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March 9, 2023

BY ELECTRONIC FILING

Hon. Bernard J. Logan, Clerk
State Corporation Commission
Tyler Building, 1st Floor
1300 East Main Street
Richmond, VA 23219

Re: Application of Virginia Electric and Power Company for Approval and Certification of Electric Transmission Facilities: Possum Point 2nd Transformer and New 230 KV Tie Line #2216 – Case No. PUR-2023-00029.

Dear Mr. Logan:

Please find enclosed for electronic filing in the above-captioned proceeding the application for approval of electric facilities on behalf of Virginia Electric and Power Company (the “Company”). This filing contains the Application, Appendix, Direct Testimony, and DEQ Supplement, 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 Prince William County, as well as the digital geographic information system (“GIS”) map required by Va. Code § 56-46.1, which is Attachment II.A.2 to the Appendix, were provided via an e-room to the Commission’s Division of Public Utility Regulation.

If you have any questions or need further information, please feel free to contact us.

Sincerely,

Andrew J. Flavin



Timothy L. McHugh



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.
Annie C. Larson, Esq.
Bonnie S. Gill, Esq.
William T. Smith, Esq.



**Dominion
Energy[®]**

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

**Before the State Corporation
Commission of Virginia**

**Possum Point 2nd Transformer
and New 230 kV Tie Line #2216**

Application No. 322

Case No. PUR-2023-00029

Filed: March 9, 2023

Volume 1 of 2

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF
VIRGINIA ELECTRIC AND POWER COMPANY
FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

Possum Point 2nd Transformer and
New 230 kV Tie Line #2216

Application No. 322

Case No. PUR-2023-0029

Filed: March 9, 2023

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER	)	Case No. PUR-2023-00029
COMPANY	)	
	)	
For approval and certification of electric	)	
transmission facilities: Possum Point 2nd	)	
Transformer and New 230 kV Tie Line	)	

**APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY
FOR APPROVAL AND CERTIFICATION OF
ELECTRIC TRANSMISSION FACILITIES:
POSSUM POINT 2ND TRANSFORMER AND NEW 230 KV TIE LINE**

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 shows 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 and/or construct new transmission facilities in its system.

3. Accordingly, in order to maintain the reliability of its transmission system in compliance with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, the Company proposes in Prince William County the following:

- Install a second 500-230 kV transformer bank at the Possum Point 500 kV Substation and perform associated bus work;
- Rebuild approximately 0.8 miles of existing 230 kV transmission Line #2078 between the Company’s existing Possum Point 500 kV and 230 kV Substations within an existing corridor on Company-owned property,¹ in order to utilize the existing corridor to accommodate a second circuit following the addition of a 500-230 kV transformer bank at the Possum Point 500 kV Substation;
- Install approximately 0.95 miles of a new 230 kV transmission line, Line #2216, between the Company’s existing Possum Point 500 kV and 230 kV Substations along the majority of the Line #2078 corridor and primarily collocated with the Line #2078 structures, with three new structures on Company-owned property in a new approximately 0.29-mile corridor adjacent to the existing Possum Point 500 kV Substation;
- Install a circuit breaker and line terminal equipment at the Possum Point 230 kV Substation; and
- Install two new structures to raise Lines #215/#2001 and Lines #237/#2022 to provide clearance for Line #2078 and Line #2216.²

¹ The Project, which is located within Company-owned property, includes multiple crossings of the Richmond, Fredericksburg and Potomac (“RF&P”) railroad, which traverses the Company’s property. Existing Line #2078, Lines #215/#2001, and Lines #237/#2022 already cross the RF&P railroad at three locations, which are allowed pursuant to an existing master license agreement. The Company will pursue an amendment to the existing master license agreement for the crossing of Line #2216. See Sections II.A.6, II.A.8 and III.D of the Appendix.

² The Company considers the work associated with Lines #215/#2001 and Lines #237/#2022, which includes the installation of two new structures, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to § 56-265.2 A 1 of the Code of Virginia (“Va. Code”) and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity (“CPCN”) from the State Corporation Commission of Virginia (“Commission”). Because the Company considers this work to be ordinary course, detailed supporting documentation has not been provided in the Appendix. Should the Commission determine that a CPCN is required for the work associated with Lines #215/#2001 and Lines #237/#2022 as described herein, the Company requests that the Commission grant such CPCNs as part of its final order in this proceeding.

(collectively, the “Project”).

4. There is an immediate and current need for the proposed Project to ensure that Dominion Energy Virginia can continue to provide reliable electric transmission service consistent with the Company's obligation under Virginia law to serve retail electric customers in its exclusive service territory. The Project is located in the Company’s Northern Virginia Load Area, which encompasses the Company’s transmission facilities located in the Alexandria-Arlington Planning Zone 351, Fairfax Planning Zone 352 and the Woodbridge Planning Zone 353. The Project area is typically one of the fastest growing areas located in the Company’s service territory with a large portion of this load growth being driven by data center development. Specifically, an additional 500-230 kV transformer bank is required at the Possum Point 500 kV Substation to continue to adequately serve the needs of the Company and its customers by resolving system reliability criteria violations. Currently, this load area is primarily served by the 500-230 kV transformers which are located at Clifton, Ox, and Possum Point Switching Stations where these transformers support the transfer of capacity and energy from the 500 kV System to the 230 kV system. An additional 500-230 kV transformer is needed at Possum Point 500 kV Substation to allow the Company to continue to provide reliable service to its customers located in this load area, consistent with NERC Reliability Criteria.

5. To support the additional 500-230 kV transformer at Possum Point Substation, the Company proposes replacing Line #2078, located between the Possum Point 500 kV and 230 kV Substations at Possum Point Power Station. The Company also proposes installing approximately 0.95 miles of a new 230 kV transmission line, Line #2216, between the Company’s existing Possum Point 500 kV and 230 kV Substations along the majority of the Line #2078 corridor and primarily collocated with the Line #2078 structures, with three new structures on Company-owned

property in a new approximately 0.29-mile corridor adjacent to the existing Possum Point 500 kV Substation.

6. The length of the existing transmission corridor to be used for the Project, which is approximately 0.8 miles, is adequate to construct the Project, with the exception of approximately 0.29 miles of new corridor that will be required to extend new Line #2216 to interconnect with the Possum Point 500 kV Substation. Because the Company-owned property is adequate to construct the proposed Project, including the new approximately 0.29-mile corridor, no new property or right-of-way is necessary. Accordingly, the underlying goal of the statutory preference given to the use of existing rights-of-way is achieved. Moreover, because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternate routes requiring new right-of-way outside of the Company-owned property for the Project.

7. The desired in-service target date for the Project is November 30, 2025. The Company estimates it will take approximately 18 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 May 1, 2024. Should the Commission issue a final order by May 1, 2024, the Company estimates that construction should begin in July 2024, and be completed by the in-service target date of November 30, 2025. The necessity for the proposed Project is described in detail in Section I of the Appendix attached to this Application.

8. The estimated conceptual cost of the Project is approximately \$31.5 million (in 2022 dollars), which includes \$8.0 million for transmission-related work and \$23.5 million for substation-related work (\$21.2 million for the 500 kV Substation and \$2.3 million for the 230 kV Substation).

9. The proposed Project will afford the best means of meeting the continuing need for reliable service while reasonably minimizing adverse impact on the scenic, environmental, and historic assets of the area.

10. 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.

11. 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 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.

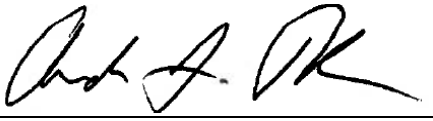
12. Section V of the Appendix provides a proposed route description for public notice purposes and a list of federal, state, and local agencies and officials that the Company has notified or will notify about the Application.

13. In addition to the information provided in the Appendix and the DEQ Supplement, this Application is supported by the pre-filed direct testimony of Company Witnesses Steven J. Schweiger, Logan J. Manzuk, Charles H. Weil, and Santosh Bhattarai, filed with this Application.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission:

- a) direct that notice of this Application be given as required by Va. Code § 56-46.1;
- b) approve pursuant to Va. Code § 56-46.1 the construction of the Project; and,
- c) grant a certificate of public convenience and necessity for the Project under the Utility Facilities Act, Va. Code §§ 56-265.1, *et seq.*, by May 1, 2024 if possible.

VIRGINIA ELECTRIC AND POWER COMPANY

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March 9, 2023

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APPLICATION OF
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Possum Point 2nd Transformer and
New 230 kV Tie Line #2216

Application No. 322

Appendix

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

Case No. PUR-2023-00029

Filed: March 9, 2023

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EXECUTIVE SUMMARY

In order to maintain the reliability of its transmission system in compliance with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) proposes in Prince William County the following:

- (1) Install a second 500-230 kV transformer bank at the Possum Point 500 kV Substation and perform associated bus work;
- (2) Rebuild approximately 0.8 miles of existing 230 kV transmission Line #2078 between the Company’s existing Possum Point 500 kV and 230 kV Substations within an existing corridor on Company-owned property,¹ in order to utilize the existing corridor to accommodate a second circuit following the addition of a 500-230 kV transformer bank at the Possum Point 500 kV Substation;
- (3) Install approximately 0.95 miles of a new 230 kV transmission line, Line #2216, between the Company’s existing Possum Point 500 kV and 230 kV Substations along the majority of the Line #2078 corridor and primarily collocated with the Line #2078 structures, with three new structures on Company-owned property in a new approximately 0.29-mile corridor adjacent to the existing Possum Point 500 kV Substation;
- (4) Install a circuit breaker and line terminal equipment at the Possum Point 230 kV Substation; and
- (5) Install two new structures to raise Lines #215/#2001 and Lines #237/#2022 to provide clearance for Line #2078 and Line #2216.²

(collectively, the “Project”).

The proposed Project is necessary to maintain reliable service for the Company’s customers, specifically those located in the Project area, and to comply with mandatory NERC Reliability Standards. The Project is located in the Company’s Northern Virginia Load Area, which

¹ The Project, which is located within Company-owned property, includes multiple crossings of the Richmond, Fredericksburg and Potomac (“RF&P”) railroad, which traverses the Company’s property. Existing Line #2078, Lines #215 and #2001, and Lines #237 and #2022 already cross the RF&P railroad at three locations, which are allowed pursuant to an existing master license agreement. The Company will pursue an amendment to the existing master license agreement for the crossing of Line #2216. See Sections II.A.6, II.A.8 and III.D.

² The Company considers the work associated with Lines #215/#2001 and Lines #237/#2022, which includes the installation of two new structures, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to § 56-265.2 A 1 of the Code of Virginia (“Va. Code”) and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity (“CPCN”) from the State Corporation Commission of Virginia (“Commission”). Because the Company considers this work to be ordinary course, detailed supporting documentation has not been provided in the Appendix. Should the Commission determine that a CPCN is required for the work associated with Lines #215/#2001 and Lines #237/#2022 as described herein, the Company requests that the Commission grant such CPCNs as part of its final order in this proceeding.

encompasses the Company's transmission facilities located in the Alexandria-Arlington Planning Zone 351, Fairfax Planning Zone 352 and the Woodbridge Planning Zone 353. The Project area is typically one of the fastest growing areas located in the Company's service territory with a large portion of this load growth being driven by data center development.

The length of the existing transmission corridor to be used for the Project, which is approximately 0.8 miles, is adequate to construct the Project, with the exception of approximately 0.29 miles of new corridor that will be required to extend new Line #2216 to interconnect with Possum Point 500 kV Substation. Because the Company-owned property is adequate to construct the proposed Project, including the new approximately 0.29-mile corridor, no new property is necessary. Accordingly, the underlying goal of the statutory preference given to the use of existing rights-of-way is achieved. Moreover, because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternate routes requiring new right-of-way outside of the Company-owned property for the Project. As discussed in Section II.A.9, the Company considered alternative routes for new Line #2216 within the Company-owned property; however, they were rejected and are not proposed for public notice because they would have to be routed around an existing 500 kV tower, which created conflicts with an existing road, two 500 kV lines, the Possum Point 500 kV Substation, and the coal ash pond.

The estimated conceptual cost of the Project is approximately \$31.5 million (in 2022 dollars), which includes \$8.0 million for transmission-related work and \$23.5 million for substation-related work (\$21.2 million for the 500 kV Substation and \$2.3 million for the 230 kV Substation). The desired in-service target date for the Project is November 30, 2025. The Company estimates it will take approximately 18 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 May 1, 2024. Should the Commission issue a final order by May 1, 2024, the Company estimates that construction should begin in July 2024, and be completed by the in-service target date of November 30, 2025.

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 proposed Project is necessary to maintain the reliability of the Company’s transmission system in compliance with mandatory NERC Reliability Standards. See Attachment I.A.1 for a Project overview map.

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 “Dominion Energy Zone” or the “Dom Zone”).

Dominion Energy Virginia is part of PJM Interconnection, LLC (“PJM”), the regional transmission organization that provides service to a large portion of the eastern United States. PJM currently is responsible for ensuring the reliability of, 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 166,929 megawatts (“MW”) for summer peak demand, of which Dominion Energy Virginia’s load portion was approximately 19,256 MW serving 2.4 million customers. On August 9, 2022, the Company set a record high of 21,156 MW for summer peak demand. On December 24, 2022, the Company set a winter peak and all-time record demand of 22,189 MW. Based on the 2023 PJM load forecast, the Dominion Energy Zone is expected to grow with average growth rates of 5.0% summer and 4.8% winter over the next 10 years compared to the PJM average of 0.8% and 1.0% over the same period for the summer and winter, respectively.

Dominion Energy Virginia is also part of the Eastern Interconnection transmission 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.³

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 follow these NERC Reliability Standards and imposes fines for noncompliance of approximately \$1.3 million per 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.⁴ 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.⁵ 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 that is then presented for approval by 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, Reliability First, 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 order to interconnect new customer load, address degraded equipment performance, improve operational flexibility and efficiency, and increase infrastructure resilience. While supplemental projects are included in the RTEP, the PJM Board does not actually approve such projects. The Project is classified as a baseline project resolving several system reliability criteria violations. See

³ See FAC-001-3 (R1, R3) (effective April 1, 2021), which can be found at <https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-interconnection-requirements-signed.pdf>.

⁴ PJM Manual 14B (effective July 1, 2021) focuses on the RTEP process and can be found at <https://www.pjm.com/-/media/documents/manuals/m14b.ashx>.

⁵ See PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria. *See supra*, n. 4.

Section I.J for a discussion of the PJM process as it relates to this Project.

Need for the Project

This Project is necessary to maintain reliable service for the Company's customers, specifically those located in the Project area, and to comply with mandatory NERC Reliability Standards. The Project is located in the Company's Northern Virginia Load Area, which encompasses the Company's transmission facilities located in the Alexandria-Arlington Planning Zone 351, Fairfax Planning Zone 352 and the Woodbridge Planning Zone 353. The Project area is typically one of the fastest growing areas located in the Company's service territory, with a large portion of this load growth being driven by data center development.

This Project was identified at the January 10, 2019 Transmission Expansion Advisory Committee ("TEAC") meeting, and was approved by the PJM Board as a baseline project in February 2019. See Attachment I.A.2 for relevant slides from the January 2019 TEAC Presentation and Section I.J of this Appendix. Subsequent to PJM's approval of the Project as described in Attachment I.A.2, the Company determined that the need driving the Project had changed based on the analysis discussed below. However, the Project as proposed in Attachment I.A.2 was still needed.

As noted in Attachment I.A.2, original criteria violations were identified between 2013 and 2017. To initially address that need, the Company developed an earlier project that included a new 230 kV underground line between the Company's Glebe Substation and Potomac Electric Power Company's Potomac River substation ("Glebe-Potomac River Project"). The Glebe-Potomac River Project initially was reviewed as a potential solution to identified violations of NERC Reliability Standards at the December 12, 2013 TEAC meeting and was approved by the PJM Board of Directors at its February 2014 meeting (b2443). Subsequently, changes in the PJM Load Forecasts eliminated the NERC violations driving the need for the Glebe-Potomac River Project, as discussed at the December 13, 2018 TEAC meeting, and resulted in a revised project that involved removing the Potomac Yards North Terminal Station, undergrounding portions of Lines #248 and #2023, and converting the Company's Glebe Substation to a Gas Insulated Substation ("GIS") (the "Potomac Yards Undergrounding and Glebe GIS Conversion"), which was approved at the February 2019 PJM Board Meeting as a baseline upgrade (b3090). The Commission approved the Potomac Yards Undergrounding and Glebe GIS Conversion by Final Order dated September 27, 2019 in Case No. PUR-2019-00040.

In 2019, PJM identified drivers for the current Project based on a summer 2023 RTEP model derived, in part, from PJM's 2018 Load Forecast. In order to determine if this Project was still needed in 2020, the Company used PJM's summer 2023 RTEP case based on the PJM 2020 Load Forecast that was provided to the Company earlier that year. This case was developed by PJM as part of their 2020

RTEP process. The Company used PowerGEM's TARA Program to perform a reliability analysis to determine if the proposed Project was still required to meet NERC Reliability Standards. The result of this analysis indicated that while the initial driver for this Project had changed from PJM's initial assessment in 2019, the proposed Project was still needed to resolve NERC Reliability Criteria violations. See Attachment I.A.3.

The results of the foregoing analyses indicated that for a P6 N-1-1 contingency, the Ox 500-230 kV transformers were overloaded. Specifically, the analysis indicated that an outage of 500 kV Line #561 (Clifton-Ox) and the Ox 500-230 kV Transformer #1 resulted in the Ox 500-230 kV Transformer #2 being loaded to 101.3% of its load dump ("LD") rating. Additionally, the analysis indicated that an outage of 500 kV Line #561 (Clifton-Ox) and the Ox 500-230 kV Transformer #2 resulted in the Ox 500-230 kV Transformer #1 being loaded to 100.6% of its LD rating, as discussed in Section I.D.⁶

In 2021, updated PJM Summer 2023 and 2025 RTEP planning models indicated that the drivers for the Project as described above were no longer present. These model updates included significant reductions in flows on the 500 kV system, identified on the Company's facilities as well as the Potomac Electric Power Company ("PEPCO") Burches tie line for the 2024 and 2025 RTEP model years. While the mitigation of the aforementioned harm could not be tied to one single factor, cancellation of the Project was formally submitted to PJM on May 11, 2021 via the monthly PJM TEAC meeting. See Attachment I.A.4.

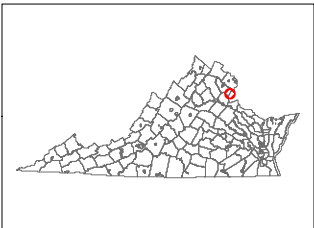
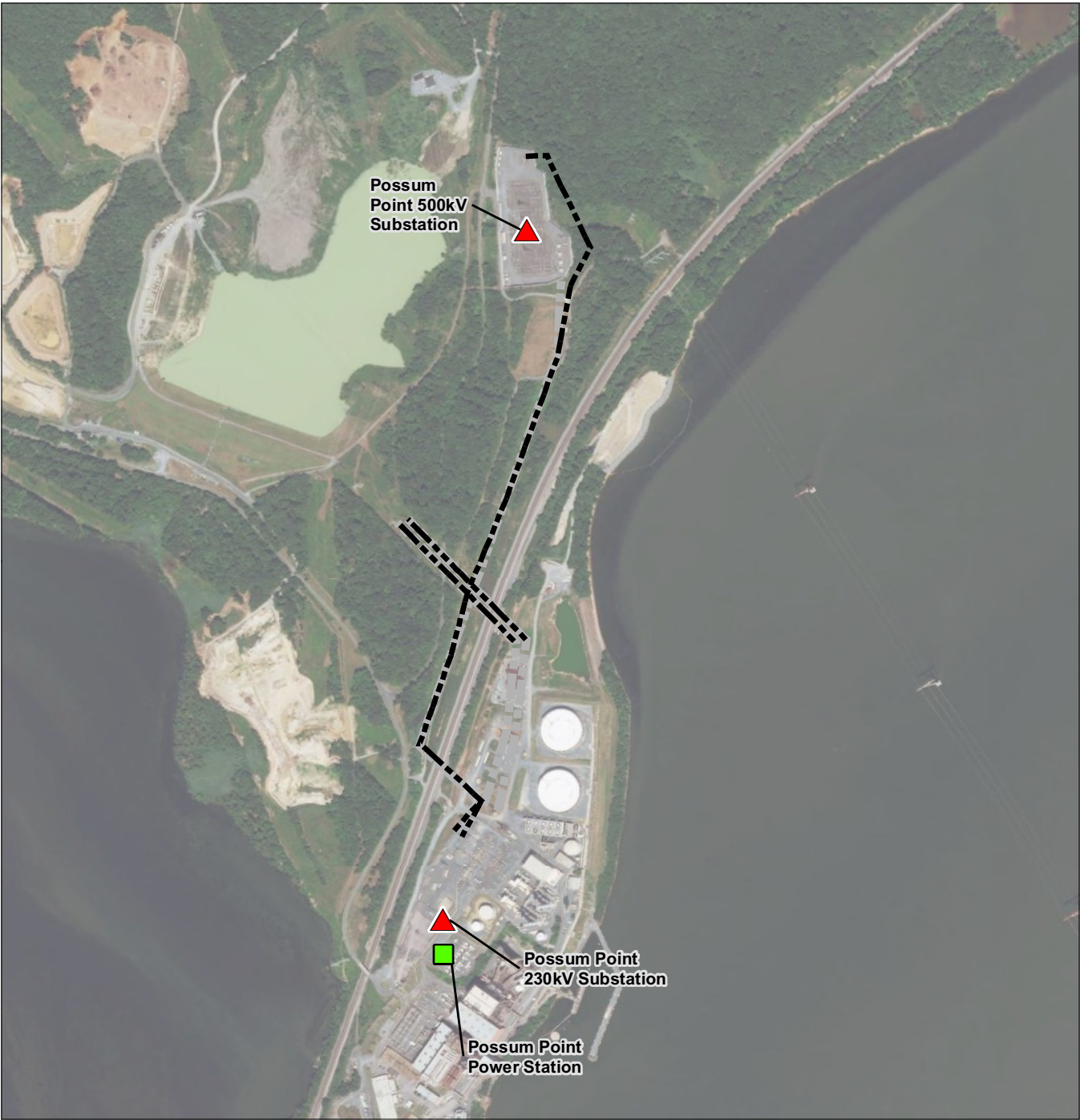
Later that year and upon release of the PJM 2026 summer RTEP model, Ox 500-230 kV Transformers #1 and #2 were identified as becoming overloaded again on the Company's annual FERC Form No. 715 Report, in violation of the Company's Planning Criteria, which was submitted in the Company's annual FERC Form No. 715 report.⁷ Under Section C.2.1.3 of the Company's Planning Criteria, the Company will model an outage on the most critical generators in the area being studied, and the resulting power flow case is considered a critical stress case. Under this critical stress case condition (outage of Possum Point Unit #6 followed by the loss of Ox 500-230 kV Transformer #1 or #2), both Ox 500-230 kV transformers #1 and #2 became thermally overloaded. According to FERC Form 715 regulations, these violations were subject to the 2021 PJM RTEP window for which a solution was necessary. To mitigate these violations, the Company submitted this

⁶ Ratings for single contingency type are based on 94% of the summer emergency rating of the facility. The contingency analysis then identifies load % based on this rating. The Dominion Energy Virginia Criteria for a type P1 single contingency limits thermal loading to 94% of the Short Term Emergency ("STE") Rating of the facility. Ratings for tower and breaker contingency type are based on 100% of the LD rating of the facility. The Dominion Energy Virginia Criteria for a type P6 multiple contingency (N-1-1) limits thermal loading to 100% of the LD rating of the facility, prior to re-dispatch. For a complete listing of Dominion Energy Virginia's Planning Criteria, see FAC-001, which can be found at <https://www.dominionenergy.com/company/moving-energy/electric-transmission-access>.

⁷ For additional information related to FERC Form 715, see <https://www.pjm.com/library/request-access/ferc-form-715>.

Project as a proposal in the 2021 PJM RTEP window which PJM accepted as the winning solution. See Attachment I.A.5.

In summary, the proposed Project will address criteria violations in compliance with the Company's mandatory Planning Criteria, NERC Reliability Standards and FERC Form No. 715 reporting requirements, and is consistent with sound engineering judgment, thereby enabling the Company to maintain the overall long-term reliability of its transmission system, as well as to provide important system reliability benefits to the Company's entire network.



-  Substation
-  Existing Power Station
-  Proposed Centerline
-  Existing Centerline

0 500 1,000 Feet
(At original document size of 8.5x11)
1:12,000



Stantec



Dominion Energy

Project Location

Prepared by CDC on 2022-12-19

Prince William County, Virginia

TR by RJW on 2022-12-21

Client/Project

203401924

Dominion Energy Virginia
Possum Point Second Transformer and
New 230kV Tie Line #2216

Figure No.

I.A.1.

Title

Project Overview Map

Notes
1. Coordinate System: NAD 1983 StatePlane
Virginia North FIPS 4501 Feet
2. Data Sources: Dominion Energy Virginia
3. Basemap © ESRI

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



Dominion/PEPCO B2443 – Glebe to Station C Project Update



Existing Baseline b2443

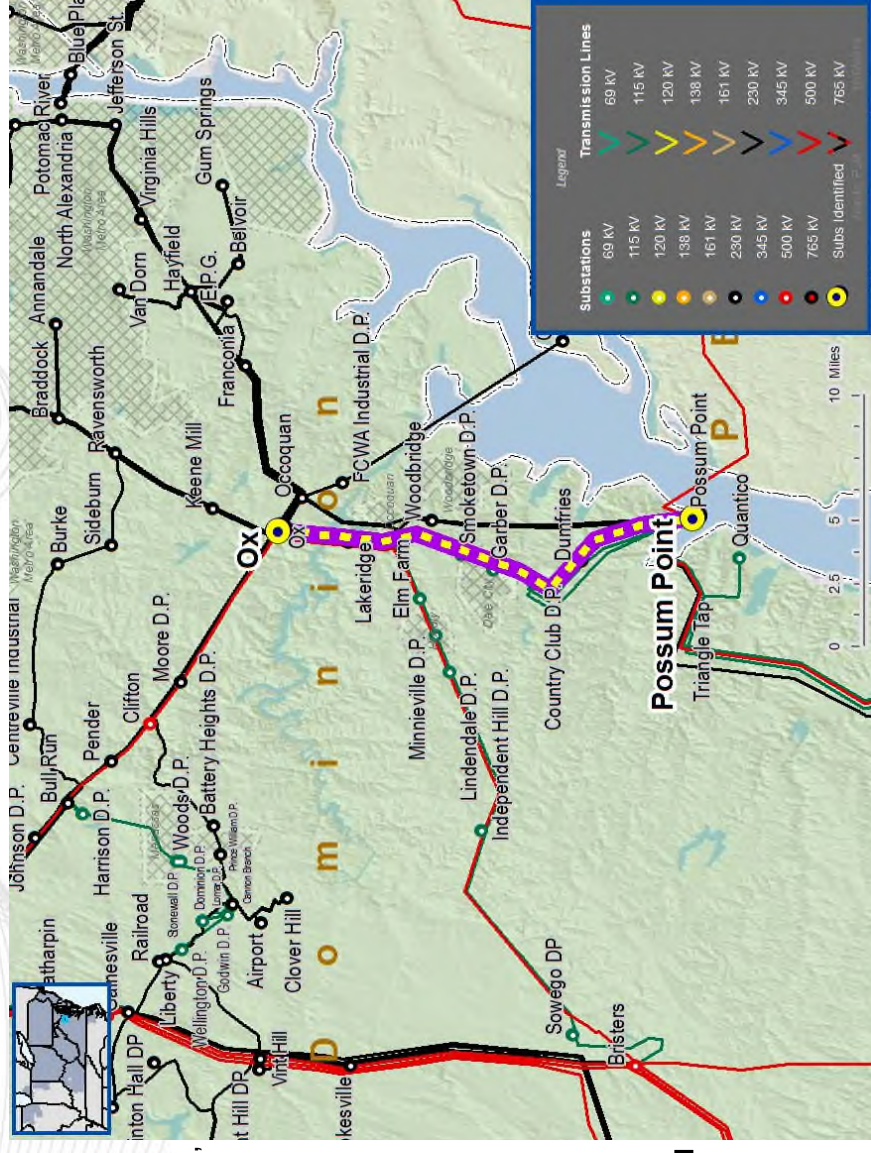
Date Project Last Presented: 12/11/2013, 01/09/2014, 11/11/2014 & 06/08/2017

Problem Statement: Updated NERC Reliability Drivers

- Original criteria violations included overloads of Ox 500/230 kV Tx #1 & #2, 230 kV Line #248 (UG section between Carlyle South – North Potomac Yard) and the Franconia – Van Dorn Section of 230 kV Line #243.
- Updated criteria violation – Based on recent generation retirements (Possum Point Units #3 & #4) and the PJM 2018 Load Forecast updates indicates that for a NERC Category P1 – single contingency that Possum Point 500/230 kV Tx #1 overloads for a loss of the Possum Point – Ox 500 kV Line #571 under Dominion's critical stress case criteria.
- Other previously identified deficiencies in Dominion and PEPCO are no longer present.
- The Glebe – Station C Project (b2443) will be cancelled and replaced with a new baseline to resolve the NERC reliability deficiencies.
 - The previously approved cost for the Glebe – Station C Project: **\$299 M**
 - The new baseline will be discussed on the next slide.

Continued on next slide...

Dominion Transmission Zone: Baseline Glebe – Station C Project



Continued from previous Glebe – Station C Project slide...

Recommended Solution:

- Install a second 500/230 kV transformer at Possum Point substation and replace bus work and associated equipment as needed. **(b2443.6)**
- Replace 19 - 63 kA 230 kV breakers with 19 – 80 kA 230 kV breakers **(b2443.7)**
 - 230kV Possum Point breakers: H892, H8T2078, H992, H9T237, 23792, G6BTGT, GT92, 202292, 252T2022, 21592, G5T215, 25292, G492, G592, G6A92, G6B92, G4T2001, 200192, 207892

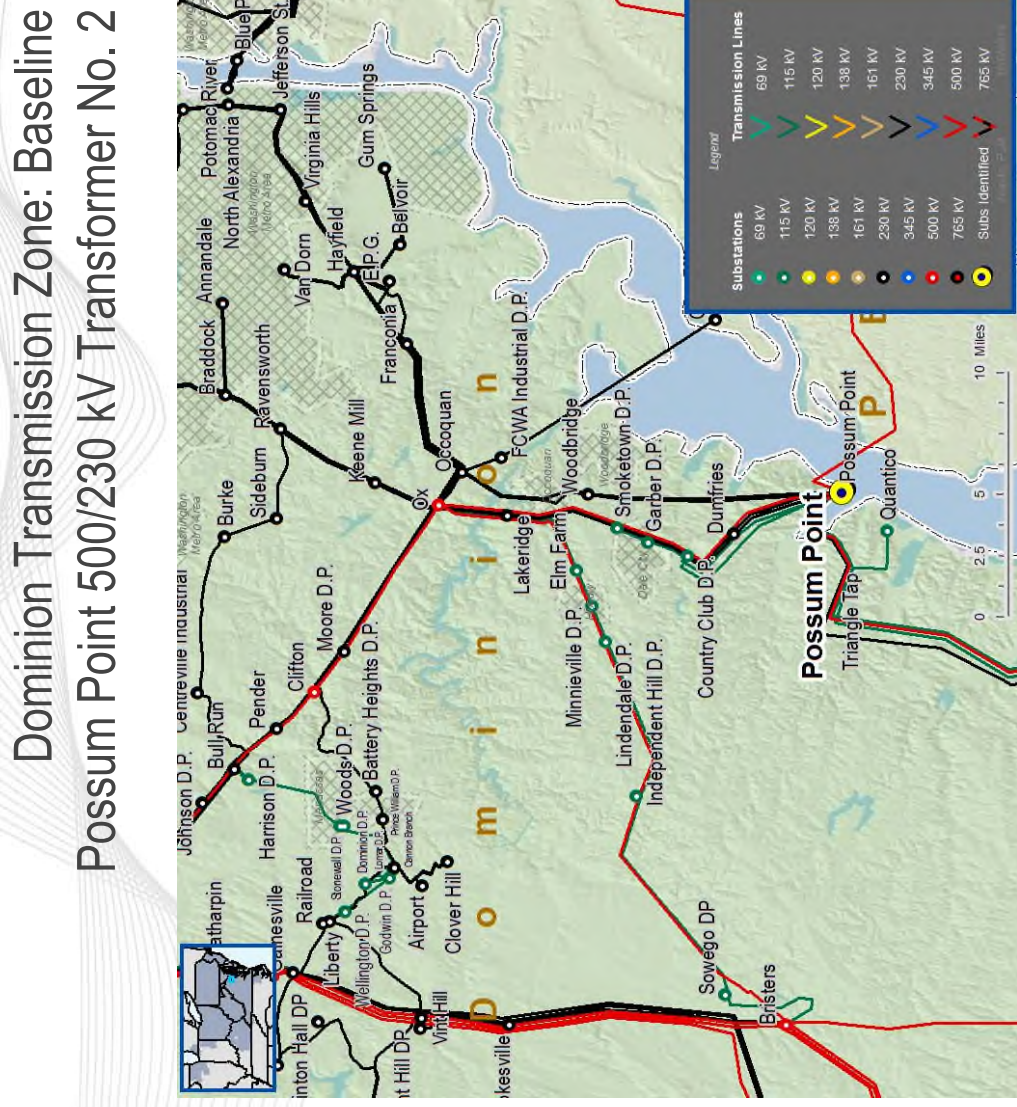
Estimated Project Cost:

500/230 kV transformer bank,	\$21 M	(b2443.6)
bus work & associated equipment :	\$19 M	(b2443.7)
19 – 230 kV 80 kA breakers:	<u>\$40 M</u>	
Total:		

Required IS Date: 06/01/2023
Projected IS Date: 06/01/2023

Project Status: Conceptual

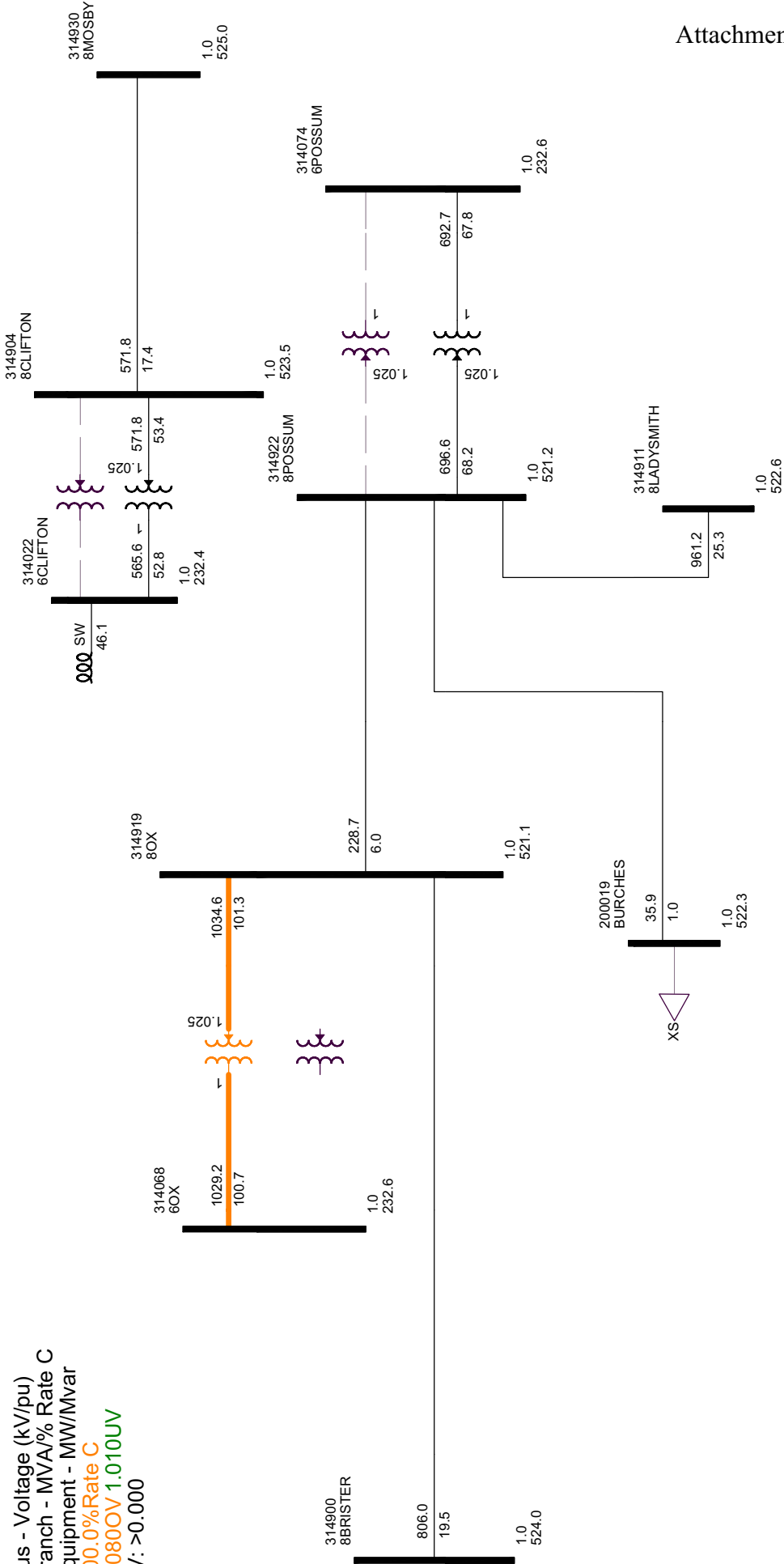
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Glebe – Station C Project				
	<u>Components</u>	<u>Baseline ID</u>	<u>Estimate</u>	<u>Status</u>
DVP				
	Construct new underground 230 kV line from Glebe to Station C	b2443	\$136.5 M	Cancel
	Replace the Idylwood 230 kV breaker '203512' with 50kA breaker	b2443.1	\$0.255 M	In-Service
	Replace the Ox 230 kV breaker '206342' with 63kA breaker	b2443.2	\$0.27 M	In-Service
	Rebuild Glebe Substation	b2443.4	\$65.0 M	Cancel
PEPCO				
	New 230kV Potomac River Substation Project (includes PAR)	b2443.3	\$94.8 M	Cancel
	Blue Plains Substation Breaker Replacements Project	b2443.5	\$2 M	Cancel
	Total Cost		\$299 M	

CEII NO SECOND TX OUTAGE LINE 561 & OX TX#1
2020RTEP 2023SUM FEB 1 PREFINAL
WED, JUL 01 2020 13:15

Bus - Voltage (kV/pu)
Branch - MVA/% Rate C
Equipment - MW/Mvar
100.0%Rate C
1.0800V 1.010UV
kV: >0.000





Reliability Analysis Update

Aaron Berner, Senior Manager

Transmission Expansion Advisory Committee
May 11, 2021



Changes to Existing Projects

Baseline Reliability Projects



Dominion Transmission Zone: Baseline Possum Point 2nd 500-230 kV Tx

Existing Baseline b2443.6

Date Project Last Presented: 12/11/2013, 01/09/2014, 11/11/2014, 06/08/2017 & 01/10/2019

Problem Statement: Based on recent generation retirements (Possum Point Units #3 & #4) and the PJM 2018 Load Forecast updates indicates that for a NERC Category P1 – single contingency that Possum Point 500/230 kV Tx #1 overloads for a loss of the Possum Point – Ox 500 kV Line #571 under Dominion's critical stress case criteria.

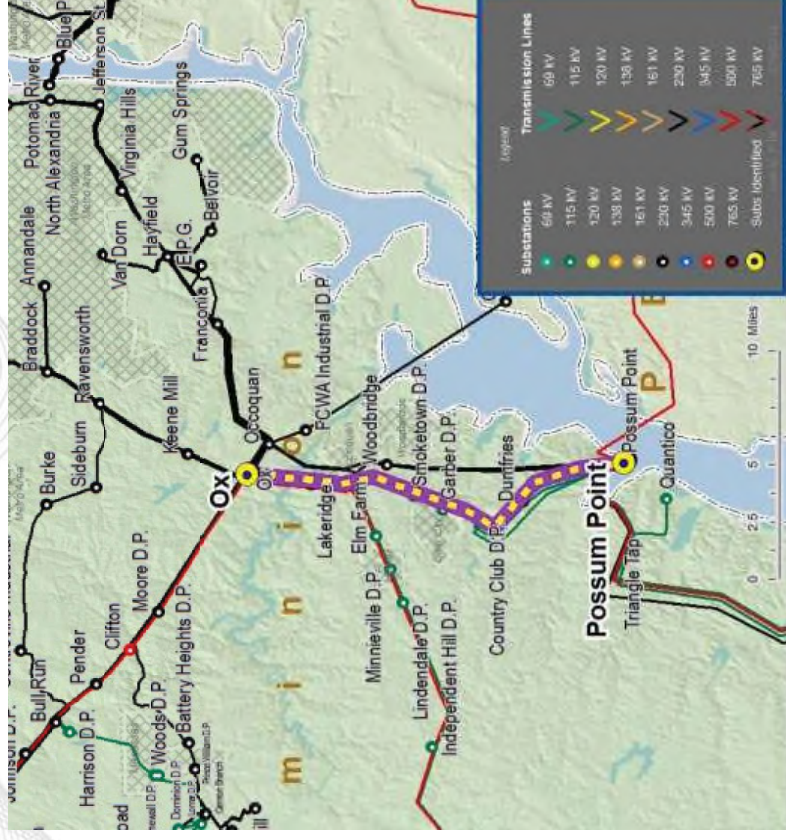
Updated criteria evaluation: Updated Summer 2023 & 2025 RTEP Models indicated deficiencies are no longer present. There were significant reductions in flows on the 500 kV System not only on the Dominion System but also the PEPCO Burches Tie Line for the 2024 and 2025 RTEP Models based on many factors. No single factor can be identified.

Recommended Solution: Cancel the Project.

Project Status: Engineering

Estimated Cost: \$550K to date

Original Estimated Project Cost: \$21M (b2443.6)



Dominion Transmission Zone: Baseline Possum Point 230kV Breaker Replacements

Process Stage: Cancellation

Criteria: Over Duty Breaker

Assumption Reference: none

Model Used for Analysis: 2025 short circuit model

Proposal Window Exclusion: Station Equipment

Problem Statement:

Nineteen (19) Possum Point 230kV breakers are over duty:
 H892, H8T2078, H992, H9T237, 23792, G6BTGT, GT92, 202292, 252T2022, 21592,
 G5T215, 25292, G492, G592, G6A92, G6B92, G4T2001, 200192, 207892

Significant Driver:

b2443.6: Install 2nd Possum Point 500/230 kV transformer.

Existing Facility Rating: 63kA interrupting rating

Solution Cancellation Driver: Possum Point 5 Retirement

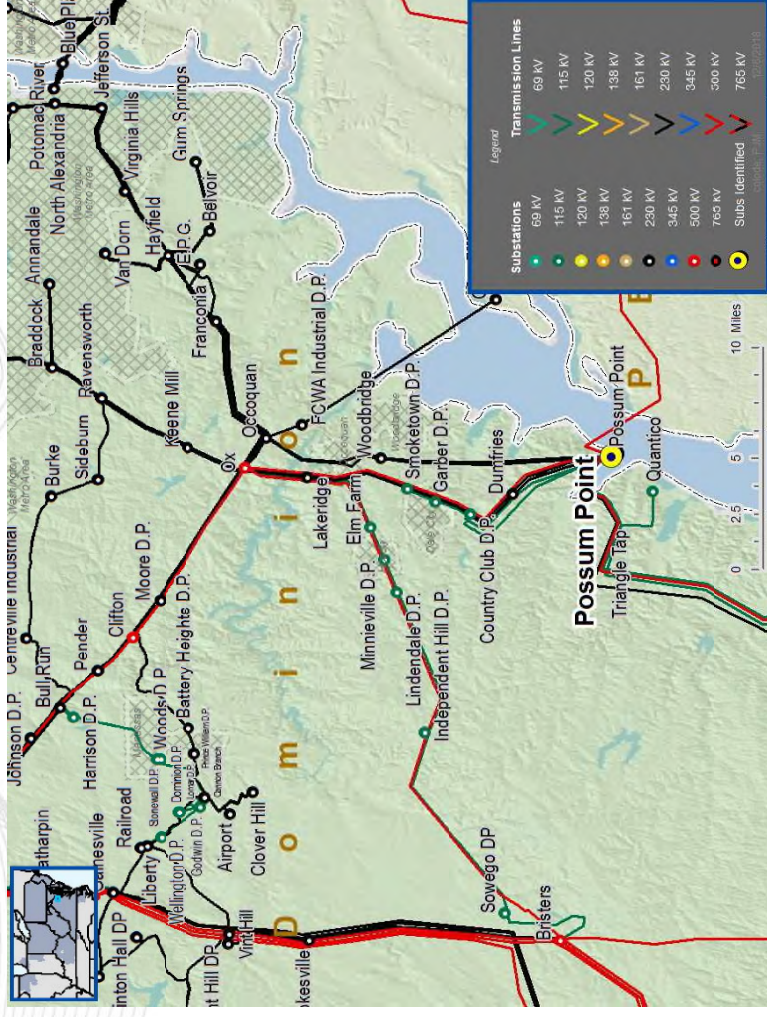
Recommended Solution Cancellation:

b2443.7: Replace the nineteen (19) Possum Point 230kV breakers with 80kA breakers:
 H892, H8T2078, H992, H9T237, 23792, G6BTGT, GT92, 202292, 252T2022, 21592,
 G5T215, 25292, G492, G592, G6A92, G6B92, G4T2001, 200192, 207892

- **Estimated Cost:** \$19M Replace the nineteen breakers with 80kA breakers (\$1M each)

Required In-Service: 6/1/2023

Previously Presented: 1/10/2019





Reliability Analysis Update

Aaron Berner, Senior Manager
Transmission Expansion Advisory Committee
Tuesday, November 30, 2021



2021 RTEP Proposal Window



Second Review

Baseline Reliability Projects



Process Stage: Second Review

Criteria: FERC Form 715 (C.2.1.3 Critical Stress Case)

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

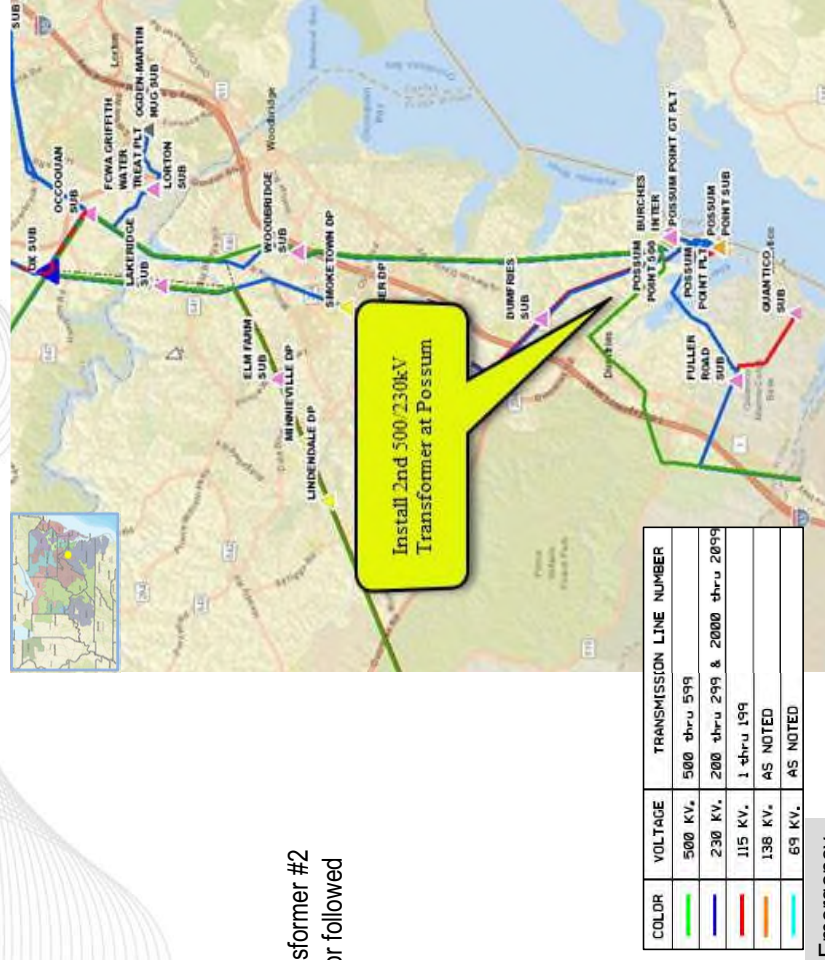
DOM-T3, DOM-T4

In the 2026 RTEP summer case, the Ox 500/230kV transformer #1 & Ox 500/230kV transformer #2 are overloaded under Dominion stress case criteria. (Outage of the most critical generator followed by single contingency: N-1-1).

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
8OX – 6OX #1 500/230kV	931.9/963.8/1198.8/1242.3
8OX – 6OX #2 500/230kV	909.3/951.9/1167.6/1220.4

Continued on next slide





As part of the 2021 RTEP Window #1, the following projects were proposed to address violations on 500/230kV transformer #1 & #2 at Ox:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
57 ⁽¹⁾	Dominion	Install 2 nd 500/230kV transformer at Possum Point	24.539
319	Dominion	Replace both 500/230kV transformers at Ox	63.768
637	Dominion	Expand Occoquan substation via the installation of a 500kV GIS ring bus, 1-1100MVA 500/230kV transformer and 230kV breaker-and-a-half bus arrangement.	75.389

⁽¹⁾ Proposal 57 corresponds to baseline b2443.6 that was brought to TEAC to be canceled but not taken to Board to cancel due to issue being identified in the 2021 RTEP and potential for project to be brought back if the proposal was provided to mitigate the violation. (Adding 2nd 500/230kV transformer at Possum Point.)

Recommended Solution: Proposal #2021_1-57

- Install a 2nd 500kV-230kV 840MVA transformer bank at Possum Point 500kV yard, a 0.8 mile long 230kV line extension between Possum Point 500kV and Possum Point 230kV substation, and a new 230kV breaker at Possum 230kV yard to terminate the extension. (b2443.6)

Note: Possum Point 500kV Substation and Possum Point 230kV Substation are separated by approximately 0.85 miles.

Continued on next slide....

Dominion Transmission Zone: Baseline Ox 500/230kV Transformers



Preliminary Facility Rating:

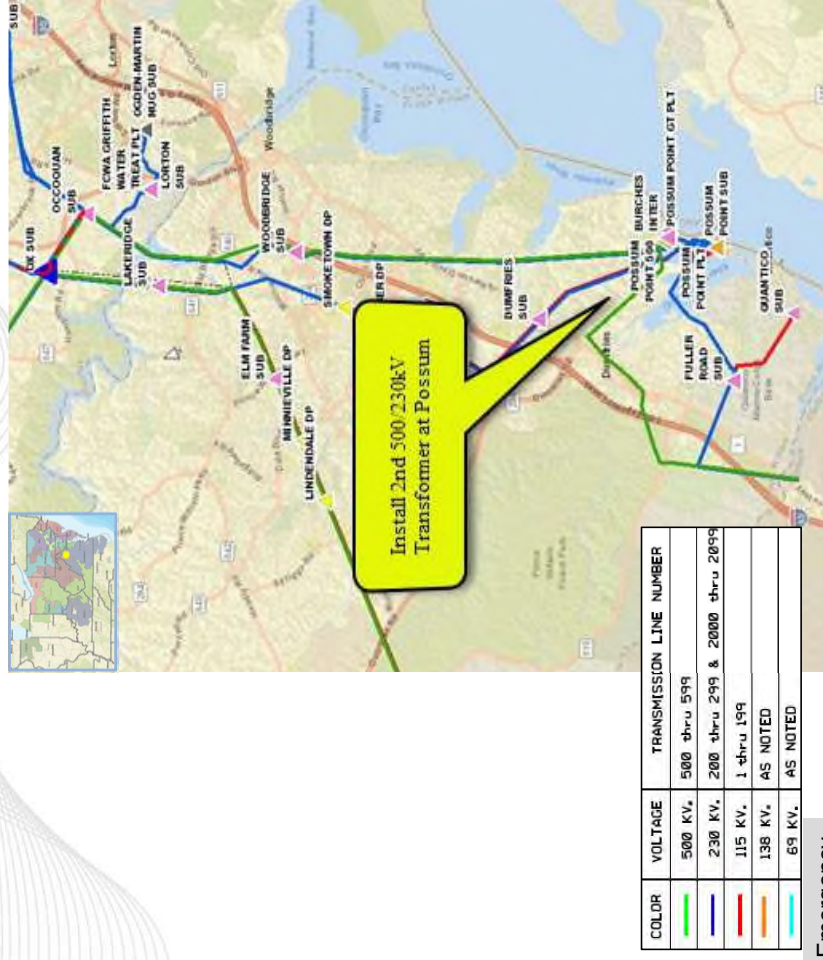
Branch	SN/SE/WN/WE (MVA)
8POSSUM – 6POSSUM #2 500/230kV	902.4/945.9/1155.4/1209.9

Total Estimated Cost: \$24.539M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021



SN / SE / WN / WE: Summer Normal / Summer Emergency / Winter Normal / Winter Emergency

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: [1] Engineering Justification for the Project

Detail the engineering justifications for the proposed project.

For a detailed description of the engineering justification of the proposed Project, see Section I.A.

[2] 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.

None.

[3] 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.

The reliability studies conducted for this Project and the study results are described in Section I.A. See also Attachments I.D.1 through I.D.4.

[4] Facilities List

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

All approved PJM RTEP projects and associated generators are included in the 2026 RTEP model as based on PJM RTEP Protocols.

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: Attachment I.G.1 shows the portion of the Company's transmission system in the area of the proposed Project.

Like most metropolitan areas, the Northern Virginia Load Area is dependent on the bulk electric system for the transportation of capacity and energy from generating resources located outside of load centers. Once transported to these load centers, the capacity and energy is transformed from the Company's 500 kV system to the 230 kV system via 500-230 kV transformers. The majority of the Company's distribution transformers, which provide service to the Company's retail customers, are located on the 230 kV system. In the Project area, three transmission switching stations exist at Clifton, Ox, and Possum Point that each have 500-230 kV transformers. Clifton and Ox Switching Stations each have two 500-230 kV transformers, and Possum Point has one 500-230 kV transformer.

As described in Section I.A, an additional 500-230 kV transformer bank is required at the Possum Point 500 kV Substation in order to continue to adequately serve the needs of the Company and its customers by resolving system reliability criteria violations. As previously described, currently this load area is primarily served by the 500-230 kV transformers which are located at Clifton, Ox, and Possum Point Switching Stations where these transformers support the transfer of capacity and energy from the 500 kV System to the 230 kV system. An additional 500-230 kV transformer is needed at Possum Point Substation to allow the Company to continue to provide reliable service to its customers located in this load area, consistent with NERC Reliability Criteria.

The tables in Attachment I.C.1 provide 10 years of historical summer and winter loads for the Northern Virginia Load Zones in the Dominion Energy Virginia system and 10 years of projected summer and winter peak loads for the Northern Virginia Load Zones. The historical load growth shows a 1349 MW growth in Northern Virginia over the last 10 years, between 2013 and 2022.

Completing the proposed Project will enable the Company to maintain the reliability of its transmission system, as discussed in Section I.A.

Historical load (MW)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NOVA - Summer	6733.0	6690.0	6720.0	7204.0	6994.3	7438.5	7038.3	7843.8	7777.6	8082.0
NOVA - Winter	5511.7	6022.7	6453.7	6130.0	6243.3	6602.7	6561.3	6167.0	6192.1	6688.0

Projected load (MW)*

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
NOVA - Summer	8243.0	8353.0	8483.0	8563.0	8862.0	8962.0	9073.0	9187.0	9467.0	9561.0
NOVA - Winter	6696.0	6702.0	6743.0	6791.0	7019.0	7093.0	7151.0	7228.0	7431.0	7506.0

*Forecasted values are based on the PJM 2023 Load Forecast

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: Using PJM's Summer 2026 RTEP model based on the 2021 Load Forecast, modified to comply with the critical stress case scenario of Possum Point Unit #6 taken out of service, reliability deficiencies in regard to the Company's Planning Criteria and FERC Form No. 715 reporting requirements were identified in the Company's Northern Virginia Load Area, specifically at the Company's Ox Switching Station, without the proposed Project. Under the critical stress case scenario defined above, the Company's Planning Criteria states that facilities reaching over 94% of their emergency rating are in violation and must be mitigated. The below violations would, therefore, also violate FERC Form No. 715 reporting requirements.

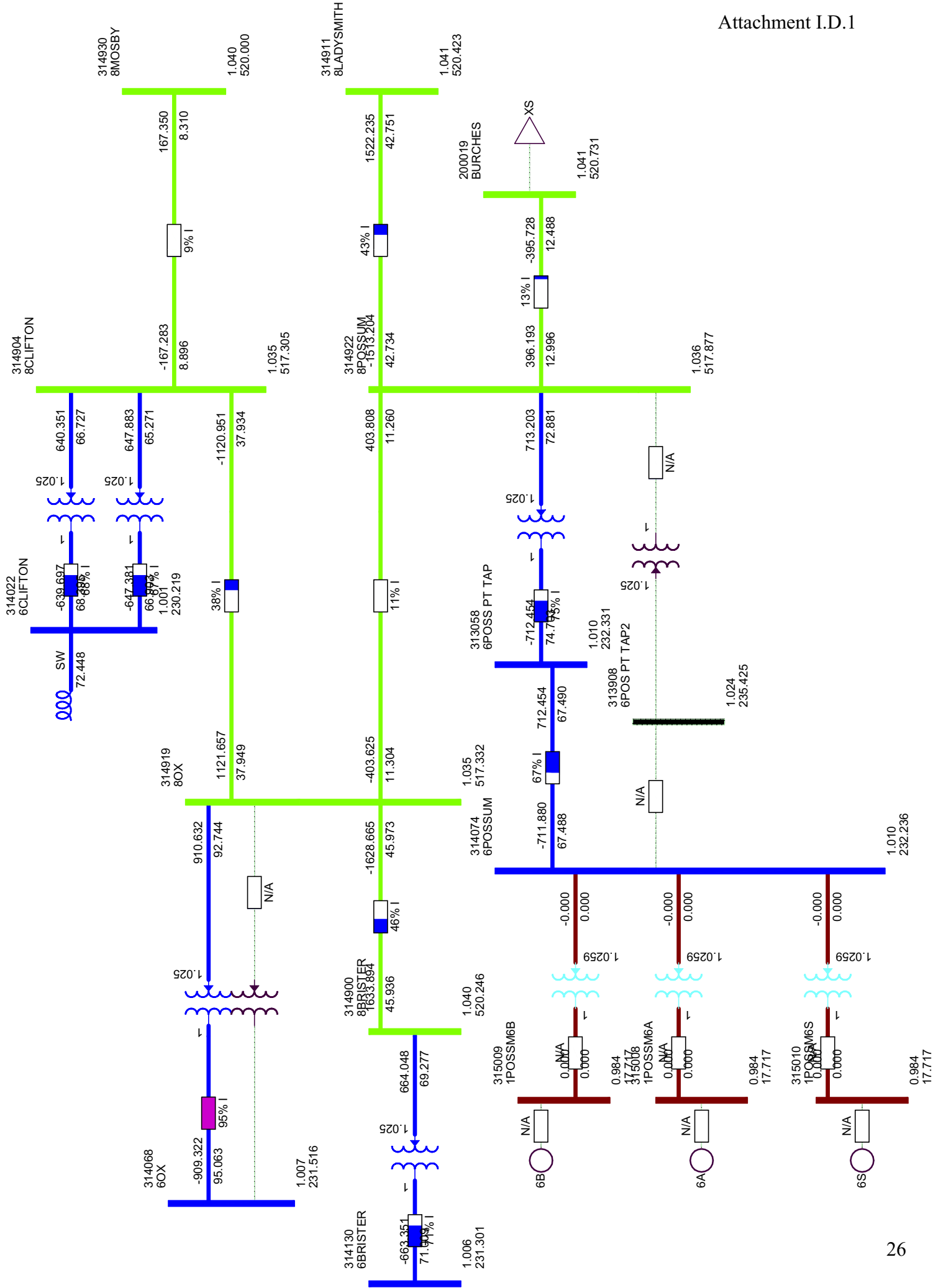
An outage of Possum Point Unit #6 and the Ox 500-230 kV Transformer #1 resulted in the Ox 500-230 kV Transformer #2 being loaded to 95.06% of its summer emergency rating. See [Attachment I.D.1](#) for a screenshot of this contingency condition.

With the proposed Project in service, an outage of Possum Point Unit #6 and the Ox 500-230 kV Transformer #1 resulted in the Ox 500-230 kV Transformer #2 being loaded to 86.83% of its summer emergency rating. See [Attachment I.D.2](#) for a screenshot of this contingency condition.

An outage of Possum Point Unit #6 and the Ox 500-230 kV Transformer #2 resulted in the Ox 500-230 kV Transformer #1 being loaded to 94.31% of its summer emergency rating. See [Attachment I.D.3](#) for a screenshot of this contingency condition.

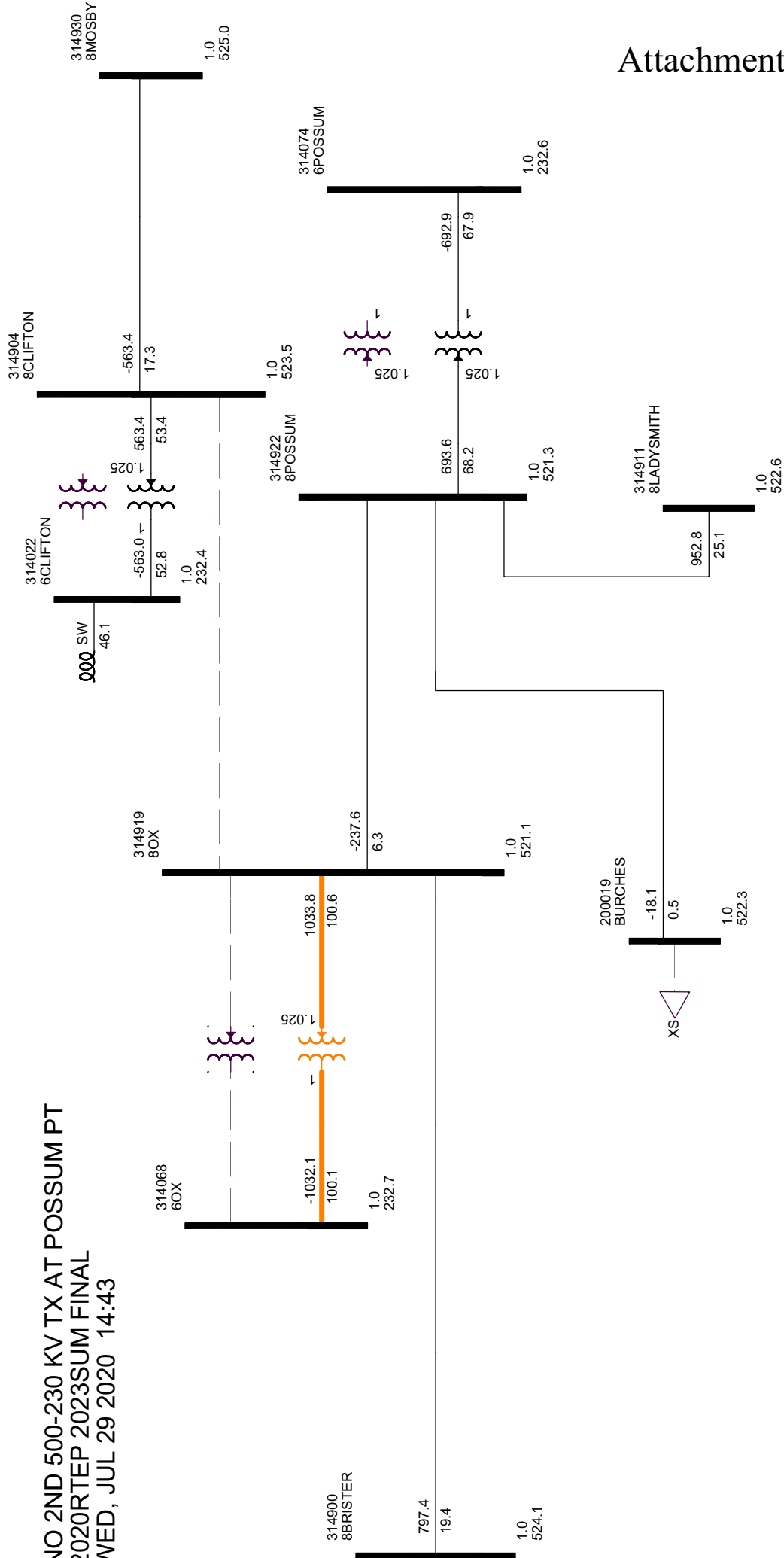
With the proposed Project in service, an outage of Possum Point Unit #6 and the Ox 500-230 kV Transformer #2 resulted in the Ox 500-230 kV Transformer #1 being loaded to 86.15% of its summer emergency rating. See [Attachment I.D.4](#) for a screenshot of this contingency condition.

[Attachment I.D.5](#) has been included as a summary of the identified violations above as received from PJM for the 2021 RTEP Window. The ratings of the monitored facilities in this table have been adjusted to 94% of their emergency rating.

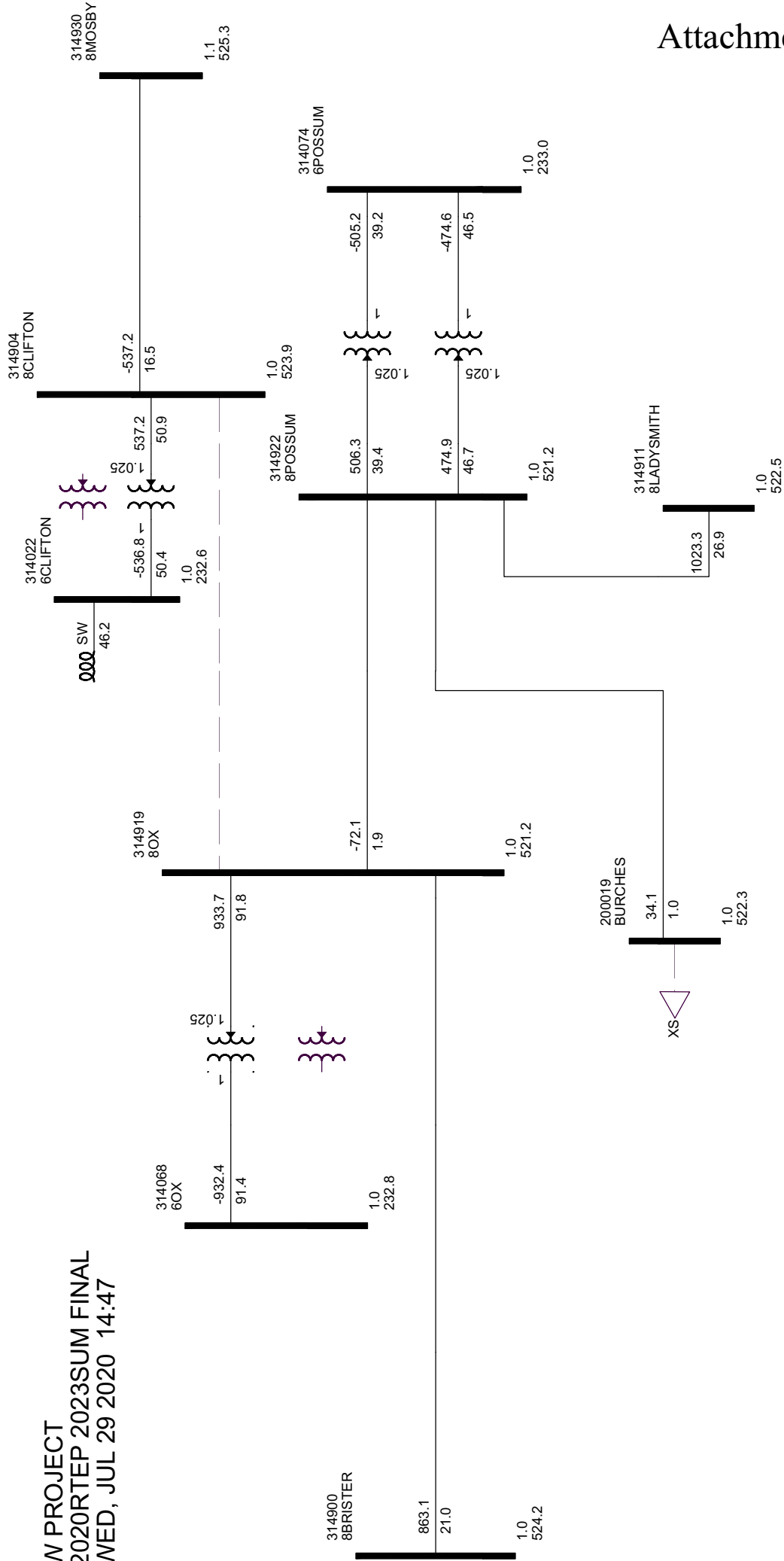




NO 2ND 500-230 KV TX AT POSSUM PT
2020RTEP 2023SUM FINAL
WED, JUL 29 2020 14:43



W PROJECT
 2020RTEP 2023SUM FINAL
 WED, JUL 29 2020 14:47



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: Feasible Project Alternatives (Prior to Project Cancellation)

As an alternative to the Project, the Company considered expanding its existing Occoquan Substation. This expansion included establishing a new three-breaker 500 kV ring bus at Occoquan Substation by splitting the existing Ox-Possum Point 500 kV Line #571 into two separate 500 kV lines and installing a new 500-230 kV transformer bank at the site. This alternative also included rebuilding a 230 kV switching station in a new location on the Occoquan Substation site, which would approximately triple the size of the existing Occoquan Substation site. This alternative was estimated to cost \$69.7 million. PJM initially determined that this proposed solution would not resolve the identified NERC Criteria Violations as identified in Attachment I.A.2.

Following PJM's approval of the Project as shown in Attachment I.A.2, the Company determined that the need for the Project had changed, as discussed in Section I.A. While the rejected alternative discussed above did not resolve the need initially identified (as described in Attachment I.A.2), it would resolve the revised need for the Project. The Company again presented the alternative to PJM on July 28, 2020. PJM again rejected this alternative in favor of the Project due to the alternative's greater cost and its failure to solve the initial reliability deficiency.

Feasible Project Alternatives (Via the 2021 PJM RTEP Window)

The Company considered the following transmission alternatives to the Project as submitted to PJM via the 2021 RTEP Window (see Attachment I.A.5):

Alternative (1): Replacement of Ox 500-230 kV Transformer #1 and #2

Under this alternative scenario, both Ox 500-230 kV transformers that were identified as being in violation of FERC Form 715 and the Company's Planning Criteria would be upgraded to higher-rated 1440 MVA transformer units. While this solution would resolve the violations identified by PJM, PJM rejected this proposal in favor of the Project because the Project is a more cost-effective solution.

Alternative (2): Expansion of Occoquan Substation

Under this transmission alternative scenario, the violations identified for the Ox 500-230 kV transformers would be resolved by expanding the Company's existing Occoquan Substation via the installation of a 500 kV GIS ring bus, one 1100 MVA 500-230 kV transformer, and a 230 kV breaker-and-a-half arrangement. While this solution also would resolve the violations identified by PJM, PJM rejected this

proposal in favor of the Project because the Project is a more cost-effective solution.

Analysis of Demand-Side Resources

Pursuant to the Commission's November 26, 2013, Order entered in Case No. PUE-2012-00029, and its November 1, 2018, Final Order entered in Case No. PUR-2018-00075 ("2018 Final Order"), 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, PJM and the Company have identified a need for the proposed Project based on the need to maintain the overall long-term reliability of its transmission system and to comply with mandatory NERC Reliability Standards.⁸ Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs that are considered in PJM's fixed resource requirement ("FRR") plan 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 previously into PJM's reliability pricing model ("RPM") 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 absolve the need for the Project. As reflected in Attachment I.C.1, the load area for this Project (historic and projected) ranges from 5,512 to 9,561 MW (summer and winter). By way of comparison, statewide, the Company achieved demand savings of 308.4 MW (net) / 396.8 MW (gross) from its DSM programs in 2021.

⁸ 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.

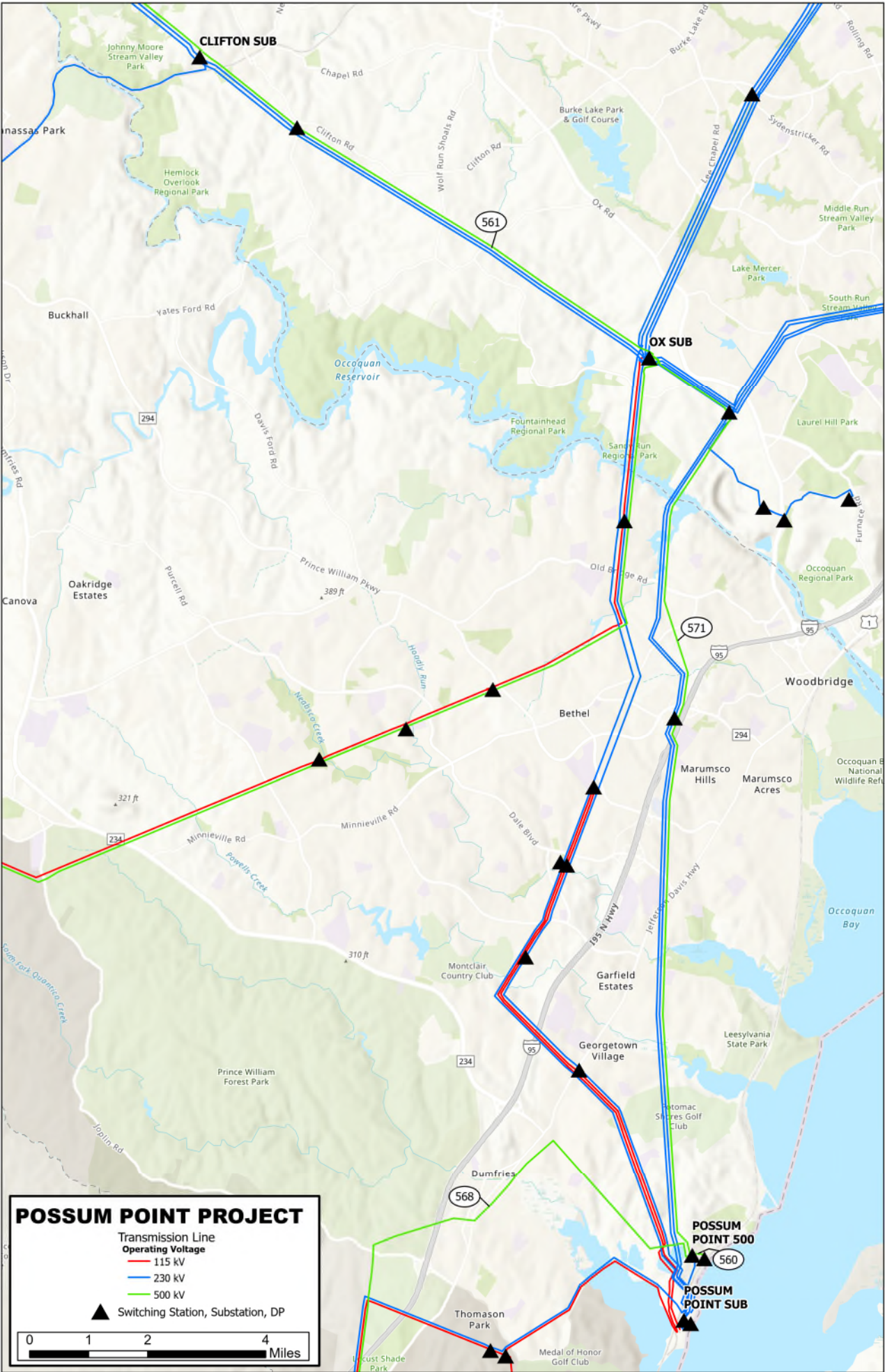
Response: Line #2078, located between the Possum Point 500 kV and 230 kV Substations at Possum Point Power Station, will be replaced. Eight single circuit structures will be replaced with five double circuit and two single circuit structures. The existing backbone structures will remain. In addition to the structure removal, the existing single circuit 3-phase 2-636 ACSR conductors, one 3#6 alumoweld shield wire, and one fiber optic shield wire will be replaced. The 3-phase 2-636 ACSR had a normal/emergency transfer capability of 1047 MVA.⁹

⁹ Apparent power, measured in megavolt amperes (“MVA”), is made up of real power (megawatt or “MW”) and reactive power megavolt ampere reactive (“MVAR”). The power factor (“pf”) is the ratio of real power to apparent power. For loads with a high pf (approaching unity), 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.

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.



I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Company estimates it will take approximately 18 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 May 1, 2024. Should the Commission issue a final order by May 1, 2024, the Company estimates that substation site prep should begin in May 2024, and construction should begin around July 2024 and be completed by November 2025. This schedule is contingent upon obtaining the necessary permit and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new build scheduled to occur in this load area. While the Company is actively working with appropriate agencies regarding all necessary permitting for the Project, dates may need to be adjusted based on potential delays, including delays associated with scheduling outages, right-of-way acquisition, permitting delays, or design modifications to comply with additional agency requirements identified during the permitting application process, as well as unpredictable delays due to labor shortages or materials/supply issues.

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 estimated conceptual cost of the Project is approximately \$31.5 million (in 2022 dollars), which includes \$8.0 million for transmission-related work and \$23.5 million for substation-related work (\$21.2 million for the 500 kV Substation and \$2.3 million for the 230 kV Substation).

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 was approved by the PJM Board as their recommended solution at its November 2021 TEAC meeting as a baseline project (b2443.6). See Attachment I.A.3 and Sections I.A and I.E.

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

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. The need for the proposed Project is not due to reliability issues. See Sections I.A and I.C.

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. The need for the proposed Project is not due to reliability issues. 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: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: The length of the proposed corridor for the Project is approximately 0.95 miles, which is located within Company-owned property.

See Section II.A.9 for a description of the Company’s route selection process and alternative routes that were considered and rejected.

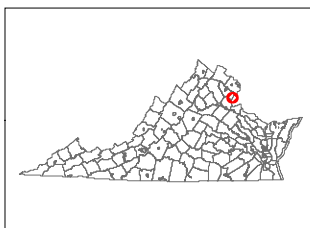
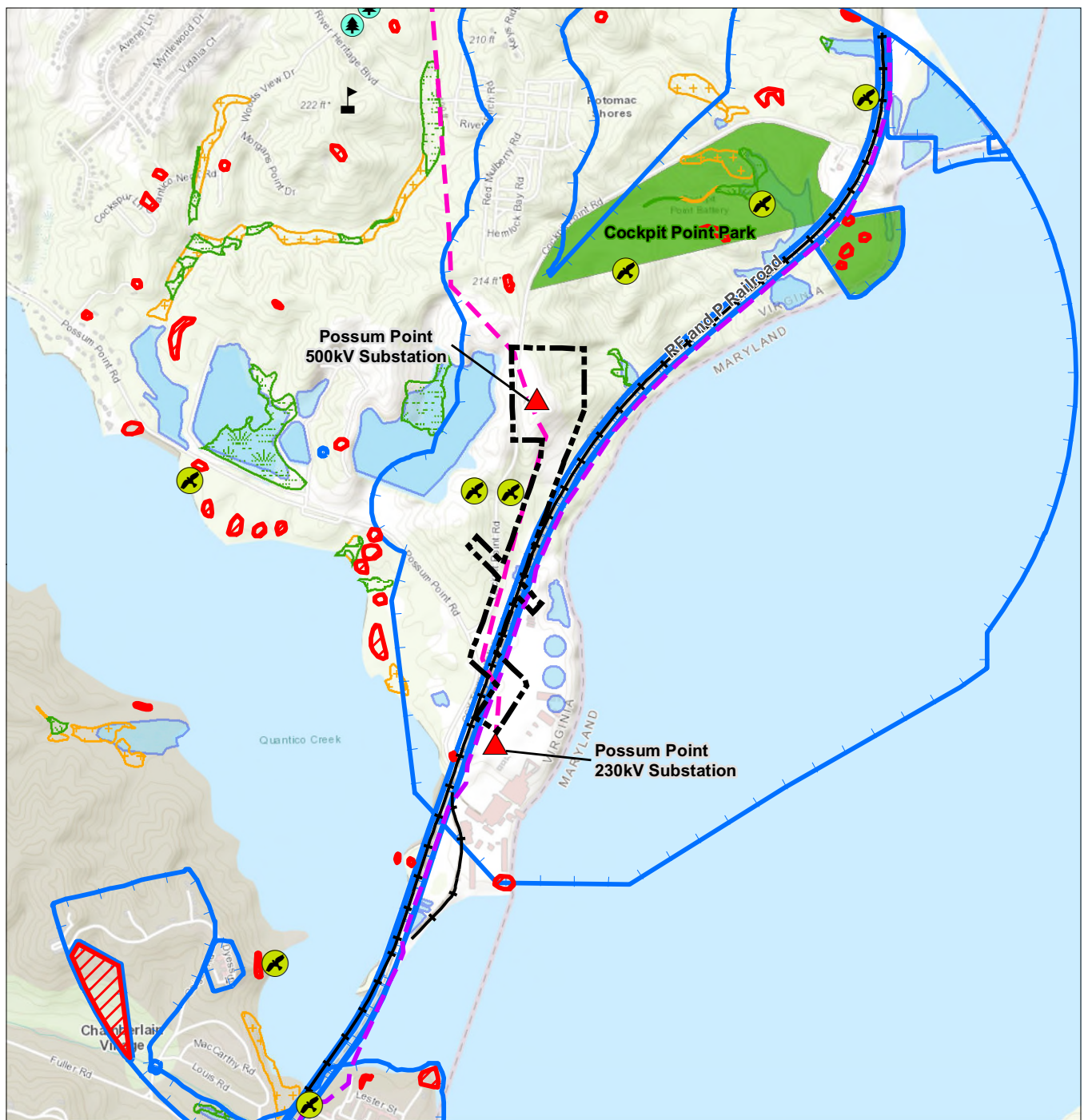
II. DESCRIPTION OF THE PROPOSED PROJECT

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, which includes existing linear utilities paralleled by the existing transmission line corridor. No portion of the corridor is proposed to be quitclaimed or relinquished.

The Company will make a digital Geographic Information Systems shapefile available to interested persons upon request to counsel for the Company.



Notes

1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Data Sources: Dominion Energy Virginia, NPMS, VCRIS, Google Earth, Pennwell, Prince William County, NWI, NHD, CCB
3. Basemap © ESRI

- Eagle Nest
- School Park
- School
- Substation
- Gas Transmission Pipeline
- Hazardous Liquid Pipeline
- Railroad
- Project Limits
- NWI PEM/PSS Wetland
- NWI PFO Wetland
- Park
- NHD Waterbody
- Archaeology Resource
- Architecture Resource

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(At original document size of 8.5x11)
1:24,000



Project Location Prepared by MGS on 2020-04-06

Prince William County, Virginia TR by TPS on 2020-04-09

Client/Project IR by MMJ on 2020-04-09

Dominion Energy Virginia
Possum Point Second Transformer and
New 230kv Tie Line #2216

Figure No.
IIA2

Title
Environmental Constraints Map

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.

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: The Project is located entirely within Company-owned property, with the exception of aerial crossings of the RF&P railroad, which traverse the Company’s property. Existing Line #2078, Lines #215/#2001, and Lines #237/#2022 already cross the RF&P railroad at three locations pursuant to an existing master license agreement. The Company will pursue an amendment to the existing master license agreement with CSX for the crossing of Line #2216. See Section III.D.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

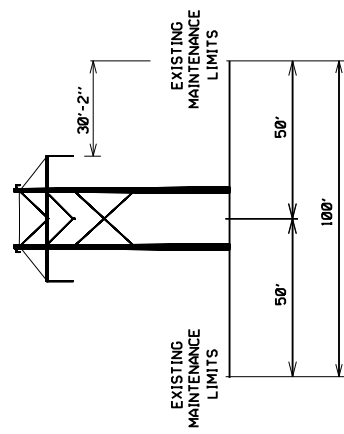
- 5. Provide drawings of the ROW cross section showing typical transmission line structure placements referenced to the edge of the ROW. These drawings should include:**
 - a. ROW width for each cross section drawing;**
 - b. Lateral distance between the conductors and edge of ROW;**
 - c. Existing utility 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-b.

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

EXISTING STRUCTURE NUMBER 2078/10 TO 1

EXISTING
230kV CIRCUIT
(LINE #2078)



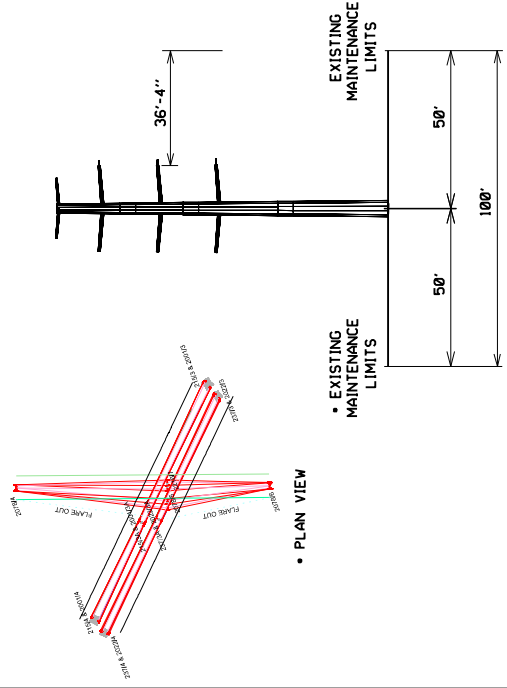
EXISTING CONFIGURATION
TYPICAL CORRIDOR LOOKING TOWARD 500kV STATION

PROPOSED STRUCTURE NUMBER 2078/9 TO 1
PROPOSED STRUCTURE NUMBER 2216/11 TO 5

PROPOSED
230kV CIRCUIT
(LINE #2078)

PROPOSED
230kV CIRCUIT
(LINE #2216)

PRELIMINARY



PROPOSED CONFIGURATION
TYPICAL CORRIDOR LOOKING TOWARD 500kV STATION

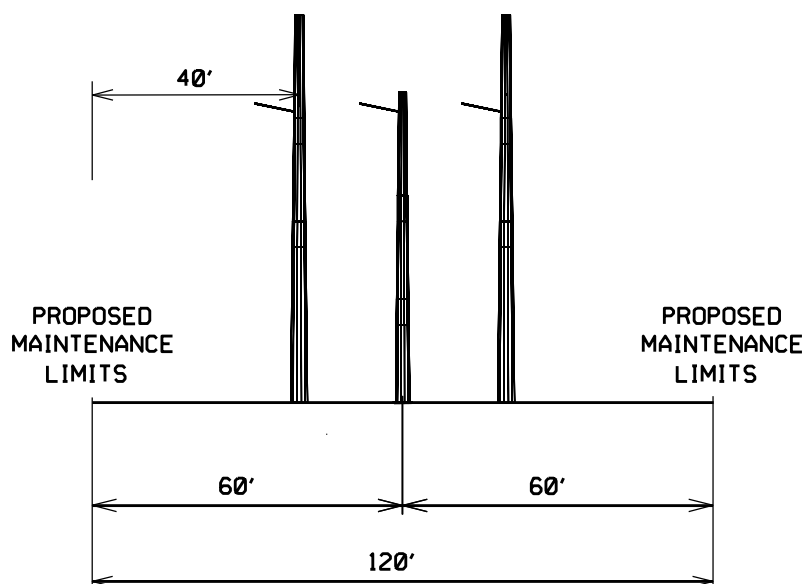
• PROPOSED CORRIDOR FLARES OUT AN ADDITIONAL 85' AT STRUCTURE 2078/5. FLARE OUT STARTS AT PROPOSED STRUCTURE 2078/6 AND ENDS AT STRUCTURE 2078/4. THIS INCLUDES TWO SPANS FOR APPROXIMATELY 1000' WHICH INCLUDES AN APPROXIMATE 200' OVERLAP WITH THE EXISTING LINE 215, 237, 2001, & 2022 CORRIDOR.

NOTE: Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.

PROPOSED STRUCTURE NUMBER 2216/4 TO 1

PROPOSED
230KV CIRCUIT
(LINE #2216)

PRELIMINARY



PROPOSED CONFIGURATION TYPICAL CORRIDOR LOOKING TOWARD 500kV STATION

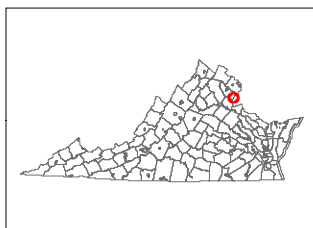
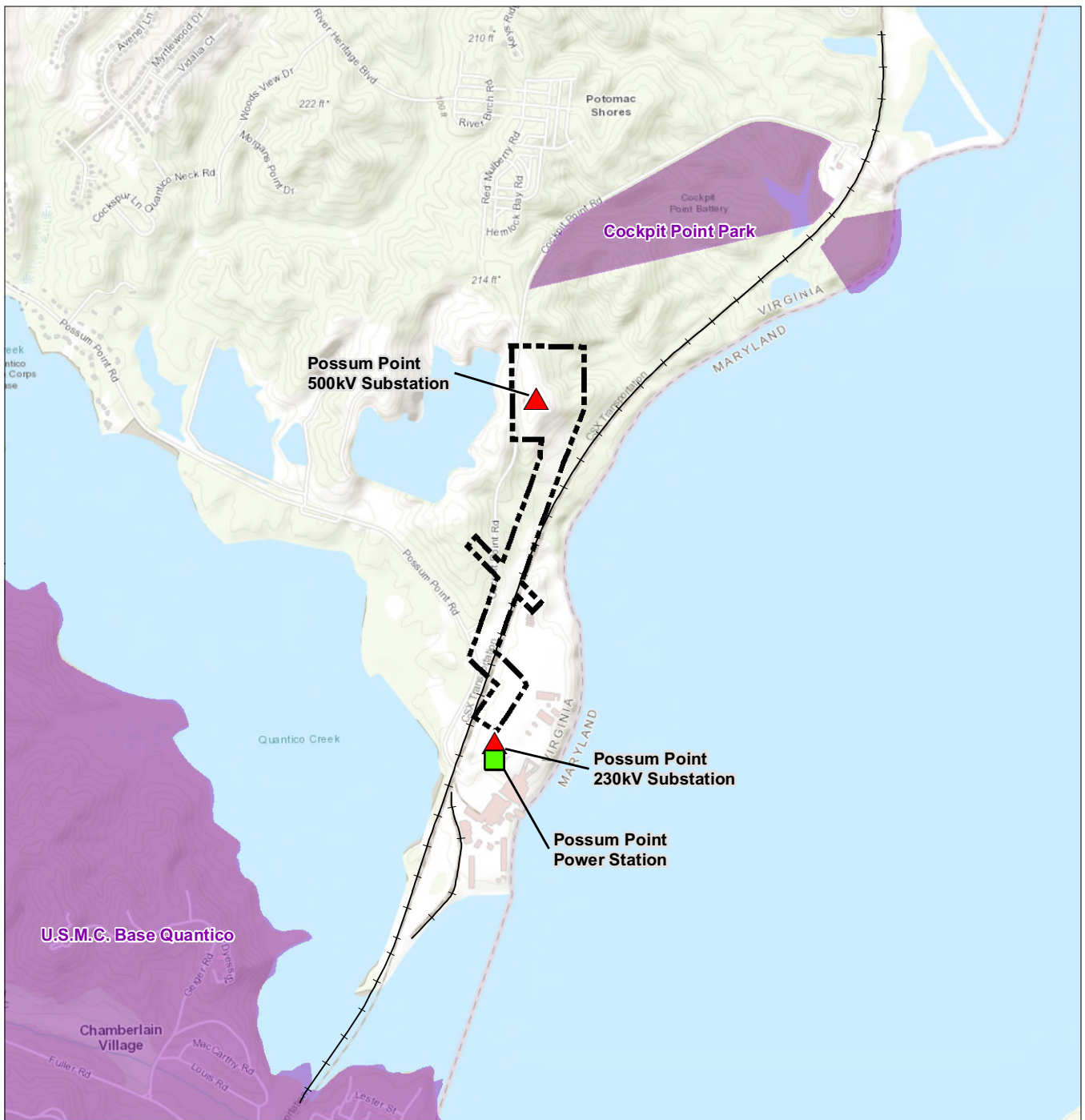
NOTE: Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.

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: The Company initially purchased the property on which the Project corridor is located in 1901. The crossings of the RF&P railroad by the Project corridor are through the listed encroachments on the master license agreement executed between the Company and CSX. Existing Line #2078, Lines #215/#2001, and Lines #237/#2022 already cross the RF&P railroad at three locations, totaling five separate encroachments (one per line). The crossing of Line #2078 is near the Possum Point 230kV Substation and will be collocated with Line #2216. The Company will need a new encroachment listing within the master license agreement for the aerial crossing of Line #2216. There are no conservation easements within the Project corridor. See Attachment II.A.6 for a conservation easement map.



- ▲ Substation
- Existing Power Station
- Project Limits
- Conservation Easement
- +— RF&P Railroad

0 1,000 2,000 Feet
(At original document size of 8.5x11)
1:24,000



Project Location Prince William County, Virginia
Prepared by CDC on 2022-12-19
TR by RJW on 2022-12-21
IR by CPG on 2022-12-21
Client/Project Dominion Energy Virginia
Possum Point Second Transformer and
New 230kV Tie Line #2216
203401924

Figure No.
II.A.6

Title
Conservation Easement Map

Notes
1. Coordinate System: NAD 1983 StatePlane
Virginia North FIPS 4501 Feet
2. Data Sources: Dominion Energy Virginia, PADUS,
Prince William County, and DCR
3. Basemap © ESRI

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 entire 100-foot width of the existing transmission line corridor is currently cleared and maintained for operation of the existing transmission facilities. The Project will include the extension of approximately 0.29 miles of new 120-foot-wide corridor, adjacent to the Possum Point 500 kV Substation, which will require approximately 2.88 acres of clearing. The Project will also require expansion of the existing corridor by 85 feet where Lines #2078 and #2216 cross underneath Lines #215/#2001 and Lines #237/2022. Both the extension and expansion of the existing transmission line corridor will occur entirely on Company-owned property.

Trimming of tree limbs along the edge of the corridor may be conducted to support construction activities for the Project. For any such minimal clearing, 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 at or above ground level, limbed, and will remain where felled. No grubbing of roots or stumps will occur. 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 or from equipment placed on mats in wetland areas and within 100 feet of streams, if applicable. Care will be taken not to leave debris in streams or wetland areas that may cause an impediment to the flow of water. No mulching will occur in wetlands. Erosion control devices will be used on an ongoing basis, as appropriate, during all clearing and construction activities.

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.

Limited clearing or limbing may be required to accommodate construction access. Any clearing will be done in accordance with the Company’s Integrated Vegetation Management Plan (“IVMP”) practice with no grubbing of roots or stump materials. The remainder of the existing right-of-way is currently cleared and maintained.

The right-of-way will continue to be maintained in its current state 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 herbicide application.

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: The Project is located within Company-owned property, with the exception of aerial crossings of the RF&P railroad, which traverses the Company’s property. Existing Line #2078, Lines #215/#2001, and Lines #237/#2022 already cross the RF&P railroad at three locations pursuant to an existing master license agreement. The Company will pursue an amendment to the existing master license agreement with CSX for the crossing of Line #2216. See Section III.D.

For the portions of the Project located on Company-owned property, any non-transmission use will be permitted that:

- Is in accordance with the terms of any 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; and
- 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 that may be suitable for a transmission line can be identified.

For this Project, the Company requested the services of Stantec Consulting Services, Inc. (“Stantec”) to perform a Route Review Study to identify and evaluate potential alternative routes for new Line #2216 within the Company’s existing property at the Possum Point Power Station. The route development process is described in more detail in the Routing Review Study provided in Attachment II.A.9.a.¹⁰

Following the data collection effort and field reconnaissance, three alternative routes were developed by Stantec in collaboration with the Company: Routes A-C. The alternative routes were developed to utilize the existing Line #2078 corridor exiting from the Possum Point 230 kV Substation and entering the northern side of the Possum Point 500 kV Substation where improvements to the substation are proposed as part of the Project, while also avoiding an active coal ash pond to the west and the Potomac River to the east.

Alternative Route A would construct a new approximately 0.94-mile 230 kV line within Company-owned property. Located approximately 750 feet west of the existing Line #2078 alignment, Route A was the westernmost route. Route A would follow the existing 230 kV Line #2078 exit from the Possum Point 230 kV

¹⁰ Stantec provided a memorandum to the Company dated February 17, 2023, updating the Route Review Study (“Routing Update Memo”). The Routing Update Memo is provided as Attachment II.A.9.b.

Substation, paralleling Possum Point Road for approximately 0.2 miles before turning north to head to the Possum Point 500 kV Substation from the west.

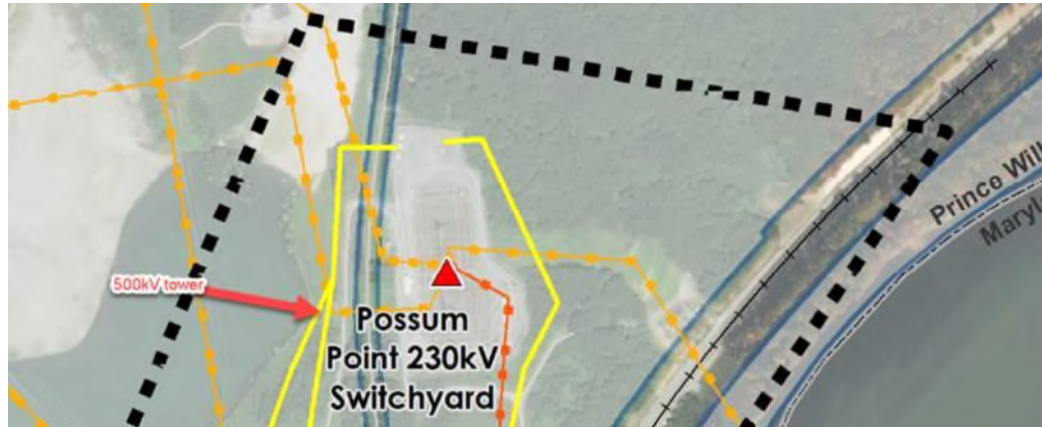
Alternative Route B would construct a new approximately 0.89-mile 230 kV line within Company-owned property. Route B was located approximately 400 feet east of Route A (i.e., between Routes A and C). Like Route A, Route B would follow the existing 230 kV Line #2078 exit from the Possum Point 230 kV Substation, and travel parallel to Cockpit Point Road before entering the Possum Point 500 kV Substation from the west at the same entry point as Route A.

Proposed Route C would construct a new approximately 0.95-mile 230 kV line primarily within the existing overhead Line #2078 corridor located within Company-owned property. Route C would follow the existing 230 kV Line #2078 exit from the Possum Point 230 kV Substation for the majority of the existing corridor, but then would extend further north approximately 0.29 miles of new corridor within Company-owned property in order to enter the Possum Point 500 kV Substation at an eastern entry point.

The three alternative routes are depicted below and in Appendix A, Figure 2, of the Routing Review Study:



As discussed in the Routing Review Study, the Company rejected Routes A and B as not viable. As demonstrated below, both Routes A and B would have to be routed around an existing 500 kV tower.



Attempting to route around this existing tower within Company-owned property created conflicts with an existing road, two 500 kV lines, the Possum Point 500 kV Substation, and the coal ash pond. The Routing Review Study provided in [Attachment II.A.9.a](#) provides additional comparison of the routes. For these reasons and those discussed therein, the Company rejected Routes A and B as not viable.

Proposed Route C utilizes an existing transmission line corridor for the majority of the approximately 0.95-mile route, with only 0.29 miles at the north end of the route extended in order to enter the Possum Point 500 kV Substation. Rebuilding Line #2078 in order to collocate new Line #2216 for the majority of the route allows the Company to maximize the use of an existing transmission corridor.

This approach generally avoids or minimizes impacts on natural and human environments. This approach is also consistent with Attachment 1 of these Guidelines, which provides a tool routinely used by the Company in routing its transmission line projects. Specifically, this approach is consistent with Guideline #1, which states that existing rights-of-way should be given priority when adding new transmission facilities, and Va. Code §§ 56-46.1 and 56-259, which promote the use of existing rights-of-way for new transmission facilities. The Routing Review Study in Attachment II.A.9.a provides a more detailed overview of the information collected within the study area, explains the development of the alternative routes, and performs a routing analysis comparing the route alternatives.



**Possum Point 2nd Transformer and
New 230 kV Tie Line #2216**

Route Review Study

July 29, 2020

Prepared for:

Dominion Energy Virginia
10900 Nuckols Rd, 4th Floor
Glen Allen, Virginia 23060

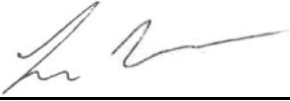
Prepared by:

Stantec Consulting Services, Inc.
5209 Center Street
Williamsburg, Virginia 23188

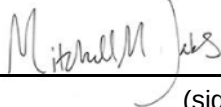


POSSUM POINT 2ND TRANSFORMER AND NEW 230 KV TIE LINE #2216

This document entitled Possum Point 2nd Transformer and New 230 kV Tie Line #2216 was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Virginia Electric and Power Company (Dominion Energy Virginia or the Company). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and Dominion. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 
(signature)

Lauren Pudvah

Reviewed by 
(signature)

Mitchell Jabs

Approved by 
(signature)

Curt Bjurlin



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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

As part of a larger Project that includes the installation of a new 500-230 kV transformer bank at Dominion Energy Virginia's Possum Point 500 kV Substation, the Company is planning to install 0.95-mile of new 230 kV transmission line, Line #2216, between the Company's existing Possum Point 500 kV and 230 kV Substations in Prince William County, Virginia (Figure 1, Appendix A). Dominion Energy Virginia retained Stantec Consulting Services, Inc (Stantec) to perform a route review study to identify and evaluate potential alternative routes for new Line #2216 within the Company's existing property. This process included the review of three alternative routes and culminated in a Preferred Route. A multi-disciplinary siting team performed the route review. Members of the siting team have experience in transmission line siting, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, right-of-way, and construction management.

The Study Area is characterized by industrial land uses and consisted of land owned by the Company, with the exception of a single crossing of the Richmond, Fredericksburg and Potomac (RF&P) railroad, which traverses the Company's property. Multiple transmission lines and related infrastructure are present within the Study Area (Figure 1, Study Area, Appendix A). It is anticipated that the new transmission structures will range from 55 feet to 120 feet tall. The complete route review process is described in more detail in the sections to follow.

1.2 ROUTING PROCESS AND METHODOLOGY REVIEW

Routing is an iterative process in which information is compiled, analyzed, and communicated to identify a preferred route. The route review study included the identification of a Study Area, development of Alternative Routes, comparative analysis, and selection of a Preferred Route. In collaboration with Dominion Energy Virginia, three Alternative Routes were developed, and a quantitative and qualitative analysis was performed in which environmental, land use, social and engineering constraints were identified for each route and compared against one another to select a Preferred Route. The Routing Team was multidisciplinary, consisting of members experienced in transmission line routing, engineering, permitting, land services, and agency and public relations. Many factors were considered during the routing process including safety, potential environmental and social impacts, engineering, and existing land uses. This report provides a summary of:

- The opportunities and constraints in the project Study Area that shaped the development of Alternative Routes;
- The decision-making process that led to the selection of the Preferred Route; and
- The potential impacts of the Preferred Route on the natural and human environment



2.0 ALTERNATIVE ROUTE DEVELOPMENT

2.1 STUDY AREA DESCRIPTION

The Study Area is located in Prince William County, Virginia (Figure 1, Study Area). The 0.47 square-mile Study Area was developed to include property owned by the Company between the Possum Point 500 kV Substation and Possum Point 230 kV Substation, while also avoiding a coal ash pond to the west and the Potomac River to the east. The Study Area encompassed the Possum Point 500 kV Substation, the Possum Point 230 kV Substation, and multiple existing transmission lines owned by Dominion Energy Virginia. The Study Area was established to allow for a reasonable set of alternatives between the two substations that would maximize use of land owned by Dominion Energy Virginia.

Multiple linear features were documented within the Study Area, including a network of Company-owned transmission lines, a gas transmission pipeline, a hazardous liquid pipeline, and the RF&P Railroad, which is operated by CSX. The majority of the Study Area consisted of industrial land, with the Possum Point 500 kV Substation to the north, a coal ash pond to the west, the Potomac River to the east, and the Possum Point 230 kV Substation to the south. The Study Area contained few environmental features. The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) database indicated streams, wetlands, and other jurisdictional features as largely absent, with the exception of one small open water feature north of the Possum Point 230 kV Substation and a large open water feature associated with coal ash disposal on the northwest corner of the Study Area.

2.2 SITING GUIDELINES

The siting team, in collaboration with the Company, developed the siting guidelines below to be applied throughout the routing process.

System Planning Requirements

- Meet the electrical need and requirements in an economic and reliable way
- Project starting point is the Possum Point 230 kV Substation
- Project terminus is the Possum Point 500 kV Substation

Engineering Requirements/ Planning Considerations

- Approximate width of transmission line corridor 100 feet to 120 feet
- Evaluate paralleling or co-location of existing transmission
- Utilize Company-owned property

Impacts to the Natural Environment and Land Use

Where possible:

- Minimize the removal or substantial interference with the use of existing residences.



POSSUM POINT 2ND TRANSFORMER AND NEW 230 KV TIE LINE #2216

- Minimize the removal of existing barns, garages, commercial buildings, and other non-residential structures.
- Minimize interference with the use and operation of existing schools, recognized places of worship, cemeteries, and facilities used for cultural, historical, and recreational purposes.
- Maximize distance from residences, schools, cemeteries, known historical resources, recreation sites, and other important cultural sites.
- Maximize the sharing or paralleling of existing rights-of-way.
- Minimize interference with economic activities, including agricultural and silvicultural activities.
- Minimize the crossing of environmentally and culturally sensitive lands, such as recreation lands, designated battlefields and other designated historic sites, national and state forests and parks, nature preserves, conservation lands and easements, large lakes and large wetland complexes, critical habitat, and other unique or distinct natural resources.
- Where crossings of sensitive lands are unavoidable, maximize the use of existing crossings.
- Minimize substantial visual impact on residential areas and public resources.
Minimize route length, circuitry, cost, and special design requirements.

The siting team developed opportunities and constraints criteria to reflect these guidelines for use in a comparative analysis of the Alternative Routes. Opportunities and constraints criteria were grouped into four criteria groups: environmental, land use, social, and engineering criteria (Table 1. Evaluation Criteria).

Table 1. Evaluation Criteria

Environmental Criteria	Forested wetlands in corridor (acres)
	Herbaceous wetlands in corridor (acres)
	Forested land in corridor (acres)
	Water crossings by centerline (count)
	Floodplain crossed by centerline (feet)
	Protected species (flora & fauna) known locations within 1,000 feet of centerline (count)
	Protected habitat within corridor (acres)
	Potential environmental contamination sites within 1,000 feet of centerline (count)
	Geological features within corridor (count)
Land Use Criteria	Length of route paralleling federal and state roads (percent of total length)
	Length of route paralleling local roads (percent of total length)
	Length of route paralleling non-Dominion transmission lines (percent of total length)
	Length of route paralleling Dominion-owned transmission (percent of total length)
	Length of route paralleling distribution lines (percent of total length)
	Length of route paralleling railroad right-of-way (percent of total length)
	Conservation lands within 1,000 feet of corridor (acres)
	Federal and/or state lands within 1,000 feet of corridor (acres)
	Agricultural land within corridor (acres)
	Commercial and service land within corridor (acres)
	Industrial and extractive land within corridor (acres)
	Municipal lands crossed by corridor (acres)
	Recreational areas within 1,000 feet of corridor (count)



Social Criteria	Residential buildings within 250 feet of corridor (count)
	Residential buildings within 250-500 feet of corridor (count)
	Property owners crossed by corridor (count)
	Parcels crossed by corridor (count)
	Schools within 1,000 feet of corridor (count)
	Community facilities within 1,000 feet of corridor (count)
	NRHP listed cultural resources within 1,000 feet of centerline (count)
	State listed known resources within 1,000 feet of centerline (count)
	Known archaeological sites within corridor (count)
	Historic districts within 1,000 feet of centerline (count)
	Cemeteries within or adjacent to corridor (count)
	Historic Battlefields within corridor (acres)
Engineering Criteria	Transmission line crossings (count)
	Gas pipeline crossing (count)
	Highway, interstate, local road, or railroad crossings (count)
	Turn angles >20 degrees (count)
	Span length in excess of 400 feet (feet)
	Airports and heliports within 20,000 feet of corridor (count)
	Total route length (miles)

2.3 DATA SOURCES

The route review process included the collection of information from public and agency databases on natural resource features and existing land uses within the Study Area. The study made extensive use of information in existing GIS datasets obtained from many sources, including federal, state, and local governments. No public engagement activities occurred as part of this route review.

Table 2, below, includes the data that was collected as part of this review. Following the desktop data collection, the siting team moved into alternative route development.



POSSUM POINT 2ND TRANSFORMER AND NEW 230 KV TIE LINE #2216

Table 2. Data Sources

Sub-Category	Source	Date of Data
Aerial imagery	Virginia Geographic Information Network	2017
Agricultural land cover	Prince William County GIS, NLCD	2016
Airports and helipads	Federal Aviation Authority	2020
Cemeteries	Prince William County GIS, Parcel Data	2018
Cultural & historic resources	Virginia Department of Historic Resources, Virginia Cultural Resource Information System (VCRIS)	2020
Existing electric infrastructure	Dominion Energy and PennWell	2020, 2018
Flood zones	FEMA	2020
Forested land cover	Prince William County, NLCD	2017, 2016
Hospitals	Prince William County	2019
Potential Contaminated Lands	US EPA, Virginia DEQ	2020
Land cover	National Land Cover Database (NLCD)	2016
Other existing utilities	Dominion Energy Virginia & PennWell	2020, 2018
Parcel data	Prince William County	2018
Protected lands	PADUS, Prince William County	2018, 2020
Railroads	Prince William County GIS	2020
Recreation	Prince William County and Google Earth	2017
Religious facilities	Prince William County	2016
Residences	Prince William County	2018
Roads	North American Detailed Streets and Prince William County	2005, 2020
Schools	Prince William County	2019
Slope	Digital Elevation Model Contours (LiDAR)	2011
Streams	USGS National Hydrography Dataset	2019
Threatened & endangered species	Virginia Department of Conservation and Recreation, Virginia Department of Wildlife Resources, US Fish and Wildlife Service Information, Planning, and Consultation Service	IPaC-2020
Topographic map	USGS	1994
Wetlands	USFWS National Wetland Inventory	2019
Zoning	Prince William County	2020



3.0 ROUTE EVALUATION

Following the data collection effort and field reconnaissance, three Alternative Routes were developed by Stantec in collaboration with the Company: Routes A-C (Figure 2. Alternative Routes, Appendix A). The Alternative Routes were developed to utilize the existing Line #2078 corridor exiting from the Possum Point 230 kV Substation and entering the northern side of the Possum Point 500 kV Substation where improvements to the substation are proposed, while also avoiding a coal ash pond to the west and the Potomac River to the east.

- Route A would construct a new approximately 0.94-mile 230 kV line entirely within Company-owned property. Located approximately 750-feet west of the existing Line #2078 alignment, Route A was the westernmost route. Route A would follow the existing 230 kV Line #2078 exit from the Possum Point 230 kV Substation, paralleling Possum Point Road for approximately 0.2 miles before turning north to the head to the Possum Point 500 kV Substation from the west.
- Route B would construct a new approximately 0.89-mile 230 kV line entirely within Company-owned property. Route B was located approximately 400-feet east of Route A (i.e., between Routes A and C). Like Route A, Route B would follow the existing 230 kV Line #2078 exist from the Possum Point 230 kV Substation, and then traveled parallel to the Cockpit Point Road before entering the Possum Point 500 kV Substation from the west at the same entry point as Route A.
- Route C would construct a new approximately 0.95-mile 230 kV line primarily within the existing overhead Line #2078 corridor located entirely within Company-owned property. Route C would follow the existing 230 kV Line #2078 exit from the Possum Point 230 kV Substation for the majority of the existing corridor, but then would extend further north approximately 0.29 mile of the new corridor within Company-owned property to enter the Possum Point 500 kV Substation at an eastern entry point.

Following the development of the Alternative Routes, a field review was conducted by Stantec on March 24, 2020. At this time, Stantec personnel completed a windshield survey of the Study Area and Alternative Routes from public vantage points. The purpose of the field review was to confirm existing land uses, verify sensitive receptors, and note any additional constraints that were not identified through public datasets. No additional constraints were documented.

Following field reconnaissance, the Alternative Routes were carried forward for quantitative and qualitative review. A comparative analysis was conducted using the evaluation criteria outlined in Section 2.2. Routes were evaluated based on environmental, land use, social, and engineering criteria groups to identify a preferred route that could be safely constructed and maintained, while minimizing impacts to human and natural resources (Table 3. Alternative Route Comparison, Appendix B).



3.1 ENVIRONMENTAL AND ENGINEERING CONSIDERATIONS

3.1.1 Environmental Considerations

Distinguishing factors within this criteria group are acreage of forested land and proximity to protected species occurrences. Routes A and B would require new corridor through forested land; therefore, these routes would require more forested clearing than Route C, the majority of which was located within existing corridor. All three routes were located within 1,000 feet of three documented bald eagle (*Haliaeetus leucocephalus*) nests. USFWS guidelines restrict all clearing, external construction, and landscaping activities within 660 feet of the nest to occur only outside the nesting season. Additionally, standard National Bald Eagle Guidelines recommend maintaining a 330-foot vegetated buffer and a time-of-year restriction on construction within 660-feet of a nest during the breeding season, which occurs between December 15 and July 15 in Virginia. Routes A and B would be located within the 330-foot buffer. Route C is the only route that would not intersect the 330-foot buffer; however, Route C would be located within the 660-foot eagle nest buffer.

None of the routes crossed wetlands, waterbodies, or 100-year floodplain features. Four environmental contamination sites were documented within the Study Area: three petroleum release sites and one registered tank facility. These sites were associated with the existing Possum Point Substation and were not located within 1,000 feet of any of the Alternative Routes. In addition to the documented occurrences noted above, Stantec completed a review of online databases for federal and state threatened and endangered species potentially occurring in the vicinity of the Project. The following databases were reviewed:

- USFWS Information, Planning, and Conservation (IPaC) Database
- USFWS Critical Habitat for Threatened and Endangered Species Mapper
- USFWS Bald Eagle Concentration Area Map
- Department of Game and Inland Fisheries (DGIF) Virginia Fish and Wildlife Information Service (VAFWIS)
- DGIF Northern Long-eared Bat (NLEB) Winter Habitat and Roost Trees Map
- Virginia Department of Conservation and Recreation (DCR) Natural Heritage Data Explorer (NHDE)
- Center for Conservation Biology (CCB) Bald Eagle Nest Locator for Virginia

According to these databases, a total of seven plant and animal species listed as federally or state threatened or endangered were identified as potentially occurring near the Study Area; however, four of these species inhabit aquatic or damp habitats that are not found within any of the Alternative Route ROWs. Table 3 presents the list of these protected species and their state or federal protection status.

Table 3. Threatened and Endangered Species that may occur within Study Area

Species	Habitat	Designated Status
Mammal		
Northern long-eared bat (<i>Myotis septentrionalis</i>)	Prefers old-growth forests with hibernation occurring primarily in caves.	FT, ST



POSSUM POINT 2ND TRANSFORMER AND NEW 230 KV TIE LINE #2216

Avian		
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Preferers large open water bodies, saltwater marshes, dry prairies, mixed pine, hardwood forests, wet prairies, marshes, and pine flatwoods.	(1)
Peregrine falcon (<i>Falco peregrinus</i>)	Species prefers undisturbed areas with a wide view, near water, and close to plentiful prey.	ST
Insect		
Virginia piedmont water boatman (<i>Sigara depressa</i>)	Occupies a wide range of aquatic habitats, including pools, ponds, backwaters of streams, and occasionally slow-flowing stream.	SE
Plants		
Harperella (<i>Ptilimnium nodosum</i>)	Grows along rocky shoals of clear swift-flowing streams. Requires a very narrow range of hydrologic conditions to survive.	FE
Sensitive joint-vetch (<i>Aeschynomene virginica</i>)	This species is generally found in the intertidal zone of coastal marshes in bare to sparsely vegetated substrates. It is typically found in the outer fringe of slightly brackish to freshwater marshes.	FT, ST
Small whorled pogonia (<i>Isotria medeoloides</i>)	Species requires mixed damp woods of acidic soils of dry to mesic second-growth, deciduous or deciduous-coniferous forests with an open herb layer, although occasionally dense ferns, moderate to light shrub layer, and a relatively open canopy.	FT, SE

FE – Listed as Endangered Species by the USFWS; FT- Listed as a Threatened Species by the USFWS; ST-State population listed as Threatened by the Virginia DGIF; SE- State population listed as Endangered by the Virginia DGIF.

(1) While not listed under the ESA, the Bald Eagle is federally protected under the Bald and Golden Eagle Protection Act.

The Study Area was also evaluated for the occurrence of Critical Habitat as defined by the *Endangered Species Act of 1973*, as amended and 50 CFR part 424. No Critical for any federally listed species was identified within the Study Area.

3.1.2 Engineering Considerations

Distinguishing factors within the engineering criteria group are electric and gas transmission features, transportation corridors, total route length, and proximity to airports. All routes would cross existing electric and gas transmission lines. Routes A and B both would cross electric transmission lines four times, while Route C crossed these features three times. All routes would cross a gas transmission pipeline at two locations and a hazardous liquid pipeline at one location. All routes would cross a railway operated by CSX at their exit from the Possum Point 230 kV Substation. Routes A and B would also require crossing Cockpit Point Road.

The nearest public airport to any of the Alternative Routes, the Maryland Airport, was located approximately 12 miles away. One private airport, within Marine Corps Base Quantico, was documented approximately 13,450 feet from all three routes. Additionally, one private landing strip, Buds Ferry Landing Strip, was located approximately 11,200 feet from all three routes.

3.2 LAND USE AND SOCIAL CONSIDERATIONS

3.2.1 Land Use Considerations

Differentiators within the land use criteria group include roadway paralleling, railroad paralleling, acreage of industrial and extractive land uses, and recreational areas within 1,000 feet. All the Alternative Routes were located entirely within property zoned as “Heavy Industrial.” Route C paralleled the RF&P railroad



for the greatest percentage of its total length and would also parallel a gas transmission pipeline for the greatest percentage of its length. Routes A and C would parallel state roadway for comparable percentages of their total route lengths: 21% and 28%, respectively. All Alternative Routes were located within 1,000 feet of one recreational feature: Medal of Honor Golf Course, located on the western side of Quantico Creek.

No residences were located within or directly adjacent to the Study Area at the time of the study. Additionally, no community facilities were identified within the Study Area. The entire Study Area was owned by the Company, with the exception of the RF&P railroad, which traverses the property. According to the *Prince William County Comprehensive Plan*, the Study Area is classified as a Suburban Area, Industrial Employment. There are no planned roadway widening or realignment projects or improvements to bicycle or pedestrian paths within the Study Area.

3.2.2 Social Considerations

Within the social criteria group, property ownership, parcels crossed, and battlefields crossed are the only criteria with recordable values. All the Alternative Routes would be located within one parcel owned by the Company. There were no architectural or archaeological resources noted within or adjacent to any of the Alternative Routes; however, one historic battlefield was noted: the Cockpit Point Battlefield. The Alternative Routes would be located entirely within the battlefield boundary, and all routes were located almost entirely within the core battlefield boundary. No cemeteries were identified within the Study Area.

Although not within any of the Alternative Routes, three known archaeological sites were identified along the western periphery of the Study Area, west of Possum Point Road. The northern most site (DHR ID# 44PW0442) is a prehistoric domestic temporary camp, the larger resource just to the south (DHR# 44PW0385) is a terrestrial, open air site, and the southernmost site (DHR ID# 44PW2029) is a pre-contact temporary camp.

3.3 RESULTS AND DISCUSSION

Quantitative results for the three Alternative Routes varied most between the land use and environmental groups. Route A would intersect the 330-foot buffer of one of the eagle nests and the 660-foot buffer of all three nests. Route B would intersect both the 330-foot buffer and the 660-foot buffer of all three nests. Route C would intersect the 660-foot buffer of two of the nests. Route C would require the least amount of forested clearing, due to primarily being located within an existing corridor. Total route lengths were comparable among the three Alternative Routes; however, Routes B and C would both require one less turn angle greater than 20 degrees than Route A.

Route A had the greatest percentage of its total route length paralleling state roadways due to the portion of its alignment paralleling Possum Point Road. Route C would cross two less roadways than Routes A and B. All Routes are completely contained within land owned by Dominion Energy Virginia on the same parcel and would avoid wetland or water features.



POSSUM POINT 2ND TRANSFORMER AND NEW 230 KV TIE LINE #2216

Based on this analysis, Stantec recommended Route C as the Preferred Route (Figure 5. Preferred Route – Route C, Appendix A). Route C would require less forested clearing and had the fewest roadway crossings. Additionally, Route C was located entirely outside of the 330-foot eagle nest buffers associated with the three eagles' nests in the vicinity. Given its location within the existing transmission corridor, it was determined that the construction of Route C would minimize impacts to forested land, threatened and endangered species, and avoid conflicts with existing transmission lines in the area.

In addition to the land use and environmental results discussed above, the Company identified constraints to the construction of Routes A and B. Specifically, Routes A and B would have to be routed around an existing 500 kV tower. Attempting to route around this existing tower within Company-owned property created conflicts with an existing road, two 500 kV lines, and the Possum Point 500 kV Substation to the east, and conflicts with the coal ash pond and two 500 kV lines to the west, which would most likely need to be raised to allow for the crossings. As such, the Company rejected Routes A and B as not viable.



4.0 PREFERRED ROUTE DESCRIPTION

Route C would exit the Possum Point 230 kV Substation to the west, and would be co-located with the existing transmission corridor, Line #2078, for approximately 0.7 mile before deviating to the east of the Possum Point 500 kV Substation. Route C would then tie into the northern side of the substation, where substation improvements are proposed. Route C is approximately 0.95 mile in length, is located within Company-owned property, and would be built almost entirely within the existing 100-foot wide transmission corridor.

4.1 LAND USE AND SOCIAL CONSIDERATIONS

The Preferred Route would not be located within 1,000 feet of any known historic structures or cemeteries and did not have any known archaeological resources within its corridor; however, the Preferred Route is within the core boundary of the Cockpit Point Battlefield. The majority of the Preferred Route is within the existing transmission corridor and the entire corridor is zoned as heavy industrial. Land immediately adjacent to Route C consists of the RF&P railroad to the east and an undeveloped, forested area to the west.

4.2 ENVIRONMENTAL AND ENGINEERING CONSIDERATIONS

Route C crosses the 660-foot buffer of a known eagle nest. Work to rebuild Line #2078 and construct Line #2216 will be required to adhere to USFWS guidelines restricting all clearing, external construction, and landscaping activities within 660 feet of the nest to occur only outside the nesting season. Additionally, standard National Bald Eagle Guidelines recommend maintaining a 330-foot vegetated buffer and a 660-foot time-of-year restriction on construction during the breeding season, which occurs between December 15 and July 15 in Virginia. No water, wetland, or geological features were identified within the corridor for Route C. Route C crosses electric transmission lines at three locations, a gas transmission pipeline at two locations, and a hazardous liquid pipeline at one location.



5.0 CONCLUSION

Route C was recommended as the Preferred Route because it minimizes clearing of forested lands, would be located almost entirely within the existing transmission corridor, and would be located furthest from existing bald eagle nests. Route C accommodates design characteristics that are safe, reliable, permittable, and can be constructed to maintain safely and reliably.

Route C would be located within 660-feet of multiple bald eagle nests, which may require additional field review and additional coordination with regulatory agencies prior to construction. It is recommended that the Company conduct further environmental review and consultation as soon as possible to allow sufficient time to secure any necessary environmental approvals. Additional coordination with CSX will also be required prior to construction for the crossing of the RF and P railroad. Based on the surrounding land uses, distance from bald eagle nests, and location within the existing transmission corridor, Route C was determined to be the most practicable location for the construction of new Line #2216.



APPENDIX A

Project Graphics

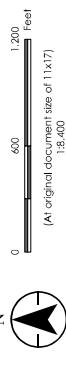
Figure No.



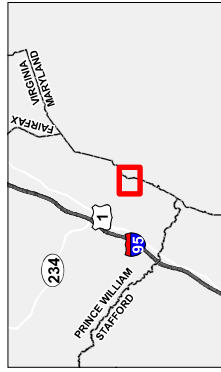
Figure No. 3

Alternative Routes with Environmental and Engineering Considerations

Client/Project	203401383
Dominion Energy Virginia	
Potomac Point 500kV Substation - 230kV Substation	
Transmission Line Siting	
Project Location	Prepared by: Stantec on 2020-05-20
Price William County, Virginia	Revised by: MJD on 2020-05-20
	Revised by: CDH on 2020-05-20

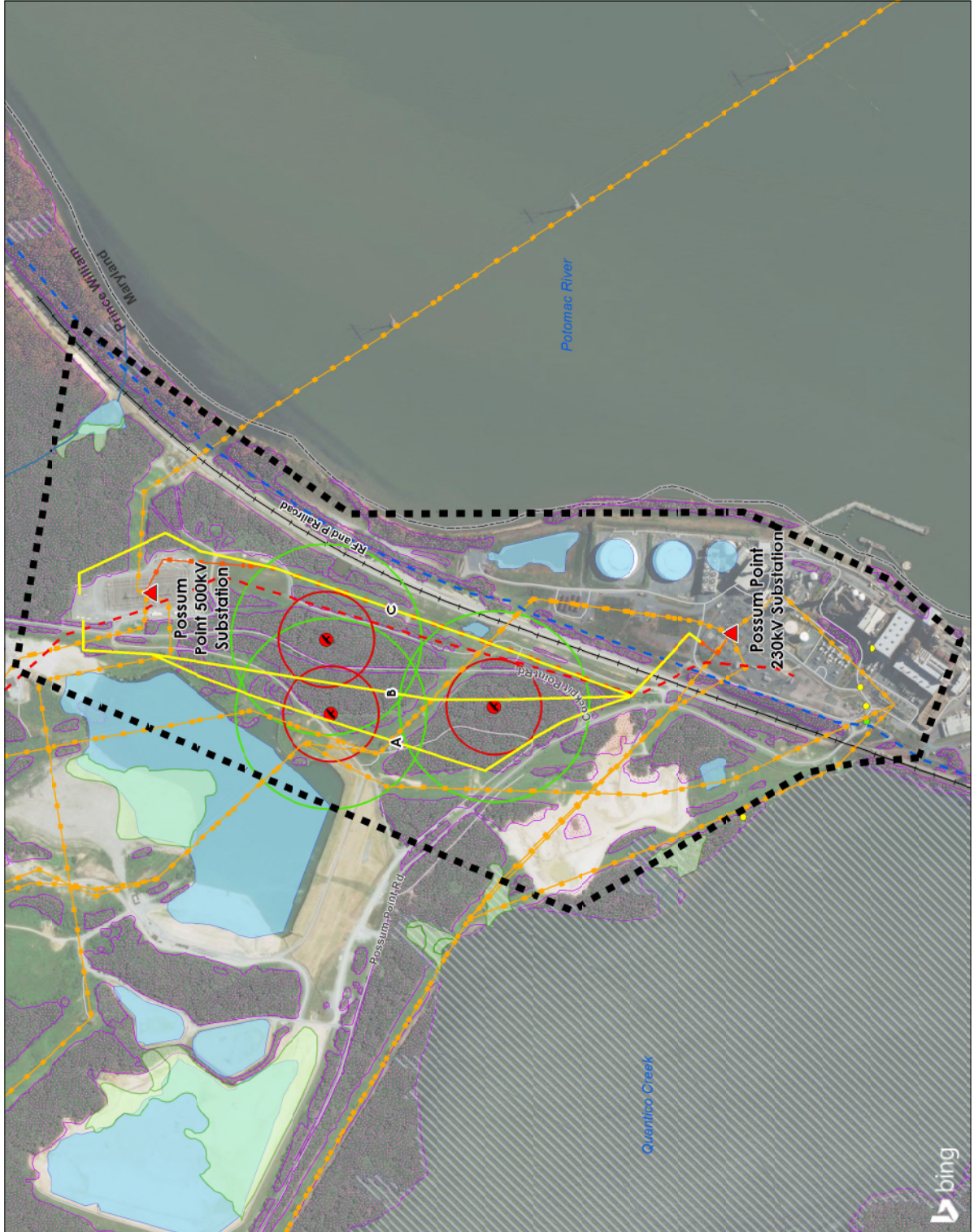


- Substation
- Alternative Routes
- Existing Line #2078
- Existing Dominion Transmission Line
- Railroad
- Petroleum Release Site
- Registered Tank Facility
- Gas Transmission Pipeline
- Hazardous Liquid Pipeline
- Study Area
- NWI Wetland Feature
- Tree Cover
- 100 - Year Flood Zone
- Documented Eagle Nest
- Eagle Nest 330-Foot Buffer
- Eagle Nest 660-Foot Buffer
- National Hydrography Dataset
- Stream/River
- Waterbody



Notes

1. Coordinate System: NAD 1983 StatePlane Virginia North FIPS 4501 Feet
2. Data Sources: Stantec, Dominion Energy Virginia, Stantec, PennWell, LCR, ESR, NAD, NWI, NHD, MCHM
3. Data Management: © Bing Maps
4. All content (including aerial imagery) is provided with permission from Microsoft Corporation

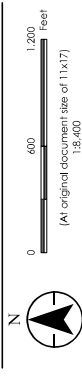


Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

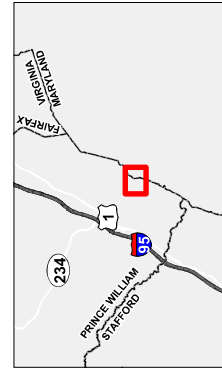
Figure No. 4

Alternative Routes with Social and Land Use Considerations

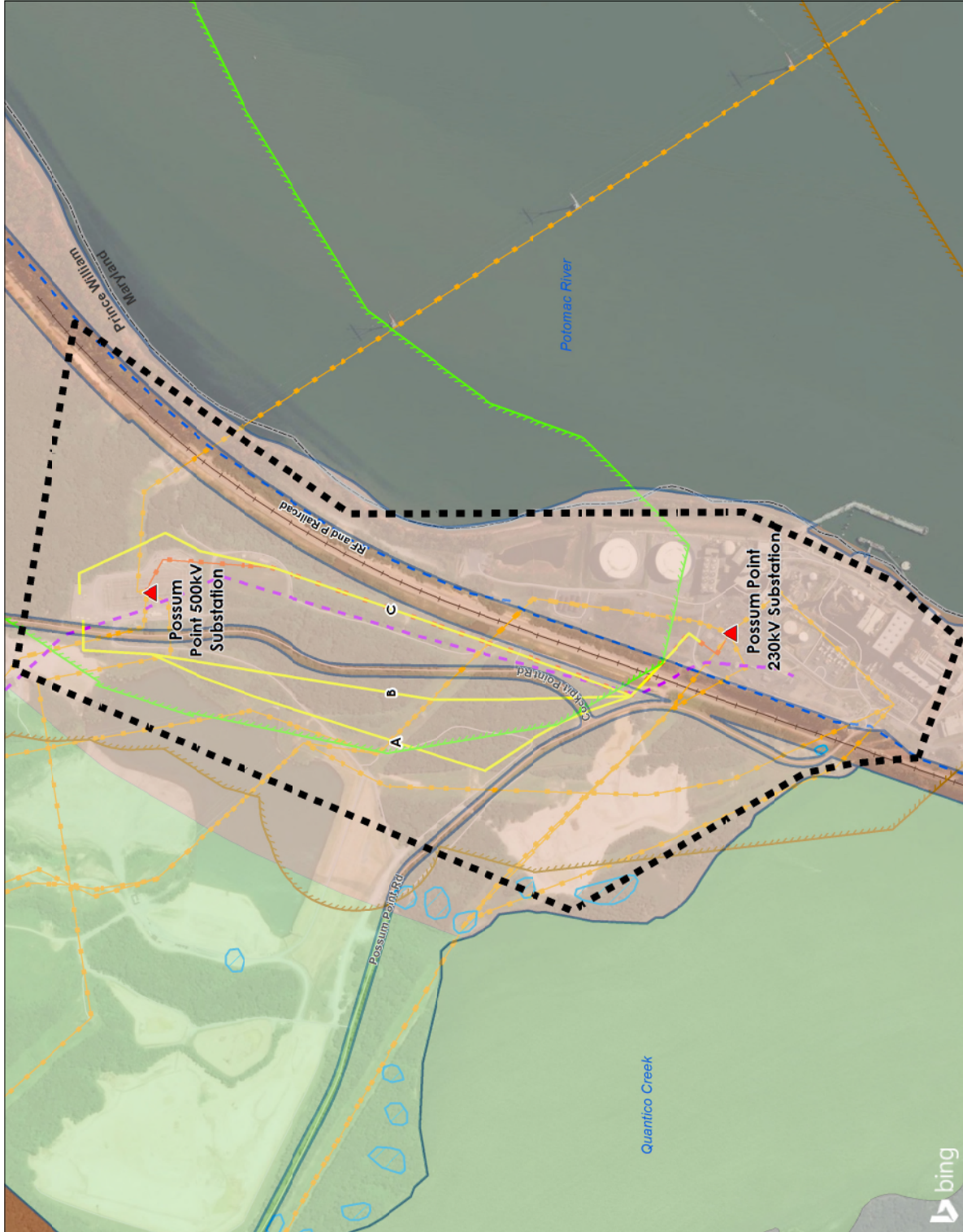
Client/Project
 Dominion Energy Virginia
 Possum Point 500kV Substation - 230kV Substation
 Transmission Line Siting
Project Location
 Prince William County, Virginia
 Prepared by: J. Williams
 Date: 10/1/2020
 Re: by MD on 2020-08-09
 Re: by CD on 2020-08-09



- ▲ Substation
- Alternative Routes
- Existing Line #2078
- Existing Dominion Transmission Line
- Study Area
- Railroad
- Gas Transmission Pipeline
- Hazardous Liquid Pipeline
- Dominion Energy Virginia Parcel
- Historical Sites
- Known Archaeology Site
- Historic Battlefield Boundary
- Historic Core Battlefield Boundary
- Land Use Zoning**
- Agricultural
- Federal
- Heavy Industrial
- Planned Mixed Residential



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia North FIPS 4501 Feet
 2. Data Source: Dominion Energy Virginia, Stantec, PennWell LCR, ESRI, NAD83
 3. Disclaimer: © Bing Maps
 4. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation



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Figure No.

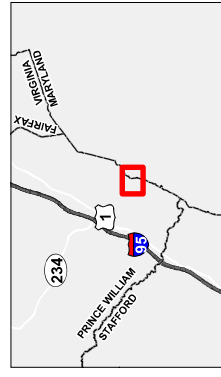
5

Preferred Route - Route C

Client/Project	203401383
Dominion Energy Virginia	
Possum Point 500kV Substation - 230kV Substation	
Transmission Line Siting	
Project Location	Prepared by: Dominion Energy Virginia
Price William County, Virginia	Revised by: M&D on 2020-05-09
	Revised by: M&D on 2020-05-09
	Revised by: M&D on 2020-05-09



- Substation
- Preferred Route - Route C
- Preferred Route Right-of-Way (100-Feet)
- Existing Line #2078
- Existing Dominion Transmission Line
- Railroad
- Study Area
- Dominion Energy Virginia Parcel



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia North FIPS 4501 Feet
 2. Data Source: Dominion Energy Virginia, Stantec, PennWell, LCR, ESR, NAD5
 3. Data Source: © Bing Maps
 4. Microsoft product screen shot(s) repeated with permission from Microsoft Corporation



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APPENDIX B

Project Tables

Table 3. Alternative Route Comparison

CRITERIA	Route A	Route B	Route C	RANGE
Environmental Criteria				
Forested wetlands in ROW (acres)	0.00	0.00	0.00	0.00
Herbaceous Wetlands in ROW (PEM / PSS) (acres)	0.00	0.00	0.00	0.00
Forested Land in ROW (acres)	5.66	6.62	2.88	3.74
Water crossings by centerline (count)	0	0	0	0
Floodplain crossed by centerline (feet)	0	0	0	0.00
Protected species (flora & fauna) known locations within 1,000 feet of centerline (count)	3	3	3	0
Protected habitat within ROW (acres)	0.00	0.00	0.00	0.00
Potential Environmental Contamination Sites within 1,000 feet of centerline (count)	0.00	0.00	0.00	0
Geological features within ROW (count)	0	0	0	0
Land Use Criteria				
Length of route paralleling federal and state roads (percent of total length)	28%	5%	21%	23%
Length of route paralleling local roads (percent of total length)	0%	0%	0%	0%
Length of route paralleling non-Dominion electric transmission lines (percent of total length)	0%	0%	0%	0%
Length of route paralleling non-Dominion gas transmission lines (percent of total length)	0%	0%	60%	60%
Length of route paralleling Dominion-owned electric transmission (percent of total length)	0%	0%	0%	0%
Length of route paralleling distribution lines (percent of total length)	0%	0%	0%	0%
Length of route paralleling railroad right-of-way (percent of total length)	0%	0%	34%	34%
Conservation lands within 1,000 feet of ROW (acres)	0.00	0.00	0.00	0.00
Federal and/or state lands within 1,000 feet of ROW (acres)	0.00	0.00	0.00	0.00
Agricultural land within ROW (acres)	0.00	0.00	0.00	0.00
Commercial and service land within ROW (acres)	0.00	0.00	0.00	0.00
Industrial and extractive land within ROW (acres)	13.62	12.95	13.50	0.67
Municipal Lands Crossed by ROW (acres)	0.00	0.00	0.00	0.00
Recreational Areas within 1,000 feet of ROW (count)	1.00	1.00	1.00	0
Social Criteria				
Residential buildings within 250 feet of ROW (count)	0	0	0	0
Residential buildings within 250-500 feet of ROW (count)	0	0	0	0
Property owners crossed by ROW (count)	1	1	1	0
Parcels crossed by ROW (count)	1	1	1	0
Schools within 1,000 feet of ROW (count)	0	0	0	0
Community facilities within 1,000 feet of ROW (count)	0	0	0	0
NRHP listed cultural resources within 1,000 feet of centerline (count)	0	0	0	0
State listed known resources within 1,000 feet of centerline (count)	0	0	0	0
Known archaeological sites within ROW (count)	0	0	0	0
Historic districts within 1,000 feet of centerline (count)	0	0	0	0
Cemeteries within or adjacent to ROW (count)	0	0	0	0
Historic Battlefields within ROW	13.62	12.95	13.50	0.67
Engineering Criteria				
Transmission line crossings (count)	4	4	3	1
Gas pipeline crossings (count)	3	3	3	0
Highway, interstate, state, local road crossing (count)	2	2	0	2
Railroad crossing (count)	1	1	1	0
Length of route co-located with existing transmission (percent of total length)	14%	14%	68%	54%
Turn angles >20 degrees (count)	5	4	4	1
Span length in excess of 400 feet (feet)	0.00	0.00	0.00	0.00
Airports and heliports within 20,000 feet of ROW (count)	2	2	2	0
Total route length (miles)	0.94	0.89	0.93	0.05

APPENDIX C

Data Collection Correspondence



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032
<http://www.fws.gov/northeast/virginiafield/>

In Reply Refer To:
Consultation Code: 05E2VA00-2020-SLI-2377
Event Code: 05E2VA00-2020-E-06548
Project Name: Possum Point - 230 kV Switch Yard Rebuild

March 04, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Chesapeake Bay Ecological Services Field Office

177 Admiral Cochrane Drive

Annapolis, MD 21401-7307

(410) 573-4599

Project Summary

Consultation Code: 05E2VA00-2020-SLI-2377

Event Code: 05E2VA00-2020-E-06548

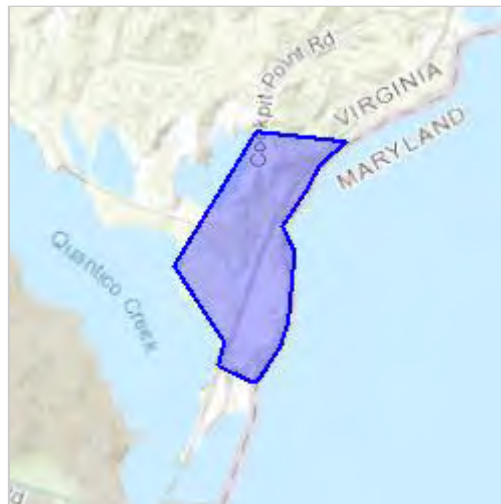
Project Name: Possum Point - 230 kV Switch Yard Rebuild

Project Type: TRANSMISSION LINE

Project Description: Siting study

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.54464065935141N77.28124130465216W>



Counties: Charles, MD | Prince William, VA

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Harperella <i>Ptilimnium nodosum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3739	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

REFUGE INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.
PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Ecological Services Field Office

177 Admiral Cochrane Drive

Annapolis, MD 21401-7307

Phone: (410) 573-4599 Fax: (410) 266-9127

<http://www.fws.gov/chesapeakebay/>

<http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html>

In Reply Refer To:

March 04, 2020

Consultation Code: 05E2CB00-2020-SLI-0712

Event Code: 05E2CB00-2020-E-01858

Project Name: Possum Point - 230 kV Switch Yard Rebuild

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office

177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Virginia Ecological Services Field Office

6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

Project Summary

Consultation Code: 05E2CB00-2020-SLI-0712

Event Code: 05E2CB00-2020-E-01858

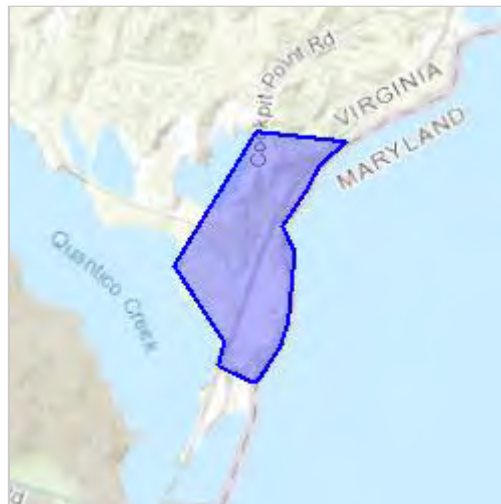
Project Name: Possum Point - 230 kV Switch Yard Rebuild

Project Type: TRANSMISSION LINE

Project Description: Siting study

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.54464065935141N77.28124130465216W>



Counties: Charles, MD | Prince William, VA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i>	Threatened
No critical habitat has been designated for this species.	
This species only needs to be considered under the following conditions:	
Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key	
Species profile: https://ecos.fws.gov/ecp/species/9045	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

REFUGE INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.
PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Assistant Regional Director-Ecological Services
5600 American Blvd. West
Bloomington, MN 55437-1458
Phone: (612) 713-5350 Fax: (612) 713-5292



IPaC Record Locator: 538-21129742

April 06, 2020

Subject: Consistency letter for the 'Possum Point - 230 kV Switch Yard Rebuild' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Lauren Pudvah:

The U.S. Fish and Wildlife Service (Service) received on April 06, 2020 your effects determination for the 'Possum Point - 230 kV Switch Yard Rebuild' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause “take”^[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action’s effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- Harperella, *Ptilimnium nodosum* (Endangered)

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

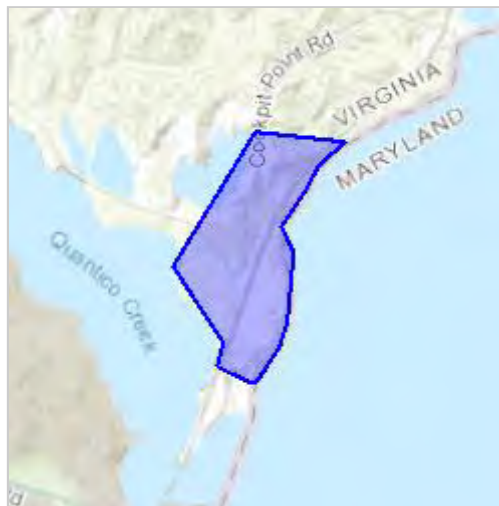
Possum Point - 230 kV Switch Yard Rebuild

2. Description

The following description was provided for the project 'Possum Point - 230 kV Switch Yard Rebuild':

Transmission line rebuild

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/38.54464065935141N77.28124130465216W>

**Determination Key Result**

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

No

2. Will your activity purposefully **Take** northern long-eared bats?

No

3. Is the project action area located wholly outside the White-nose Syndrome Zone?

Automatically answered

No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

6. Will the action involve Tree Removal?

Yes

7. Will the action only remove hazardous trees for the protection of human life or property?
Yes

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.



Memo

To:	Charles H. Weil Dominion Energy Siting and Permitting 10900 Nuckols Road, 4th Floor Glen Allen, VA 23060	From:	Becky Wilk Stantec Consulting Services Inc. 5209 Center Street Williamsburg, VA 23188
File:	203401924	Date:	February 17, 2023

Reference: Possum Point 2nd Transformer and New 230 kV Tie Line #2216 Route Review Study Update

This memo describes any updates that have occurred since the Possum Point 2nd Transformer and New 230 kV Tie Line #2216 Route Review Study (Study) was completed on July 29, 2020.

The Company notes it is anticipated that the US Fish and Wildlife Service (USFWS) will “up-list” the Northern Long Eared Bat (*Myotis septentrionalis*) from threatened to endangered as of April 1, 2023. It is anticipated that the ESA 4(d) Rule will no longer be applicable to use on projects and the new regulations will come into effect. If tree clearing becomes necessary during this time, then a presence/absence survey with negative results will be required. The survey window is May 15 to August 15. This does not change the results of the Study as the Preferred Route has the least amount of tree clearing. Additionally, harperella (*Ptilimnium nodosum*) was listed on the USFWS Information, Planning, and Conservation (IPaC) Database in March 2020 for the Study Area. As of February 2023, harperella no longer appears on the IPaC search for the Study Area. This has no effect on the Study since suitable habitat was not present for any of the alternatives.

The 2020 Study results and conclusions appear to remain unchanged as of February 17, 2023.

Stantec Consulting Services Inc.

Becky Wilk

Senior Environmental Scientist
Phone: (757) 603-4528
Becky.Wilk@stantec.com

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: To limit service disruption to the affected load area, the Company plans to take segments of Lines #237, #2022, #2078, #215, #2001, and #560, Possum Point 500 kV Substation Bus and Possum Point 230 kV Substation Bus #3 out of service in 10 separate sequential outages. The outages are sequenced to allow the adjacent infrastructure to adequately provide service to connected customers while certain lines and equipment are out of service. The work will be done during non-peak load times. This strategy will allow the grid to be in normal and optimal configuration during peak load times and available to respond to contingency issues should they arise. Assuming a final order by May 1, 2024, as requested in Section I.H, the current plan is to start construction by July 15, 2024, and to complete construction of the project by November 30, 2025.

The Company has requested four outages from PJM for Lines #237, #2022, #2078, #215, #2001, and #560, Possum Point 500 kV Substation Bus, and Possum Point 230 kV Substation Bus #3 during the Fall of 2024. The eDart Numbers for those outages are 1033838, 1033821, 1033734 and 1033722.

The Company has also requested three outages from PJM for Lines #2078 and #560, Possum Point 500 kV Substation Bus, and Possum Point 230 kV Substation Bus #3 during the Spring of 2025. The eDart Numbers for those outages are 1033811, 1033864 and 1033904.

The Company has also requested three outages from PJM for Line #2078, Possum Point 500 kV Substation Bus, and Possum Point 230 kV Substation Bus #3 during the Fall of 2025. The eDart Numbers for those outages are 1033916, 1033921 and 1033925.

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 the Guidelines contains a tool routinely used by the Company in routing its transmission line projects.

The Company utilized Guideline #1 (existing rights-of-way should be given priority when adding additional facilities) by siting the proposed Project within an existing transmission corridor.

By utilizing the existing transmission corridor, the proposed Project will minimize impact to any site listed on the National Register of Historic Places (“NRHP”). Thus, the Project is consistent with Guideline #2 (where practical, rights-of-way should avoid sites listed on the National Register of Historic Places). See Section III.A for a discussion of the Stage I Pre-Application Analysis prepared by Stantec, which is included with the DEQ Supplement as Attachment 2.I.2. The Company will coordinate with the Virginia Department of Historic Resources (“VDHR”) through review of the Stage I Pre-Application Analysis regarding these initial findings.

The Company has communicated with a number of local, state, and federal agencies 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). See Section III.B and the DEQ Supplement.

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

The Company also utilizes recommended guidelines in the clearing of transmission line rights-of-way, constructing facilities, and maintaining the corridor after construction. Moreover, secondary uses of rights-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.**

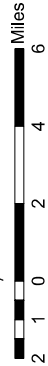
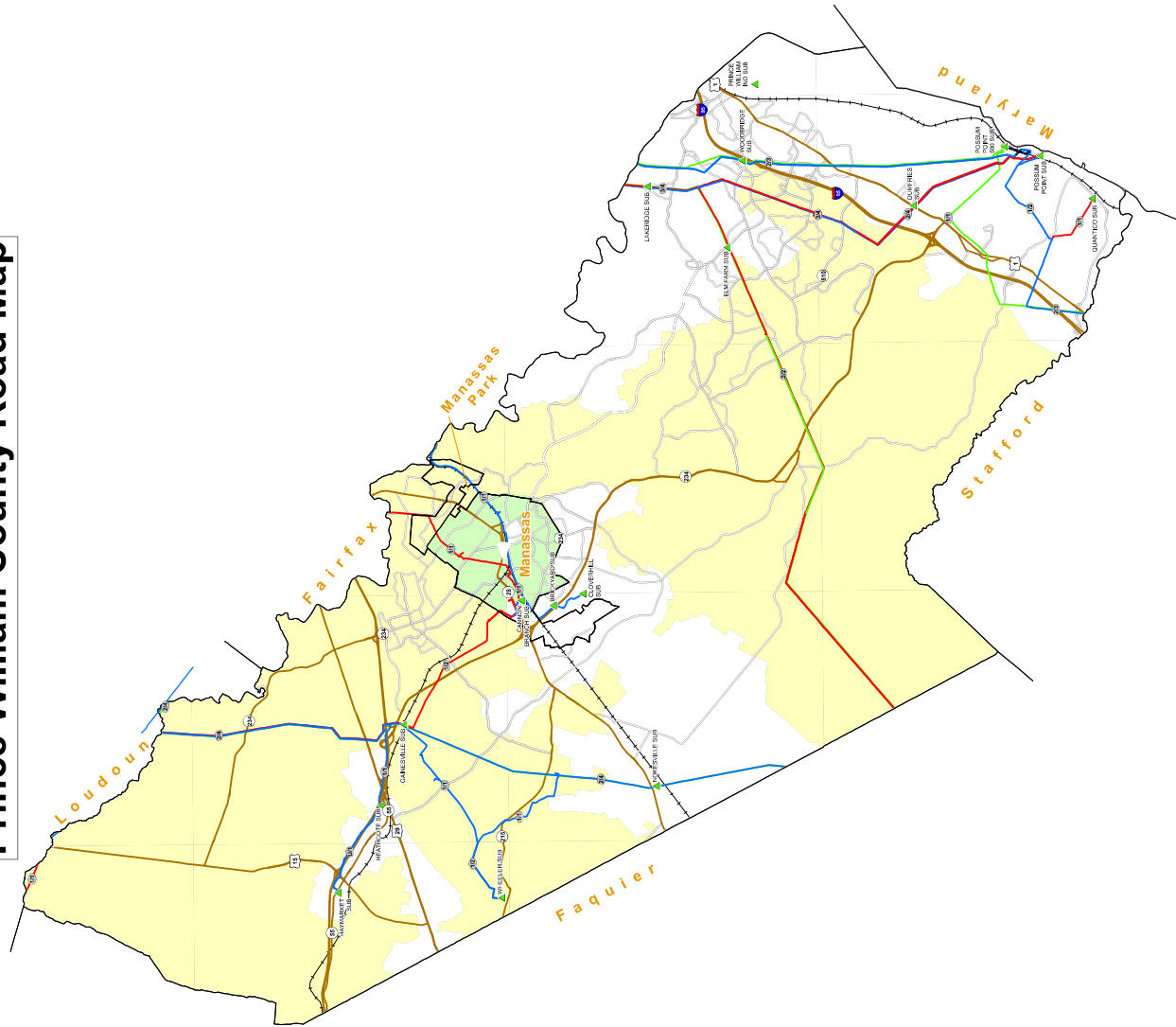
Response: a. The Project traverses Prince William County, Virginia, for approximately 0.95 miles and is located within Dominion Energy Virginia’s service territory.

 b. An electronic version of the Virginia Department of Transportation “General Highway Map” for Prince William County will be filed with the Application. A reduced copy of the map is provided as Attachment II.A.12.b.

Prince William County Road Map



This digital map depicts the Virginia Electric and Power Company ("Company") transmission facilities in this county as of November 2012. The map includes existing transmission facilities ("TSC") and any proposed transmission facilities in this county, as of November 2012. The map is based on data provided by the Company and is not intended to be used for any purpose other than the approved county maps.



*VDOT and other road data obtained from Navies and County data, current as of November 2012.

Prince William

VIRGINIA ELECTRIC AND POWER COMPANY
PAPERWORK TO TRANSMISSION LINES AND
SUBSTATIONS SHOWN IN BLACK LINES
ON THIS MAP.

IS NOT OPPOSED TO SUCH CONSTRUCTION IN
ITS SERVICE TERRITORY.

SIGNATURE
DATE

TITLE

Legend

----- Proposed Possum Point Second Transformer and 230kV Tie Line
⑤ Number of Lines of Structures/Number of Circuits

▲ Existing Substation

115 kV

230 kV

500 kV

Provider Service Territory

City of Manassas

NOVEC

VEPCO

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: Lines #2078 and #2216 will be designed and operated at 230 kV with no anticipated voltage upgrade. The twin-bundled 636 ACSR conductors will have a transfer capability of 1047 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: Line #2078 will have three-phase twin-bundled 636 ACSR conductors arranged as shown in Attachments II.B.3.i-iii with one fiber optic shield wire. The last two spans at the 500 kV substation, the two spans crossing under existing 230 kV Lines #215, #2001, #237, and #2022, and the last span at the 230 kV substation will have an additional 7#7 alumoweld shield wire. The twin-bundled 636 ACSR conductors will meet the required 1047 MVA transfer capability.

Line #2216 will have three-phase twin-bundled 636 ACSR conductors arranged as shown in Attachments II.B.3.i-iv with one fiber optic shield wire. The last four spans at the 500 kV substation, the two spans crossing under existing 230kV Lines #215, #2001, #237, and #2022, and the last span at the 230 kV substation will have an additional 7#7 alumoweld shield wire. The twin-bundled 636 ACSR conductors will meet the required 1047 MVA transfer capability.

II. DESCRIPTION OF THE PROPOSED PROJECT

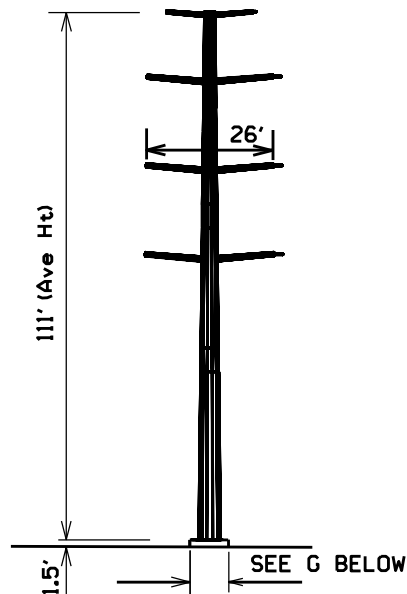
B. Line Design and Operational Features

- 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.i-v.

DOUBLE CIRCUIT DOUBLE DEADEND STEEL POLE

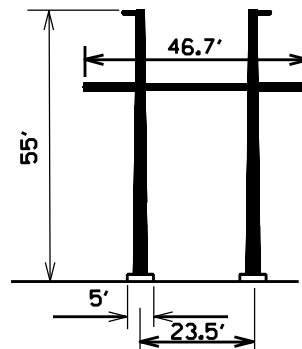
PRELIMINARY

PROPOSED STRUCTURES

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:
SEE ATTACHMENT 11.B.5
 - b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE: THE SINGLE SHAFT STEEL POLE ALLOWS THE INSTALLATION OF A SECOND 230kV CIRCUIT IN THE EXISTING CORRIDOR.
 - c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:
5 AND 0.8 MILES LINE 2078 (0.95 MILES LINE 2216)
 - d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:
GALVANIZED STEEL TO RESEMBLE EXISTING CONCRETE POLES
 - e. FOUNDATION MATERIAL: CONCRETE (Str 2078/3, 4, & 6)
H-PILE WITH CONCRETE CAP (Str 2078/7 & 8)
 - f. AVERAGE WIDTH AT CROSSARM: 26'
 - g. AVERAGE WIDTH AT BASE: 6.5' DIAMETER (RANGE OF 6'-7.5' FOR Str 2078/3, 4, & 6)
11'x5' PEDESTAL (Str 2078/7 & 8)
 - h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 120 FEET, 100', AND 111'
(DOES NOT INCLUDE FOUNDATION REVEAL)
 - i. AVERAGE SPAN LENGTH: 532 FEET (RANGE 238 - 990 FEET) (LINE 2078)
508 FEET (RANGE 139 - 990 FEET) (LINE 2216)
 - j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 22.5'
- NOTE: Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.

SINGLE CIRCUIT STEEL H-FRAME

PRELIMINARY

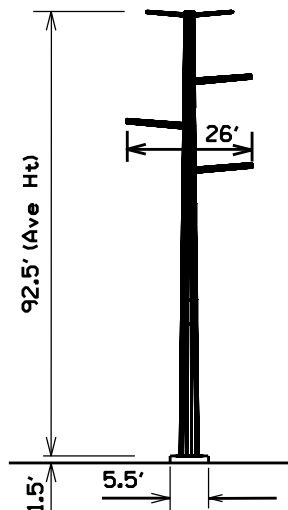
PROPOSED STRUCTURES

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE: THE H-FRAME STRUCTURE PLACES THE CONDUCTORS IN THE HORIZONTAL POSITION TO CROSS UNDER THE FOUR EXISTING 230kV LINES.
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:
1 AND 0.8 MILES (LINE 2078)
1 AND 0.95 MILES (LINE 2216)
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:
GALVANIZED STEEL TO RESEMBLE EXISTING CONCRETE POLES
- e. FOUNDATION MATERIAL: CONCRETE
- f. AVERAGE WIDTH AT CROSSARM: 46.7
- g. AVERAGE WIDTH AT BASE: 28.5'
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 55 FEET, 55', AND 55'
(DOES NOT INCLUDE FOUNDATION REVEAL)
- i. AVERAGE SPAN LENGTH: 532 FEET (RANGE 238 - 990 FEET) (LINE 2078)
508 FEET (RANGE 139 - 990 FEET) (LINE 2216)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 22.5'

NOTE: Information contained on drawing is to be considered preliminary
in nature and subject to change based on final design.

SINGLE CIRCUIT STEEL POLE

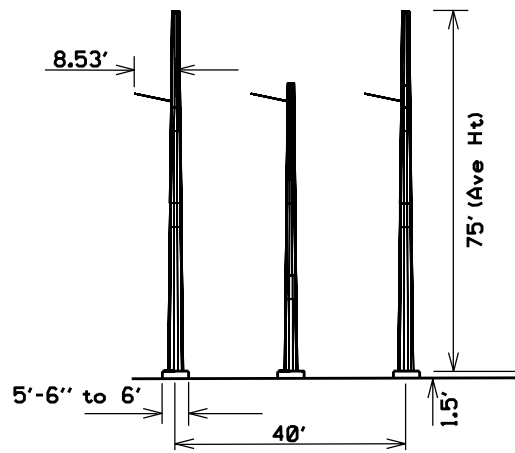
PRELIMINARY

PROPOSED STRUCTURES

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:
SEE ATTACHMENT II.B.5
 - b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE: THE SINGLE SHAFT STEEL POLE REDUCES THE FOOTPRINT OF THE STRUCTURE
 - c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:
1 AND 0.8 MILES (LINE 2078)
1 AND 0.95 MILES (LINE 2216)
 - d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:
GALVANIZED STEEL TO MATCH REBUILT LINE 2078
 - e. FOUNDATION MATERIAL: CONCRETE
 - f. AVERAGE WIDTH AT CROSSARM: 26'
 - g. AVERAGE WIDTH AT BASE: 5.5'
 - h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 100 FEET, 85', AND 92.5'
(DOES NOT INCLUDE FOUNDATION REVEAL)
 - i. AVERAGE SPAN LENGTH: 532 FEET (RANGE 238 - 990 FEET) (LINE 2078)
508 FEET (RANGE 139 - 990 FEET) (LINE 2216)
 - j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 22.5'
- NOTE: Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.

SINGLE CIRCUIT STEEL 3-POLE

PRELIMINARY

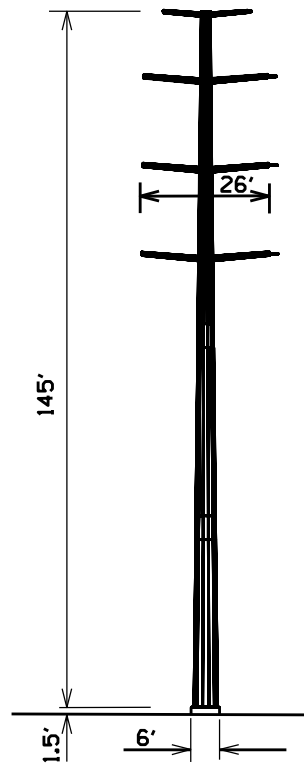
PROPOSED STRUCTURES

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:
THE 3-POLE STRUCTURE PLACES THE CONDUCTORS IN A HORIZONTAL ARRANGEMENT TO CROSS UNDER THE EXISTING 500kV LINE
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:
2 AND 0.95 MILES (LINE 2216)
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:
GALVANIZED STEEL TO MATCH REBUILT LINE 2078
- e. FOUNDATION MATERIAL: CONCRETE
- f. AVERAGE WIDTH AT CROSSARM: SEE ABOVE
- g. AVERAGE WIDTH AT BASE: SEE 45.75' (RANGE OF 45.5'-46')
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 90 FEET, 60', AND 75'
(DOES NOT INCLUDE FOUNDATION REVEAL)
- i. AVERAGE SPAN LENGTH: 508 FEET (RANGE 139 - 990 FEET) (LINE 2216)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 22.5'

NOTE: Information contained on drawing is to be considered preliminary in nature and subject to change based on final design.

DOUBLE CIRCUIT DOUBLE DEADEND STEEL POLE

PRELIMINARY

PROPOSED STRUCTURES

- a. MAPPING THAT IDENTIFIES EACH PORTION OF THE PREFERRED ROUTE:
SEE ATTACHMENT II.B.5
- b. RATIONALE FOR THE SELECTION OF THE STRUCTURE TYPE:
MAINTAINS THE CONDUCTORS IN THE EXISTING VERTICAL ARRANGEMENT AND RAISES THE LINES FOR THE PROPOSED 230kV CROSSING
- c. NUMBER OF EACH TYPE OF STRUCTURE AND LENGTH OF EACH PORTION OF THE R/W:
2 AND 0 MILES (LINE 237/2022 & 215/2001)
- d. STRUCTURE MATERIAL AND RATIONALE FOR THE SELECTION OF SUCH MATERIAL:
GALVANIZED STEEL TO MATCH REBUILT LINE 2078
- e. FOUNDATION MATERIAL: CONCRETE
- f. AVERAGE WIDTH AT CROSSARM: 26'
- g. AVERAGE WIDTH AT BASE: 6'
- h. MAX, MIN, AND AVERAGE STRUCTURE HEIGHTS: 145 FEET, 145', AND 145'
(DOES NOT INCLUDE FOUNDATION REVEAL)
- i. AVERAGE SPAN LENGTH: 553 FEET (RANGE 531 - 576 FEET FOR LINE 237)
552 FEET (RANGE 455 - 648 FEET FOR LINE 215)
- j. MINIMUM CONDUCTOR-GROUND CLEARANCE UNDER MAXIMUM OPERATING CONDITIONS: 22.5'

NOTE: Information contained on drawing is to be considered preliminary
in nature and subject to change based on final design.

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: Not applicable.

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: See Attachment II.B.5 for structure mapping.

See the table below for the existing and proposed heights of permanent structures related to the Project. The proposed approximate structure heights are from the conceptual design created to estimate the cost of the Project and are subject to change based on final engineering design. The approximate structure heights do not include foundation reveal.

Existing Structure Number	Existing Structure Height (ft.)	Proposed Structure Number	Proposed Structure Height (ft.)	Attachment II.B.3 Structure Type
2078/2	102	2078/2	100	II.B.3.iii
2078/3	107	2078/3	105	II.B.3.i
2078/4	80	2078/4	110	II.B.3.i
2078/5	60	N/A	N/A	N/A
2078/6	39	2078/5	55	II.B.3.ii
2078/7	65	2078/6	100	II.B.3.i
2078/8	85	2078/7	120	II.B.3.i
2078/9	80	2078/8	120	II.B.3.i
Minimum	39		55	
Maximum	107		120	
Average	77		101	



 Substation
 Existing Power Station
 Existing Structure to Remain
 Existing Structure to be Replaced
 Proposed Structure
 Project Limits



Project Location Prince William County Virginia	Client Project Dominion Energy Virginia Possum Point Second Transformer and New 230KV Tie Line #2216	Prepared by CDC on 2022-12-19 IRB # 2022-12-19 IRB # 2022-12-19 IRB # 2022-12-19	202401924
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Title
Structure Location Map

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

6. **Provide photographs for typical existing facilities to be removed, comparable photographs or representations for proposed structures, and 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) *Photographs for typical existing facilities to be removed.*

See Attachment II.B.6.a for representative photographs of the existing structures on Line #2078.

(b) *Comparable photographs or representations for proposed structures.*

See Attachment II.B.6.b for representative photographs of the structures proposed for the Project.

(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.*

Visual simulations showing the appearance of the proposed transmission structures are provided for identified historic properties where expected to be visible. These simulations were created using GIS modeling to depict whether the existing and proposed structures are or will be visible from historic properties. Attachment II.B.6.c includes maps illustrating the photo simulation locations, as well as photographs of existing structures and simulations of the proposed structures from selected key observation points (“KOPs”), where visible. The table identifies the historic properties evaluated.

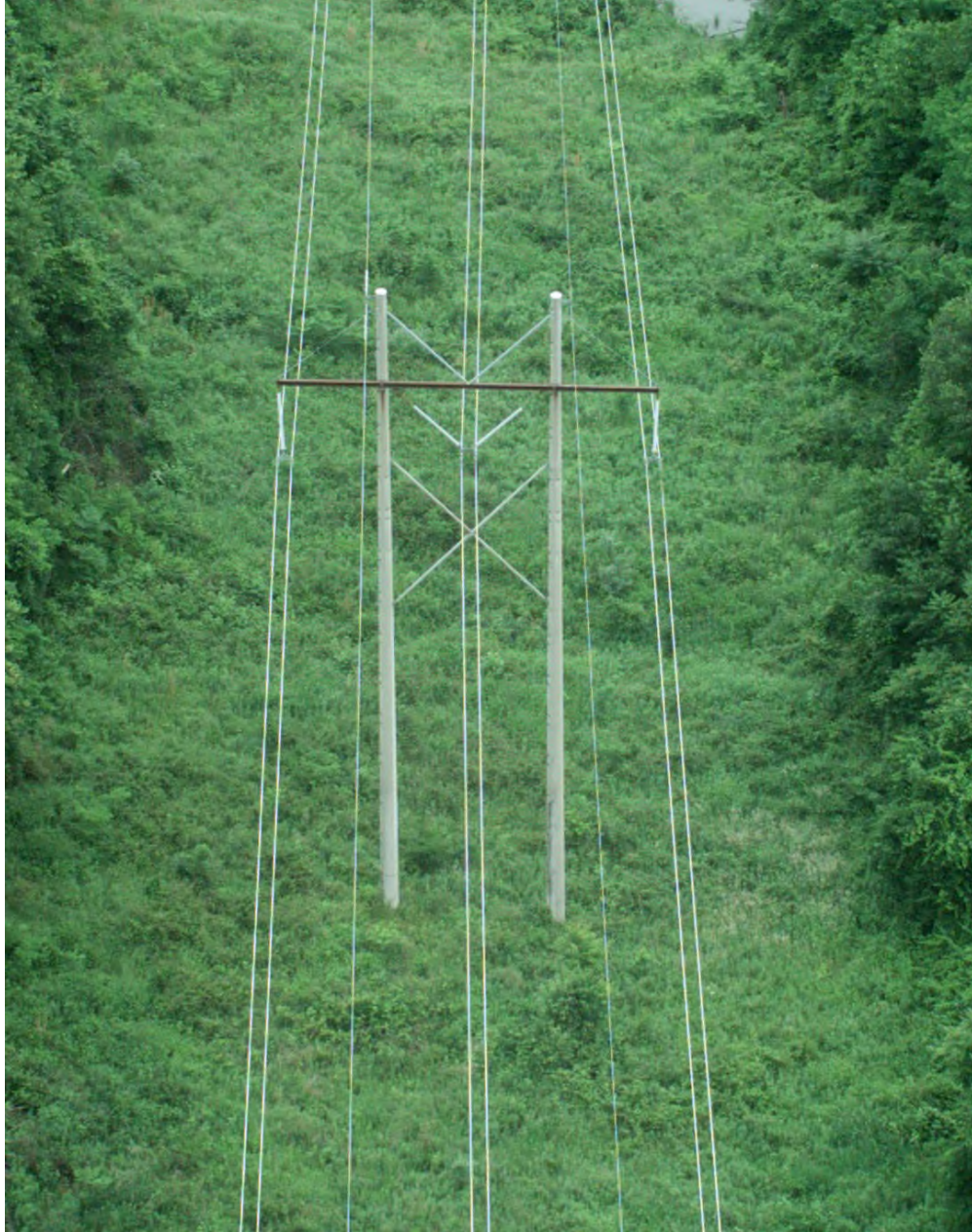
Resource Name	DHR #	KOP #	Comments
Quantico Marine Corps Base Historic District	287-0010	1	No visibility of the proposed structures at KOP#1
Cockpit Point Battlefield	076-5842	2, 3, 4	No visibility of the proposed structures at KOP #2; Proposed structures 2078/7, 2078/8, 2078/9 & 2216/9, 2216/10, 2216/11 & 2022/1 & 237/1 are visible from KOP#3;

			Proposed structures 2078/7 & 2216/9 are visible from KOP#4
Richmond, Fredericksburg & Potomac Railroad Historic District, and Richmond, Fredericksburg & Potomac Railroad	500-0001, 076-0301	4	Structures 2078/7 & 2216/9 are visible from KOP#4



Photograph provided by Dominion Energy

Existing Structure Type: Steel Monopole DDE - 2078/3



Photograph provided by Stantec

Existing Structure Type: Steel H-Frame Suspension - 2078/4



Photograph provided by Stantec

Existing Structure Type: Steel 3-Pole DDE - 2078/6



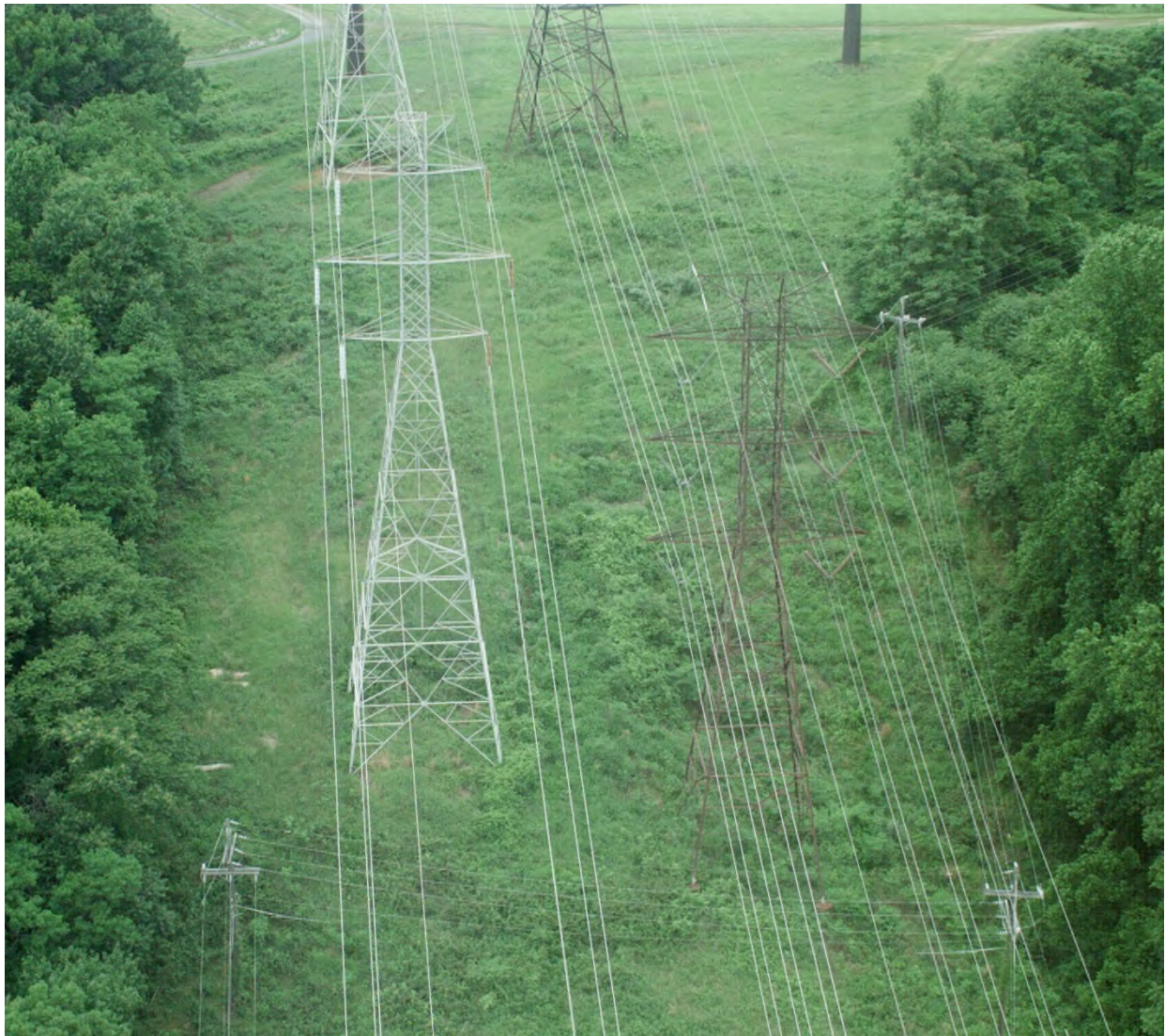
Photograph provided by Stantec

Existing Structure Type: Steel 3-Pole DDE Angle - 2078/9



Photograph provided by Stantec

Existing Structure Type: Steel H Frame Backbone - 2078/10



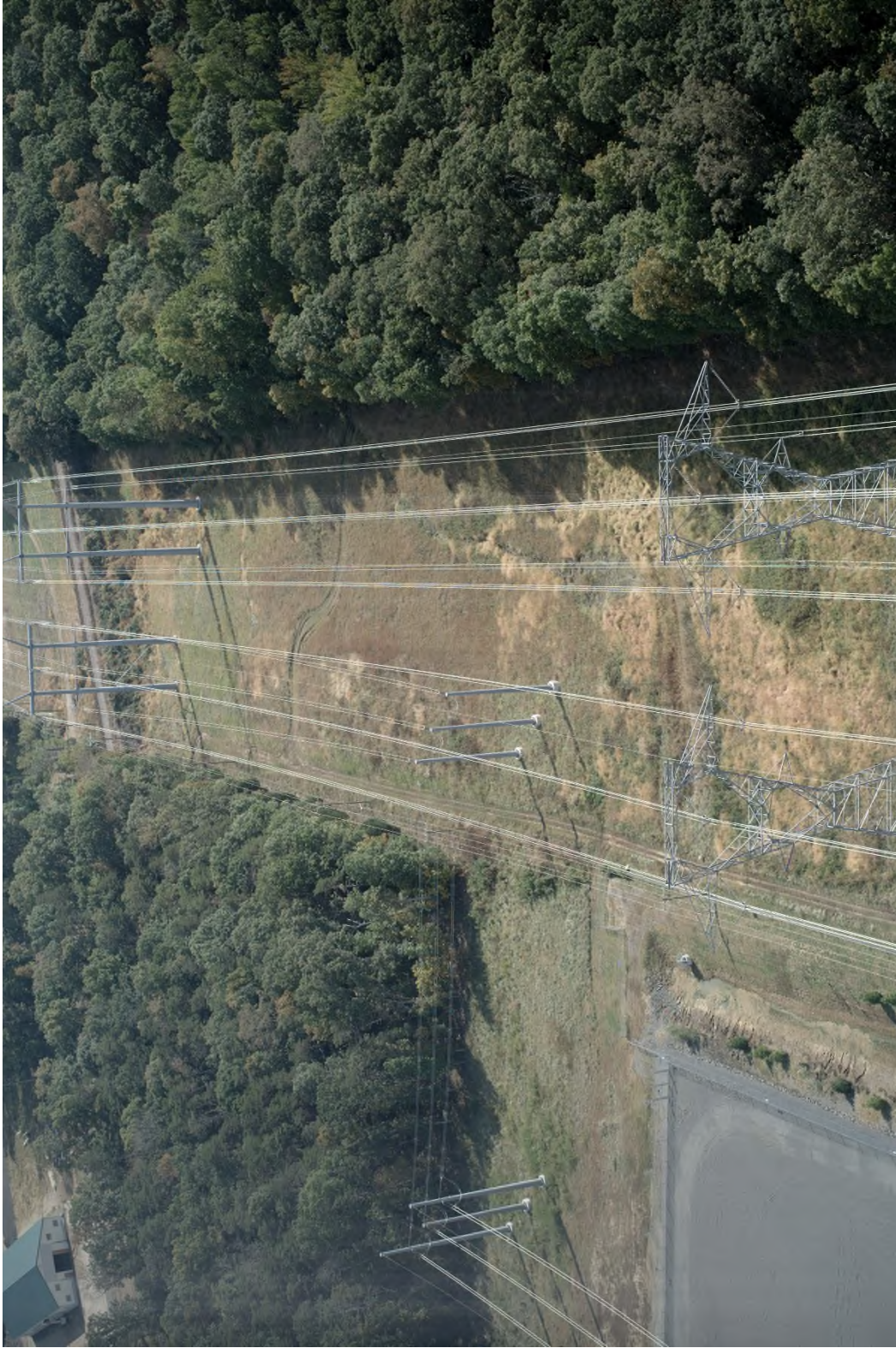
Photograph provided by Stantec

Existing Structure Type: Steel Lattice Tower



Photograph provided by Dominion Energy

Proposed Double Circuit DDE Steel Pole



Photograph provided by Dominion Energy



Proposed Single Circuit DDE Steel 3-Pole



Proposed Single Circuit DDE Steel Pole

Photograph provided by Dominion Energy





Photograph provided by Dominion Energy



Proposed Single Circuit DDE H-Frame

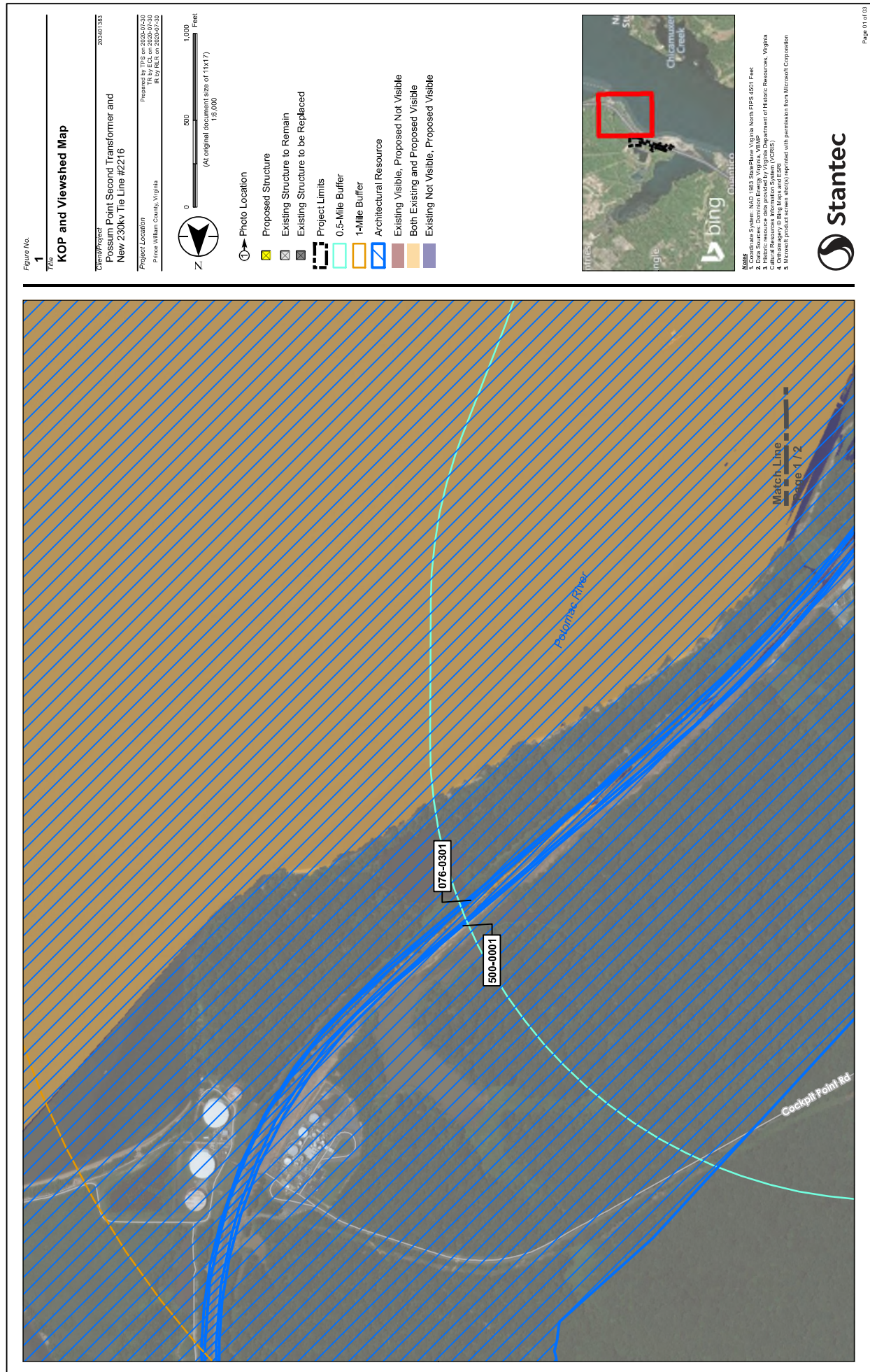


Figure No. 1

KOP and Viewshed Map

Client/Project
 Potomac River
 Potomac River
 New 230kv Tie Line #2216

Project Location
 Prince William County, Virginia

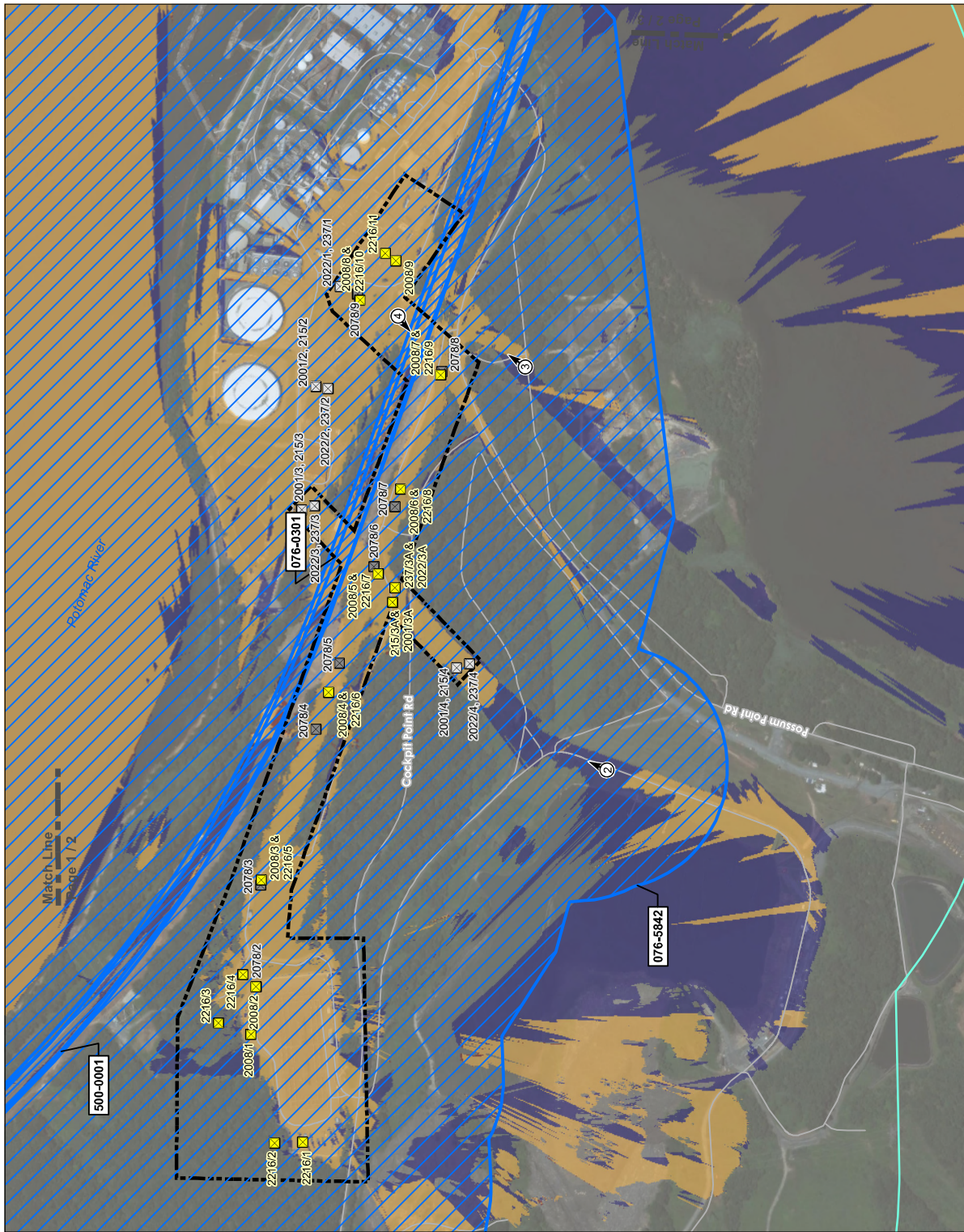
Prepared by TFS on 2/20/21-24
 R by ELS on 2/20/21-24

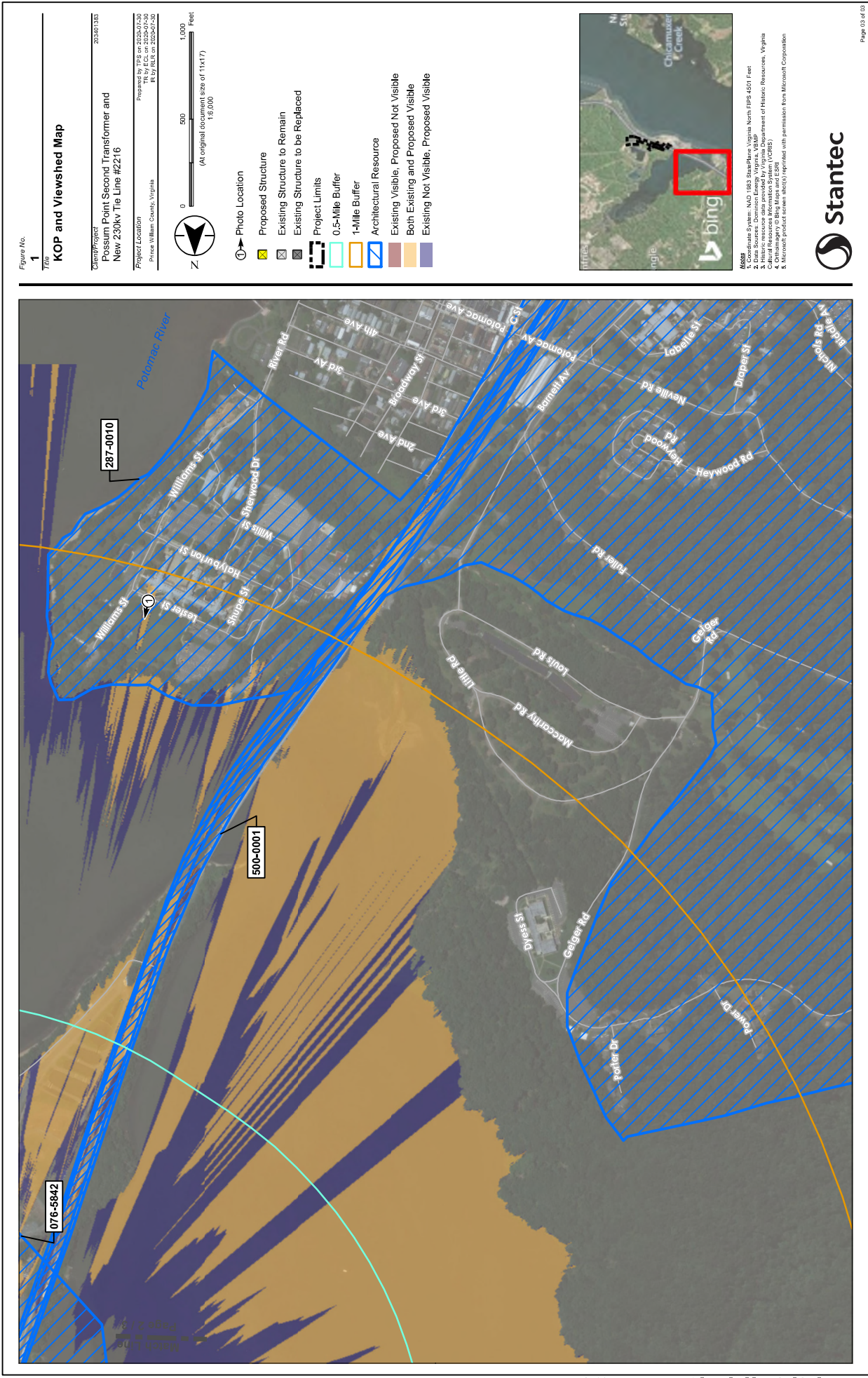


- ① Photo Location
- Proposed Structure
- Existing Structure to Remain
- Existing Structure to be Replaced
- Project Limits
- 0.5-Mile Buffer
- 1-Mile Buffer
- Architectural Resource
- Existing Visible, Proposed Not Visible
- Both Existing and Proposed Visible
- Existing Not Visible, Proposed Visible



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia North FIPS 4501 Feet
 2. Data Sources: Dominion Energy Virginia, VBLUP
 3. Cultural Resources: Virginia Department of Historic Resources, Virginia
 Cultural Resources Information System (VCRIS)
 4. Cultural Resources: Virginia Department of Historic Resources, Virginia
 Cultural Resources Information System (VCRIS)
 5. Microsoft Project and other data were updated with permission from Microsoft Corporation







Representation Provided by Stantec
 *Subject to final engineering

KOP 1: Existing
Quantico Marine Corps Base Historic District
(DHR #287-0010)





Representation Provided by Stantec
*Subject to final engineering



**KOP 1: Proposed
Quantico Marine Corps Base Historic District
(DHR #287-0010)**



Representation Provided by Stantec
*Subject to final engineering

**KOP 2: Existing (no visibility)
Cockpit Point Battlefield (DHR
#076-5842)**



Representation Provided by Stantec
 *Subject to final engineering

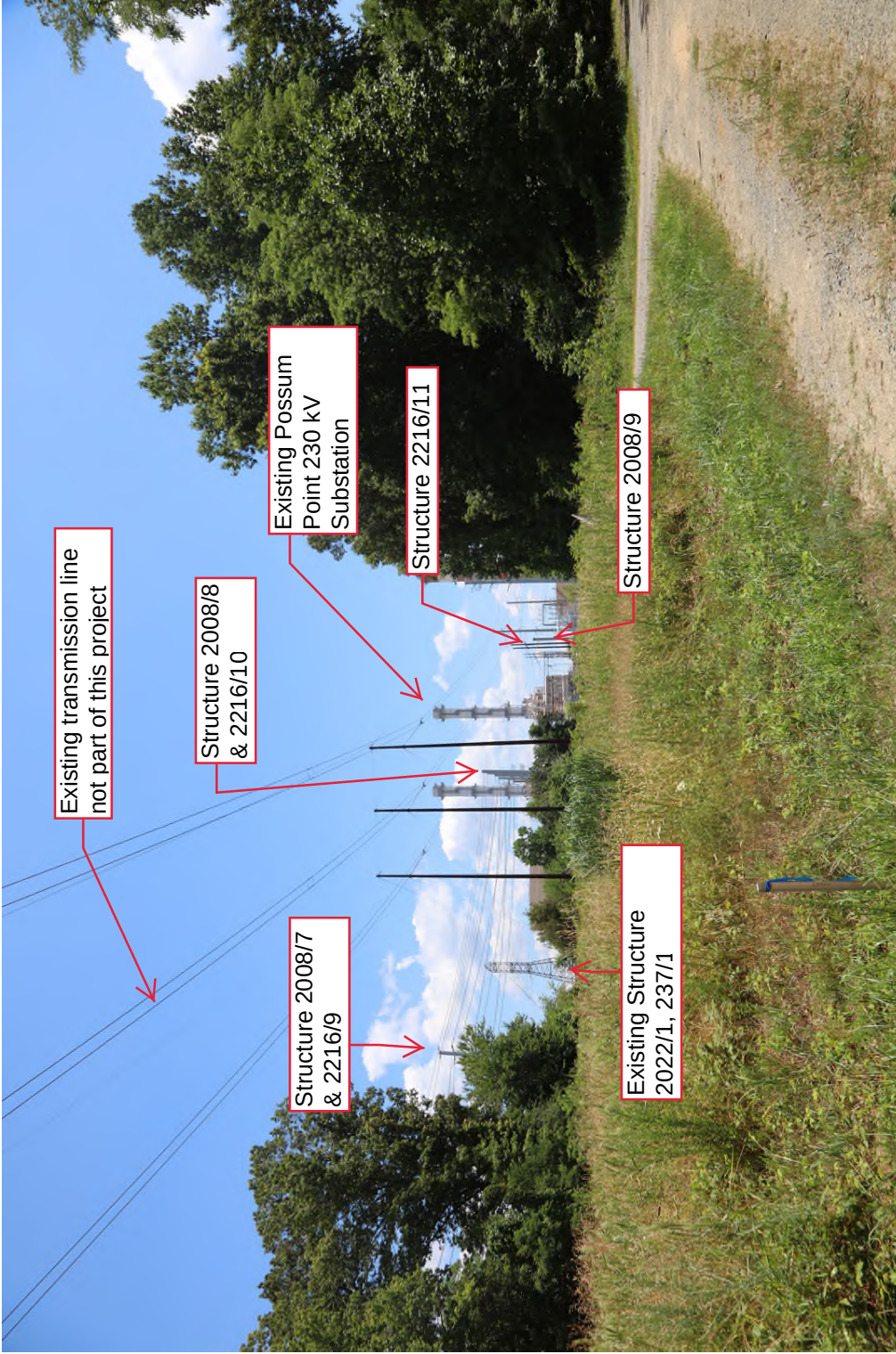


KOP 2: Guide- no visibility Cockpit Point Battlefield (DHR #076-5842)



Representation Provided by Stantec
*Subject to final engineering

**KOP 3: Existing
Cockpit Point Battlefield
(DHR #076-5842)**



Representation Provided by Stantec
 *Subject to final engineering

KOP 3: Proposed Cockpit Point Battlefield (DHR #076-5842)



Representation Provided by Stantec
 *Subject to final engineering

KOP 4: Existing
Richmond, Fredericksburg & Potomac Railroad
Historic District (DHR #500-0001); Cockpit Point
Battlefield (DHR #076-5842)



Representation Provided by Stantec
 *Subject to final engineering

**KOP 4: Proposed
 Richmond, Fredericksburg & Potomac Railroad
 Historic District (DHR #500-0001); Cockpit Point
 Battlefield (DHR #076-5842)**

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 will require the addition of substation equipment inside the Possum Point 500 kV Substation and the Possum Point 230 kV Substation, as described below.

The Possum Point 500 kV Substation requires the installation of a second 500-230 kV transformer bank. The bank will consist of four 280 MVA units (including a spare) and a sparing bus. A 500 kV circuit breaker and two switches will be added to the existing ring bus. A 230 kV circuit breaker and switches will be installed on the low side of the new transformer bank to create a new 230 kV line terminal. A new backbone structure will support the new transmission Line #2216 going from the Possum Point 500 kV Substation to the Possum Point 230 kV Substation. A set of risers/rigid bus conductors will be installed to connect the new line to the low side of the transformer bank. All the new substation equipment required for this Project will be installed inside the current substation footprint.

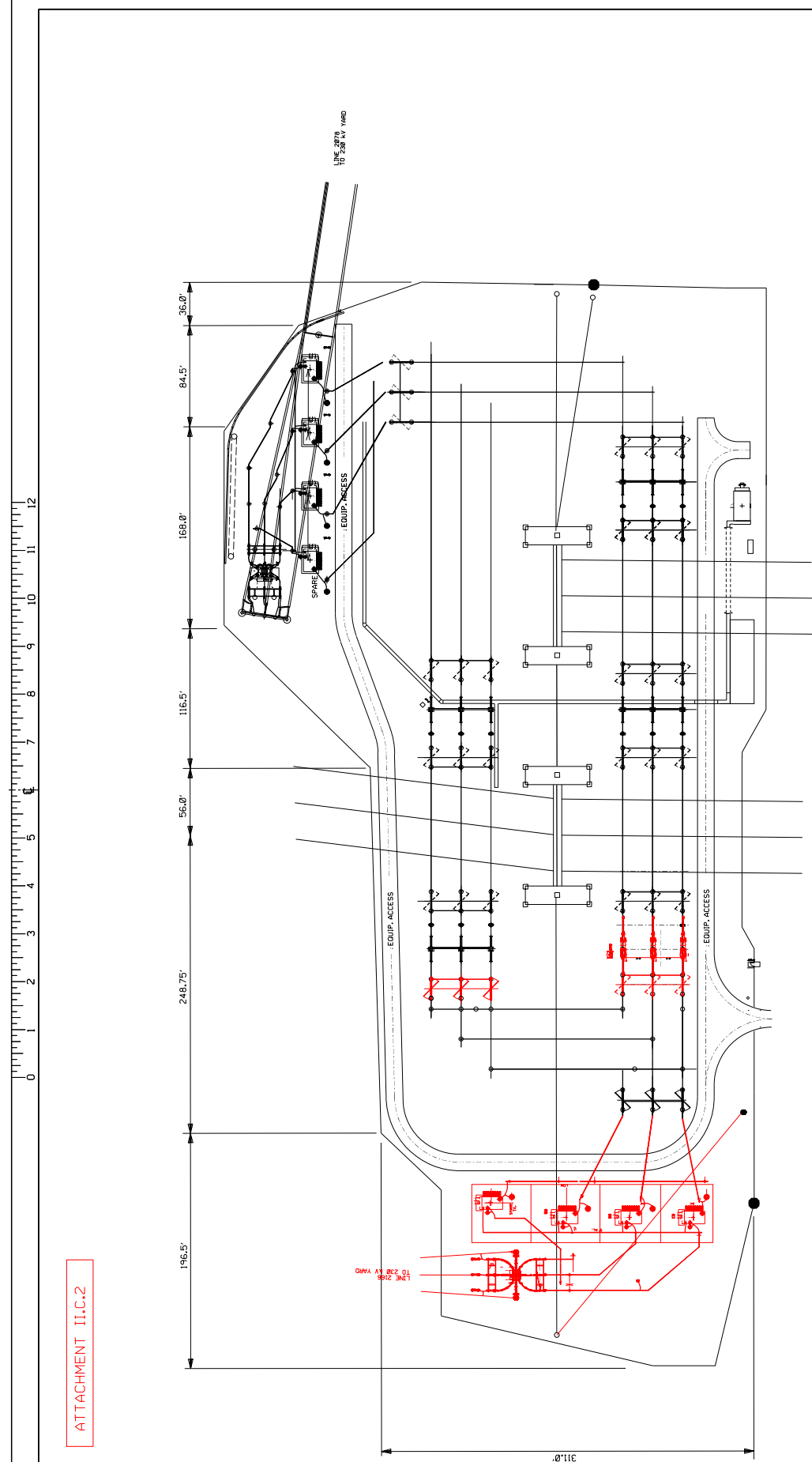
The Possum Point 230 kV Substation requires the installation of a 230 kV circuit breaker, switches and coupling capacity voltage transformers (“CCVTs”) to create a line position for a second 230 kV line coming from Possum Point 500 kV Substation. The existing 230 kV substation footprint will be expanded within Company-owned property (approximately 0.25 acres) to accommodate the new equipment. The existing 230 kV Line #2078 will be moved to the new backbone and the new Line #2216 will terminate on the current Line #2078 position to avoid transmission line crossings outside the substation.

The one-line and general arrangement for the Possum Point 500 kV Substation are provided as Attachment II.C.1 and Attachment II.C.2, respectively. The one-line and general arrangement for the Possum Point 230 kV Substation are provided as Attachment II.C.3 and Attachment II.C.4, respectively.



Drawn By: SB	Date 02-22-2023	Substation	POSSUM POINT 500KV
Approval	Date	Drawing No.	0695000Z

[illegible]

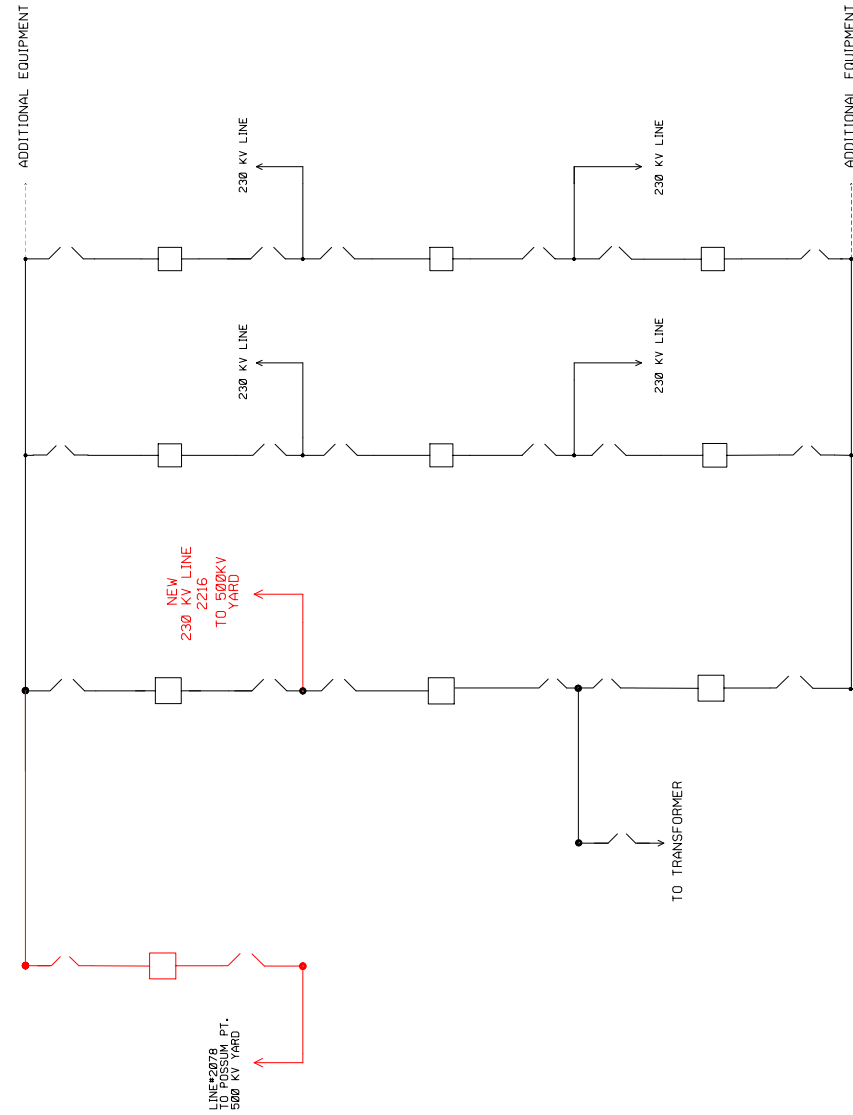


ATTACHMENT II.C.2

PRELIMINARY
NOT FOR CONSTRUCTION

Revisions		Project Information	
No.	Date	By	Checked/Approved
1	08/18/28	SB	
Description		Project Number	
ADD 500KV BUS, 500KV BUS, 500KV BUS		902745	
PRELIMINARY			
Project Name		Project No.	
GENERAL ARRANGEMENT PLAN		1 of 1	
POSSUM POINT 500 KV SUBSTATION		Scale	
PRINCE WILLIAM COUNTY, VIRGINIA		1"=100'	
Designed by		Date	
Approved		08/18/28	
E-M No.		Revision	
06/25/11		06/25/11	
COTED		06/25/11	
06/25/11		06/25/11	

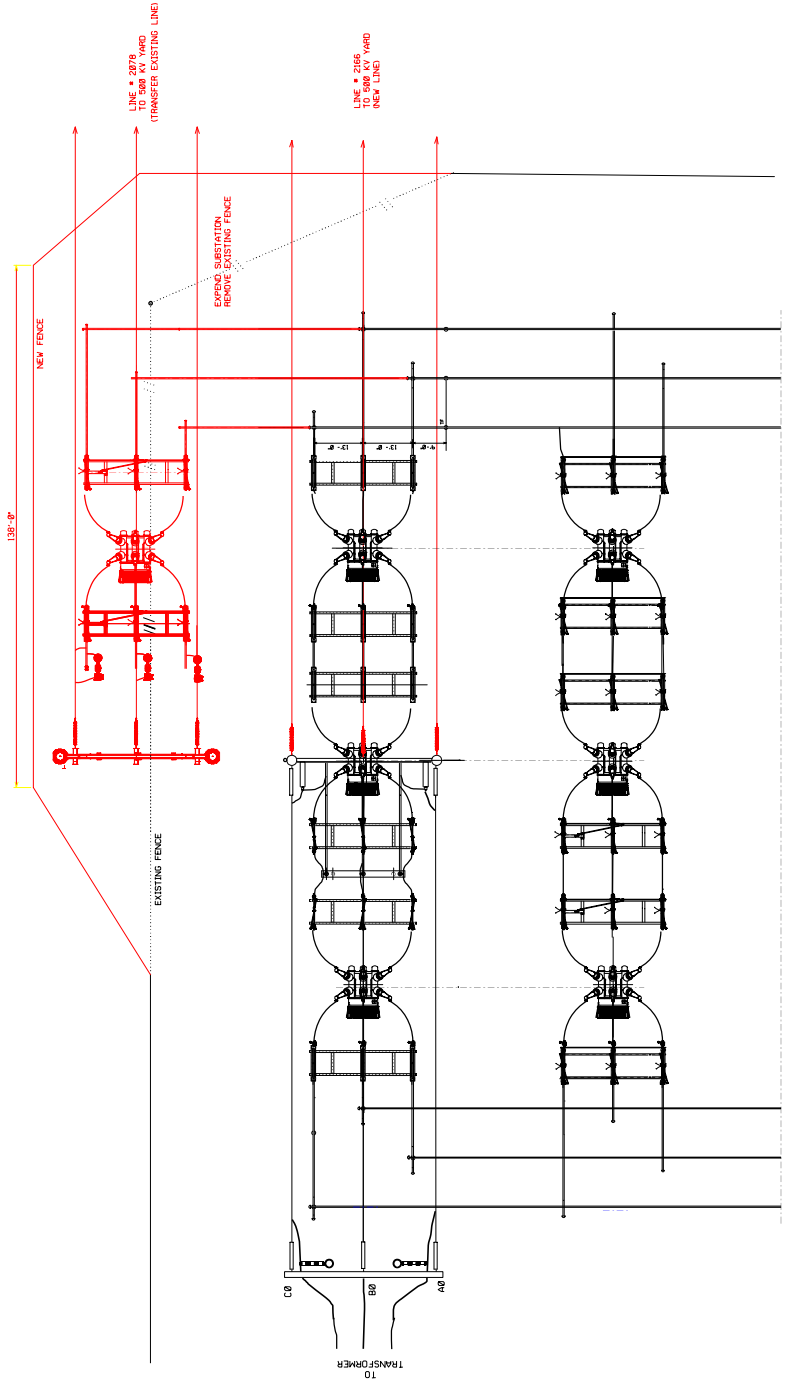
Title: Drawing		Library Location		Cell Name		B/M Assembly		Pipe Stand Foundation Cells (Plan)		Foundation Cells (Spread)		Steel Detail & Assembly	
Attachment II.C.2													



PRELIMINARY
NOT FOR CONSTRUCTION

	SHELL#XXXXXXXXXXXX	
Drawn By: SB	Date: 02-22-2023	Station: FOSSUM PT, 230
Approval:	Date:	Drawing No.

ATTACHMENT II.C.4



CNTD. ON DRAWING 2 OF 2

PRELIMINARY
NOT FOR CONSTRUCTION



GENERAL ARRANGEMENT PLAN
230 KV SWITCHYARD
POSSUM POINT SUBSTATION
PRINCE WILLIAM COUNTY, VIRGINIA

Project No.	0810-097
Sheet No.	1 OF 2
Date	
Designed by	
Checked by	
Approved by	
B/M No.	
Revisions	
Cost File Name	0810097.dwg
ROUTED	*****

Revisions	Project Number	B/M
No. Desc. By		
01 230 KV LINE FROM POSSUM POINT 500 PRELIMINARY 08-27-05		

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: **Land Use**

The general character of the Project area is industrial. The Project is located within Company-owned property in Prince William County, Virginia.

Wetlands

According to the U.S. Geological Survey (“USGS”) Quantico [1994] topographic quadrangle, the existing transmission line does not cross any named stream features.

Within the Project corridor, the Company delineated wetlands and other waters of the United States using the *Routine Determination Method* as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* and methods described in the *2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (Version 2.0). The Company submitted the results of this delineation to the Corps on July 31, 2020 for confirmation. A preliminary jurisdictional determination from the Corps was received on September 1, 2020 (NAO-2020-01315-RDB). Total jurisdictional resources within the proposed Project corridor are provided in the table below. See also Attachment 2.D.1 to the DEQ Supplement.

Jurisdictional Resources within Project Corridor

Resource	Acreage (±)
Palustrine Emergent Wetland	1.51
Palustrine Scrub-shrub Wetland	0.07
Palustrine Forested Wetland	0.44
Open water	0.67
Ephemeral Streams	0.07 (625 linear feet)
Upper Perennial Streams	0.03 (501 linear feet)
Intermittent Streams	0.03 (496 linear feet)

Prior to construction, the Company will obtain any necessary permits to impact jurisdictional resources.

Historic Features

In accordance with the *Guidelines for Assessing Impacts of Proposed Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (2008)*, a Stage I Pre-Application Analysis was conducted by Stantec. This report was forwarded to the VDHR and is included as Attachment 2.I.2 to the DEQ Supplement. The background archival research identified zero National Historic Landmarks within the 1.5-mile buffer; and one NRHP-listed resource and two NRHP-eligible resources within the one-mile buffer.

Threatened and Endangered Species

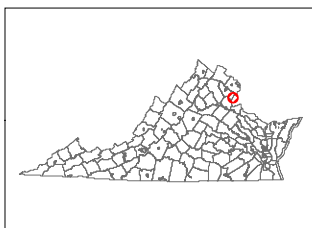
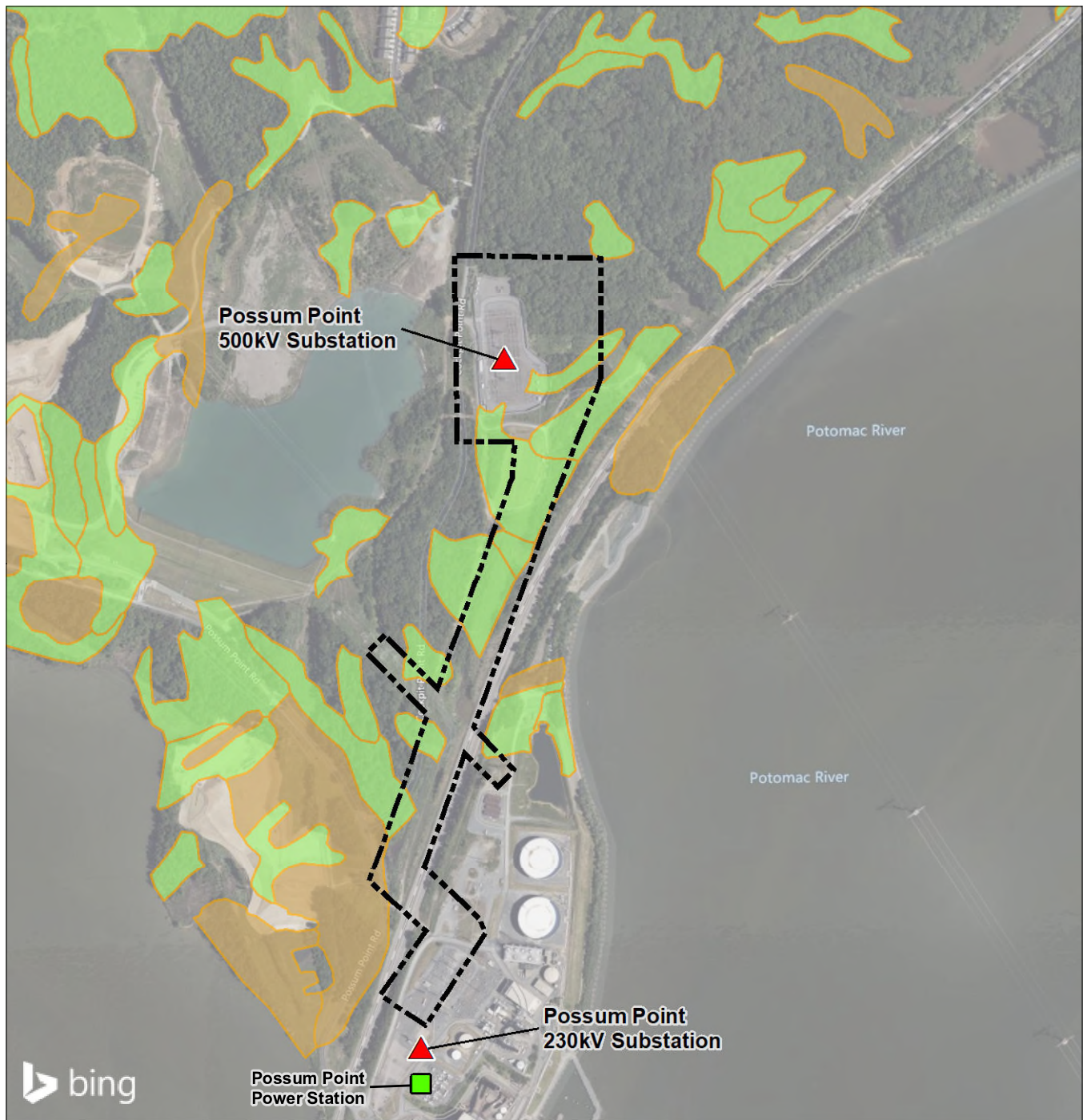
A search of the Virginia Department of Wildlife Resources (“DWR”), United States Fish and Wildlife Service (“USFWS”), and Department of Conservation and Recreation (“DCR”) public databases identified several federal and state listed species that have the potential to occur within the Project area. These resources are identified in the report included as Attachment 2.G.1 to the DEQ Supplement. In addition, three active bald eagle nests and a peregrine falcon nest are identified within the Project area, as described in the DEQ Supplement. The Company intends to reasonably minimize any impact on these resources and coordinate with DWR, USFWS, and DCR as appropriate.

Dwellings

The project is located on Company-owned property. There are no dwellings located within 100, 250, or 500 feet of the centerline of the Project corridor.

Farmland/Forest

There is 0.45 acres of prime farmland soils within the corridor according to the Natural Resource Conservation Service. See Attachment III.A.1. As the corridor for the proposed Project is currently in use for transmission line operation, and within property fully owned by the Company for electric generation, no impact to farmlands would be expected beyond temporary impacts during construction. No forestland occurs within the portion of the route that is currently cleared and maintained for transmission line operation; however, the proposed corridor extension into the existing Possum Point 500 kV Substation will require clearing of approximately 2.88 acres of forestland.



Notes

1. Coordinate System: NAD 1983 StatePlane Virginia North FIPS 4501 Feet
2. Data Sources: Dominion Energy Virginia, USDA NRCS
3. Orthoimagery © Bing Maps
4. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

- Project Limits
- All Areas are Prime Farmland (0.45 Acre ±)
- Farmland of Statewide Importance (14.40 Acre ±)
- Substation
- Existing Power Station

0 500 1,000 Feet
(At original document size of 8.5x11)
1:12,000



Stantec



Project Location Prince William County, Virginia Prepared by CDC on 2022-12-19
TR by RJW on 2022-12-21
IR by CPG on 2022-12-21

Client/Project Dominion Energy Virginia
Possum Point Second Transformer and
New 230kV Tie Line #2216 203401924

Figure No.
III.A.1

Title
Prime Farmland Map

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: At Dominion Energy Virginia, the Company believes stakeholder engagement is critical to the success of its projects. However, given that all work related to the Project will be completed on Company-owned property that is zoned as “Heavy Industrial,” the Company anticipates Project construction will have a limited impact on the surrounding community. Accordingly, the Company’s outreach efforts related to the proposed Project were limited to the following:

On January 13, 2023, the Company sent project announcement mailers to 68 property owners who live along Possum Point Road in Dumfries, Virginia. Since there are not any landowners adjacent to or crossed by the Project, residents who may experience a slight increase in construction traffic were notified. Each mailer provided a brief overview of the proposed Project and provided contact information for the Project team if there were any questions. Given the limited scope of the Project, mailers will be used as the primary form of communication in lieu of in-person meetings. A copy of the mailer is included as Attachment III.B.1.¹¹ The Company also posted a digital Spanish translation of the postcard on the Project website.

As part of preparing for the Project, the Company researched the demographics of the surrounding communities using Clarion Ledger-American Community Survey HUD’s Tribal Directory Assessment Tool (TDAT), and EPA’s EJScreen. This information revealed that there are three (3) Census Block Groups within the Project area that fall within one mile of the existing transmission line corridor but only two Census Block Groups are intersected by the project. A review of ethnicity, income, age, and education census data identified populations within the study area that meet the U.S. Environmental Protection Agency threshold to be defined as Environmental Justice Communities (“EJ Communities”).

Pursuant to Va. Code §§ 56.46.1 C and 56-259 C and FERC Guidelines, there is a strong preference for the use of existing utility right-of-way whenever feasible. The Project is on Company owned land, situated in an industrial area, and there are no adjacent landowners or dwellings. Based on the analysis of the Project, the Company does not anticipate disproportionately high or adverse impacts to the surrounding community and the EJ Communities located within the study area, consistent with the Project design to reasonably minimize impacts.

In addition to its evaluation of impacts, the Company has and will continue to engage the EJ Communities and others potentially affected by Project in a manner that allows them to meaningfully participate in the project development and

¹¹ In July 2020, the Company conducted the same outreach to nearby landowners before the Project was cancelled.

approval process so that their views and input can be taken into consideration. See Attachment III.B.2 for a copy of the Company's Environmental Justice Policy.

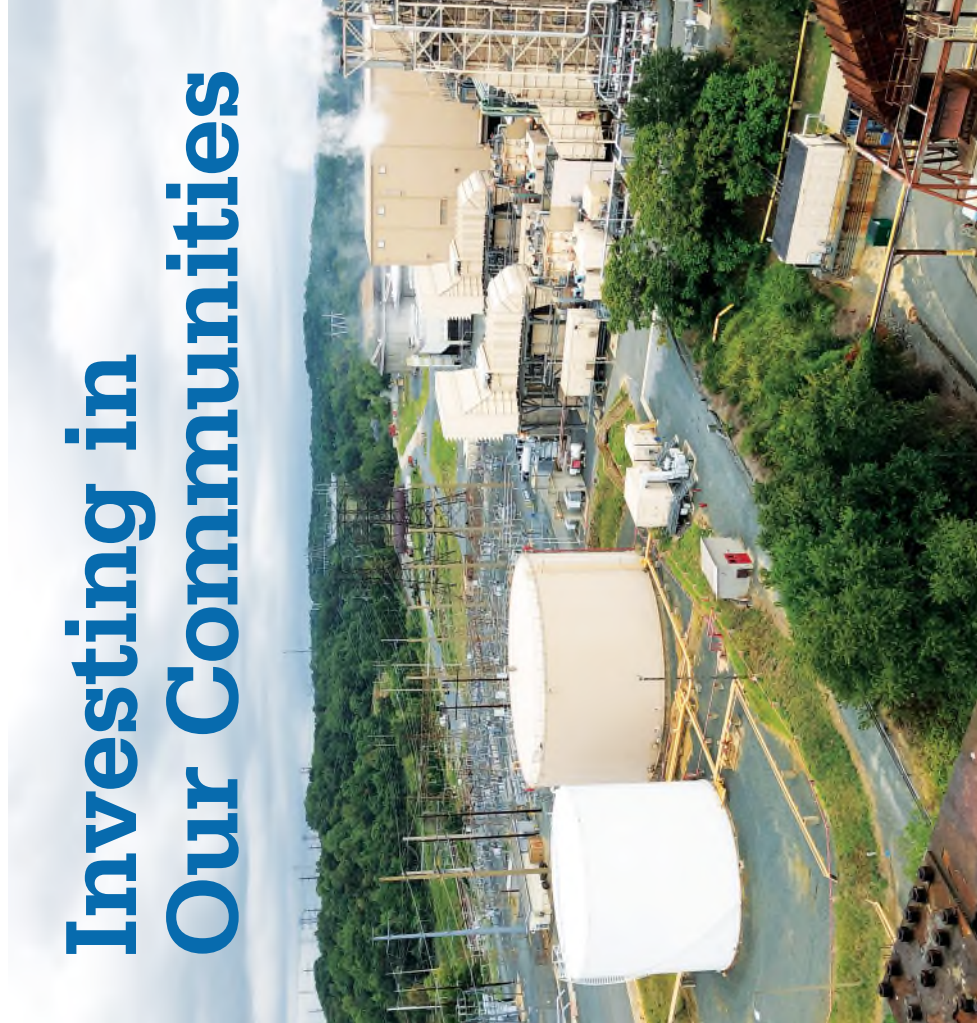
Investing in Our Communities

Electric Transmission
P.O. Box 26666
Richmond, VA 23261



Actions Speak Louder

Local Power Line Project Information Enclosed



Dominion Energy image. Not project specific.

IMPORTANT

Local Power Line Project Information

Possum Point Substations and Transmission Line Reliability Project

Use your iPhone camera or the QR reader app on other smartphones to visit the project page on our website.



AT DOMINION ENERGY, we are committed to providing safe, reliable, and affordable electric service to our neighbors. You are receiving this postcard because we are preparing to file an application with the Virginia State Corporation Commission (SCC) to upgrade electric transmission infrastructure at Possum Point Power Station in Prince William County, Virginia.

This work will include substation and electric transmission line activities. We plan to add an additional transformer at the existing 500 kilovolt (kV) substation, make improvements to the existing 230 kV substation, and install nearly one mile of new transmission line. All work will be done on Dominion Energy property and have minimal impact on the local community.

We originally announced this project in 2020 but suspended it as we monitored the evolving bulk electricity grid. Now, we need to restart this project to maintain reliable electric service to customers and comply with federal standards.

We will continue to update you as activities progress.

CONTACT US — Visit our website at DominionEnergy.com/possumpointsubs for project updates. Or contact us by sending an email to powerline@dominionenergy.com or calling 888-291-0190.

Estamos preparando la presentación de una solicitud ante la Comisión Estatal de Sociedades (SCC) de Virginia para mejorar la infraestructura de transmisión eléctrica en la Central Eléctrica de Possum Point, en el condado de Prince William, Virginia. Todos los trabajos se realizarán en propiedad de Dominion Energy y tendrán un impacto mínimo en la comunidad local. Los detalles están disponibles en español en DominionEnergy.com/possumpointsubs.



AT DOMINION ENERGY, protecting the grid and making it secure against natural and man-made acts is a top priority. We work alongside government officials to prepare for potential incidents that could affect our ability to provide electricity safely and reliably to the communities we serve. Learn how we're keeping you safe at powerlines101.dominionenergy.com.

This map is intended to serve as a representation of the project area and is not intended for detailed engineering purposes.



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: During the Company's review of the existing corridor, it identified zero unauthorized encroachments within the Project corridor as the Project is within Company-owned land.

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: Line #2078 is within an existing transmission line corridor that has been in use since 2001. Approximately 0.29 miles of new corridor will be required to extend new Line #2216 to interconnect with Possum Point 500 kV Substation, also within Company-owned property.

The Line #2078 corridor will continue to parallel the RF&P Railroad for 0.32 miles and will still cross the railroad at one location. Line #2216 will require a railroad crossing at the same location as Line #2078 since they will be collocated. Lines #215/#2001 and Lines #237/#2022 cross the RF&P railroad at separate locations just north of the aforementioned crossing.

The Project corridor will continue to cross a gas transmission pipeline and hazardous liquid pipeline. Lines #215/#2001 and Lines #237/#2022 have an aerial crossing over Cockpit Road; however, Line #2078 does not and Line #2216 will not cross any roadways. The general character of the Project area is industrial, dominated by existing transmission facilities.

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 Project is within Company-owned property and will not affect land use.

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. Prince William County has not designated important farmlands within its jurisdiction nor any agricultural districts within the Project area.

 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. Quantico Marine Corps Base Historic District (VDHR# 287-0010) is listed on the NRHP and is located 4,640 feet south of the proposed corridor.
 2. VDHR has determined one architectural resource to be potentially eligible (VDHR# 076-0301) and one architectural resource to be eligible (VDHR# 500-001) for listing on the NRHP within or adjacent to the existing corridor. There is one architectural resource that the American Battlefield Protection Program determined potentially eligible for listing on the NRHP within or adjacent to the existing corridor (VDHR# 076-5842).
 3. Prince William County has designated historic districts; however, none are within the vicinity of the Project.
 4. None.
 5. None.
 6. None.
 7. None
 8. None.
 9. None.
 10. None.
 11. The existing corridor does not cross any parks or similar facilities in Prince William County.
 12. The existing corridor is located within the historical core boundary of the Battle of Cockpit Point. The battlefield has not been evaluated by VDHR.

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 reviewed the FAA's website¹² to identify airports within 10 miles of the proposed Project. Based on this review, the Marine Corps Air Facility Quantico is located approximately 2.5 miles from the Project. Due to the proximity of the Project to the Quantico airfield and information contained within the FAA Notice Criteria Tool, all structures will require FAA filing. The Company will complete all required FAA filings prior to construction.

See also Section 2.O of the DEQ Supplement.

¹² See <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

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: The Project corridor does not cross any scenic byways. Use of the existing right-of-way minimizes or eliminates permanent incremental impacts at road crossings.

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 Prince William County regarding the proposed Project. Below is a list of coordination efforts that have occurred with municipal, state, and federal agencies:

On February 28, 2022, the Company met with Prince William County Supervisor Andrea Bailey to revisit the Project following initial briefing in 2020. On January 31, 2023, the Company provided updated information materials to Supervisor Bailey.

On January 12, 2023, the Company solicited comments via letter from several federally recognized Native American tribes, including the Catawba Indian Nation, Cheroenhaka (Nottoway) Indian Tribe, Chickahominy Indian Tribe, Chickahominy Indian Tribe Eastern Division, Delaware Nation, Mattaponi Tribe, Monacan Indian Nation, Nansemond Indian Nation, Nottoway Indian Tribe of Virginia, Pamunkey Indian Tribe, Patawomeck Indian Tribe of Virginia, Rappahannock Tribe, and Upper Mattaponi Indian Tribe. Attachment III.J.1 provides a copy of the letter template and overview map.

Property owners received a postcard including an overview map in January 2023. See Attachment III.B.1.¹³

¹³ In June and July 2020, the Company conducted the same outreach with appropriate municipal, state, and federal agencies before the Project was cancelled.

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



January 12, 2023

Possum Point Substations and 230 kV Electric Transmission Line Reliability Project

Dear [recipient]:

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 at Possum Point Power Station in Prince William County, Virginia, and you may have an interest in this area. In 2020, analysis of the energy grid originally prompted communication with your organization about this project. However, as the grid continued to evolve, we determined that the work was not necessary at that time. Recent analysis has again revealed the need for this project, so we now plan to proceed with it to maintain reliable service and meet mandatory standards.

We are proposing both substation and electric transmission line work to continue dependable service and to comply with mandatory federal electric standards. We plan to add an additional transformer at the existing 500 kilovolt (kV) substation, make improvements to the existing 230 kV substation, and install nearly one mile of new transmission line connecting both substations. All work will be done on Dominion Energy property and have minimal impact on the local community.

Enclosed is a project overview map for your reference. This project requires review by the Virginia State Corporation Commission (SCC), and we plan to file this project for SCC approval in March. 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.

If you have questions or would like to set up a meeting to discuss the project, please contact me by calling 804-690-8869 or sending an email to jenna.e.brown@dominionenergy.com. You may also contact Tribal Relations Manager Ken Custalow by sending an email to Ken.Custalow@dominionenergy.com.

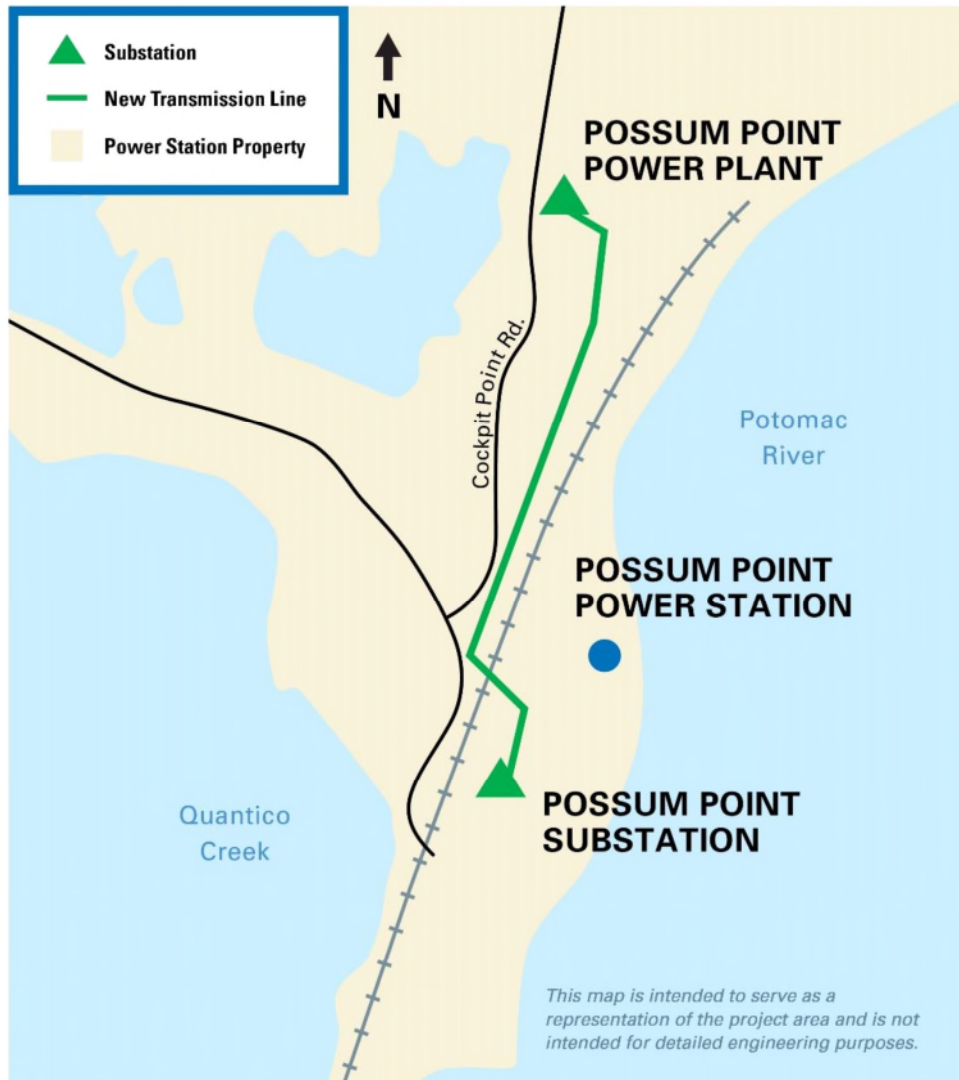
Sincerely,

A handwritten signature in black ink that reads "Jenna Brown".

Jenna Brown
Communications Specialist
The Electric Transmission Project Team 165

Possum Point Substations and Transmission Line Reliability Project

Prince William County, Virginia



For more information, please visit the project website at DominionEnergy.com/possumpointsubs. You may also contact us by sending an email to powerline@dominionenergy.com or calling 888-291-0190.



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

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

Response: On January 12, 2023, the Company solicited comments via letter from the nongovernmental organizations and private citizen groups identified below. A copy of the letter template and overview map is included as Attachment III.K.1.¹⁴

Name	Organization
Ms. Elizabeth S. Kostelny	Preservation Virginia
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
Ms. Eleanor Breen	Council of Virginia Archaeologists
Ms. Leighton Powell	Scenic Virginia
Ms. Elaine Chang	National Trust for Historic Preservation
Ms. Julie Bolthouse	Piedmont Environmental Council
Mr. John McCarthy	Piedmont Environmental Council
Dr. Cassandra Newby-Alexander	Norfolk State University
Ms. Shaleigh R. Howells	Pamunkey Indian Museum and Cultural Center
Mr. Roger Kirchen	Virginia Department of Historic Resources
Ms. Adrienne Birge-Wilson	Virginia Department of Historic Resources
Mr. Dave Dutton	Dutton + Associates, LLC

¹⁴ In June 2020, the Company conducted the same coordination with non-governmental organizations or private citizen groups before the Project was cancelled.

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



January 12, 2023

Possum Point Substations and 230 kV Electric Transmission Line Reliability Project

Dear [recipient],

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. As a valued stakeholder with a unique perspective, you can help us meet these objectives as we plan necessary electric infrastructure projects. We are reaching out to you as we have an upcoming project at Possum Point Power Station in Prince William County, Virginia, and you may have an interest in this area.

In 2020, analysis of the energy grid originally prompted communication with your organization about this project. However, as the grid continued to evolve, we determined that the work was not necessary at that time. Recent analysis has again revealed the need for this project, so we now plan to proceed with it to maintain reliable service and meet mandatory standards.

We are proposing both substation and electric transmission line work to continue dependable service and to comply with mandatory federal electric standards. We plan to add an additional transformer at the existing 500 kilovolt (kV) substation, make improvements to the existing 230 kV substation, and install nearly one mile of new transmission line connecting both substations. All work will be done on Dominion Energy property and have minimal impact on the local community.

Enclosed is a project overview map for your reference. This project requires review by the Virginia State Corporation Commission (SCC), and we plan to file this project for SCC approval in March. 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.

If you have questions or would like to set up a meeting to discuss the project, please contact me by calling 804-690-8869 or sending an email to jenna.e.brown@dominionenergy.com.

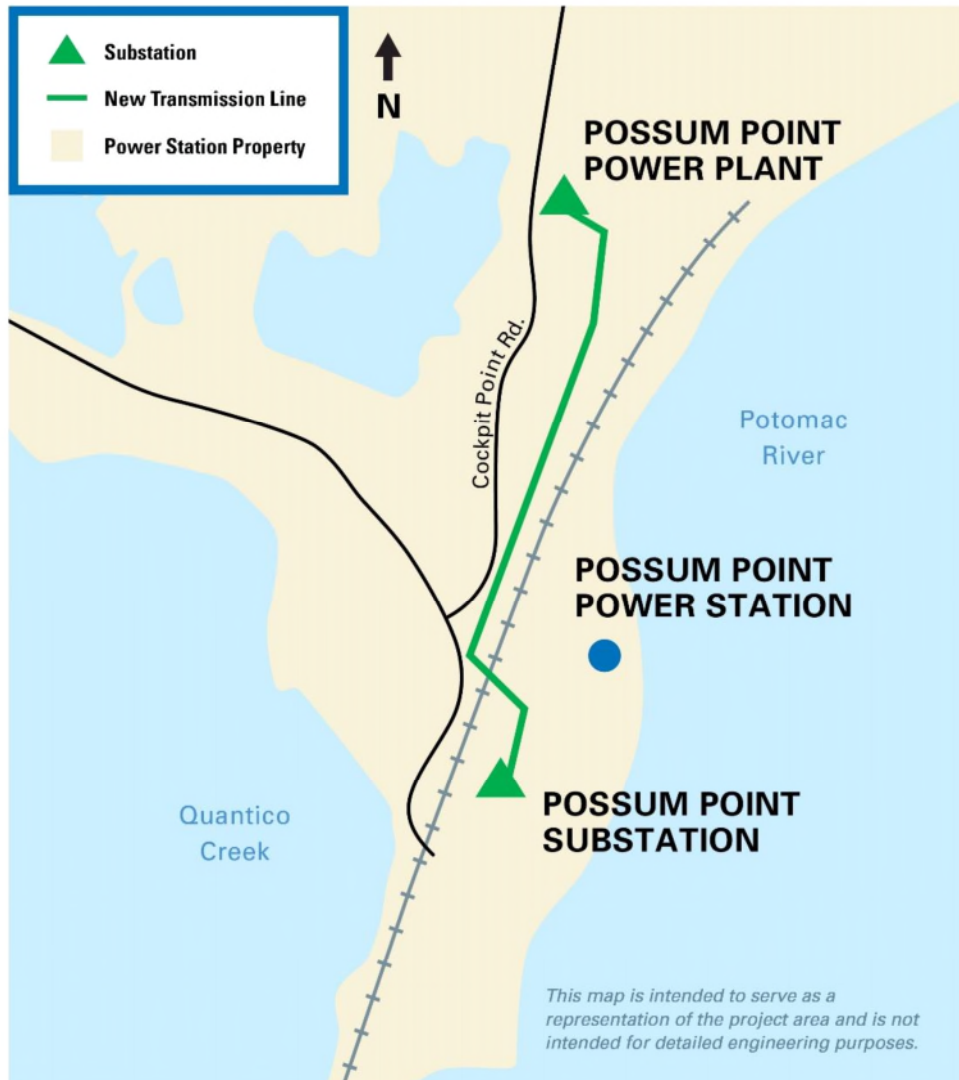
Sincerely,

A handwritten signature in black ink that reads "Jenna Brown".

Jenna Brown
Communications Specialist
The Electric Transmission Project Team

Possum Point Substations and Transmission Line Reliability Project

Prince William County, Virginia



For more information, please visit the project website at DominionEnergy.com/possumpointsubs. You may also contact us by sending an email to powerline@dominionenergy.com or calling 888-291-0190.



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 Project are listed below.

Potential Permits

Activity	Permit	Agency
Impacts to wetlands and waters of the U.S.	Nationwide Permit 57	U.S. Army Corps of Engineers
Impacts to wetlands and waters of the U.S.	Waiver or VWP Permit	Virginia Department of Environmental Quality
Discharge of Stormwater from Construction	Construction General Permit	Virginia Department of Environmental Quality
Work within VDOT right-of-way	Land Use Permit	Virginia Department of Transportation
Work within CSX railroad right-of-way	Encroachment Permit	CSX Transportation

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 is best estimated by field levels from power lines calculated at annual average loading. For any day of the year, the electric and magnetic field (“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 existing and proposed transmission line. EMF levels are provided for both historical (2022) and future (2027) annual average and maximum (peak) loading conditions.

Existing lines – Historical average loading

EMF levels were calculated for the existing line at the **historical average** load condition (680 amps for line #2078) at an operating voltage of 241.5 kV when supported on the existing structures – see [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 an historical average load operating temperature.

EMF levels at the edge of the maintenance limits for the existing lines at the historical average loading:

	<u>Northwest Edge</u>		<u>Southeast Edge</u>	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
<u>Attachment II.A.5.a</u>	2.041	53.265	2.036	53.265

Existing lines – Historical peak loading

EMF levels were calculated for the existing line at the **historical peak** load condition (1687 amps for Line #2078) and at an operating voltage of 241.5 kV when supported on the existing structures – see [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 an historical peak load operating temperature.

EMF levels at the edge of the maintenance limits for the existing lines at the historical peak loading:

	<u>Northwest Edge</u>		<u>Southeast Edge</u>	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
<u>Attachment II.A.5.a</u>	2.056	68.245	2.052	68.245

Proposed Project – Projected Average Loading in 2023

EMF levels were calculated for the proposed Project at the **projected average** load condition (361 amps for line #2078 and 361 amps for line #2216) and at an operating voltage of 241.5 kV when supported on the proposed Project structures – see Attachments II.A.5.a and b.

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.

EMF levels at the edge of the maintenance limits for the proposed Project at the projected average loading:

	<u>Northwest Edge</u>		<u>Southeast Edge</u>	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
<u>Attachment II.A.5.a</u>	0.664	24.215	0.651	24.382
<u>Attachment II.A.5.b</u>	1.279	14.281	1.279	14.281

Proposed Project – Projected Peak Loading in 2027

EMF levels were calculated for the proposed Project at the projected **peak** load condition (633 amps for Line #2078 and 627 amps for Line #2216) and at an operating voltage of 241.5 kV when supported on the proposed Project structures – see Attachments II.A.5.a and b.

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

EMF levels at the edge of the maintenance limits for the proposed Project at the projected peak loading:

	<u>Northwest Edge</u>		<u>Southeast Edge</u>	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
<u>Attachment II.A.5.a</u>	0.6559	30.520	0.646	30.714
<u>Attachment II.A.5.b</u>	1.280	17.971	1.280	17.971

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 two decades are the foundation of the Company’s opinion that no adverse health effects will result from the operation of the proposed Project. Each of these panels has evaluated the scientific research related to health and power-frequency 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 of high, short-term EMF exposures not typically found in people’s day-to-day lives on biological responses, while others evaluate the effects of common, lower EMF exposures found throughout communities. Studies also have evaluated the possibility of effects (e.g., cancer, neurodegenerative diseases, reproductive effects) of long-term exposure. Altogether, this research includes well over a hundred 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 agencies to identify, review, and summarize the results of this large and diverse research.

The reviews of EMF biological and health research have been conducted by numerous scientific and health agencies, including 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 International Committee on Electromagnetic Safety (“ICES”), 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; ICES, 2019). 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 show 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 report by SCENIHR and annual reviews published by SSM (e.g., for the years 2015 through 2021). 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.

The WHO has recommended that countries adopt recognized international standards published by ICNIRP and ICES. Typical levels of EMF from Dominion's 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

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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.

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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.”¹⁵

The continuing scientific research on 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:

- The WHO, which published one of the most comprehensive and detailed reviews of the relevant scientific peer-reviewed literature in 2007.
- SCENIHR, a committee of the European Commission, that published its assessments in 2009 and 2015;
- The SSM, which has published annual reviews of the relevant peer-reviewed scientific literature since 2003, with its most recent review published in 2021; and,
- EFHRAN, that 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

¹⁵ See <http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/highfinal.pdf>.

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 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).

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 neurodegenerative diseases. Of these, the following recent publications, published following the inclusion date (June 2014) for the SCENIHR (2015) report through May 2021, provided additional evidence and contributed to clarification of previous findings. Overall, new research studies have not provided evidence to alter the previous conclusions of scientific and health organizations, including the WHO and SCENIHR.

Recent epidemiologic studies of EMF and childhood leukemia 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 tumor, 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-on) and reported no overall associations between exposure categories and childhood leukemia for the later time periods (1980 and on), and consistent pattern for time 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 kilovolts [“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), 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) were examined. 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.
- 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 Québec. 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 high calculated magnetic fields (≥ 0.4 microtesla [i.e., 4 milligauss]). 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.

- Nunez-Enriquez et al. (2020) assessed the relationship between residential magnetic-field exposure and B-lineage acute lymphoblastic leukemia (“BALL”) 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.

Recent epidemiologic studies of EMF and neurodegenerative diseases 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 kV 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 Parkinsonism¹⁶ 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 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.
- Rösli and Jalilian (2018) performed a meta-analysis using data from five epidemiologic studies examining residential exposure to magnetic fields and

¹⁶ 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).

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 nonsignificant 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.

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V. NOTICE

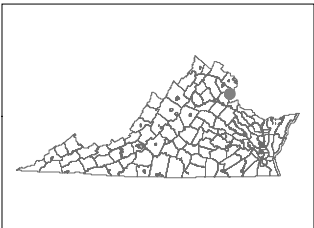
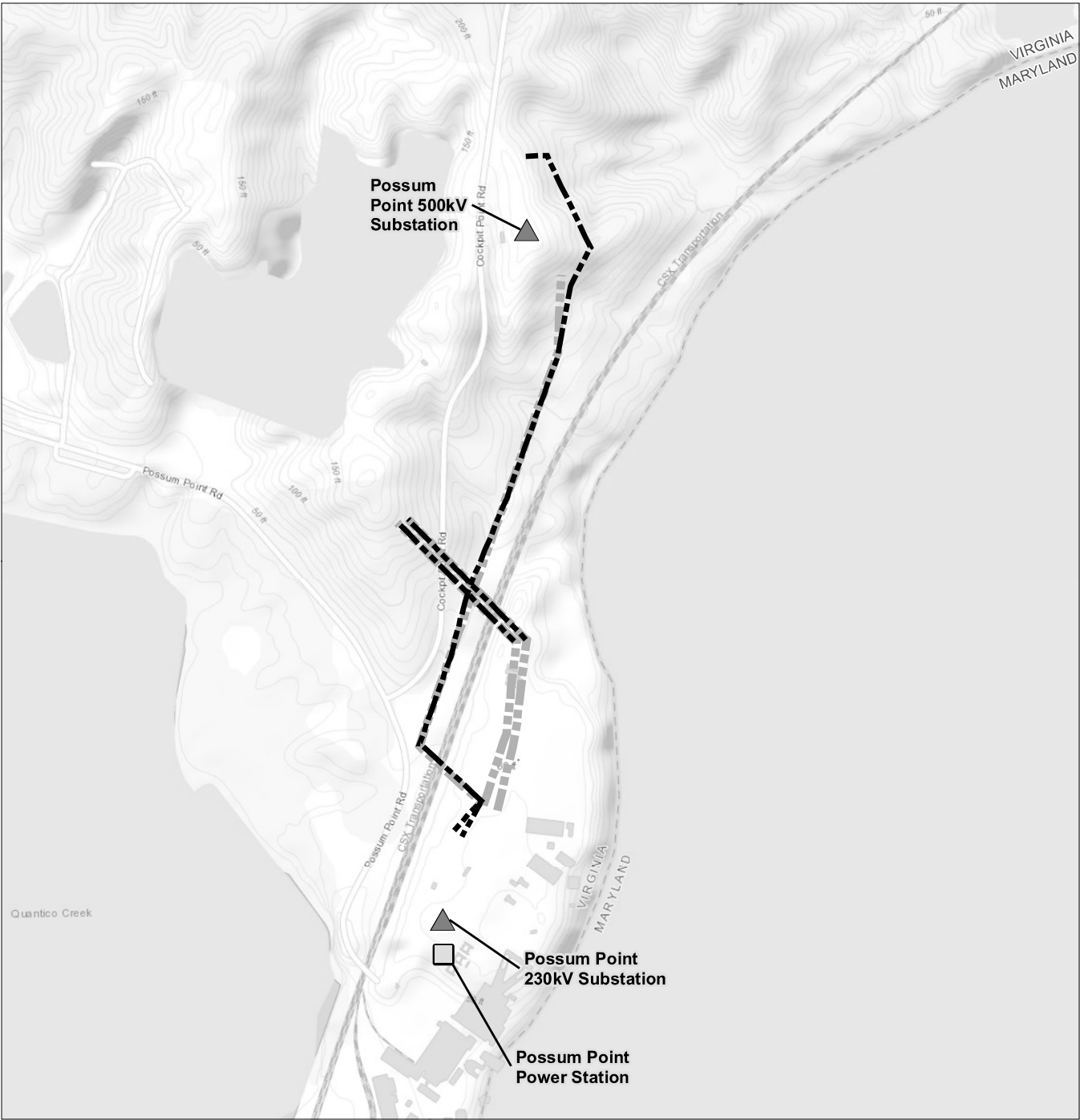
- A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposed to be noticed, provide minimum, maximum and average structure heights.**

Response: A map showing the existing route to be used for the Project is provided as Attachment V.A. A written description of the route is as follows:

The proposed route for the Project is approximately 0.8 miles of existing transmission line corridor currently occupied by the existing 230 kV transmission Line #2078. The new line, Line #2216, will be located adjacent to the majority of the Line #2078 corridor and primarily collocated with the Line #2078 structures. Where Line #2216 deviates from Line #2078 to extend into the northern side of the Possum Point 500 kV substation, an additional 0.29 miles of new transmission line (Line #2216) will be required.

The total length of the proposed Project corridor is approximately 0.95 miles. The route is entirely within Prince William County. The Project originates at the Possum Point 230 kV Substation located off Possum Point Road. From the Possum Point Substation, the route heads west to exit the substation, across the RF&P railroad, and turns north. The route continues north for approximately 0.8 miles and enters the Possum Point 500 kV Substation from the northeast. Line #2078 does not cross any roads.

For the overall Project, the minimum structure height is approximately 55 feet, the maximum structure height is approximately 120 feet, and the average structure height is approximately 101 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.



Notes
1. Coordinate System: NAD 1983 StatePlane
Virginia North FIPS 4501 Feet
2. Data Sources: Dominion Energy Virginia
3. Basemap © ESRI

- ▲ Substation
- Existing Power Station
- Proposed Centerline
- Existing Centerline

0 500 1,000 Feet
(At original document size of 8.5x11)
1:12,000



Project Location Prince William County, Virginia
Prepared by CDC on 2022-12-19
TR by RJW on 2022-12-21
IR by CPG on 2022-12-21

Client/Project Dominion Energy Virginia
Possum Point Second Transformer and
New 230kV Tie Line #2216
203401924

Figure No. V.A
Title Project Overview Map

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: The Application is available for public inspection electronically at the following website: www.dominionenergy.com/possumpointsubs.

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
P.O. Box 1105
Richmond, Virginia 23218

Ms. Michelle Henicheck
Virginia Department of Environmental Quality
Office of Wetlands and Stream Protection
P.O. Box 1105
Richmond, VA 23218

Ms. Rene Hypes
Virginia Department of Conservation and Recreation
Division of Natural Heritage, Natural Heritage Program
600 East Main Street, 24th Floor
Richmond, Virginia 23219

Ms. Kristal McKelvey
Department of Conservation and Recreation, Planning Bureau
600 East Main Street, 17th Floor
Richmond, Virginia 23219

Mr. Roger Kirchen
Virginia Department of Historic Resources
Review and Compliance Division
2801 Kensington Avenue
Richmond, Virginia 23221

Ms. Amy Martin
Virginia Department of Wildlife Resources
7870 Villa Park, Suite 400
Henrico, Virginia 23228

Mr. Keith Tignor
Virginia Department of Agriculture and Consumer Affairs
102 Governor Street
Richmond, Virginia 23219

Mr. Karl Didier, PhD
Virginia Department of Forestry
Forestland Conservation Division
900 Natural Resources Drive, Suite 800
Charlottesville, Virginia 22903

Mr. Mark Eversole
Virginia Marine Resources Commission
Habitat Management Division
Building 96, 380 Fenwick Road
Ft. Monroe, VA 23651

Mr. Troy Andersen
US Fish and Wildlife Service
Virginia Field Office, Ecological Services
6669 Short Lane
Gloucester, Virginia 23061

Regulator of the Day
US Army Corps of Engineers
Norfolk District
803 Front Street
Norfolk, Virginia 23510

Mr. Scott Denny
Virginia Department of Aviation
Airport Services Division
5702 Gulfstream Road
Richmond, Virginia 23250

Ms. Martha Little
Virginia Outdoors Foundation
600 East Main Street, Suite 402
Richmond, Virginia 23219

Ms. Patrice Sadler
Historic Virginia Land Conservancy
5000 New Point Road, Suite 2202
Williamsburg, Virginia 23188

Mr. John Lynch, P.E., District Engineer
Virginia Department of Transportation
Northern Virginia Residency
4975 Alliance Drive
Fairfax, Virginia 22030

Mr. Christopher Shorter
Prince William County, County Executive
1 County Complex Court
Prince William, Virginia 22192

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 February 3, 2023, was sent to Mr. Christopher Shorter, County Executive in Prince William County, Virginia, advising of the Company's intention to file this Application and inviting the County to consult with the Company about the proposed Project. See Attachment V.D.¹⁷

¹⁷ In July 2020, the Company conducted the same outreach to the County Executive before the Project was cancelled.

February 3, 2023

Christopher Shorter
County Executive
Prince William County
1 County Complex Court
Prince William, VA 22192

**RE: Dominion Energy Virginia's Proposed Possum Point 2nd Transformer and New 230 kV Tie Line #2216– Prince William County, Virginia
Notice Pursuant to Va. Code § 15.2-2202E**

Dear Mr. Shorter,

Dominion Energy Virginia (the “Company”) is proposing substation and related electric transmission line work at the Possum Point Power Station in Prince William County, Virginia, which will be performed entirely on Company-owned property or existing right-of-way crossing a railroad owned by CSX Transportation, Inc. (the “Project”). The Project is necessary to maintain the reliability of the Company’s electric transmission system in compliance with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards.

Specifically, the Project will involve the following components: (i) install a second 500-230 kV transformer bank at the Possum Point 500 kV Substation and perform associated bus work; (ii) rebuild approximately 0.8 miles of existing 230 kV transmission Line #2078 within the existing transmission corridor between the Company’s existing Possum Point 500 kV and 230 kV Substations on Company-owned property; (iii) install approximately 0.95 miles of a new 230 kV transmission line, Line #2216, between the Company’s existing Possum Point 500 kV and 230 kV Substations along the majority of the Line #2078 corridor and primarily collocated with the Line #2078 structures, with three new structures on Company-owned property in a new approximately 0.29-mile corridor adjacent to the existing Possum Point 500 kV Substation; (iv) install a circuit breaker and line terminal equipment at the Possum Point 230 kV Substation; and (v) install two new structures to raise Lines #215/#2001 and Lines #237/#2022 to provide clearance for Line #2078 and Line #2216.

The Company is in the process of preparing an application for a certificate of public convenience and necessity (“CPCN”) from the State Corporation Commission of Virginia (the “Commission”). Pursuant to Va. Code § 15.2-2202, the Company is writing to notify you of the specific plans for the proposed Project in advance of the Commission filing. In advance of filing an application for a CPCN from the Commission, the Company respectfully requests that you submit any comments or additional information that would have bearing on the proposed Project within 30 days of the date of this letter. If you would like to receive a GIS shapefile of the transmission line routes to assist in the project review or if there are any questions, please do not hesitate to contact me at (804) 239-6450 or charles.h.weil@dominionenergy.com.

We appreciate your assistance with this project review and look forward to any additional information you may have to offer.

Regards,

Dominion Energy Virginia



Charles H. Weil, PE
Engineer III, Siting and Permitting

Enc: Project Overview Map

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER	)	Case No. PUR-2023-00029
COMPANY	)	
	)	
For approval and certification of electric	)	
transmission facilities: Possum Point 2nd	)	
Transformer and New 230 kV Tie Line	)	

**IDENTIFICATION, SUMMARIES AND TESTIMONY OF DIRECT WITNESSES OF
VIRGINIA ELECTRIC AND POWER COMPANY**

Steven Schweiger

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Logan J. Manzuk

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Santosh Bhattarai

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

Charles H. Weil

Witness Direct Testimony Summary
Direct Testimony
Appendix A: Background and Qualifications

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Steven Schweiger

Title: Area Planning Engineer – Electric Transmission Planning

Summary:

Company Witness Steven Schweiger sponsors those sections of the Appendix describing the Company's electric transmission system and the need for, and benefits of, the proposed Project, as follows:

- Section I.B: This section details the engineering justifications for the proposed project.
- Section I.C: 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: This section describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E: This section explains feasible project alternatives.
- Section I.H: This section provides the desired in-service date of the proposed project and the estimated construction time.
- 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: Although not applicable to the proposed project, this section 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: Although not applicable to the proposed project, this section contains information for transmission lines interconnecting a non-utility generator.
- Section I.N: Although not applicable to the proposed project, 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.
- Section II.A.10: This section provides details of the construction plans for the proposed project, including requested and approved line outage schedules.

Additionally, Company Witness Schweiger co-sponsors the following portions of the Appendix:

- Section I.A (co-sponsored with Company Witness Logan Manzuk): This section details the primary justifications for the proposed Project.
- Section I.F (co-sponsored with Company Logan Manzuk): This section describes any lines or facilities that will be removed, replaced or taken out of service upon completion of the proposed project and normal and emergency ratings of the facilities.
- Section II.A.3 (co-sponsored with Company Witness Charles H. Weil): This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.

A statement of Mr. Schweiger's background and qualifications is attached to his testimony as Appendix A.

**DIRECT TESTIMONY
OF
STEVEN SCHWEIGER
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00029**

1 **Q. Please state your name, business address and position with Virginia Electric and**
2 **Power Company (“Dominion Energy Virginia” or the “Company”).**

3 A. My name is Steven Schweiger, and I am an Area Planning Engineer in the Electric
4 Transmission Planning Department of the Company. My business address is 10900
5 Nuckols Road, Glen Allen, Virginia 23060. A statement of my qualifications and
6 background is provided as Appendix A.

7 **Q. Please describe your areas of responsibility with the Company.**

8 A. I am responsible for planning the Company’s electric transmission system for voltages
9 of 69 kilovolts (“kV”) through 500 kV.

10 **Q. What is the purpose of your testimony in this proceeding?**

11 A. In order to maintain the structural integrity and reliability of its transmission system in
12 compliance with mandatory North American Electric Reliability Corporation ("NERC")
13 Reliability Standards, Dominion Energy Virginia proposes to, entirely within its existing
14 right-of-way: (i) install a second 500-230 kV transformer bank at the Possum Point 500 kV
15 Substation; (ii) rebuild approximately 0.8 miles of existing 230 kV transmission Line
16 #2078 to accommodate a second circuit following the addition of a 500-230 kV transformer
17 bank; (iii) install 0.95 miles of a new 230 kV transmission line, Line #2216, with three new
18 structures; (iv) install a circuit breaker and line terminal equipment at the Possum Point
19 230 kV Substation; and (v) install two new structures to raise Lines #215/#2001 and Lines

1 #237/#2022 to provide clearance for Line #2078 and Line #2216 (collectively, the
2 "Project").

3 The purpose of my testimony is to describe the Company's electric transmission system
4 and the need for, and benefits of, the proposed Project. I am sponsoring Sections I.B, I.C,
5 I.D, I.E, I.G, I.H, I.J, I.K, I.M, I.N, and II.A.10 of the Appendix. Additionally, I also co-
6 sponsor Sections I.A and I.F of the Appendix with Company Witness Logan Manzuk, and
7 Section II.A.3 with Company Witness Charles H. Weil.

8 **Q. Does this conclude your testimony?**

9 A. Yes, it does.

**BACKGROUND AND QUALIFICATIONS
OF
STEVEN SCHWEIGER**

Steven Schweiger received a Bachelor of Science degree in Electrical Engineering from Hofstra University in Hempstead, NY. Before joining Dominion Energy Virginia in 2021, Mr. Schweiger worked with multiple electric utility companies in the Northeast, Midwest, and Southern regions from 2017 to 2021 as a Transmission Planning Consultant for Burns & McDonnell.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Logan J. Manzuk

Title: Engineer II - Electric Transmission Line Engineer

Summary:

Company Witness Logan J. Manzuk will sponsor those portions 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.L: Although not applicable to the proposed project, this section provides photographs illustrating the deterioration of structures and associated equipment as applicable.
- Section II.A.5: This section provides drawings of the right-of-way cross section showing typical transmission lines structure placements.
- Section II.B.1 to II.B.4: These sections provide the line design and operational features of the proposed project.
- Section IV: This section provides analysis on the health aspects of electric and magnetic field levels.

Additionally, Company Witness Manzuk co-sponsors the following portions of the Appendix:

- Section I.A (co-sponsored with Company Witness Steven Schweiger): This section details the primary justifications for the proposed project.
- Section I.F (co-sponsored with Company Witness Steven Schweiger): This section describes any lines or facilities that will be removed, replaced or taken out of service upon completion of the proposed project and normal and emergency ratings of the facilities.
- Section I.I (co-sponsored with Company Witness Santosh Bhattarai): This section provides the estimated total cost of the proposed project.
- Section II.B.5 (co-sponsored with Company Witness Charles H. Weil): This section provides the mapping and structure heights for the existing and proposed overhead structures.

A statement of Mr. Manzuk's background and qualifications is attached to his testimony as Appendix A.

**DIRECT TESTIMONY
OF
LOGAN J. MANZUK
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00029**

1 **Q. Please state your name, business address and position with Virginia Electric and**
2 **Power Company (“Dominion Energy Virginia” or the “Company”).**

3 A. My name is Logan J. Manzuk, and I am an Engineer II in the Electric Transmission Line
4 Engineering Department of the Company. My business address is 10900 Nuckols Road,
5 Glen Allen, Virginia 23060. A statement of my qualifications and background is provided
6 as Appendix A.

7 **Q. Please describe your areas of responsibility with the Company.**

8 A. I am responsible for the estimating and conceptual design on high voltage transmission
9 line projects from voltages of 69 kilovolts (“kV”) to 500 kV.

10 **Q. What is the purpose of your testimony in this proceeding?**

11 A. In order to maintain the structural integrity and reliability of its transmission system in
12 compliance with mandatory North American Electric Reliability Corporation ("NERC")
13 Reliability Standards, Dominion Energy Virginia proposes to, entirely within its existing
14 right-of-way: (i) install a second 500-230 kV transformer bank at the Possum Point 500 kV
15 Substation; (ii) rebuild approximately 0.8 miles of existing 230 kV transmission Line
16 #2078 to accommodate a second circuit following the addition of a 500-230 kV transformer
17 bank; (iii) install 0.95 miles of a new 230 kV transmission line, Line #2216, with three new
18 structures; (iv) install a circuit breaker and line terminal equipment at the Possum Point
19 230 kV Substation; and (v) install two new structures to raise Lines #215/#2001 and Lines

1 #237/#2022 to provide clearance for Line #2078 and Line #2216 (collectively, the
2 "Project").

3 The purpose of my testimony is to describe the design characteristics of the transmission
4 facilities for the proposed Project, and also to discuss electric and magnetic field ("EMF")
5 levels. I sponsor Sections I.L, II.A.5, II.B.1 to II.B.4, and IV of the Appendix. I also co-
6 sponsor Section I.A and Section I.F of the Appendix with Company Witness Steven
7 Schweiger; Section I.I of the Appendix with Company Witness Santosh Bhattarai; and
8 Section II.B.5 with Company Witness Charles H. Weil.

9 **Q. Does this conclude your testimony?**

10 A. Yes, it does.

**BACKGROUND AND QUALIFICATIONS
OF
LOGAN J. MANZUK**

Logan J. Manzuk graduated from Pennsylvania State University in 2012 with a Bachelor of Science in Civil Engineering. He joined the Company in 2020 as an Engineer II in the Electric Transmission Engineering department. Mr. Manzuk is a licensed engineer in the Commonwealth of Pennsylvania.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Santosh Bhattarai

Title: Supervisor - Substation Engineering

Summary:

Company Witness Santosh Bhattarai sponsors or co-sponsors the following portions of the Appendix describing the work to be performed at the existing substations for the Project, as follows:

- Section I.I (co-sponsored with Company Witness Logan Manzuk): 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(s) associated with the proposed Project, if needed.

A statement of Mr. Bhattarai's background and qualifications is attached to his testimony as Appendix A.

**DIRECT TESTIMONY
OF
SANTOSH BHATTARAI
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00029**

1 **Q. Please state your name, business address and position with Virginia Electric and**
2 **Power Company (“Dominion Energy Virginia” or the Company”).**

3 A. My name is Santosh Bhattarai, and I am a Supervisor in the Substation Engineering section
4 of the Electric Transmission group of the Company. My business address is 5000
5 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and
6 background is provided as Appendix A.

7 **Q. Please describe your areas of responsibility with the Company.**

8 A. I am responsible for supervision of a team of engineers in the Substation Engineering
9 conceptual department. My team is responsible for the evaluation of substation project
10 requirements, feasibility studies, conceptual physical design, scope development,
11 preliminary engineering and cost estimating for high voltage transmission and
12 distribution substations.

13 **Q. What is the purpose of your testimony in this proceeding?**

14 A. In order to maintain the structural integrity and reliability of its transmission system in
15 compliance with mandatory North American Electric Reliability Corporation ("NERC")
16 Reliability Standards, Dominion Energy Virginia proposes to, entirely within Company-
17 owned property: (i) install a second 500-230 kV transformer bank at the Possum Point 500
18 kV Substation; (ii) rebuild approximately 0.8 miles of existing 230 kV transmission Line
19 #2078 to accommodate a second circuit following the addition of a 500-230 kV transformer

1 bank; (iii) install 0.95 miles of a new 230 kV transmission line, Line #2216, with three new
2 structures; (iv) install a circuit breaker and line terminal equipment at the Possum Point
3 230 kV Substation; and (v) install two new structures to raise Lines #215/#2001 and Lines
4 #237/#2022 to provide clearance for Line #2078 and Line #2216 (collectively, the
5 “Project”).

6 The purpose of my testimony is to describe the work to be performed at the Possum Point
7 500 kV Substation and the Possum Point 230 kV Substation as a part of the proposed
8 Project. I sponsor Section II.C of the Appendix. Additionally, I co-sponsor Section I.I of
9 the Appendix with Company Witness Logan Manzuk, specifically, as it pertains to
10 substation work.

11 **Q. Does this conclude your testimony?**

12 **A.** Yes, it does.

**BACKGROUND AND QUALIFICATIONS
OF
SANTOSH BHATTARAI**

Santosh Bhattarai received a Master of Science degree in Electrical Engineering from South Dakota State University in 2006. Before working for the Company, Mr. Bhattarai worked at Electrical Consultants, Inc. from 2006 to 2009 in Billings, Montana as a Substation Design Engineer. Then, from 2010 to 2013, he worked at Electrical Consultants, Inc. in Madison, Wisconsin as a Substation Project Engineer. Mr. Bhattarai's responsibilities included the evaluation of substation project requirements, development of project scope documents, estimates and schedules, preparation of specifications and bid documents, material procurement, develop detailed substation physical drawings, electrical schematics and wiring diagrams. Mr. Bhattarai joined the Dominion Energy Virginia Substation Engineering department in November 2013 as an Engineer III. He was promoted to Consulting Engineer in July 2019 and Substation Supervisor in March 2023. He has been licensed as a Professional Engineer in the Commonwealth of Virginia since 2015. In recognition of his professional standing, the Institute of Electrical and Electronics Engineers ("IEEE") board elected him to the grade of Senior Member in 2017.

Mr. Bhattarai has previously testified before the Virginia State Corporation Commission.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Charles H. Weil

Title: Engineer III, Siting and Permitting Group

Summary:

Company Witness Charles H. Weil will sponsor 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.1: This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2: 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: This section explains why the existing right-of-way is not adequate to serve the need, to the extent applicable.
- Sections II.A.6 to II.A.8: These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9: This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11: This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- 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.
- Section II.B.6: This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III: This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V: This section provides information related to public notice of the proposed project.

Additionally, Mr. Weil co-sponsors the following portion of the Appendix:

- Section II.A.3 (co-sponsored with Company Witness Steven Schweiger): This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.
- Section II.B.5 (co-sponsored with Company Witness Logan J. Manzuk): This section provides the mapping and structure heights for the existing and proposed overhead structures.

Finally, Mr. Weil sponsors the DEQ Supplement filed with the Application. A statement of Mr. Weil's background and qualifications is attached to his testimony as Appendix A.

**DIRECT TESTIMONY
OF
CHARLES H. WEIL
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00029**

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 Charles H. Weil, and I am an Engineer III for Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) in the Siting and Permitting Group. My business address is 10900 Nuckols Road, 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 maintain the structural integrity and reliability of its transmission system in compliance with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to, entirely on Company-owned property: (i) install a second 500-230 kV transformer bank at the Possum Point 500 kV Substation, (ii) rebuild approximately 0.8 miles of existing 230 kV transmission Line

#2078 to accommodate a second circuit following the addition of a 500-230 kV transformer bank; (iii) install 0.95 miles of a new 230 kV transmission line, Line #2216, with three new structures; (iv) install a circuit breaker and line terminal equipment at the Possum Point 230 kV Substation; and (v) install two new structures to raise Lines #215/#2001 and Lines #237/#2022 to provide clearance for Line #2078 and Line #2216 (collectively, the "Project").

The purpose of my testimony is to provide an overview of the route and permitting for the proposed Project. As it pertains to routing and permitting, I sponsor Sections II.A.1, II.A.2, II.A.4, II.A.6, II.A.7, II.A.8, II.A.9, II.A.11, II.A.12, II.B.6, III, and V of the Appendix. I also sponsor the DEQ Supplement filed with the Application, and co-sponsor Section II.A.3 with Company Witness Steven Schweiger, and Section II.B.5 of the Appendix with Company Witness Logan J. Manzuk.

Q. Has the Company complied with Va. Code § 15.2-2202 E?

A. In accordance with Va. Code § 15.2-2202 E, a letter dated February 2, 2023, was sent to Mr. Christopher Shorter, County Executive in Prince William County, Virginia, advising of the Company's intention to file this Application and inviting the County to consult with the Company about the Project. A copy of this letter is included as Appendix Attachment V.D.1.

Q. Does this conclude your pre-filed direct testimony?

A. Yes, it does.

**BACKGROUND AND QUALIFICATIONS
OF
CHARLES H. WEIL**

Charles H. Weil graduated from Virginia Tech in 2012 with a Bachelor of Science in Civil and Environmental Engineering. He has a professional license in Civil Engineering. He was previously a transportation engineer with various consulting firms and the City of Suffolk, Virginia before joining Dominion Energy Virginia as an Engineer II in the Siting and Permitting Group in 2019.

Mr. Weil has previously submitted pre-filed testimony to the Virginia State Corporation Commission.