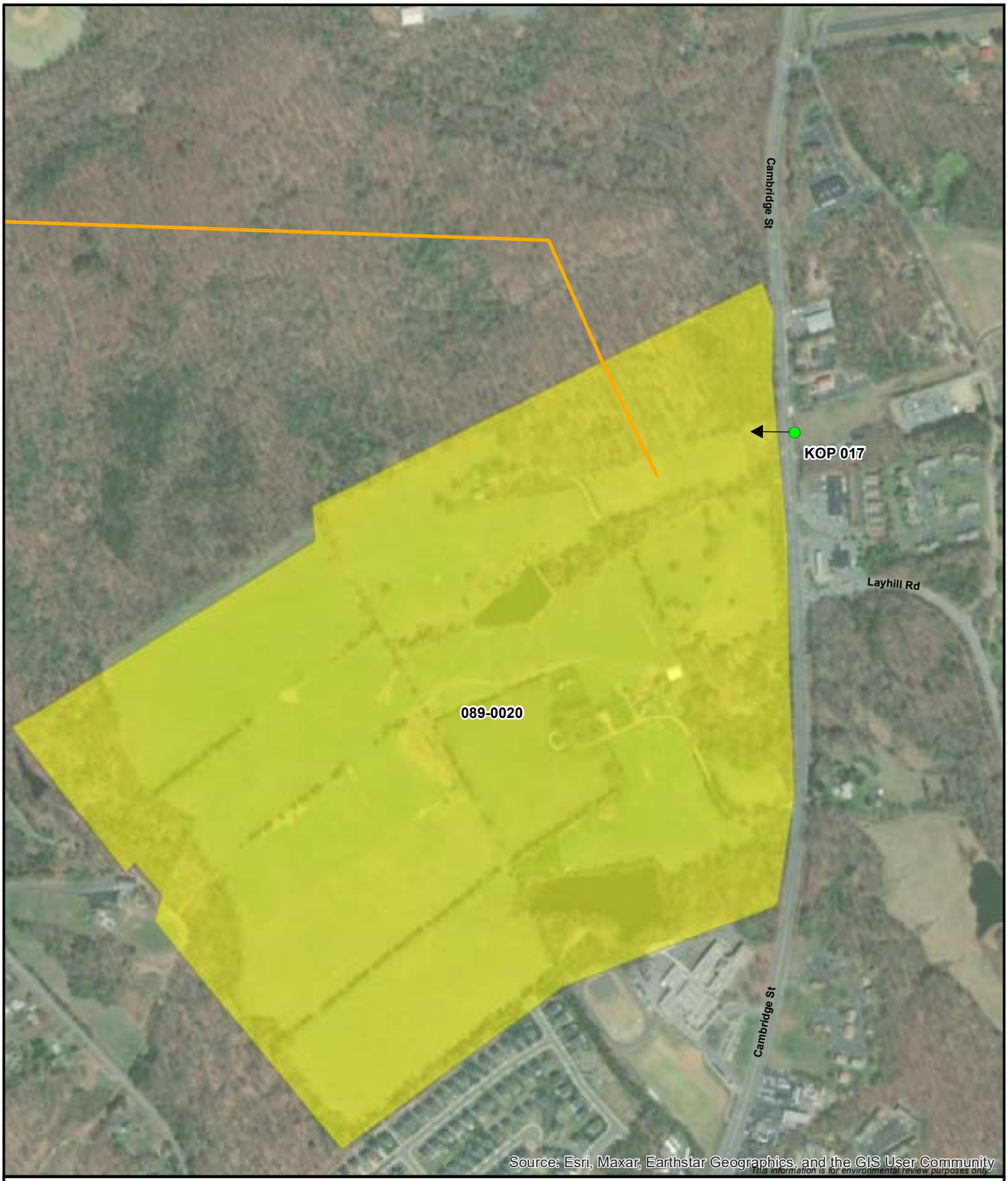


Figure 3. Aerial photograph depicting land use and photo view for 089-0020.

Existing View

Proposed view showing transmission line structures

Dominion Energy

ERM

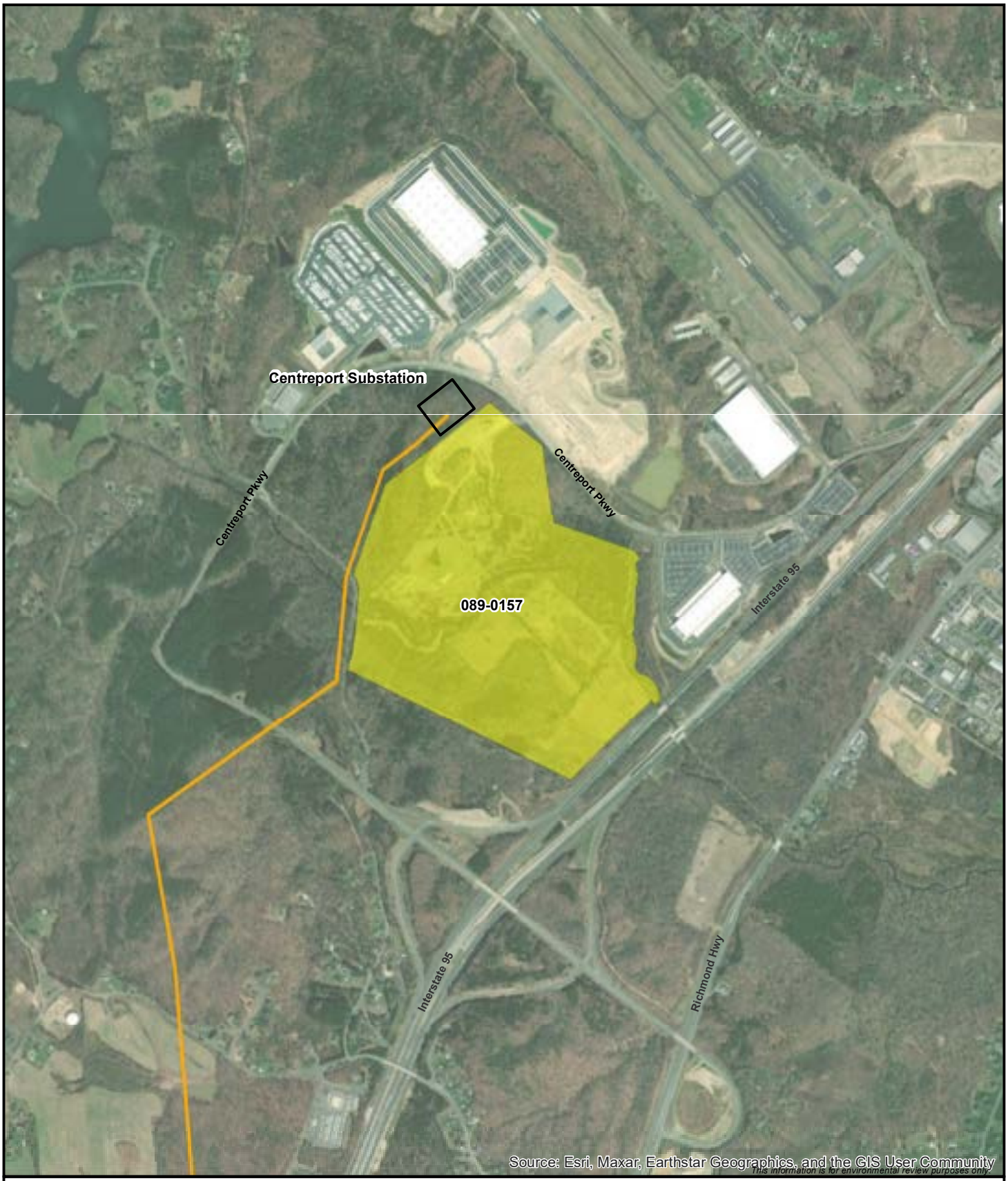
Viewpoint Location UTM Zone 18N:	285218E 4247873N
View Direction:	292 degrees
Viewpoint Elevation:	163 feet
Distance to Development:	631 feet
Horizontal Field of View:	90 degrees

Date of Photography:	25th April 2024 13:23
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

VIEWPOINT CONTEXT

Figure 4
Viewpoint KOP 017
Cambridge St N of Heritage Commons Dr
089-0020

Pre-Application Analysis Centreport



ERM

C:\Users\Vincent.macek\OneDrive - ERM\DOM Centrepoint 0713641\DOM Centrepoint maps 8-2024\Attachment 5\Centreport Attachment 5 Fig 5 Rte 1 089-0157.mxd | REVISED: 08/21/2024 | SCALE: 1:24,000

Figure 5. Aerial photograph depicting land use and photo view for 089-0157.

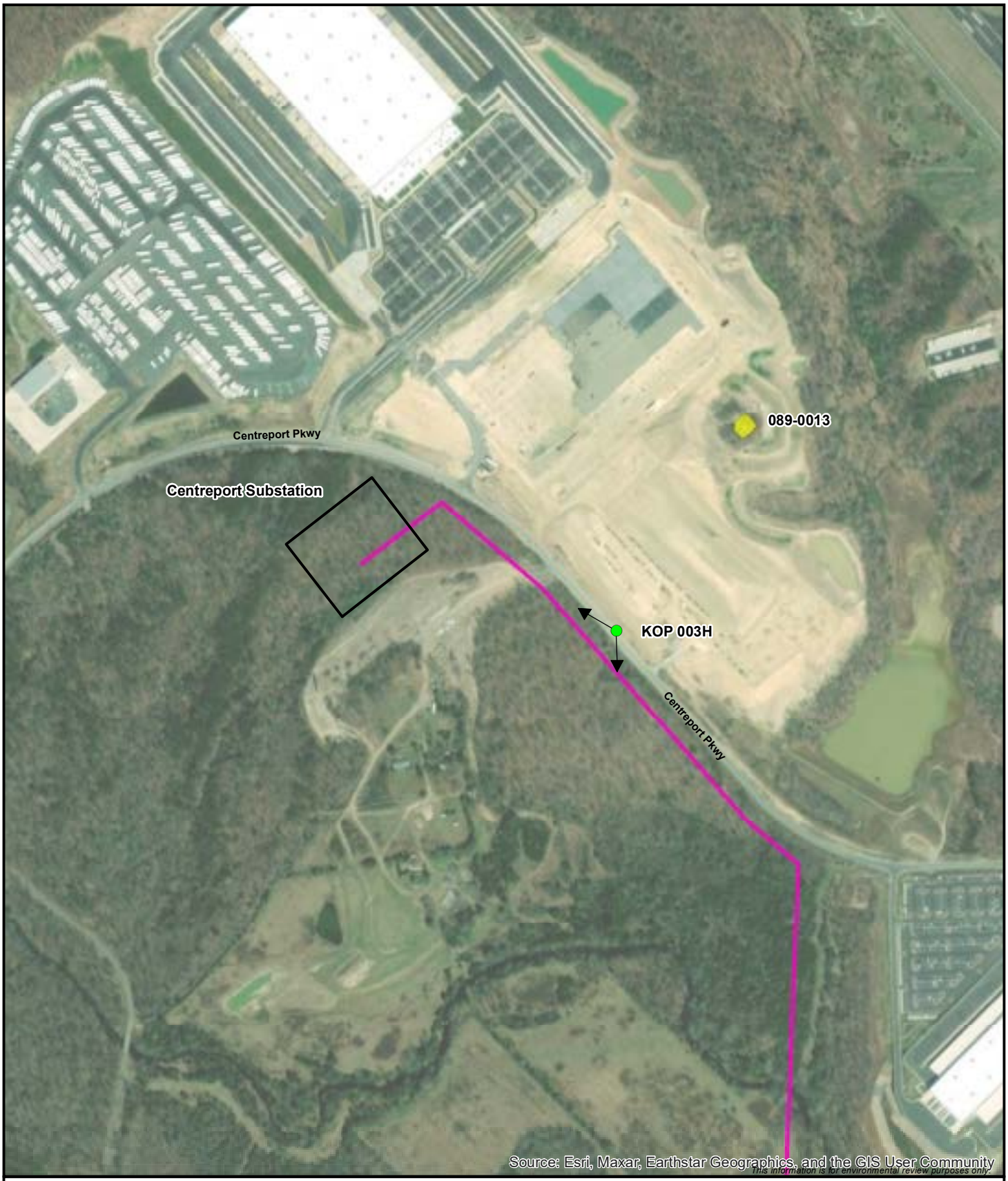


Figure 6. Aerial photograph depicting land use and photo view for 089-0013.

Existing View

Proposed view showing transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	224 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	1350 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

Figure 7
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

Pre-Application Analysis
Centreport

Existing View

Proposed view showing transmission line structures

110

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	177 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	80 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

Figure 8
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

Pre-Application Analysis
Centreport

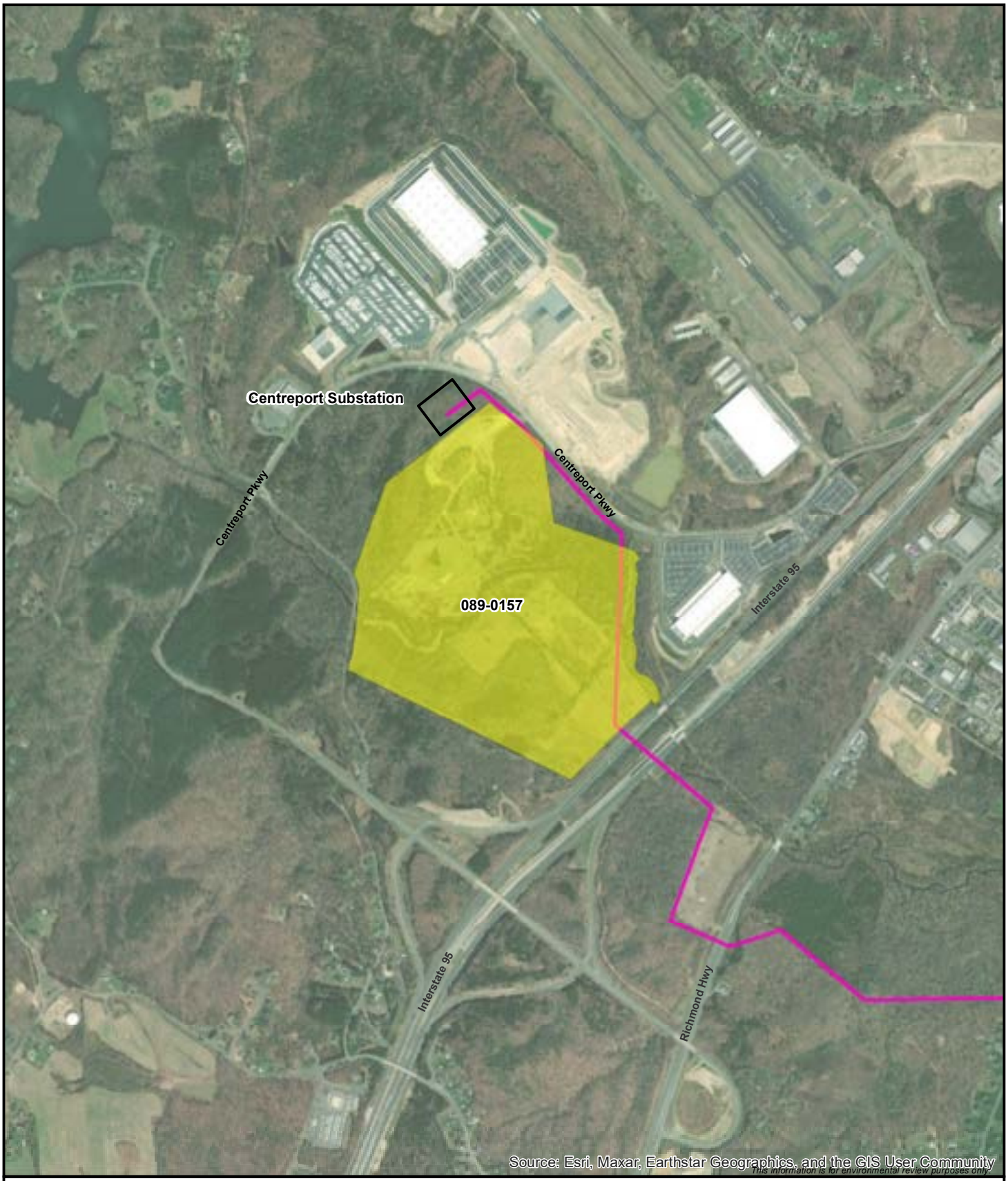


Figure 9. Aerial photograph depicting land use and photo view for 089-0157.

Figure 10. Aerial photograph depicting land use and photo view for 089-0013.

Existing View

Proposed view showing transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	224 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	1350 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

Figure 11
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

Pre-Application Analysis
Centreport

Existing View

Proposed view showing transmission line structures

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	177 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	80 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

VIEWPOINT CONTEXT

Figure 12
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

Pre-Application Analysis
Centreport

Figure 13. Aerial photograph depicting land use and photo view for 089-0157.

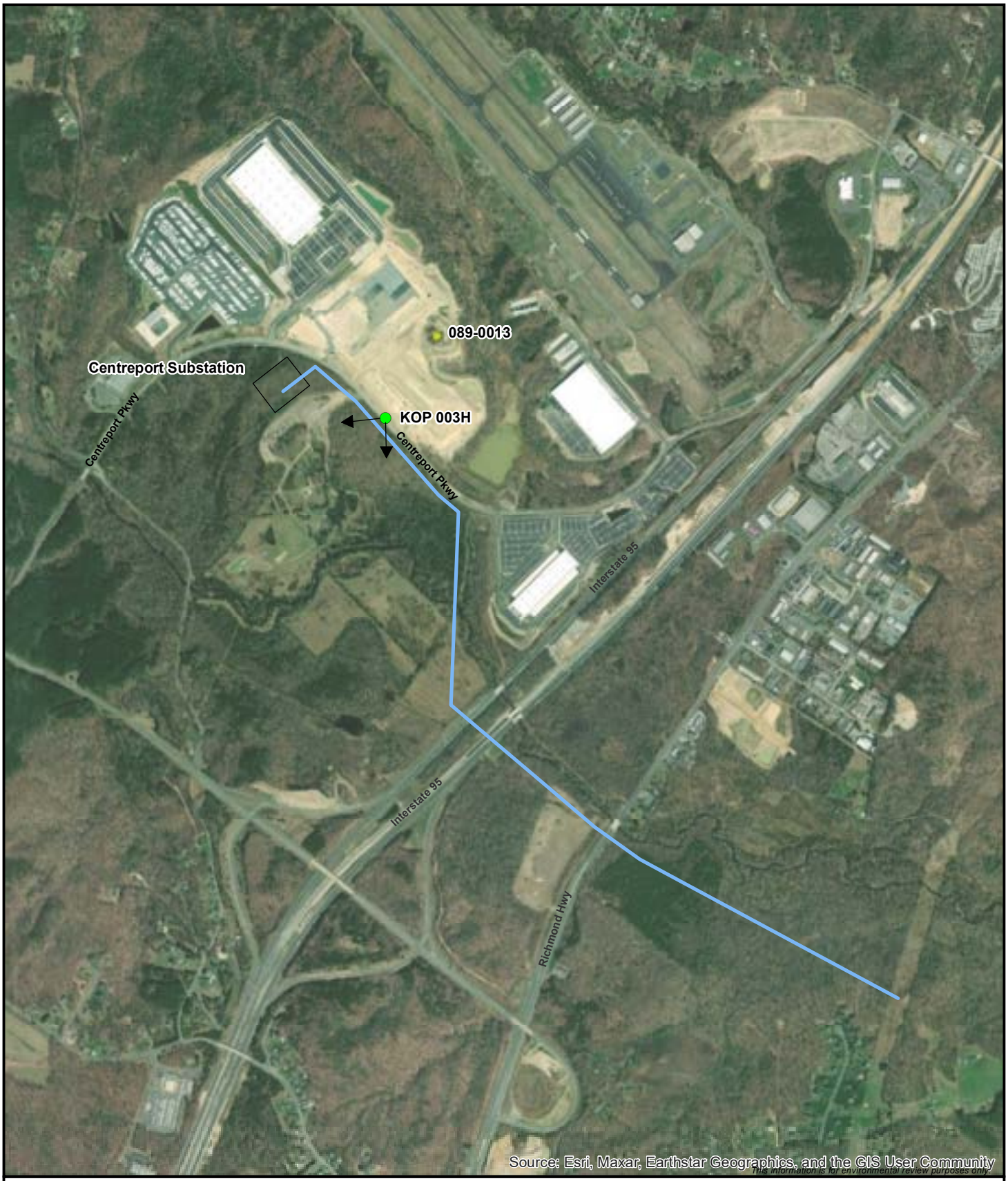


Figure 14. Aerial photograph depicting land use and photo view for 089-0013.

Existing View

Proposed view showing transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	224 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	1350 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

Figure 15
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

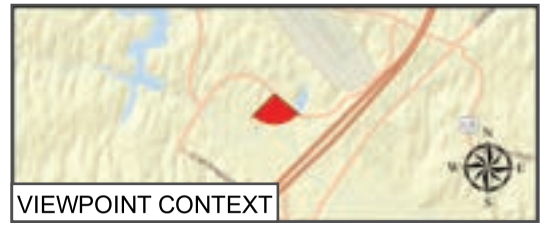
Pre-Application Analysis
Centreport

Existing View

Proposed view showing transmission line structures

Viewpoint Location UTM Zone 18N:	285124E 4251878N
View Direction:	177 degrees
Viewpoint Elevation:	154 feet
Distance to Development:	80 feet
Horizontal Field of View:	95 degrees

Date of Photography:	24th April 2024 10:35
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 16
Viewpoint KOP 003H
Centreport Pkwy SE of Oakenwold Ln
089-0013

Pre-Application Analysis
Centreport

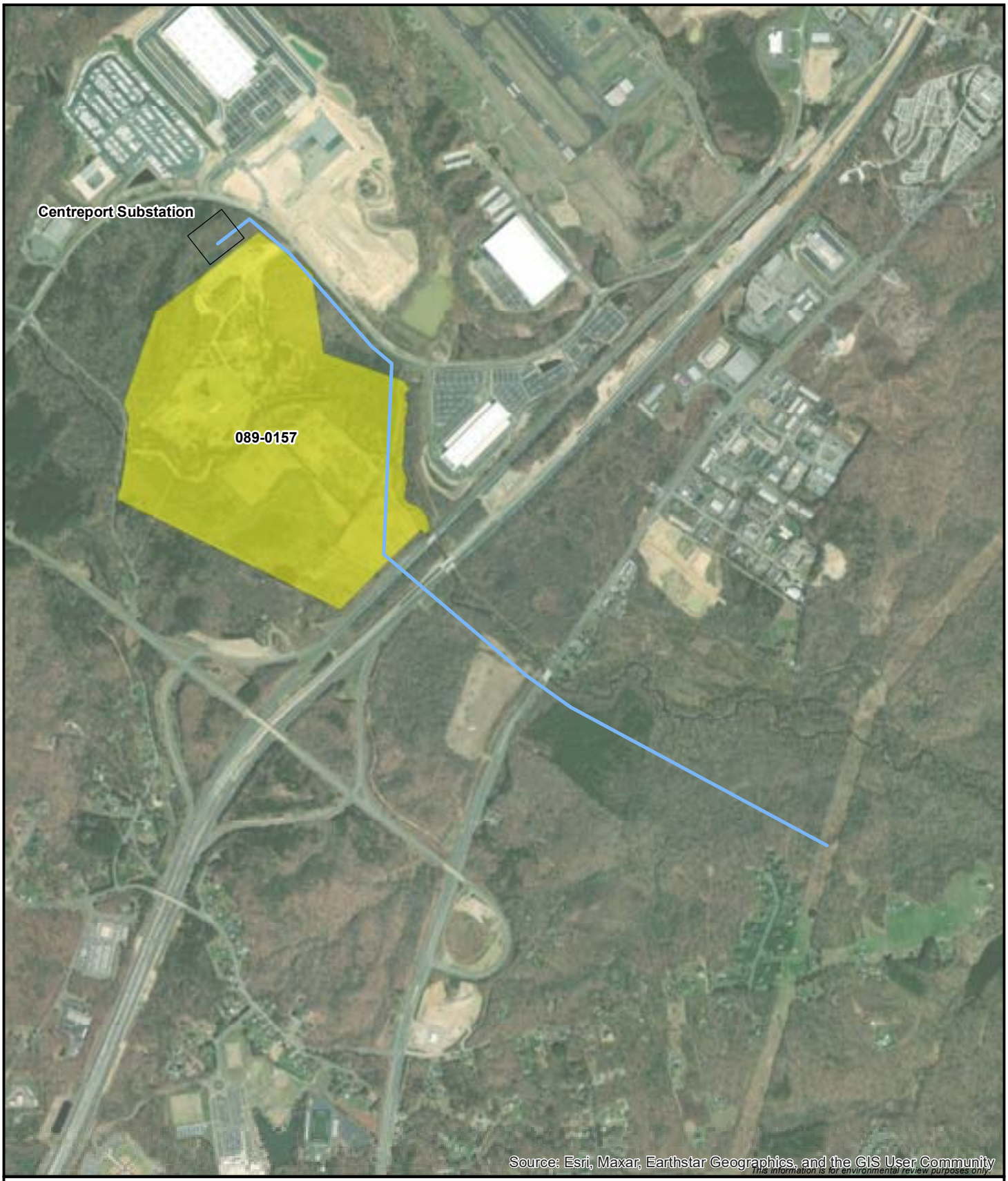


Figure 17. Aerial photograph depicting land use and photo view for 089-0157.

II. DESCRIPTION OF THE PROPOSED PROJECT

C. Describe and furnish plan drawings of all new substations, switching stations, and other ground facilities associated with the proposed project. Include size, acreage, and bus configurations. Describe substation expansion capability and plans. Provide one-line diagrams for each.

Response: The proposed Project requires construction of the Centreport Substation in Stafford County, Virginia.

In accordance with the Company's FIR document and to reliably serve the Customer, the proposed Centreport Substation will be constructed with five 112 MVA 230-34.5 kV transformers, a 230 kV ring bus with a four circuit breaker configuration, and other associated equipment. The proposed Centreport Substation will be designed to accommodate future growth in the area with an ultimate build-out to a 230 kV ring bus with a six circuit breaker configuration. The total area of the Centreport Substation is approximately 5.0 acres.

The one-line diagram and general arrangement for the proposed Centreport Substation are provided as Attachment II.C.1 and Attachment II.C.2, respectively.

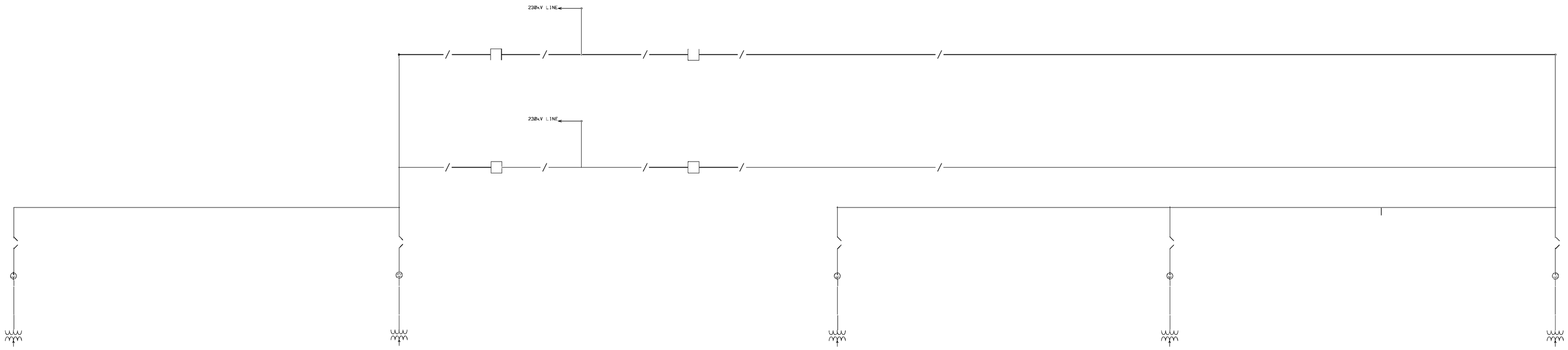
Other Minor Substation-Related Work

In addition to the substation-related work described above, the Company currently anticipates that it will perform relay resets at the existing Aquia Harbour and Cranes Corner Substations, and will remove wave traps at Cranes Corner Substation.

While this work is required in association with the Project, it is not a component of the Project as defined in Section I.A, and the costs associated with this minor substation-related work are not included in the total Project costs. The costs associated with this minor substation-related work are provided below, for reference purposes only.

Other Minor Substation-Related Costs
(Millions (approximate))

Substation	Total
Aquia Harbour	$22,000
Cranes Corner	$169,000



121

PRELIMINARY NOT FOR CONSTRUCTION

By:	Approval
Date:	
Project No.	
Network No.	
BM No.	
Description	

Revisions

(20) (S) DEMARCATION INDICATOR - SEE SUB. OL.
(99) (T) DEMARCATION INDICATOR - SEE TLIN. OL.
(98) (D) DEMARCATION INDICATOR - SEE DIST. OL.
(97) (C) DEMARCATION INDICATOR - SEE CUST. DOC.

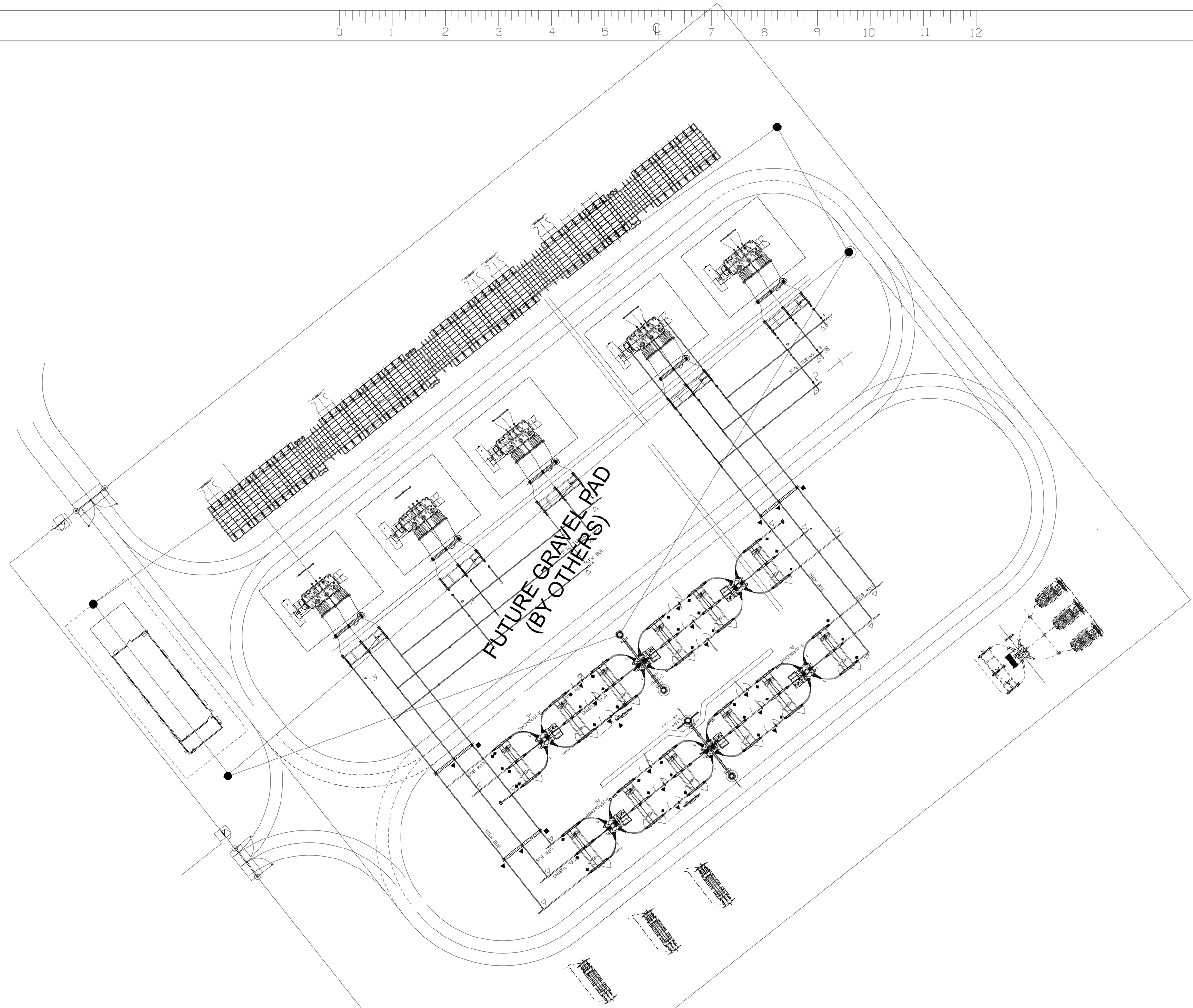
USER: mohamm6

Dominion Energy

Drawn By:	Date	Substation CENTREPORT
Approval	Date	Drawing No. II.C.1

8/13/2024

Attachment II.C.1



PRELIMINARY NOT FOR CONSTRUCTION

122

No.	Date	By	Description	Project Number	B/M
	Checked/Appr.				

Revisions

Typical Drawing Information	Library Location	Cell Name	B/M Assembly	Pipe Stand Foundation Cells (Pier)	Pipe Stand Foundation Cells (Spread)	Foundation Cells for Other Typical Structures (Pier)	(Spread)	Steel Detail & Assembly

USER: mohamm6

Dominion Energy

CENTREPORT

	Name	Date	Project No.	Sheet No.
Designed by:				
Approvals			Scale	OF
Approvals				
		B/M No.	Revisions	

Cad File Name

PLOTTED: 8/13/2024

Drawing No. II.C.2

BORDER

$FILENAME$
PLOTTED: 8/13/2024
USER: mohamm6

Attachment II.C.2

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

A. Describe the character of the area that will be traversed by this line, including land use, wetlands, etc. Provide the number of dwellings within 500 feet, 250 feet and 100 feet of the centerline, and within the ROW for each route considered. Provide the estimated amount of farmland and forestland within the ROW that the proposed project would impact.

Response: **Proposed Route (Route 2)**

The Proposed Route is approximately 2.5 miles in length and is located entirely within Stafford County, extending west from the cut-in location on existing Line #2104 north of Cranes Court Bluff to the proposed Centreport Substation, which is located adjacent to Centreport Parkway. The Proposed Route crosses mostly forested lands, including four undeveloped, forested parcels, then angles to the north and back south to avoid a proposed development before crossing over Richmond Highway and then traversing around a warehouse on the east side of the highway. The route crosses forested land adjacent to Potomac Creek for a short stretch before crossing Interstate 95, then crosses open land, Potomac Creek, and forested land on the south side of Centreport Parkway, before crossing the proposed Centreport Substation parcel, which will be cleared and graded by the Customer for the future data center development, and entering the proposed Centreport Substation.

According to County parcel data, zoning data, and aerial photo analysis, there are two residential dwellings, three non-residential structures, and two commercial buildings located within 500 feet of the proposed centerline of the Proposed Route. There are zero buildings within 250 or 100 feet of the centerline, and zero buildings within the right-of-way of the Proposed Route.

See Attachment III.A.1 for a map of farmland within the right-of-way that the Proposed Route would cross and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way of the Proposed Route.

For additional description of the character of the area that will be traversed by the Proposed Route and related impacts, see the DEQ Supplement, specifically as to land use (Sections 2.G and 2.L), wetlands (Section 2.D), forests (Section 2.L), agricultural lands (Section 2.L), historic resources (Section 2.I), and wildlife (Sections 2.G and 2.K).

Alternative Route 1

Alternative Route 1 is approximately 3.5 miles in length and is located entirely within Stafford County, extending northwest from the cut-in location on existing Line #2157 near its intersection with Cambridge Street to the proposed Centreport Substation, which is located adjacent to Centreport Parkway. Alternative Route 1

crosses mostly forested lands, including two undeveloped, forested parcels, before crossing Interstate 95 and traversing through forested, low-density residential land from the interstate to Enon Road. From Enon Road to the proposed Centreport Substation, the route crosses through undeveloped forested land before crossing Mountain View Road and the proposed Centreport Substation parcel, which will be cleared and graded by the Customer for the future data center development, and entering the proposed Centreport Substation.

According to County parcel data, zoning data, and aerial photo analysis, there are five residential dwellings located within 500 feet of the proposed centerline, one residential dwelling within 250 feet of the proposed centerline, and zero dwellings located within 100 feet of the proposed centerline or within the right-of-way of Alternative Route 1. There are four non-residential structures and one commercial building within 500 feet of the proposed centerline.

See Attachment III.A.1 for a map of farmland within the right-of-way that the Alternative Route 1 would cross and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way that Alternative Route 1 would impact.

For additional description of the character of the area that will be traversed by Alternative Route 1 and related impacts, see the DEQ Supplement, specifically as to land use (Sections 2.G and 2.L), wetlands (Section 2.D), forests (Section 2.L), agricultural lands (Section 2.L), historic resources (Section 2.I), and wildlife (Sections 2.G and 2.K).

Alternative Route 3

Alternative Route 3 is approximately 2.3 miles in length and is located entirely within Stafford County, extending west from the cut-in location on existing Line #2104 north of Potomac Creek to the proposed Centreport Substation, which is located adjacent to Centreport Parkway. Alternative Route 3 crosses mostly forested lands, crossing two undeveloped parcels with a mixture of open space and forest and crossing Potomac Creek before crossing Richmond Highway. From Richmond Highway to Interstate 95, Alternative Route 3 crosses a mixture of forested and open space adjacent to Potomac Creek and a warehouse development. On the west side of the interstate, Alternative Route 3 crosses open land, Potomac Creek, and forested land on the south side of Centreport Parkway, before crossing the proposed Centreport Substation parcel, which will be cleared and graded by the Customer for the future data center development, and entering the proposed Centreport Substation.

According to County parcel data, zoning data, and aerial photo analysis, there is one residential dwelling within 500 feet and one residential dwelling within 250 feet of the proposed centerline of Alternative Route 3. There are zero residential dwellings within 100 feet of the centerline, and zero residential dwellings within the right-of-way. There are eight non-residential structures and five commercial buildings within 500 feet of the centerline.

See Attachment III.A.1 for a map of farmland within the right-of-way that the Alternative Route 3 would cross and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way that Alternative Route 3 would impact.

For additional description of the character of the area that will be traversed by Alternative Route 3 and related impacts, see the DEQ Supplement, specifically as to land use (Sections 2.G and 2.L), wetlands (Section 2.D), forests (Section 2.L), agricultural lands (Section 2.L), historic resources (Section 2.I), and wildlife (Sections 2.G and 2.K).

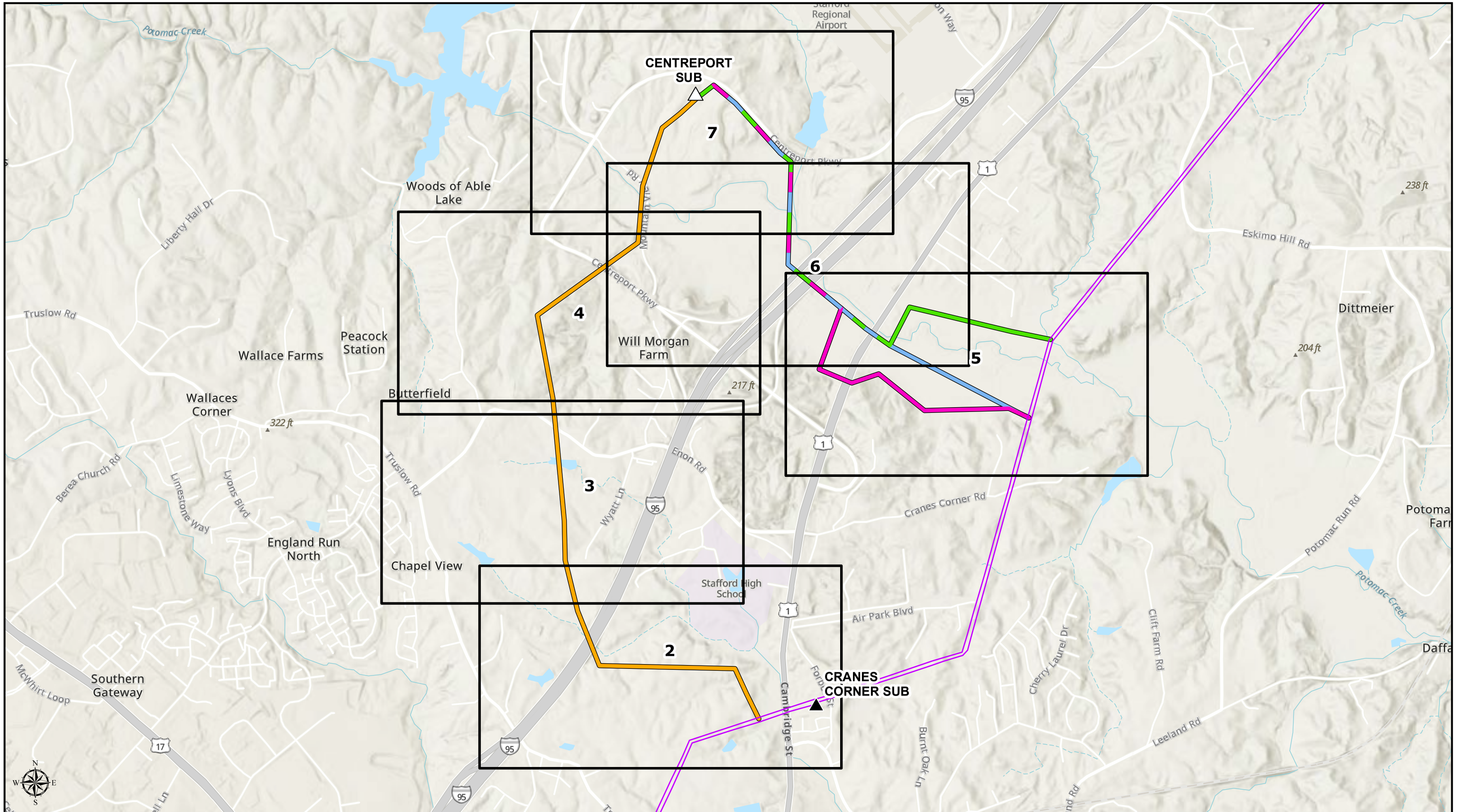
Alternative Route 4

Alternative Route 4 is approximately 2.2 miles in length and is located entirely within Stafford County, extending west from the cut-in location on existing Line #2104 about 0.3 mile north of Cranes Corner Road to the proposed Centreport Substation, which is located adjacent to Centreport Parkway. From the cut-in location, the Alternative Route 4 right-of-way crosses almost entirely undeveloped, forested lands, with a small amount of open space adjacent to Richmond Highway before it continues along the same alignment as Alternative Route 3 for the remainder of the route.

According to County parcel data, zoning data, and aerial photo analysis, there is one residential dwelling, two commercial buildings, and one non-residential structure located within 500 feet of the proposed centerline of Alternative Route 4. There are zero residential dwellings, non-residential structures, or commercial buildings within 250 or 100 feet of the centerline or within the right-of-way.

See Attachment III.A.1 for a map of farmland within the right-of-way that Alternative Route 4 would cross and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way that Alternative Route 4 would impact.

For additional description of the character of the area that will be traversed by Alternative Route 4 and related impacts, see the DEQ Supplement, specifically as to land use (Sections 2.G and 2.L), wetlands (Section 2.D), forests (Section 2.L), agricultural lands (Section 2.L), historic resources (Section 2.I), and wildlife (Sections 2.G and 2.K).



- Existing Substation
- Proposed Substation
- Dominion Exsiting Transmission Line

Route Alternatives

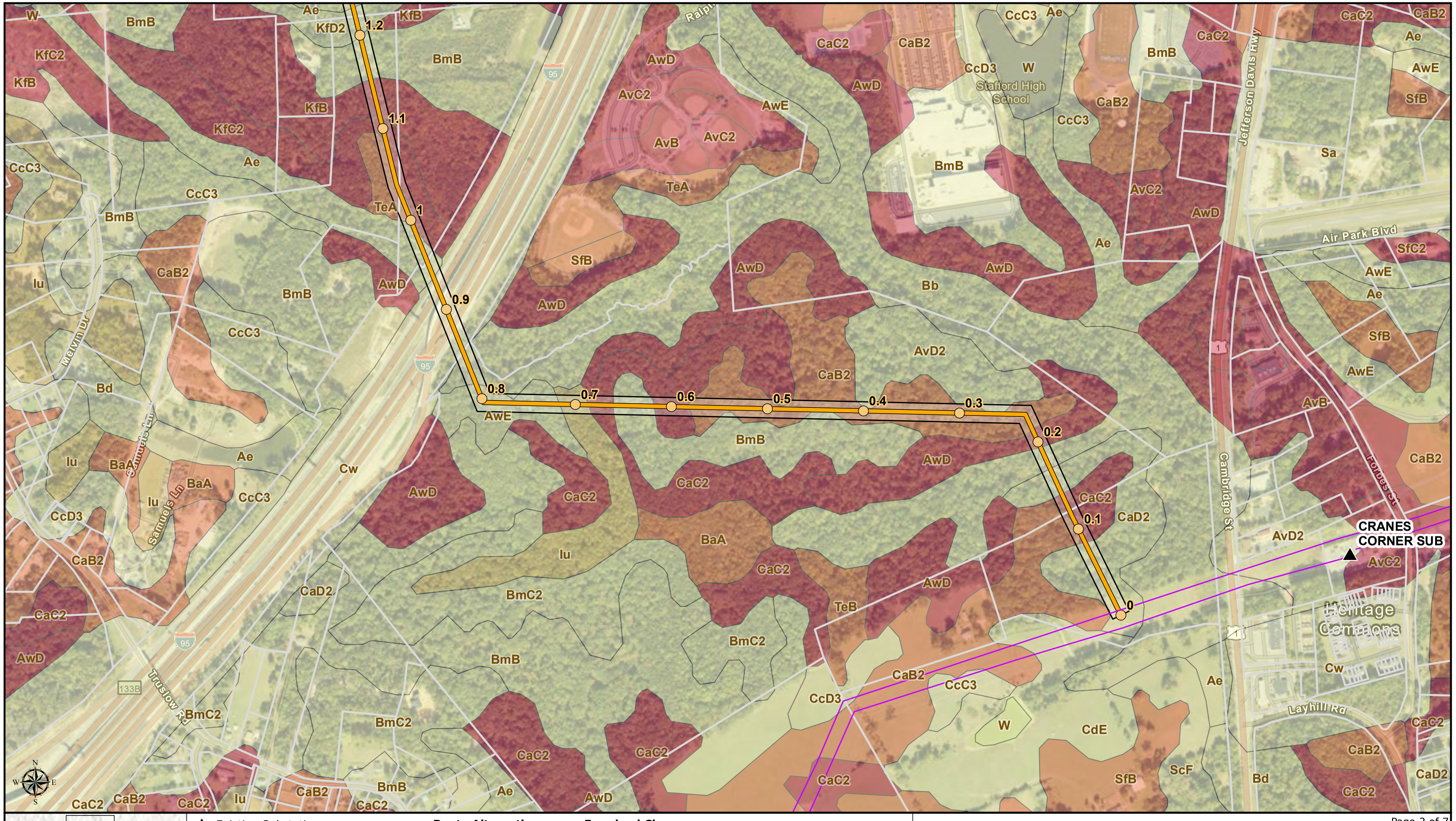
- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4
- Index Page

0 1,000 2,000
Feet
1:24,000

Attachment III.A.1 Index
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

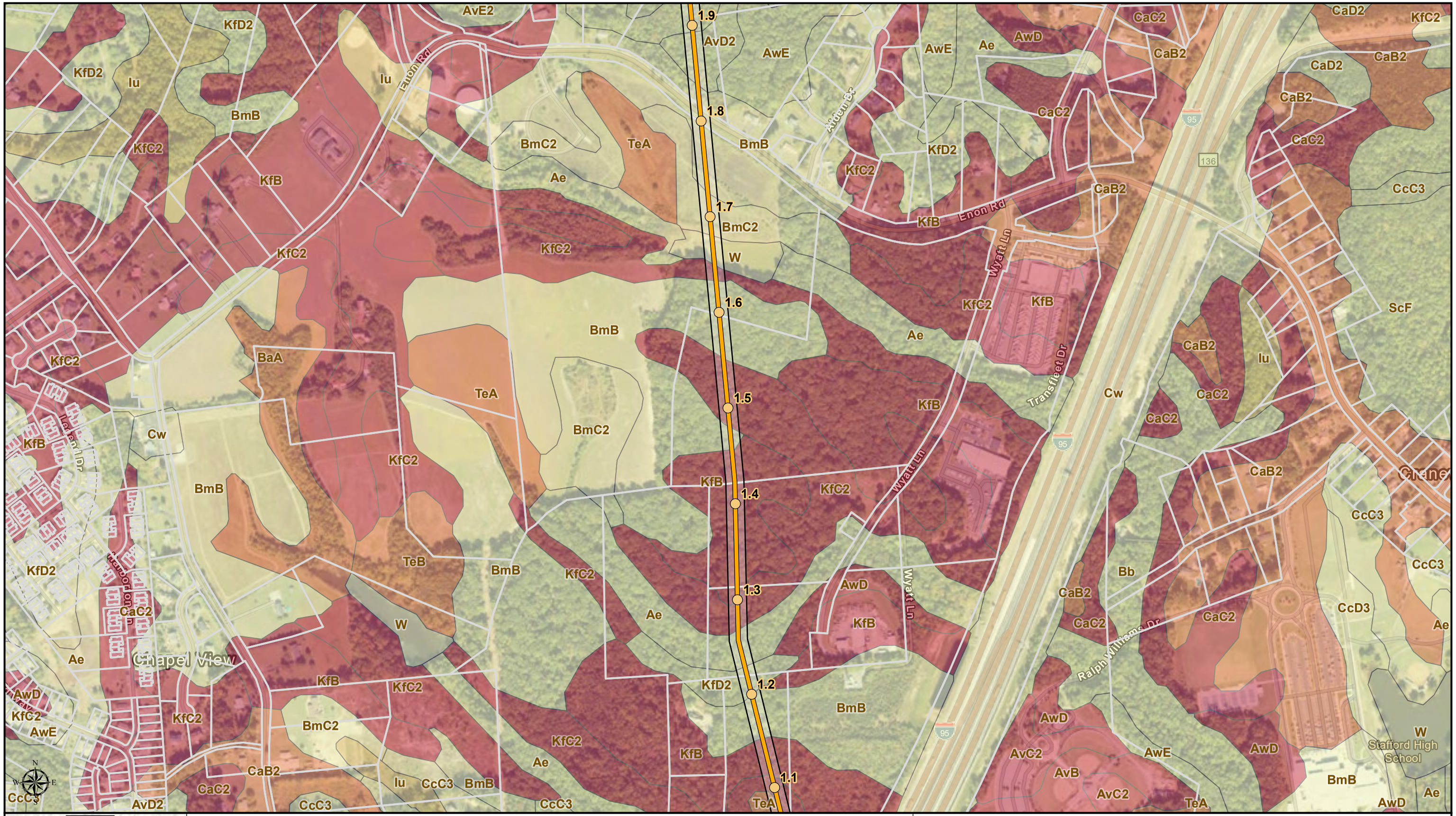
Dominion Energy

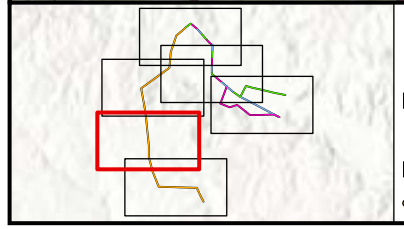


Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy





▲ Existing Substation
△ Proposed Substation

Milepost
○ Alternative Route 1

Route Alternatives
Alternative Route 1

100ft Right-of-Way

Farmland Class
Farmland of statewide importance
All areas are prime farmland
Prime farmland if drained
Not prime farmland

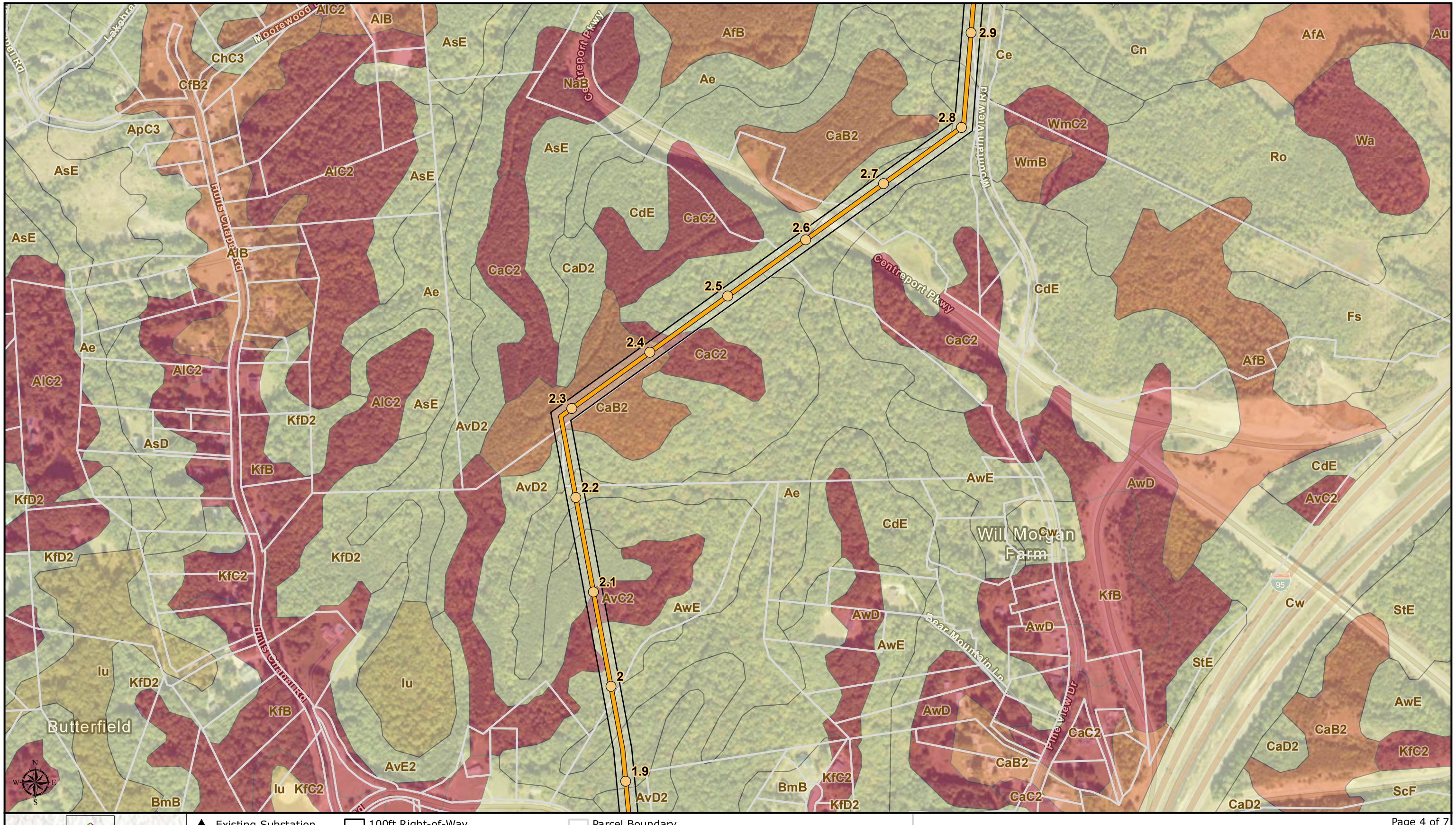
Parcel Boundary

0 150 300
Feet
1:6,000

Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Existing Substation
Proposed Substation

Milepost
Alternative Route 1

Route Alternatives
Alternative Route 1

100ft Right-of-Way
Parcel Boundary

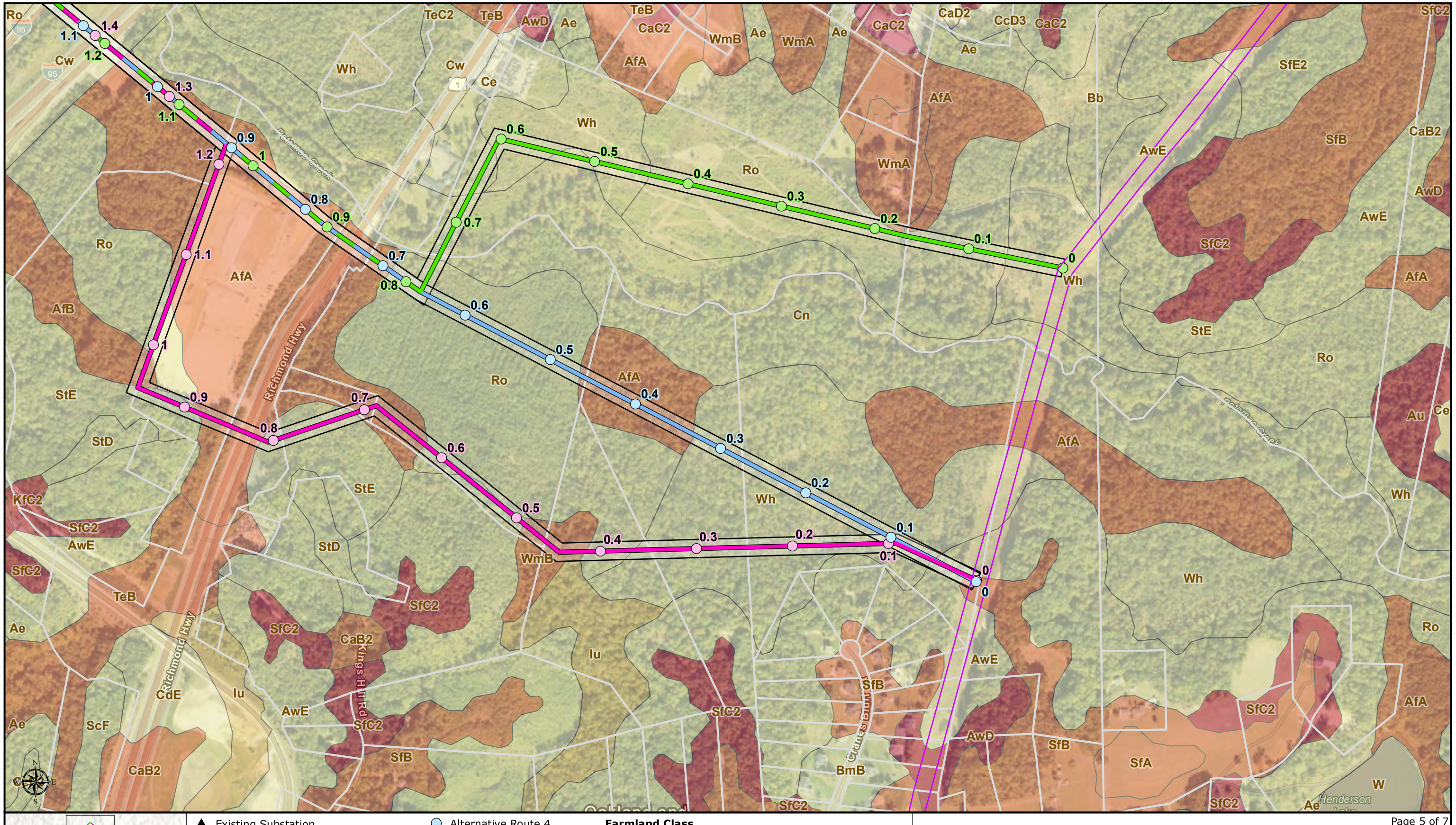
Farmland Class
Farmland of statewide importance
All areas are prime farmland
Prime farmland if drained
Not prime farmland

0 150 300
Feet
1:6,000

Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



▲ Existing Substation
△ Proposed Substation
Dominion Exsiting Transmission Line

Milepost
Proposed Route (Route 2)
Alternative Route 3
Alternative Route 4

Route Alternatives
Proposed Route (Route 2)
Alternative Route 3
Alternative Route 4
100ft Right-of-Way

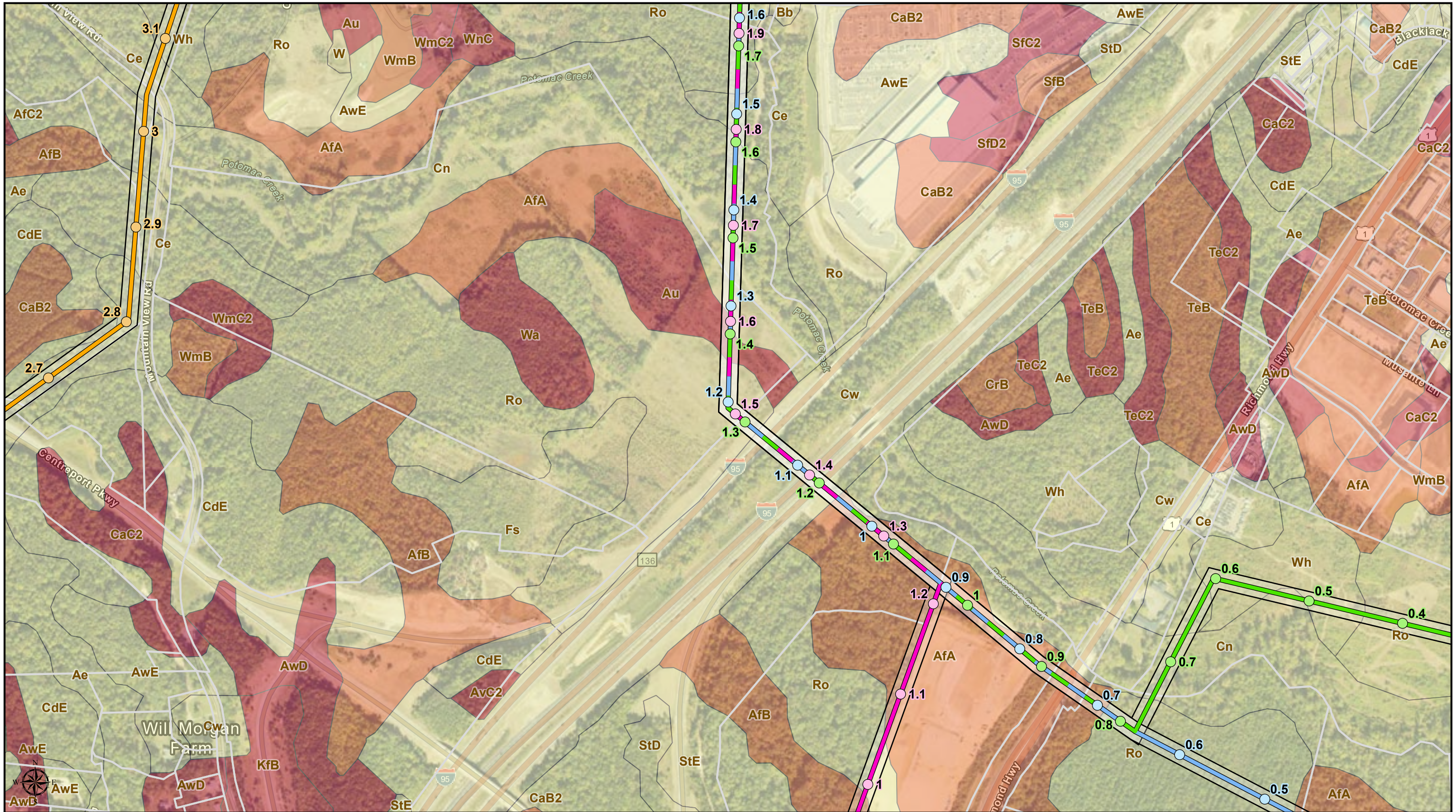
Farmland Class
Farmland of statewide importance
All areas are prime farmland
Prime farmland if drained
Not prime farmland
Parcel Boundary

0 150 300
Feet
1:6,000

Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy



Existing Substation
Proposed Substation

Milepost
Proposed Route (Route 2)
Alternative Route 1
Alternative Route 3
Alternative Route 4

Route Alternatives
Proposed Route (Route 2)
Alternative Route 1
Alternative Route 3
Alternative Route 4

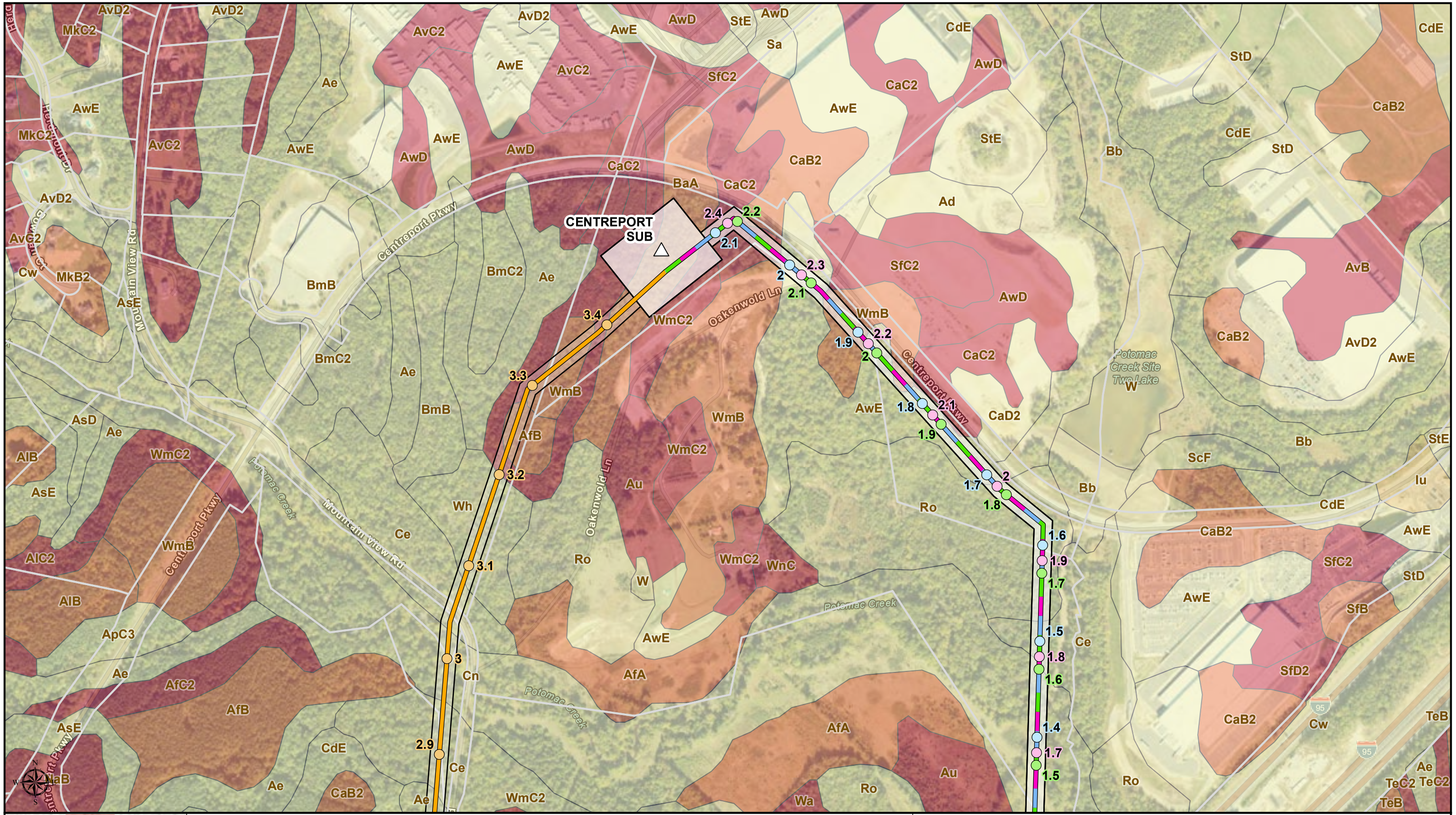
100ft Right-of-Way

Farmland Class
Farmland of statewide importance
All areas are prime farmland
Not prime farmland
Parcel Boundary

0 150 300
Feet
1:6,000

Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM
Dominion Energy



Existing Substation
Proposed Substation

Milepost
- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4

Route Alternatives
- Proposed Route (Route 2)
- Alternative Route 1
- Alternative Route 3
- Alternative Route 4
- 100ft Right-of-Way

Farmland Class
- Farmland of statewide importance
- All areas are prime farmland
- Prime farmland if drained
- Not prime farmland
- Parcel Boundary

0 150 300
Feet
1:6,000

Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
Centreport 230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

B. Describe any public meetings the Applicant has had with neighborhood associations and/or officials of local, state or federal governments that would have an interest or responsibility with respect to the affected area or areas.

Response: Stakeholder Engagement

On March 22, 2024, the Company announced the proposed Project to the public with a letter and launched an internet website dedicated to the proposed Project: www.dominionenergy.com/centreport (the "Project website"). The Project website includes a description and benefits of the proposed Project, an explanation of need, study area map, copies of letters mailed to the community, and information on the Commission review process.

The March 2024 project announcement letter was sent to approximately 675 property owners and residents within the study area for the Project. Each letter included information about the need for the Project, a study area map, and a fact sheet. Additionally, the communication indicated an in-person community meeting would be held on April 23, 2024. Lastly, the letter explained how to contact the Project team to provide any feedback or questions. A copy of the March 2024 letter, study area map, and fact sheet are available on the Project website.

The Company mailed a postcard to property owners and residents within the study area for the Project in March 2024 to provide additional details about the April 23, 2024 community meeting. A copy of the March 2024 postcard is available on the Project website.

On April 10, 2024, the Company mailed a letter to residents within the study area sharing the initial routes under consideration. The letter also included a map outlining the routes and information about how to view the routes in-depth on the Project website by using MapChat by ERM, an interactive mapping tool that allows property owners to zoom in on the route alternatives, measure distances, and leave comments for the Company's Project team. A copy of the April 10, 2024 letter is available on the Project website.

Newspaper print advertisements regarding the Project and open house were placed in The Free Lance Star (20,195 circulation) on April 17, 2024. An example of the advertisement placed in the papers is included as Attachment III.B.1.

Additionally, from April 5, 2024 to May 4, 2024, the Company used paid digital and social media campaigns to drive awareness and educate the public regarding the Company's Project, MapChat by ERM, and the first community meeting. A copy of those digital advertisements is included as Attachment III.B.2. The event campaigns ran within NextDoor and Facebook. All phases urged local residents to visit the Project website to learn more about the meeting and to participate in the planning process.

The April 23, 2024 community meeting was held from 5:30 p.m. to 7:30 p.m. at the Rowser Building, and there were 23 community members in attendance. The Company answered questions from the community in an open house-style meeting where community members could speak with Project team members individually. The community meeting materials have been posted on the Project website.

On May 6, 2024, a postcard was mailed to the entire mailing list of property owners and residents within the study area for the Project, inviting neighbors to attend a second community meeting on June 4, 2024, for an update on the Project. A copy of the May 2024 postcard is available on the Project website.

From May 13, 2024 to June 14, 2024, the Company used paid digital and social media campaigns in the same manner used to promote the first community meeting for the June 4 community meeting. The event campaigns ran within Facebook, Google, and NextDoor. The campaigns urged local residents to visit the Project website to learn more about the meeting and to participate in the planning process.

The June 4, 2024 community meeting was held from 5:00 p.m. to 7:00 p.m. at the Rowser Building. There were 13 community members in attendance. Again, the Company answered questions from the community in an open house-style meeting where community members could speak with Project team members individually. The June 4, 2024 community meeting materials are posted on the Project website.

Additionally, from June 5, 2024 to June 14, 2024, the Company used paid digital and social media campaigns in the same manner used to promote the community meetings to drive awareness and educate the public regarding the Company's Project, and MapChat by ERM. See Attachment III.B.2.

As routes changed based on additional analysis and feedback received during the routing process, the Project team updated MapChat by ERM with revised simulations for impacted routes. The Project website includes the date that MapChat was last updated.

On August 28, 2024, the Company sent a letter to the entire mailing list announcing updates to MapChat by ERM, which reflect modifications to the routes, and notifying the community that photo simulations are available for viewing on the Project website. The photo simulations are included as Attachment III.B.3.

Environmental Justice

As set forth in Section 6.7 of the Environmental Routing Study, the Company researched the demographics of the surrounding communities using data from the U.S. Census Bureau's American Community Survey 5-Year Estimates (2018-2022). This screening identified 12 Census Block Groups ("CBGs") located within one mile of the Proposed Route and proposed Centreport Substation. A review of census data for several demographic characteristics identified populations within the Project study area that meet the Virginia Environmental Justice Act ("VEJA") thresholds for Environmental Justice Communities ("EJ Communities") (Va. Code

§§ 2.2-234, 2.2-235).

Of the 12 CBGs within the Project study area, five CBGs are crossed by at least one route alternative. All five CBGs crossed appear to contain populations of color, including one CBG which meets the Limited English-Speaking threshold. None of the five CBGs crossed meet low-income thresholds.

As set forth above in this Section III.B, the Company has engaged extensively all communities within the Project study area, including people in the EJ Community CGBs discussed herein. This engagement includes translations of Project information into other languages. The Company believes that 1) its work has allowed for the fair treatment and meaningful involvement of all interested people, regardless of race, color, national origin, income, faith, or disability, and 2) the Project's Proposed Route minimizes potential impacts to EJ Communities and other populations, and will not result in a significantly adverse and disproportionate impact on EJ Communities.

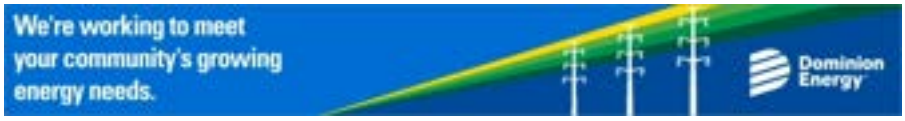
In addition to its evaluation of impacts, the Company has and will continue to engage the EJ Communities in a manner that allows them to meaningfully participate in the Project development and approval process so that the Company can take their views and input into consideration. See Attachment III.B.4 for a copy of the Company's Environmental Justice Policy.

charles ryan associates

Dominion Energy Electric Transmission Contact:
Ann Gordon Mickel, Ann.Gordon.Mickel@dominionenergy.com

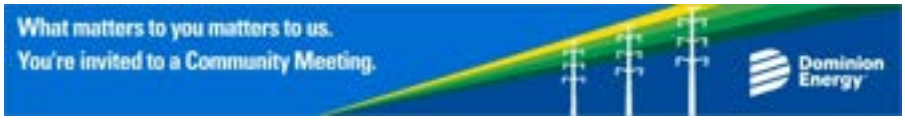
Dominion Energy Electric Transmission

Centreport Electric Transmission Line Project Announcement Display



Dominion Energy
Electric Transmission

Centreport Electric
Transmission Line Project
Pre-Event Display



Dominion Energy
Electric Transmission

Centreport Electric
Transmission Line Project
Post-Event Display

Dominion Energy Electric Transmission

Centreport Electric Transmission Line Project Nextdoor Imagery

Announcemet Image:

Pre-Event Image:

Post-Event Image:

Dominion Energy
Electric Transmission

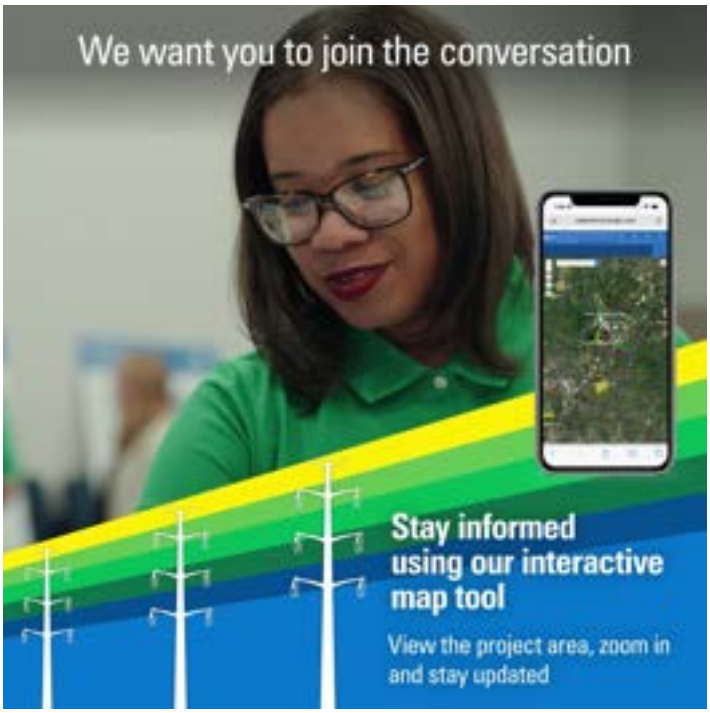
Centreport Electric Transmission Line Project Social Videos

Announcement Video (Click to Play)

Pre-event Video (Click to Play)

Dominion Energy
Electric Transmission

Centreport Electric
Transmission Line Project
Social Videos



Post-Event Video (Click to Play)

Dominion Energy
Electric Transmission

Centreport Electric
Transmission Line Project
Print Ads

DE Transmission

Centreport

Report Date: April 5, 2024 – May 4, 2024

charles ryan associates

Dominion Energy

DET | Centreport | 4/5/24 – 5/4/24 | Overall Report

The Centreport campaign ran on Facebook, Google and Nextdoor through 5/4/24. These campaigns targeted customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

1,420,744 impressions
of ads were delivered to target audiences.

14,107 clicks
have taken audiences to the landing pages.

156,737 video views with an average 45.77% VCR.

0.99% CTR
Most CTRs near or above benchmarks.

106,801 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Display 300x600 ad had the highest CTR at 4.07%, which is 714% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.45% and 52,283 completed video views for a 52.04% VCR.
- Nextdoor ads performed well with a CTR of 0.35%, which is 133% above benchmark.
- Google Display ads performed well with a CTR of 0.69%, which is 38% above benchmark.
- Google Video ads had 19,457 completed video views for a 34.58% VCR, which is 131% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

DET | Centreport | 4/5/24 – 4/12/24 | Announcement Report

The Centreport campaign ran on Facebook, Google and Nextdoor through 4/12/24. These campaigns targeted customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

398,047 impressions
of ads were delivered to target audiences.

4,507 clicks
have taken audiences to the landing pages.

55,158 video views with an average 50.29% VCR.

1.13% CTR
Most CTRs near or above benchmarks.

42,557 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Display 300x600 ad had the highest CTR at 3.51%, which is 602% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.33% and 22,309 completed video views for a 55.52% VCR.
- Nextdoor ads performed well with a CTR of 0.33%, which is 120% above benchmark.
- Google Display ads performed well with a CTR of 0.73%, which is 46% above benchmark.
- Google Video ads had 5,428 completed video views for a 36.24% VCR, which is 142% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

DET | Centreport | 4/13/24 – 4/23/24 | Pre-Event Report

The Centreport campaign ran on Facebook, Google and Nextdoor through 4/23/24. These campaigns targeted customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

620,294 impressions
of ads were delivered to target audiences.

5,741 clicks
have taken audiences to the landing pages.

55,078 video views with an average 47.40% VCR.

0.93% CTR
Most CTRs near or above benchmarks.

37,135 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Display 300x600 ad had the highest CTR at 4.07%, which is 714% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.48% and 18,994 completed video views for a 54.54% VCR.
- Nextdoor ads performed well with a CTR of 0.42%, which is 180% above benchmark.
- Google Display ads performed well with a CTR of 0.66%, which is 32% above benchmark.
- Google Video ads had 7,114 completed video views for a 35.13% VCR, which is 134% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

DET | Centreport | 4/25/24 – 5/4/24 | Post-Event Report

The Centreport campaign ran on Facebook, Google and Nextdoor through 5/4/24. These campaigns targeted customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

402,403 impressions
of ads were delivered to target audiences.

3,859 clicks
have taken audiences to the landing pages.

46,501 video views with an average 38.48% VCR.

0.96% CTR
Most CTRs near or above benchmarks.

27,109 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Display 300x600 ad had the highest CTR at 2.89%, which is 478% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.59% and 10,980 completed video views for a 43.11% VCR.
- Nextdoor ads performed well with a CTR of 0.25%, which is 67% above benchmark.
- Google Display ads performed well with a CTR of 0.69%, which is 38% above benchmark.
- Google Video ads had 6,915 completed video views for a 32.88% VCR, which is 119% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

Summary:

- The Centreport Pre-Event Display 300x600 ad was the highest-performing display ad with a CTR of 4.07%.
- Females aged 65+ were the top engagers on Facebook. Males ages 25-34 were the top engagers on Video and Display.
- Facebook was the top-performing platform for the campaign and ended the campaign with a CTR 172% over the 0.90% Facebook benchmark.
- Video ads performed well in this campaign with 156,737 video views. There were 71,740 completed video views across the platforms for a total VCR of 45.77%.
- The home & garden, media & entertainment , and travel audience segments had the highest CTRs on Google.

148

August 28, 2024

Platform Benchmarks:
Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% |
LinkedIn CTR Benchmark: 0.26%

DE Transmission

Centreport

Phase 2

149

Report Date: May 13, 2024 – June 14, 2024

charles ryan associates

Dominion Energy

DET | Centreport | 5/13/24 – 6/14/24 | Overall Report

The Centreport campaign ran on Facebook, Google and Nextdoor through 6/14/24. These campaigns were targeted at customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

1,286,742 impressions
of ads were delivered to target audiences.

14,298 clicks
have taken audiences to the landing pages.

140,123 video views with an average 40.87% VCR.

1.11% CTR
Most CTRs near or above benchmarks.

93,288 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Post-Event 300x600 Display ad had the highest CTR at 6.22%, which is 1,144% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.36% and 41,166 completed video views for a 47.19% VCR.
- Nextdoor ads performed well with a CTR of 0.45%, which is 200% above benchmark.
- Google Display ads performed well with a CTR of 1.19%, which is 138% above benchmark.
- Google Video ads had 16,106 completed video views for a 30.45% VCR, which is 103% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

DET | Centreport | 5/13/24 – 5/21/24 | Announcement Report

The Centreport Announcement campaign ran on Facebook, Google and Nextdoor through 5/21/24. These campaigns were targeted at customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

292,062 impressions
of ads were delivered to target audiences.

3,403 clicks
have taken audiences to the landing pages.

48,938 video views with an average 43.38% VCR.

1.17% CTR
Most CTRs near or above benchmarks.

33,997 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Facebook ad had the highest CTR at 2.14%, which is 138% higher than the 0.90% Facebook benchmark.

Notable Insights

- Facebook ads had a CTR of 2.14% and 16,689 completed video views for a 52.49% VCR.
- Nextdoor ads performed well with a CTR of 0.51%, which is 240% above benchmark.
- Google Video ads had 4,540 completed video views for a 26.48% VCR, which is 77% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

DET | Centreport | 5/22/24 – 6/4/24 | Pre-Event Report

The Centreport Pre-Event campaign ran on Facebook, Google and Nextdoor through 6/4/24. These campaigns were targeted at customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

594,087 impressions
of ads were delivered to target audiences.

6,574 clicks
have taken audiences to the landing pages.

49,273 video views with an average 40.50% VCR.

1.11% CTR
Most CTRs near or above benchmarks.

34,370 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport 300x600 Display ad had the highest CTR at 3.98%, which is 696% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.42% and 15,019 completed video views for a 46.79% VCR.
- Nextdoor ads performed well with a CTR of 0.40%, which is 167% above benchmark.
- Google Display ads performed well with a CTR of 1.03%, which is 106% above benchmark.
- Google Video ads had 4,938 completed video views for a 28.75% VCR, which is 92% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

DET | Centreport | 6/5/24 – 6/14/24 | Post-Event Report

The Centreport Post-Event campaign ran on Facebook, Google and Nextdoor through 6/14/24. These campaigns were targeted at customers over the age of 25 who resided in and around the project areas in Stafford County, Virginia.

400,593 impressions
of ads were delivered to target audiences.

4,321 clicks
have taken audiences to the landing pages.

41,912 video views with an average 38.38% VCR.

1.08% CTR
Most CTRs near or above benchmarks.

24,921 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET Centreport Post-Event 300x600 Display ad had the highest CTR at 6.22%, which is 1,144% higher than the 0.50% Display benchmark.

Notable Insights

- Facebook ads had a CTR of 2.59% and 9,458 completed video views for a 40.51% VCR.
- Nextdoor ads performed well with a CTR of 0.47%, which is 213% above benchmark.
- Google Display ads performed well with a CTR of 1.75%, which is 250% above benchmark.
- Google Video ads had 6,627 completed video views for a 35.70% VCR, which is 138% above the 15% Google VCR benchmark.

Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% | Google Search CTR Benchmark: 3.17% | Google Display CTR Benchmark: 0.50% | Google Video Benchmark: 15%| Nextdoor CTR Benchmark: 0.15%

Summary:

- The Centreport Post-Event 300x600 Display ad was the highest-performing ad with a CTR of 6.22%.
- Females 65+ were the top engagers on Facebook. Males ages 18-34 were the top engagers on Video and Display.
- Facebook was the top-performing platform for the campaign and ended the campaign with a CTR 162% over the 0.90% Facebook benchmark.
- Video ads performed well in this campaign with 140,123 video views. There were 57,272 completed video views across the platforms for a total VCR of 40.87%.
- The energy industry information, renewable energy and power outage information audience segments had the highest CTRs on Google.

154

August 28, 2024

Platform Benchmarks:
Facebook CTR Benchmark: 0.90% | Twitter CTR Benchmark: 1.11% |
LinkedIn CTR Benchmark: 0.26%

CENTREPORT

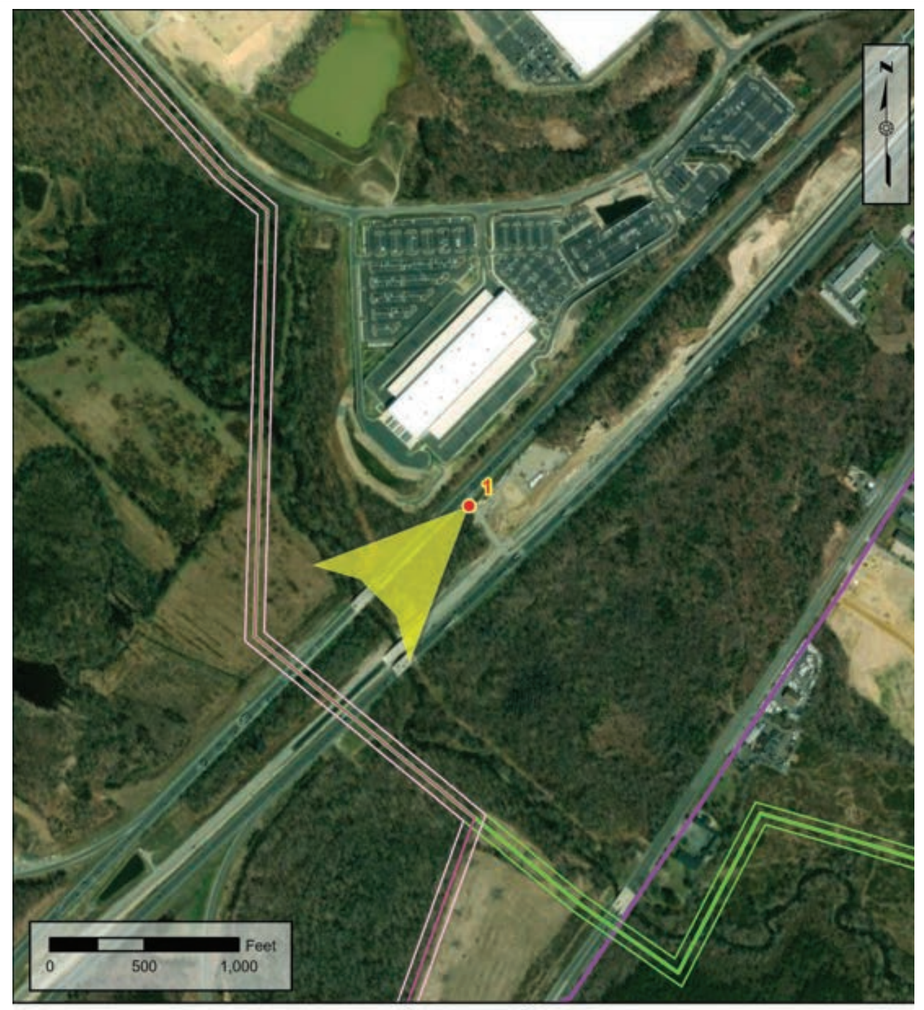
230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County Virginia

Dominion Energy℠

KOP 1

Interstate 95

Date: 04/24/2024
Time: 11:34 am
Viewing Direction: Southwest
Distance to closest feature: .25 mi



Note: Project components illustrated are based on proposed preliminary designs
The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

Attachment III.B.3

CENTREPORT

230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County Virginia

Dominion Energy℠

KOP 1

Interstate 95

Date: 04/24/2024
Time: 11:34 am
Viewing Direction: Southwest
Distance to closest feature: .25 mi

EXISTING CONDITIONS

HIDDEN PROJECT INFRASTRUCTURE SHOWN IN YELLOW

Legend

- KOP View Direction
- Dominion Existing Transmission Line
- **> Route 2**
  - Route 2
  - 100ft Right of Way
- **> Route 3**
  - Route 3
  - 100ft Right of Way

Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

CENTREPORT

230 kV Electric Transmission Project

Dominion Energy Virginia

Stafford County Virginia

Dominion Energy℠

KOP 5

Centreport Pkwy & Mountain View Rd

Date: 04/24/2024

Time: 1:35 am

Viewing Direction: Southeast

Distance to closest feature: .25 mi

EXISTING CONDITIONS

HIDDEN PROJECT INFRASTRUCTURE SHOWN IN YELLOW

Legend

- KOP View Direction
- Proposed Substation Boundary
- **> Route 1**
- Route 1
- 100ft Right of Way

Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

CENTREPORT

230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County Virginia

Dominion Energy℠

KOP 8

Alabaster Ln

Date: 04/25/2024
Time: 2:47 pm
Viewing Direction: Southeast
Distance to closest feature: 951 ft

Legend

- KOP View Direction
- Dominion Existing Transmission Line
- **> Route 3**
- Route 3
- 100ft Right of Way

Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

CENTREPORT

230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County Virginia

Dominion Energy℠

KOP 9

Cranes Bluff Ct

Date: 04/25/2024
Time: 11:34 am
Viewing Direction: North
Distance to closest feature: 688 ft

Legend

- KOP View Direction
- Dominion Existing Transmission Line
- **> Route 2**
- Route 2
- 100ft Right of Way

Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

CENTREPORT

230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County Virginia

Dominion Energy℠

KOP 9

Cranes Bluff Ct

Date: 04/25/2024
Time: 11:34 am
Viewing Direction: North
Distance to closest feature: 688 ft

Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

CENTREPORT

230 kV Electric Transmission Project
Dominion Energy Virginia
Stafford County Virginia

Dominion Energy℠

KOP 13

Enon Rd

Date: 04/25/2024
Time: 12:07 pm
Viewing Direction: Northwest
Distance to closest feature: 624 ft

EXISTING CONDITIONS

PROPOSED CONDITIONS

Legend

KOP View Direction
> Route 1
Route 1
100ft Right of Way

Note: Project components illustrated are based on proposed preliminary designs The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

CENTREPORT

230 kV Electric Transmission Project

Dominion Energy Virginia

Stafford County Virginia

Dominion Energy℠

KOP 17

Cambridge St

Date: 04/25/2024

Time: 1:23 pm

Viewing Direction: West

Distance to closest feature: 680 ft

EXISTING CONDITIONS

PROPOSED CONDITIONS

Legend

- KOP View Direction
- Dominion Existing Transmission Line
- > Route 1
- Route 1
- 100ft Right of Way

Note: This simulation shows the proposed conditions for the Centreport project and the Fredericksburg to Possum Point Line Rebuild Project, which was filed with the Virginia State Corporation Commission (SCC) in 2023 and is pending approval. Proposed conditions display structures as filed and are subject to changed based on SCC approval and final engineering.

Environmental Justice: Ongoing Commitment to Our Communities

At Dominion Energy, we are committed to providing reliable, affordable, clean energy in accordance with our values of safety, ethics, excellence, embrace change and team work. This includes listening to and learning all we can from the communities we are privileged to serve.

Our values also recognize that environmental justice considerations must be part of our everyday decisions, community outreach and evaluations as we move forward with projects to modernize the generation and delivery of energy.

To that end, communities should have a meaningful voice in our planning and development process, regardless of race, color, national origin, or income. Our neighbors should have early and continuing opportunities to work with us. We pledge to undertake collaborative efforts to work to resolve issues. We will advance purposeful inclusion to ensure a diversity of views in our public engagement processes.

Dominion Energy will be guided in meeting environmental justice expectations of fair treatment and sincere involvement by being inclusive, understanding, dedicated to finding solutions, and effectively communicating with our customers and our neighbors. We pledge to be a positive catalyst in our communities.

November 2018

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

C. Detail the nature, location, and ownership of each building that would have to be demolished or relocated if the project is built as proposed.

Response: The Company did not identify any buildings that would have to be demolished or relocated to construct the proposed Project along the Proposed Route.

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

D. Identify existing physical facilities that the line will parallel, if any, such as existing transmission lines, railroad tracks, highways, pipelines, etc. Describe the current use and physical appearance and characteristics of the existing ROW that would be paralleled, as well as the length of time the transmission ROW has been in use.

Response: Approximately 48% (1.2 miles) of the Proposed Route for the Centreport Loop collocates, or is parallel to, existing or planned facilities, as identified in the table below. Due to the absence of existing transmission lines within the study area, the Proposed Route does not parallel existing transmission lines. See Section II.A.4.

Route Alternative	Proposed Route (Route 2) (Mi)[a]	Alternative Route 1 (Mi)[a]	Alternative Route 3 (Mi)[a]	Alternative Route 4 (Mi)[a]
Centreport Parkway	0.4	0.0	0.4	0.4
Crossroads Industrial Park constructed warehouse	0.4	0.0	0.1	0.1
Mountain View Road	0.0	0.2	0.0	0.0
Total Existing Collocation Length	**0.8**	**0.0**	**0.5**	**0.5**
Cranes Corner Tech Center	0.4	0.0	0.0	0.0
Pemberton Tech Center	0.0	0.5	0.0	0.0
Total Planned Collocation Length	**1.2**	**0.7**	**0.5**	**0.5**

[a] The sum may not equal the totals due to rounding.

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

E. Indicate whether the Applicant has investigated land use plans in the areas of the proposed route and indicate how the building of the proposed line would affect any proposed land use.

Response: The Stafford County, Virginia, Comprehensive Plan 2016-2036[29] ("Comprehensive Plan") was reviewed to evaluate the potential effect the proposed Centreport Loop could have on future development in the area. The Comprehensive Plan provides guidance for the physical development of the County by laying out a vision of the future with specific recommendations, including a Future Land Use Plan and changes to zoning and land use regulations to implement the Future Land Use Plan.

Objectives and policies regarding transmission lines are listed under the health and safety goals in the Comprehensive Plan, and include the following:

- Minimizing visual impacts and environmental hazards associated with electrical generation transmission,
- Locating transmission lines away from schools,
- Discouraging residential development near transmission lines over 150 kV and substations without adequate screening and buffering,
- Minimizing electromagnetic field impacts on nearby residential, school, and business areas,
- Siting transmission lines with regard to visual and environmental impacts on adjacent land uses, strongly encouraging underground routes for new and replacement lines, and encouraging adequate screening and buffering for above-ground lines over 150 kV.

The Project study area is located within Stafford County's defined Urban Service Area, where more compact development of Targeted Development, Suburban, and Business Industry Areas are recommended. Projected growth is intended to be focused in this area in order to maximize vacant and underutilized land and existing infrastructure and services, while avoiding development of agricultural areas. The Comprehensive Plan notes that improvements to the utility system may be needed to support this growth. The Comprehensive Plan also notes the potential for growth around the Stafford Regional Airport, which is being observed in multiple industrial developments adjacent to the airport, including the proposed Centreport Substation and associated development.

The entirety of the Proposed Route (Route 2), Alternative Route 3, and Alternative Route 4, and approximately half of Alternative Route 1 are located within the

[29] *See* https://staffordcountyva.gov/government/departments_p-z/planning_and_zoning/long_range/comprehensive_plan/comprehensive_plan_2016-2036.php.

Central Stafford Targeted Development Area, which is intended to serve as an employment center with commercial and industrial development recommended, including research and technology, data centers, offices, and warehousing and manufacturing, with some mixed-use areas on the perimeters. Demand is expected to continue to grow with new data center construction and other residential, commercial, and industrial development near the Proposed Route.

The Project team met with the Stafford County Planning and Zoning Staff in January 2024. At that time, the Planning and Zoning Staff did not identify any conflicting land uses; however, they provided information on multiple planned developments within the study area which have been avoided through the routing process.

The County's Transportation Plan within the Comprehensive Plan identifies upcoming road improvement projects in the study area that have approved funding programs, including intersection improvements on Centreport Parkway and Richmond Highway, as well as VDOT Six Year Improvement Plan projects along Interstate 95 and a traffic study for future development on Centreport Parkway. The Project team also met with local VDOT staff in March 2024, and they provided information on upcoming projects in the area, including an on-ramp onto Centreport Parkway near Hills Cemetery and a connection of Enon Road to Centreport Parkway. At that time, VDOT staff indicated a preference to avoid any structures being placed within VDOT's right-of-way and for perpendicular road crossings. While VDOT staff did not express a route preference, they indicated that they did not prefer Alternative Route 1 due to the angled crossing of Interstate 95. The Company will continue to coordinate with the appropriate agencies at the time of construction to ensure that the Project will not conflict with upcoming road projects within the County.

Additionally, in developing the Proposed Route, the Company considered input from affected landowners and other stakeholders, such as developers, to determine a feasible path for the transmission lines to cross cohesively around planned developments within the study area.

In particular, the Company met with the developers of the Crossroads Industrial Park (Matan Crossroads) west of Richmond Highway and Capitol 95 Logistics Development, located adjacent to the proposed Centreport Substation parcel. Matan Crossroads expressed a preference for the Proposed Route (Route 2), which would route along the southern and western boundaries of their property, as opposed to Alternative Route 3, which would route along the north edge of the property between the development and Potomac Creek. The Capitol 95 Logistics developers expressed a preference for the route options that cross their parcel on the north side along Centreport Parkway (Proposed Route and Alternative Route 3).

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

F. Government Bodies

1. Indicate if the Applicant determined from the governing bodies of each county, city and town in which the proposed facilities will be located whether those bodies have designated the important farmlands within their jurisdictions, as required by § 3.2-205 B of the Code.

2. If so, and if any portion of the proposed facilities will be located on any such important farmland:

a. Include maps and other evidence showing the nature and extent of the impact on such farmlands;

b. Describe what alternatives exist to locating the proposed facilities on the affected farmlands, and why those alternatives are not suitable; and

c. Describe the Applicant's proposals to minimize the impact of the facilities on the affected farmland.

Response: (1) Stafford County designates important farmland based on soil type. The Company coordinated with Stafford County staff who did not identify any important farmlands that the Project will impact.

(2) Not applicable.

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

G. Identify the following that lie within or adjacent to the proposed ROW:

1. **Any district, site, building, structure, or other object included in the National Register of Historic Places maintained by the U.S. Secretary of the Interior;**

2. **Any historic architectural, archeological, and cultural resources, such as historic landmarks, battlefields, sites, buildings, structures, districts or objects listed or determined eligible by the Virginia Department of Historic Resources ("DHR");**

3. **Any historic district designated by the governing body of any city or county;**

4. **Any state archaeological site or zone designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body;**

5. **Any underwater historic assets designated by the DHR, or predecessor agency or board;**

6. **Any National Natural Landmark designated by the U.S. Secretary of the Interior;**

7. **Any area or feature included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation ("DCR");**

8. **Any area accepted by the Director of the DCR for the Virginia Natural Area Preserves System;**

9. **Any conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code (or a comparable prior or subsequent provision of the Code);**

10. **Any state scenic river;**

11. **Any lands owned by a municipality or school district; and**

12. **Any federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facility. Features, sites, and the like listed in 1 through 11 above need not be identified again.**

Response: (1) None.

(2) Three architectural resources are determined eligible for listing in the NRHP: Glencairne (089-0020) is located within the right-of way of Alternative Route 1; Oakenwold Farm (089-0157) is located within the right-of-way of Alternative Routes 2, 3 and 4, and within the 0.5-mile tier of Alternative Route 1; Buzzard's Roost (089-0013) is located within the 0.5-mile tier of all four route alternatives. See Section 2.I of the DEQ Supplement for additional information.

(3) None.

(4) The known archaeological sites in the right-of-way for the Proposed and Alternative Routes are summarized in the table below. Of the eight resources located within the rights-of-way, four have been deemed not eligible and four are unevaluated. One previously recorded archaeological site, 44ST1149, is a cemetery. One is a lithic scatter, four are associated with temporary camps, one is associated with a pre-historic camp, and one is a historic mill.

Site Number	Description	NRHP Status	Route Alternative
44ST0310	Camp (Prehistoric/Unknown).	Not Eligible	Proposed Route Alternative Route 3 Alternative Route 4
44ST0485	Temporary camp (Early Archaic Period, Middle Archaic Period, Late Archaic Period)	Unevaluated	Proposed Route Alternative Route 3 Alternative Route 4
44ST1054	Temporary camp (Colony to Nation, Early National Period)	Unevaluated	Alternative Route 3 Alternative Route 4
44ST1072	Temporary camp (Late Archaic Period, Early Woodland, Late Woodland)	Not Eligible	Alternative Route 3 Alternative Route 4
44ST1073	Mill (Early National Period, Antebellum, Civil War, Reconstruction and Growth)	Not Eligible	Alternative Route 3 Alternative Route 4
44ST1149	Oakenwold Cemetery (Historic/Unknown, Pre-Contact)	Not Eligible	Alternative Route 1
44ST1274	Lithic scatter (Pre-Contact)	Unevaluated	Alternative Route 1 Proposed Route Alternative Route 3 Alternative Route 4
44ST1276	Temporary camp (Pre-Contact)	Unevaluated	Proposed Route Alternative Route 3 Alternative Route 4

(5) None.

(6) None.

(7) None.

(8) None.

(9) Two Northern Virginia Conservation Trust ("NVCT") easements are located within the study area. One approximately 72.6-acre NVCT easement is located between Interstate 95 and Richmond Highway, bounded by Potomac Creek on the south and commercial developments on Flex Way to the north. The Proposed Route and Alternative Routes 3 and 4 pass within 250 feet of the southern edge of this easement. The other NVCT easement is approximately 43.7 acres, located on the northwest corner of the intersection of Interstate 95 and Centreport Parkway. Alternative Route 1 passes adjacent to the northwest corner of this easement on the south side of Mountain View Road.

Two Virginia Outdoors Foundation Easements (totaling approximately 187 acres) are located approximately 200 feet south and 300 feet southeast of the cut-in location of Alternative Route 1.

(10) None.

(11) Alternative Route 1 crosses approximately 0.1 mile south from Stafford County High School, which is owned by the Stafford County School Board. Stafford County Public Schools Facilities Operations and Maintenance Facility—which is used for offices, storage for maintenance equipment, and parking lots for school buses—is located approximately 0.2 mile east of Alternative Route 1. The facility is located adjacent to the west side of Interstate 95, south of Enon Road. Additionally, Alternative Route 1 is located directly south of the lands associated with Chichester Park, located on the east side of Interstate 95. The park includes multiple baseball/softball fields and is managed and owned by Stafford County.

(12) Musselman Park is located approximately 0.2 mile west of Alternative Route 1.

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

H. List any registered aeronautical facilities (airports, helipads) where the proposed route would place a structure or conductor within the federally-defined airspace of the facilities. Advise of contacts, and results of contacts, made with appropriate officials regarding the effect on the facilities' operations.

Response: The Federal Aviation Administration ("FAA") is responsible for overseeing air transportation in the United States. The FAA manages air traffic in the United States and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime objective of the FAA in conducting an obstruction evaluation is to ensure the safety of air navigation and the efficient utilization of navigable airspace by aircraft.

The Company has reviewed the FAA's website[30] to identify airports within 10.0 nautical miles of the proposed Project. Based on this review, the following FAA-restricted airports are located within 10.0 nautical miles of the Project:

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles (approx.))	Use
Dogwood Airpark Airport	○ 0.2 mile northeast of Alternative Route 1 to the nearest end of the runway ○ 0.7 mile south of the Proposed Route and Alternative Route 4	Private
Stafford Regional Airport	○ 0.5 mile northeast of the Proposed Route, Alternative Route 3, Alternative Route 4, and Centreport Substation to nearest point on Primary Surface of runway 15/30	Public
Stafford Hospital Center Heliport	○ 2.9 miles northeast of the Proposed Route, Alternative Route 3, Alternative Route 4 and the proposed Centreport Substation	Private
Mary Washington Hospital Heliport	○ 2.7 miles south of Alternative Route 1	Public
Shannon Airport	○ 5.2 miles south of Alternative Route 1	Public
Chimney View Airport	○ 6.0 miles east of Alternative Route 3 and Alternative Route 4	Private
Spotsylvania Regional Medical Center Heliport	○ 8.3 miles south of Alternative Route 1	Private
Quantico MCAF (Turner Field) Airport	○ 9.6 miles east of Alternative Route 3 and Alternative Route 4	Private

[30] *See* https://oeaaa.faa.gov/oeaaa/external/portal.jsp and https://adip.faa.gov/agis/public/#/public.

ERM reviewed the height limitations associated with FAA defined imaginary surveys for all runways at Stafford Regional Airport and all other public or private registered airfields within 10.0 nautical miles of the proposed Project facilities to determine whether any structures planned to be installed for the Project would penetrate any of the relevant flight surfaces for any runways. ERM conducted a preliminary evaluation of structure heights and locations using the FAA defined Civil and Department of Defense Airport Imaginary Surfaces, and applied standard Geographic Information System tools, including ESRI's ArcGIS Pro software with Spatial Analyst, 3D Analyst, and Aviation Airports Extensions. This software was used to create and georeference the imaginary surfaces in space and in relationship to the transmission structures. Ground surface data for the study area was derived by using a USGS 10 Meter Digital Elevation Model. Of the five airports and three heliports listed in the table above, only the Stafford Regional Airport is in close enough proximity to the Project route alternatives for a transmission structure to potentially impact navigable airspace. The Dogwood Airpark Airport is in close proximity to the Proposed Route and Alternative Routes 3 and 4; however, it is a private airfield which is not regulated by the FAA, and there are no local ordinances associated with this airfield. As such, no impacts or notification requirements apply to the Dogwood Airpark Airport; however, the Company has notified the Dogwood Airpark Airport for awareness of the Project.

The Company conducted an analysis to determine if any of the FAA-defined airport imaginary surfaces for the Stafford Regional Airport could be penetrated by transmission structures associated with the Project. The Stafford Regional Airport's single runway is aligned in a northwest-southeast orientation and is referred to as Runway 15/33, with the northwest approach designated as Runway 15, and the southeast approach designated as Runway 33. All route alternatives are located generally perpendicular to Runway 15/33 and outside of the Runway 33 approach surface. The only exception is the Alternative Route 3 cut-in location. The ground elevation at the cut-in location is approximately 150 feet lower than the end of Runway 33, however, and is at a distance from the end of the runway which would allow the maximum structure height in this area to be over 290 feet tall. Consequently, no approach surface penetration is anticipated. The Proposed Route and Alternative Routes and 3 and 4 are located within the planimetric extent of the Runway 33 extended transitional surface, but due to the Project's distance from the airport, the transitional surface slope would exceed the height of the horizontal surface.

Existing ground elevations at the Centreport Substation site and within the rights-of-way of the Proposed Route (Route 2) and Alternative Routes 1 and 3 near the site are estimated to range from approximately 134 to 172 feet above mean sea level ("AMSL"). Ground elevations along the Proposed Route and Alternative Routes 3 and 4 generally decrease as the routes extend southeast towards Potomac Creek and the tap points. The elevation of Alternative Route 3 at its cut-in location is estimated to be approximately 44 feet AMSL. Alternative Route 1 is estimated to range in elevation from approximately 132 feet AMSL at the Centreport Substation, to a minimum elevation of 71 feet AMSL where it crosses Potomac Creek, and to

a maximum elevation of 252 feet AMSL where it crosses Enon Road.

Based on the results of the ground elevation and structure height analysis, the horizontal surface at 369.1 feet AMSL, which is located 150 feet above the airport surface and extends 10,000 feet from the runways, is the most limiting surface for the Proposed Route and Alternative Routes 1 and 4. The most limiting surface for most structures associated with Alternative Route 3 is also the horizontal surface. At the location of Structure #2104/5459, however, the most limiting surface is the approach surface of Runway 33 at 310.6 feet AMSL, and at the location of Structure #2379/1, the most limiting surface is the transitional surface at 346.5 feet AMSL. Based on the calculated distances between ground elevations and the horizontal surface, structures would be limited to heights ranging from as high as 338 feet to as low as 140 feet, depending on location. Structure heights along the route alternatives are proposed to range between 85 to 185 feet tall and placed to avoid imaginary surface penetration.

Based on the above discussion, none of the structures along the Proposed and Alternative Routes are anticipated to penetrate civil airport imaginary surfaces or interfere with terminal instrument procedures established by the FAA. Therefore, no impacts to navigable airspace from the Project are anticipated, and no special features or design alterations are expected to be required for the transmission structures installed for the Project.

Because structures associated with all routes have the potential to penetrate the 100 to 1 Imaginary Notice Surface for Stafford Regional Airport, an FAA Form 7460-Notice of Proposed Construction or Alteration, will likely need to be filed for the Project.

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

I. Advise of any scenic byways that are in close proximity to or that will be crossed by the proposed transmission line and describe what steps will be taken to mitigate any visual impacts on such byways. Describe typical mitigation techniques for other highways' crossings.

Response: No scenic byways are in close proximity to the study area for the proposed Project or will be crossed by any of the Proposed or Alternative Routes. Where feasible in consideration of engineering, development, or property boundary constraints, perpendicular road crossings will be used at other road crossings, which are preferred by VDOT and Stafford County.

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

J. Identify coordination with appropriate municipal, state, and federal agencies.

Response: The Company solicited feedback from Stafford County regarding the proposed Project. Below is a list of coordination that has occurred with municipal, state, and federal agencies:

- Coordination with the U.S. Army Corps of Engineers, DEQ, Virginia Marine Resources Commission, and VDOT will take place as appropriate to obtain necessary approvals for the Project.
- A letter dated August 20, 2024, was submitted to Stafford County to describe the Project and request comments. See Section V.D.
- A Stage I Pre-Application Analysis has been prepared and was submitted to VDHR on September 18, 2024. See Attachment 2.I.1 to the DEQ Supplement.
- On March 20, 2024, the Company solicited comments via letter from several federally recognized Native American tribes, including:

Name	Tribe
Chief Walt "Red Hawk" Brown	Cheroenhaka (Nottoway) Indian Tribe
Mary Frances Wilkerson	Cheroenhaka (Nottoway) Indian Tribe
Chief Stephen Adkins	Chickahominy Indian Tribe
Assistant Chief Reginald Stewart	Chickahominy Indian Tribe
Chief Gerald A. Stewart	Chickahominy Indian Tribe Eastern Division
Jessica Phillips	Chickahominy Indian Tribe Eastern Division
Dana Adkins	Chickahominy Tribe
Chief Mark Custalow	Mattaponi Tribe
Chief Diane Shields	Monacan Indian Nation
Chief Keith Anderson	Nansemond Indian Nation
Chief Lynette Allston	Nottoway Indian Tribe of Virginia
Ms. Beth Roach	Nottoway Indian Tribe of Virginia
Chief Robert Gray	Pamunkey Indian Tribe
Kendall Stevens	Pamunkey Indian Tribal Resource Office
Chief Charles (Bootsie) Bullock	Patawomeck Indian Tribe of Virginia
Chief G. Anne Richardson	Rappahannock Tribe
Assistant Chief	Rappahannock Tribe
Chief W. Frank Adams	Upper Mattaponi Indian Tribe

Leigh Mitchell	Upper Mattaponi Indian Tribe
Dr. Wenonah G. Haire	Catawba Indian Nation
Caitlin Rogers	Catawba Indian Nation
Katelyn Lucas	Delaware Nation, Oklahoma
Deborah Dotson	Delaware Nation, Oklahoma

A copy of the letter template and map is included as Attachment III.J.1. The tribal historic preservation officer for the Catawba Nation provided a response dated April 18, 2024, indicating "no immediate concerns . . . within the boundaries of the proposed project areas." A copy of the response from Catawba Nation is included as Attachment III.J.2.

See also Sections III.B, III.K and V.D of this Appendix, and the DEQ Supplement.

Dominion Energy Virginia
Electric Transmission
P.O. Box 26666, Richmond, VA 23261-6666
DominionEnergy.com

March 20, 2024

Proposed Centreport 230 kV Electric Transmission Project

Dear _____:

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. You are receiving this project announcement letter as part of our efforts to proactively communicate early with Tribal Nations who may have an interest in this area. With your unique perspective, you can help us better plan projects in their earliest stages. Please note, this letter is not a notification of formal government-to-government consultation from any state or federal agency. Dominion Energy has been and continues to be committed to creating and maintaining strong, open, supportive, and mutually beneficial relationships with Tribal Nations.

We are reaching out to you now as we have an upcoming project in Stafford County, Virginia, and you may have an interest in this area. A new substation, known as Centreport Substation, and a new double-circuit 230 kilovolt (kV) electric transmission line are required to address recent development in Stafford County.

Enclosed is a project study area overview map for your reference. This project requires review by the Virginia State Corporation Commission (SCC). We are currently in the conceptual phase of the project and will have preliminary routes to share in the coming weeks. Providing your input now allows us to consider any concerns you may have as we work to meet the project's needs. Please feel free to notify other relevant organizations that may have an interest in the project area. For reference, other recipients of this letter include county and state historic, cultural, and scenic organizations, as well as Tribal Nations.

In spring and summer 2024, we will host community meetings where you can meet the project team and have your questions answered. Please provide your comments by May 1, 2024, so we have adequate time to review and consider your comments in our project design.

If you would like any additional information, have questions, or would like to set up a meeting to discuss the project, please contact me by email at ann.gordon.mickel@dominionenergy.com or by calling 804-363-9783. You may also contact Ken Custalow, our Tribal Liaison Manager. He can be reached by email at ken.custalow@dominionenergy.com.

Sincerely,

Ann Gordon Mickel
Electric Transmission Communications

Enclosure: Project Map
cc Ken Custalow

Stafford Regional Airport
Centreport Sub
Oakenwold Ln
Centreport Pkwy
Richmond Hwy
Mountain View Rd
Woods of Ahle Lake
Hulls Chapel Rd
Liberty Hall Dr
Centreport Pkwy
Eskimo Hill Rd
Dittmeier
Peacock Station
Wallace Farms
Will Morgan Farm
Butterfield
Wallaces Corner
Enon Rd
Richmond Hwy
Kings Hill Rd
Cranes Corner Rd
Potomac Run Rd
Potomac Run Farm
Revell Rd
Lyons Blvd
England Run North
Chapel View
Wyatt Ln
Stafford High School
Air Park Blvd
Clift Farm Rd
Dahlgren
Truslow Rd
Forbes St
Cambridge St
Warrenton Rd
Falls Run Dr
S Gateway
95

OH WV MD
Project Location
KY
Virginia
TN

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- Proposed Substation
- Dominion Existing Transmission Line
- Existing Pipeline
- Study Area

Study Area
Centerport 230 kV Transmission Line Project
Dominion Energy Virginia
Stafford County, Virginia

ERM
Dominion Energy

MPLS M:\US\Projects\D-F\Dominion\Centreport\ArcGIS\2024\03\Routes_OV_Fig_DOM_CTP_Routes_Fig.aprx\DOM_CTP_StudyArea | REVISED: 03/19/2024 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: NAD

From: Caitlin Rogers
To: Ann Gordon Mickel (DEV Trans Distribution - 1)
Subject: [EXTERNAL] Proposed Centreport 230 kV Electric Transmission Project
Date: Thursday, April 18, 2024 2:37:34 PM
Attachments: 2024-1108-8.docx

Attached is the concurrence letter for your project.

Hawuh (Thank you),

Caitlin Rogers
Catawba Nation
Cultural Division Programs Manager
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

803-328-2427 ext. 226

Please Note: We CANNOT accept Section 106 forms via e-mail, unless requested. Please send us hard copies. Thank you for your understanding

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427

April 18, 2024

Attention: Ann Gordon Mickel
Dominion Energy
P.O. Box 26666
Richmond, VA 23261

Re. THPO #	TCNS #	Project Description
2024-1108-8		Proposed Centreport 230 kV Electric Transmission Project

Dear Ms. Mickel,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions, please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail Caitlin.Rogers@catawba.com.

Sincerely,

Caitlin Rogers for

Wenonah G. Haire
Tribal Historic Preservation Officer

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

K. Identify coordination with any non-governmental organizations or private citizen groups.

Response: On March 20, 2024, the Company solicited comments via letter from the community leaders, environmental groups, and business groups identified in the table below. A copy of the letter template and map is included as Attachment III.K.1.

Name	Organization
Ms. Elizabeth S. Kostelny	Preservation Virginia
Ms. Eleanor Breen, PhD, RPA	Council of Virginia Archaeologists
Ms. Leighton Powell	Scenic Virginia
Ms. Elaine Chang	National Trust for Historic Preservation
Mr. John McCarthy	Piedmont Environmental Council
Ms. Julie Bolthouse	Piedmont Environmental Council
Mr. Thomas Gilmore	American Battlefield Trust
Mr. Jim Campi	American Battlefield Trust
Mr. Max Hokit	American Battlefield Trust
Mr. Steven Williams	Colonial National Historical Park
Dr. Cassandra Newby-Alexander	Norfolk State University
Mr. Roger Kirchen, Archaeologist	Virginia Department of Historic Resources
Ms. Adrienne Birge-Wilson	Virginia Department of Historic Resources
Mr. Dave Dutton	Dutton and Associates, LLC

The VDHR responded on April 19, 2024, requesting that archaeological and architectural surveys be performed. A copy of the letter is included as Attachment III.K.2. VDHR recommended the Company follow the *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on*

Historic Resources in the Commonwealth of Virginia to minimize impacts to historic resources. ERM was retained by the Company to conduct a Stage I Pre-Application Analysis, which is included as Attachment 2.I.1 in the DEQ Supplement. As detailed by VDHR guidance, consideration was given to: National Historic Landmark ("NHL") properties located within a 1.5-mile radius of the Project centerline; NRHP-listed properties, battlefields, and historic landscapes located within a 1.0-mile radius of the Project centerline; NRHP-eligible sites located within a 0.5-mile radius of the Project centerline; and archaeological sites located within the Project corridor.

Dominion Energy Virginia
Electric Transmission
P.O. Box 26666, Richmond, VA 23261
DominionEnergy.com

March 20, 2024

Proposed Centreport 230 kV Electric Transmission Project

Dear _____,

At Dominion Energy, we are dedicated to finding the best solution for our long-term needs in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in the development of a new electric transmission line and substation in Stafford County, Virginia.

To address recent development in Stafford County, a new substation, known as Centreport Substation and double-circuit 230 kilovolt (kV) electric transmission are required.

This project is currently in the conceptual phase, and we are seeking your input prior to filing an application with the Virginia State Corporation Commission (SCC) in fall 2024. Doing so allows us to hear any concerns you may have as we work to meet the project's needs. Please feel free to notify other relevant organizations that may have an interest in the project area. For reference, other recipients of this letter include countywide and statewide historic, cultural, and scenic organizations, as well as Native American Tribes.

Enclosed, you will find an overview map with the study area under consideration. We are currently in the conceptual phase of the project and will have preliminary routes to share in the coming weeks. Please visit the project website at DominionEnergy.com/centreport for more project information.

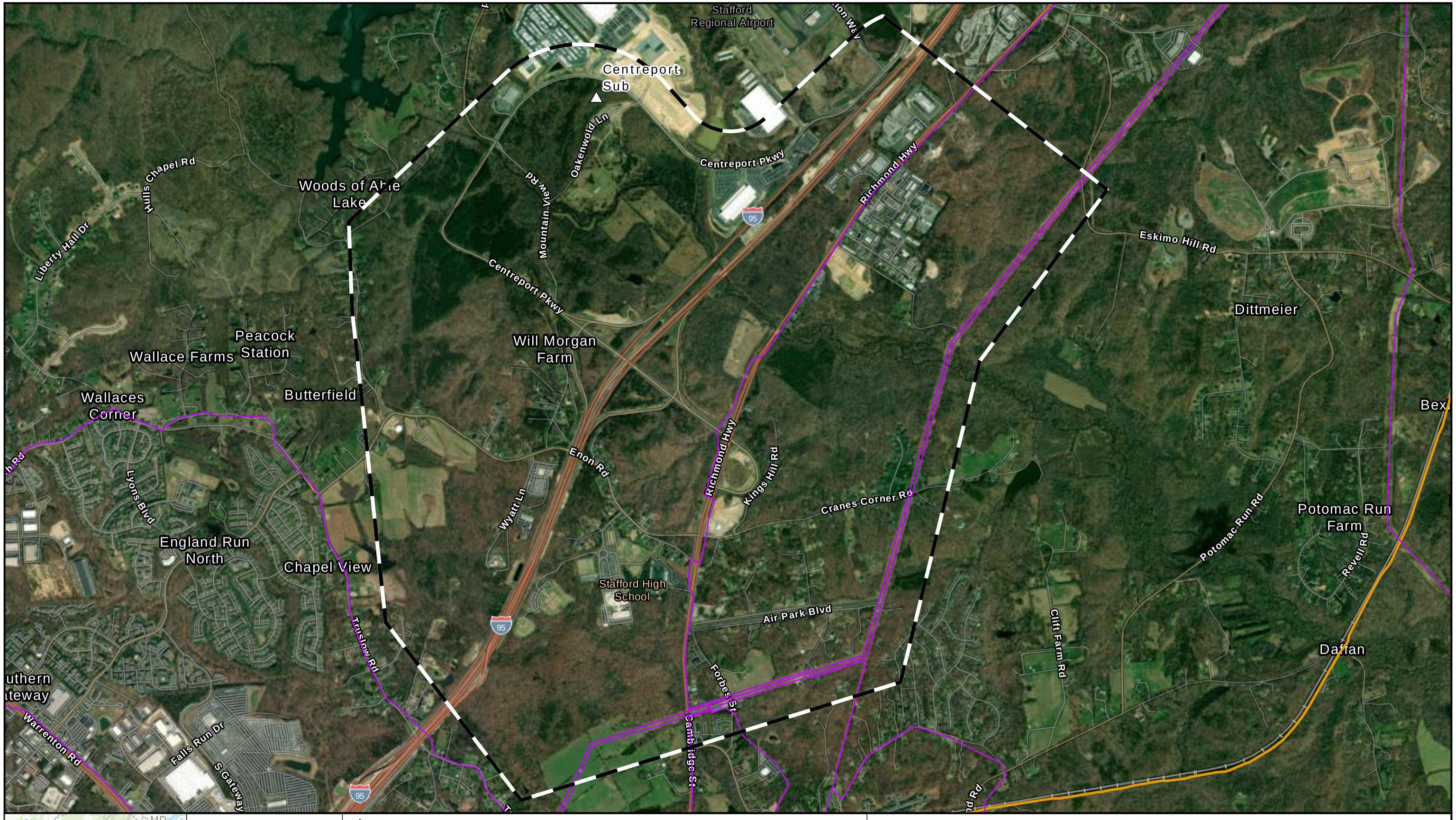
We appreciate your assistance as we move through the planning process. In spring and summer 2024, we will host community meetings where you can meet the project team and have your questions answered. Please provide your comments by May 1, 2024, so we have adequate time to review and consider your comments in our project design.

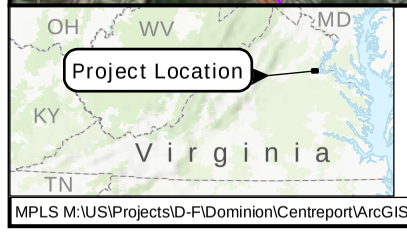
If you would like any additional information, have questions, or would like to set up a meeting to discuss the project, please do not hesitate to contact me by sending an email to ann.gordon.mickel@dominionenergy.com or calling 804-363-9783.

Sincerely,

Ann Gordon Mickel
Communications Consultant
The Electric Transmission Project Team

Enclosure: Project Map





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- Proposed Substation
- Dominion Existing Transmission Line
- Existing Pipeline
- Study Area

Study Area
Centerport 230 kV Transmission Line Project
Dominion Energy Virginia
Stafford County, Virginia

ERM

Dominion Energy

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DRAWN BY: NAD

COMMONWEALTH of VIRGINIA

Travis A. Voyles
Secretary of Natural and Historic Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

April 19, 2024

Ann Gordon Mickel
Dominion Energy Virginia
Electric Transmission
P.O. Box 26666
Richmond, VA 23261

Re: Centreport 230 kV Electric Transmission
Stafford County, Virginia
DHR File No. 2024-3690

Dear Ms. Gordon Mickel

We have received your request for comments on the project referenced above. The undertaking, as presented, involves the construction of a new substation and electric transmission line. Our comments are provided as technical assistance to Dominion. We have not been notified by any state or federal agency of their involvement in this project; however, we reserve the right to provide additional comment pursuant to the National Historic Preservation Act, if applicable.

Based on the submission, Dominion plans to prepare an application for a certificate of public convenience and necessity (CPCN) from the State Corporation Commission (SCC). Typically, we recommend that Dominion follow the *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* developed by DHR to assist project proponents in developing transmission line projects that minimize impacts to historic resources.

Typically, we recommend that the project proponent establish a study area for each route alternative under consideration and gather information on known resources. A qualified cultural resources consultant in the appropriate discipline should perform an assessment of impact for each known historic resource present within the proposed study area.

Once the route alternatives have been finalized, DHR recommends that full archaeological and architectural surveys be performed to determine the effect of the project on all historic resources listed in or eligible for listing in the National Register. This process involves the identification and recordation of all archaeological sites and structures greater than 50 years of age, the evaluation of those resources for listing in the National Register, determining the degree of impact of the project on eligible resources, and developing a plan to avoid, minimize, or mitigate any negative impacts. Comments received from the public or other stakeholder

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

regarding impacts to specific historic resources should be addressed as part of this survey and assessment process.

Thank you for seeking our comments on this project. If you have any questions at this time, please do not hesitate to contact me at jennifer.bellville-marrion@dhr.virginia.gov.

Sincerely,

Jenny Bellville-Marrion, Project Review Archaeologist
Review and Compliance Division

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Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

L. Identify any environmental permits or special permissions anticipated to be needed.

Response: The permits or special permissions that are likely to be required for the proposed Project are listed below.

Potential Permits

Activity	Potential Permit	Agency/Organization
Impacts to wetlands and other waters of the U.S.	Nationwide Permit 57	U.S. Army Corps of Engineers
Impacts to wetlands and other waters of the U.S.	Virginia Water Protection Permit	Virginia Department of Environmental Quality
Discharge of stormwater from construction	Construction General Permit	Virginia Department of Environmental Quality
Aerial crossing over state-owned bottomlands	Subaqueous Habitat Management Permit (VGP5)	Virginia Marine Resource Commission
Work within VDOT rights-of-way	Land Use Permit	Virginia Department of Transportation
Airspace obstruction evaluation	FAA 7460-1	Federal Aviation Administration
Substation Construction	Conditional Use Permit	Stafford County

IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS ("EMF")

A. Provide the calculated maximum electric and magnetic field levels that are expected to occur at the edge of the ROW. If the new transmission line is to be constructed on an existing electric transmission line ROW, provide the present levels as well as the maximum levels calculated at the edge of ROW after the new line is operational.

Response: Public exposure to magnetic fields associated with high voltage power lines is best estimated by field levels calculated at annual average loading. For any day of the year, the EMF levels associated with average conditions provide the best estimate of potential exposure. Maximum (peak) values are less relevant as they may occur for only a few minutes or hours each year.

This section describes the levels of EMF associated with the proposed transmission lines. EMF levels are provided for future (2029) annual average and maximum (peak) loading conditions. The EMF values provided in this section were calculated based on the Company's proposed line characteristics of a typical span in both average and peak loading conditions.

Proposed Project – Projected average loading in 2029

EMF levels were calculated for the proposed Project at the ***projected average*** load condition (615 amps for Line #2104, 936 amps for Line #2379) and at an operating voltage of 241.5 kV when supported on the proposed Project structures – see Attachment II.A.5.a.[31]

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a projected average load operating temperature.

Proposed Project - Projected Average Loading (2029)				
Attachment	Left Edge Looking Towards Centreport		Right Edge Looking Towards Centreport	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	0.688	57.174	1.111	58.223

Proposed Project – Projected peak loading in 2029

EMF levels were calculated for the proposed Project at the ***projected peak*** load condition (946 amps for Line #2104, 1440 amps for Line #2379) and at an operating voltage of 241.5 kV when supported on the proposed Project structures – see

[31] The EMF calculations provided in this section are based on the 100-foot-wide right-of-way illustrated in Attachment II.A.5.a.

Attachment II.A.5.a.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a projected peak load operating temperature.

Proposed Project - Projected Peak Loading (2029)				
Attachment	**Left Edge Looking Towards Centreport**		**Right Edge Looking Towards Centreport**	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	0.689	87.983	1.110	89.545

IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS ("EMF")

B. If the Applicant is of the opinion that no significant health effects will result from the construction and operation of the line, describe in detail the reasons for that opinion and provide references or citations to supporting documentation.

Response: The conclusions of multidisciplinary scientific review panels assembled by national and international scientific agencies during the past few decades are the foundation of the Company's opinion that no adverse health effects are anticipated to result from the operation of the proposed Project. Each of these panels has evaluated the scientific research related to health and extremely low frequency ("ELF") EMF, also referred to as power-frequency (50/60 Hertz ("Hz")) EMF, and provided conclusions that form the basis of guidance to governments and industries. The Company regularly monitors the recommendations of these expert panels to guide their approach to EMF.

Research on EMF and human health varies widely in approach. Some studies evaluate the effects on biological responses of high, short-term EMF exposure not typically found in people's day-to-day lives, while others evaluate the effects of common, low EMF exposures found throughout communities. Studies also have evaluated the possibility of effects (*e.g.*, cancer, neurodegenerative diseases, and reproductive effects) of long-term exposure. Altogether, this research includes well over 100 epidemiologic studies of people in their natural environment and many more laboratory studies of animals (*in vivo*) and isolated cells and tissues (*in vitro*). Standard scientific procedures, such as weight-of-evidence methods, were used by the expert panels assembled by scientific agencies to identify, review, and summarize the results of this large and diverse research.

The reviews of ELF EMF-related biological and health research have been conducted by numerous scientific and health agencies, including, for example, the European Health Risk Assessment Network on Electromagnetic Fields Exposure ("EFHRAN"), the International Commission on Non-Ionizing Radiation Protection ("ICNIRP"), the World Health Organization ("WHO"), the IEEE's International Committee on Electromagnetic Safety ("ICES"), the Scientific Committee on Health, Environmental and Emerging Risks ("SCHEER") (formerly the Scientific Committee on Emerging and Newly Identified Health Risks ["SCENIHR"]) of the European Commission, and the Swedish Radiation Safety Authority ("SSM") (formerly the Swedish Radiation Protection Authority ["SSI"]) (WHO, 2007; SCENIHR, 2009, 2015; EFHRAN, 2010, 2012; ICNIRP, 2010; SSM, 2015, 2016, 2018, 2019, 2020, 2021, 2022; ICES, 2019; SCHEER, 2023). The general scientific consensus of the agencies that have reviewed this research, relying on generally accepted scientific methods, is that the scientific evidence does not confirm that common sources of EMF in the environment, including transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects.

The most recent reviews on this topic include the 2015 and 2023 reports by

SCENIHR and SCHEER, respectively, and annual reviews published by SSM (i.e., for the years 2015 through 2022). These reports, similar to previous reviews, found that the scientific evidence does not confirm the existence of any adverse health effects caused by environmental or community exposure to EMF.

WHO has recommended that countries adopt recognized international standards published by ICNIRP and ICES. Typical levels of EMF from Dominion Energy Virginia's high voltage power lines outside its property and rights-of-way are far below the screening reference levels of EMF recommended for the general public and still lower than exposures equivalent to restrictions to limits on fields within the body (ICNIRP, 2010; ICES, 2019).

Thus, based on the conclusions of scientific reviews and the levels of EMF associated with the proposed Project, the Company has determined that no adverse health effects are anticipated to result from the operation of the proposed Project.

References

European Health Risk Assessment Network on Electromagnetic Fields Exposure (EFHRAN). Report on the Analysis of Risks Associated to Exposure to EMF: *In Vitro* and *In Vivo* (Animals) Studies. Milan, Italy: EFHRAN, 2010.

European Health Risk Assessment Network on Electromagnetic Fields Exposure (EFHRAN). Risk Analysis of Human Exposure to Electromagnetic Fields (Revised). Report D2 of the EFHRAN Project. Milan, Italy: EFHRAN, 2012.

International Commission on Non-ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Phys 99: 818-36, 2010.

International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 300 GHz. IEEE Std C95.1-2019. New York, NY: IEEE, 2019.

Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Health Effects of Exposure to EMF. Brussels, Belgium: European Commission, 2009.

Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). Opinion on Potential Health Effects of Exposure to Electromagnetic Fields (EMF). Brussels, Belgium: European Commission, 2015.

Scientific Committee on Health, Environmental and Emerging Risks (SCHEER). Preliminary Opinion on Potential Health Effects of Exposure to Electromagnetic Fields (EMF): Update with regard to frequencies between 1Hz and 100 kHz. Brussels, Belgium: European Commission, 2023.

Swedish Radiation Safety Authority (SSM). Research 2015:19. Recent Research

on EMF and Health Risk - Tenth report from SSM's Scientific Council on Electromagnetic Fields. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2015.

Swedish Radiation Safety Authority (SSM). Research 2016:15. Recent Research on EMF and Health Risk - Eleventh report from SSM's Scientific Council on Electromagnetic Fields, 2016. Including Thirteen years of electromagnetic field research monitored by SSM's Scientific Council on EMF and health: How has the evidence changed over time? Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2016.

Swedish Radiation Safety Authority (SSM). Research 2018:09. Recent Research on EMF and Health Risk - Twelfth report from SSM's Scientific Council on Electromagnetic Fields, 2017. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2018.

Swedish Radiation Safety Authority (SSM). Research 2019:08. Recent Research on EMF and Health Risk – Thirteenth Report from SSM's Scientific Council on Electromagnetic Fields, 2018. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2019.

Swedish Radiation Safety Authority (SSM). Research 2020:04. Recent Research on EMF and Health Risk – Fourteenth Report from SSM's Scientific Council on Electromagnetic Fields, 2019. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2020.

Swedish Radiation Safety Authority (SSM). Research 2021:08. Recent Research on EMF and Health Risk – Fifteenth report from SSM's Scientific Council on Electromagnetic Fields, 2020. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2021.

Swedish Radiation Safety Authority (SSM). Research 2022:16. Recent Research on EMF and Health Risk – Sixteenth report from SSM's Scientific Council on Electromagnetic Fields, 2021. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2022.

World Health Organization (WHO). Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. Geneva, Switzerland: World Health Organization, 2007.

IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS ("EMF")

C. Describe and cite any research studies on EMF the Applicant is aware of that meet the following criteria:

1. Became available for consideration since the completion of the Virginia Department of Health's most recent review of studies on EMF and its subsequent report to the Virginia General Assembly in compliance with 1985 Senate Joint Resolution No. 126;

2. Include findings regarding EMF that have not been reported previously and/or provide substantial additional insight into findings; and

3. Have been subjected to peer review.

Response: The Virginia Department of Health ("VDH") conducted its most recent review and issued its report on the scientific evidence on potential health effects of extremely low frequency ELF EMF in 2000: "[T]he Virginia Department of Health is of the opinion that there is no conclusive and convincing evidence that exposure to extremely low frequency EMF emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans."[32]

The continuing scientific research on ELF EMF exposure and health has resulted in many peer-reviewed publications since 2000. The accumulating research results have been regularly and repeatedly reviewed and evaluated by national and international health, scientific, and government agencies, including most notably:

- WHO, which published one of the most comprehensive and detailed reviews of the relevant scientific peer-reviewed literature in 2007;
- SCHEER (formerly SCENIHR), a committee of the European Commission, which published its assessments in 2009, 2015 and 2023;
- The SSM, which has published annual reviews of the relevant peer-reviewed scientific literature since 2003, with its most recent review published in 2022; and,
- EFHRAN, which published its reviews in 2010 and 2012.

The above reviews provide detailed analyses and summaries of relevant recent peer-reviewed scientific publications. The conclusions of these reviews that the evidence overall does not confirm the existence of any adverse health effects due to exposure to EMF below scientifically established guideline values are consistent with the conclusions of the VDH report. With respect to the statistical association observed in some of the childhood leukemia epidemiologic studies, the most recent

[32] *See* http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/highfinal.pdf.

comprehensive review of the literature by SCENIHR, published in 2015, concluded that "no mechanisms have been identified and no support is existing [*sic*] from experimental studies that could explain these findings, which, together with shortcomings of the epidemiological studies prevent a causal interpretation" (SCENIHR, 2015, p. 16). In their 2023 Preliminary Opinion providing an update on the potential health effects of exposure to electromagnetic fields in the 1 Hz to 100 kilohertz ("kHz") range, SCHEER concluded that "overall, there is weak evidence concerning the association of ELF-MF [magnetic field] exposure with childhood leukaemia" (SCHEER 2023, p. 2).

While research is continuing on multiple aspects of EMF exposure and health, many of the recent publications have focused on an epidemiologic assessment of the relationship between EMF exposure and childhood leukemia and EMF exposure and neurodegenerative diseases. Of these, the following recent publications, published following the inclusion date (June 2014) for the SCENIHR (2015) report through March 2024, provide additional evidence and contribute to clarification of previous findings. Overall, new research studies have not provided evidence to alter the previous conclusions of scientific and health organizations, including WHO and SCENIHR.

Epidemiologic studies of EMF and childhood leukemia published during the above referenced period include:

- Bunch et al. (2015) assessed the potential association between residential proximity to high voltage underground cables and development of childhood cancer in the United Kingdom largely using the same epidemiologic data as in a previously published study on overhead transmission lines (Bunch et al., 2014). No statistically significant associations or trends were reported with either distance to underground cables or calculated magnetic fields from underground cables for any type of childhood cancers.

- Pedersen et al. (2015) published a case-control study that investigated the potential association between residential proximity to power lines and childhood cancer in Denmark. The study included all cases of leukemia (n=1,536), central nervous system tumors, and malignant lymphoma (n=417) diagnosed before the age of 15 between 1968 and 2003 in Denmark, along with 9,129 healthy control children matched on sex and year of birth. Considering the entire study period, no statistically significant increases were reported for any of the childhood cancer types.

- Salvan et al. (2015) compared measured magnetic-field levels in the bedroom for 412 cases of childhood leukemia under the age of 10 and 587 healthy control children in Italy. Although the statistical power of the study was limited because of the small number of highly exposed subjects, no consistent statistical associations or trends were reported between measured magnetic-field levels and the occurrence of leukemia among children in the study.

- Bunch et al. (2016) and Swanson and Bunch (2018) published additional

analyses using data from an earlier study (Bunch et al., 2014). Bunch et al. (2016) reported that the association with distance to power lines observed in earlier years was linked to calendar year of birth or year of cancer diagnosis, rather than the age of the power lines. Swanson and Bunch (2018) re-analyzed data using finer exposure categories (*e.g.*, cut-points of every 50-meter distance) and broader groupings of diagnosis date (*e.g.*, 1960-1979, 1980-1999, and 2000 and after) and reported no overall associations between exposure categories and childhood leukemia for the later periods (1980 and after), and consistent pattern for the periods prior to 1980.

- Crespi et al. (2016) conducted a case-control epidemiologic study of childhood cancers and residential proximity to high voltage power lines (60 kV to 500 kV) in California. Childhood cancer cases, including 5,788 cases of leukemia and 3,308 cases of brain tumor, diagnosed under the age of 16 between 1986 and 2008, were identified from the California Cancer Registry. Controls, matched on age and sex, were selected from the California Birth Registry. Overall, no consistent statistically significant associations for leukemia or brain tumor and residential distance to power lines were reported.

- Kheifets et al. (2017) assessed the relationship between calculated magnetic-field levels from power lines and development of childhood leukemia within the same study population evaluated in Crespi et al. (2016). In the main analyses, which included 4,824 cases of leukemia and 4,782 controls matched on age and sex, the authors reported no consistent patterns, or statistically significant associations between calculated magnetic-field levels and childhood leukemia development. Similar results were reported in subgroup and sensitivity analyses. In two subsequent studies, Amoon et al. (2018a, 2019) examined the potential impact of residential mobility (i.e., moving residences between birth and diagnosis) on the associations reported in Crespi et al. (2016) and Kheifets et al. (2017). Amoon et al. (2018a) concluded that changing residences was not associated with either calculated magnetic-field levels or proximity to the power lines, while Amoon et al. (2019) concluded that while uncontrolled confounding by residential mobility had some impact on the association between EMF exposure and childhood leukemia, it was unlikely to be the primary driving force behind the previously reported associations in Crespi et al. (2016) and Kheifets et al. (2017).

- Amoon et al. (2018b) conducted a pooled analysis of 29,049 cases and 68,231 controls from 11 epidemiologic studies of childhood leukemia and residential distance from high voltage power lines. The authors reported no statistically-significant association between childhood leukemia and proximity to transmission lines of any voltage. Among subgroup analyses, the reported associations were slightly stronger for leukemia cases diagnosed before 5 years of age and in study periods prior to 1980. Adjustment for various potential confounders (*e.g.*, socioeconomic status, dwelling type, residential mobility) had little effect on the estimated associations.

- Kyriakopoulou et al. (2018) assessed the association between childhood acute leukemia and parental occupational exposure to social contacts, chemicals, and electromagnetic fields. The study was conducted at a major pediatric hospital in Greece and included 108 cases and 108 controls matched for age, gender, and ethnicity. Statistically non-significant associations were observed between paternal exposure to magnetic fields and childhood acute leukemia for any of the exposure periods examined (1 year before conception; during pregnancy; during breastfeeding; and from birth until diagnosis); maternal exposure was not assessed due to the limited sample size. No associations were observed between childhood acute leukemia and exposure to social contacts or chemicals.

- Auger et al. (2019) examined the relationship between exposure to EMF during pregnancy and risk of childhood cancer in a cohort of 784,000 children born in Quebec. Exposure was defined using residential distance to the nearest high voltage transmission line or transformer station. The authors reported statistically non-significant associations between proximity to transformer stations and any cancer, hematopoietic cancer, or solid tumors. No associations were reported with distance to transmission lines.

- Crespi et al. (2019) investigated the relationship between childhood leukemia and distance from high voltage lines and calculated magnetic-field exposure, separately and combined, within the California study population previously analyzed in Crespi et al. (2016) and Kheifets et al. (2017). The authors reported that neither close proximity to high voltage lines nor exposure to calculated magnetic fields alone were associated with childhood leukemia; an association was observed only for those participants who were both close to high voltage lines (< 50 meters) and had exposure to high calculated magnetic fields (≥ 0.4 microtesla ["μT"]) (i.e., ≥ 4 milligauss ["mG"]). No associations were observed with low-voltage power lines (< 200 kV). In a subsequent study, Amoon et al. (2020) examined the potential impact of dwelling type on the associations reported in Crespi et al. (2019). Amoon et al. (2020) concluded that while the type of dwelling at which a child resides (*e.g.*, single-family home, apartment, duplex, mobile home) was associated with socioeconomic status and race or ethnicity, it was not associated with childhood leukemia and did not appear to be a potential confounder in the relationship between childhood leukemia and magnetic-field exposure in this study population.

- Swanson et al. (2019) conducted a meta-analysis of 41 epidemiologic studies of childhood leukemia and magnetic-field exposure published between 1979 and 2017 to examine trends in childhood leukemia development over time. The authors reported that while the estimated risk of childhood leukemia initially increased during the earlier period, a statistically non-significant decline in estimated risk has been observed from the mid-1990s until the present (i.e., 2019).

- Talibov et al. (2019) conducted a pooled analysis of 9,723 cases and 17,099

controls from 11 epidemiologic studies to examine the relationship between parental occupational exposure to magnetic fields and childhood leukemia. No statistically significant association was found between either paternal or maternal exposure and leukemia (overall or by subtype). No associations were observed in the meta-analyses.

- Núñez-Enríquez et al. (2020) assessed the relationship between residential magnetic-field exposure and B-lineage acute lymphoblastic leukemia ("B-ALL") in children under 16 years of age in Mexico. The study included 290 cases and 407 controls matched on age, gender, and health institution; magnetic-field exposure was assessed through the collection of 24-hour measurements in the participants' bedrooms. While the authors reported some statistically significant associations between elevated magnetic-field levels and development of B-ALL, the results were dependent on the chosen cut-points.

- Seomun et al. (2021) performed a meta-analysis based on 33 previously published epidemiologic studies investigating the potential relationship between magnetic-field exposure and childhood cancers, including leukemia and brain cancer. For childhood leukemia, the authors reported statistically significant associations with some, but not all, of the chosen cut-points for magnetic-field exposure. The associations between magnetic-field exposure and childhood brain cancer were statistically non-significant. The study provided limited new insight as most of the studies included in the current meta-analysis, were included in previously conducted meta- and pooled analyses.

- Amoon et al. (2022) conducted a pooled analysis of four studies of residential exposure to magnetic fields and childhood leukemia published following a 2010 pooled analysis by Kheifets et al. (2010). The study by Amoon et al. (2022) compared the exposures of 24,994 children with leukemia to the exposures of 30,769 controls without leukemia in California, Denmark, Italy, and the United Kingdom. Exposure was assessed by measured or calculated magnetic fields at their residences. The exposure of these two groups to magnetic fields were found not to significantly differ. A decrease in the combined effect estimates in epidemiologic studies was observed over time, and the authors concluded that their findings, based on the most recent studies, were "not in line" with previous pooled analyses that reported an increased risk of childhood leukemia.

- Brabant et al. (2022) performed a literature review and meta-analysis of studies of childhood leukemia and magnetic-field exposure. The overall analysis included 21 epidemiologic studies published from 1979 to 2020. The authors reported a statistically significant association, which they noted was "mainly explained by the studies conducted before 2000." The authors reported a statistically significant association between childhood leukemia and measured or calculated magnetic-field exposures > 0.4 μT (4 mG); no statistically significant overall associations were reported between childhood leukemia and lower magnetic-field exposure (< 0.4 μT [4 mG]), residential distance from power lines, or wire coding configuration. An association between childhood

leukemia and electric blanket use was also reported. The overall results were likely influenced by the inclusion of a large number of earlier studies; 10 of the 21 studies in the main analysis were published prior to 2000. Studies published prior to 2000 included fewer studies deemed to be of higher study quality, as determined by the authors, compared to studies published after 2000.

- Nguyen et al. (2022) investigated whether potential pesticide exposure from living in close proximity to commercial plant nurseries confounds the association between magnetic-field exposure and childhood leukemia development reported within the California study population previously analyzed in Crespi et al. (2016) and Kheifets et al. (2017). The authors in Nguyen et al. (2022) noted that while the association between childhood leukemia and magnetic-field exposure was "slightly attenuated" after adjusting for nursery proximity or when restricting to subjects living > 300 meters from nurseries, their results "do not support plant nurseries as an explanation for observed childhood leukemia risks." The authors further noted that close residential proximity to nurseries may be an independent risk factor for childhood leukemia.

- Guo et al. (2023) reported conducting a systematic review and meta-analysis of studies published from 2015 to 2022 that evaluated associations between magnetic-field exposure and childhood leukemia development. Three meta-analyses were conducted to evaluate the relationship using different exposure metrics. In the first meta-analysis, magnetic-field levels ranging from 0.4 μT (4 mG) to 0.2 μT (2 mG) were associated with a statistically significant reduced risk of childhood leukemia development (i.e., a protective association). In the second meta-analysis, exposure was based on wiring configuration codes, and the reported pooled relative risk estimates demonstrated a statistically significant increased association with childhood leukemia. In the third meta-analysis, exposure was categorized into groupings of magnetic-field strength; no statistically significant associations with childhood leukemia were reported for any of the groupings, including for magnetic-field levels ≥ 0.4 μT (4 mG). There are significant limitations of this study that prevent meaningful interpretations of the results. Most of the analyses of magnetic fields did not state whether measurements and calculations were included, and the authors provided no description of the methods used for their analyses, no data tables to support their findings, and no references to the number and type of studies included. In fact, much of the article's introduction discusses ionized radiation. The authors also do not report relevant metrics for evaluating meta-analyses such as study heterogeneity.

- Malagoli et al. (2023) examined associations between exposure to magnetic fields from high voltage power lines (≥ 132 kV) and childhood leukemia development in a case-control study of children in Italy. The study included 182 cases diagnosed with childhood leukemia between 1998 and 2019 and 726 controls matched based on age, sex, and Italian province. The authors assessed magnetic-field exposure by calculating the distance from each participant's

residence to the nearest high voltage power line and classifying that distance into one of three exposed categories (participants living < 100 meters, 100 to < 200 meters, or 200 to < 400 meters from the power lines) or as unexposed (participants living ≥ 400 meters from the power lines). The authors reported a non-statistically significant association between childhood leukemia and a residence distance of <100 meters; no statistically significant associations were reported for any distance, including when stratifying by age (< 5 or ≥ 5 years) or when restricting to acute lymphoblastic leukemia (ALL).

- Nguyen et al. (2023) extended their previous investigation (Nguyen et al., 2022) into whether pesticide exposure was an independent risk factor or confounder for childhood leukemia in the presence of magnetic-field exposure from high voltage power lines by examining the potential impact of specific pesticide exposure factors (*e.g.*, intended use, chemical class, active ingredient). The authors found no statistically significant associations between distance to high voltage power lines or magnetic-field exposure and childhood leukemia, including when adjusting for pesticide exposures. Several of the examined pesticides were determined by the authors to be potential independent risk factors for childhood leukemia.

- Zagar et al. (2023) examined the relationship between magnetic fields and childhood cancers, including childhood leukemia, in Slovenia. Cancer cases, including 194 cases of leukemia, were identified from the Slovenian Cancer Registry; cases were then classified into one of five calculated magnetic-field exposure levels (ranging from < 0.1 μT [< 1 mG] to ≥ 0.4 μT [≥ 4 mG]) based on residential distance to high voltage (*e.g.*, 110-kV, 220-kV, and 400-kV) power lines. The authors reported that less than 1% of Slovenian children and adolescents lived in an area near high voltage power lines. No differences in the development of childhood cancers, including leukemia, brain tumors, or all cancers combined, were reported across the five exposure categories.

- Crespi et al. (2024) assessed the association between residential proximity to electricity transformers in multi-story residential buildings and childhood leukemia development in the International Transformer Exposure study. Participants were required to live in an apartment building that contained a built-in transformer; exposure was estimated using the participants' apartment location relative to the transformer and categorized as high exposure (located above or adjacent to the transformer), intermediate exposure (located on the same floor as apartments in the high exposure category), or unexposed (all other apartments). In the pooled analyses of five countries' data, a total of 74 cases and 20,443 controls were included; 18 of the 74 cases were identified in the intermediate or high exposure categories. No significant associations were reported between proximity to residential transformers and childhood leukemia. Sensitivity analyses performed using the data from one of the five countries (Finland) where a cohort study design was used, also reported no significant associations. The authors concluded that the evidence for an elevated risk of childhood leukemia from proximity to residential transformers was "weak."

- Duarte-Rodríguez et al. (2024) conducted a population-based case-control study to examine the geographical distribution of childhood ALL cases in Mexico City, Mexico. Cases and controls were geolocated using the most recent residential address, and a spatial scan statistic was used to detect spatial clusters of cancer cases. The authors identified eight spatial clusters of cases, representing nearly 40% of all cases included in the study (n=1,054 cases). The authors noted that six of the eight spatial clusters were located in proximity to high voltage power lines and high voltage electric installations (distances not specified), and that the remaining two clusters were located near former petrochemical industrial facility sites. Since the study did not directly assess magnetic-field exposure and made no conclusions about magnetic-field exposure and cancer development, this study adds little value to the existing literature regarding a potential association between exposure to ELF EMF and childhood leukemia development.

- Malavolti et al. (2024) examined the association between magnetic-field exposure from transformer stations and childhood leukemia in the same Italian study population as Malagoli et al. (2023). Magnetic-field exposure was estimated based on residential distance to the nearest transformer station, and participants were then categorized as exposed or unexposed using two different distance cut-points: residing within a radius of 15 or 25 meters from the transformer station (exposed); residing ≥ 15 meters or ≥ 25 meters from the transformer station (unexposed). No significant associations were reported for all leukemias, or ALL specifically, when either distance cut-point was used, and in fact no association at all (an odds ratio = 1.0) was observed when the more stringent cut-point of 15 meters was used. In sub-analyses that stratified by participant age (< 5 years vs. ≥ 5 years), no significant associations were reported for either age category.

Epidemiologic studies of EMF and neurodegenerative diseases published during the above referenced period include:

- Seelen et al. (2014) conducted a population-based case-control study in the Netherlands and included 1,139 cases diagnosed with amyotrophic lateral sclerosis ("ALS") between 2006 and 2013 and 2,864 frequency-matched controls. The shortest distance from the case and control residences to the nearest high voltage power line (50 to 380 kV) was determined by geocoding. No statistically significant associations between residential proximity to power lines with voltages of either 50 to 150 kV or 220 to 380 kV and ALS were reported.

- Sorahan and Mohammed (2014) analyzed mortality from neurodegenerative diseases in a cohort of approximately 73,000 electricity supply workers in the United Kingdom. Cumulative occupational exposure to magnetic-fields was calculated for each worker in the cohort based on their job titles and job locations. Death certificates were used to identify deaths from neurodegenerative diseases. No associations or trends for any of the included

neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, and ALS) were observed with various measures of calculated magnetic fields.

- Koeman et al. (2015, 2017) analyzed data from the Netherlands Cohort Study of approximately 120,000 men and women who were enrolled in the cohort in 1986 and followed up until 2003. Lifetime occupational history, obtained through questionnaires, and job-exposure matrices on ELF magnetic fields and other occupational exposures were used to assign exposure to study subjects. Based on 1,552 deaths from vascular dementia, the researchers reported a statistically not significant association of vascular dementia with estimated exposure to metals, chlorinated solvents, and ELF magnetic fields. However, because no exposure-response relationship for cumulative exposure was observed and because magnetic fields and solvent exposures were highly correlated with exposure to metals, the authors attributed the association with ELF magnetic fields and solvents to confounding by exposure to metals (Koeman et al., 2015). Based on a total of 136 deaths from ALS among the cohort members, the authors reported a statistically significant, approximately two-fold association with ELF magnetic fields in the highest exposure category. This association, however, was no longer statistically significant when adjusted for exposure to insecticides (Koeman et al., 2017).

- Fischer et al. (2015) conducted a population-based case-control study that included 4,709 cases of ALS diagnosed between 1990 and 2010 in Sweden and 23,335 controls matched to cases on year of birth and sex. The study subjects' occupational exposures to ELF magnetic fields and electric shocks were classified based on their occupations, as recorded in the censuses and corresponding job-exposure matrices. Overall, neither magnetic fields nor electric shocks were related to ALS.

- Vergara et al. (2015) conducted a mortality case-control study of occupational exposure to electric shock and magnetic fields and ALS. They analyzed data on 5,886 deaths due to ALS and over 58,000 deaths from other causes in the United States between 1991 and 1999. Information on occupation was obtained from death certificates and job-exposure matrices were used to categorize exposure to electric shocks and magnetic fields. Occupations classified as "electric occupations" were moderately associated with ALS. The authors reported no consistent associations for ALS, however, with either electric shocks or magnetic fields, and they concluded that their findings did not support the hypothesis that exposure to either electric shocks or magnetic fields explained the observed association of ALS with "electric occupations."

- Pedersen et al. (2017) investigated the occurrence of central nervous system diseases among approximately 32,000 male Danish electric power company workers. Cases were identified through the national patient registry between 1982 and 2010. Exposure to ELF magnetic fields was determined for each worker based on their job titles and area of work. A statistically significant increase was reported for dementia in the high exposure category when

compared to the general population, but no exposure-response pattern was identified, and no similar increase was reported in the internal comparisons among the workers. No other statistically significant increases among workers were reported for the incidence of Alzheimer's disease, Parkinson's disease, motor neuron disease, multiple sclerosis, or epilepsy, when compared to the general population, or when incidence among workers was analyzed across estimated exposure levels.

- Vinceti et al. (2017) examined the association between ALS and calculated magnetic-field levels from high voltage power lines in Italy. The authors included 703 ALS cases and 2,737 controls; exposure was assessed based on residential proximity to high voltage power lines. No statistically significant associations were reported and no exposure-response trend was observed. Similar results were reported in subgroup analyses by age, calendar period of disease diagnosis, and study area.

- Checkoway et al. (2018) investigated the association between Parkinsonism[33] and occupational exposure to magnetic fields and several other agents (endotoxins, solvents, shift work) among 800 female textile workers in Shanghai. Exposure to magnetic fields was assessed based on the participants' work histories. The authors reported no statistically significant associations between Parkinsonism and occupational exposure to any of the agents under study, including magnetic fields.

- Gunnarsson and Bodin (2018) conducted a meta-analysis of occupational risk factors for ALS. The authors reported a statistically significant association between occupational exposures to EMF, estimated using a job-exposure matrix, and ALS among the 11 studies included. Statistically significant associations were also reported between ALS and jobs that involve working with electricity, heavy physical work, exposure to metals (including lead) and chemicals (including pesticides), and working as a nurse or physician. The authors reported some evidence for publication bias. In a subsequent publication, Gunnarsson and Bodin (2019) updated their previous meta-analysis to also include Parkinson's disease and Alzheimer's disease. A slight, statistically significant association was reported between occupational exposure to EMF and Alzheimer's disease; no association was observed for Parkinson's disease.

- Huss et al. (2018) conducted a meta-analysis of 20 epidemiologic studies of ALS and occupational exposure to magnetic fields. The authors reported a weak overall association; a slightly stronger association was observed in a subset analysis of six studies with full occupational histories available. The authors noted substantial heterogeneity among studies, evidence for publication

[33] Parkinsonism is defined by Checkoway et al. (2018) as "a syndrome whose cardinal clinical features are bradykinesia, rest tremor, muscle rigidity, and postural instability. Parkinson disease is the most common neurodegenerative form of [parkinsonism]" (p. 887).

bias, and a lack of a clear exposure-response relationship between exposure and ALS.

- Jalilian et al. (2018) conducted a meta-analysis of 20 epidemiologic studies of occupational exposure to magnetic fields and Alzheimer's disease. The authors reported a moderate, statistically significant overall association; however, they noted substantial heterogeneity among studies and evidence for publication bias.

- Röösli and Jalilian (2018) performed a meta-analysis using data from five epidemiologic studies examining residential exposure to magnetic fields and ALS. A statistically non-significant negative association was reported between ALS and the highest exposed group, where exposure was defined based on distance from power lines or calculated magnetic-field level.

- Gervasi et al. (2019) assessed the relationship between residential distance to overhead power lines in Italy and risk of Alzheimer's dementia and Parkinson's disease. The authors included 9,835 cases of Alzheimer's dementia and 6,810 cases of Parkinson's disease; controls were matched by sex, year of birth, and municipality of residence. A weak, statistically non-significant association was observed between residences within 50 meters of overhead power lines and both Alzheimer's dementia and Parkinson's disease, compared to distances of over 600 meters.

- Peters et al. (2019) examined the relationship between ALS and occupational exposure to both magnetic fields and electric shock in a pooled study of data from three European countries. The study included 1,323 ALS cases and 2,704 controls matched for sex, age, and geographic location; exposure was assessed based on occupational title and defined as low (background), medium, or high. Statistically significant associations were observed between ALS and ever having been exposed above background levels to either magnetic fields or electric shocks; however, no clear exposure-response trends were observed with exposure duration or cumulative exposure. The authors also noted significant heterogeneity in risk by study location.

- Filippini et al. (2020) investigated the associations between ALS and several environmental and occupational exposures, including electromagnetic fields, within a case-control study in Italy. The study included 95 cases and 135 controls matched on age, gender, and residential province; exposure to electromagnetic fields was assessed using the participants' responses to questions related to occupational use of electric and electronic equipment, occupational EMF exposure, and residential distance to overhead power lines. The authors reported a statistically significant association between ALS and residential proximity to overhead power lines and a statistically non-significant association between ALS and occupational exposure to EMF; occupational use of electric and electronic equipment was associated with a statistically non-significant decrease in ALS development.

- Huang et al. (2020) conducted a meta-analysis of 43 epidemiologic studies examining potential occupational risk factors for dementia or mild cognitive impairment. The authors included five cohort studies and seven case-control studies related to magnetic-field exposure. For both study types, the authors reported positive associations between dementia and work-related magnetic-field exposures. The paper, however, provided no information on the occupations held by the study participants, their magnetic-field exposure levels, or how magnetic-field levels were assessed; therefore, the results are difficult to interpret. The authors also reported a high level of heterogeneity among studies. Thus, this analysis adds little, if any, to the overall weight of evidence on a potential association between dementia and magnetic fields.

- Jalilian et al. (2020) conducted a meta-analysis of ALS and occupational exposure to both magnetic fields and electric shocks within 27 studies from Europe, the United States, and New Zealand. A weak, statistically significant association was reported between magnetic-field exposure and ALS; however, the authors noted evidence of study heterogeneity and publication bias. No association was observed between ALS and electric shocks.

- Chen et al. (2021) conducted a case-control study to examine the association between occupational exposure to electric shocks, magnetic fields, and motor neuron disease ("MND") in New Zealand. The study included 319 cases with a MND diagnosis (including ALS) and 604 controls, matched on age and gender; exposure was assessed using the participants' occupational history questionnaire responses and previously developed job-exposure matrices for electric shocks and magnetic fields. The authors reported no associations between MND and exposure to magnetic fields; positive associations were reported between MND and working at a job with the potential for electric shock exposure.

- Grebeneva et al. (2021) evaluated disease rates among electric power company workers in the Republic of Kazakhstan. The authors included three groups of "exposed" workers who "were in contact with equipment generating [industrial frequency EMF]" (a total of 161 workers), as well as 114 controls "who were not associated with exposure to electromagnetic fields." Disease rates were assessed "based on analyzing the sick leaves of employees" from 2010 to 2014 and expressed as "incidence rate per 100 employees." The authors reported a higher "incidence rate" of "diseases of the nervous system" in two of the exposed categories compared to the non-exposed group. No meaningful conclusions from the study could be drawn, however, because no specific diagnoses within "diseases of the nervous system" were identified in the paper and no clear description was provided on how the authors defined and calculated "incidence rate" for the evaluated conditions. In addition, no measured or calculated magnetic-field levels were presented by the authors.

- Filippini et al. (2021) conducted a meta-analysis to assess the dose-response relationship between residential exposure to magnetic fields and ALS. The

authors identified six ALS epidemiologic studies, published between 2009 and 2020, that assessed exposure to residential magnetic fields by either distance from overhead power lines or magnetic-field modeling. They reported a decrease in risk of ALS in the highest exposure categories for both distance-based and modeling-based exposure estimates. The authors also reported that their dose-response analyses "showed little association between distance from power lines and ALS"; the data were too sparse to conduct a dose-response analysis for modeled magnetic-field estimates. The authors noted that their study was limited by small sample size, "imprecise" exposure categories, the potential for residual confounding, and by "some publication bias."

- Jalilian et al. (2021) conducted a meta-analysis of occupational exposure to ELF magnetic fields and electric shocks and development of ALS. The authors included 27 studies from Europe, the United States, and New Zealand that were published between 1983 and 2019. A weak, statistically significant association was reported between magnetic-field exposure and ALS, and no association was observed between electric shocks and ALS. Indications of publication bias and "moderate to high" heterogeneity were identified for the studies of magnetic-field exposure and ALS, and the authors noted that "the results should be interpreted with caution."

- Goutman et al. (2022) examined occupational exposures, including "electromagnetic radiation" exposure, and associations with ALS in a case-control study of Michigan workers across various industries. The study included 381 cases diagnosed with ALS, all patients at the University of Michigan's Pranger ALS clinic, and 272 controls recruited from an online database for the University of Michigan. Participants were enrolled from 2010 to 2020 and completed a written survey of their work history and occupational exposures to nine exposure categories, including electromagnetic fields, particulate matter (PM), and pesticides. Exposure to electromagnetic fields was ascertained with a binary question asking whether they were "[e]xposed to power lines, transformation [*sic*] stations or other EM [electromagnetic radiation]?" The analysis was adjusted for age, sex, and military service. No association was observed between electromagnetic field exposure and ALS, while exposure to PM, pesticides, and metals, among others, were determined by the authors to be "associated with an increased ALS risk in this cohort."

- Sorahan and Nichols (2022) investigated magnetic-field exposure and mortality from MND in a large cohort of employees of the former Central Electricity Generating Board of England and Wales. The study included nearly 38,000 employees first hired between 1942 and 1982 and still employed in 1987. Estimates of exposure magnitude, frequency, and duration were calculated using data from the power stations and the employees' job histories, and were described in detail in a previous publication (Renew et al., 2003). Mortality from MND in the total cohort was observed to be similar to national rates. No statistically significant dose-response trends were observed with lifetime, recent, or distant magnetic-field exposure; statistically significant associations

were observed for some categories of recent exposure, but not for the highest exposure category.

- Duan et al. (2023) conducted a meta-summary of ALS and exposure to magnetic fields, which was 1 of 22 non-genetic risk factors evaluated across 67 studies for its association with ALS. Six of the 67 studies examined magnetic-field exposure and associations with ALS; of the six studies identified, the authors included four case-control studies and one cohort study in their meta-analysis. Pooling results from these studies resulted in significant increased odds of ALS among individuals with higher (but undefined) exposure to magnetic fields. However, this pooled odds ratio for magnetic-field exposure (1.22) was below the minimum odds ratio threshold of 1.3 set by the authors as the criterion for defining an exposure as an ALS risk factor. In addition, the authors identified "substantial" heterogeneity between studies evaluating magnetic-field exposure and ALS.

- In a subsequent publication of the same study as Goutman et al. (2022), Goutman et al. (2023) assessed the potential for the same nine exposure categories, including "electromagnetic radiation" exposure, to be risk factors for ALS progression, including survival and onset segment (bulbar, cervical, lumbar). Electromagnetic field exposure was not significantly associated with ALS survival or with bulbar onset compared to lumbar, but was significantly associated with cervical onset compared to lumbar. It is worth noting that an association with cervical onset compared to lumbar was observed in the majority (7/9) of the exposure categories. The authors make no concluding statements on electromagnetic field exposure and ALS and instead emphasize that occupational pesticide exposure and working in military operations were significantly associated with worse ALS survival.

- Saucier et al. (2023) carried out three systematic reviews of studies that evaluated relationships between urbanization, air pollution, and water pollution, and ALS development. The authors identified five studies that assessed whether electromagnetic fields (of varying frequencies) and high voltage infrastructure were significant urbanization risk factors for ALS, but make no conclusion about magnetic-field exposure and ALS development based on these studies, therefore adding little value to the existing literature.

- Vasta et al. (2023) examined the relationship between residential distance to power lines and ALS development in a cohort study of 1,098 participants in Italy. The authors reported no differences in the age of ALS onset or ALS progression rate between low-exposed and high-exposed participants based on residential distance to power lines at the time of the participants' diagnosis. Similarly, no differences were observed when exposure was based on residential distance to repeater antennas.

- Vitturi et al. (2023) conducted a systematic review and meta-analysis of case-control studies examining potential occupational risk factors related to multiple

sclerosis, including solvents, mercury, pesticides, and low-frequency magnetic fields. The authors included 24 studies in their review, but only one of the included studies investigated exposure to magnetic fields (Pedersen et al., 2017, discussed above), thereby adding little new information to the existing body of research.

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V. NOTICE

A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposed to be noticed, provide minimum, maximum and average structure heights.

Response: Dominion Energy Virginia's Centreport 230 kV Electric Transmission Project includes construction of a new double circuit overhead 230 kV transmission line in new right-of-way (Centreport Loop) and a new substation (Centreport Substation) entirely within Stafford County, Virginia.

A map is provided in Attachment V.A showing the route alternatives of the Centreport Loop, including the overhead Proposed Route (Route 2) and overhead Alternative Routes 1, 3, and 4. The map also shows the location of the proposed Centreport Substation. A written description of the Proposed and Alternative Routes is as follows:

Proposed Route (Route 2)

The Proposed Route (Route 2) is approximately 2.5 miles in length. Beginning at the cut-in location on Line #2104 at Structure #2104/5456, which is approximately 0.3 mile north of Cranes Corner Road in Stafford County, the route initially heads west/northwest for approximately 0.8 mile before crossing Richmond Highway. The route then turns north and west to cross Interstate 95 before angling northwest along Potomac Creek and following Centerport Parkway northwest for approximately 0.5 mile before terminating at the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

The Proposed Route will be constructed on new right-of-way primarily supported by double circuit weathering steel monopoles with a minimum structure height of 100 feet, a maximum structure height of 140 feet, and an average structure height of 112 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

Alternative Route 1

Alternative Route 1 is approximately 3.5 miles in length. Beginning at the cut-in location on Line #2157 at Structure #2157/1716, which is located approximately 0.1 mile west of Cambridge Street (U.S. Route 1) and Heritage Commons, the route initially heads north and west for approximately 0.9 mile before crossing Interstate 95 on the south side of Chichester Park. From there, the route heads north/northwest for approximately 0.9 mile, crossing Enon Road. The route then angles northeast, crosses Centreport Parkway, and turns northwest to follow Mountain View Road for approximately 0.2 mile. The route then turns northeast, crosses Mountain View Road, and terminates at the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport

Parkway and Oakenwold Lane.

Alternative Route 1 will be constructed on new right-of-way primarily supported by double circuit weathering steel monopoles with a minimum structure height of 100 feet, a maximum structure height of 185 feet, and an average structure height of 120 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

Alternative Route 3

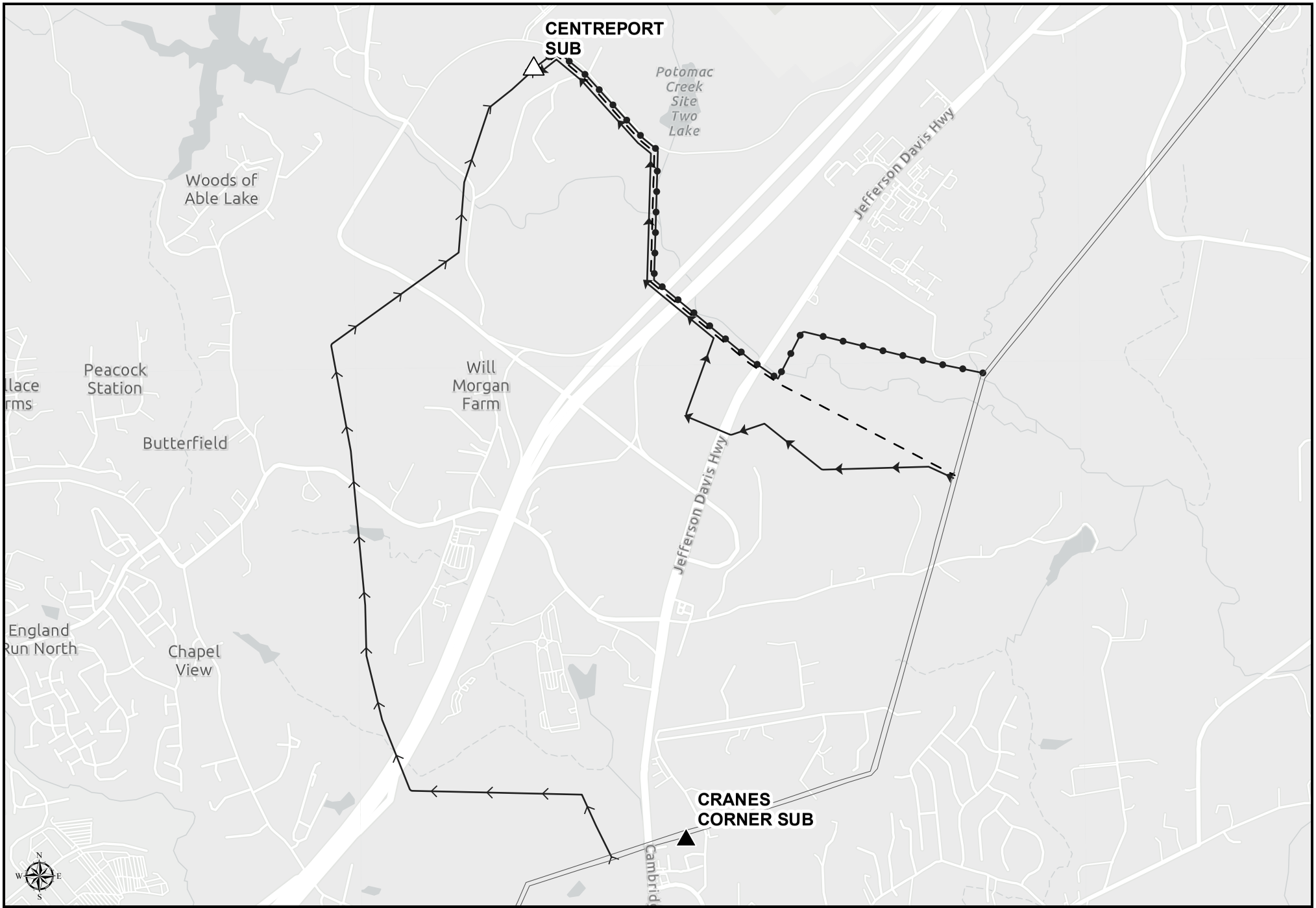
Alternative Route 3 is approximately 2.3 miles in length. Beginning at the cut-in location on Line #2104 at Structure #2104/5458, which is located approximately 0.6 mile northeast of Cranes Corner Road, the route initially heads west for approximately 0.6 mile, turning south to cross Potomac Creek on the east side of Richmond Highway. The route then turns west again, crossing Richmond Highway and Interstate 95 before angling northwest along Potomac Creek. At Centreport Parkway, the route turns west and follows the road for approximately 0.5 mile before terminating at the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

Alternative Route 3 will be constructed on new right-of-way primarily supported by double circuit weathering steel monopoles with a minimum structure height of 85 feet, a maximum structure height of 140 feet, and an average structure height of 111 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

Alternative Route 4

Alternative Route 4 is approximately 2.2 miles in length. Beginning at the cut-in location on Line #2104 at Structure #2104/5456, which is located approximately 0.3 mile north of Cranes Corner Road, the route heads northwest for about 1.2 mile, crossing Richmond Highway and Interstate 95 before angling northwest along Potomac Creek. At Centreport Parkway the route turns west and follows the road for approximately 0.5 mile before terminating at the proposed Centreport Substation, located approximately 0.1 mile south of the intersection of Centreport Parkway and Oakenwold Lane.

Alternative Route 4 will be constructed on new right-of-way primarily supported by double circuit weathering steel monopoles with a minimum structure height of 95 feet, a maximum structure height of 140 feet, and an average structure height of 111 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.


CENTREPORT SUB
Potomac Creek Site Two Lake
Woods of Able Lake
Jefferson Davis Hwy
Peacock Station
Will Morgan Farm
Butterfield
Jefferson Davis Hwy
England Run North
Chapel View
CRANES CORNER SUB
Cambridge
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Project Location
WV
KY
Virginia
TN
Existing Substation
Proposed Substation
Dominion Exsiting Transmission Line
Route Alternatives
Proposed Route (Route 2)
Alternative Route 1
Alternative Route 3
Alternative Route 4
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ERM
Attachment V.A
Notice Map
Centreport 230 kV Transmission Line Project
Dominion Energy Virginia
Stafford County, Virginia
Dominion Energy

V. NOTICE

B. List Applicant offices where members of the public may inspect the application. If applicable, provide a link to website(s) where the application may be found.

Response: Shortly after filing, the Application will be made available electronically for public inspection at: www.dominionenergy.com/centreport.

V. NOTICE

C. List all federal, state, and local agencies and/or officials that may reasonably be expected to have an interest in the proposed construction and to whom the Applicant has furnished or will furnish a copy of the application.

Response:

Ms. Bettina Rayfield
Virginia Department of Environmental Quality
Office of Environmental Impact Review
1111 East Main Street, Suite 1400
Richmond, Virginia 23219
bettina.rayfield@deq.virginia.gov

Ms. Michelle Henicheck
Virginia Department of Environmental Quality
Office of Wetlands and Streams
1111 East Main Street, Suite 1400
Richmond, Virginia 23219

Ms. Rene Hypes
Virginia Department of Conservation and Recreation
Division of Natural Heritage
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Environmental Reviewer
Virginia Department of Conservation and Recreation
Planning & Recreation Bureau
600 East Main Street, 17th Floor
Richmond, Virginia 23219

Ms. Hannah Schul
Virginia Department of Wildlife Resources
Wildlife Information and Environmental Services
7870 Villa Park, Suite 400
Henrico, Virginia 23228

Mr. Keith Tignor
Virginia Department of Agriculture and Consumer Services
Office of Plant Industry Services
102 Governor Street
Richmond, Virginia 23219

Mr. Clint Folks
Virginia Department of Forestry
Forestland Conservation Division
900 Natural Resources Drive, Suite 800
Charlottesville, Virginia 22903

Scoping at VMRC
Virginia Marine Resources Commission
Habitat Management Division
Building 96, 380 Fenwick Road
Ft. Monroe, Virginia 23651

Mr. Troy Andersen
U.S. Fish and Wildlife Service
Virginia Field Office, Ecological Services
6669 Short Lane
Gloucester, Virginia 23061

Ms. Regena Bronson
U.S. Army Corps of Engineers
Fredericksburg Field Office
10300 Spotsylvania Parkway, Suite 230
Fredericksburg, Virginia 22408

Mr. Phil Skorupa
Virginia Department of Energy
1100 Bank Street
Washington Building, 8th Floor
Richmond, Virginia 23219

Ms. Arlene Fields Warren
Virginia Department of Health
Office of Drinking Water
109 Governor Street, 6th Floor
Richmond, Virginia 23219

Mr. Roger Kirchen
Department of Historic Resources
Review and Compliance Division
2801 Kensington Avenue
Richmond, Virginia 23221

Ms. Martha Little
Virginia Outdoors Foundation
P.O. Box 85073, PMB 38979
Richmond, Virginia 23285

Mr. Scott Denny
Virginia Department of Aviation
Airport Services Division
5702 Gulfstream Road
Richmond, Virginia 23250

Mr. Dale Totten
Acting District Engineer
Virginia Department of Transportation, Richmond District
2430 Pine Forest Drive
South Chesterfield, Virginia 23834

Mr. Kevin Gregg
Chief of Maintenance and Operations for Central Office
Virginia Department of Transportation
1401 E. Broad Street
Richmond, Virginia 23219

Mr. F. Craig Meadows
Interim County Administrator, Stafford County
1300 Courthouse Road, 3rd Floor
Stafford, Virginia 22554

V. NOTICE

D. If the application is for a transmission line with a voltage of 138 kV or greater, provide a statement and any associated correspondence indicating that prior to the filing of the application with the SCC the Applicant has notified the chief administrative officer of every locality in which it plans to undertake construction of the proposed line of its intention to file such an application, and that the Applicant gave the locality a reasonable opportunity for consultation about the proposed line (similar to the requirements of § 15.2-2202 of the Code for electric transmission lines of 150 kV or more).

Response: In accordance with Va. Code § 15.2-2202 E, a letter dated August 20, 2024, was delivered to Mr. F. Craig Meadows, Interim County Administrator of Stafford County, where the Project is located. The letter stated the Company's intention to file this Application and invited the County to consult with the Company about the Project. This letter is included as Attachment V.D.1.

Dominion Energy Services, Inc.
5000 Dominion Boulevard, 3rd Floor
Glen Allen, VA 23060
DominionEnergy.com

Mr. F. Craig Meadows
Interim County Administrator, Stafford County
1300 Courthouse Road, 3rd Floor
Stafford, Virginia 22554

August 20, 2024

RE: Dominion Energy Virginia's Proposed 230 kV Centreport Loop and Centreport Substation Project

Notice Pursuant to Va. Code § 15.2-2202 E

Dear Mr. Meadows,

Dominion Energy Virginia (the "Company") is proposing to construct a new 230-34.5 kilovolt ("kV") substation (the "Centreport Substation") and a new double circuit overhead 230 kV transmission line ("Centreport Loop") that connects the proposed Centreport Substation to the existing 230 kV transmission system in Stafford County, Virginia. Collectively this work is referred to as the "Project." The Project is needed to provide service requested by a customer, to maintain reliable service for the overall load growth in the Project area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards.

The Company is preparing to file an application for a certificate of public convenience and necessity ("CPCN") with the State Corporation Commission (the "Commission"). Pursuant to § 15.2-2202 E of the Code of Virginia, the Company is writing to notify Stafford County of the proposed Project in advance of the CPCN application filing and respectfully requests that you submit any comments or additional information you feel would have bearing on the Project within 30 days of the date of this letter. Once filed, the CPCN application filing will be available for review on the Company's website at www.dominionenergy.com/centreport.

Enclosed is a Project Overview Map depicting the Project's route alternatives, as well as the general Project location. All final materials, including maps, will be available in the Company's CPCN application filing to the Commission.

If you would like to receive a GIS shapefile of the route alternatives to assist in your Project review or if there are any questions, please do not hesitate to contact me directly at (804) 659-9637 or tracey.s.mcdonald@dominionenergy.com.

Dominion Energy Virginia appreciates your assistance with this Project review and looks forward to any additional information you may have to offer.

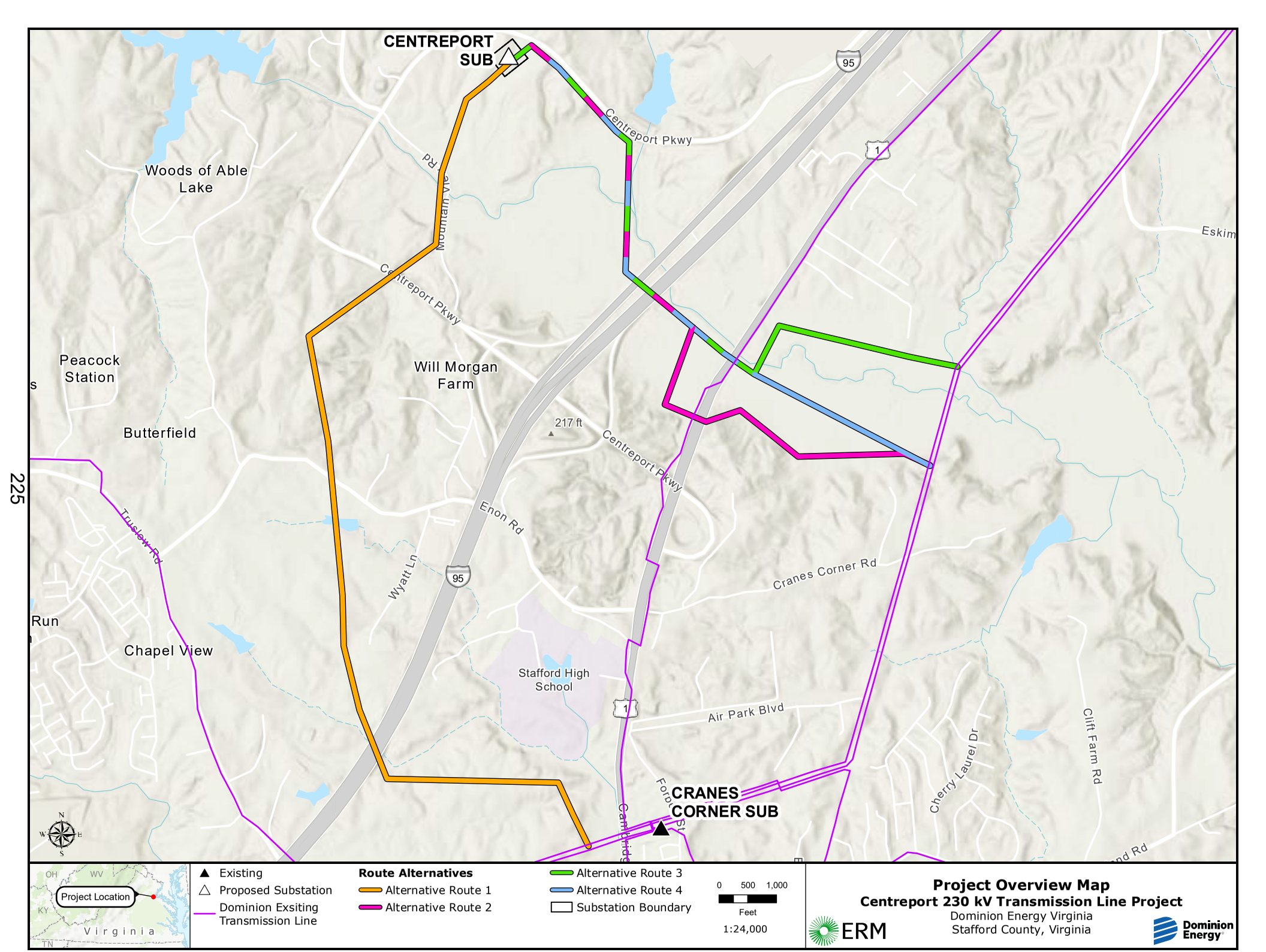
Dominion Energy Services, Inc.
5000 Dominion Boulevard, 3rd Floor
Glen Allen, VA 23060
DominionEnergy.com

Regards,

Tracey McDonald

Tracey McDonald
Senior Siting and Permitting Specialist
Electric Transmission
5000 Dominion Boulevard, 3rd Floor
Glen Allen, VA 23060
804-659-9637

Enclosure: Project Overview Map


CENTREPORT SUB
CRANES CORNER SUB
Centreport Pkwy
Woods of Able Lake
Peacock Station
Butterfield
Will Morgan Farm
217 ft
Enon Rd
Wyatt Ln
Truslow Rd
Cranes Corner Rd
Chapel View
Stafford High School
Air Park Blvd
Cherry Laurel Dr
Clift Farm Rd
95
1
225
Project Location
Existing
Proposed Substation
Dominion Exsiting Transmission Line
Route Alternatives
Alternative Route 1
Alternative Route 2
Alternative Route 3
Alternative Route 4
Substation Boundary
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Feet
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Project Overview Map
Centreport 230 kV Transmission Line Project
Dominion Energy Virginia
Stafford County, Virginia
ERM
Dominion Energy

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2024-00170
	)	
For approval and certification of electric transmission facilities: 230 kV Centreport Loop and Centreport Substation	)	

IDENTIFICATION, SUMMARIES, AND TESTIMONY OF DIRECT WITNESSES OF VIRGINIA ELECTRIC AND POWER COMPANY

Ramtin Khalili

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

ASM (Sayed) Fakhruddin

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Sergio E. De Hoyos Irizarry

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Mohammad M. Othman

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Tracey McDonald

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Matt L. Teichert

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Ramtin Khalili

Title: Engineer III – Electric Transmission Planning

Summary:

Company Witness Ramtin Khalili sponsors those portions of the Appendix describing the Company's electric transmission system and the need for, and benefits of, the proposed Project, as follows:

- Section I.G: This section provides a system map for the affected area.
- Section I.J: This section provides information about the project if approved by the RTO.
- Section I.K: This section, when applicable, provides outage history and maintenance history for existing transmission lines if the proposed project is a rebuild and is due in part to reliability issues.
- Section I.M: This section, when applicable, contains information for transmission lines interconnecting a non-utility generator.
- Section II.A.3: This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.
- Section II.A.10: This section provides details of the construction plans for the proposed project, including requested line outage schedules.

Additionally, Company Witness Khalili co-sponsors the following sections of the Appendix:

- Section I.A (co-sponsored with Company Witnesses ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Mohammad M. Othman, Tracey McDonald, and Matt L. Teichert): This section details the primary justifications for the proposed project.
- Section I.B (co-sponsored with Company Witness ASM (Sayed) Fakhruddin): This section details the engineering justifications for the proposed project.
- Section I.C (co-sponsored with Company Witness ASM (Sayed) Fakhruddin): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.
- Section I.D (co-sponsored with Company Witness ASM (Sayed) Fakhruddin): This section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E (co-sponsored with Company Witness ASM (Sayed) Fakhruddin): This section explains feasible project alternatives, when applicable.
- Section I.H (co-sponsored with Company Witnesses ASM (Sayed) Fakhruddin and Tracey McDonald): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section I.L (co-sponsored with Company Witness Sergio E. De Hoyos Irizarry): This section, when applicable, provides details on the deterioration of structures and associated equipment.
- Section I.N (co-sponsored with Company Witness ASM (Sayed) Fakhruddin): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

A statement of Dr. Khalili's background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY
OF
RAMTIN KHALILI
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00170

Q. Please state your name, position with Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), and business address.

A. My name is Ramtin Khalili, and I am an Engineer III in the Electric Transmission Planning Department for the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

Q. Please describe your areas of responsibility with the Company.

A. I am responsible for planning the Company's electric transmission system for voltages of 69 kilovolt ("kV") through 500 kV.

Q. What is the purpose of your testimony in this proceeding?

A. In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes in Stafford County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop"). From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop

will be constructed on new 100-foot-wide right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

- Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia ("the Stafford Load Area") and to comply with mandatory NERC Reliability Standards. Specifically, to serve the projected load identified in the delivery point request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in Stafford Load Area, the Company is proposing the Project.

The purpose of my testimony is to describe the Company's electric transmission system and the need for, and benefits of, the proposed Project. I sponsor Sections I.G, I.J, I.K, I.M, II.A.3, and II.A.10 of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Mohammad M. Othman, Tracey McDonald, and Matt L. Teichert; Sections I.B, I.C, I.D, I.E, and I.N with Company Witness ASM (Sayed) Fakhruddin; Section I.H with Company Witnesses ASM (Sayed) Fakhruddin and Tracey McDonald; and Section I.L with Company Witness Sergio E. De Hoyos Irizarry.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF RAMTIN KHALILI

Ramtin Khalili received a Doctor of Philosophy in Electrical Engineering from Northeastern University in 2022. He also received Bachelor of Science and Master of Science degrees in electrical engineering from K. N. Toosi University of Technology and Amirkabir University of Technology, respectively. Dr. Khalili been employed by the Company since January of 2023. Prior to joining the Company, he worked as a power systems engineer with Quanta Technology LLC and other consulting companies. His areas of expertise are power system monitoring, modeling, and control. He is an expert in Steady-State, Dynamic, and Electromagnetic transient power system studies.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: ASM (Sayed) Fakhruddin

Title: Data Center Planning Engineer - Distribution Planning Team

Summary:

Company Witness ASM (Sayed) Fakhruddin co-sponsors those sections of the Appendix describing the Company's electric distribution system and the need for, and benefits of, the proposed Project, as follows:

- Section I.A (co-sponsored with Company Witnesses Ramtin Khalili, Sergio E. De Hoyos Irizarry, Mohammad M. Othman, Tracey McDonald, and Matt L. Teichert): This section details the primary justifications for the proposed project.

- Section I.B (co-sponsored with Company Witness Ramtin Khalili): This section details the engineering justifications for the proposed project.

- Section I.C (co-sponsored with Company Witness Ramtin Khalili): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.

- Section I.D (co-sponsored with Company Witness Ramtin Khalili): Although not applicable to the proposed project, this section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.

- Section I.E (co-sponsored with Company Witness Ramtin Khalili): This section explains feasible project alternatives, when applicable.

- Section I.H (co-sponsored with Company Witnesses Ramtin Khalili and Tracey McDonald): This section provides the desired in-service date of the proposed project and the estimated construction time.

- Section I.N (co-sponsored with Company Ramtin Khalili): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

A statement of Mr. Fakhruddin's background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY
OF
ASM (SAYED) FAKHRUDDIN
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00170

Q. Please state your name, business address and position with Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company").

A. My name is ASM (Sayed) Fakhruddin, and I am a Data Center Planning Engineer – Distribution Planning for the Company. My business address is 600 East Canal Street, Richmond, Virginia 23219. A statement of my qualifications and background is provided as Appendix A.

Q. Please describe your areas of responsibility with the Company.

A. I am responsible for planning the Company's electric distribution system that serves data centers, primarily in the Company's Northern Virginia offices, for voltage under 69 kilovolt ("kV").

Q. What is the purpose of your testimony in this proceeding?

A. In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes in Stafford County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop"). From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-

34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop will be constructed on new 100-foot-wide right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

- Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia ("the Stafford Load Area") and to comply with mandatory NERC Reliability Standards. Specifically, to serve the projected load identified in the delivery point request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in Stafford Load Area, the Company is proposing the Project.

The purpose of my testimony is to describe the Company's electric distribution system and the need for, and benefits of, the proposed Project. I co-sponsor the Executive Summary and Section I.A with Company Witnesses Ramtin Khalili, Sergio E. De Hoyos Irizarry, Mohammad M. Othman, Tracey McDonald, and Matt L. Teichert. Additionally, I co-sponsor Sections I.B, I.C, I.D, I.E, and I.N of the Appendix with Company Witness Ramtin Khalili; and Section I.H with Company Witnesses Ramtin Khalili and Tracey McDonald.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
ASM (SAYED) FAKHRUDDIN

ASM (Sayed) Fakhruddin received a Master of Science degree in Electrical Engineering from New Jersey Institute of Technology, USA in 2020 and a Bachelor of Science degree in Electrical and Electronic Engineering from Khulna University of Engineering and Technology, Bangladesh in 2010. He has been employed by the Company since 2023. Mr. Fakhruddin's experience with the Company includes Distribution Planning Engineering for Data Centers.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Sergio E. De Hoyos Irizarry

Title: Engineering Technical Specialist III

Summary:

Company Witness Sergio E. De Hoyos Irizarry sponsors those sections of the Appendix providing an overview of the design characteristics of the transmission facilities for the proposed Project, and discussing electric and magnetic field levels, as follows:

- Section I.F: This section, when applicable, describes any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed project.
- Section II.A.5: This section provides drawings of the right-of-way cross section showing typical transmission lines structure placements.
- Sections II.B.1 to II.B.2: These sections provide the line design and operational features of the proposed project, as applicable.
- Section IV: This section provides analysis on the health aspects of electric and magnetic field levels.

Additionally, Company Witness De Hoyos Irizarry co-sponsors the following sections of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Mohammad M. Othman, Tracey McDonald, and Matt L. Teichert): This section details the primary justifications for the proposed project.
- Section I.I. (co-sponsored with Company Witness Mohammad M. Othman): This section provides the estimated total cost of the proposed project.
- Section I.L (co-sponsored with Company Witness Ramtin Khalili): This section, when applicable, provides details on the deterioration of structures and associated equipment.
- Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Tracey McDonald): These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- Section II.B.6 (co-sponsored with Company Witnesses Tracey McDonald and Matt L. Teichert): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section V.A (co-sponsored with Company Witnesses Tracey McDonald and Matt L. Teichert): This section provides the proposed route description and structure heights for notice purposes.

A statement of Mr. De Hoyos Irizarry's background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY
OF
SERGIO E. DE HOYOS IRIZARRY
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00170

Q. Please state your name, business address and position with Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company").

A. My name is Sergio E. De Hoyos Irizarry, and I am an Engineer Technical Specialist III in the Electric Transmission Line Engineering Department of the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

Q. Please describe your areas of responsibility with the Company.

A. I am responsible for the estimating and conceptual design of high voltage transmission line projects from 69 kilovolt ("kV") to 500 kV.

Q. What is the purpose of your testimony in this proceeding?

A. In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes in Stafford County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop"). From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop

will be constructed on new 100-foot-wide right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

- Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia ("the Stafford Load Area") and to comply with mandatory NERC Reliability Standards. Specifically, to serve the projected load identified in the delivery point request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in Stafford Load Area, the Company is proposing the Project.

The purpose of my testimony is to describe the design characteristics of the transmission facilities for the proposed Project and to discuss electric and magnetic field levels. I sponsor Sections I.F, II.A.5, II.B.1, II.B.2, and IV of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Mohammad M. Othman, Tracey McDonald, and Matt L. Teichert; Section I.I with Company Witness Mohammad M. Othman; Section I.L with Company Witness Ramtin Khalili; Sections II.B.3 to II.B.5 with Company Witness

Tracey McDonald; and Sections II.B.6 and V.A with Company Witnesses Tracey McDonald and Matt L. Teichert.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF SERGIO E. DE HOYOS IRIZARRY

Sergio E. De Hoyos Irizarry received a Bachelor of Science degree in Civil Engineering from the University of Puerto Rico in 2010 and a Master of Science degree in Civil Engineering from City University of New York in 2013. He was employed by Exelon from 2014-2023 and has worked with Dominion Energy Virginia since 2023. Mr. De Hoyos Irizarry's experience includes Overhead Transmission Standards Development & Overhead Transmission Engineering (2014-2018, 2023-Present), Underground Transmission Engineering (2018-2021), and Substation Engineering (2021-2023).

Mr. De Hoyos Irizarry has held a Professional Engineering license in the Commonwealth of Virginia since 2019.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Mohammad M. Othman

Title: Engineer III—Substation Engineering

Summary:

Company Witness Mohammad M. Othman sponsors or co-sponsors the following sections of the Appendix describing the substation work to be performed for the proposed Project as follows:

- Section I.A (co-sponsored with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Tracey McDonald, and Matt L. Teichert): This section details the primary justifications for the proposed project.

- Section I.I (co-sponsored with Company Witness Sergio E. De Hoyos Irizarry): This section provides the estimated total cost of the proposed project.

- Section II.C: This section describes and furnishes a one-line diagram of the substation associated with the proposed project.

A statement of Mr. Othman's background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY
OF
MOHAMMAD M. OTHMAN
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00170

Q. Please state your name, business address and position with Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company").

A. My name is Mohammad M. Othman, and I am an Engineer III in the Substation Engineering section of the Electric Transmission group of the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

Q. Please describe your areas of responsibility with the Company.

A. I am responsible for evaluation of the substation project requirements, feasibility studies, conceptual physical design, scope development, preliminary engineering, and cost estimating for high voltage transmission and distribution substations.

Q. What is the purpose of your testimony in this proceeding?

A. In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes in Stafford County, Virginia, to:

- Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop"). From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new

230-34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop will be constructed on new 100-foot-wide right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

- Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia ("the Stafford Load Area") and to comply with mandatory NERC Reliability Standards. Specifically, to serve the projected load identified in the delivery point request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in Stafford Load Area, the Company is proposing the Project.

The purpose of my testimony is to describe the work to be performed as part of the Project. As it pertains to station work, I sponsor Section II.C of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Tracey McDonald, and Matt L. Teichert; and Section I.I of the Appendix with Company Witness Sergio E. De Hoyos Irizarry.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
MOHAMMAD M. OTHMAN

Mohammad M. Othman received a Bachelor of Science degree in Electrical Engineering from Virginia Commonwealth University in 2008. Mr. Othman's responsibilities include the evaluation of the substation project requirements, development of scope documents and schedules, preparation of estimates and proposals, preparation of specifications and bid documents, material procurement, design substation physical layout, development of detailed physical drawings, bill of materials, electrical schematics, and wiring diagrams. Mr. Othman joined the Dominion Energy Virginia Substation Engineering department in 2010 as an Engineer II and was later promoted to Engineer III, the title he currently holds.

Mr. Othman has previously submitted pre-filed testimony to the State Corporation Commission of Virginia.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Tracey McDonald

Title: Senior Siting and Permitting Specialist – Siting and Permitting Group

Summary:

Company Witness Tracey McDonald sponsors those portions of the Appendix providing an overview of the design of the route for the proposed Project, and related permitting, as follows:

- Section II.A.12: This section identifies the counties and localities through which the proposed project will pass and provides General Highway Maps for these localities.
- Sections V.B–D: These sections provide information related to public notice of the proposed project.

Additionally, Company Witness McDonald co-sponsors the following portion of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Mohammad M. Othman, and Matt L. Teichert): This section details the primary justifications for the proposed project.
- Section I.H (co-sponsored with Company Witnesses Ramtin Khalili and ASM (Sayed) Fakhruddin): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section II.A.1 (co-sponsored with Company Witness Matt L. Teichert): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Matt L. Teichert): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Matt L. Teichert): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Matt L. Teichert): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Matt L. Teichert): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Matt L. Teichert): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Sergio E. De Hoyos Irizarry): These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- Section II.B.6 (co-sponsored with Company Witnesses Sergio E. De Hoyos Irizarry and Matt L. Teichert): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Matt L. Teichert): This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V.A (co-sponsored with Company Witnesses Sergio E. De Hoyos Irizarry and Matt L. Teichert): This section provides the proposed route description and structure heights for notice purposes.

Finally, Ms. McDonald sponsors the DEQ Supplement filed with the Application with Company Witness Matt L. Teichert. A statement of Ms. McDonald's background and qualifications is attached to her testimony as Appendix A.

DIRECT TESTIMONY
OF
TRACEY MCDONALD
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00170

Q. Please state your name, position with Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), and business address.

A. My name is Tracey McDonald, and I serve as a Senior Siting and Permitting Specialist in the Siting and Permitting Group for the Company. My business address is 5000 Dominion Boulevard, 3rd Floor, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

Q. Please describe your areas of responsibility with the Company.

A. I am responsible for identifying appropriate routes for transmission lines and obtaining necessary federal, state, and local approvals and environmental permits for those facilities. In this position, I work closely with government officials, permitting agencies, property owners, and other interested parties, as well as with other Company personnel, to develop facilities needed by the public so as to reasonably minimize environmental and other impacts on the public in a reliable, cost-effective manner.

Q. What is the purpose of your testimony in this proceeding?

A. In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes in Stafford County, Virginia, to:

- Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop"). From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop will be constructed on new 100-foot-wide right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

- Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia ("the Stafford Load Area") and to comply with mandatory NERC Reliability Standards. Specifically, to serve the projected load identified in the delivery point request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in Stafford Load Area, the Company is proposing the Project.

The purpose of my testimony is to provide an overview of the route and permitting for the proposed Project. I sponsor Sections II.A.12 and V.B to V.D of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry,

Mohammad M. Othman, and Matt L. Teichert; Section I.H with Company Witnesses Ramtin Khalili and ASM (Sayed) Fakhruddin; Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.9, II.A.11, and III with Company Witness Matt L. Teichert; Sections II.B.3 to II.B.5 with Company Sergio E. De Hoyos Irizarry; and Sections II.B.6 and V.A with Company Witnesses Sergio E. De Hoyos Irizarry and Matt L. Teichert. Finally, I co-sponsor the DEQ Supplement with Company Witness Matt L. Teichert.

Q. Has the Company complied with Va. Code § 15.2-2202 E?

A. Yes. In accordance with Va. Code § 15.2-2202 E, a letter dated August 20, 2024, was sent to Mr. F. Craig Meadows, Interim County Administrator of Stafford County, where the Project is located. The letter stated the Company's intention to file this Application and invited the County to consult with the Company about the Project. A copy of the letter is included as Appendix Attachment V.D.1.

Q. Does this conclude your pre-filed direct testimony

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
TRACEY MCDONALD

Tracey McDonald received a Bachelor of Science degree in Anthropology from Radford University in 2003. She has been employed by the Company since 2023. Ms. McDonald's experience with the Company includes Senior Siting and Permitting Specialist (2023-Present). Prior to joining the Company, she worked as an Archaeologist and Regulatory Specialist from 2003 to 2023.

Ms. McDonald has previously submitted pre-filed testimony to the State Corporation Commission of Virginia.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Matt L. Teichert

Title: Principal Consultant, Environmental Resource Management

Summary:

Company Witness Matt L. Teichert sponsors the Environmental Routing Study provided as part of the Company's Application.

Additionally, Mr. Teichert co-sponsors the following portion of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos Irizarry, Mohammad M. Othman, and Tracey McDonald): This section details the primary justifications for the proposed project.
- Section II.A.1 (co-sponsored with Company Witness Tracey McDonald): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Tracey McDonald): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Tracey McDonald): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Tracey McDonald): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Tracey McDonald): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Tracey McDonald): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.B.6 (co-sponsored with Company Witnesses Sergio E. De Hoyos Irizarry and Tracey McDonald): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Tracey McDonald): This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V.A (co-sponsored with Company Witnesses Shannon L. Genova and Tracey McDonald): This section provides the proposed route description and structure heights for notice purposes.

Finally, Mr. Teichert co-sponsors the DEQ Supplement filed with this Application with Company Witness Tracey McDonald.

A statement of Mr. Teichert's background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY
OF
MATT L. TEICHERT
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00170

Q. Please state your name, position and place of employment and business address.

A. My name is Matt L. Teichert. I am employed as a Principal Consultant with Environmental Resources Management ("ERM"). My business address is 222 South 9th Street, Suite 2900, Minneapolis, Minnesota 55402. A statement of my qualifications and background is provided as Appendix A.

Q. What professional experience does ERM have with the routing of linear energy transportation facilities?

A. ERM has extensive experience in the routing, feasibility assessments, and permitting of energy infrastructure projects. It has assisted its clients in the identification, evaluation and development of linear energy facilities for the past 30 years. During this time, it has developed a consistent approach for linear facility routing and route selection based on the identification, mapping and comparative evaluation of routing constraints and opportunities within defined study areas. ERM uses data-intensive Geographic Information System spatial and dimensional analysis and the most current and refined data layers and aerial photography resources available for the identification, evaluation and selection of transmission line routes.

In addition to Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), its clients include some of the largest energy companies in the United

States, Canada, and the world, including ExxonMobil, TC Energy, Shell, NextEra Energy, Phillips 66, Kinder Morgan, British Petroleum, Enbridge Energy, and others. ERM also routinely assists the staff of the Federal Energy Regulatory Commission, United States Army Corps of Engineers, and the U.S. Forest Service in the identification and/or evaluation of linear energy routes to support federal National Environmental Policy Act evaluations. ERM works on both small and large energy projects and has assisted in or conducted the routing and route evaluation of some of the largest electric transmission line and pipeline facilities in North America.

In Virginia, ERM served as routing consultant to Dominion Energy Virginia for many projects over the last 15 years, including:

- Cannon Branch-Cloverhill 230 kilovolt ("kV") transmission line project in the City of Manassas and Prince William County (Case No. PUE-2011-00011);
- Dahlgren 230 kV double circuit transmission line project in King George County (Case No. PUE-2011-00113);
- Surry-Skiffes Creek-Whealton 500 and 230 kV transmission lines (Case No. PUE-2012-00029);
- Remington CT-Warrenton 230 kV double circuit transmission line (Case No. PUE-2014-00025);
- Haymarket 230 kV Line and Substation Project (Case No. PUE-2015-00107);
- Remington-Gordonsville Electric Transmission Project (Case No. PUE-2015-00117);
- Norris Bridge (Case No. PUE-2016-00021);
- Idylwood-Tysons 230 kV single circuit underground transmission line, Tysons Substation rebuild, and related transmission facilities (Case No. PUR-2017-00143);
- Lockridge 230 kV Line Loop and Substation (Case No. PUR-2019-00215);
- Coastal Virginia Offshore Wind Commercial Project (Case No. PUR-2021-00142);
- DTC 230 kV Line Loop and DTC Substation (Case No. PUR-2021-00280);

- Aviator 230 kV Line Loop and Substation (Case. No. PUR-2022-00012);
- Nimbus Substation and 230 Farmwell-Nimbus Transmission Line (Case No. PUR-2022-00027);
- 500-230 kV Wishing Star Substation, 500 kV and 230 kV Mars-Wishing Star Lines, 500-230 kV Mars Substation, and Mars 230 kV Loop (Case No. PUR-2022-00183);
- 500-230 kV Unity Switching Station, 230 kV Tunstall-Unity Lines #2259 and #2262, 230-36.5 kV Tunstall, Evans Creek, Raines Substations, and 230 kV Substation Interconnect Lines (Case No. PUR-2022-00167);
- Butler Farm to Clover 230 kV Line and Butler Farm to Finneywood 230 kV Line (Case No. PUR-2022-00175);
- 230 kV Altair Loop and Altair Switching Station (Case No. PUR-2022-00197);
- 230 kV Finneywood-Jeffress Lines and Jeffress Switching Station Conversion (Case No. PUR-2023-00088);
- 500-230 kV Aspen Substation, 500 kV Aspen-Goose Creek Line #5002, 500 kV and 230 kV Aspen-Golden Lines #5001 and #2333, 500-230 kV Golden Substation, and Lines #2081/#2150 Loop (Case No. PUR-2024-00032);
- 230 kV Apollo-Twin Creek Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations (Case No. PUR-2024-00044); and
- 230 kV Rebuild, Reconductoring, and New Line Projects to Network Takeoff Substation (Case No. PUR-2024-00131).

Q. What were you asked to do in connection with this case?

A. In order to provide service requested by a data center customer (the "Customer"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes in Stafford County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on new right-of-way by cutting the Company's existing 230 kV Aquia Harbour-Cranes Corner Line #2104 at Structure #2104/5456, resulting in (i) 230 kV Centreport-Cranes Corner Line #2379 and (ii) 230 kV Centreport-Spartan Line #2104 ("Centreport Loop"). From the cut-in location on existing Line #2104, the Centreport Loop will extend approximately 2.5 miles to the proposed new 230-

34.5 kV Centreport Substation located in Stafford County, Virginia. While the cut-in location is within existing right-of-way, the proposed Centreport Loop will be constructed on new 100-foot-wide right-of-way. The Centreport Loop will be supported primarily by double circuit weathering steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

- Construct a new 230-34.5 kV substation in Stafford County, Virginia, on property to be obtained by the Company ("Centreport Substation").

Together, the Centreport Loop and Centreport Substation are referred to as the "Centreport 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by the Customer in Stafford County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall load growth in the Stafford County load area located in central Virginia ("the Stafford Load Area") and to comply with mandatory NERC Reliability Standards. Specifically, to serve the projected load identified in the delivery point request of approximately 262 MW for a new data center development in Stafford County, Virginia, as well as to support future load growth in Stafford Load Area, the Company is proposing the Project.

ERM was engaged on behalf of the Company to assist it in the identification and evaluation of route alternatives to resolve the identified electrical need that would meet the applicable criteria of Virginia law and the Company's operating needs.

The purpose of my testimony is to introduce and sponsor the Environmental Routing Study, which is included as part of the Application filed by the Company in this proceeding. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Ramtin Khalili, ASM (Sayed) Fakhruddin, Sergio E. De Hoyos

Irizarry, Mohammad M. Othman, and Tracey McDonald; Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.9, II.A.11, and III with Company Witness Tracey McDonald; and Sections II.B.6 and V.A with Company Witnesses Sergio E. De Hoyos Irizarry and Tracey McDonald. Lastly, I co-sponsor the DEQ Supplement with Company Witness Tracey McDonald.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF MATT L. TEICHERT

Matt L. Teichert earned a Bachelor of Arts degree from University of Minnesota-Duluth. He has approximately 15 years of experience working in the energy-related consulting field, specializing in the siting and regulatory permitting of major linear energy facilities, including both interstate and intrastate electric transmission lines and gas and oil pipelines throughout the United States. During this time, he was employed for 3 years with Natural Resource Group and 13 years with ERM, a privately-owned consulting company specializing in the siting, licensing and environmental construction compliance of large, multi-state energy transportation facilities.

Mr. Teichert's professional experience related to electric transmission line projects includes the direct management of field studies, impact assessments, and agency consultations associated with the routing and licensing of multiple transmission line projects in the mid-Atlantic region, including the management and/or supervision of the routing and permitting. Work on these projects included studies to identify and delineate routing constraints and options; identification and evaluation of route alternatives; and the direction of field studies to inventory wetlands, stream crossings, cultural resources, and sensitive habitats and land uses. Within the last several years he has managed the identification and evaluation of over 75 miles of 230 kV and 500 kV transmission line route alternatives in Virginia for Virginia Electric and Power Company.

Mr. Teichert has previously submitted pre-filed testimony to the State Corporation Commission of Virginia.