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November 20, 2023

BY ELECTRONIC FILING

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

Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 230 kV Germanna Lines and Germanna Substation
Case No. PUR-2023-00206

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, DEQ Supplement, and Routing Study, including attachments.

As indicated in Section II.A.12.b of the Appendix, an electronic copy of the map of the Virginia Department of Transportation "General Highway Map" for Culpeper County, as well as the digital geographic information system ("GIS") map required by § 56-46.1 of the Code of Virginia, which is Attachment II.A.2 to the Appendix, were provided via an e-room to the Commission's Division of Public Utility Regulation on November 17, 2023.

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

Highest regards,

Vishwa B. Link

Enclosures

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

Mr. Michael A. Cizenski (without enclosures)
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Dominion Energy®

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

Before the State Corporation Commission of Virginia

230 kV Germanna Lines and Germanna Substation

Application No. 330

Case No. PUR-2023-00206

Filed: November 20, 2023

Volume 1 of 3

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Germanna Lines and Germanna Substation

Application No. 330

Case No. PUR-2023-00206

Filed: November 20, 2023

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2023-00206
	)	
For approval and certification of electric transmission facilities: 230 kV Germanna Lines and Germanna Substation	)	

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

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

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

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

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

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

(1) Construct a new overhead 230 kilovolt ("kV") double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199[1] at Structure #2199/102,[2] resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in

[1] The Company's existing Line #2199 is currently named the Gordonsville-Remington line. However, in November 2022, the Company filed for a certificate of public convenience and necessity ("CPCN") from the Commission for various new electric transmission facilities in Culpeper County, Virginia. Among other things, the Company proposed to cut the existing Gordonsville-Remington Line #2199, resulting in Cirrus-Gordonsville Line #2199, Cirrus-Keyser Line #2278, and Germanna-Keyser #2276. *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: Cirrus-Keyser 230 kV Loop and Related Projects*, Case No. PUR-2022-00198 (filed Nov. 21, 2022). The Commission approved that project with an in-service date of December 30, 2025, which means it will be in service prior to the Project proposed herein. *See* Case No. PUR-2022-00198, Final Order at 5-6 (Oct. 23, 2023). For ease of reference in this Appendix, the Company will refer to the line being cut for the Project as the Cirrus-Gordonsville Line #2199 or simply Line #2199, with the resulting new lines proposed herein being named accordingly.

[2] Structure #2199/102 is a double circuit weathering steel monopole structure that also supports existing 115 kV Mountain Run-Oak Green Line #2 (Structure #2199/102 / #2/488), which will be removed to effectuate the cut-in at the Company's existing Line #2199. Specifically, in order to construct the Germanna Lines, the existing double circuit Structure #2199/102 / #2/488 will be removed and replaced with one single circuit monopole (Structure #2/488) and one double circuit 2-pole structure (Structure #2199/102 / #2331/102). See Attachment II.A.5.c-d and Attachment II.B.3.c-d of the Appendix. Importantly, the proposed Structure #2/488 will be located within the existing transmission corridor and is estimated to be within 20% of the existing structure heights in the corridor supporting Line #2, and with similar finish as the existing structure being replaced. Additionally, the Company plans to reuse the Line #2 conductor by transferring it to the new structure once installed. While this work on Line #2 is a component of the proposed Project, the Company considers the removal of the double circuit weathering steel monopole that currently supports Line #2 and replacing it with a single circuit deadend monopole structure to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. This is consistent with the Commission Staff's July 6, 2017 guidance (available at https://scc.virginia.gov/getdoc/7f6ec0f6-7d14-4ca9-bd8a-9bd2511c5cdb/StaffGuidanceOrdvsNonOrd.pdf), as only one structure is being replaced on Line #2 and the proposed structure will not be more than 20% taller than the existing structure. As a component of the proposed Project, the costs associated with this work on Line #2 have been included in the total transmission-related conceptual costs. Should the Commission determine that a CPCN is required for the work associated with Line #2 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;[3]

(2) Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and

(3) Perform relay resets at the Company's existing Gordonsville and Remington Substations.[4]

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

4. The Project is necessary to assure that Dominion Energy Virginia can provide requested service to by the Customer in Culpeper County, Virginia, maintain reliable service for the overall growth in the load area surrounding the Company's existing Culpeper Substation ("Culpeper Load Area"), and comply with mandatory NERC Reliability Standards. Specifically, the Customer has requested a total of 135 MW of contract load from Dominion Energy Virginia to serve its new data center campus in Culpeper County, Virginia.

5. The Company's existing Culpeper Substation is the source substation for the local load area and also the closest substation to the Customer's campus; however, the Culpeper Substation does not have the adequate capacity to serve this total block of load. As a result, connecting the Customer's requested load to the Culpeper Substation would result in (i) substation

[3] 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.

[4] Note that the Company's existing Gordonsville Substation is located in Orange County, Virginia, and the Company's existing Remington Substation is located in Fauquier County, Virginia.

transformer thermal overloads, and (ii) violations of the Company's transmission system reliability criteria set forth in the Facilities Interconnection Requirement ("FIR") document.[5] Accordingly, to serve this new data center campus block load and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards, the Company is proposing to construct the Germanna Lines and Germanna Substation. With the proposed Project, the system transformers in the Culpeper Load Area are not overloaded, and reliability criteria are met.

6. The Company identified an approximately 1.8-mile overhead proposed route for the Project ("Proposed Route" or "Route 2"), as well as an approximately 2.4-mile overhead alternative route ("Alternative Route 1" or "Route 1") and an approximately 2.0-mile overhead alternative route ("Alternative Route 3" or "Route 3"). The Company is proposing all three routes for notice and Commission consideration. Discussion of the Proposed Route and the Alternative Routes, as well as other underground routes, overhead routes, and distribution solutions that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

7. The Company selected the Proposed Route (Route 2) after evaluating numerous routing constraints and opportunities identified during months of desktop study, stakeholder outreach, and fieldwork. While Alternative Route 1 has some advantages over the Proposed Route and Alternative Route 3—mainly less wetland impact and fewer homes proximate to the route—it is longer, would require more right-of-way, and would require substantially more tree clearing than the other alternatives. Moreover, the Proposed Route and Alternative Route 3 each take

[5] The Company's Transmission Planning Criteria (effective April 1, 2023) can be found in Attachment 1 of the Company's FIR document, which is available online at https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-connection-requirements.pdf?la=en&rev=f280781e90cf47f69ea526c944c9c347&hash=82DD2567D0B033C47536134B8C4D5C5E.

advantage of future developments which would collocate the transmission infrastructure with future industrial lands (a solar facility and a data center campus). The routes would utilize crossings of these future developments and parallel a landscape buffer for the solar facility to help mitigate the visual impacts of the Project. Alternative Route 1 does not similarly leverage future developments, instead, crossing mostly forested areas and areas under Agricultural and Forestal District enrollment that are not planned to be affected by other projects. The impacts of the Proposed Route and Alternative Route 3 would be similar overall, but the Proposed Route is shorter and impacts less forested land. Additionally, the Proposed Route is the least expensive of all three routes. Because the Proposed Route is shorter and less costly than Alternative Route 3 and impacts less forested and agricultural land, the Company believes the Proposed Route (Route 2) is best aligned with Culpeper County's land use policies and best supports the recommendation of the Culpeper County Board of Supervisors' October 3, 2023 unanimous resolution.[6]

8. The proposed Germanna Substation initially will be constructed with four 230 kV breakers in a ring bus arrangement, with two 112 MVA and two 84 MVA 230-34.5 kV transformers, built to 4000 ampere standards. In total, the Germanna Substation will be designed to accommodate future growth in the area with an ultimate station configuration of six 230 kV breakers and five transformers. The total area required to build the Germanna Substation is approximately 6.1 acres.

9. The desired in-service target date for the proposed Project is April 16, 2026. The

[6] On October 3, 2023, the Board of Supervisors of Culpeper County (the "Board") voted unanimously to approve *A Resolution Requesting that Dominion Energy Pursue, and the State Corporation Commission Approve, a Southern Routing Option for the Transmission Line 2199 Extension in the Germanna Project*. *See* Attachment III.E.1 to the Appendix. The recitals in the resolution state the Board's intent to provide clear support for, and recommendation for approval of a southern route (*i.e.* the Proposed Route or Alternative Route 3), both of which are consistent with the goal and objectives of the Culpeper County Comprehensive Plan, which aims to minimize development of agricultural lands. See Section III.E of the Appendix for additional discussion.

Company estimates it will take approximately 20 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 August 15, 2024. Should the Commission issue a final order by August 15, 2024, the Company estimates that construction should begin around June 2025, and be completed by April 2026. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. This schedule is also contingent upon the Company's ability to negotiate property rights with property owners along the approved route without the need for additional litigation. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due labor shortages or materials/supply issues. In addition, the Company is actively monitoring the regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how it potentially could impact construction timing associated with time of year restrictions ("TOYRs"). The existing interim guidance from the U.S. Fish and Wildlife Service for the NLEB expires on March 31, 2024. The Company is also monitoring potential regulatory changes associated with the potential listing of the Tri-colored bat. On September 14, 2022, the USFWS published a proposed rule in the Federal Register proposing to list the Tri-colored bat as endangered, with an estimated announcement of a final decision within 12 months;[7] however, as of filing the Application the final listing has not been published in the Federal

[7] *See* https://www.federalregister.gov/documents/2022/09/14/2022-18852/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-tricolored-bat.

Register. Regulatory guidance on the Tri-colored bat will be available upon up-listing. The Company's construction window described above may require adjustment based upon the regulatory guidance and potential TOYRs associated with these two bat species.

10. The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $54.3 million,[8] which includes approximately $12.7 million for transmission-related work and approximately $41.6 million for substation-related work (2023 dollars).

11. 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.

12. 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.

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

14. In addition to the information provided in the Appendix, the DEQ Supplement, and the Environmental Routing Study, this Application is supported by the pre-filed direct testimony of Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Jared B.

[8] The total Project costs are inclusive of the work associated with Line #2 (*see supra* n. 2), the excess facilities charges described in Appendix Section I.C that will be collected from the Customer, and the projected real estate costs that the Company anticipates will be required to acquire the land for the Proposed Route and Germanna Substation.

McPherson, Gregory R. Baka, and Jacob M. Rosenberg 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 § 56-46.1 of the Code of Virginia;

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

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

VIRGINIA ELECTRIC AND POWER COMPANY

By: *[s] Vishwa B. Link*
Counsel for Applicant

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Counsel for Applicant Virginia Electric and Power Company

November 20, 2023

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Germanna Lines and Germanna Substation

Application No. 330

Appendix

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

Case No. PUR-2023-00206

Filed: November 20, 2023

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EXECUTIVE SUMMARY

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

(1) Construct a new overhead 230 kilovolt ("kV") double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199[1] at Structure #2199/102,[2] resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor

[1] The Company's existing Line #2199 is currently named the Gordonsville-Remington line. However, in November 2022, the Company filed for a certificate of public convenience and necessity ("CPCN") from the State Corporation Commission (the "Commission") for various new electric transmission facilities in Culpeper County, Virginia. Among other things, the Company proposed to cut the existing Gordonsville-Remington Line #2199, resulting in Cirrus-Gordonsville Line #2199, Cirrus-Keyser Line #2278, and Germanna-Keyser #2276. *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: Cirrus-Keyser 230 kV Loop and Related Projects*, Case No. PUR-2022-00198 (filed Nov. 21, 2022). The Commission approved that project with an in-service date of December 30, 2025, which means it will be in service prior to the Project proposed herein. *See* Case No. PUR-2022-00198, Final Order at 5-6 (Oct. 23, 2023). For ease of reference in this Appendix, the Company will refer to the line being cut for the Project as the Cirrus-Gordonsville Line #2199 or simply Line #2199, with the resulting new lines proposed herein being named accordingly.

[2] Structure #2199/102 is a double circuit weathering steel monopole structure that also supports existing 115 kV Mountain Run-Oak Green Line #2 (Structure #2199/102 / #2/488), which will be removed to effectuate the cut-in at the Company's existing Line #2199. Specifically, in order to construct the Germanna Lines, the existing double circuit Structure #2199/102 / #2/488 will be removed and replaced with one single circuit monopole (Structure #2/488) and one double circuit 2-pole structure (Structure #2199/102 / #2331/102). See Attachment II.A.5.c-d and Attachment II.B.3.c-d. Importantly, the proposed Structure #2/488 will be located within the existing transmission corridor and is estimated to be within 20% of the existing structure heights in the corridor supporting Line #2, and with similar finish as the existing structure being replaced. Additionally, the Company plans to reuse the Line #2 conductor by transferring it to the new structure once installed. While this work on Line #2 is a component of the proposed Project, the Company considers the removal of the double circuit weathering steel monopole that currently supports Line #2 and replacing it with a single circuit deadend monopole structure to qualify as an "ordinary extension[] or improvement[] 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 CPCN from the Commission. This is consistent with the Commission Staff's July 6, 2017 guidance (available at https://scc.virginia.gov/getdoc/7f6ec0f6-7d14-4ca9-bd8a-9bd2511c5cdb/StaffGuidanceOrdvsNonOrd.pdf), as only one structure is being replaced on Line #2 and the proposed structure will not be more than 20% taller than the existing structure. As a component of the proposed Project, the costs associated with this work on Line #2 have been included in the total transmission-related conceptual costs. Should the Commission determine that a CPCN is required for the work associated with Line #2 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

with a summer transfer capability of 1,573 MVA;[3]

(2) Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and

(3) Perform relay resets at the Company's existing Gordonsville and Remington Substations.[4]

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

The Project is necessary to assure that Dominion Energy Virginia can provide service requested by the Customer in Culpeper County, Virginia, maintain reliable service for the overall growth in the load area surrounding the Company's existing Culpeper Substation ("Culpeper Load Area"), and comply with mandatory NERC Reliability Standards. Specifically, the Customer has requested a total of 135 MW of contract load from Dominion Energy Virginia to serve its new data center campus in Culpeper County, Virginia.

The Company's existing Culpeper Substation is the source substation for the local load area and also the closest substation to the Customer's campus; however, the Culpeper Substation does not have the adequate capacity to serve this total block of load. As a result, connecting the Customer's requested load to the Culpeper Substation would result in (i) substation transformer thermal overloads, and (ii) violations of the Company's transmission system reliability criteria set forth in the Facilities Interconnection Requirement ("FIR") document.[5] Accordingly, to serve this new data center campus block load and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards, the Company is proposing to construct the Germanna Lines and Germanna Substation. With the proposed Project, the system transformers in the Culpeper Load Area are not overloaded, and reliability criteria are met.

The Company identified an approximately 1.8-mile overhead proposed route for the Project ("Proposed Route" or "Route 2"), as well as an approximately 2.4-mile overhead alternative route ("Alternative Route 1" or "Route 1") and an approximately 2.0-mile overhead alternative route ("Alternative Route 3" or "Route 3"). The Company is proposing all three routes for notice and Commission consideration. Discussion of the Proposed Route and the Alternative Routes, as well as other underground routes, overhead routes, and distribution solutions that the Company studied

[3] 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.

[4] Note that the Company's existing Gordonsville Substation is located in Orange County, Virginia, and the Company's existing Remington Substation is located in Fauquier County, Virginia.

[5] The Company's Transmission Planning Criteria (effective April 1, 2023) can be found in Attachment 1 of the Company's FIR document, which is available online at https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-connection-requirements.pdf?la=en&rev=f280781e90cf47f69ea526c944c9c347&hash=82DD2567D0B033C47536134B8C4D5C5E.

but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

The proposed Germanna Substation initially will be constructed with four 230 kV breakers in a ring bus arrangement, with two 112 MVA and two 84 MVA 230-34.5 kV transformers, built to 4000 ampere ("A") standards. In total, the Germanna Substation will be designed to accommodate future growth in the area with an ultimate station configuration of six 230 kV breakers and five transformers. The total area required to build the Germanna Substation is approximately 6.1 acres.

The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $54.3 million,[6] which includes approximately $12.7 million for transmission-related work and approximately $41.6 million for substation-related work (2023 dollars).

The desired in-service target date for the proposed Project is April 16, 2026. The Company estimates it will take approximately 20 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 August 15, 2024. Should the Commission issue a final order by August 15, 2024, the Company estimates that construction should begin around June 2025, and be completed by April 2026. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. This schedule is also contingent upon the Company's ability to negotiate for property rights with property owners along the approved route without the need for additional litigation. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due labor shortages or materials/supply issues. In addition, the Company is actively monitoring the regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how it potentially could impact construction timing associated with time of year restrictions ("TOYRs"). The existing interim guidance from the U.S. Fish and Wildlife Service ("USFWS") for the NLEB expires on March 31, 2024. The Company is also monitoring potential regulatory changes associated with the potential listing of the Tri-colored bat. On September 14, 2022, the USFWS published a proposed rule in the Federal Register proposing to list the Tri-colored bat as endangered, with an estimated announcement of a final decision within 12 months; however, as of filing the Application the final listing has not been published in the Federal Register. Regulatory guidance on the Tri-colored bat will be available upon up-listing. The Company's construction window described above may require adjustment based upon the regulatory guidance and potential TOYRs associated with these two bat species.

[6] The total Project costs are inclusive of the work associated with Line #2 (*see supra* n. 2), the excess facilities charges described in Section I.C that will be collected from the Customer, and the projected real estate costs that the Company anticipates to acquire the land for the Proposed Route and Germanna Substation.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project is necessary to provide service requested by the Customer in Culpeper County, Virginia, to maintain reliable service for the overall load growth in the Project area, and to comply with mandatory NERC Reliability Standards. See Attachment I.A.1.a for an overview map of the Proposed and Alternative Routes and approximate boundary of the Culpeper Load Area, and Attachment I.A.1.b for a zoomed in map of the Project area, including the location of the Customer's future data center.

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

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

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

PJM's Regional Transmission Expansion Plan ("RTEP") is the culmination of a FERC-approved annual transmission planning process that includes extensive analysis of the electric transmission system to determine any needed improvements.[8] 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.[9] Projects identified through the RTEP process are developed by the TO in coordination with PJM, and are presented at the Transmission Expansion Advisory Committee ("TEAC") meetings prior to inclusion in the RTEP, which is then presented for approval to the PJM Board of Managers (the "PJM Board").

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

[7] *See* Facility Connection ("FAC") standard 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?la=en&rev=38f51ffb04b1489f921b32a41d9887c8.

[8] 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.

[9] *See* PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria. *See supra*, n. 8.

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

Need for the Project

The Project is needed to provide service requested by the Customer for a new data center campus, and to maintain reliable service for the overall load growth in the Culpeper Load Area, in compliance with mandatory NERC Reliability Standards. The Culpeper Load Area encompasses portions of eastern and southern Culpeper County and is generally bounded by the Town of Culpeper to the east, the proposed Germanna Substation to the west, U.S. Route 15 to the north and the Rapidan River/Orange County line to the south. See Attachment I.A.1.a.

In September 2023, the Company's Distribution Planning group submitted an updated delivery point ("DP") request to the Transmission Planning group for construction of a new substation (*i.e.*, the Germanna Substation) to serve the Customer's new data center campus in Culpeper County, Virginia. Specifically, the Customer is constructing two data center buildings ("Building A" and "Building B") on its campus in Culpeper County (see Attachment I.A.1.b), which will require 15 MW to begin its load ramp in September 2024, with a total of 135 MW of requested contract capacity at full build out.

While the Company's existing Culpeper Substation is the source substation for the local load area and also the closest substation to the Customer's new data center campus, the Culpeper Substation does not have the adequate capacity to serve this total block of load. As a result, connecting the Customer's requested load to the Culpeper Substation would result in (i) substation transformer thermal overloads, and (ii) violations of the Company's transmission system reliability criteria set forth in the FIR document.[10] See Section I.C. Accordingly, the Project is needed to serve the Customer's new data center campus in Culpeper County, Virginia, and maintain reliable service for the overall load growth in the Culpeper Load Area, consistent with NERC Reliability Standards.

However, the Project cannot be completed and energized until April 2026. Due to the Customer's requested service and timing (15 MW by 2024), and the inability of the existing Culpeper Substation to serve the total need required by the Customer's campus (as discussed further in Section I.C), the Company determined that bridging power initially would be needed to serve the Customer's Building A. Specifically, to address the Customer's need and ramp schedule, the Company determined that the Culpeper Substation could accommodate 15 MW of bridging power for the Customer from 2024 to 2026 without resulting in overload conditions. See Attachment I.C.1.b. The Company will use existing distribution infrastructure to serve the Customer's need until the proposed Project is completed and energized

[10] *See supra*, n. 5.

in April 2026. At that time, the Customer's load is projected to ramp up to full capacity over the next 10 years, and will be served by the proposed Project, as shown in the table below.

Customer Building	Substation Source	Contract Capacity
Building A	Culpeper Substation	15 MW (bridging)
Building A	Germanna Substation	74 MW
Building B	Germanna Substation	60.5 MW

Attachment I.A.2 provides a one-line diagram of the existing area transmission system. Attachment I.A.3 provides a one-line diagram after the completion of the proposed Project in 2026. See Attachment II.A.2 for a map depicting the proposed Project area.

Project Description

Germanna Lines

As part of the Project, the Company proposes to construct the new overhead 230 kV double circuit Germanna Lines by cutting the Company's 230 kV Line #2199 at Structure #2199/102 and extending them approximately 1.8 miles to the proposed Germanna Substation, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA.

In addition to the approximately 1.8-mile overhead Proposed Route (Route 2), the Company identified an approximately 2.4-mile overhead Alternative Route 1 and an approximately 2.0-mile overhead Alternative Route 3. The Company is proposing all three routes for notice and Commission consideration.

Discussion of the Proposed Route and the Alternative Routes, as well as other overhead routes, underground routes, and distribution solutions that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

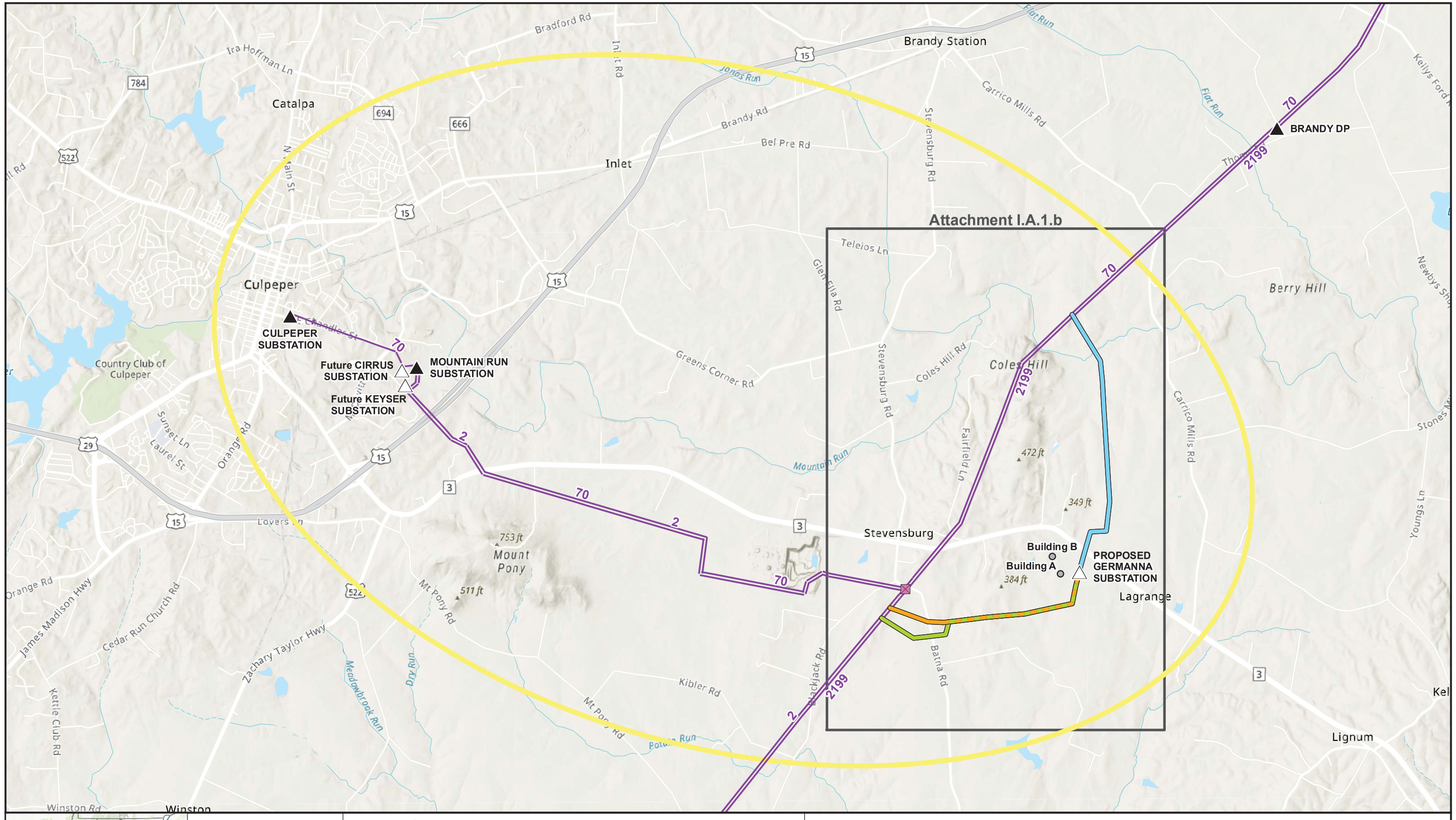
Germanna Substation

The Company also proposes to construct the Germanna Substation, which initially will be constructed with four 230 kV breakers in a ring bus arrangement, with two 112 MVA and two 84 MVA 230-34.5 kV transformers, built to 4000A standards. The load from the Customer's data center campus will be split between two 112 transformers and four feeders, with two normal feeders and two alternate feeders. In total, the Germanna Substation will be designed to accommodate future growth

in the area with an ultimate configuration of six 230 kV breakers and five transformers. The total area required to build the Germanna Substation is approximately 6.1 acres.

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

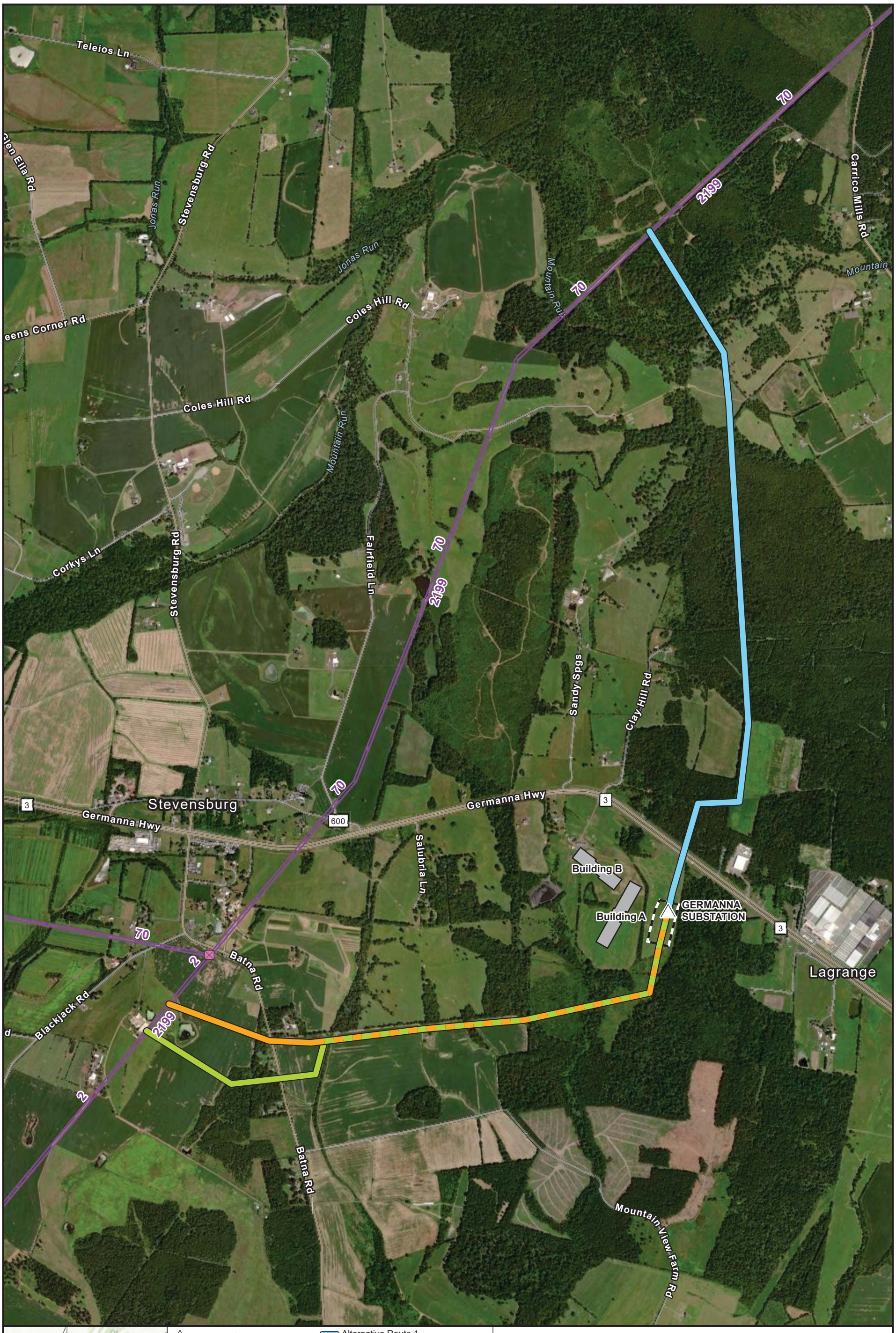


Attachment I.A.1.a
Project Overview and Culpeper Load Area
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

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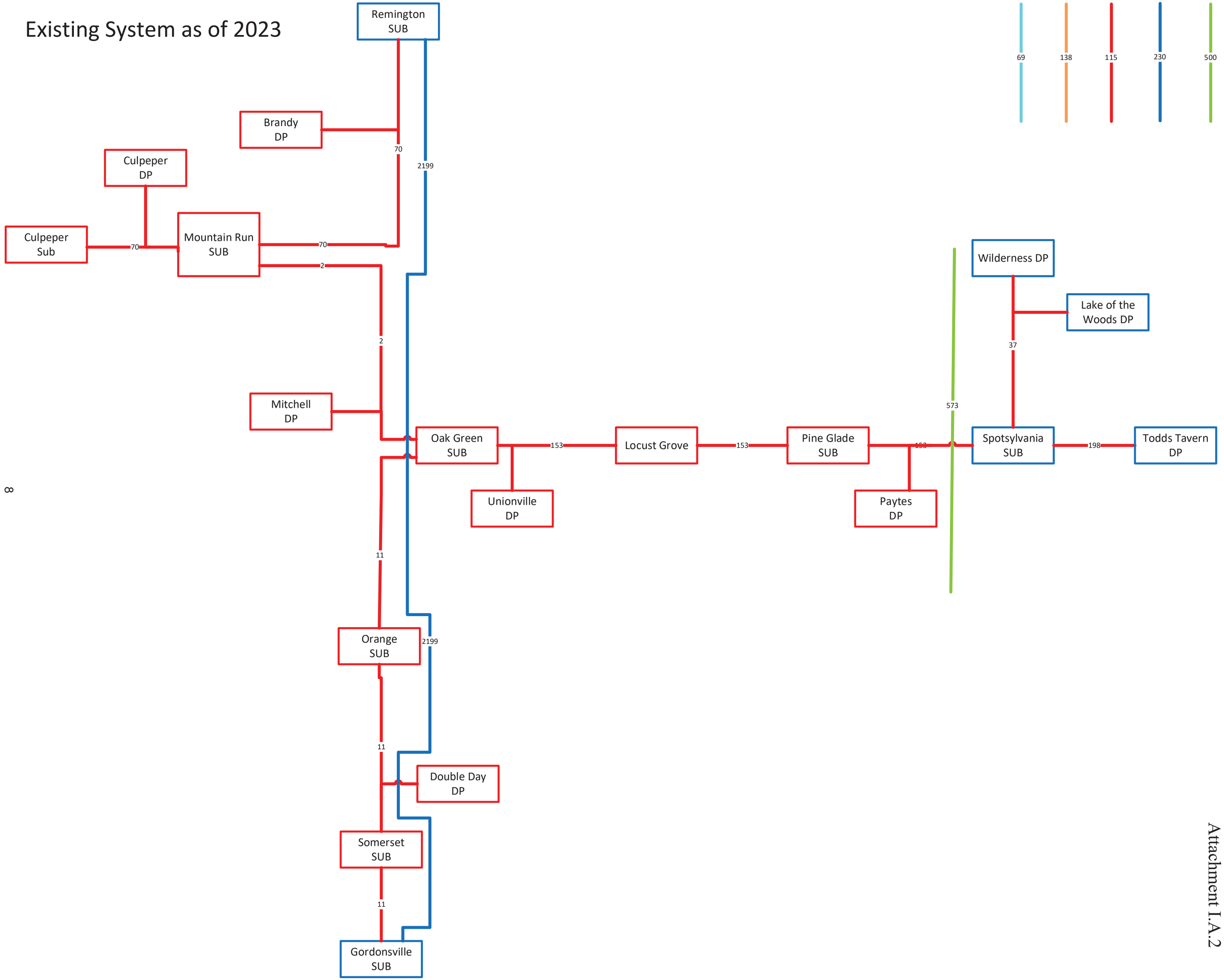
Attachment I.A.1.b
Overview Project
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

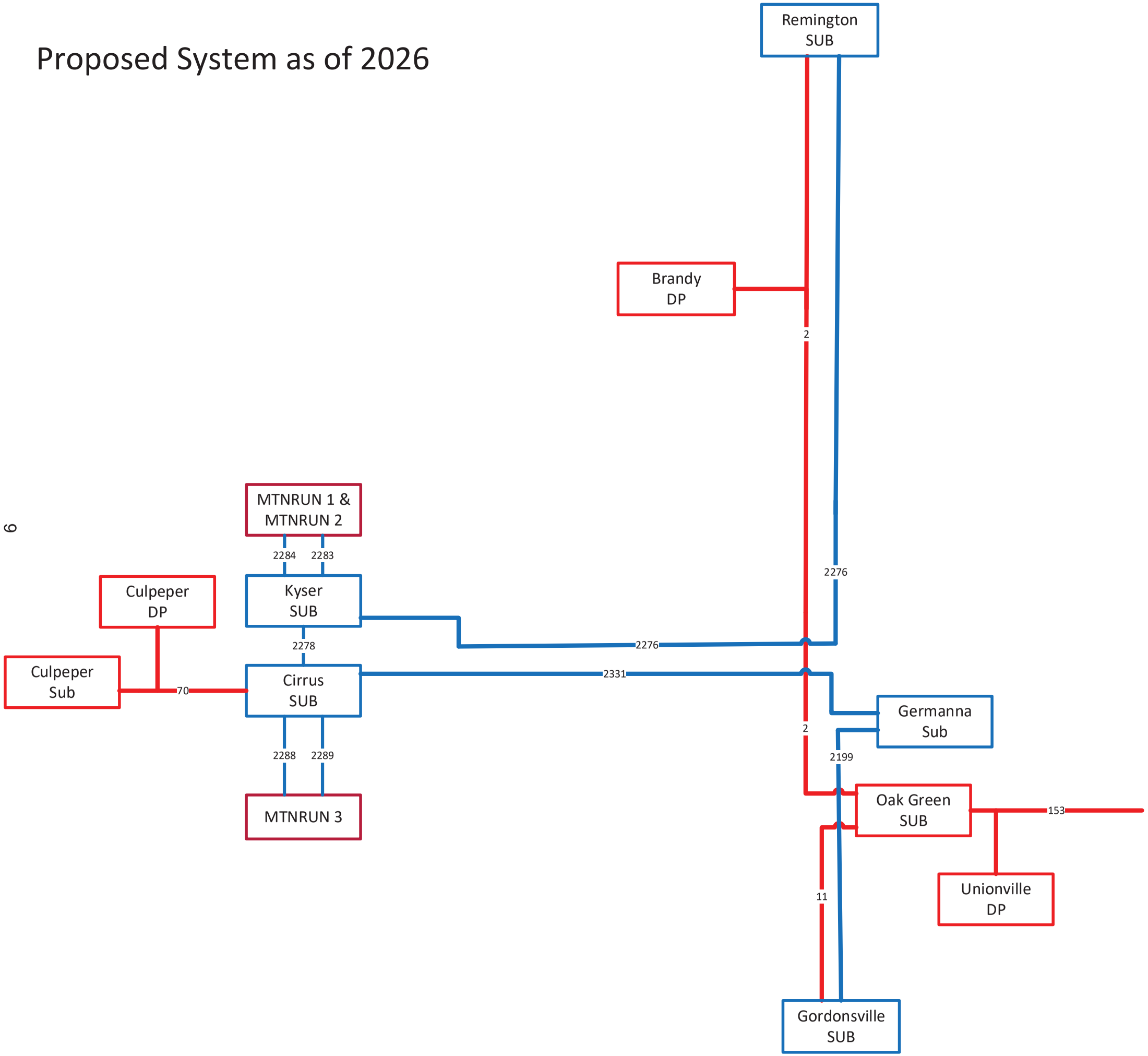
Dominion Energy

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Existing System as of 2023



Proposed System as of 2026



I. NECESSITY FOR THE PROPOSED PROJECT

B. Detail the [1] 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 [2] 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 [3] 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 [4] list of those facilities that are not yet in service.

Response: **[1] Engineering Justification for Project**

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

See Section I.A of the Appendix.

[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.

The proposed Project is needed to serve the Customer's new data center campus and maintain reliable service for the overall load growth in the area, consistent with NERC Reliability Standards. While future transmission facilities are located generally within the Culpeper Load Area, each has its own unique load growth driver, and as such, these future projects do not "require" that the proposed Project be constructed. These facilities include new substations that will be required to serve other parcels within the Culpeper Load Area that have the potential to be developed as data centers.

For example, the Company is aware of two new data center campuses that are in the preliminary planning stages in the Culpeper Load Area.[11] Based on the Company's experience with typical loading projections for data center campuses, the peak loading of just one new data center campus can be expected to exceed 100 MW. At full build out of these new data center campuses, the Company anticipates additional transmission infrastructure will be required in the Project area, potentially including two to three substations. The Company anticipates that the

[11] *See, e.g.,* https://www.datacenterdynamics.com/en/news/peterson-companies-announces-2-million-sq-ft-data-center-campus-in-virginias-culpeper-county/.

Germanna Substation will be able to provide bridging power to these new data center campuses until such time as those future substations can be energized.

[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.

Distribution

For this Project, the Company's Distribution Planning group first used the Customer's load projection information for the data center development. After analyzing the information, the Distribution Planning group determined for this Project that it was not feasible to serve the total requested load at full build out from the Company's existing Culpeper Substation, which is the source substation for the local area load and also the closest substation to the Customer's campus. Specifically, the Company is unable to install the additional transformers and ring bus at the Culpeper Substation that would be required to accommodate the total load at full build out consistent with NERC Reliability Standards due to space constraints at the substation. While the Company has determined that the Culpeper Substation can accommodate 15 MW of bridging power for the Customer from 2024 to 2026 without resulting in overload conditions, the Project will be required to serve the full build out of the Customer's campus. See Sections I.A and I.C.

Transmission

In order to maintain reliable service to the Company's customers and to comply with mandatory NERC Reliability Standards, specifically FAC-001,[12] the Company's FIR[13] document addresses the interconnection requirements of generation, transmission, and electricity end-user facilities. The purpose of the NERC FAC standards is to avoid adverse impacts on reliability by requiring that each TO establish facility connection and performance requirements in accordance with FAC-001, and the TO's and end-users meet and adhere to the established facility connection and performance requirements in accordance with FAC-002.[14]

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

[12] *See supra*, n. 7.

[13] *See supra*, n. 5.

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

Exhibit A of the FIR document.

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

1) Ring bus arrangement is required for load interconnections in excess of 100 MW (Company's FIR, Section 6.2); and

2) The minimum load levels within a 10-year planning horizon for the direct interconnection to existing transmission lines is 30 MW for a 230 kV delivery (Company's FAC-001 Section 6, Load Criteria – End User).

The Project is being constructed as two single 230 kV circuits to comply with Section 6.2 of the Company's FIR, which requires a ring bus arrangement for load interconnections in excess of 100 MW.

[4] Facilities List

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

See Attachment I.A.1.a for the affected Culpeper Load Area, and Attachment I.A.3 for a one-line diagram of facilities that will be in-service once the Project is completed. See Attachment I.G.1 for existing transmission facilities.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The existing Culpeper Load Area is located in Culpeper County, Virginia, and is generally bounded by the Town of Culpeper to the east, the proposed Germanna Substation to the west, U.S. Route 15 to the north, and the Rapidan River/Orange County line to the south. See Attachment I.A.1.a for a map of the general load area boundary and Attachment I.A.1.b for the location of the Customer's data center campus that comprises the need for the Project. See Attachment I.G.1 for the portion of the Company's existing transmission facilities in the area of the Project. The Culpeper Substation is the source substation for the local load area, and is also the closest to the Customer's data center campus. The load at the Customer's two buildings is projected to be approximately 123.5 MVA[15] in 10 years. Adding the load from the Customer's future data center buildings to the existing Culpeper Substation would result in overload conditions and NERC transmission system reliability criteria violations, as discussed in Section I.A.

Attachment I.C.1 shows loading (MVA), as follows:

- Attachment I.C.1.a shows historical and projected loading at Culpeper Substation from 2019 through 2034, without the Customer's contracted load or requested bridging.
- Attachment I.C.1.b shows historical and projected loading at Culpeper Substation from 2019 through 2034, with the Customer's Building A receiving bridging power from 2024-2026, and the full load of Buildings A and B through 2034.
- Attachment I.C.1.c shows projected loading at Germanna Substation through 2034, with the Customer's Building A and Building B beginning in 2026.

Note that Attachments I.C.1.a, I.C.1.b and I.C.1.c include only the normal feed circuits to the Company's customers; they do not include any alternate feed loads.

For this Project, the Customer has requested that each of its data center buildings include a totally independent, redundant distribution feed. This is referred to as an alternate feed. At any customer's request, the Company will endeavor to design a

[15] It is the Company's standard practice for planning purposes to apply a diversification factor to determine projected load at full build out. For this load, a diversification factor of 90% was utilized, based on previous similar loads.

distribution system that provides for a back-up source of power should their normal feed have an outage. The cost of this alternate feed arrangement is compared to the normal arrangement of service, and the difference in cost is collected through an excess facilities charge. The Customer's business plan counts on the requested alternate feed plan to meet the non-outage demands of its data center clients. Therefore, the Company plans to serve the Customer's two data center buildings with both normal feed circuits and alternate feed circuits. This essentially doubles the required substation transformer capacity that the Customer will contract for and double the number of distribution circuits required compared to providing normal feed service only. Attachments I.C.1.a, I.C.l.b, and I.C.l.c do not include alternate feed loads from other customers that have existing alternate feed contracts.

The proposed Germanna Substation will be constructed with two 112 MVA and two 84 MVA transformers installed in the substation. Each 112 MVA and 84 MVA, 230-34.5 kV transformer will have a normal overload rating ("NOL") of 120 MVA. The transformers will be responsible for sourcing two normal feeders and two alternate feeders for the Customer's data center capacity. Each feeder connected to the substation transformers will have a thermal overload rating that is based on the type of equipment and the configuration of the equipment in the field. To prevent overloads that could damage equipment or result in failure, the maximum capacity limits of the distribution circuits and the substation transformers cannot be exceeded.

The Company's FIR document requires a ring bus arrangement for load interconnections in excess of 100 MW (Section 6.2) and that the total load in any distribution substation not exceed 300 MW (Section C.2.8) to ensure system reliability and to remain in compliance with NERC mandated reliability criteria. The Culpeper Substation was not designed with a ring bus arrangement and space constraints at the substation prohibit the installation of a ring bus, thereby leading to load in excess of 100 MW were the Customer's full load at build-out added to that substation (see Attachment I.C.1.b). As proposed, the Germanna Substation has been designed with a ring bus arrangement in order to serve load in excess of 100 MW but not in excess of 300 MW, and therefore can accommodate the Customer's load at full build out (see Attachment I.C.1.c). See also Section I.B.

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

As shown in Attachment I.C.1.b, the Culpeper Substation is projected to have TX #2 thermal overloads starting in summer 2027 (with all existing load, planned load, and load from the Customer's data center campus). Both of the Culpeper Substation transformers will be thermally overloaded starting by summer 2028.

Based on all these stated projected overloads and criteria violations above, the Company needs to construct the Project by April 2026, with bridging power sourced from Culpeper Substation from 2024 until energization of the Germanna Substation.

Table I.C.1.a																		
Culpeper Sub Area																		
Culpeper Substation (Loads contain Area Load only)																		
			2019 Actual Summer Peak Loading (MVA)	2020 Actual Summer Peak Loading (MVA)	2021 Actual Summer Peak Loading (MVA)	2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Summer Projection (MVA)	2025 Summer Projection (MVA)	2026 Summer Projection (MVA)	2027 Summer Projection (MVA)	2028 Summer Projection (MVA)	2029 Summer Projection (MVA)	2030 Summer Projection (MVA)	2031 Summer Projection (MVA)	2032 Summer Projection (MVA)	2033 Summer Projection (MVA)	2034 Summer Projection (MVA)
Substation Total			38.3	33.5	40.5	35.9	51.8	52.3	52.8	53.3	53.9	54.4	54.9	55.6	56.0	56.6	57.2	57.8
Substation Total Calculation for 100 MW or Less NERC Tapped Line Load Criteria			36.4	31.8	38.5	34.1	49.2	49.7	50.2	50.7	51.2	51.7	52.2	52.8	53.2	53.7	54.3	54.9
Transformer	Nameplate	NOL																
TX #1	44.8	49.28	16.9	12.9	16.2	14.9	15.1	15.2	15.4	15.5	15.7	15.8	16.0	16.2	16.3	16.5	16.7	16.9
TX #2	56	61.6	21.4	20.6	24.3	21	36.7	37.1	37.4	37.8	38.2	38.6	39.0	39.4	39.7	40.1	40.5	40.9

Table I.C.1.b																		
Culpeper Sub Area											Tx #2 is Overloaded.	Tx # 1 and Tx # 2 are Overloaded. Exceeding NERC 100MW requirement. Substation was built without having the four-breaker ring bus required for loads over 100MW and based on tapped lines of 100MW or less.						
Culpeper Substation (Loads contain Area Load, Bridging, and Customer Load)																		
			2019 Actual Summer Peak Loading (MVA)	2020 Actual Summer Peak Loading (MVA)	2021 Actual Summer Peak Loading (MVA)	2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Summer Projection (MVA)	2025 Summer Projection (MVA)	2026 Summer Projection (MVA)	2027 Summer Projection (MVA)	2028 Summer Projection (MVA)	2029 Summer Projection (MVA)	2030 Summer Projection (MVA)	2031 Summer Projection (MVA)	2032 Summer Projection (MVA)	2033 Summer Projection (MVA)	2034 Summer Projection (MVA)
Substation Total			38.3	33.5	40.5	35.9	51.8	67.3	67.8	76.4	108.9	162.4	178.6	179.1	179.7	180.3	180.8	181.4
Substation Total Calculation for 100 MW or Less NERC Tapped Line Load Criteria			36.4	31.8	38.5	34.1	49.2	64.0	64.4	72.6	**103.5**	**154.3**	**169.7**	**170.2**	**170.7**	**171.2**	**171.8**	**172.3**
Transformer	Nameplate	NOL																
TX #1	44.8	49	16.9	12.9	16.2	14.9	15.1	30.3	30.4	27.1	43.2	**69.9**	**77.8**	**78.0**	**78.2**	**78.3**	**78.5**	**78.6**
TX #2	56	60	21.4	20.6	24.3	21	36.7	37.1	37.4	49.3	**65.7**	**92.6**	**100.8**	**101.1**	**101.5**	**101.9**	**102.3**	**102.7**

Table I.C.1.c							Energization of Germanna								
Germanna Sub															
			2022 Actual Summer Peak Loading (MVA)	2023 Actual Summer Peak Loading (MVA)	2024 Projected Summer Peak Loading (MVA)	2025 Projected Summer Peak Loading (MVA)	2026 Projected Summer Peak Loading (MVA)	2027 Projected Summer Peak Loading (MVA)	2028 Projected Summer Peak Loading (MVA)	2029 Projected Summer Peak Loading (MVA)	2030 Projected Summer Peak Loading (MVA)	2031 Projected Summer Peak Loading (MVA)	2032 Projected Summer Peak Loading (MVA)	2033 Projected Summer Peak Loading (MVA)	2034 Projected Summer Peak Loading (MVA)
Substation Total			0	0	0	0	23	55	108	123.6	123.6	123.6	123.6	123.6	123.6
Substation Total Calculation for 300 MW NERC Limit			0	0	0	0	22.3	53.4	104.8	119.9	119.9	119.9	119.9	119.9	119.9
Transformer	Nameplate	NOL													
TX #1	112	120	0	0	0	0	11.5	27.5	54	61.8	61.8	61.8	61.8	61.8	61.8
TX #2	112	120	0	0	0	0	11.5	27.5	54	61.8	61.8	61.8	61.8	61.8	61.8

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Company considered electrical alternatives to the proposed Project, including the use of distribution facilities as described below. There are no transmission alternatives to cutting Line #2199 as there is no other 230 kV source in the area.

Distribution Alternatives

The Company considered the following distribution alternatives to the Project.

Culpeper Substation

Under this distribution alternative scenario, the Culpeper Substation, as the source substation for the local load area and also the closest substation to the Customer's campus, would serve the full load of the Customer's data center campus. However, as discussed in Sections I.A and I.C, if the summation of the Customer's data center campus unserved load (135 MW) were connected to the Culpeper Substation, the existing distribution substation equipment would overload. Connecting the Customer's requested load to Culpeper Substation alone would result in (i) substation transformer thermal overloads, and (ii) violation of the Company's transmission system reliability criteria set forth in the FIR document.[16] Accordingly, the Company rejected this distribution alternative.

Off-Site Substation

Under this distribution alternative scenario, the Company would construct an off-site substation and then extend distribution lines to serve the Customer's data center campus. However, the Company rejected this distribution alternative for the following reasons.

First, when dealing with substantial energy needs, such as 100 MW or greater, a substation closer to the load area maintains a more efficient and reliable solution. While the Company's first approach is to use existing distribution-level facilities when adequate, 100+ MW of new load may not be reliably and efficiently connected to existing facilities due to physical and electrical characteristics of distribution lines and equipment.

Second, it is the Company's experience that substations located on-site to load centers, connected via a transmission line, create more efficient, reliable, and cost-effective electric distribution solution for customers.

[16] *See supra*, n. 5. *See also* Section I.C for a description of the potential violations.

Finally, loads greater than 100 MW require multiple distribution circuits bundled together – this creates a requirement for more substantive right-of-way than typical distribution lines *(e.g.*, residential, non-data center use) require and would be in addition to the transmission right-of-way. Substations located off-site from large load centers require longer distribution lines to customers, which could create an inefficiency in how they can be operated during restoration (limited contingency options). For all these reasons, the Company rejected this distribution alternative.

Analysis of Demand-Side Resources:

Pursuant to the Commission's November 26, 2013 Order entered in Case No. PUE-2012-00029, 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 in order to provide requested service and comply with mandatory NERC Reliability Standards, thereby enabling the Company to maintain the overall long-term reliability of its transmission system.[17] Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs because PJM only dispatches DR when the system is under stress (*i.e.*, a system emergency). Accordingly, while existing DSM is considered to the extent the load forecast accounts for it, DR that has been bid previously into PJM's capacity market is not a factor in this particular application because of the identified need for the Project. Based on these considerations, the evaluation of the Project demonstrated that despite accounting for DSM consistent with PJM's methods, the Project is necessary.

Incremental DSM also will not eliminate the need for the Project. As discussed in Sections I.A and I.C, the need for the proposed Project is not load driven; rather, it is based on the Company's obligation to interconnect the Customer's new data center campus consistent with the Company's FIR and mandatory NERC Reliability Standards.

[17] 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 P JM'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.

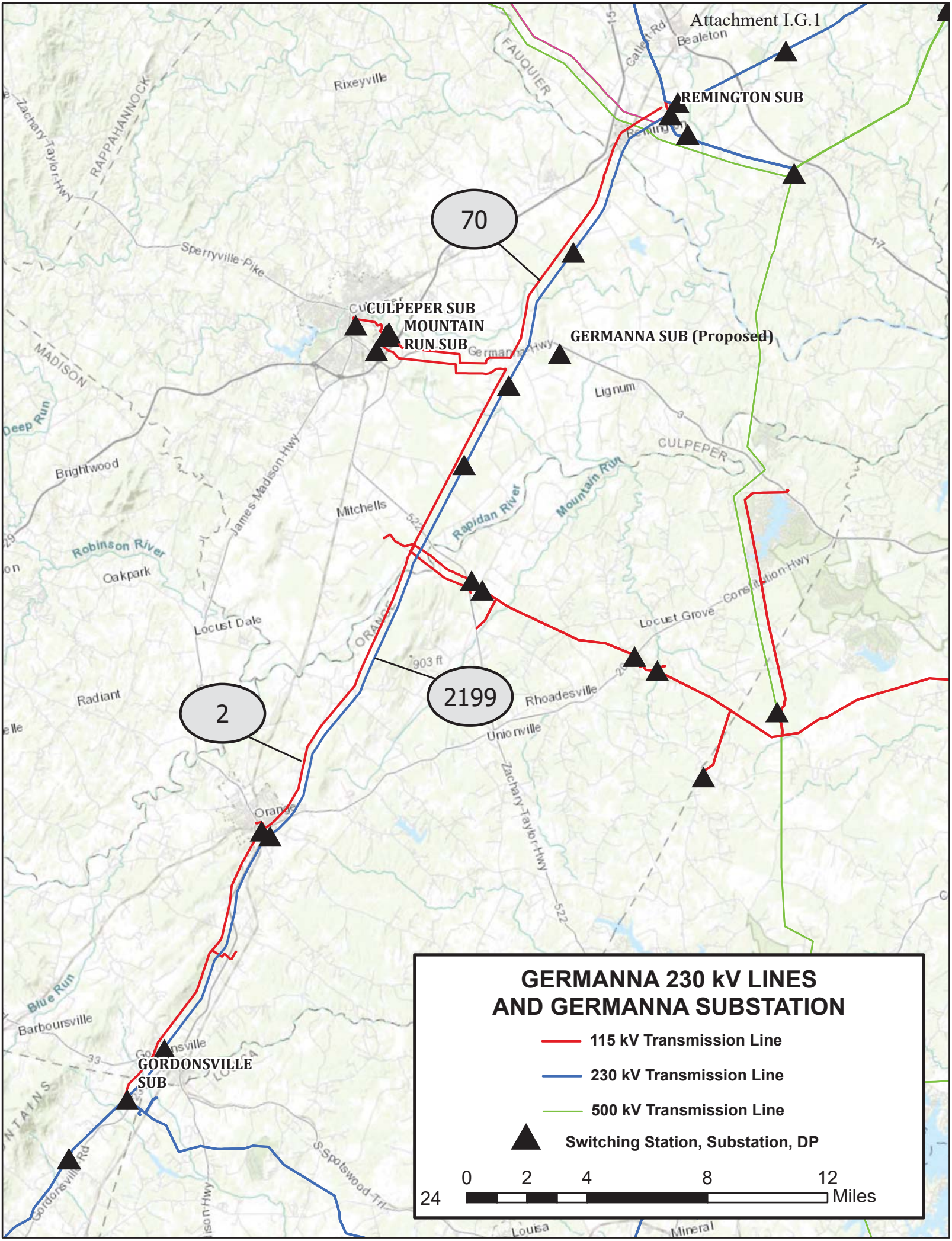
Response: One double circuit 230 kV weathering steel monopole (Structure #2199/102) will be removed to construct the Germanna Lines. Structure #2199/102 will be replaced with one double circuit 2-pole structure (Structure #2199/102 / #2331/102).[18]

[18] *But see also,* n. 2.

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.


REMINGTON SUB
CULPEPER SUB
MOUNTAIN RUN SUB
GERMANNA SUB (Proposed)
GORDONSVILLE SUB
70
2
2199
Rixeyville
Bealeton
Sperryville Pike
Brightwood
Mitchells
Oakpark
Locust Dale
Radiant
Rhoadesville
Unionville
Lignum
Locust Grove
Barboursville
Rapidan River
Mountain Run
Robinson River
Blue Run
Zachary-Taylor-Hwy
James Madison Hwy
Constitution Hwy
Germanna Hwy
903 ft
GERMANNA 230 kV LINES
AND GERMANNA SUBSTATION
115 kV Transmission Line
230 kV Transmission Line
500 kV Transmission Line
Switching Station, Substation, DP
0 2 4 8 12
24
Miles

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The desired in-service target date for the proposed Project is April 16, 2026.

The Company estimates it will take approximately 20 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 August 15, 2024. Should the Commission issue a final order by August 15, 2024, the Company estimates that construction should begin around June 2025, and be completed by April 2026. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. This schedule is also contingent upon the Company's ability to negotiate for property rights with property owners along the approved route without the need for additional litigation. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due labor shortages or materials/supply issues.

In addition, the Company is actively monitoring the regulatory changes and requirements associated with the NLEB and how it potentially could impact construction timing associated with TOYRs. The existing interim guidance from the USFWS for the NLEB expires on March 31, 2024. The Company is also monitoring potential regulatory changes associated with the potential up-listing of the Tri-colored bat. On September 14, 2022, the USFWS published a proposed rule in the Federal Register proposing to list the Tri-colored bat as endangered, with an estimated announcement of a final decision within 12 months;[19] however, as of filing the Application the final listing has not been published in the Federal Register. Regulatory guidance on the Tri-colored bat will be available upon up-listing. The Company's construction window described above may require adjustment based upon the regulatory guidance and potential TOYRs associated with these two bat species.

[19] *See* https://www.federalregister.gov/documents/2022/09/14/2022-18852/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-tricolored-bat.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $54.3 million,[20] which includes approximately $12.7 million for transmission-related work and approximately $41.6 million for substation-related work (2023 dollars).

The estimated conceptual costs for the transmission-related work associated with Alternative Route 1 and Alternative Route 3 are provided in Section II.A.9. The substation-related costs associated with the Alternative Routes is the same as the Proposed Route.

[20] *See supra* n. 6.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project is classified as a supplemental project (Supplemental Project DOM-2022-0033) initiated by the TO in order to interconnect new customer load. The Project was submitted to PJM at the June 7, 2022 TEAC Meeting (Need) and September 6, 2022 TEAC Meeting (Solution). See Attachments I.J.1 and I.J.2, respectively. The Company presented revised slides to PJM as to the Project in-service date and projected load, as reflected in this Appendix, at the October 31, 2023 TEAC Meeting. See Attachment I.J.3. As this is a supplemental project, the Company anticipates that these revisions will have no impact, and the Project will be included in the RTEP. While the Company has not received a Supplemental ID# for this Project, the Project as originally submitted to PJM in 2022 was included in the 2028 RTEP model.

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

Needs

Attachment I.J.1

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0033

Process Stage: Need Meeting 06/07/2022

Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV distribution has submitted a DP Request for a new 230kV substation (Germanna) to serve a data center complex in Culpeper County with a total projected load of 139 MW. Requested in-service date is 01/01/2025.

Initial In-Service Load	Projected 2027 Load
Summer: 78 MW	Summer: 124.6 MW



Solutions

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0033
Process Stage: Solutions Meeting 09/06/2022
Previously Presented: Need Meeting 06/07/2022

Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV distribution has submitted a DP Request for a new 230kV substation (Germanna) to serve a data center complex in Culpeper County with a total projected load of 139 MW. Requested in-service date is 01/01/2025.

Initial In-Service Load	Projected 2027 Load
Summer: 78 MW	Summer: 124.6 MW



Dominion Transmission Zone: Supplemental Germanna 230kV Delivery Point

Need Number: DOM-2022-0033

Process Stage: Solutions Meeting 09/06/2022

Proposed Solution:

Interconnect the new substation by cutting and extending Line #2199 (Remington-Gordonsville) to the proposed Germanna Substation. Lines to terminate in a 230kV four-breaker ring arrangement with an ultimate arrangement of a six-breaker ring.

Estimated Project Cost: $55 M

Alternatives Considered:

No feasible alternatives

Projected In-service Date: 01/01/2025

Project Status: Engineering

Model: DNH2025, RTEP2026



Solutions

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

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0033 (Update)

Process Stage: Solution Meeting 10/31/2023

Previously Presented: Solution Meeting 09/06/2022

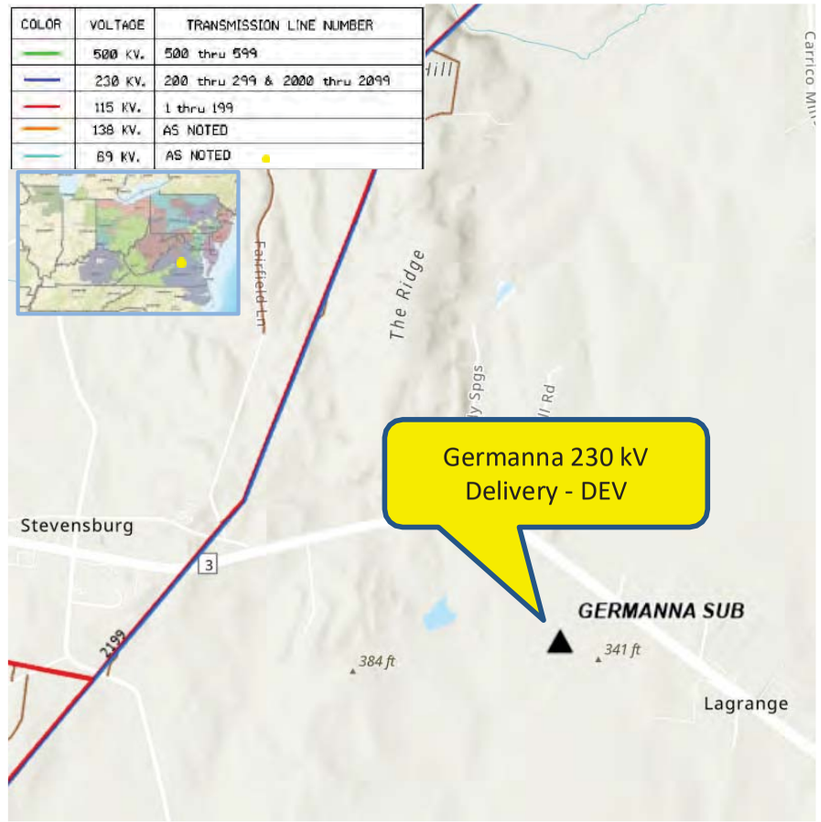
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV distribution has submitted a DP Request for a new 230kV substation (Germanna) to serve a data center complex in Culpeper County with a total projected load of 124 MW. Requested in-service date is 04/16/2026.



Initial In-Service Load	Projected 2028 Load
Summer: 23 MW Winter: 0 MW	Summer: 108 MW Winter: 87 MW

Dominion Transmission Zone: Supplemental Germanna 230kV Delivery Point - DEV

Need Number: DOM-2022-0033

Process Stage: Solutions Meeting 10/31/2023
Previously presented: Solutions Meeting 09/06/2022

Proposed Solution:
Interconnect the new substation by cutting and extending Line #2199 (Cirrus-Gordonsville) to the proposed Germanna Substation. Lines to terminate in a 230kV four-breaker ring arrangement with an ultimate arrangement of a six-breaker ring.



Estimated Project Cost: $55 M

Alternatives Considered:
No feasible alternatives – Line #2199 is the only 230kV source in the area

Projected In-service Date: 04/16/2026

Project Status: Engineering

Model: RTEP 2028

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable. See Section I.A.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable. See Section I.A.

I. NECESSITY FOR THE PROPOSED PROJECT

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

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

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

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

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

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

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

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Germanna Substation will serve the Culpeper Load Area described in Section I.C. See also Attachment I.A.1.a. The Project may also be used to support future load in the area.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The approximate lengths of the Proposed and Alternative Routes for the Germanna Lines are as follows:

Proposed Route (Route 2): 1.8 miles

Alternative Route 1: 2.4 miles

Alternative Route 3: 2.0 miles

See Section II.A.9 for an explanation of the Company's route selection process, as well as the Environmental Routing Study referenced therein.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

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

- Salubria Manor
- Occupied Residence within 500' of Centerline
- Burial Ground/Cemetery
- Place of Worship
- Culpeper County Entrance Corridor
- Parcel Boundary
- Future Solar Panel Area
- Stevensburg Agricultural and Forestal District

Scenic/Historic Areas and Conservation Easements

- A: Hansbrough Ridge - VDHR Easement, VOF Easement, ABT Holding, VLR Listing
- B: ABT Holding
- C: Rose Hill Game Preserve and Historic Farm - VOF Easement, NRHP Listing, VLR Listing
- D: Salubria Manor - VDHR Easement, NRHP Listing, VLR Listing
- E: Salubria Site - VOF Easement
- F: Mack Tract - VDHR Easement

Parks and Recreation Areas

- G: Kildee Farms
- H: Bees and Trees Farm
- I: Gobbler Hill Farm
- J: Lenn Park

Planned Developments

- K: Data Center
- L: Greenwood Solar

Project Location

- Proposed Substation
- Mountain Run Junction
- Existing Dominion Transmission Line
- Existing Dominion Distribution Line
- Proposed Germanna Substation Boundary
- Future Data Center Building
- Alternative Route 1
- Proposed Route (Route 2)
- Alternative Route 3

1:18,000

0 675 1,350 Feet

Attachment II.A.2
Project Overview and Constraints
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

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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: There is no existing Company-owned right-of-way that can adequately serve the Customer's future data center campus. The Company's existing distribution rights-of-way in the area, particularly those along State Route 3 (Germanna Highway), are insufficient in width. Expansion of this existing distribution right-of-way would require encroachment on an existing Virginia Outdoors Foundation ("VOF") easement associated with Hansbrough Ridge (CUL-VOF-4326). See Attachment II.A.6.

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

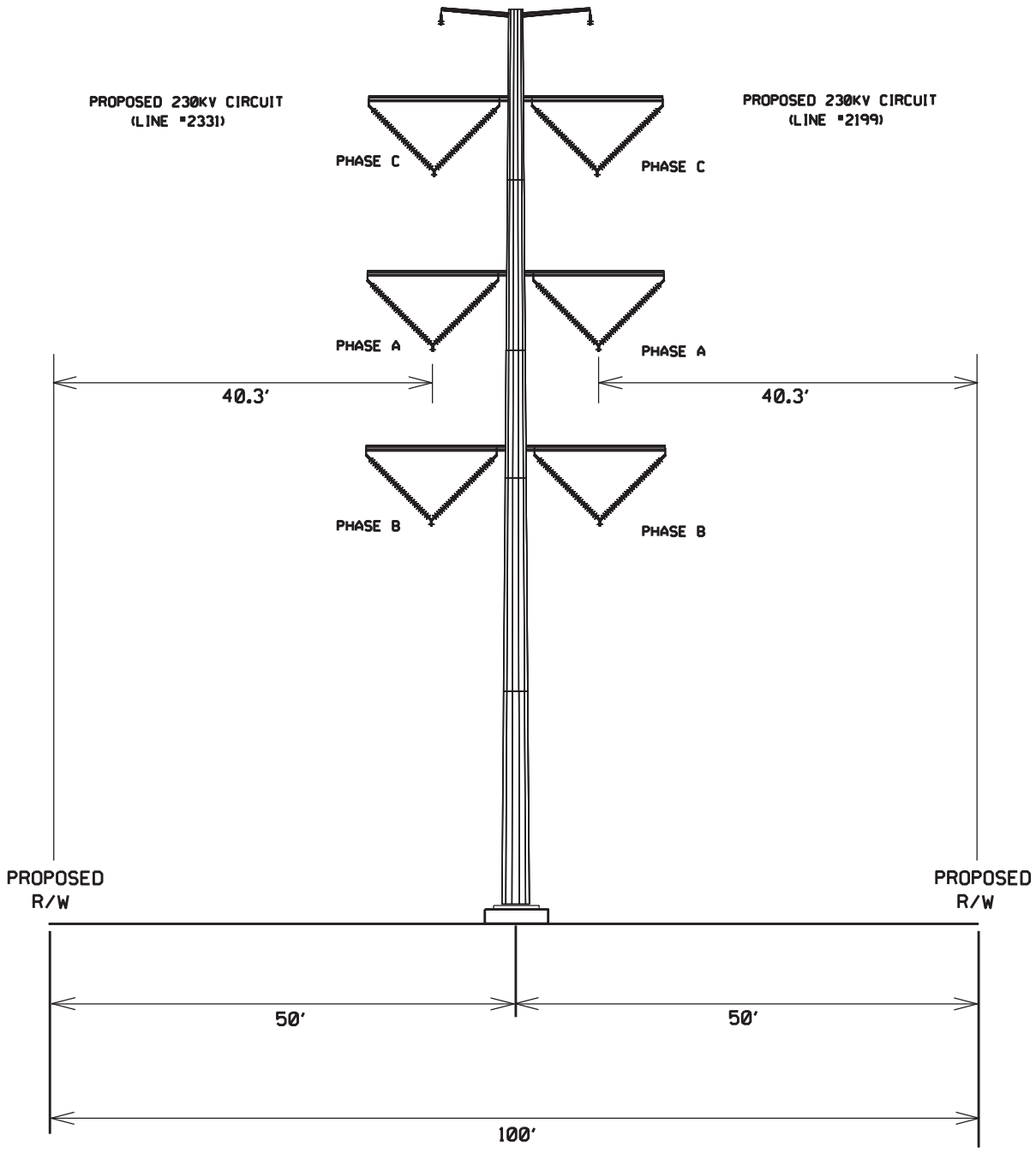
d. For lines being rebuilt in existing ROW, provide all of the above (i) as it currently exists, and (ii) as it will exist at the conclusion of the proposed project.

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

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

LINE #2331 CIRRUS - GERMANNA
LINE #2199 GERMANNA - GORDONSVILLE

PROPOSED CONFIGURATION



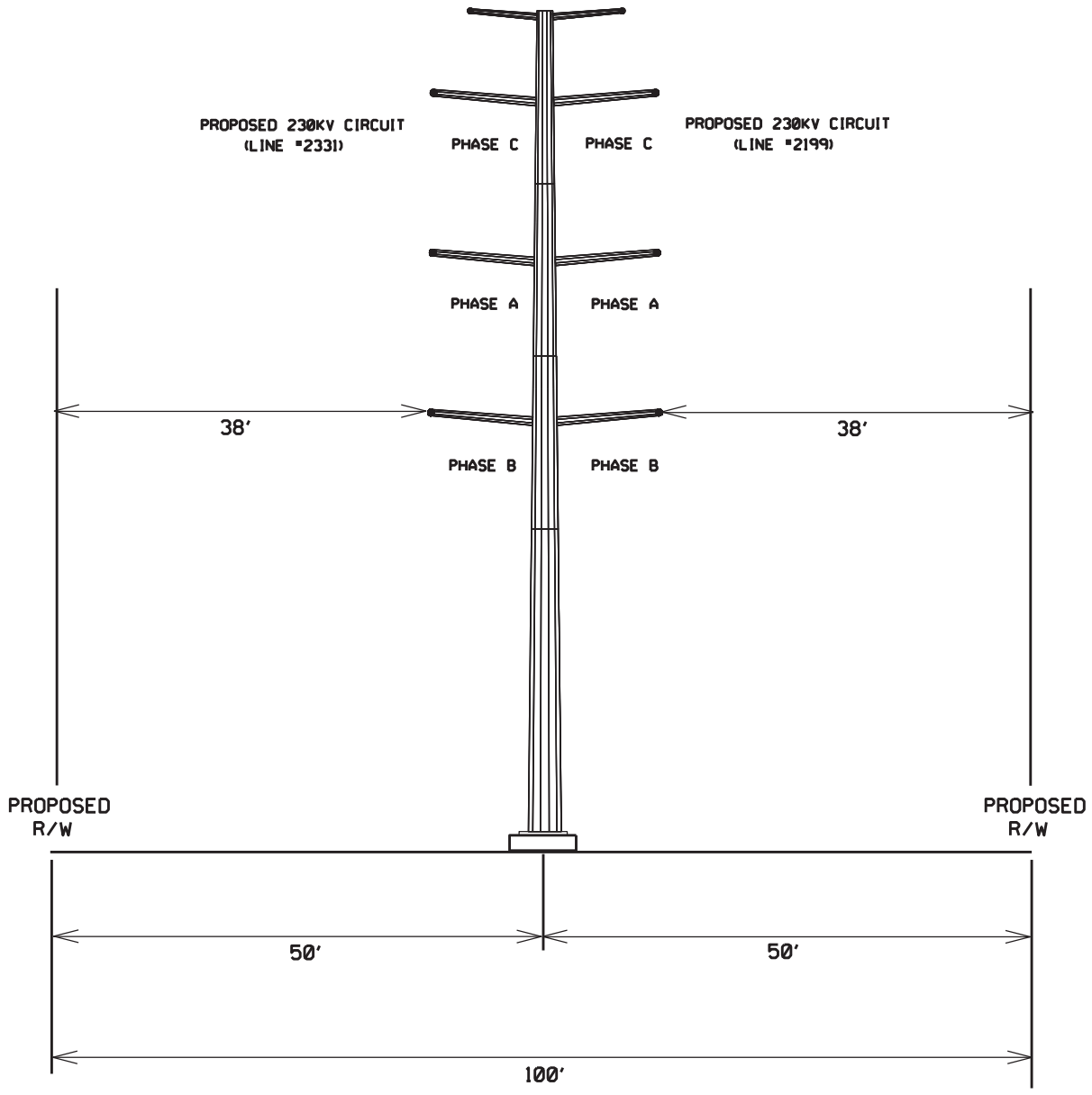
TYPICAL RIGHT OF WAY LOOKING TOWARD GERMANNA SUBSTATION

NOTE:

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

LINE #2331 CIRRUS - GERMANNA
LINE #2199 GERMANNA - GORDONSVILLE

PROPOSED CONFIGURATION



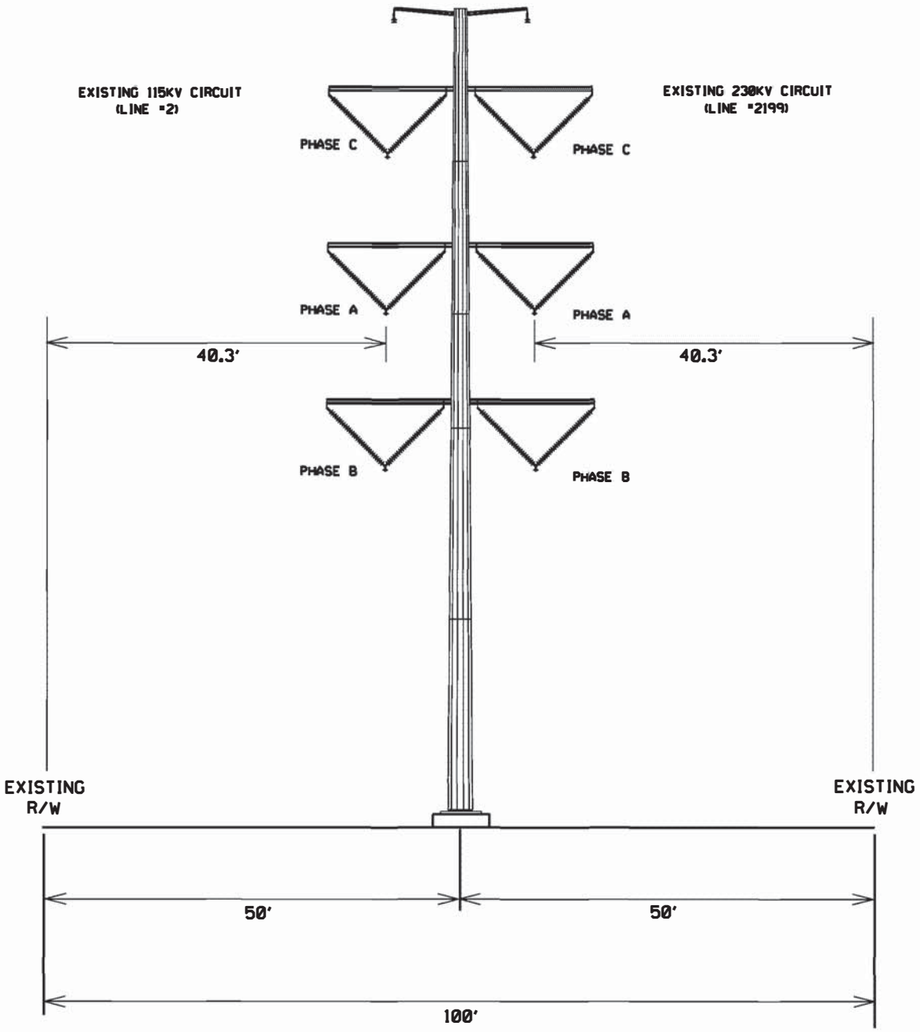
TYPICAL RIGHT OF WAY LOOKING TOWARD GERMANNA SUBSTATION

NOTE:

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

LINE #2 OAK GREEN - MOUNTAIN RUN
LINE #2199 REMINGTON - GORDONSVILLE

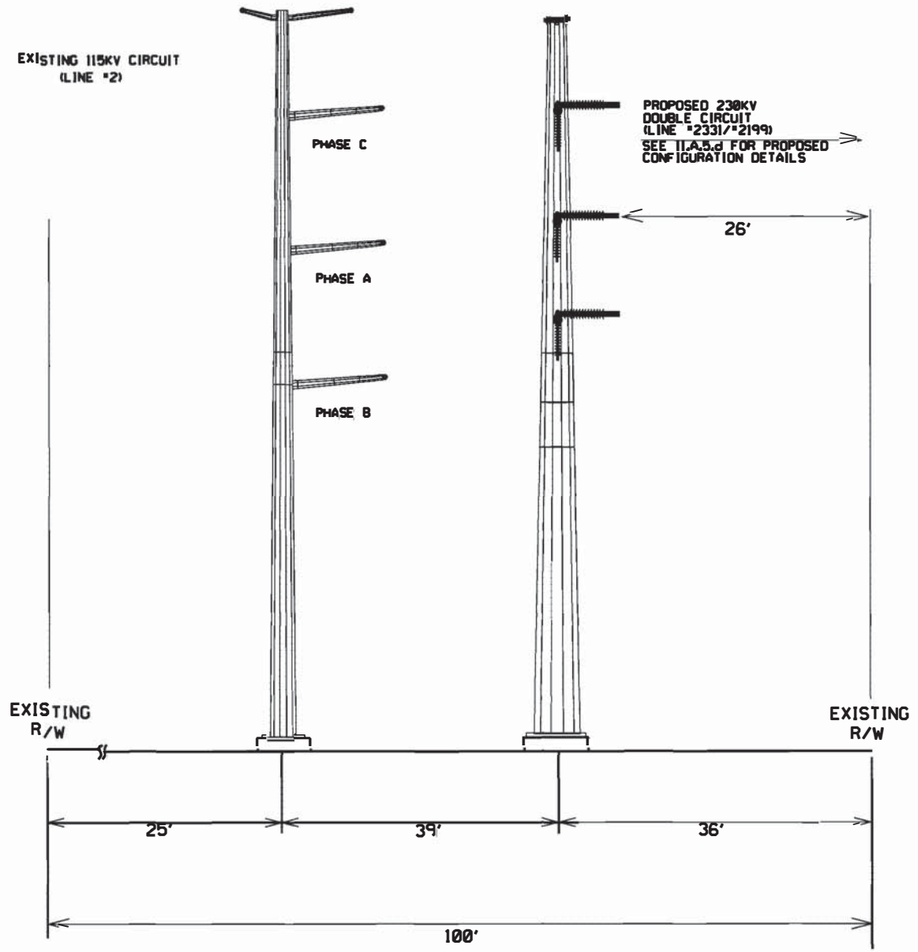
EXISTING CONFIGURATION



TYPICAL RIGHT OF WAY LOOKING TOWARD REMINGTON SUBSTATION

LINE #2 OAK GREEN - REMINGTON
LINE #2331 CIRRUS - GERMANNA
LINE #2199 GERMANNA - GORDONSVILLE

PROPOSED CONFIGURATION



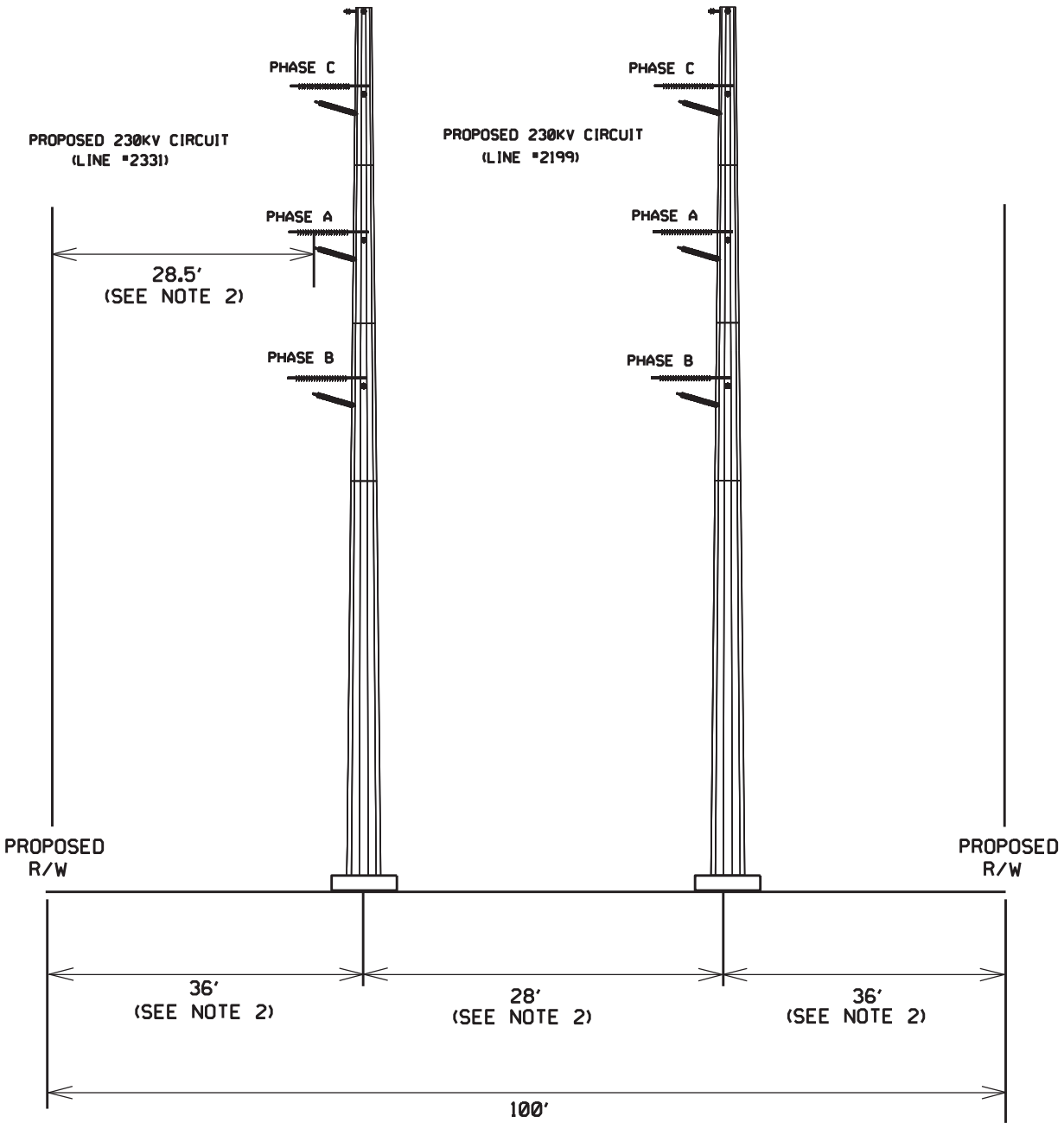
RIGHT OF WAY LOOKING TOWARD REMINGTON SUBSTATION
CROSS-SECTION AT GERMANNA JUNCTION

NOTE:

INFORMATION CONTAINED ON DRAING IS CONSIDERED PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN.

LINE #2331 CIRRUS - GERMANNA
LINE #2199 GERMANNA - GORDONSVILLE

PROPOSED CONFIGURATION



TYPICAL RIGHT OF WAY LOOKING TOWARD GERMANNA SUBSTATION

NOTE:

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

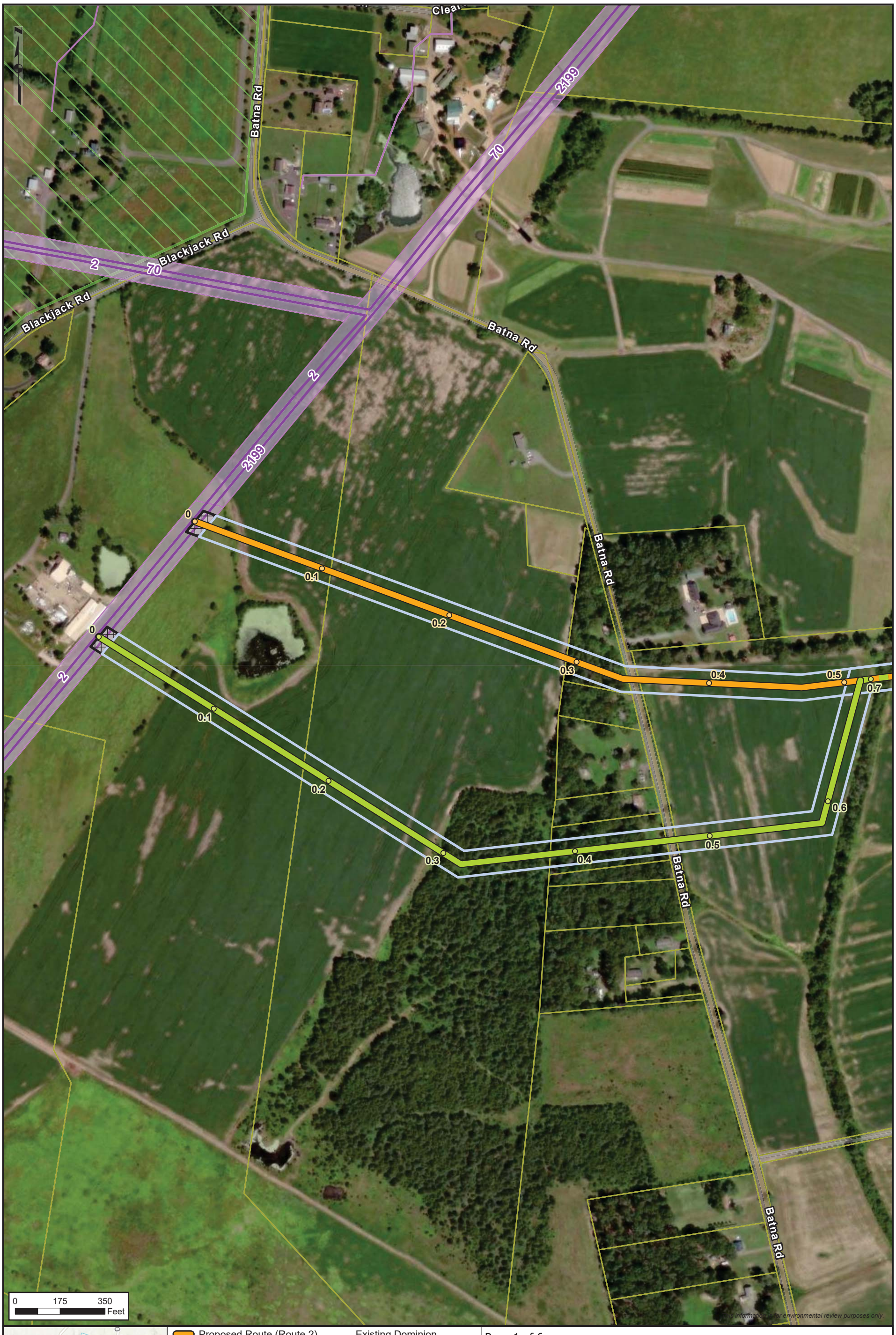
2. DUE TO LINE ANGLE, DIMENSION IS LARGER ALONG THE BISECTOR.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: As discussed in Section II.A.4, there is no existing Company-owned right-of-way that can adequately serve the Customer's future data center campus. Therefore, the entire right-of-way for the Project will require new property rights for a new-build transmission line. See Attachment II.A.6.



Page 1 of 6

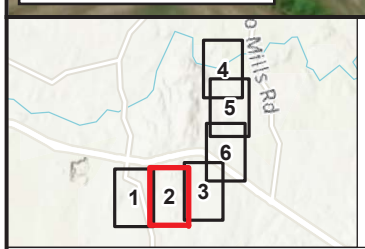
Attachment II.A.6
Right of Way Subject to New and Existing Easements
230 kV Germanna Lines and
Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

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Proposed Route (Route 2)
Alternative Route 3
Milepost
Existing Dominion Distribution Line
Parcel Boundary
VOF Easement
DHR Easement

Attachment II.A.6
Right of Way Subject to New and Existing Easements
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

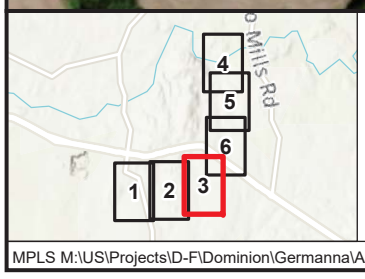
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GERMANNA SUBSTATION

2.2
2.3
1.8
1.9
1.7
1.8
1.6
1.7
1.5
1.6
1.4
1.5
1.3
1.4
1.2
1.3
1.1

0 175 350 Feet

Mountain V



- Proposed Substation
- Alternative Route 1
- Proposed Route (Route 2)
- Alternative Route 3
- New Right of Way
- Milepost
- Proposed Germanna Substation Boundary
- Existing Dominion Distribution Line
- Parcel Boundary
- VOF Easement

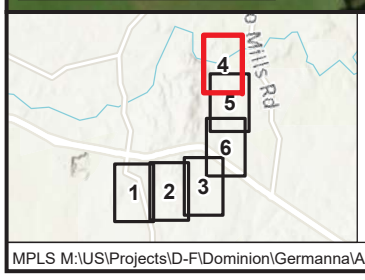
Attachment II.A.6
Right of Way Subject to New and Existing Easements
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

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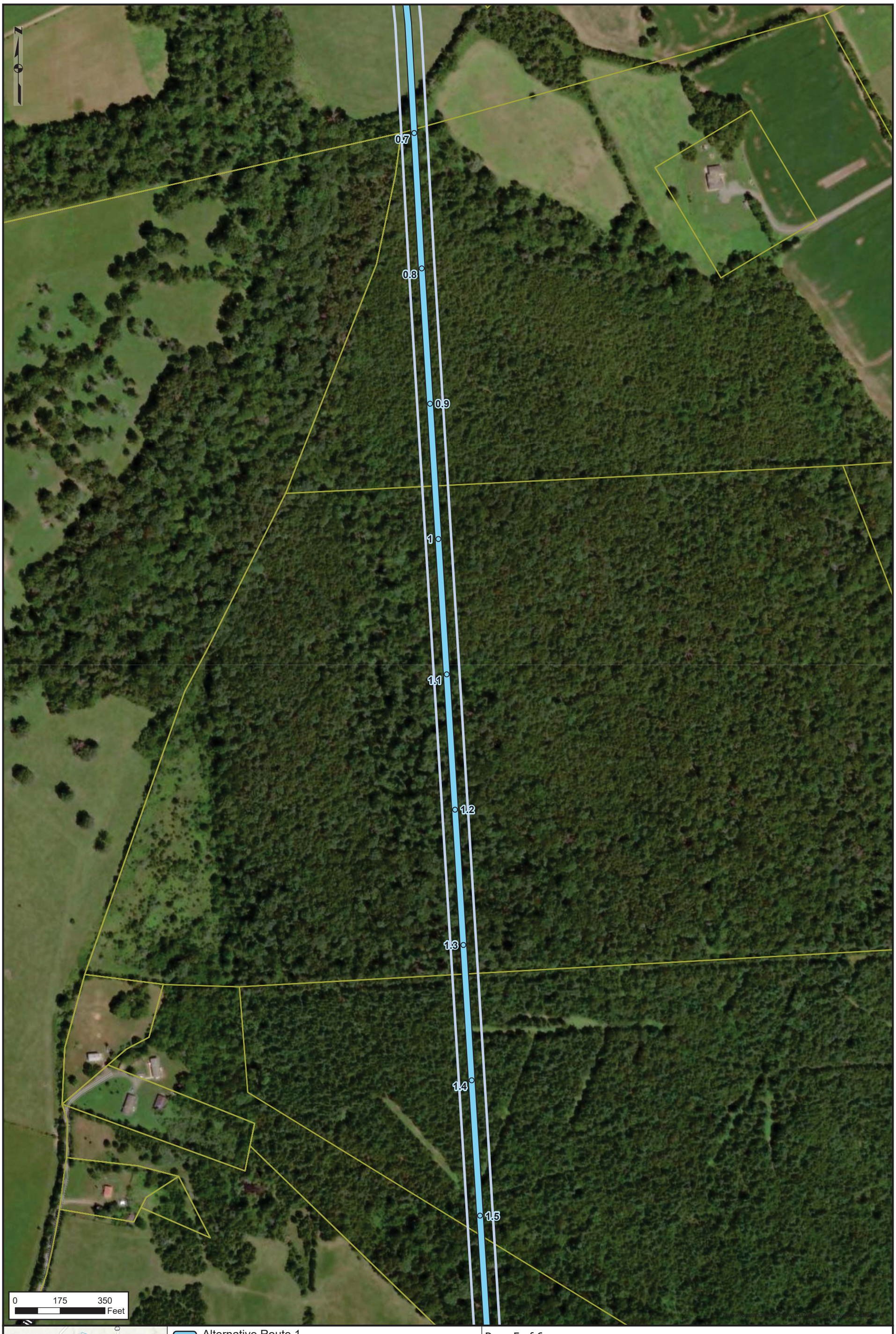
Alternative Route 1
New Right of Way
Existing Right of Way
Milepost
Existing Dominion Transmission Line
Parcel Boundary

Attachment II.A.6
Right of Way Subject to New and Existing Easements
230 kV Germanna Lines and
Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

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Page 5 of 6

Attachment II.A.6

Right of Way Subject to New and Existing Easements

230 kV Germanna Lines and

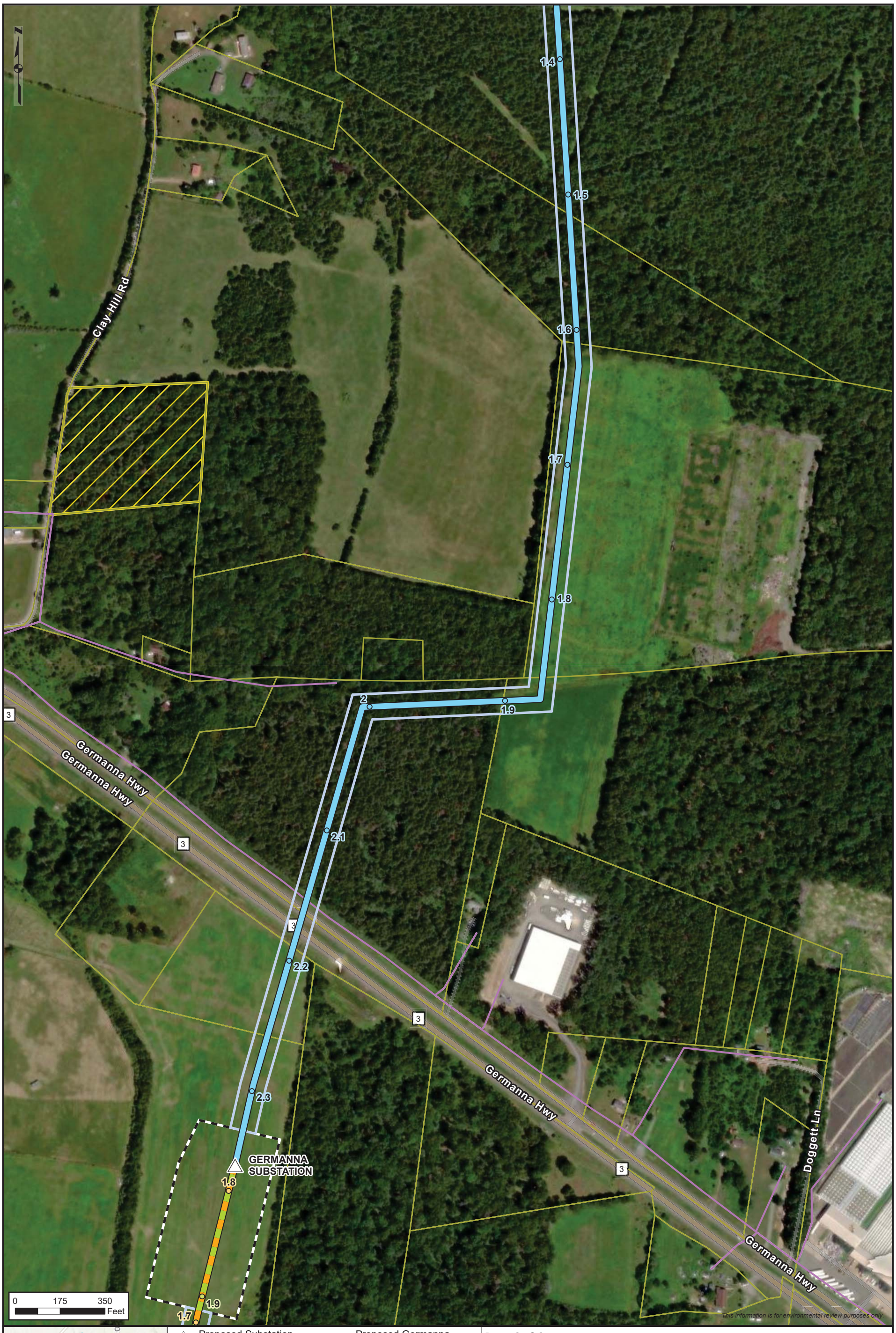
Germanna Substation Project

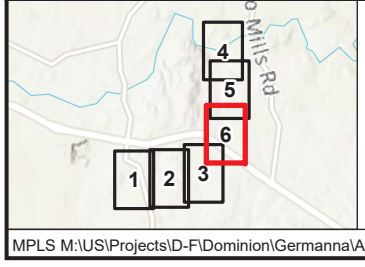
Culpeper County, Virginia

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- Proposed Substation
- Alternative Route 1
- Proposed Route (Route 2)
- Alternative Route 3
- New Right of Way
- Milepost
- Proposed Germanna Substation Boundary
- Existing Dominion Distribution Line
- Parcel Boundary
- DHR Easement

Attachment II.A.6
Right of Way Subject to New and Existing Easements
230 kV Germanna Lines and
Germanna Substation Project
Culpeper County, Virginia

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II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The right-of-way for the Proposed Route will be 100 feet in width. In general, the entire 100-foot-wide right-of-way will require clearing.

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

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

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

Based on recommendations by the Virginia Department of Wildlife Resources ("DWR"), the Company will adhere to the TOYRs for cutting trees and vegetations favorable to winged animals from March 15 – November 15. This includes further minimizing potential effects by avoiding trees favorable for bat maternity roosting locations nesting bird habitat, to the extent practicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

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

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The Company's route selection for a new transmission line typically begins with identification of the project "origin" and "termination" points provided by the Company's Transmission Planning group. 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 retained the services of Environmental Resources Management ("ERM") to help collect information within the study area, identify potential routes, perform a routing analysis comparing the route alternatives, and document the routing efforts in an Environmental Routing Study. After review of the new build options, Dominion Energy Virginia determined there was only one viable electrical solution, which is located entirely within Culpeper County, Virginia.

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

- The Company's existing Line #2199 to the north and west;
- Mountain View Farm Road to the south; and
- Carrico Mills Road to the east.

The Company considered the facilities required to construct and operate the new infrastructure, the length of new right-of-way that would be required for the Project, the amount of existing development in the area, the potential for environmental impacts and impacts on communities, and cost.

As discussed in more detail below and in the Environmental Routing Study, the Company identified three viable overhead route alternatives for the proposed Germanna Lines between the proposed Germanna Substation and potential cut-in locations along the Company's existing 230 kV Line #2199. Ultimately, the Company selected Route 2 as the Proposed Route. Alternative Route 1 and Alternative Route 3 were selected as viable alternatives to the Proposed Route. A more direct route for the Germanna Lines was not feasible due to the easements held by the VOF and the Virginia Department of Historic Resources ("VDHR") that exist between the Company's existing Line #2199 and the proposed Germanna Substation.

The Company also initially identified an underground route alternative for the proposed Germanna Lines but ultimately rejected it as discussed in Section 2.5 of the Environmental Routing Study. Compared with the proposed overhead transmission solution, the underground transmission option is costly and requires a transition station with a footprint of up to 7.0 acres, which would be in addition to the Germanna Substation footprint. The transition station would be located adjacent to Line #2199 in the area south of Mountain Run Junction.

PROPOSED AND ALTERNATIVE ROUTES

Proposed Route (Route 2)

The Proposed Route (Route 2) would involve constructing a new overhead 230 kV double circuit transmission line primarily supported by double circuit monopole structures in a new 100-foot-wide right-of-way by cutting the Company's existing 230 kV Line #2199 at Structure #2199/102 and extending approximately 1.8 miles east to the proposed Germanna Substation. The estimated conceptual cost of the Proposed Route is approximately $12.7 million (2023 dollars).[21]

The Proposed Route originates at a cut-in location along Line #2199 at Structure #2199/102, 0.2 mile south of the intersection of Blackjack Road and Batna Road. From the cut-in location, the route heads southeast for about 0.3 mile across an agriculture field before turning east 0.2 mile and crossing a forested area before crossing Batna Road. The route continues east for 0.1 mile before crossing the proposed landscape buffer of the future Greenwood Solar Facility. The route then continues east and parallels the southern edge of the proposed landscape buffer for 0.6 mile. The route then crosses through a mix of forest and scrub area on the Customer's data center property. The Customer's data center site plan includes an open space proffer and right-of-way reservation allowing for a future transmission line right-of-way. The route then turns north 0.1 mile before terminating on the southern side of the proposed Germanna Substation. In total, the Proposed Route measures approximately 1.8 miles in length.

The Proposed Route will cross a total of five parcels affecting 26.7 acres of right-of-way. All five parcels crossed by the right-of-way are privately owned and all

[21] *See supra* n. 2.

owners have agreed to convey property rights to the Company along the Proposed Route. See Section III.E. Land cover along the right-of-way consists of 2.3 acres of forested land, 24.3 acres of agricultural land, 0.1 acre of developed land, and no areas of open water.

Based on ERM's desktop wetland and waterbody analysis, the Proposed Route has a total of four waterbody crossings, all of which are intermittent streams. The Proposed Route will require the clearing of approximately 2.3 acres of forested land. It is anticipated that the Proposed Route will require the least amount of forest clearing out of all the Germanna Lines. The Proposed Route also has the least impact on forested lands with Forest Conservation Value ("FCV") classification of "very high" and "outstanding" when compared with Alternative Route 1 and Alternative Route 3 and in consideration of the recent harvesting of "outstanding" FCV forest within the right-of-way.

The Proposed Route is the shortest (1.8 miles) and least impactful of the three routes. The Proposed Route requires the smallest construction footprint and would affect the least amount of land zoned and actively used for agriculture. In addition, the Proposed Route avoids conservations easements and parcels enrolled in the Stevensburg Agricultural and Forestal District ("AFD"). The Proposed Route also crosses two planned developments: the future Greenwood Solar Facility and a future data center campus. The route crosses the future Greenwood Solar Facility along a corridor between a future landscape buffer and the operational area for future solar panels at the site. The route avoids impacts on future operation of the solar facility and takes advantage of a planned landscape buffer. The Proposed Route also utilizes a planned, 100-foot-wide, transmission line right-of-way depicted on the approved site plan for the Customer's future data center campus. By crossing both the landscape buffer area of the future Greenwood Solar Facility (0.6-mile-long) and the dedicated transmission line right-of-way across the future data center property (0.5-mile-long), approximately 61% of the length of the Proposed Route (a total of 1.1 miles) would be within land planned for future industrial uses. This compares to 55% (1.1 miles) for Alternative Route 3 and 8% (0.2 mile) for Alternative Route 1. In the absence of collocation opportunities parallel to existing electric transmission lines, these future developments provide an opportunity to collocate the Germanna Lines with compatible industrial uses in an otherwise rural and agricultural area.

The Proposed Route would have the least impact on forested lands at 2.3 acres, followed by Alternative Route 3 at 2.7 acres, and Alternative Route 1 at 21.1 acres. Thus, the Proposed Route would have roughly nine times less impact on forested lands than Alternative Route 1. Although Alternative Route 1 has less potential wetland impacts (1.3 acres) than either the Proposed Route or Alternative Route 3 (3.1 and 3.0 acres, respectively) and encompasses less palustrine forested wetland (1.0 acre) than the Proposed Route and Alternative Route 3 (2.6 acres each), these impacts can be considered incremental in comparison to the potential impact to forested lands. Additionally, while Alternative Route 1 crosses fewer waterbodies (two) than the Proposed Route (Route 2) and Alternative Route 3 (four each), it is

the only alternative that crosses a perennial waterbody (Mountain Run), which is a disadvantage, compared to the Proposed Route and Alternative Route 3 that only cross intermittent streams.

The route alternatives for the Germanna Lines would result in a similar overall visual impact. Alternative Route 1 would affect fewer visually sensitive resources but require more tree clearing than the Proposed Route or Alternative Route 3. Infrastructure installed along Alternative Route 1 would be visible from the east side of Hansbrough Ridge, from residences and vehicles along Carrico Mills Road, and from travelers along Germanna Highway, which is designated as an Entrance Corridor Overlay District in Culpeper County. Transmission infrastructure installed along the Proposed Route and Alternative Route 3 would be visible from parts of the Town of Stevensburg, residences south of Germanna Highway, and Salubria Manor, but would have less of an impact on travelers along Germanna Highway and visitors to Hansbrough Ridge. Viewsheds in the study area will be modified by construction of the future Greenwood Solar Facility and future data center campus, which will have greater visual impacts than the Germanna Lines. As noted above, the Proposed Route and Alternative Route 3 take better advantage of the landscape screening and collocation with industrial uses compared to Alternative Route 1.

The Alternative Route 1 centerline passes within 250 feet of one residence and 500 feet of another. In contrast, the Proposed Route centerline passes within 250 feet of four residences and 500 feet of seven residences, and the Alternative Route 3 centerline passes within 250 feet of two residences and within 500 feet of seven residences. There are no residences within 100 feet of the route centerlines.

There are fewer homes near Alternative Route 1 than the Proposed Route or Alternative Route 3, but this is mainly due to Alternative Route 1 crossing more forested, undeveloped areas than the other alternatives. Two of the dwellings within 250 feet of the Proposed Route centerline and one of the dwellings within 500 feet of the Alternative Route 3 centerline are uninhabitable. When these structures are accounted for, there are no substantive differences in the number of dwellings near the Proposed Route or Alternative Route 3.

While Alternative Route 1 would impact fewer cultural resources overall than the Proposed Route or Alternative Route 3, the impact ratings for individual resources suggest that the overall effects of the Project would be similar regardless of the route selected. Each route would result in a moderate impact on the Hansbrough Ridge Winter Encampment District. The impact assessment for all other cultural resources identified in the analysis is either no impact or minimal impact. Additionally, it is worth noting that viewsheds in the study area will be modified by construction of the future Greenwood Solar Facility and future data center campus, which will have greater visual impacts than the Germanna Lines. These developments will affect the viewsheds of many of the same cultural resources as the Project.

The visual impacts of the Proposed Route on Salubria are anticipated to be minor to moderate; however, the Company undertook additional visual simulations and analysis at the request of Historic Germanna. At the October 17, 2023 Project community meeting, Historic Germanna staff requested that additional photographs be taken so they could better evaluate potential visual impacts from important observation points around the property. See Section III.B. The visual simulations, drafted at their request, included views from a second story window of the manor and other vantage points around the grounds where events and photography were most likely to occur. See Attachment III.B.5. Company representatives and ERM staff met with Historic Germanna staff on November 3, 2023, to present the visual simulations taken from Salubria Manor and the surrounding grounds. Upon review of the visual simulations, Historic Germanna staff commented that the visual impacts were less than anticipated and concurred with ERM's finding of minor to moderate affect. The Historic Germanna Board of Directors plans to review the visual simulations and provide official comment at a later date.

Lastly, on October 3, 2023, the Board of Supervisors of Culpeper County (or the "Board") voted unanimously to approve *A Resolution Requesting that Dominion Energy Pursue, and the State Corporation Commission Approve, a Southern Routing Option for the Transmission Line 2199 Extension in the Germanna Project* (the "Resolution"). See Attachment III.E.1. The recitals in the Resolution state the Board's intent to provide clear support for, and recommendation for approval of one of the southern routes (*i.e.*, the Proposed Route or Alternative Route 3), both of which are consistent with the goal and objectives of the Culpeper County Comprehensive Plan (or "Comprehensive Plan"), which aims to minimize development of agricultural lands. See Section III.E. The Resolution further explains that upon consideration of the route alternatives, the Board concluded that either southern route is preferable to Alternative Route 1 based on a number of factors including proximity to existing transmission lines, compliance with Comprehensive Plan guidelines, and impacts to landowners with "particular concern for the protection of active agricultural land." The Resolution concludes with the Board urging the Commission to approve either the Proposed Route or Alternative Route 3.

While Alternative Route 1 has some advantages over the Proposed Route and Alternative Route 3—mainly less wetland impact and fewer homes proximate to the route—it is longer, would require more right-of-way, and would require substantially more tree clearing than the other alternatives. Moreover, the Proposed Route and Alternative Route 3 each take advantage of future developments which would collocate the transmission infrastructure with future industrial lands (a solar facility and a data center campus). The routes would utilize crossings of these future developments and parallel a landscape buffer for the solar facility to help mitigate the visual impacts of the Project. Alternative Route 1 does not similarly leverage future developments, instead, crossing mostly forested areas and areas under AFD enrollment that are not planned to be affected by other projects. The impacts of the Proposed Route and Alternative Route 3 would be similar overall, but the Proposed Route is shorter and impacts less forested land. Additionally, the

Proposed Route is the least expensive of all three routes. Because the Proposed Route is shorter and less costly than Alternative Route 3 and impacts less forested and agricultural land, the Company believes the Proposed Route (Route 2) is best aligned with Culpeper County's land use policies and best supports the recommendation of the Culpeper County Board of Supervisors' October 3, 2023 unanimous Resolution.

Alternative Route 1

Alternative Route 1 would involve constructing a new overhead 230 kV double circuit transmission line primarily supported by double circuit monopole structures in a new 100-foot-wide right-of-way by cutting the Company's existing 230 kV Line #2199 at Structure #2199/76 and extending approximately 2.4 miles south to the proposed Germanna Substation. The estimated conceptual cost of Alternative Route 1 is approximately $17.1 million (2023 dollars).[22]

Alternative Route 1 originates at a cut-in location along Line #2199 at Structure #2199/76 and in a forested area approximately 0.7 mile west of the intersection of Carrico Mills Road and Berry Hill Farm Road. From the cut-in location, the route heads southeast for approximately 0.4 mile and then south for approximately 1.4 miles. The route crosses Mountain Run, a tributary of the Rappahannock River, and mostly forested land as it travels south through forested land and areas of open pasture. Alternative Route 1 then turns west for 0.1 mile and then south for 0.2 mile before crossing Germanna Highway. The route continues south for 0.2 mile before terminating on the northside of the proposed Germanna Substation. In total, Alternative Route 1 measures approximately 2.4 miles in length.

Alternative Route 1 will cross a total of 12 parcels affecting 34.2 acres of right-of-way. All 12 parcels crossed are privately owned. Land cover along the right-of-way consists of 21.1 acres of forested land, 12.9 acres of agricultural land, 0.1 acre

[22] Note that the estimated transmission-related conceptual costs for Alternative Route 1 include costs associated with removing existing Structure #2199/76. Structure #2199/76 is a double circuit weathering steel monopole structure that also supports existing 115 kV Culpeper-Remington Line #70 (Structure #2199/76 / #70/77), and would be removed to construct the Germanna Lines if the Commission were to select Alternative Route 1 as the preferred route for the Project. If Alternative Route 1 were selected by the Commission, Structure #2199/76 / #70/77 would be removed and replaced with one single circuit monopole (Structure #70/77) and one double circuit 2-pole structure that would support the new Germanna Lines. Importantly, the proposed Structure #70/77 would be located within the existing transmission corridor and is estimated to be within 20% of the existing structure heights within the corridor supporting Line #70, and with similar finish as the existing structure being replaced. Additionally, the Company would plan to reuse the Line #70 conductor by transferring it to the new structure once installed. To the extent that Alternative Route 1 is selected by the Commission for the Project, the Company would assert that the work associated with the removing one double circuit monopole supporting Line #70 and replacing it with one single circuit monopole would qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. This is consistent with the Commission Staff's July 6, 2017 guidance (available at https://scc.virginia.gov/getdoc/7f6ec0f6-7d14-4ca9-bd8a-9bd2511c5cdb/StaffGuidanceOrdvsNonOrd.pdf), as only one structure would be replaced on Line #70 and the proposed structure would not be more than 20% taller than the existing structure. Should the Commission select Alternative Route 1 as the preferred route for the Project and also determine that a CPCN is required for the work associated with Line #70 as described herein, the Company would request that the Commission grant such CPCN as part of its final order in this proceeding.

of open water, and 0.1 acre of developed area.

Based on ERM's desktop wetland and waterbody analysis, Alternative Route 1 has a total of two waterbody crossings, including one intermittent stream and one perennial waterbody. Alternative Route 1 will require the clearing of approximately 21.1 acres of forested land, which is significantly greater than the Proposed Route (2.3 acres) and Alternative Route 3 (2.7 acres). When compared to the Proposed Route and Alternative Route 3, Alternative Route 1 is proximate to fewer residences within 250 and 500 feet of the centerline and would cross fewer wetlands (including forested wetlands), but it would cross more FCV lands with "very high" and "outstanding" rankings, and offers less collocation with the future solar and data center facilities.

Alternative Route 1 also is longer than the Proposed Route by 0.6 mile and would have a construction footprint approximately 7.5 acres larger than the Proposed Route. In addition to the impacts discussed above, Alternative Route 1 is incompatible with Culpeper County's goal of preserving agricultural-zoned land and forest, and collocating with similar industrial uses as described in the Comprehensive Plan's future land use policies (as discussed in Section III.E). Alternative Route 1 is the only route that crosses lands enrolled in the Stevensburg AFD and is the only route that crosses Germanna Highway, which is designated as an Entrance Corridor Overlay District in Culpeper County. Unlike the Proposed Route and Alternative Route 3, Alternative Route 1 does not cross a majority of private landowners amenable to conveying property rights to the Company along the route. See Table 4-1 and Sections 5 and 6 of the Environmental Routing Study for the route analysis and additional discussion.

Alternative Route 3

Alternative Route 3 would involve constructing a new overhead 230 kV double circuit transmission line primarily supported by double circuit monopole structures in a new 100-foot-wide right-of-way by cutting the Company's existing 230 kV Line #2199 at Structure #2199/103 and extending approximately 2.0 miles east to the proposed Germanna Substation. The estimated conceptual cost of Alternative Route 3 is approximately $15.0 million (2023 dollars).[23]

[23] Note that the estimated transmission-related conceptual costs for Alternative Route 3 include costs associated with removing existing Structure #2199/103. Structure #2199/103 is a double circuit weathering steel monopole structure that also supports existing 115 kV Mountain Run-Oak Green Line #2 (Structure #2199/103 / #2/489), and would be removed to construct the Germanna Lines if the Commission were to select Alternative Route 3 as the preferred route for the Project. If Alternative Route 3 were selected by the Commission, Structure #2199/103 / #2/489 would be removed and replaced with a single circuit monopole (Structure #2/489) and one double circuit 2-pole structure that would support the new Germanna Lines. Importantly, the proposed Structure #2/489 would be located within the existing transmission corridor and is estimated to be within 20% of the existing structure heights within the corridor supporting Line #2, and with similar finish as the existing structure being replaced. Additionally, the Company would plan to reuse the Line #2 conductor by transferring it to the new structure once installed. To the extent that Alternative Route 3 is selected by the Commission for the Project, the Company would assert that the work associated with the removing one double circuit monopole supporting Line #2 and replacing it with a single circuit monopole would

Alternative Route 3 originates at a cut-in location along Line #2199 at Structure #2199/103 and south of the intersection of Blackjack Road and Batna Road. From the cut-in location, Alternative Route 3 heads southeast for about 0.3 mile across an agricultural field before turning for 0.2 mile and crossing a forested area before crossing Batna Road. The route turns north for 0.1 mile then turns east and crosses the proposed landscape buffer of the future Greenwood Solar Facility. Alternative Route 3 continues east and parallels the southern edge of the proposed landscape buffer and existing tree line for 0.6 mile. The route then crosses a mix of forest, scrub, and wetland on the Customer's data center property. Alternative Route 3 then turns north for 0.1 mile before terminating on the southern side of the proposed Germanna Substation. In total, Alternative Route 3 measures approximately 2.0 miles in length.

Alternative Route 3 will cross a total of five parcels affecting 28.9 acres of right-of-way. All five parcels crossed by the right-of way are privately owned and all owners have agreed to convey property rights to the Company along Alternative Route 3. See Section III.E. Land cover along the right-of-way consists of 2.7 acres of forested land, 26.1 acres of agricultural land, 0.1 acre of developed area, and no areas of open water.

Based on ERM's desktop wetland and waterbody analysis, Alternative Route 3 has a total of four waterbody crossings, all of which are intermittent streams, and 3.0 acres of wetland. Alternative Route 3 will require the clearing of approximately 2.7 acres of forested land. It is anticipated that Alternative Route 3 will require the second least amount of forest clearing for the Germanna Lines. Alternative Route 3 also has the second least impact on forested lands with FCV classification of "very high" and "outstanding" when compared with Alternative Route 1 and has nearly identical impacts when compared to the Proposed Route. As discussed in Section 3.2.6.3 of the Environmental Routing Study, qualitatively, the type and location of forest impacts is a significant factor to consider when comparing routes. In this instance, the Alternative Route 3 and the Proposed Route cross an area of "outstanding" FCV that was timbered and harvested around 2012. Because the integrity of the "outstanding" FCV area was compromised by felling, the Alternative Route 3 and the Proposed Route have the least affect to "very high" and "outstanding" FCV-designated land as measured by current land cover.

Alternative Route 3 is the second shortest (2.0 miles) of the three routes and provides the opportunity to parallel a future landscape buffer provided by the future Greenwood Solar Facility. Both the Alternative Route 3 and the Proposed Route cross four landowners, compared to the nine landowners along Alternative Route

qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. This is consistent with the Commission Staff's July 6, 2017 guidance (available at https://scc.virginia.gov/getdoc/7f6ec0f6-7d14-4ca9-bd8a-9bd2511c5cdb/StaffGuidanceOrdvsNonOrd.pdf), as only one structure is being replaced on Line #2 and the proposed structure will not be more than 20% taller than the existing structure. Should the Commission select Alternative Route 1 as the preferred route for the Project and also determine that a CPCN is required for the work associated with Line #70 as described herein, the Company would request that the Commission grant such CPCN as part of its final order in this proceeding.

1. Alternative Route 3 largely avoids residential areas, thereby reducing the number of residences impacted but is still in proximity to a greater number of residences than Alternative Route 1 when measured from 250 and 500 feet from centerline. Alternative Route 3 impacts the greatest amount of agricultural land but does so in areas planned for solar development and, unlike Alternative Route 1, does not cross parcels enrolled in the Stevensburg AFD. As stated in the Culpeper County Board of Supervisors' Resolution (see Attachment III.E.1), Alternative Route 3 and the Proposed Route both are consistent with the goal and objectives of the Culpeper County Comprehensive Plan (as discussed in Section III.E), which aims to minimize development of agricultural lands. Moreover, Alternative Route 3 is compatible with the future commercial/industrial land uses that it crosses (*i.e.*, a future solar facility and data center campus). Alternative Route 3 and the Proposed Route are therefore best aligned with Guideline #1 when compared to Alternative Route 1 (see Section II.A.11); however, Alternative Route 3 is significantly more costly than the Proposed Route. Because Alternative Route 3 has greater impacts to agricultural lands, forest, and is longer and more costly, the Proposed Route is the superior route for the Germanna Lines.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The Company plans to construct the Germanna Lines in a manner that minimizes outage time on Line #2199. Assuming construction commences around June 2025, the cut-in of the lines going to Germanna Substation should start around Spring 2026. The cut-in process will require a PJM outage eDart ticket on Line #2199. A PJM outage eDart ticket on Line #2 also will be required to replace the existing double circuit Structure #2/488 with a single circuit monopole.[24] The line cut-in should require a four weeklong outage on Line #2199 and a two-week long outage on Line #2. Assuming a final order from the Commission by August 15, 2024, as requested in Section I.H of this Appendix, the Company estimates that construction of the new Project will commence around June 2025, and be completed by April 2026.

The Company will request these outages from PJM prior to the date of such outages. It is customary for PJM not to grant approval of outages until shortly before the outages are expected to occur and, therefore, it may be subject to change.

[24] *See supra* n. 2. Note, if the Commission were to select Alternative Route 1 as the preferred route for the Project, an outage would be required on Line #70. *See supra* n. 22. If the Commission were to select Alternative Route 3 as the preferred route for the Project, an outage would be required on Line #2. *See supra* n. 23.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

The Company utilized Guideline #1 by minimizing conflict between existing rights-of-way and present and prospective uses of the land on which the proposed Project is to be located (To the extent permitted by the property interest involved, rights-of-way should be selected with the purpose of minimizing conflict between the rights-of-way and present and prospective uses of the land on which they are to be located. To this end, existing rights-of-way should be given priority as the locations for additions to existing transmission facilities, and the joint use of existing rights-of-way by different kinds of utility services should be considered.). The Proposed Route has the greatest percentage of collocation with the future Greenwood Solar Facility landscape buffer and the Customer's future data center campus, as discussed in Section 5.3 of the Environmental Routing Study. As discussed in Section II.A.9, approximately 61% of the total length of the Proposed Route collocates along future developments by crossing within the landscape-screened area of the future Greenwood Solar Facility and within the future data center property's prescribed transmission corridor. Alternative Route 3 has the second highest collocation at approximately 55% of the total length. Alternative Route 1 does not collocate with the future Greenwood Solar Facility landscape buffer or the future data center's prescribed transmission corridor; however, this route does cross the northern section of the future data center property for 0.2 mile (8% of the total length of the route).

The proposed Project will have no impact to any site listed on the National Register of Historic Places ("NRHP"). Thus, it is consistent with Guideline #2 (where practical, rights of-way should avoid sites listed on the NRHP). A Stage I Pre-Application Analysis prepared by ERM on behalf of the Company, which is included with the Environmental Routing Study as Appendix G and was submitted to VDHR on November 17, 2023.

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

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

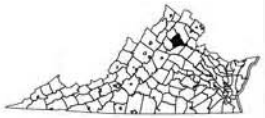
12. a. Detail counties and localities through which the line will pass. If any portion of the line will be located outside of the Applicant's certificated service area: (1) identify each electric utility affected; (2) state whether any affected electric utility objects to such construction; and (3) identify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

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

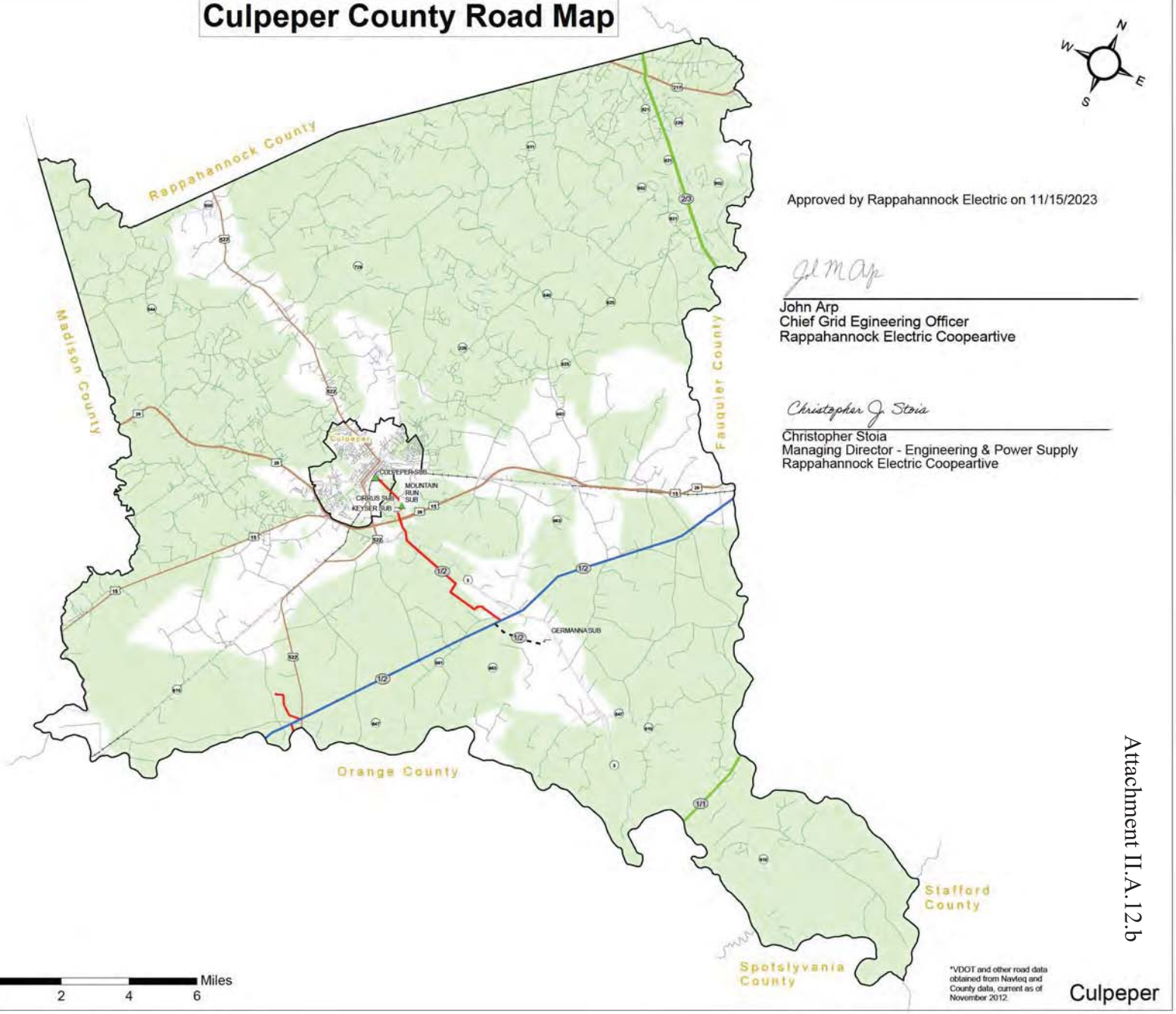
Response: a. The proposed Project traverses Culpeper County, Virginia, for a total of 1.8 miles. Approximately 1.3 miles are located in Dominion Energy Virginia's service territory, and approximately 0.5 mile are located in Rappahannock Electric Cooperative's ("REC's") service territory. The Company has confirmed that REC does not object to the proposed Project.

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

Culpeper County Road Map



This digital map depicts the Virginia Electric and Power Company ("Company") transmission facilities in this county as approved by the Virginia State Corporation Commission ("SCC"), and any proposed transmission facilities in this county, as of November 8, 2023. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.



Approved by Rappahannock Electric on 11/15/2023

John Arp
Chief Grid Egineering Officer
Rappahannock Electric Coopeartive

Christopher Stoia
Managing Director - Engineering & Power Supply
Rappahannock Electric Coopeartive

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

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

SIGNATURE

DATE TITLE

Legend

- Proposed 230 kV Transmission Lines
- Number of Lines of Structures/Number of Circuits
- Proposed Substation
- Existing Substation
- 115 kV
- 230 kV
- 500 kV

Provider Service Territory

- Rappahannock Electric Cooperative
- VEPCO

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

Culpeper

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: The proposed double circuit 230 kV Germanna Lines will include three-phase twin-bundled 768.2 ACSS/TW/HS conductors arranged as shown in Attachments II.B.3.a, II.B.3.b, and II.B.3.d. The twin-bundled 768.2 ACSS/TW/HS conductors are a Company standard for new 230 kV construction.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

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

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

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

e. the foundation material;

f. the average width at cross arms;

g. the average width at the base;

h. the maximum, minimum and average structure heights;

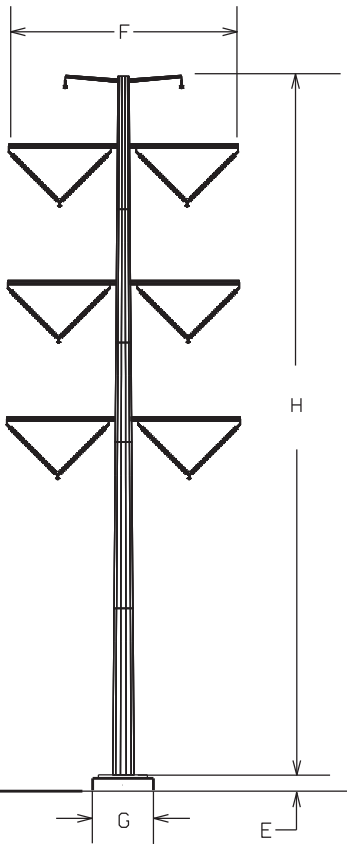
i. the average span length; and

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

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

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

230KV LINE #2331 CIRRUS - GERMANNA
230KV LINE #2199 GERMANNA - GORDONSVILLE



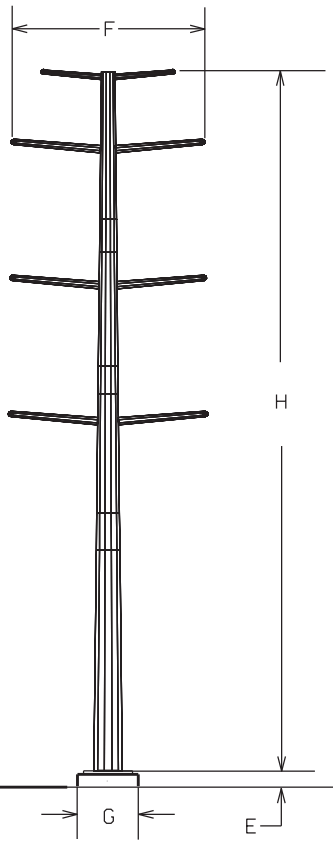
DOUBLE CIRCUIT SUSPENSION MONOPOLE STRUCTURE

A. MAPPING OF THE ROUTE:	SEE ATTACHMENT II.B.3.e
B. RATIONALE FOR STRUCTURE TYPE:	ACCOMMODATES BOTH CIRCUITS REDUCES BLOWOUT FOOTPRINT.
C. LENGTH OF R/W (STRUCTURE QTY):	1.8 MILES (7)
D. STRUCTURE MATERIAL: RATIONAL FOR MATERIAL:	WEATHERING STEEL WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING EXISTING LINE #2199
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	36'
G. AVERAGE WIDTH AT BASE:	6' DIAMETER FOUNDATION (SEE NOTE 3)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	105' 125' 115'
I. AVERAGE SPAN LENGTH (RANGE):	648' (404' - 845') (WIND SPAN)
J. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTE:

1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM THE STRUCTURE CENTERLINE.

230KV LINE #2331 CIRRUS - GERMANNA
230KV LINE #2199 GERMANNA - GORDONSVILLE



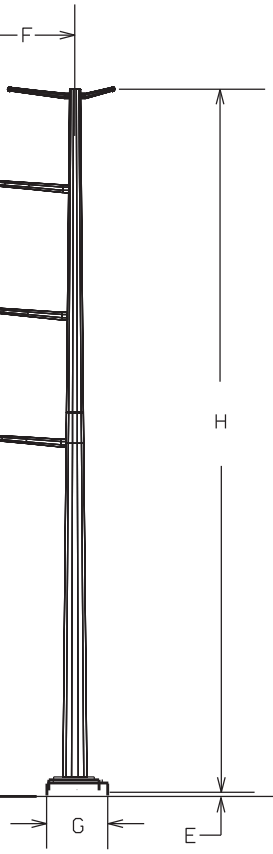
DOUBLE CIRCUIT DEADEND MONOPOLE STRUCTURE

A. MAPPING OF THE ROUTE:	SEE ATTACHMENT II.B.3.e
B. RATIONALE FOR STRUCTURE TYPE:	MAINTAINS THE EXISTING CIRCUITS VERTICAL CONFIGURATION.
C. LENGTH OF R/W (STRUCTURE QTY):	1.8 MILES (7)
D. STRUCTURE MATERIAL: RATIONAL FOR MATERIAL:	WEATHERING STEEL WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING EXISTING LINE #2199
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	27'
G. AVERAGE WIDTH AT BASE:	6' DIAMETER FOUNDATION (SEE NOTE 3)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	105' 125' 113'
I. AVERAGE SPAN LENGTH (RANGE):	590' (302' - 781') (WIND SPAN)
J. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTE:

1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM THE STRUCTURE CENTERLINE.

115KV LINE #2 OAK GREEN - REMINGTON



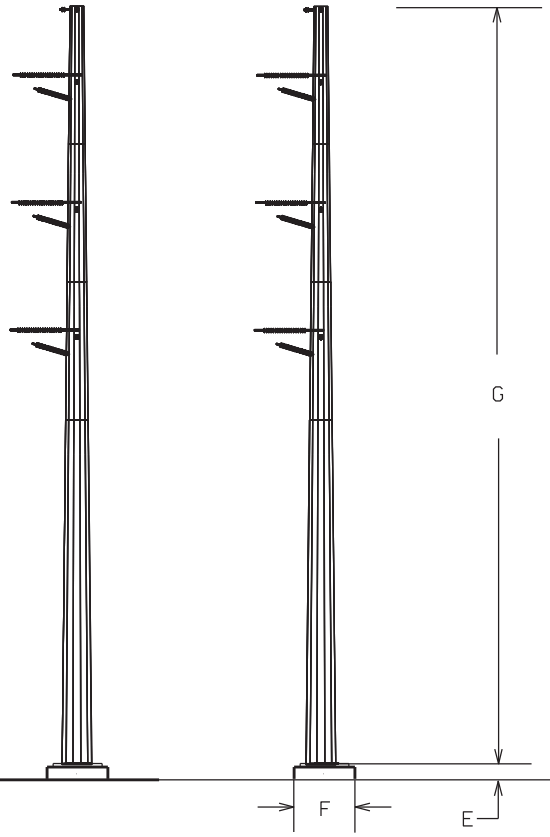
SINGLE CIRCUIT DEADEND MONOPOLE STRUCTURE

A. MAPPING OF THE ROUTE:	SEE ATTACHMENT II.B.3.e
B. RATIONALE FOR STRUCTURE TYPE:	MAINTAINS THE EXISTING CIRCUITS VERTICAL CONFIGURATION.
C. LENGTH OF R/W (STRUCTURE QTY):	0.11 MILES (1)
D. STRUCTURE MATERIAL: RATIONAL FOR MATERIAL:	WEATHERING STEEL WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING EXISTING LINE #2
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	13'
G. AVERAGE WIDTH AT BASE:	6' DIAMETER FOUNDATION (SEE NOTE 3)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	110' 110' 110'
I. AVERAGE SPAN LENGTH (RANGE):	606' (N/A) (WIND SPAN)
J. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTE:

1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM THE STRUCTURE CENTERLINE.

230KV LINE #2331 CIRRUS - GERMANNA
230KV LINE #2199 GERMANNA - GORDONSVILLE



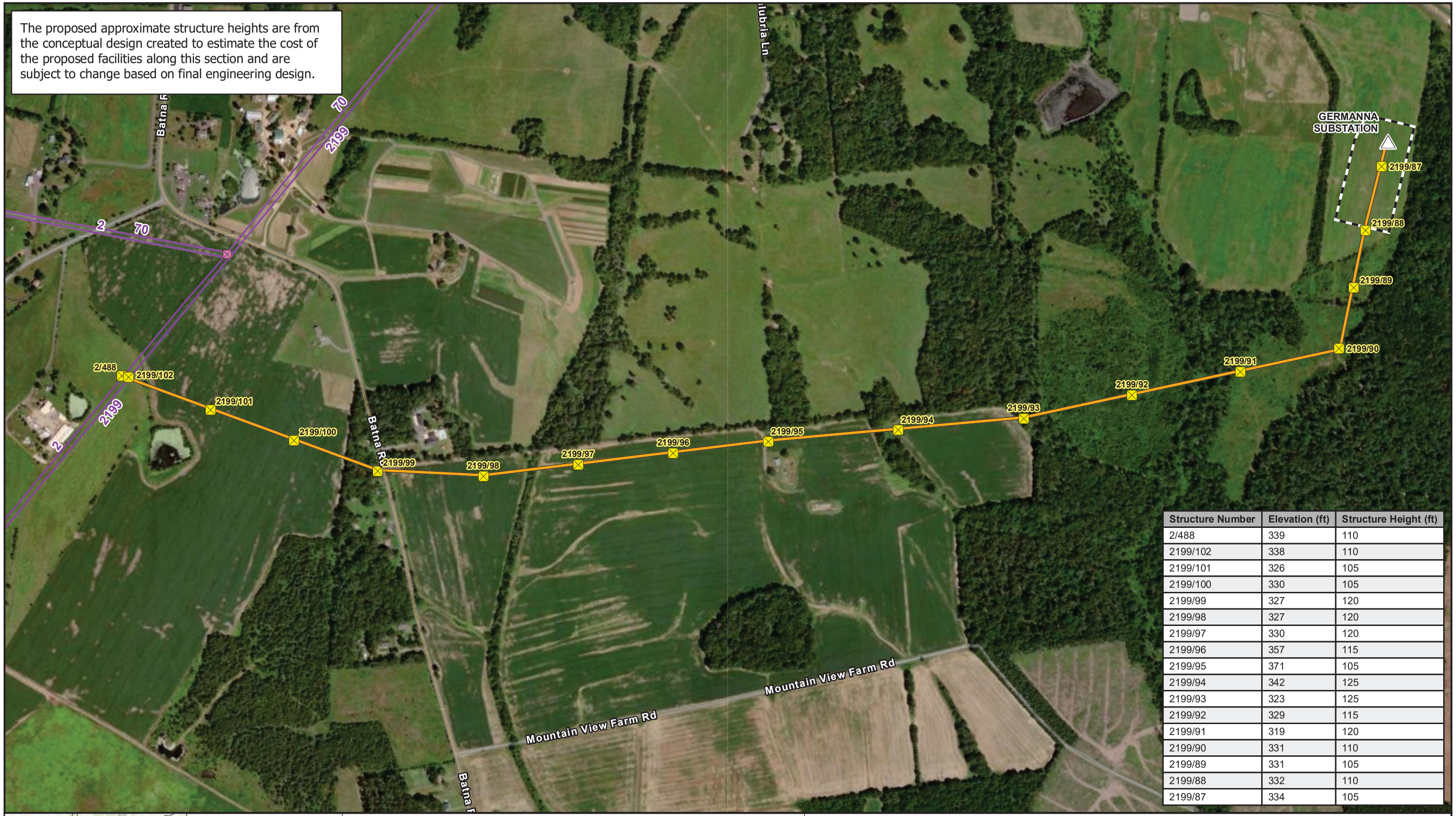
DOUBLE CIRCUIT DEADEND 2-POLE STRUCTURE

A. MAPPING OF THE ROUTE:	SEE ATTACHMENT II.B.3.e
B. RATIONALE FOR STRUCTURE TYPE:	MAINTAINS THE EXISTING CIRCUITS VERTICAL CONFIGURATION.
C. LENGTH OF R/W (STRUCTURE QTY):	1.8 MILES (2)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONAL FOR MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE STEEL POLE STRUCTURES CARRYING EXISTING LINE #2199
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT BASE:	6' DIAMETER FOUNDATION (SEE NOTE 3)
G. MINIMUM STRUCTURE HEIGHT:	110'
MAXIMUM STRUCTURE HEIGHT:	115'
AVERAGE STRUCTURE HEIGHT:	113'
H. AVERAGE SPAN LENGTH (RANGE):	572' (549' - 596') (WIND SPAN)
I. MINIMUM CONDUCTOR-TO-GROUND:	25.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTE:

1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING.
4. STRUCTURE HEIGHTS ARE MEASURED FROM THE STRUCTURE CENTERLINE.

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



Structure Number	Elevation (ft)	Structure Height (ft)
2/488	339	110
2199/102	338	110
2199/101	326	105
2199/100	330	105
2199/99	327	120
2199/98	327	120
2199/97	330	120
2199/96	357	115
2199/95	371	105
2199/94	342	125
2199/93	323	125
2199/92	329	115
2199/91	319	120
2199/90	331	110
2199/89	331	105
2199/88	332	110
2199/87	334	105

Proposed Substation
Mountain Run Junction
Existing Dominion Transmission Line
Proposed Structure Location
Proposed Route (Route 2)
Proposed Germanna Substation Boundary

Attachment II.B.3.e
Structure Locations Along the Proposed Route
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\11\SCC_DOM_GERM_SCC_Figures_Update.aprx\Att II.B.3.e Structure Locations | REVISED: 11/10/2023 | SCALE: 1:7,200 when printed at 11x17 | DRAWN BY: MPLS GIS

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

Route	Minimum (ft.)	Maximum (ft.)	Average (ft.)
Proposed Route (Route 2)	105	125	113
Alternative Route 1	105	125	117
Alternative Route 3	105	125	112

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: [a] See Attachment II.B.6.a for a representative photograph of Structure #2199/102, which is being removed at the cut-in location of the Proposed Route.[25]

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

[c] Visual simulations showing the appearance of the proposed transmission structures at identified historic locations within 1.0 mile of the centerline of the Proposed Route are provided. See Attachment II.B.6.c for a map of the simulation location, the existing views at the identified historic locations, and simulated proposed views. These simulations were created using GIS modeling to depict whether the proposed structures will be visible from the identified historic properties. The historic properties evaluated are described below. See also the Stage I Pre-Application Analysis contained in Appendix G of the Environmental Routing Study. At the request of Historic Germanna, additional simulations were taken from four locations in and around the La Grange/Salubria property (023-0020). Two of these locations were included in Attachment II.B.6.c as well as in the Stage I Pre-Application Analysis, and the other two are addressed in Section III.B of the Appendix.

Historic Property	Viewpoint	Comments
Rose Hill Farm/Game Preserve (VDHR ID# 023-0018)	9, 10.4	The Proposed Route and Alternative Route 3 will have no more than a minimal impact on 023-0018.
La Grange/Salubria (VDHR ID# 023-0020)	3 (N), 20 (N), 21 (N), 25 Requested Simulations: 83, 85	The Proposed Route and Alternative Routes 1 and 3 will have no more than a minimal impact on 023-0020.
Hansbrough Ridge Winter Encampment District (VDHR ID# 023-0068)	1, 2A, 11, 14	The Proposed Route and Alternative Routes 1 and 3 will have no more than a moderate impact on 023-0068.

[25] *See supra*, n. 2.

Historic Property	Viewpoint	Comments
Mount Pony Rural Historic District (VDHR ID# 023-0084)	12	The Proposed Route and Alternative Route 3 will have no impact on 023-0084.
Brandy Station Battlefield (VDHR ID# 023-5055)	5, 16, 21 (N), 18 (N), 24	The Proposed Route and Alternative Routes 1 and 3 will have no more than a minimal impact on 023-5055.
Farmstead (VDHR ID# 023-5494)	17	Alternative Route 3 will have no more than a minimal impact on 023-5494.
Battle of Morton's Ford (VDHR ID# 068-5007)	9, 10.4	The Proposed Route and Alternative Route 3 will have no more than a minimal impact on 068-5007.

See Attachment III.B.4 and Attachment III.B.5 for visual simulations of key locations evaluated.



Existing Structure Type:
230 kV Double Circuit Steel Monopole (Tangent)

Attachment II.B.6.a



Proposed Structure Type:
230 kV Double Circuit Steel Monopole (Deadend)

Attachment II.B.6.b.i



Proposed Structure Type:
230 kV Double Circuit Steel Monopole (Tangent)

Dominion Energy®



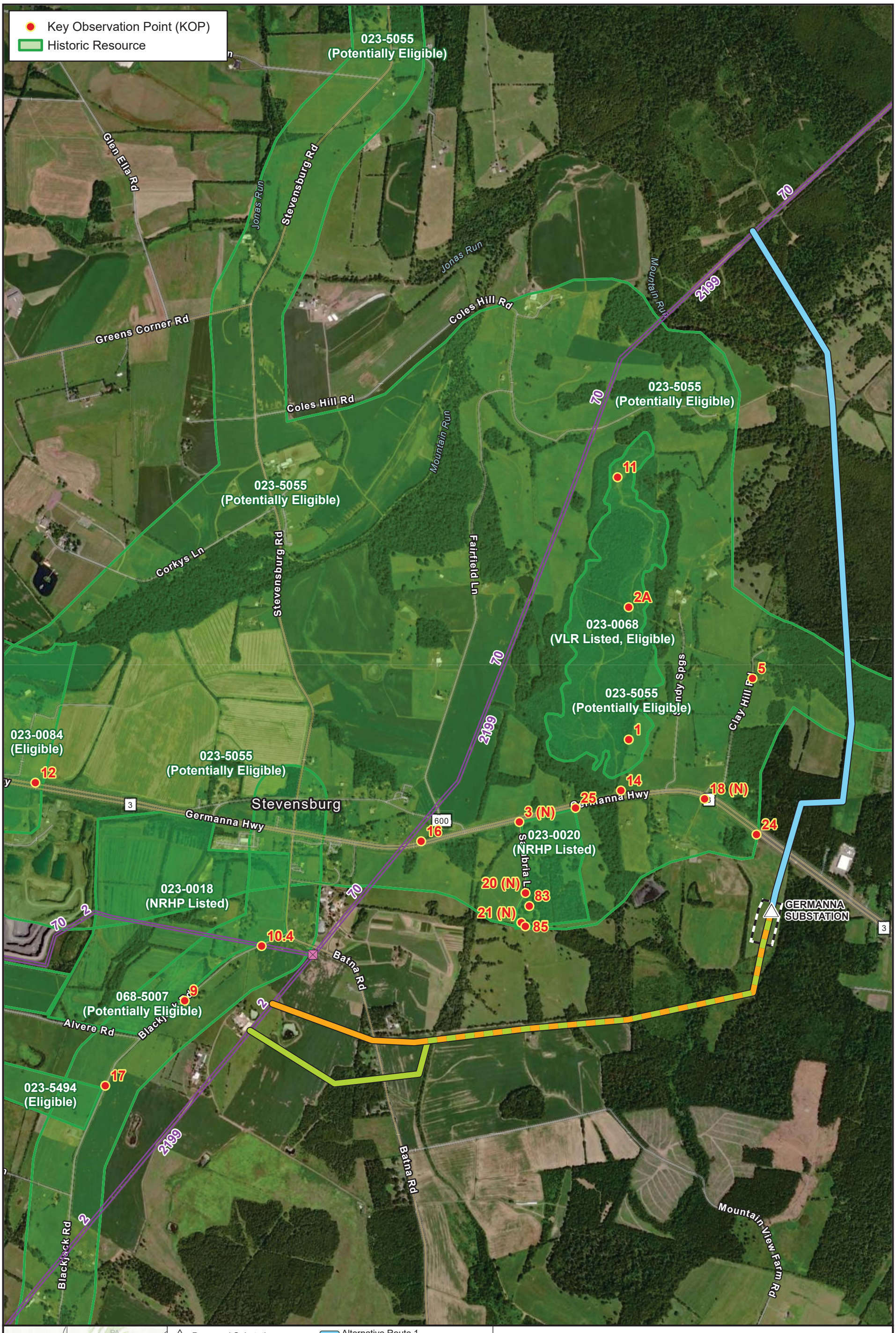
Proposed Structure Type:
230 kV Double Circuit Steel 2-Pole Structure
(Deadend)

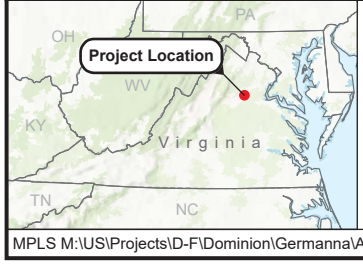


Proposed Structure Type:

230 kV Single Circuit Steel Monopole

(Deadend)





Proposed Substation
Mountain Run Junction
Existing Dominion Transmission Line
Proposed Germanna Substation Boundary
Study Area

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

1:18,000

0 750 1,500 Feet

Attachment II.B.6.c
Overview Map of Routes Showing Visual Simulation Locations and Associated Aboveground Historic Resources
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\11\SCC_DOM_GERM_SCC_Figures_Update.aprx\Att II.B.6.c Cultural Locations | REVISED: 11/10/2023 | SCALE: 1:18,000 when printed at 11x17 DRAWN BY: 0239



Figure 1: Aerial photograph depicting land use and photo view for 023-0020.



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248332E 4258872N
View Direction:	138 degrees
Viewpoint Elevation:	261 feet
Distance to Development:	4529 feet
Horizontal Field of View:	115 degrees

Date of Photography:	27th August 2023 11:27
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 2
Viewpoint SP 25
Germanna Hwy E of Salubria Ln
023-0020

Pre-Application Analysis
Germanna

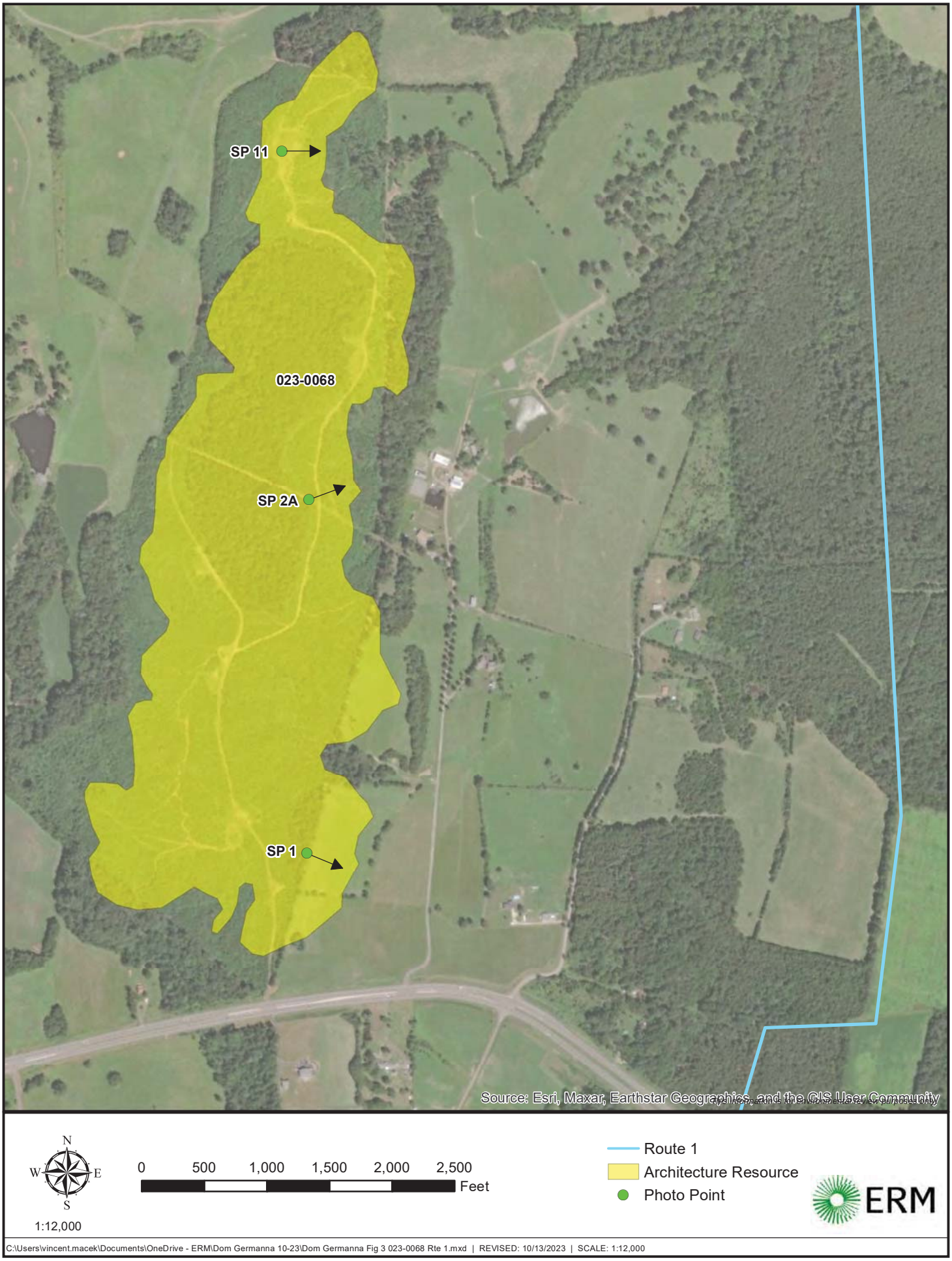


Figure 3: Aerial photograph depicting land use and photo view for 023-0068.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248615E 4259210N
View Direction:	150 degrees
Viewpoint Elevation:	428 feet
Distance to Development:	3854 feet
Horizontal Field of View:	96 degrees

Date of Photography:	10th August 2022 11:05
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	57 inches



VIEWPOINT CONTEXT

Figure 4
Viewpoint SP 1
Sandy Spgs N of Germanna Hwy
023-0068

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248641E 4259883N
View Direction:	117 degrees
Viewpoint Elevation:	461 feet
Distance to Development:	4524 feet
Horizontal Field of View:	46 degrees

Date of Photography:	10th August 2022 10:22
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 5
Viewpoint SP 2A
Sandy Spgs N of Germanna Hwy
023-0068

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248609E 4260546N
View Direction:	99 degrees
Viewpoint Elevation:	427 feet
Distance to Development:	4591 feet
Horizontal Field of View:	80 degrees

Date of Photography:	10th August 2022 11:53
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	60 inches



VIEWPOINT CONTEXT

Figure 6
Viewpoint SP 11
Coles Hill Rd SE of Fairfield Ln
023-0068

Pre-Application Analysis
Germanna

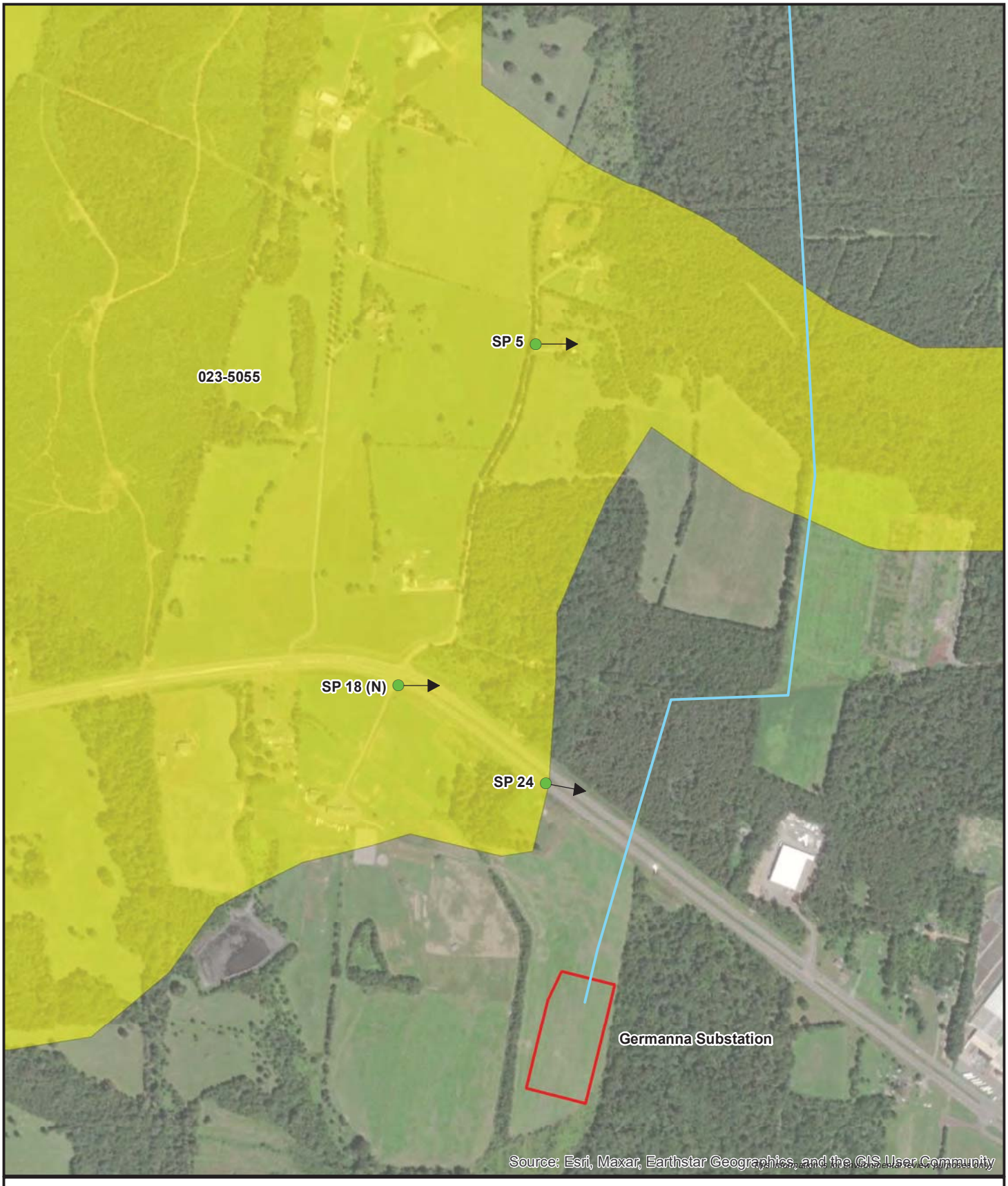


Figure 7: Aerial photograph depicting land use and photo view for 023-5055.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	249257E 4259497N
View Direction:	171 degrees
Viewpoint Elevation:	561 feet
Distance to Development:	1986 feet
Horizontal Field of View:	89 degrees

Date of Photography:	9th August 2022 18:28
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 8
Viewpoint SP 5
Clay Hill Rd N of Germanna Hwy
023-5055

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248990E 4258893N
View Direction:	153 degrees
Viewpoint Elevation:	349 feet
Distance to Development:	1943 feet
Horizontal Field of View:	89 degrees

Date of Photography:	12th August 2022 16:07
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 9
Viewpoint SP 18
Germanna Hwy at Clay Hill Rd
023-5055

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	249247E 4258702N
View Direction:	180 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	671 feet
Horizontal Field of View:	89 degrees

Date of Photography:	27th August 2023 12:14
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 10
Viewpoint SP 24
Germanna Hwy SE of Clay Hill Rd
023-5055

Pre-Application Analysis
Germanna

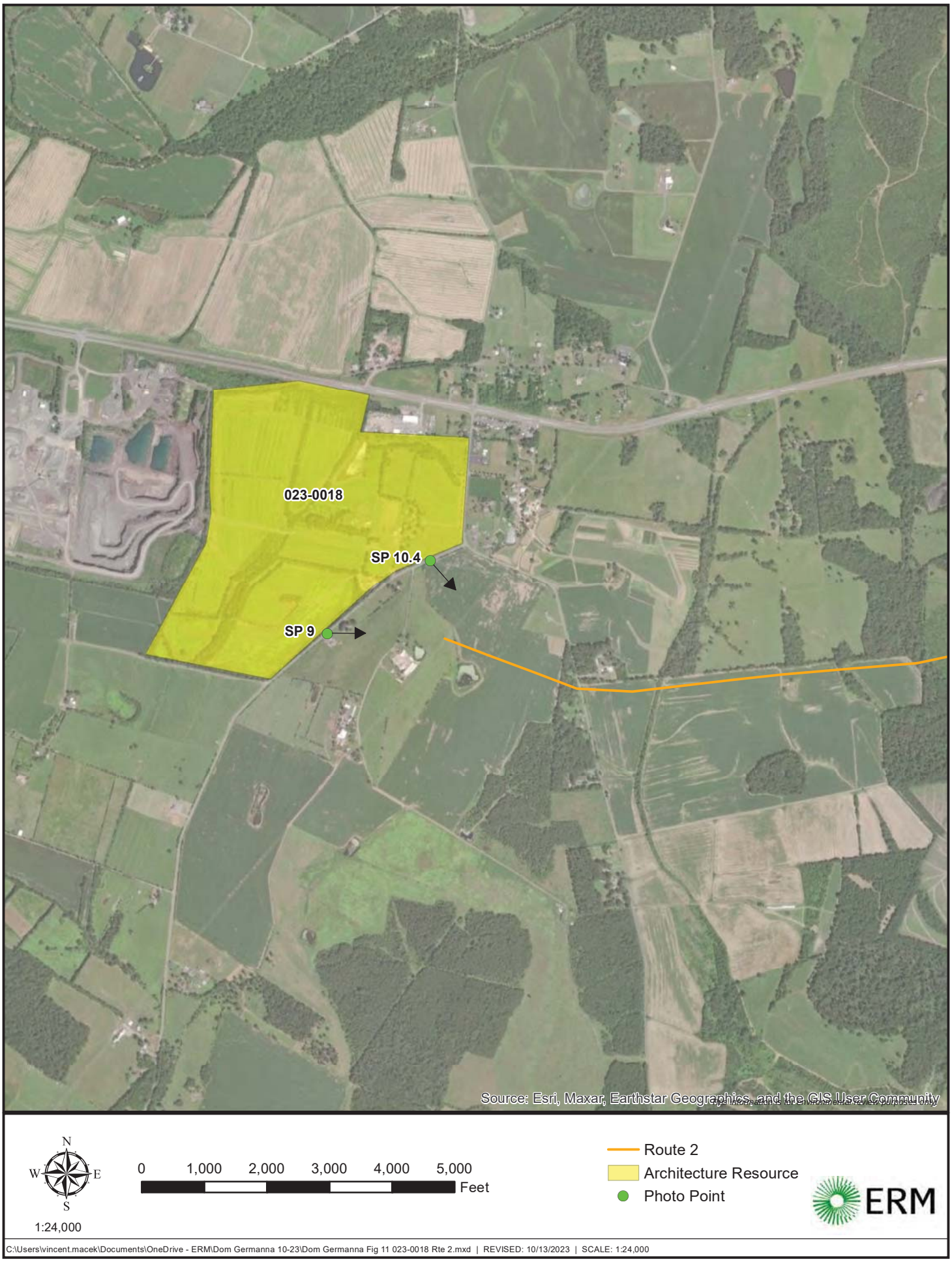


Figure 11: Aerial photograph depicting land use and photo view for 023-0018.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	246709E 4258231N
View Direction:	140 degrees
Viewpoint Elevation:	346 feet
Distance to Development:	1260 feet
Horizontal Field of View:	100 degrees

Date of Photography:	1st November 2022 12:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 12
Viewpoint SP 10.4
Blackjack Rd W of Batna Rd
023-0018

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	246307E 4257967N
View Direction:	87 degrees
Viewpoint Elevation:	319 feet
Distance to Development:	1873 feet
Horizontal Field of View:	88 degrees

Date of Photography:	9th August 2022 10:53
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 13
Viewpoint SP 9
Blackjack Rd NE of Alvere Rd
023-0018

Pre-Application Analysis
Germanna

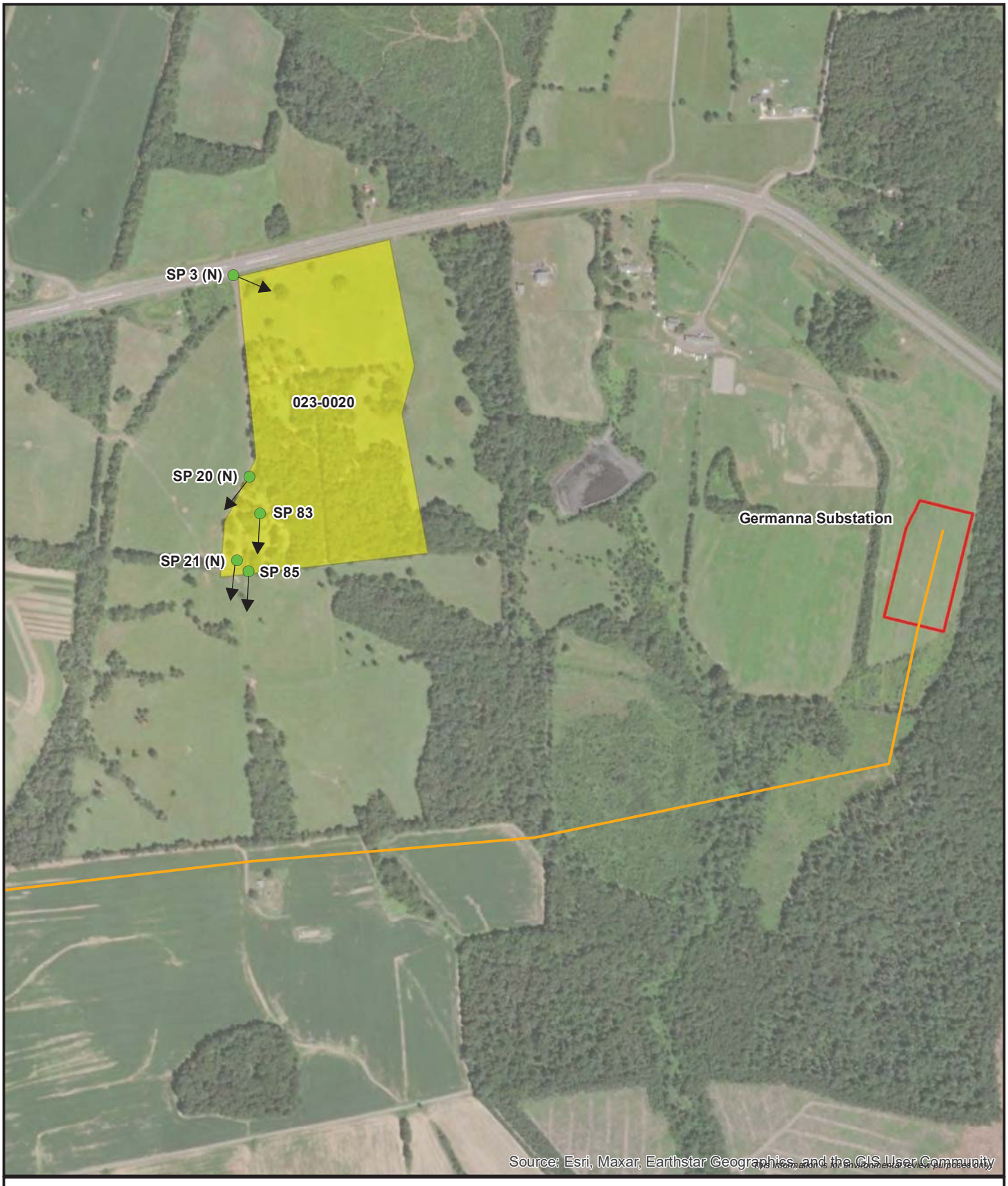


Figure 14: Aerial photograph depicting land use and photo view for 023-0020.



Existing View



Proposed view showing location of transmission line structures

Viewpoint Location UTM Zone 18N:	248034E 4258299N
View Direction:	195 degrees
Viewpoint Elevation:	384 feet
Distance to Development:	2212 feet
Horizontal Field of View:	90 degrees

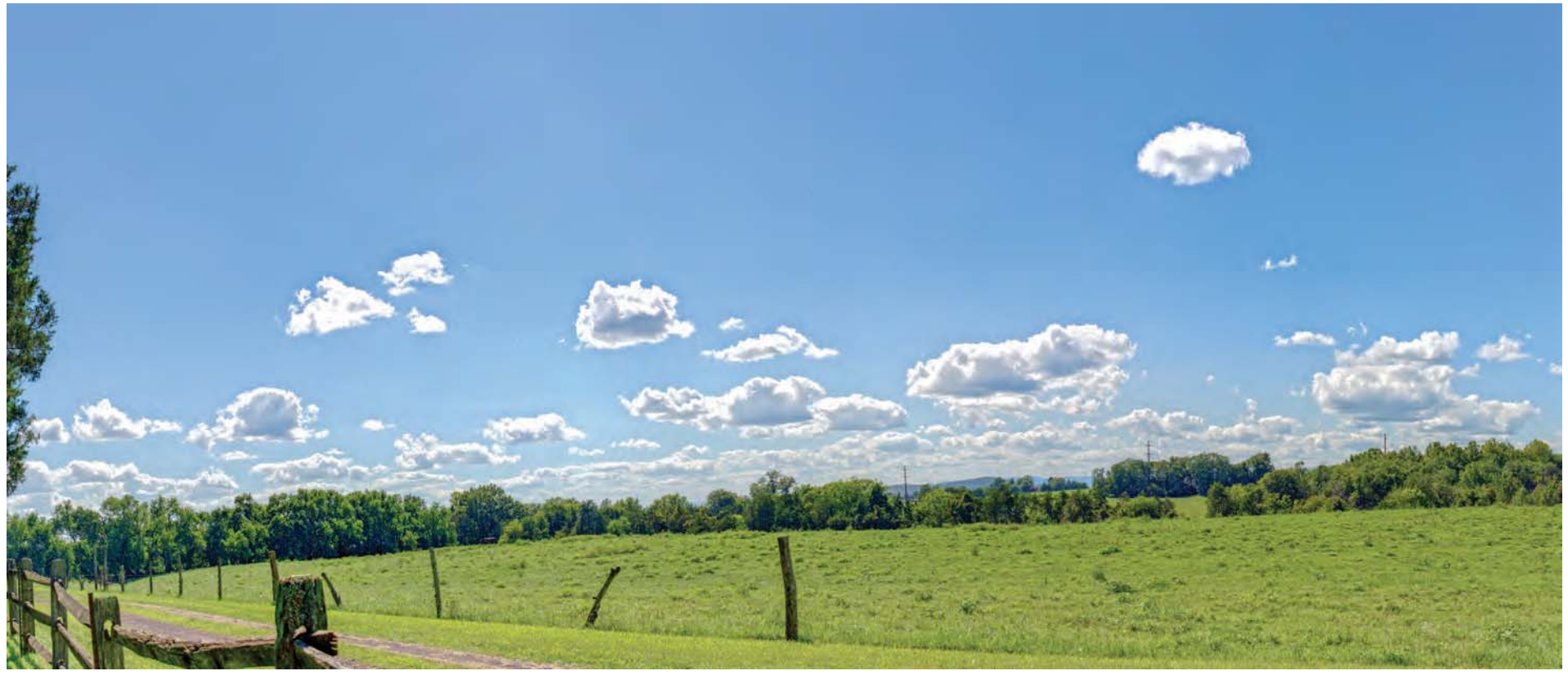
Date of Photography:	12th August 2022 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



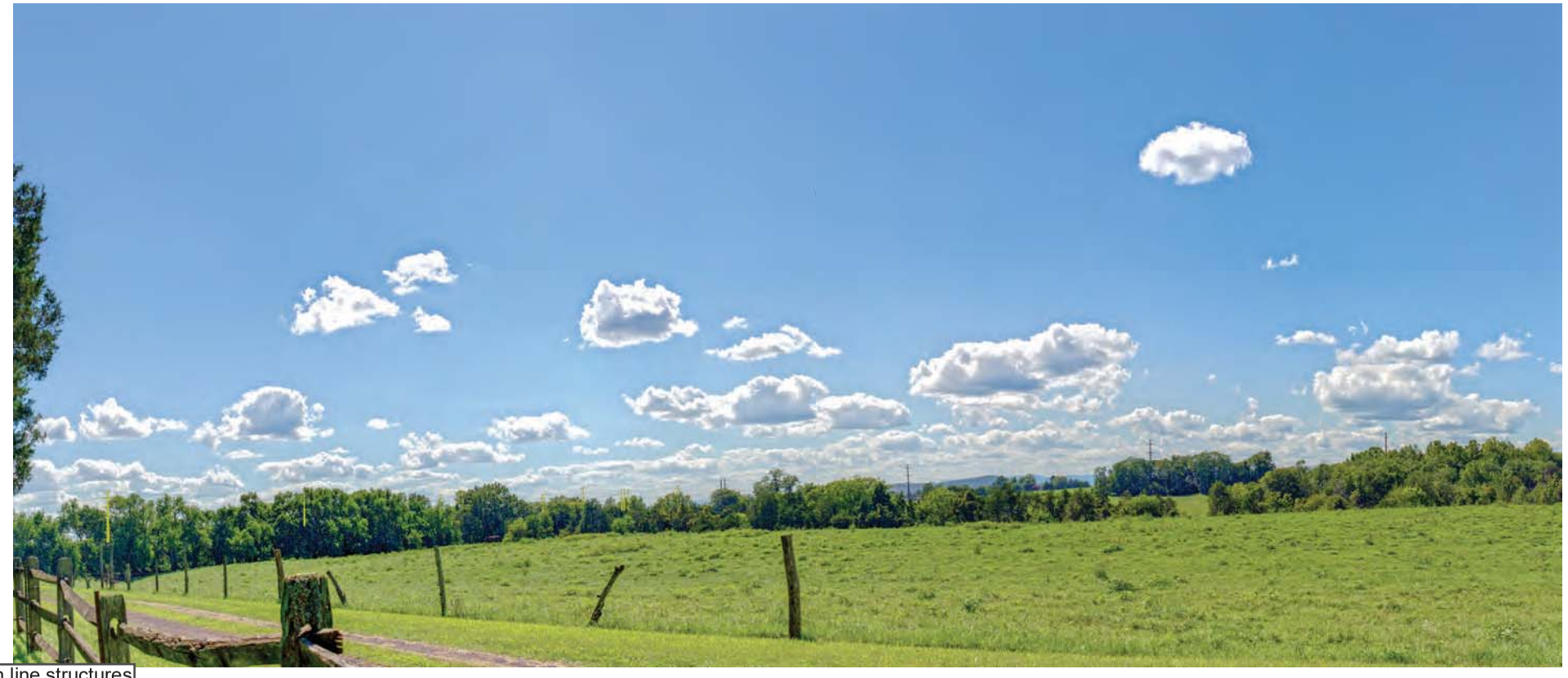
VIEWPOINT CONTEXT

Figure 15
Viewpoint SP 21
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248061E 4258449N
View Direction:	260 degrees
Viewpoint Elevation:	385 feet
Distance to Development:	2834 feet
Horizontal Field of View:	78 degrees

Date of Photography:	12th August 2022 15:33
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	58 inches



VIEWPOINT CONTEXT

Figure 16
Viewpoint SP 20
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248043E 4258812N
View Direction:	122 degrees
Viewpoint Elevation:	367 feet
Distance to Development:	4359 feet
Horizontal Field of View:	120 degrees

Date of Photography:	12th August 2022 15:56
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 17
Viewpoint SP 3
Salubria Ln at Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 18
Viewpoint SP 83
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248054E 4258280N
View Direction:	168 degrees
Viewpoint Elevation:	385 feet
Distance to Development:	2126 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 13:24
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 19
Viewpoint SP 85
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna

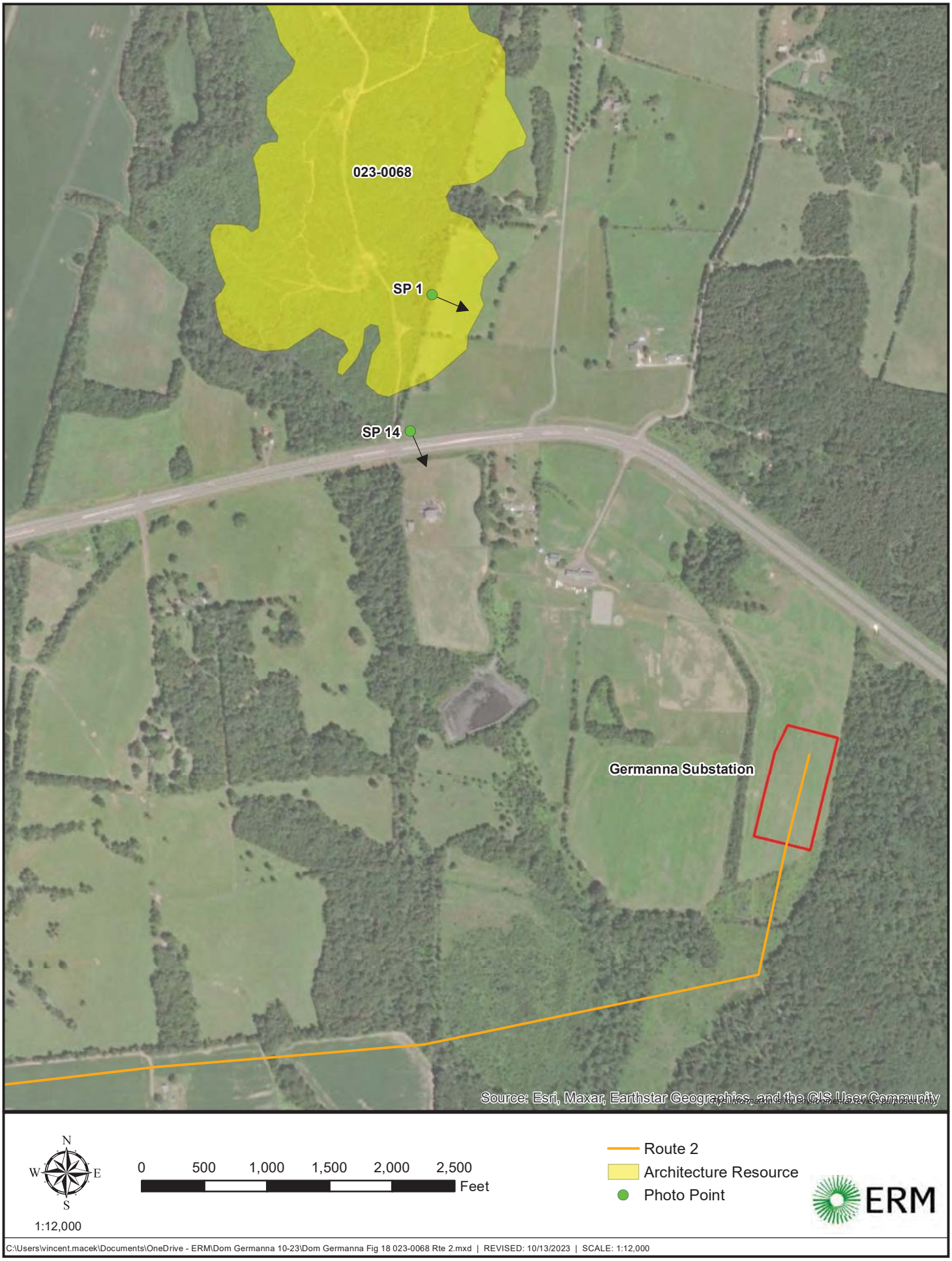


Figure 20: Aerial photograph depicting land use and photo view for 023-0068.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248615E 4259210N
View Direction:	150 degrees
Viewpoint Elevation:	428 feet
Distance to Development:	5789 feet
Horizontal Field of View:	96 degrees

Date of Photography:	10th August 2022 11:05
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	57 inches



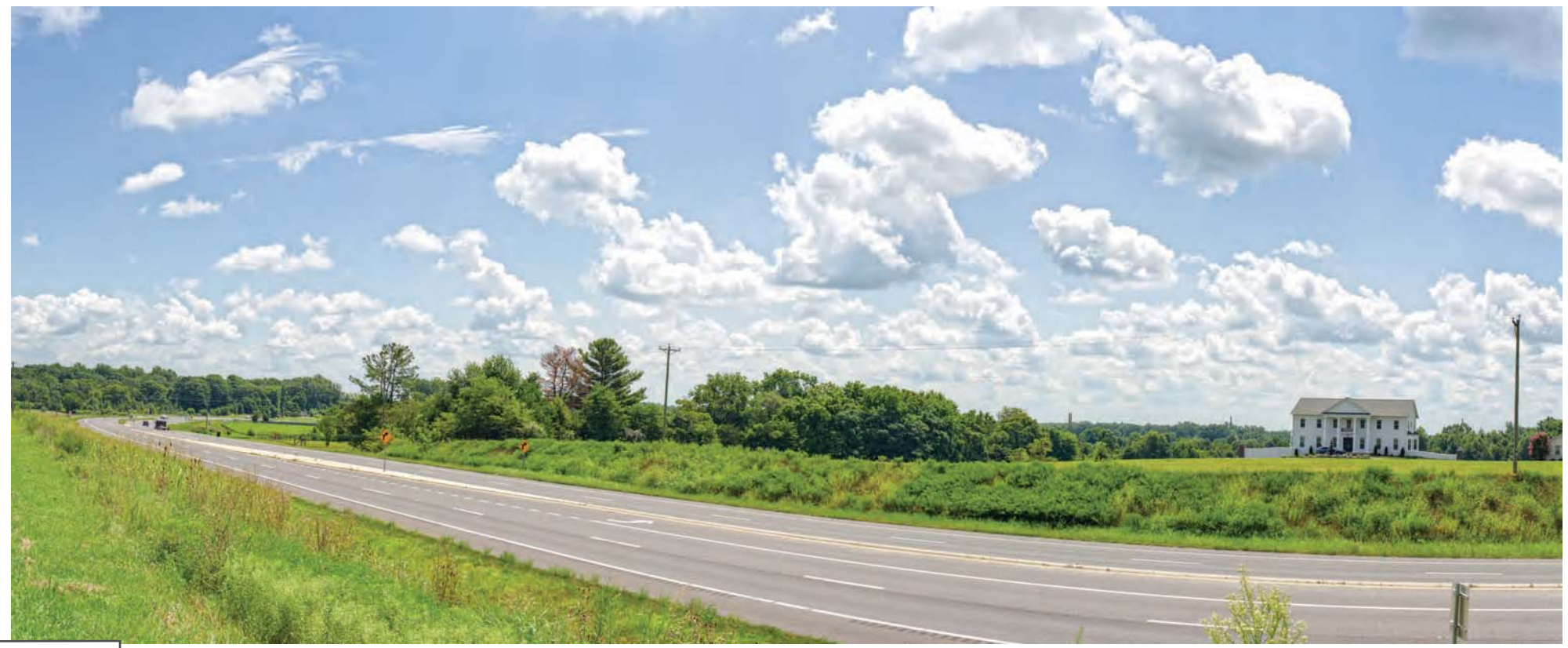
VIEWPOINT CONTEXT

Figure 21
Viewpoint SP 1
Sandy Spgs N of Germanna Hwy
023-0068

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	248566E 4258952N
View Direction:	136 degrees
Viewpoint Elevation:	389 feet
Distance to Development:	4759 feet
Horizontal Field of View:	88 degrees

Date of Photography:	10th August 2022 17:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 22
Viewpoint SP 14
Germanna Hwy W of Sandy Spgs
023-0068

Pre-Application Analysis
Germanna

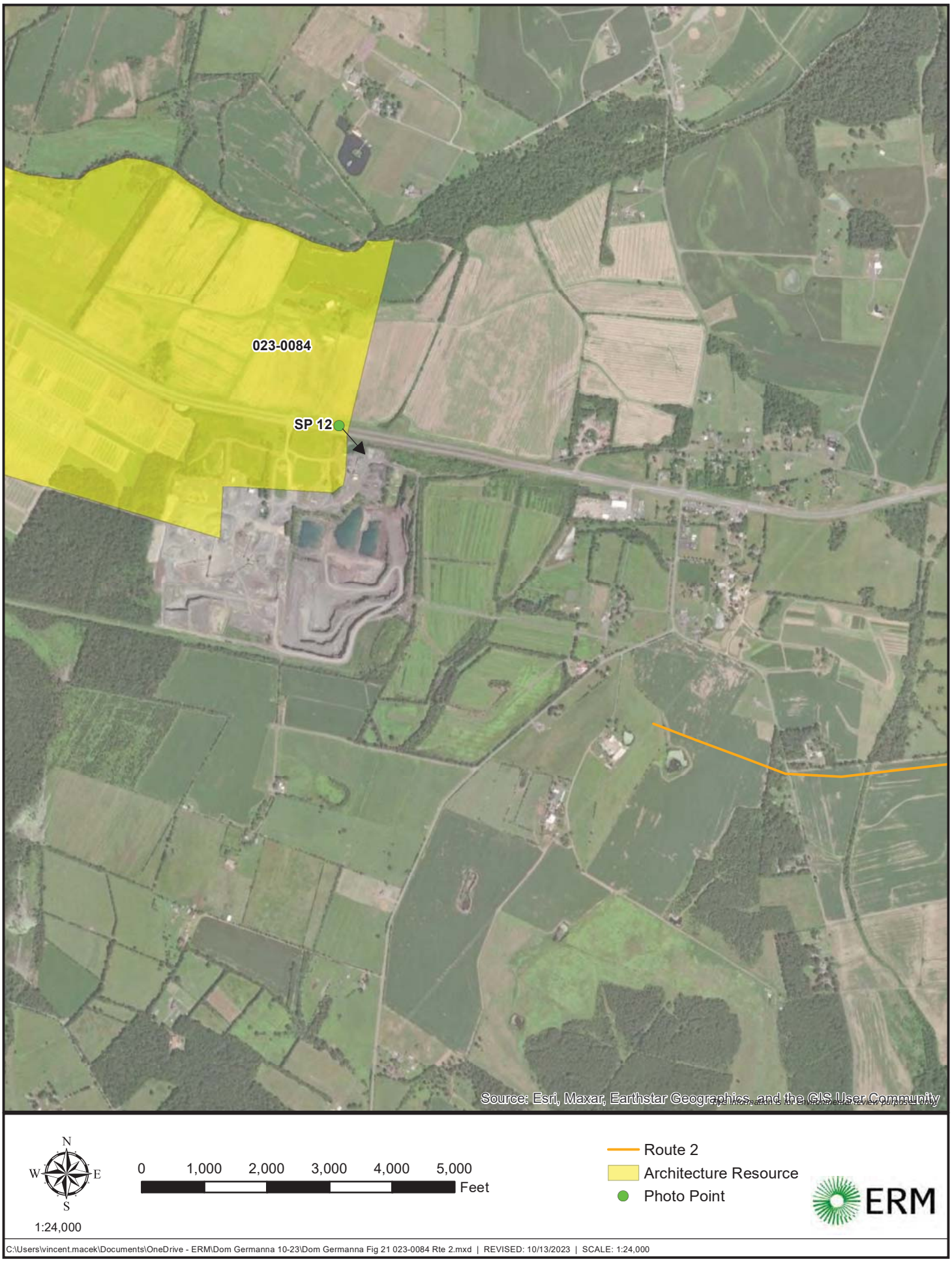


Figure 23: Aerial photograph depicting land use and photo view for 023-0084.



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	245590E 4259105N
View Direction:	113 degrees
Viewpoint Elevation:	310 feet
Distance to Development:	6983 feet
Horizontal Field of View:	89 degrees

Date of Photography:	8th August 2022 11:30
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 24
Viewpoint SP 12
Germanna Hwy E of Clover Hill Rd
023-0084

Pre-Application Analysis
Germanna

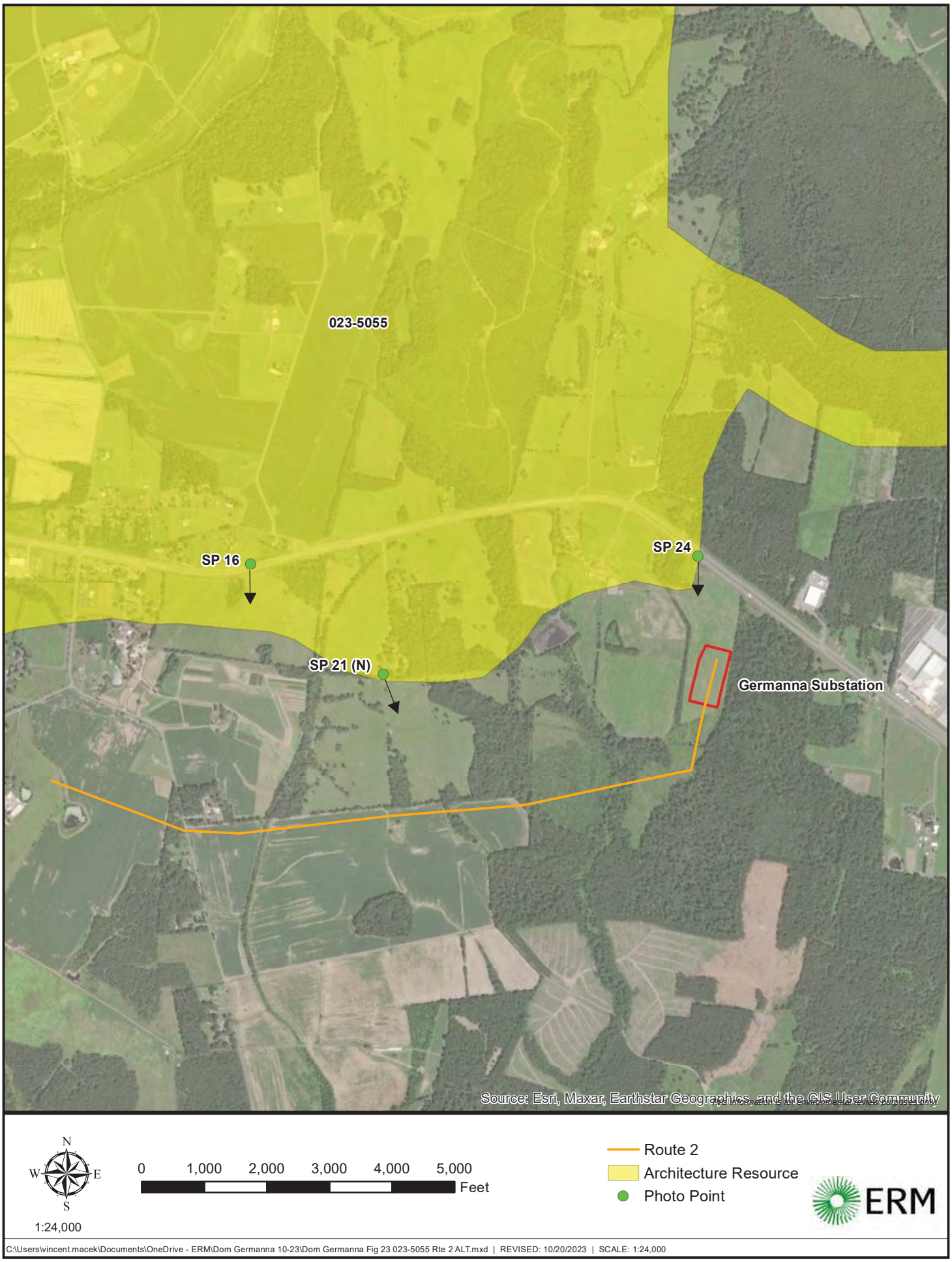


Figure 25: Aerial photograph depicting land use and photo view for 023-5055.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	247540E 4258733N
View Direction:	158 degrees
Viewpoint Elevation:	381 feet
Distance to Development:	4193 feet
Horizontal Field of View:	85 degrees

Date of Photography:	8th August 2022 13:46
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 26
Viewpoint SP 16
Germanna Hwy W of York Rd
023-5055

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	248034E 4258299N
View Direction:	195 degrees
Viewpoint Elevation:	384 feet
Distance to Development:	2212 feet
Horizontal Field of View:	90 degrees

Date of Photography:	12th August 2022 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 27
Viewpoint SP 21
Salubria Ln S of Germanna Hwy
023-5055

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	249247E 4258702N
View Direction:	180 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1651 feet
Horizontal Field of View:	89 degrees

Date of Photography:	27th August 2023 12:14
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 28
Viewpoint SP 24
Germanna Hwy SE of Clay Hill Rd
023-5055

Pre-Application Analysis
Germanna

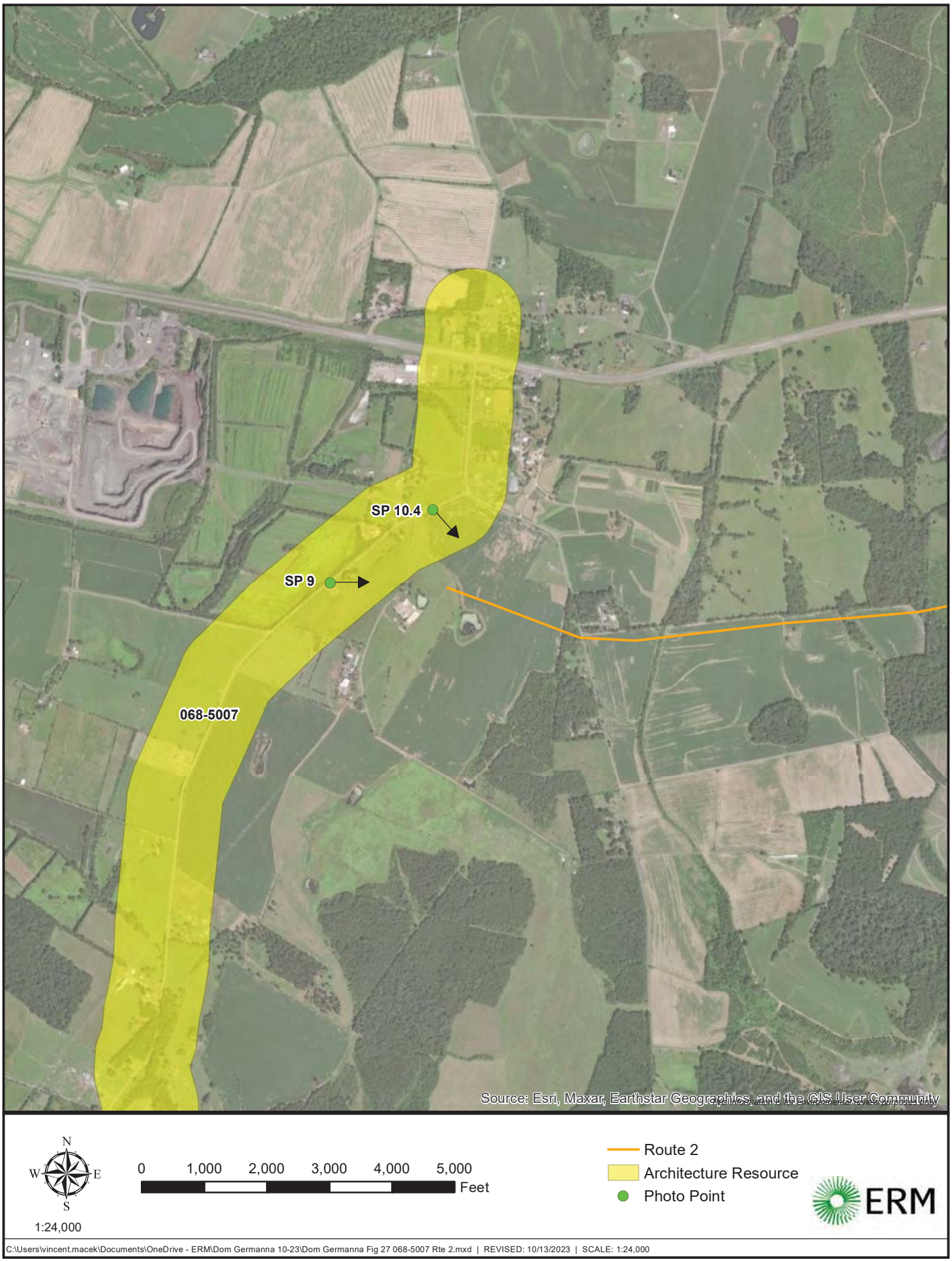


Figure 29: Aerial photograph depicting land use and photo view for 068-5007.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	246709E 4258231N
View Direction:	140 degrees
Viewpoint Elevation:	346 feet
Distance to Development:	1260 feet
Horizontal Field of View:	100 degrees

Date of Photography:	1st November 2022 12:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 30
Viewpoint SP 10.4
Blackjack Rd W of Batna Rd
068-5007

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	246307E 4257967N
View Direction:	87 degrees
Viewpoint Elevation:	319 feet
Distance to Development:	1873 feet
Horizontal Field of View:	88 degrees

Date of Photography:	9th August 2022 10:53
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 31
Viewpoint SP 9
Blackjack Rd NE of Alvere Rd
068-5007

Pre-Application Analysis
Germanna

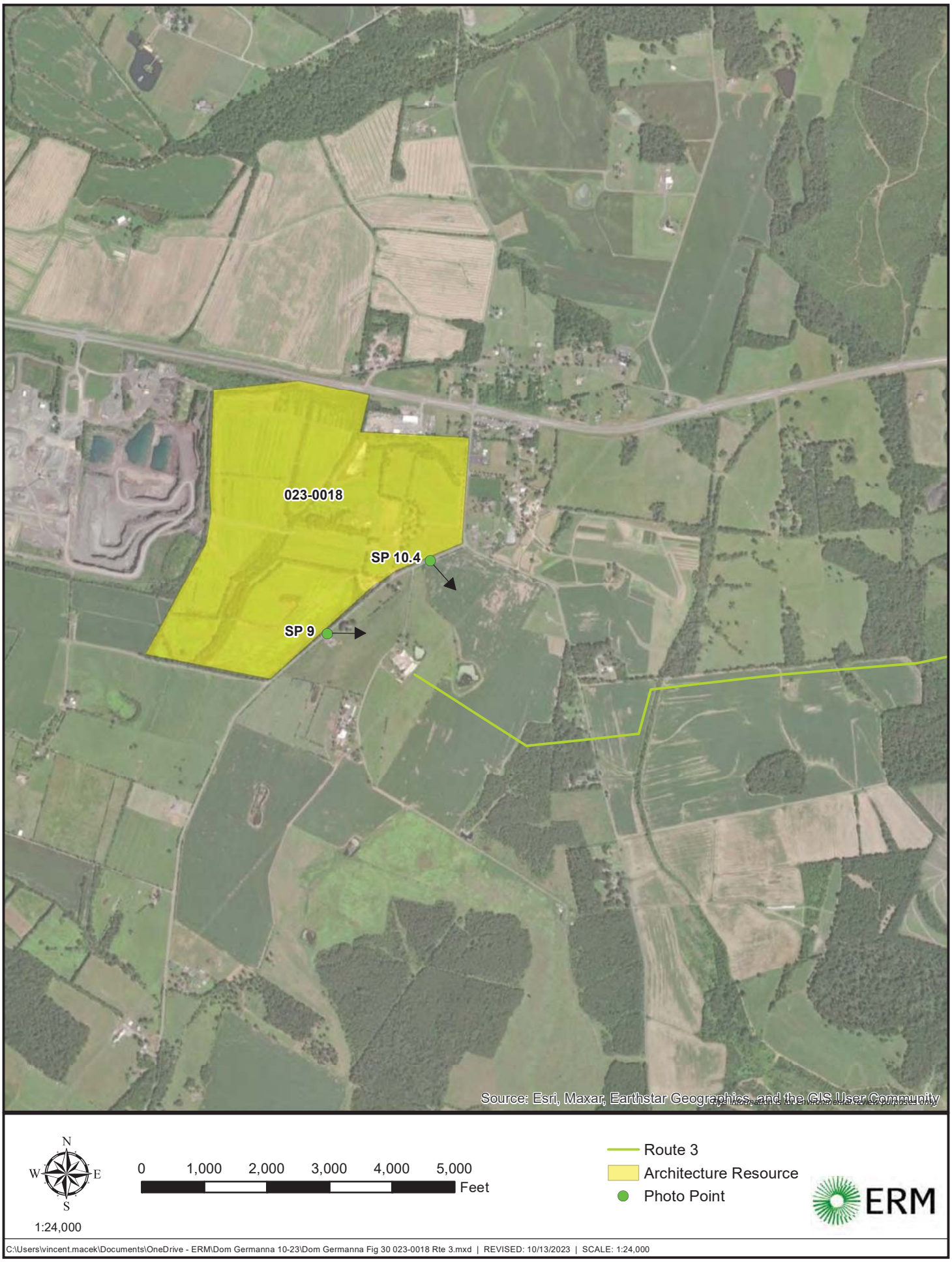


Figure 32: Aerial photograph depicting land use and photo view for 023-0018. 122



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	246709E 4258231N
View Direction:	140 degrees
Viewpoint Elevation:	346 feet
Distance to Development:	1807 feet
Horizontal Field of View:	100 degrees

Date of Photography:	1st November 2022 12:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 33
Viewpoint SP 10.4
Blackjack Rd W of Batna Rd
023-0018

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	246307E 4257967N
View Direction:	87 degrees
Viewpoint Elevation:	319 feet
Distance to Development:	1537 feet
Horizontal Field of View:	88 degrees

Date of Photography:	9th August 2022 10:53
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 34
Viewpoint SP 9
Blackjack Rd NE of Alvere Rd
068-5007

Pre-Application Analysis
Germanna

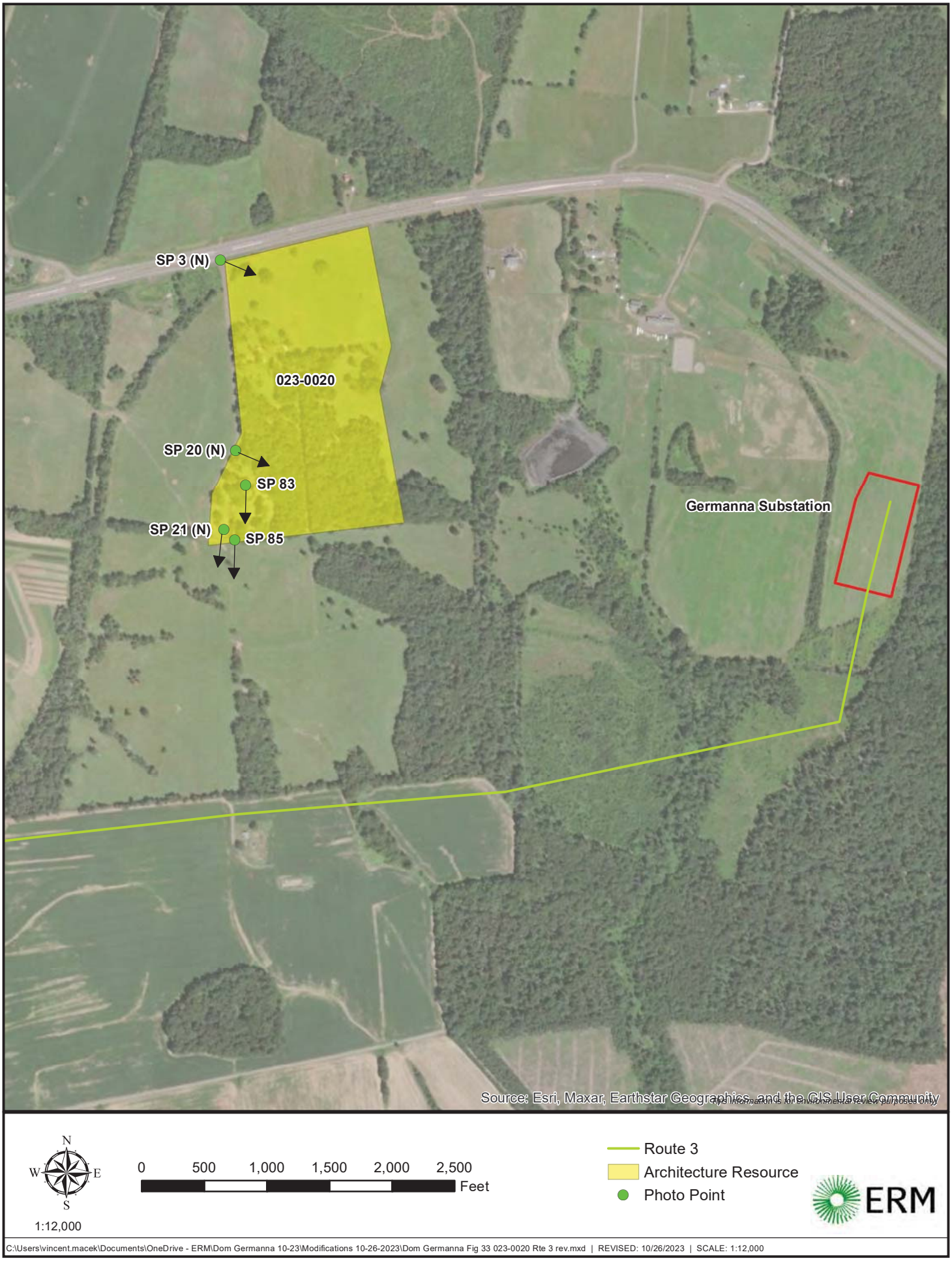


Figure 35: Aerial photograph depicting land use and photo view for 023-0020.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	248034E 4258299N
View Direction:	195 degrees
Viewpoint Elevation:	384 feet
Distance to Development:	2212 feet
Horizontal Field of View:	90 degrees

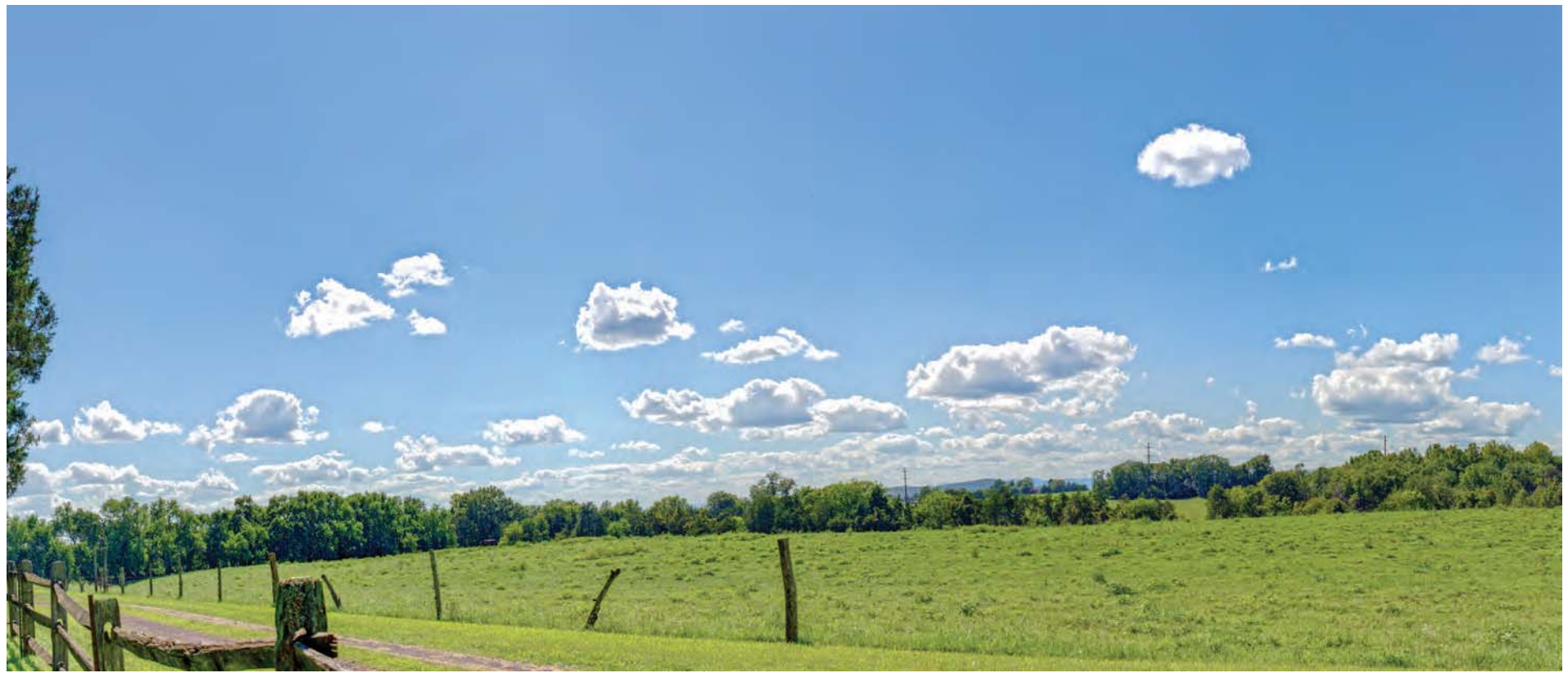
Date of Photography:	12th August 2022 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 36
Viewpoint SP 21
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248061E 4258449N
View Direction:	260 degrees
Viewpoint Elevation:	385 feet
Distance to Development:	2834 feet
Horizontal Field of View:	78 degrees

Date of Photography:	12th August 2022 15:33
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	58 inches



VIEWPOINT CONTEXT

Figure 37
Viewpoint SP 20
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248043E 4258812N
View Direction:	122 degrees
Viewpoint Elevation:	367 feet
Distance to Development:	4359 feet
Horizontal Field of View:	120 degrees

Date of Photography:	12th August 2022 15:56
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 38
Viewpoint SP 3
Salubria Ln at Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 39
Viewpoint SP 83
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248054E 4258280N
View Direction:	168 degrees
Viewpoint Elevation:	385 feet
Distance to Development:	2126 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 13:24
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 40
Viewpoint SP 85
Salubria Ln S of Germanna Hwy
023-0020

Pre-Application Analysis
Germanna

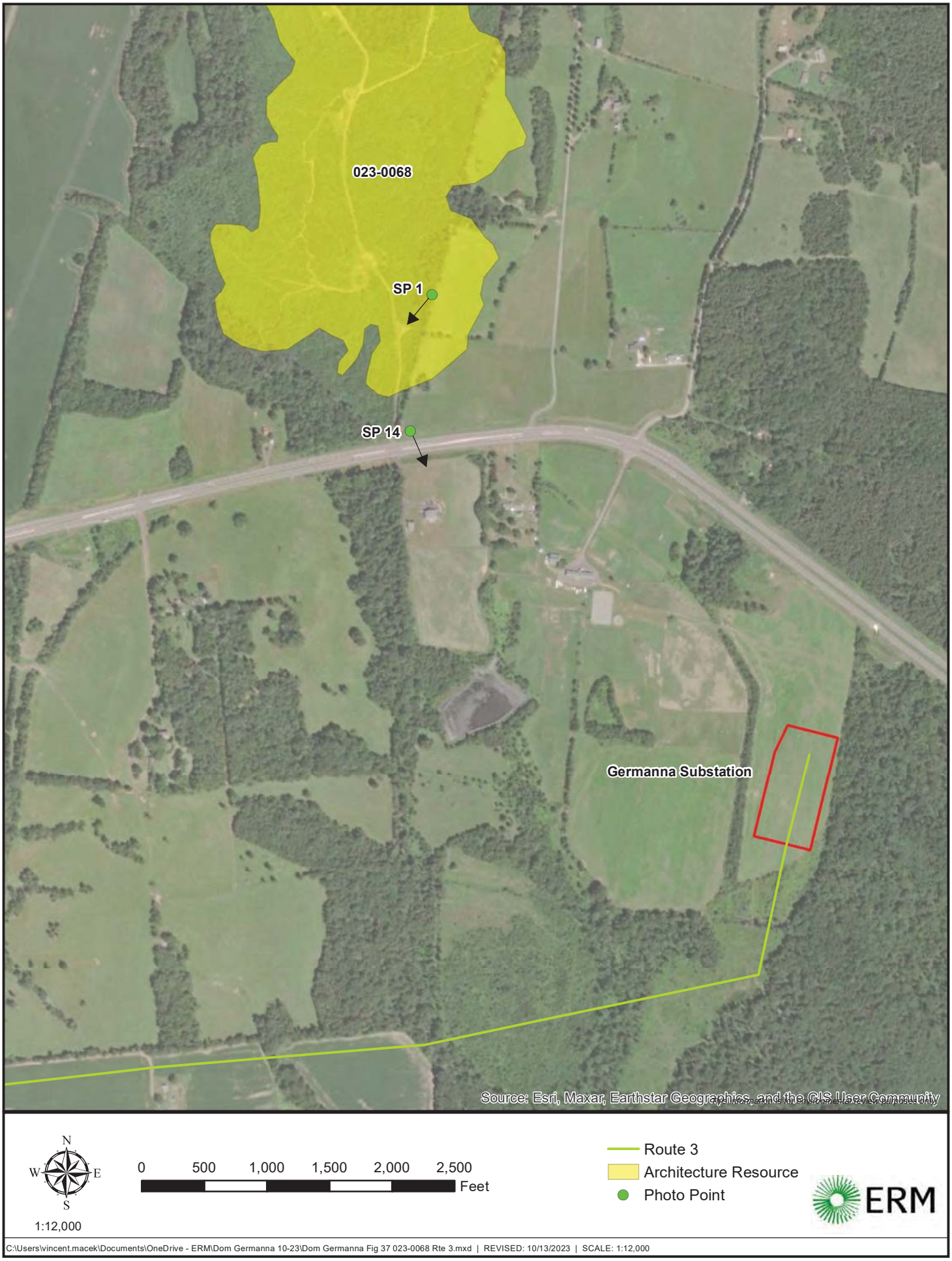


Figure 41: Aerial photograph depicting land use and photo view for 023-0068.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248615E 4259210N
View Direction:	150 degrees
Viewpoint Elevation:	428 feet
Distance to Development:	5789 feet
Horizontal Field of View:	96 degrees

Date of Photography:	10th August 2022 11:05
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	57 inches



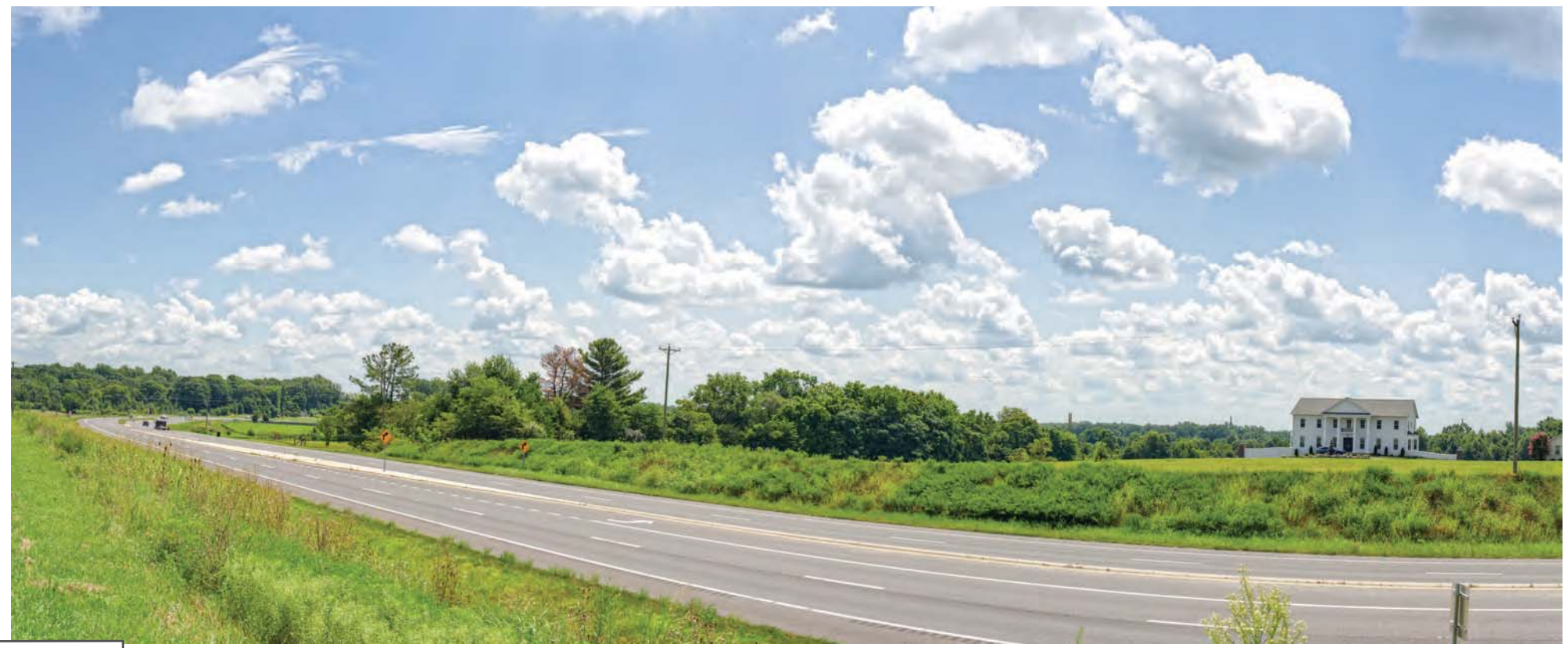
VIEWPOINT CONTEXT

Figure 42
Viewpoint SP 1
Sandy Spgs N of Germanna Hwy
023-0068

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	248566E 4258952N
View Direction:	136 degrees
Viewpoint Elevation:	389 feet
Distance to Development:	4759 feet
Horizontal Field of View:	88 degrees

Date of Photography:	10th August 2022 17:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 43
Viewpoint SP 14
Germanna Hwy W of Sandy Spgs
023-0068

Pre-Application Analysis
Germanna

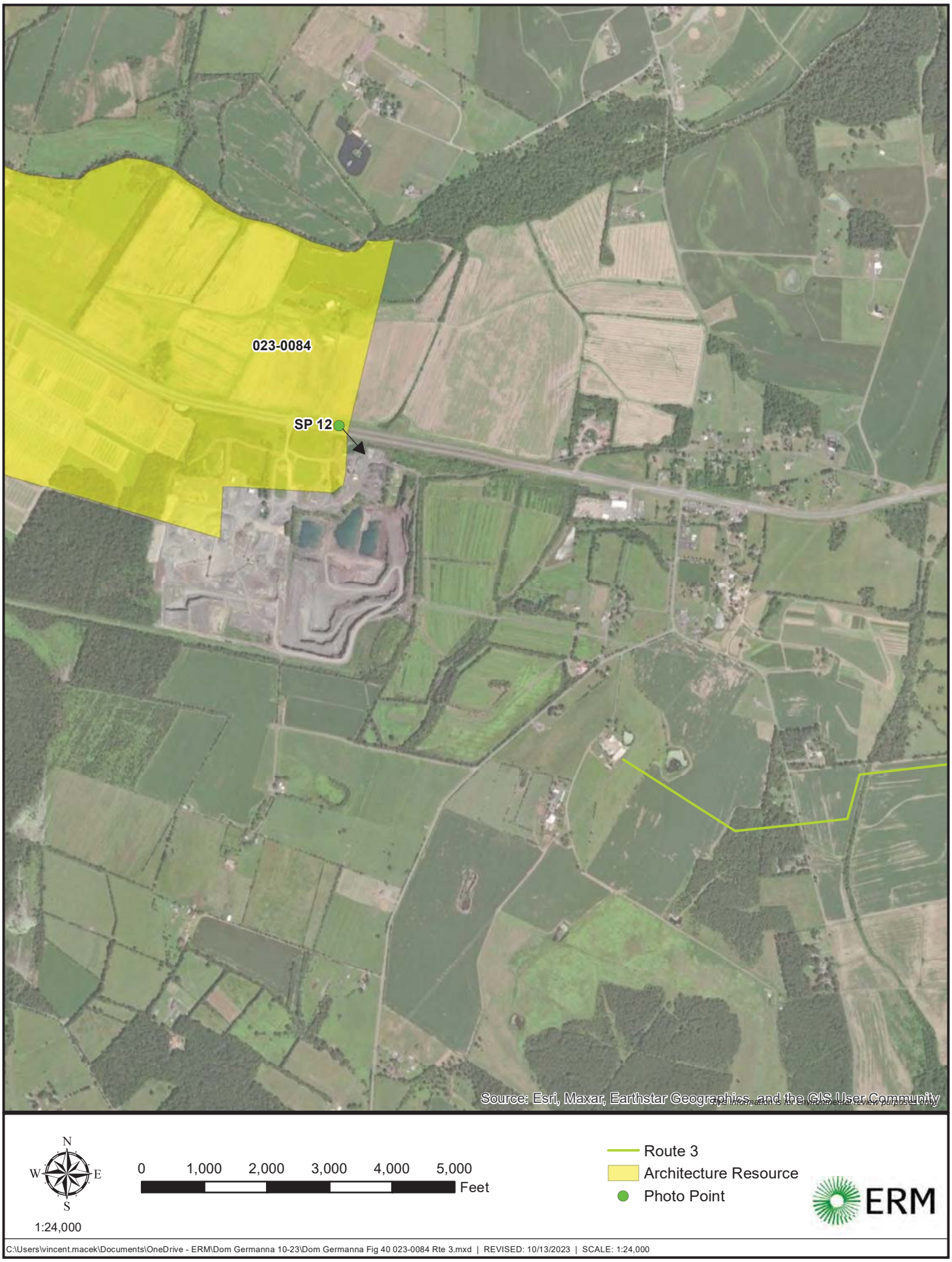


Figure 44: Aerial photograph depicting land use and photo view for 023-0084.



Existing View



Proposed view showing location of hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	245590E 4259105N
View Direction:	113 degrees
Viewpoint Elevation:	310 feet
Distance to Development:	7007 feet
Horizontal Field of View:	89 degrees

Date of Photography:	8th August 2022 11:30
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 45
Viewpoint SP 12
Germanna Hwy E of Clover Hill Rd
023-0084

Pre-Application Analysis
Germanna

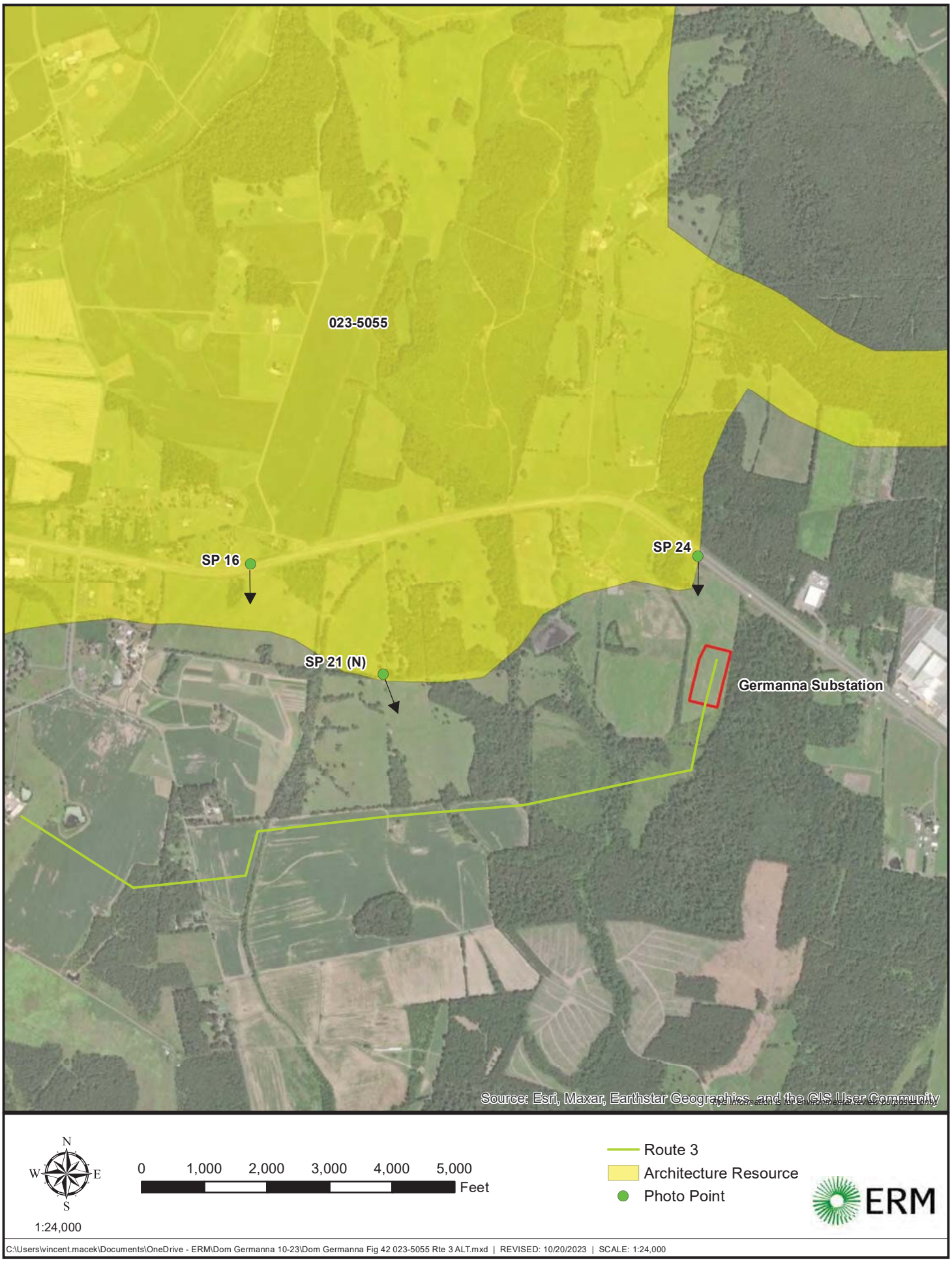


Figure 46: Aerial photograph depicting land use and photo view for 023-5055.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	247540E 4258733N
View Direction:	158 degrees
Viewpoint Elevation:	381 feet
Distance to Development:	4193 feet
Horizontal Field of View:	85 degrees

Date of Photography:	8th August 2022 13:46
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 47
Viewpoint SP 16
Germanna Hwy W of York Rd
023-5055

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Viewpoint Location UTM Zone 18N:	248034E 4258299N
View Direction:	195 degrees
Viewpoint Elevation:	384 feet
Distance to Development:	2212 feet
Horizontal Field of View:	90 degrees

Date of Photography:	12th August 2022 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 48
Viewpoint SP 21
Salubria Ln S of Germanna Hwy
023-5055

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	249247E 4258702N
View Direction:	180 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1651 feet
Horizontal Field of View:	89 degrees

Date of Photography:	27th August 2023 12:14
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 49
Viewpoint SP 24
Germanna Hwy SE of Clay Hill Rd
023-5055

Pre-Application Analysis
Germanna

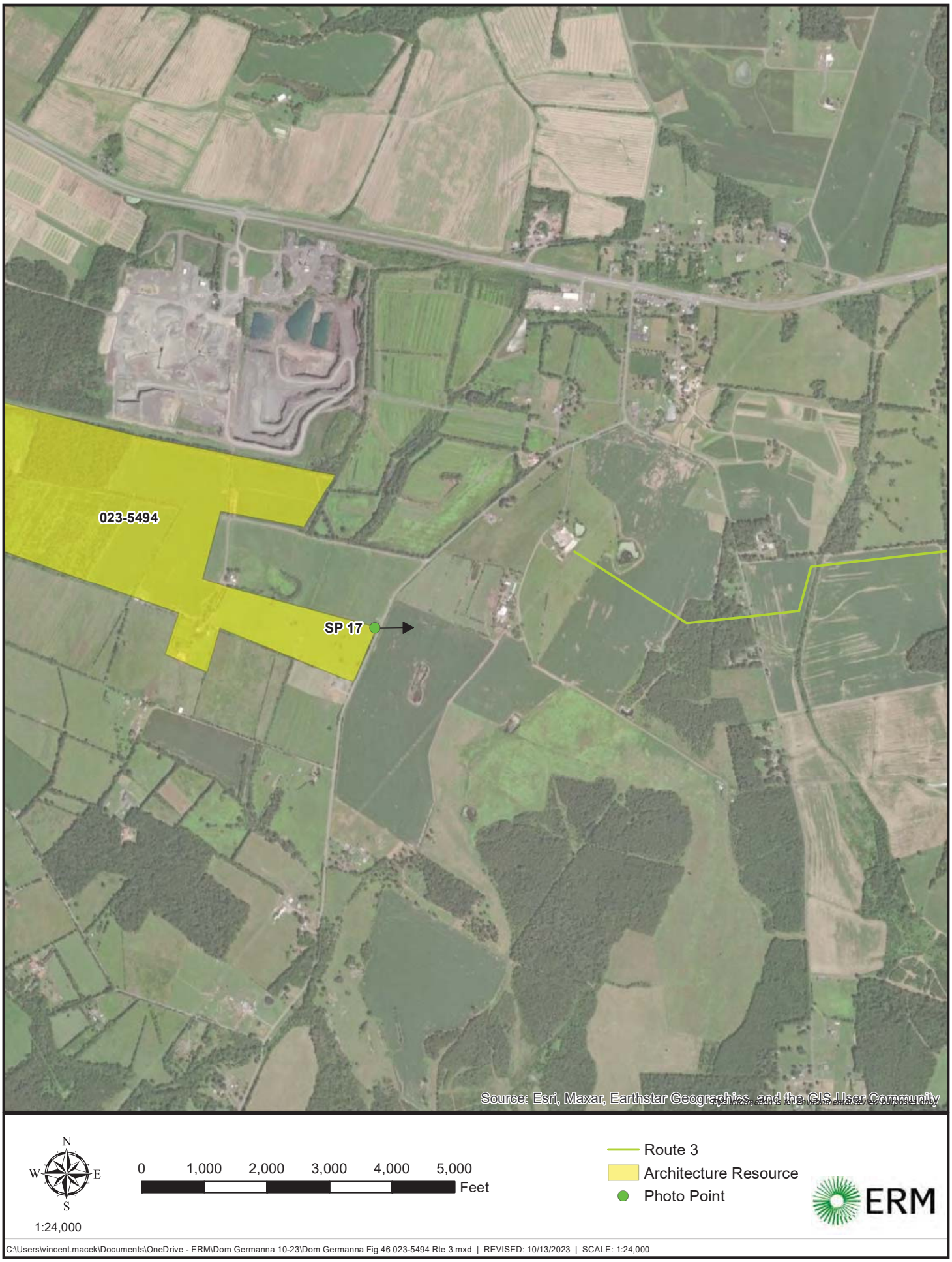


Figure 50: Aerial photograph depicting land use and photo view for 023-5494.



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	245886E 4257550N
View Direction:	77 degrees
Viewpoint Elevation:	309 feet
Distance to Development:	3284 feet
Horizontal Field of View:	78 degrees

Date of Photography:	21st April 2023 13:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches



VIEWPOINT CONTEXT

Figure 51
Viewpoint SP 17
Blackjack Rd S of Alvere Rd
023-5494

Pre-Application Analysis
Germanna

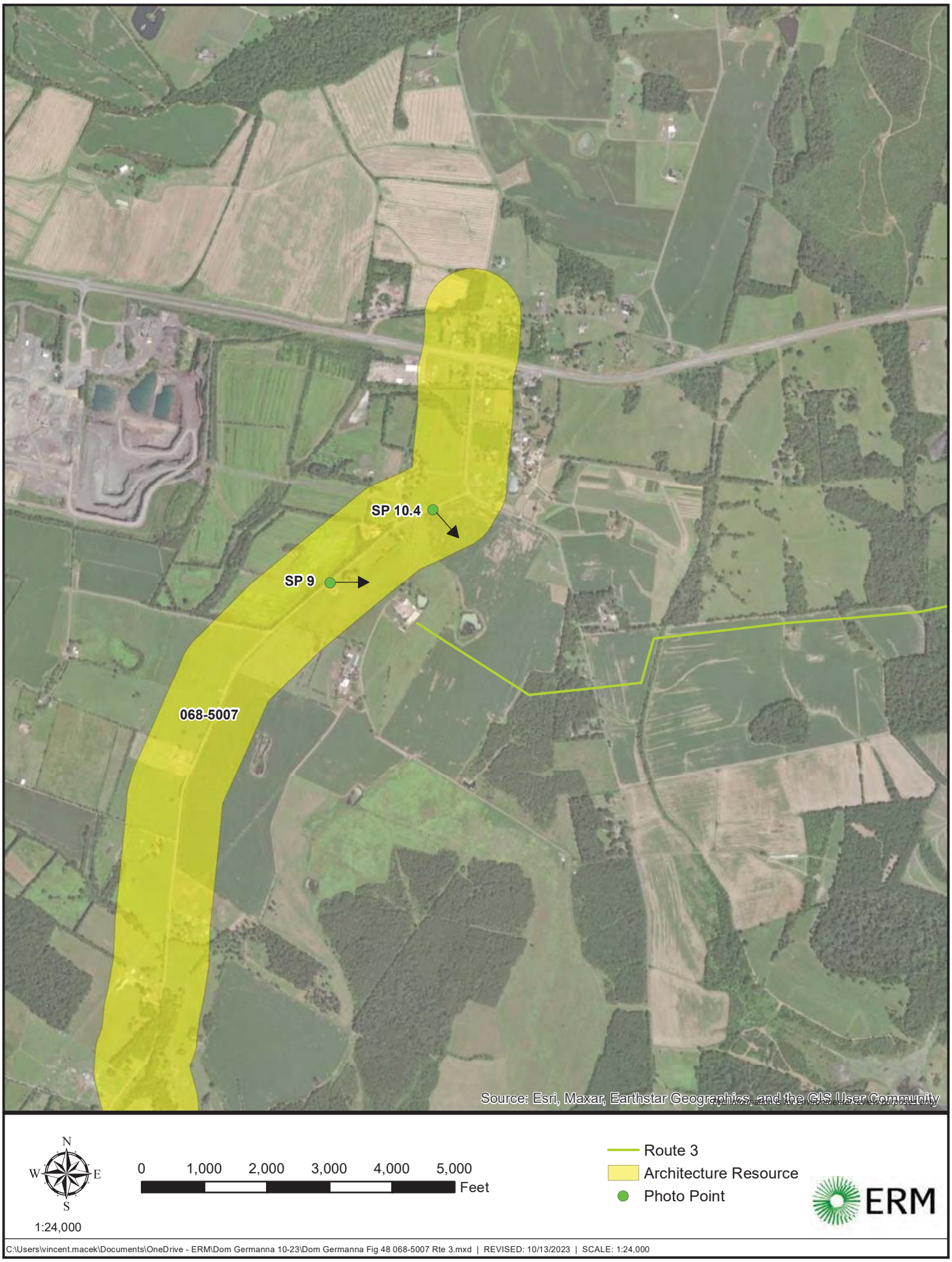


Figure 52: Aerial photograph depicting land use and photo view for 068-5007. 142



Existing View



Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	246709E 4258231N
View Direction:	140 degrees
Viewpoint Elevation:	346 feet
Distance to Development:	1807 feet
Horizontal Field of View:	100 degrees

Date of Photography:	1st November 2022 12:02
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 53
Viewpoint SP 10.4
Blackjack Rd W of Batna Rd
068-5007

Pre-Application Analysis
Germanna



Existing View



Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	246307E 4257967N
View Direction:	87 degrees
Viewpoint Elevation:	319 feet
Distance to Development:	1537 feet
Horizontal Field of View:	88 degrees

Date of Photography:	9th August 2022 10:53
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches



VIEWPOINT CONTEXT

Figure 54
Viewpoint SP 9
Blackjack Rd NE of Alvere Rd
068-5007

Pre-Application Analysis
Germanna

II. DESCRIPTION OF THE PROPOSED PROJECT

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

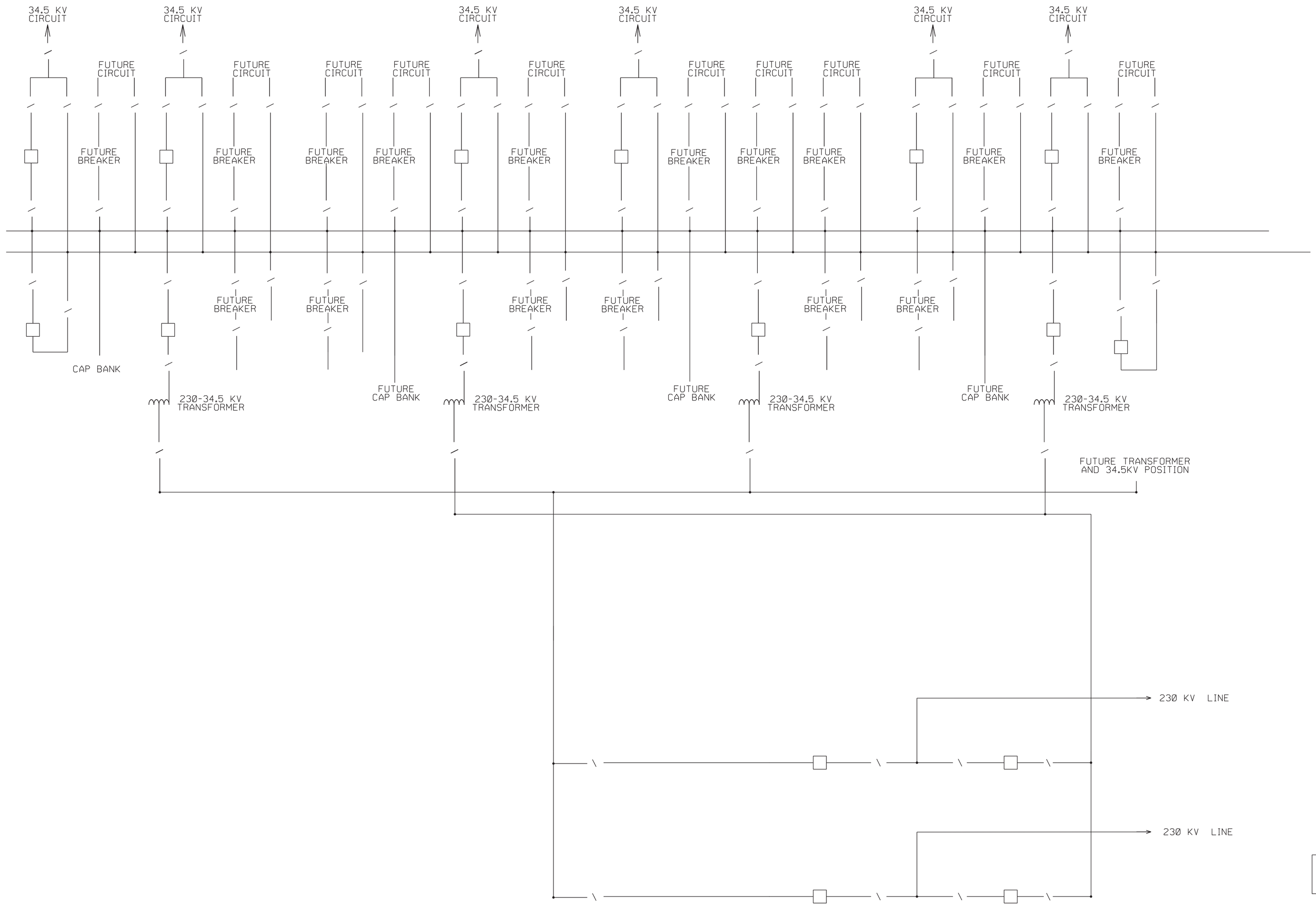
Response: The proposed Project requires construction of the new 230-34.5 kV Germanna Substation in Culpeper County, Virginia.

The proposed Germanna Substation initially will be constructed with four 230 kV breakers in a ring bus arrangement, with two 112 MVA and two 84 MVA 230-34.5 kV transformers, built to 4000A standards. The load from the Customer's data center campus will be split between two 112 transformers and four feeders, with two normal feeders and two alternate feeders. In total, the Germanna Substation will be designed to accommodate future growth in the area with an ultimate configuration of six 230 kV breakers and five transformers. The total area required to build the Germanna Substation is approximately 6.1 acres.

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

Additionally, the Project will require relay resets at the Company's existing Gordonsville and Remington Substations.

ATTACHMENT II.C 3



LEGEND

CIRCUIT BREAKER

POWER TRANSFOREMR

DISCONNECT SWITCH

PRELIMINARY
NOT FOR CONSTRUCTION

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

Dominion Energy

One Line Diagram

Drawn By: SB	Date 10-18-2022	Substation	GERMANNA
Approval	Date	Drawing No.	

USER: tnickles

146

Attachment II.C.1
23028/11

$FILENAME$
PLOTTED: 11/9/2023
USER: tnickles

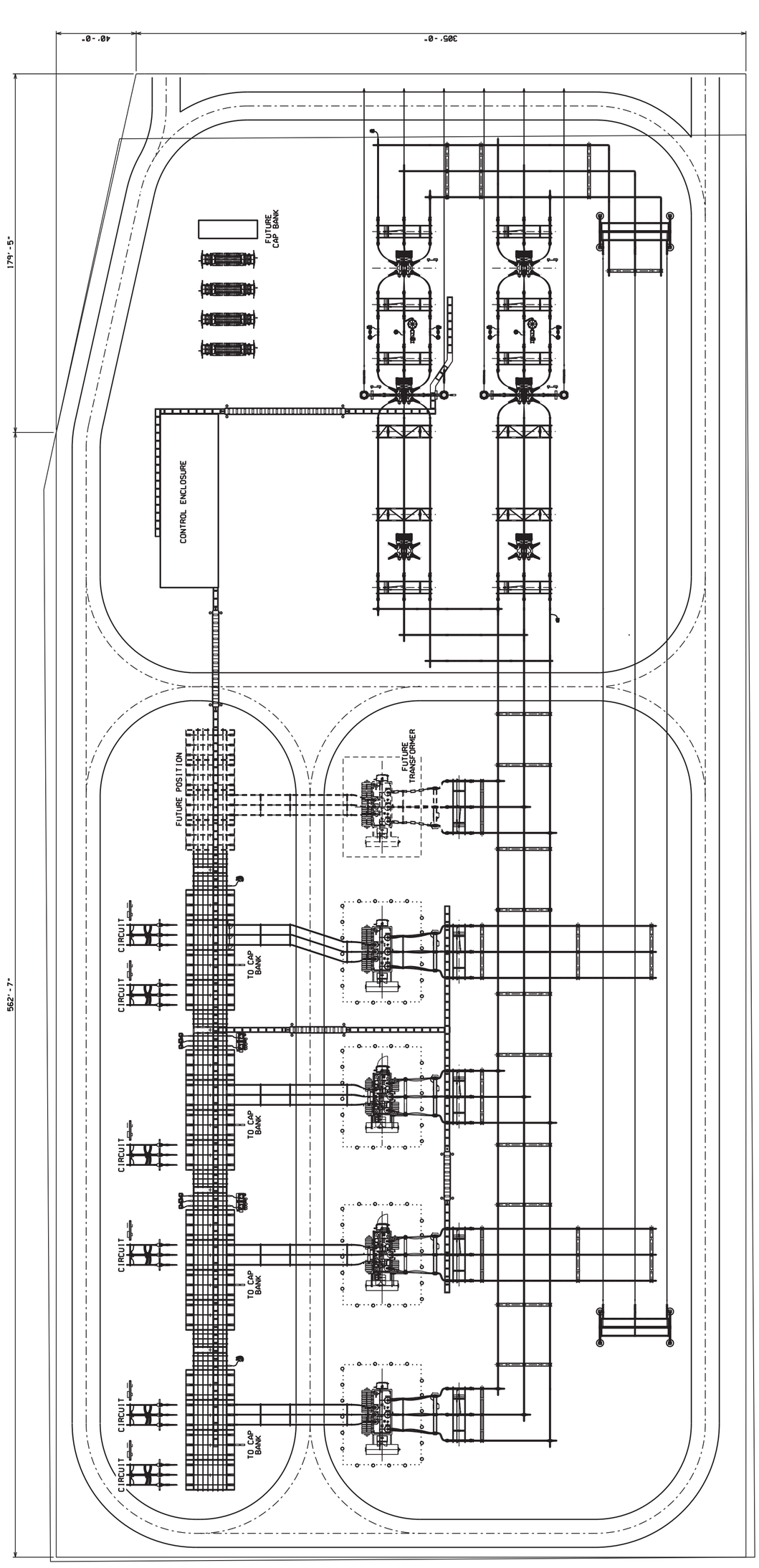
Dominion Energy

ULTIMATE GENERAL ARRANGEMENT
GERMANNA SUBSTATION

	Name	Date
Designed by:	ACK(BMC)	08-02-21
Approvals		
Approvals		

Project No. 99-2910/47-3522-A
Scale 1"=30'
B/M No.
Revisions
Sheet No. 1 OF 1
Drawing No. TBD-001
Cad File Name TBD001A.dgn
PLOTTED: 11/9/2023

PRELIMINARY NOT FOR CONSTRUCTION



ATTACHMENT II.C.2

B/M Assembly	Pipe Stand Foundation Cells (Pier)	Pipe Stand Foundation Cells (Spread)	Foundation Cells for Other Typical Structures	Steel Detail & Assembly
			(Pier)	(Spread)

Library Location | Cell Name

Typical Drawing Information

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

Revisions

USER: tnickles

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

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

Response: Proposed Route (Route 2)

The Proposed Route is approximately 1.8 miles in length and is located entirely within Culpeper County, extending east from a proposed cut-in location on Line #2199 to the proposed Germanna Substation. The Proposed Route crosses mostly rolling agricultural fields and forested land along areas planned for solar and data center development near the proposed Germanna Substation and east of the Batna Road crossing. The route crosses near several rural residential parcels along Batna Road zoned A-1 (Agricultural) as well as the Customer's data center property, which is zoned LI (Light Industrial). The future Greenwood Solar Facility parcels are zoned A-1, but require a conditional use permit because the utility-scale solar generation is not a permitted principal use in the A-1 zoning district.

According to County parcel data, zoning data, aerial photo analysis, and field investigation, there are seven dwellings located within 500 feet of the proposed centerline and four dwellings located within 250 feet of the proposed centerline of the Proposed Route. Two of the dwellings within 250 feet are abandoned and uninhabitable. There are 10 non-residential buildings (*e.g.*, sheds and outbuildings) located within 500 feet of the proposed centerline of the Proposed Route.

See Attachment III.A.1 for a map depicting prime farmland and farmland of statewide importance in the Project area, and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way that the Proposed Route would impact.

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

Alternative Route 1

Alternative Route 1 is approximately 2.4 miles in length and is located entirely within Culpeper County, extending south from a proposed cut-in location on Line #2199 to the proposed Germanna Substation. Alternative Route 1 crosses mostly forested land with a few agricultural fields and open pastures set on rolling terrain. The route does not cross any residential areas; however, there are residences located in the vicinity. The route crosses mainly parcels zoned A-1 (Agricultural) except for the Customer's data center property, which is zoned LI (Light Industrial).

According to County parcel data, zoning data, aerial photo analysis, and field investigation, there is one dwelling located within 250 feet of the proposed centerline of Alternative Route 1; however, the dwelling is abandoned and uninhabitable. There are no non-residential buildings (*e.g.*, sheds and outbuildings) located within 500 feet of the proposed centerline of Alternative Route 1.

See Attachment III.A.1 for a map depicting prime farmland and farmland of statewide importance in the Project area, and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way that Alternative Route 1 would impact.

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

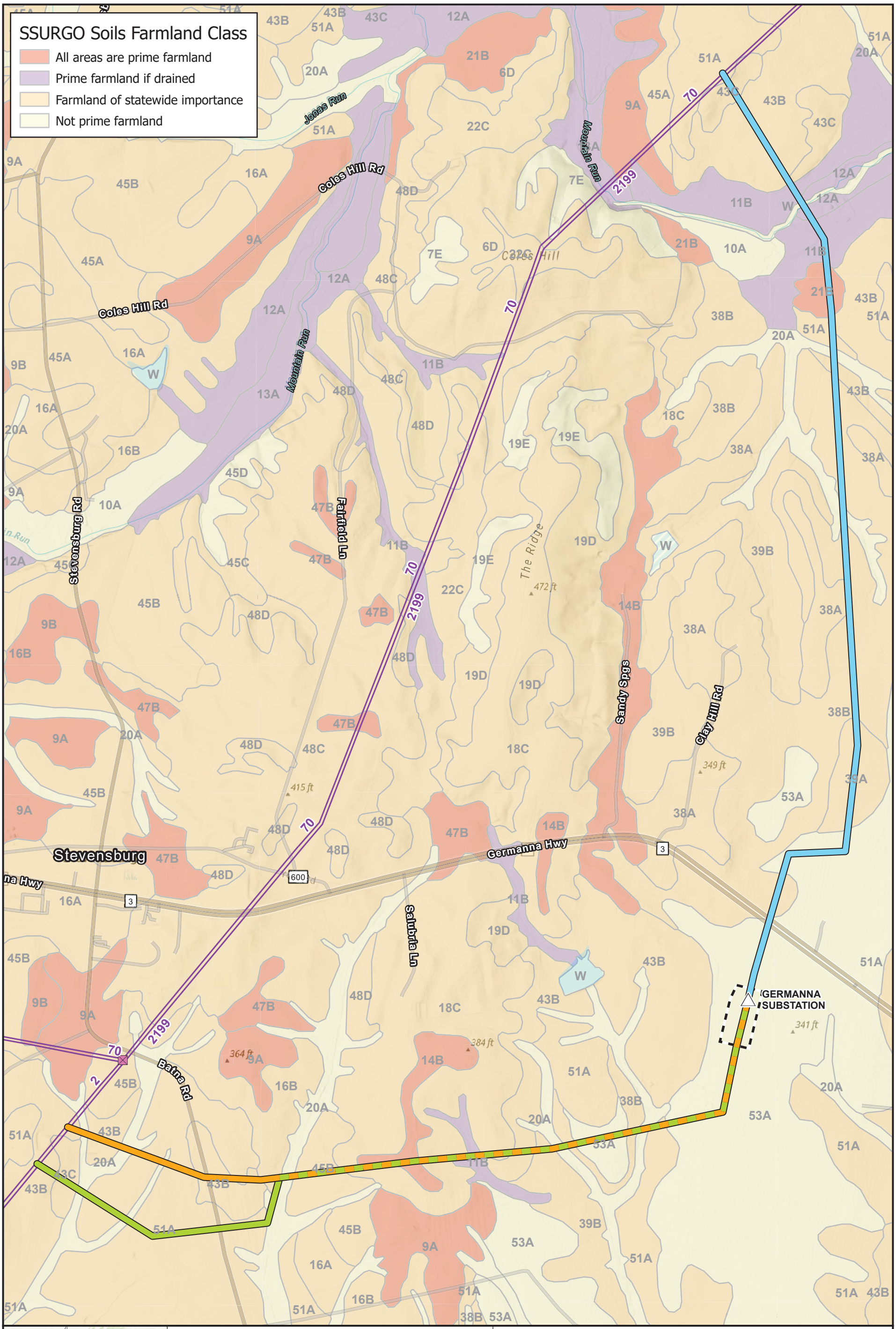
Alternative Route 3

Alternative Route 3 is approximately 2.0 miles in length and is located entirely within Culpeper County, extending east from a proposed cut-in location on Line #2199 to the proposed Germanna Substation. Alternative Route 3 crosses mostly rolling agricultural fields and forested land along areas planned for solar and data center development near the proposed Germanna Substation and east of the Batna Road crossing. The route crosses near several rural residential parcels along Batna Road zoned A-1 (Agricultural) as well as the Customer's data center property, which is zoned LI (Light Industrial). The future Greenwood Solar Facility parcels are zoned A-1, but require a conditional use permit because utility-scale solar generation is not a permitted principal use in the A-1 zoning district.

According to County parcel data, zoning data, aerial photo analysis, and field investigation, there are seven dwellings located within 500 feet of the proposed centerline, one of which is abandoned and uninhabitable, and two dwellings are located within 250 feet of the proposed centerline of Alternative Route 3. There are eight non-residential buildings (*e.g.*, sheds and outbuildings) located within 500 feet of the proposed centerline of Alternative Route 3.

See Attachment III.A.1 for a map depicting prime farmland and farmland of statewide importance in the Project area, and Section 2.L of the DEQ Supplement for the estimated amount of farmland and forestland within the right-of-way that Alternative Route 3 would impact.

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



Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
230 kV Germanna Lines and Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\11\SCC_DOM_GERM_SCC_Figures_Update.aprx\Att III.A.1 Farmland | REVISED: 11/10/2023 | SCALE: 1:13,200 when printed at 11x17 | DRAWN BY: 0239

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: In 2022, the Company launched an internet website dedicated to the proposed Project: www.dominionenergy.com/germanna. The website includes a description and benefits of the proposed Project, an explanation of need, route map, photo simulations, a recording of the virtual open house meeting, and information on the Commission review process.

In July and August 2022, Company representatives met with the following organizations to brief them on the study area of the Project, foster awareness regarding the Project generally, and to solicit their initial feedback:

- American Battlefield Trust (the "Trust")
    - This includes a July 2022 in-person visit with representatives of the American Battlefield Trust to Hansbrough Ridge to identify key observation points from the Ridge to take into consideration for photo simulations and to more effectively understand the historical nature of the area and the concerns of the Trust.
- Piedmont Environmental Council
- Historic Germanna
- Preservation Virginia

More recently, in August 2023, Company representatives again met with the Trust and Piedmont Environmental Council to provide an update on the Project, to review conceptual routing and photo simulations, and to garner their feedback.

In October 2023, Company representatives met with the Executive Director of Historic Germanna to visit Salubria and take additional photos for conceptual simulations. In November 2023, Company representatives again met with the Executive Director of Historic Germanna to review the updated visual simulations based on the photos taken during the October 2023 site visit. During this meeting, the Executive Director expressed appreciation for the Company coordinating with Historic Germanna and expressed no further concerns with the Project after reviewing the updated visual simulations.

In September 2023, Company representatives provided a briefing on electric transmission infrastructure generally and the Project specifically to the Culpeper County Board of Supervisors.

Also in September 2023, the Company sent project announcement letters to approximately 68 property owners and residents within 1,000 feet of the Project. Each letter included information about the need for the Project and an overview map. The letters also advertised an in-person community meeting scheduled for October 17, 2023. In addition, the communication indicated that detailed materials would be posted to the dedicated Project website and how to contact the Project team to provide any feedback or questions. Templates of the letters and map are included as Attachment III.B.1.

Newspaper print advertisements regarding the Project and the upcoming community meeting were placed in the Culpeper Star Exponent, the Culpeper Times, and the Free Lance Star. A copy of the advertisement placed in the Culpeper County papers is included as Attachment III.B.2.

Additionally, from October 10, 2023 to October 17, 2023, the Company used paid digital and social media campaigns to drive awareness and educate the public regarding the Company's Project and the community meeting. A copy of those digital advertisements are included as Attachment III.B.3. The event campaigns ran within Google AdWords, Google Display, Google Video, Facebook, Nextdoor, and Twitter. All phases urged local residents to visit the www.dominionenergy.com/germanna website to learn more about the meeting and to attend in person. Campaign results include 287,343 Impressions Delivered, 0.70% Click Thru Rate, 2,006 Link Clicks and 20,160 ad engagements, including reactions, likes, comments, shares and saves.

An in-person community meeting was held on October 17, 2023 from 5:00 p.m. to 7:00 p.m. At the community meeting, the Company made available details about Project need, route maps, anticipated construction, Project timing, and the Commission approval process. Traditional open house materials have been posted on the website for the proposed Project, including simulations of the proposed Project from key locations. The key location simulations are included as Attachment III.B.4.

As discussed above, additional simulations from Salubria were prepared for Historic Germanna from requested viewpoints 82-85, which are included as Attachment III.B.5. Based on these additional simulations, the Proposed Route and Alternative Routes 1 and 3 would have no more than a minimal impact on this resource.

As part of preparing for the Project, the Company researched the demographics of the surrounding communities using the American Community Survey 5-Year Estimates (2017-2021) of the U.S. Census Bureau. This review revealed that three Census Block Groups ("CBGs") are located within one mile of the route alternatives. A review of demographic data released by the U.S. Census Bureau identified populations within the Project study area that meet the Virginia Environmental Justice Act threshold to be defined as Environmental Justice Communities ("EJ Communities"). One of the three CBGs within the study area

appears to be a low-income population. See Sections 3.6 and 4.6 of the Environmental Routing Study for the results of the Company's EJ analysis.

As discussed in more detail in Section IV.B, scientific evidence does not show that common sources of EMF in the environment, including transmission lines and other parts of the electric system, are a cause of any adverse health effects. As such, the impacts of constructing and operating any of the route alternatives on the natural and human environments are not anticipated to be significant.

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 such impacts.

In addition to its evaluation of impacts, the Company has and will continue to engage the EJ Communities in a manner that allows them to meaningfully participate in the Project development and approval process so that the Company can take their views and input into consideration. See Attachment III.B.6 for a copy of the Company's Environmental Justice Policy.

As described above and in Sections III.J and III.K of the Appendix, the Company has engaged the community in a manner that allows access to the Project team and significant opportunity to provide input.

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

September 28, 2023

Electric Transmission Line Infrastructure Project in Culpeper County

Dear Neighbor:

At Dominion Energy, we are dedicated to maintaining reliable and secure electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we would like to inform you of the need for an electric transmission line infrastructure project in Stevensburg, Culpeper County, VA.

The Germanna 230 kilovolt (kV) Transmission Line and Substation project, will support a new data center customer located on the former Magnolia Equestrian Center property off Route 3/Germanna Highway in Stevensburg. This project will require a new 230 (kV) double-circuit electric transmission line, substation and right of way to provide service to the customer site. Our team is currently evaluating three conceptual routes to serve the site (please reference attached map); note, only one of these would be required to serve the customer site. We currently anticipate filing an application for this project with the State Corporation Commission (SCC) later this year.

We invite you to discuss this project with us at our upcoming, in-person community meeting. Details are as follows:

When: Tuesday, October 17, 2023
5 pm – 7 pm

Where: The Refinery
120 West Culpeper Street
Culpeper, VA 22701

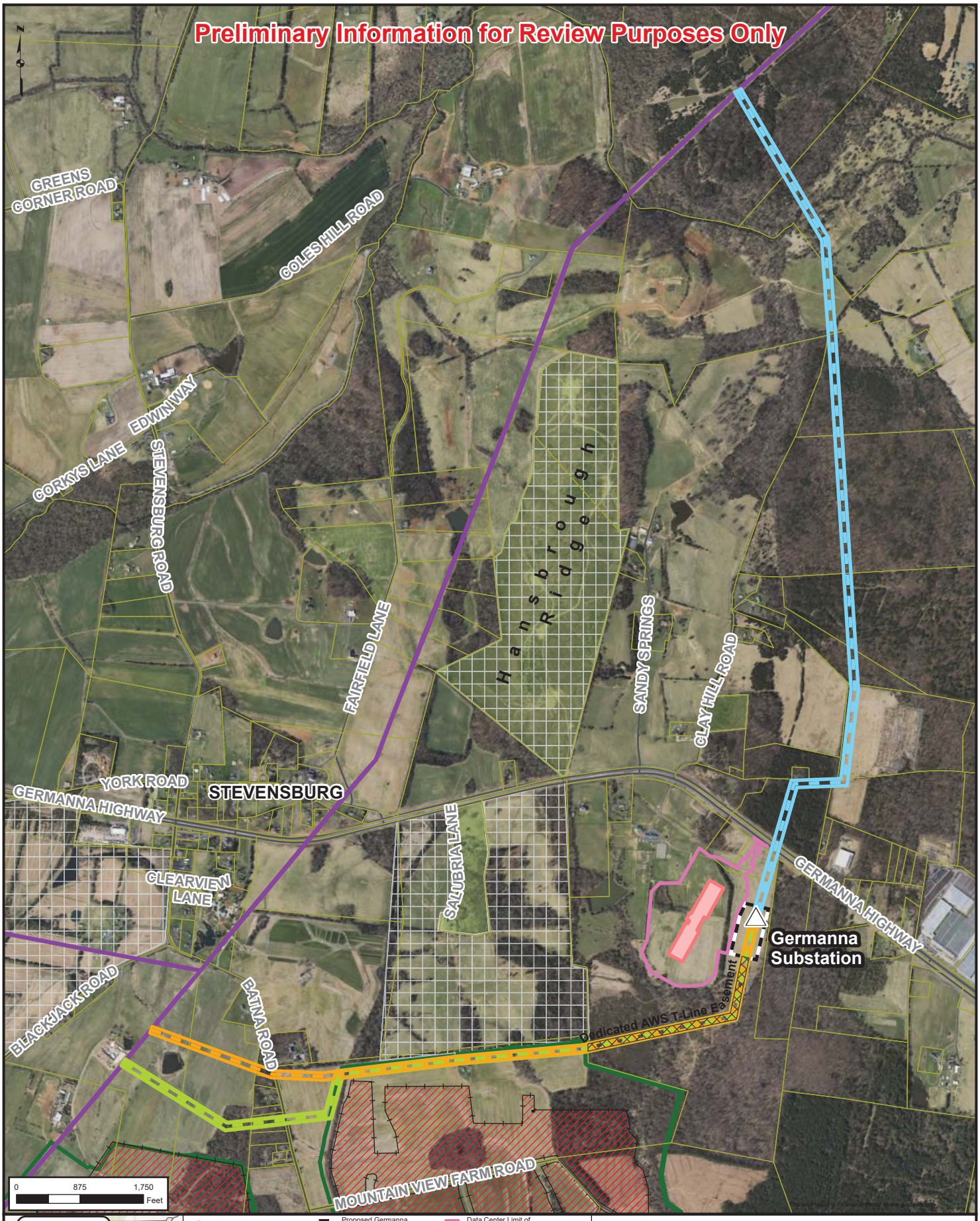
The community meeting will be open house style, with visual displays and maps for your reference. We will have our project team subject matter experts available to answer your questions. We hope you can join us!

You can also follow the status of the project and/or view maps and other collateral at www.dominionenergy.com/germanna.

If you would like to schedule a small group or one on one meeting to discuss the project, please reach out to us at Powerline@dominionenergy.com or call 888-291-0190. Please do not hesitate to reach out with any questions.

Sincerely,

The Electric Transmission Project Team


Preliminary Information for Review Purposes Only
GREENS CORNER ROAD
COLES HILL ROAD
EDWIN WAY
CORKYS LANE
STEVENSBURG ROAD
FAIRFIELD LANE
Hansbrough
SANDY SPRINGS
CLAY HILL ROAD
YORK ROAD
STEVENSBURG
GERMANNA HIGHWAY
CLEARVIEW LANE
SALUBRIA LANE
GERMANNA HIGHWAY
Germanna Substation
BLACKJACK ROAD
BATNA ROAD
Dedicated AWS T-Line Easement
MOUNTAIN VIEW FARM ROAD
0
875
1,750
Feet
Project Location
Virginia
Proposed Substation
Centerline & Right of Way (100-Foot)
Route 1 (2.4 miles)
Route 2 (1.8 miles)
Route 3 (2.0 miles)
Proposed Germanna Substation Boundary
Existing Dominion Transmission Line
Parcel Boundary
Dedicated AWS Transmission Line Easement
Future Data Center Building
Data Center Limit of Disturbance
Approved Landscape Screening
Permitted Solar Panel Area
VOF Easement
DHR Easement
ERM
Route Alternatives
Germanna 230 kV Transmission Line and Substation Project
Culpeper County, Virginia
Dominion Energy
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charles ryan associates

Dominion Energy
Electric Transmission

Germanna Event
Newspaper



Dominion Energy
Electric Transmission

Germanna Event
Half Page Newspaper



charles ryan associates

Dominion Energy Electric Transmission Contact:
Stephen S. Precker, stephen.s.precker@dominionenergy.com

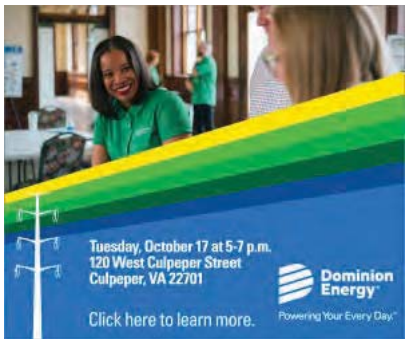
Dominion Energy
Electric Transmission

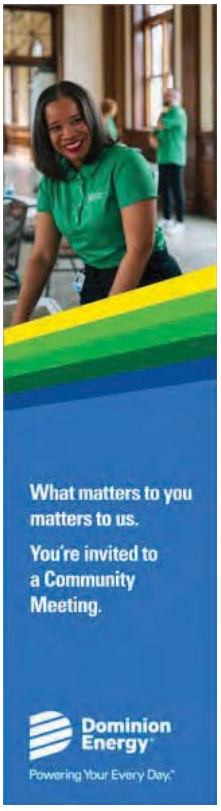
Germanna Event Display

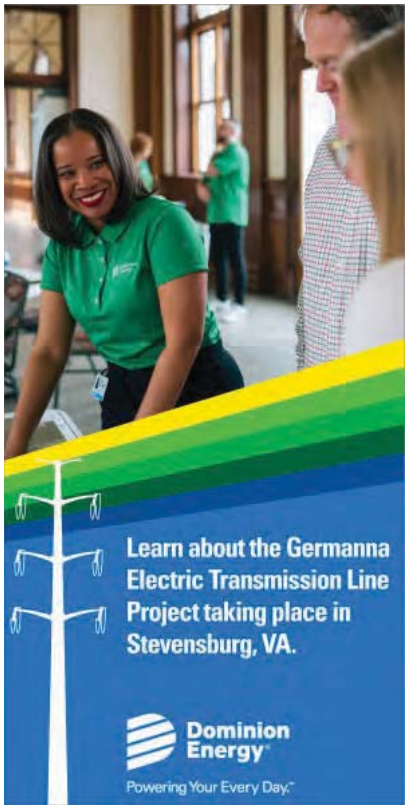












Dominion Energy Electric Transmission

Germanna Event
Nextdoor Imagery

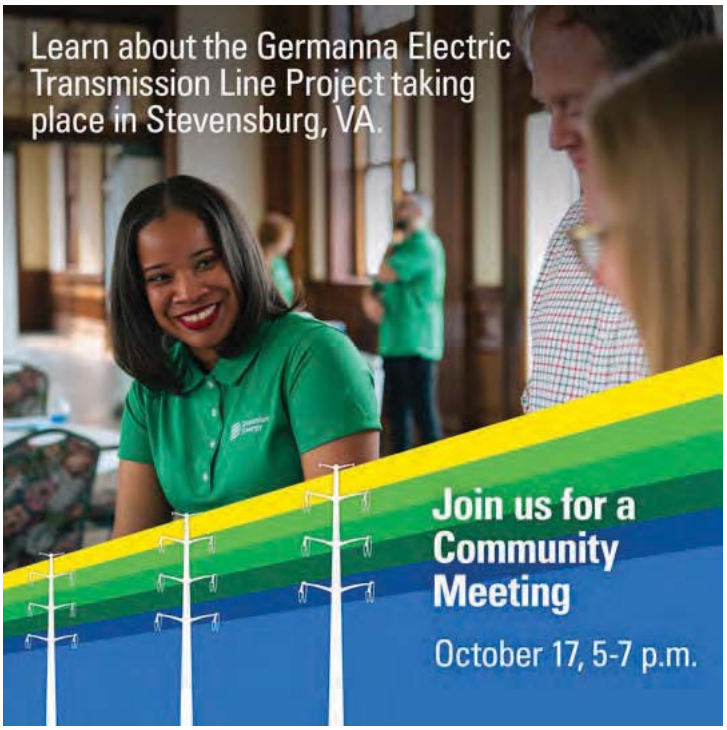
Event Image:

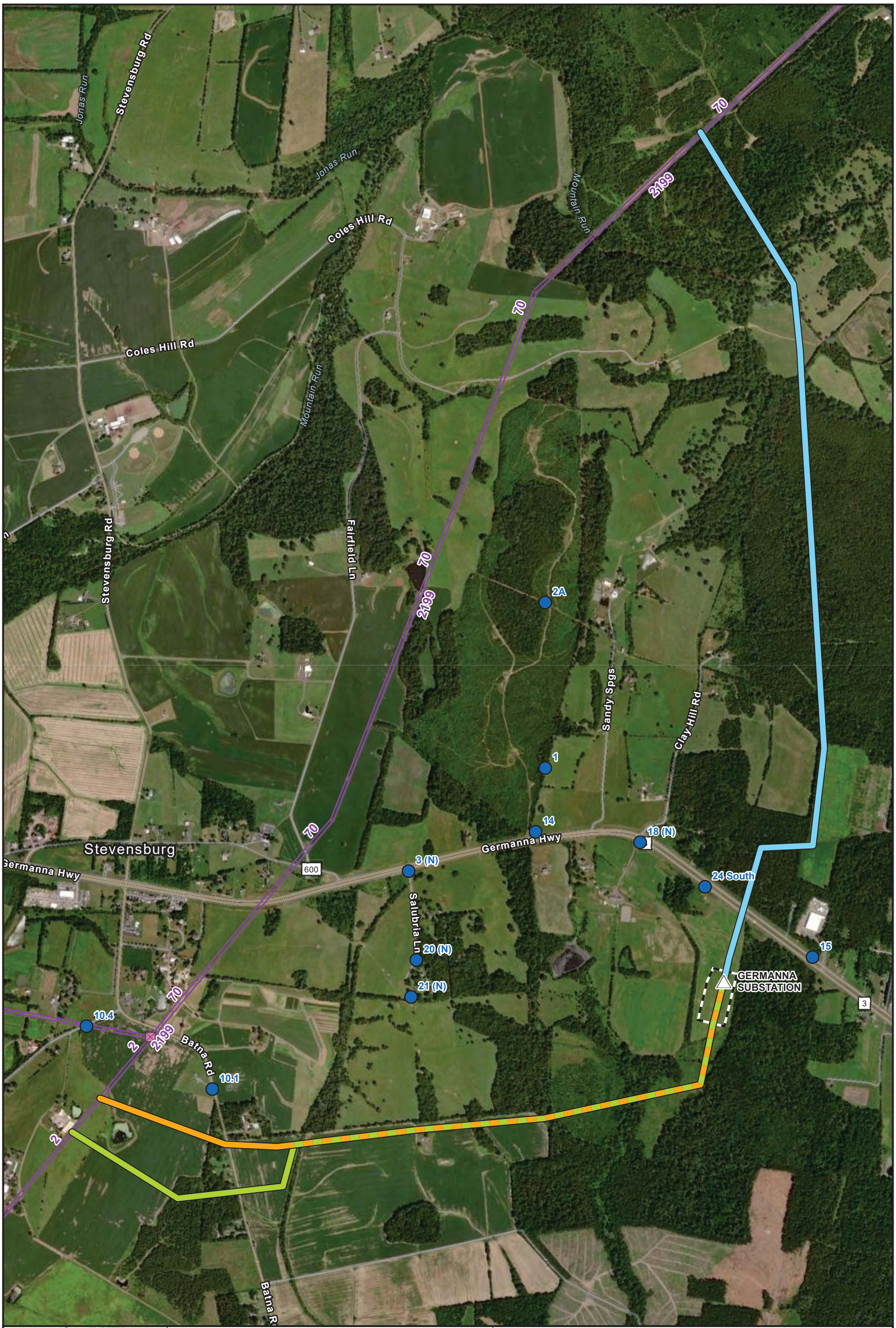


Dominion Energy Electric Transmission

Germanna Event
Social Videos

Pre-event Video (Click to Play)





Attachment III.B.4

Simulations of Key Locations Evaluated (Displayed at Project Open House)

230 kV Germanna Lines and Germanna Substation Project

Culpeper County, Virginia

ERM

Dominion Energy

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EXISTING CONDITIONS



PROPOSED CONDITIONS

ROUTE 1; GERMANNA SUBSTATION

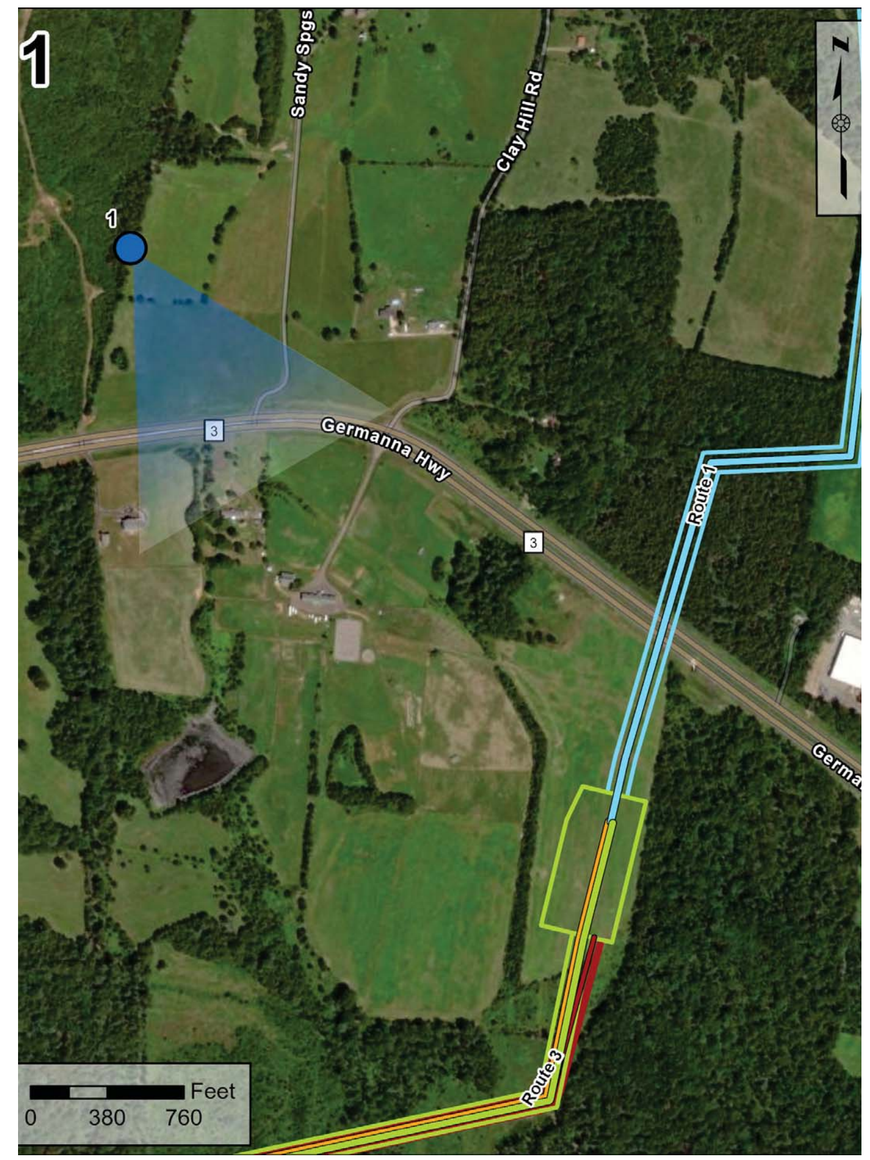
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 1

Base of Hansbrough Ridge

Date: 8/10/22
Time: 11:05 am
Viewing Direction: Southeast
Distance to closest feature: 0.6 mile
Distance to Substation: 0.7 mile



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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

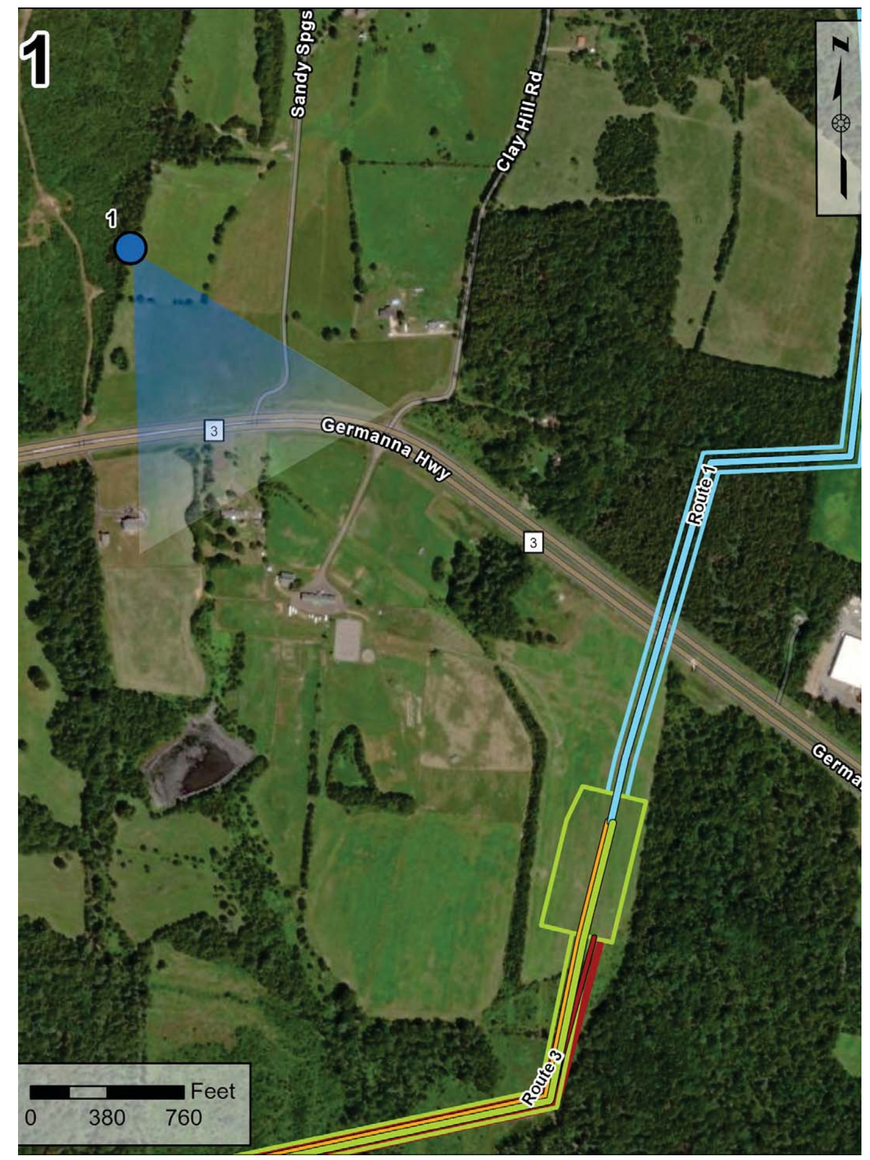
Viewpoint 1

Base of Hansbrough Ridge

Date: 8/10/22
Time: 11:05 am
Viewing Direction: Southeast
Distance to closest feature: 0.6 mile
Distance to Substation: 0.7 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 2A

East Slope of Hansbrough Ridge

Date: 8/10/22
Time: 10:22 am
Viewing Direction: Southeast
Distance to closest feature: 0.7 mile

EXISTING CONDITIONS



PROPOSED CONDITIONS ROUTE 1



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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

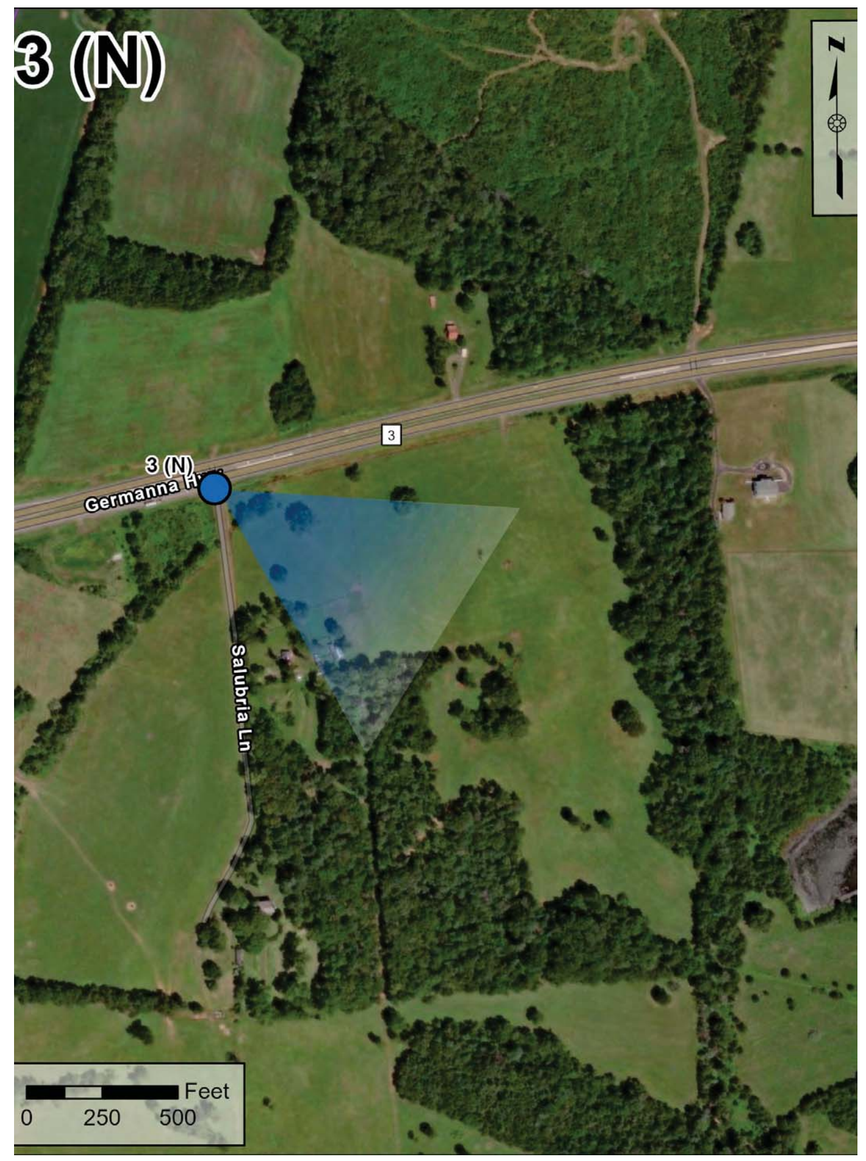
Viewpoint 3(N)

Salubria Ln S of Germanna Hwy

Date: 8/12/22
Time: 3:56 pm
Viewing Direction: Southeast
Distance to closest feature: 0.8 mile







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

ERM





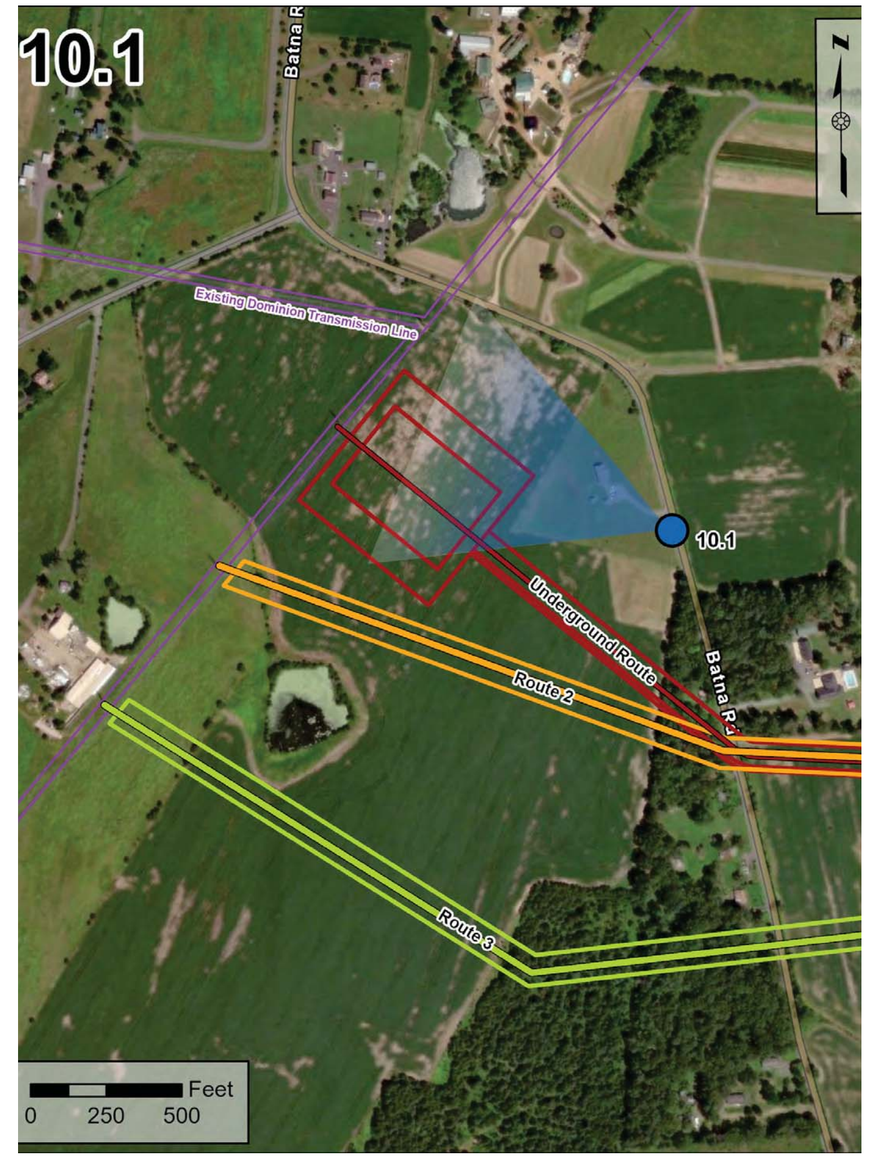
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 10.1

Batna Rd SE of Blackjack Rd

Date: 1/11/22
Time: 10:46 am
Viewing Direction: Northwest
Distance to closest feature: 0.1 mile



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

ERM





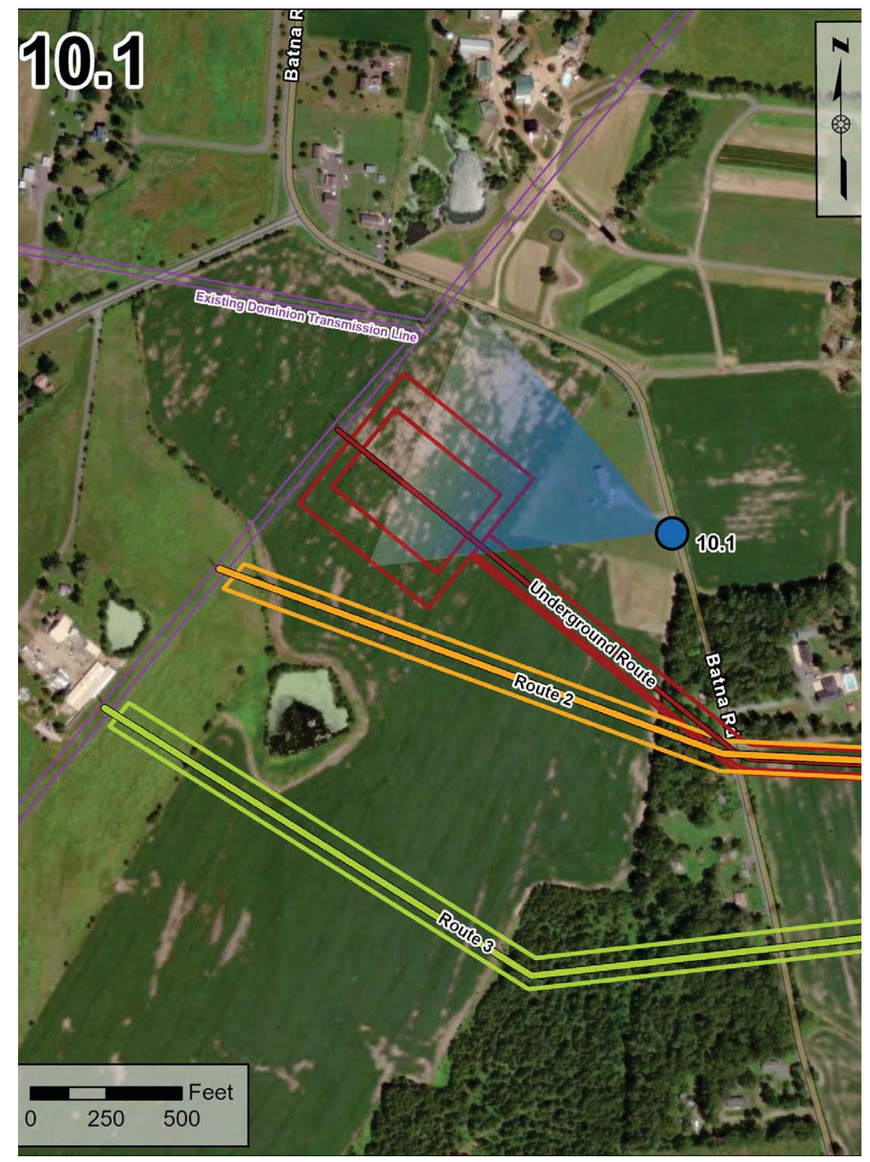
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 10.1

Batna Rd SE of Blackjack Rd

Date: 1/11/22
Time: 10:46 am
Viewing Direction: Northwest
Distance to closest feature: 0.1 mile



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

ERM





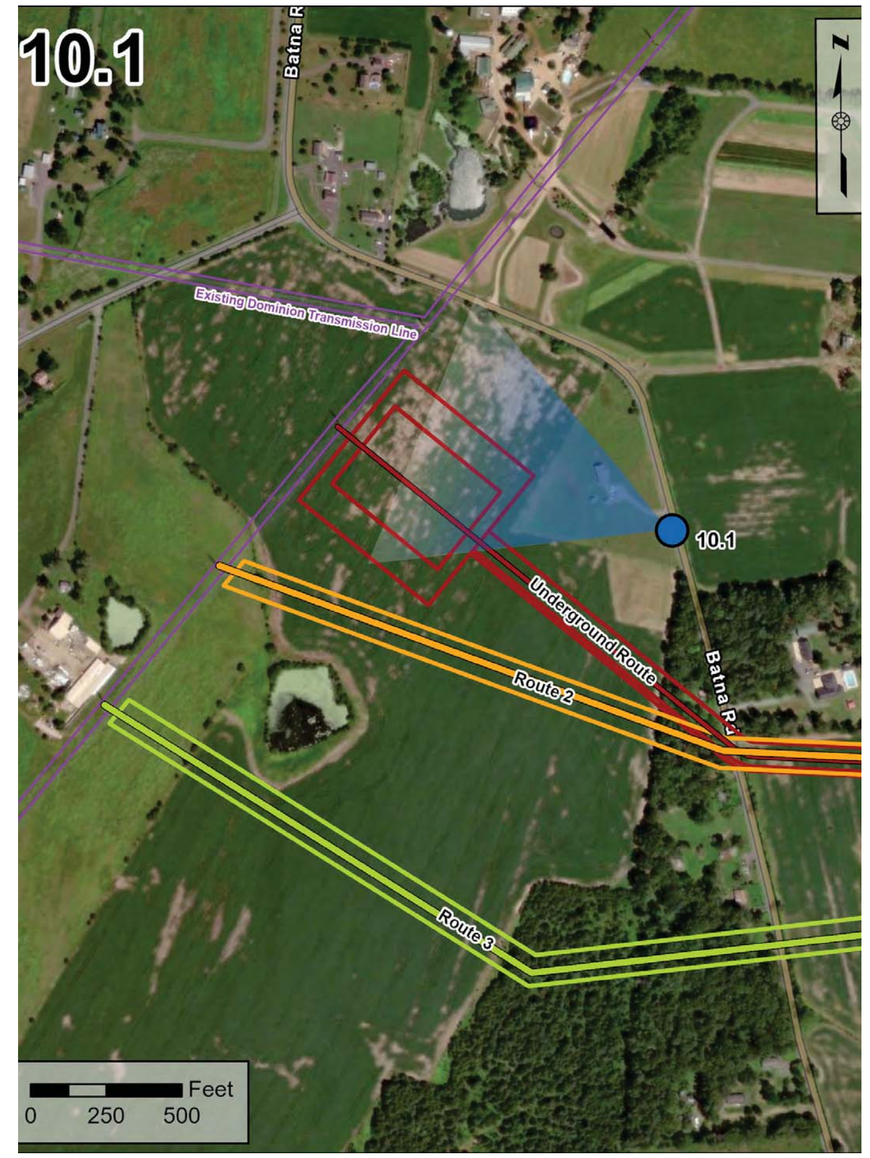
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 10.1

Batna Rd SE of Blackjack Rd

Date: 1/11/22
Time: 10:46 am
Viewing Direction: Northwest
Distance to closest feature: 0.3 mile



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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

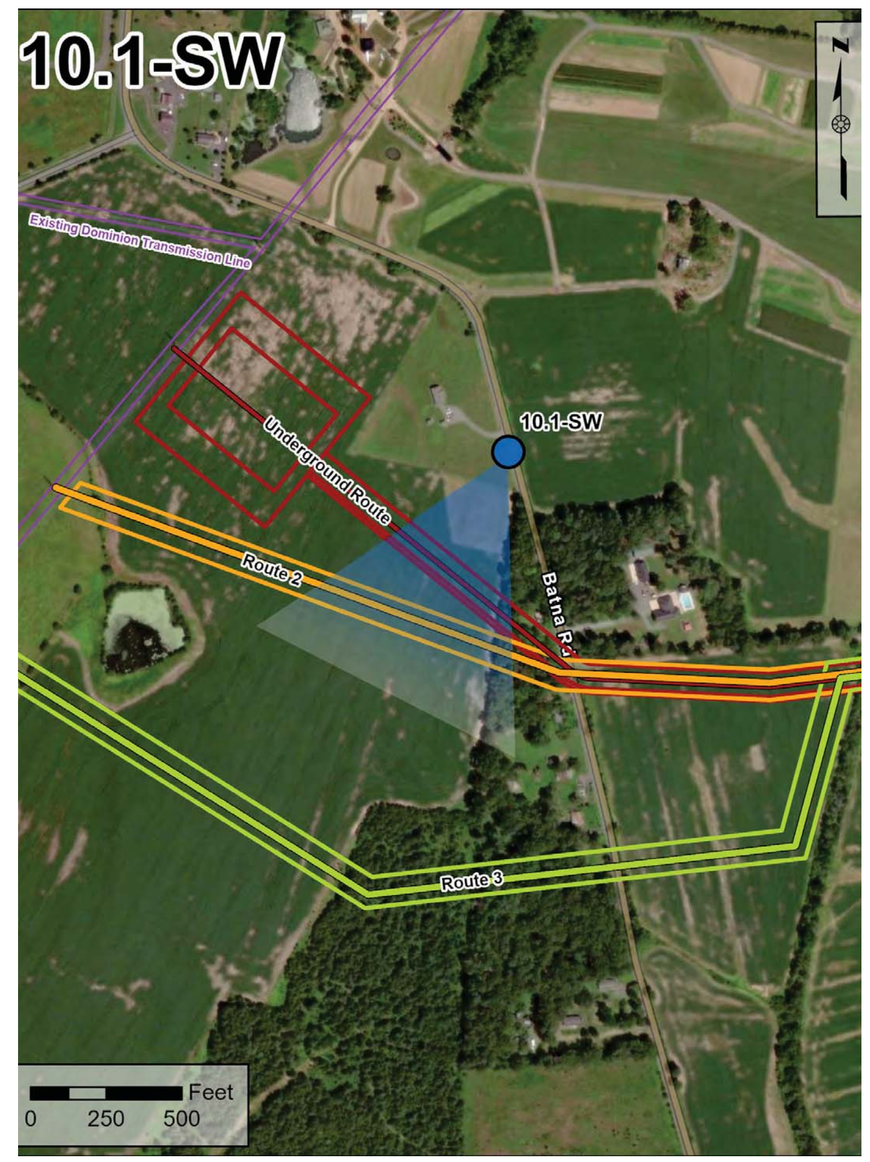
Viewpoint 10.1-SW

Batna Rd SE of Blackjack Rd

Date: 1/11/22
Time: 10:46 am
Viewing Direction: Southwest
Distance to closest feature: 0.1 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

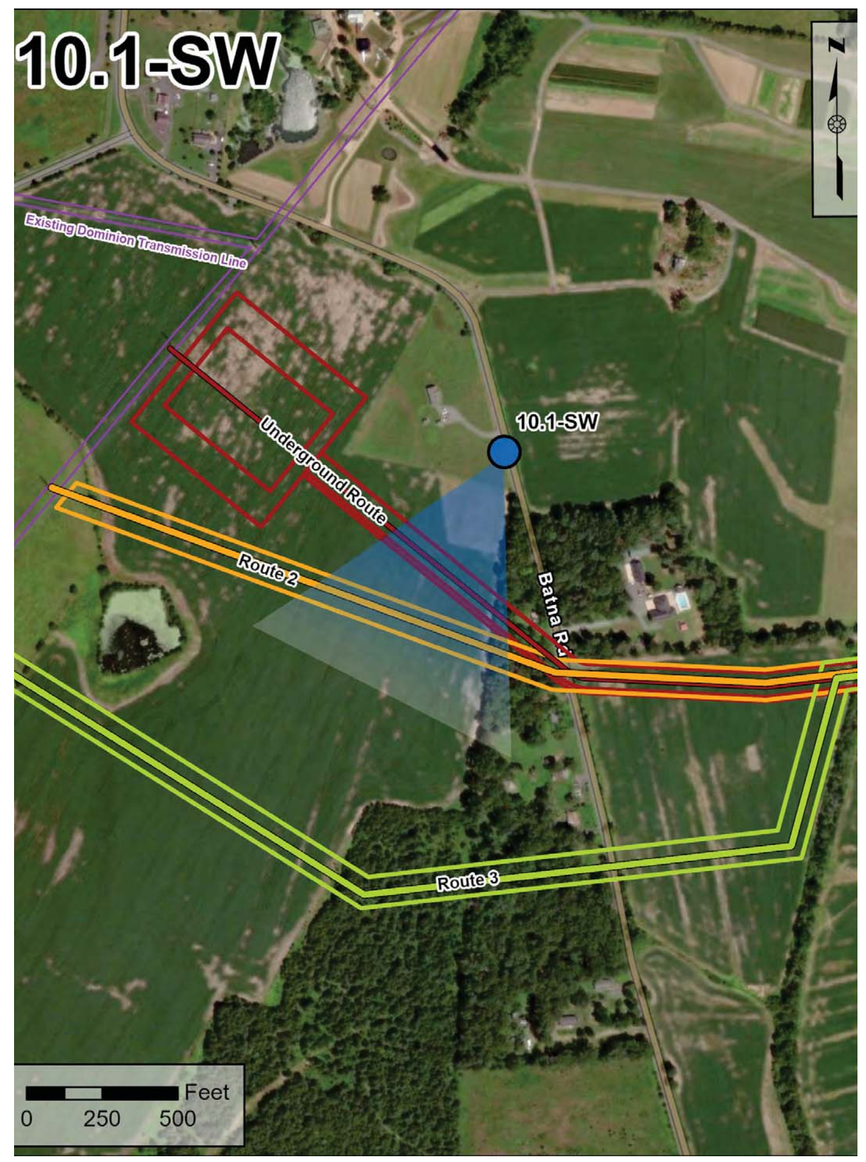
Viewpoint 10.1-SW

Batna Rd SE of Blackjack Rd

Date: 1/11/22
Time: 10:46 am
Viewing Direction: Southwest
Distance to closest feature: 0.3 mile







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

ERM





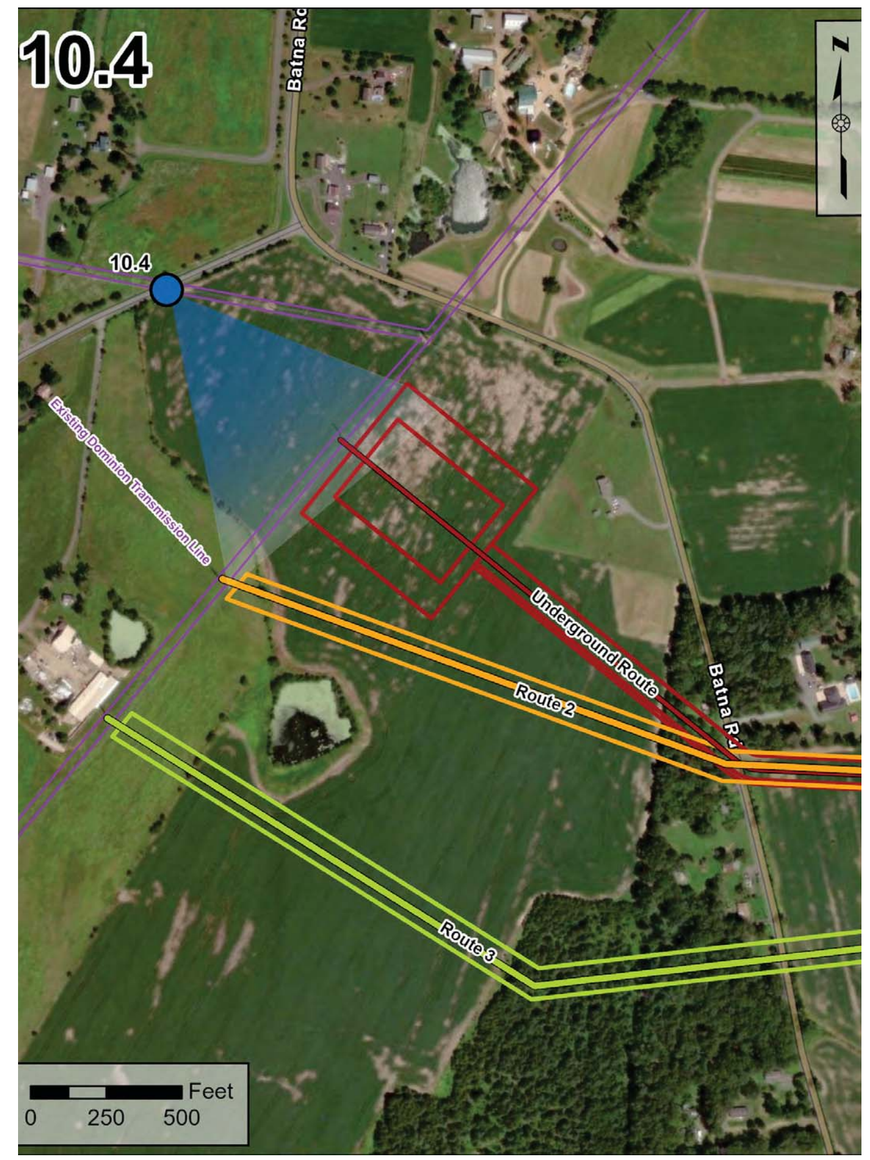
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 10.4

Blackjack Rd W of Batna Rd

Date: 1/11/22
Time: 12:46 pm
Viewing Direction: Southeast
Distance to closest feature: 0.2 mile



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

ERM

EXISTING CONDITIONS

172

PROPOSED CONDITIONS ROUTE 2

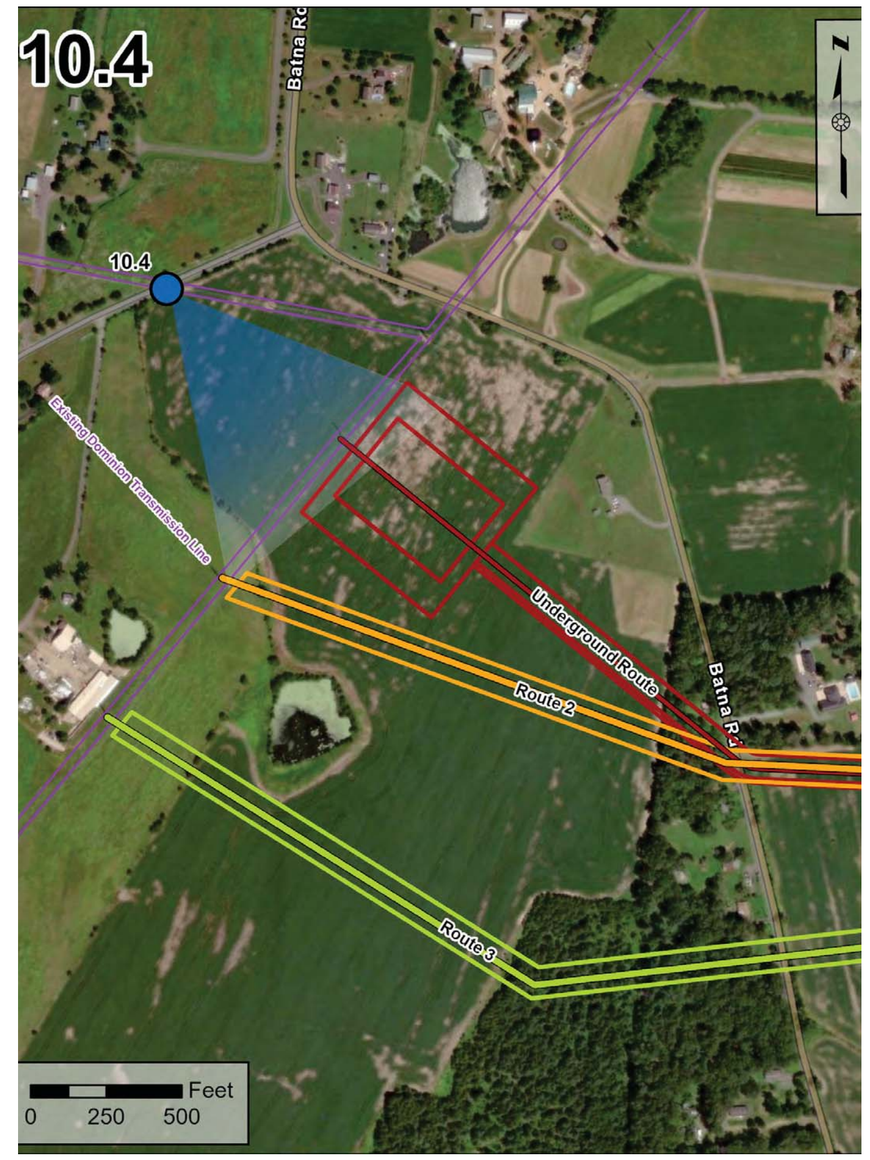
230 kV Germanna Lines
and Germanna Substation

Dominion Energy

Viewpoint 10.4

Blackjack Rd W of Batna Rd

Date: 1/11/22
Time: 12:46 pm
Viewing Direction: Southeast
Distance to closest feature: 0.2 mile



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

ERM





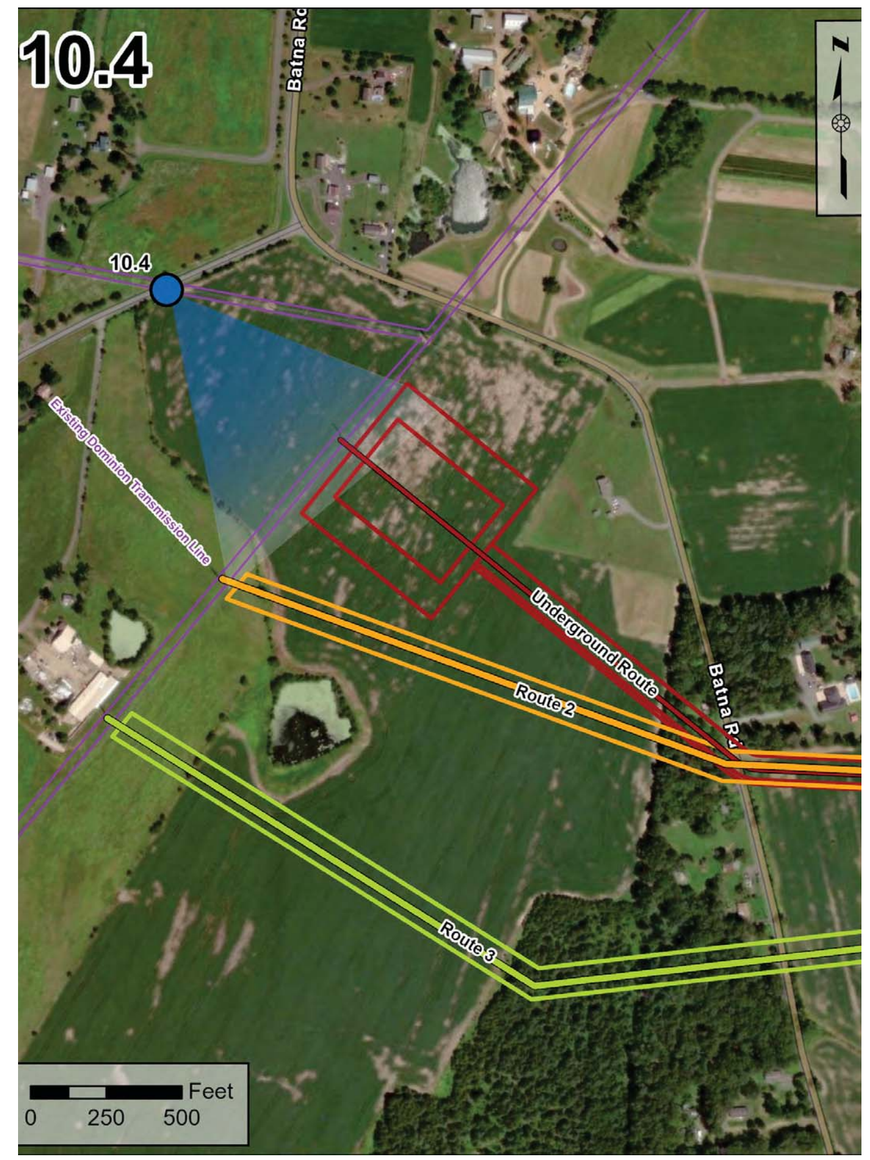
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 10.4

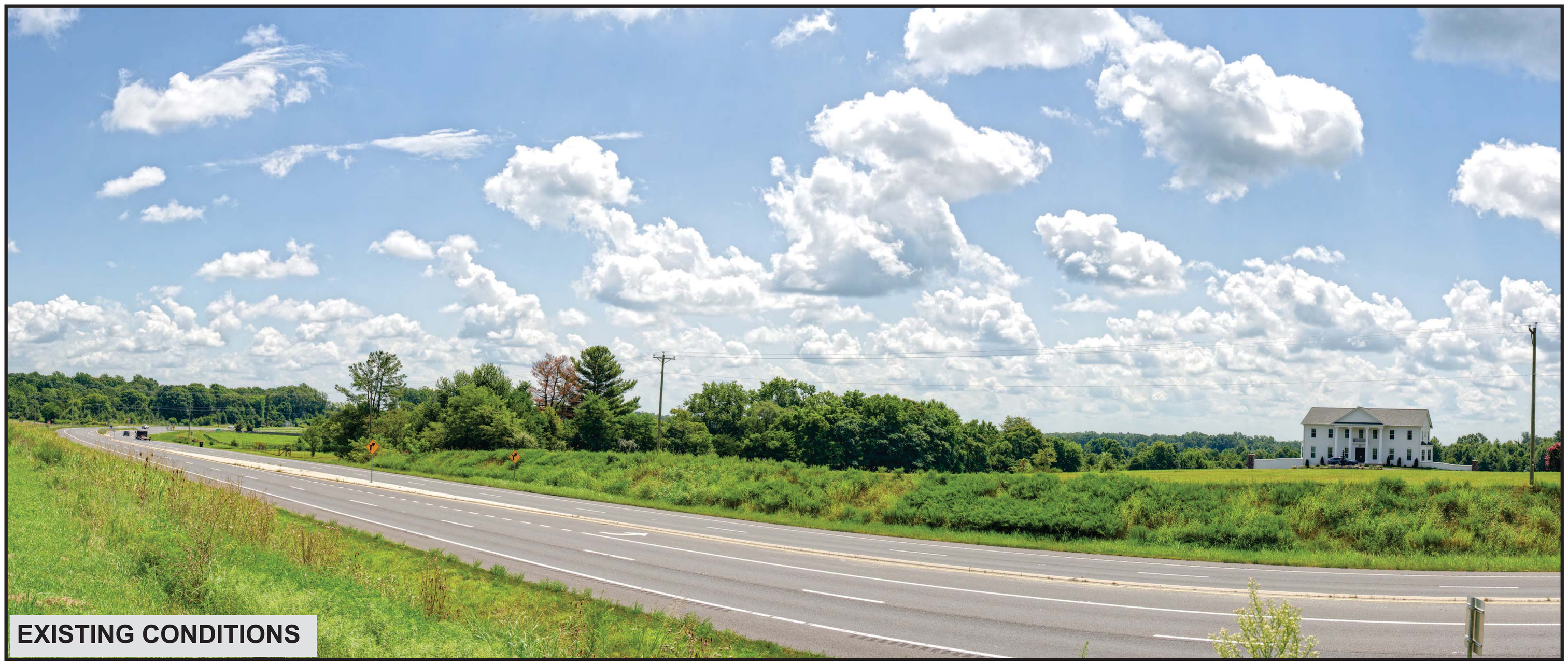
Blackjack Rd W of Batna Rd

Date: 1/11/22
Time: 12:46 pm
Viewing Direction: Southeast
Distance to closest feature: 0.3 mile



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

ERM





230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 14

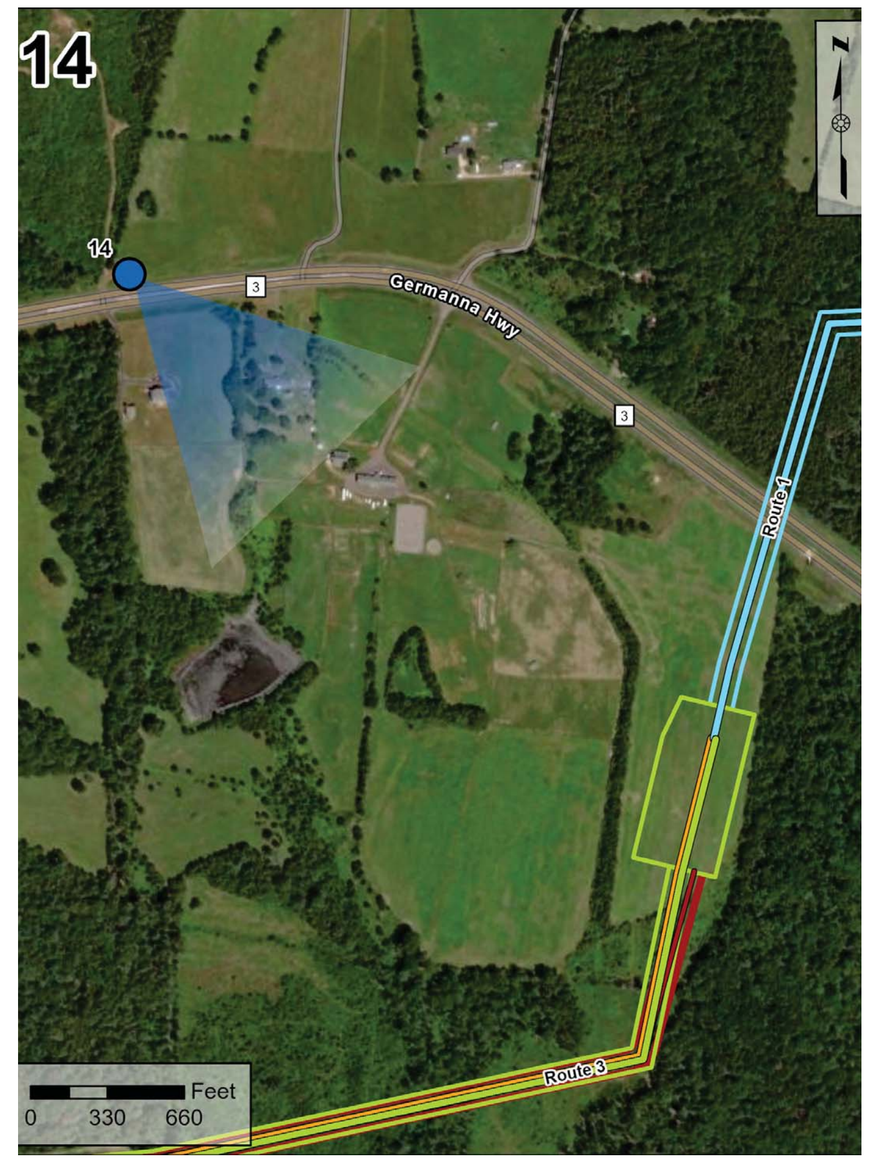
Germanna Hwy base of Hansbrough's Ridge

Date: 8/10/22

Time: 5:02 pm

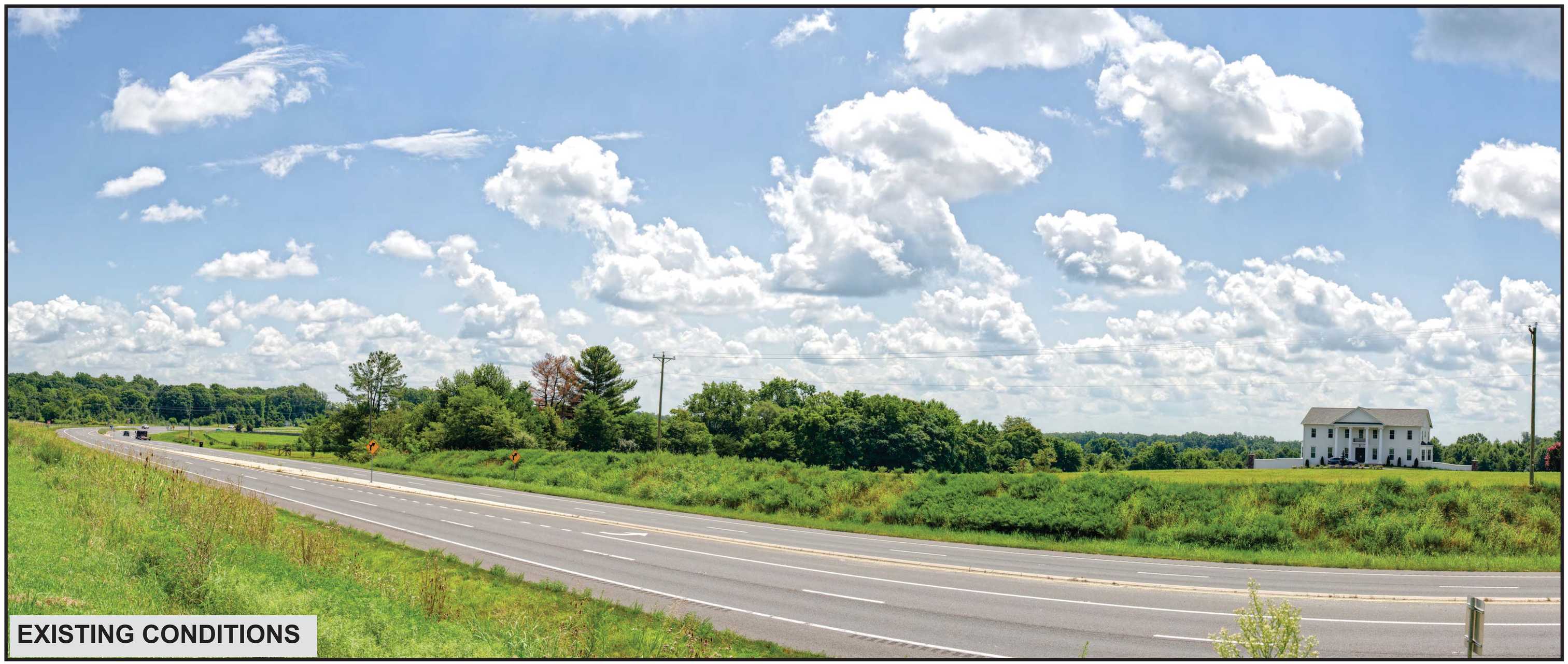
Viewing Direction: Southeast

Distance to closest feature: 0.6 mile



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

ERM





230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 14

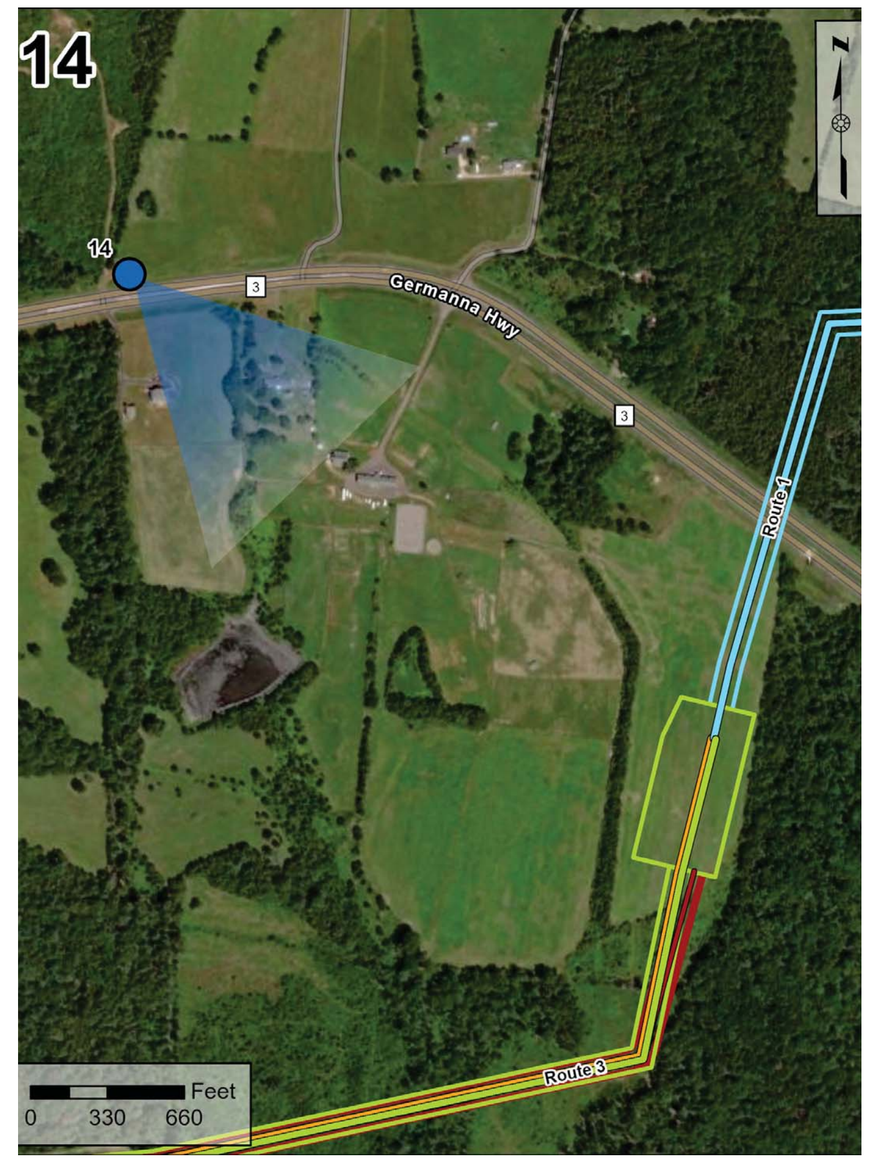
Germanna Hwy base of Hansbrough's Ridge

Date: 8/10/22

Time: 5:02 pm

Viewing Direction: Southeast

Distance to closest feature: 0.7 mile



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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

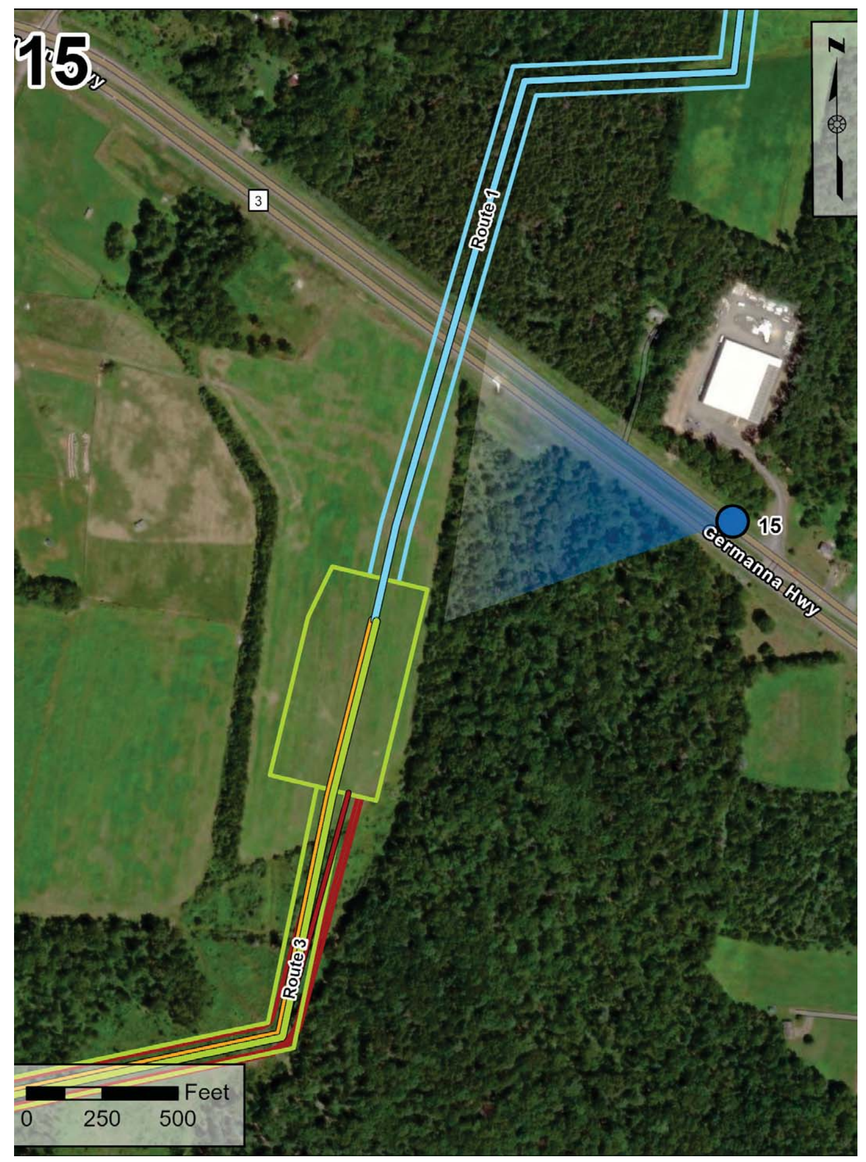
Viewpoint 15

Germanna Hwy E of Doggett Ln

Date: 8/09/22
Time: 10:43 am
Viewing Direction: West
Distance to closest feature: 0.2 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy

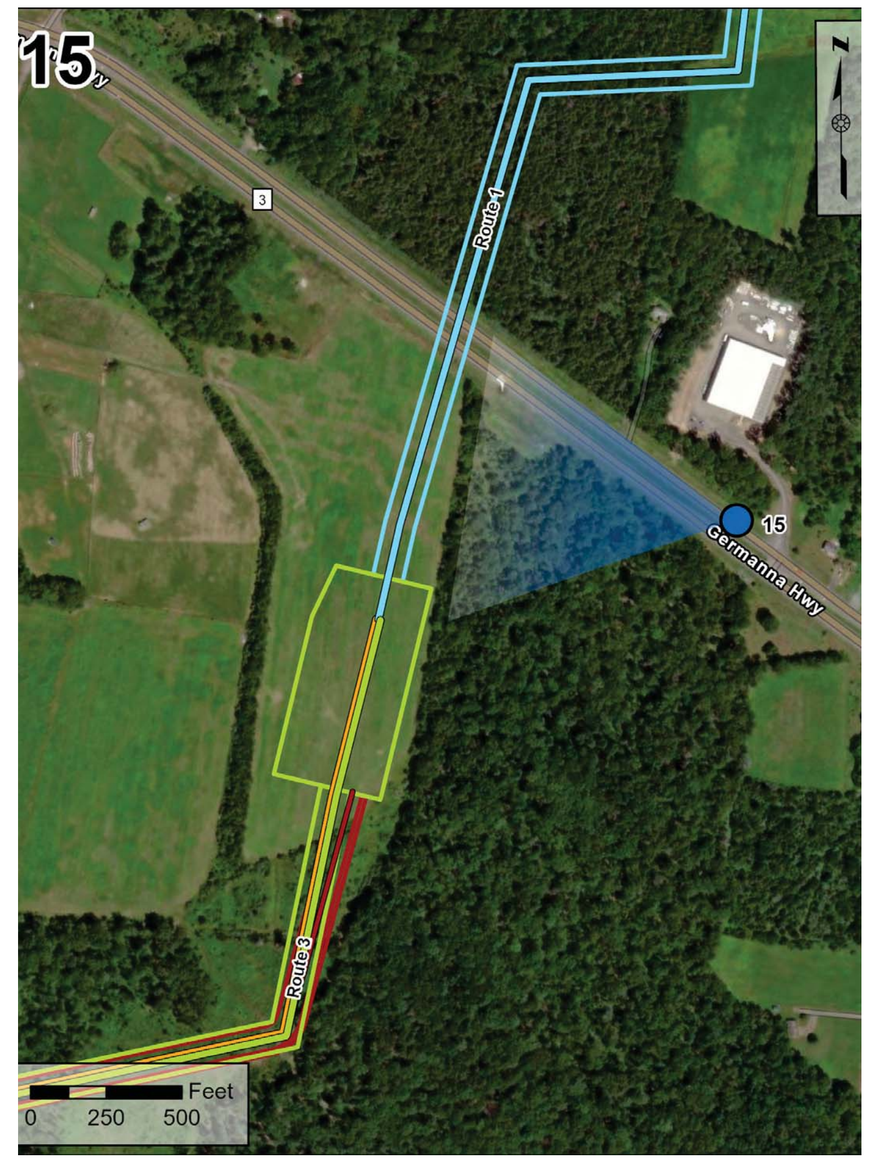
Viewpoint 15

Germanna Hwy E of Doggett Ln

Date: 8/09/22
Time: 10:43 am
Viewing Direction: West
Distance to closest feature: 0.3 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

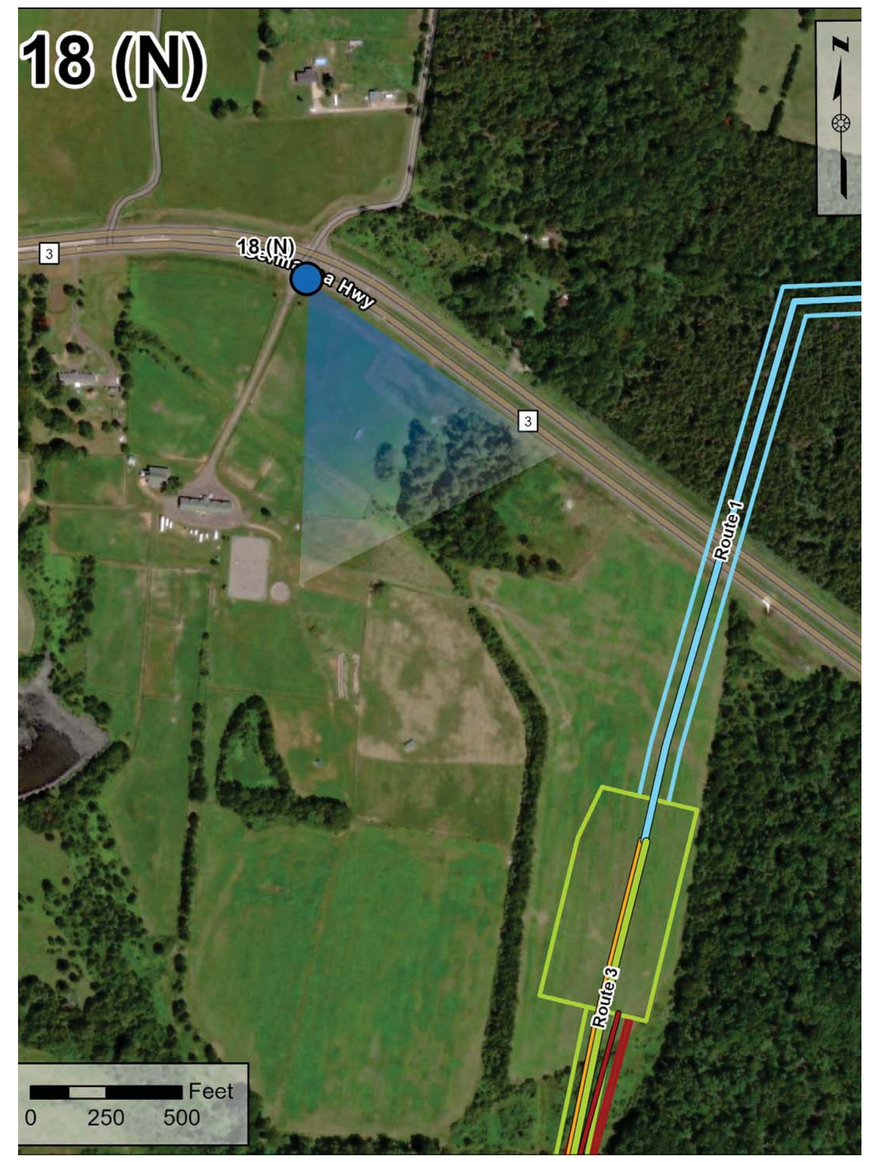
Viewpoint 18(N)

Germanna Hwy and Clay Hill Rd

Date: 8/12/22
Time: 4:07 pm
Viewing Direction: Southeast
Distance to closest feature: 0.3 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

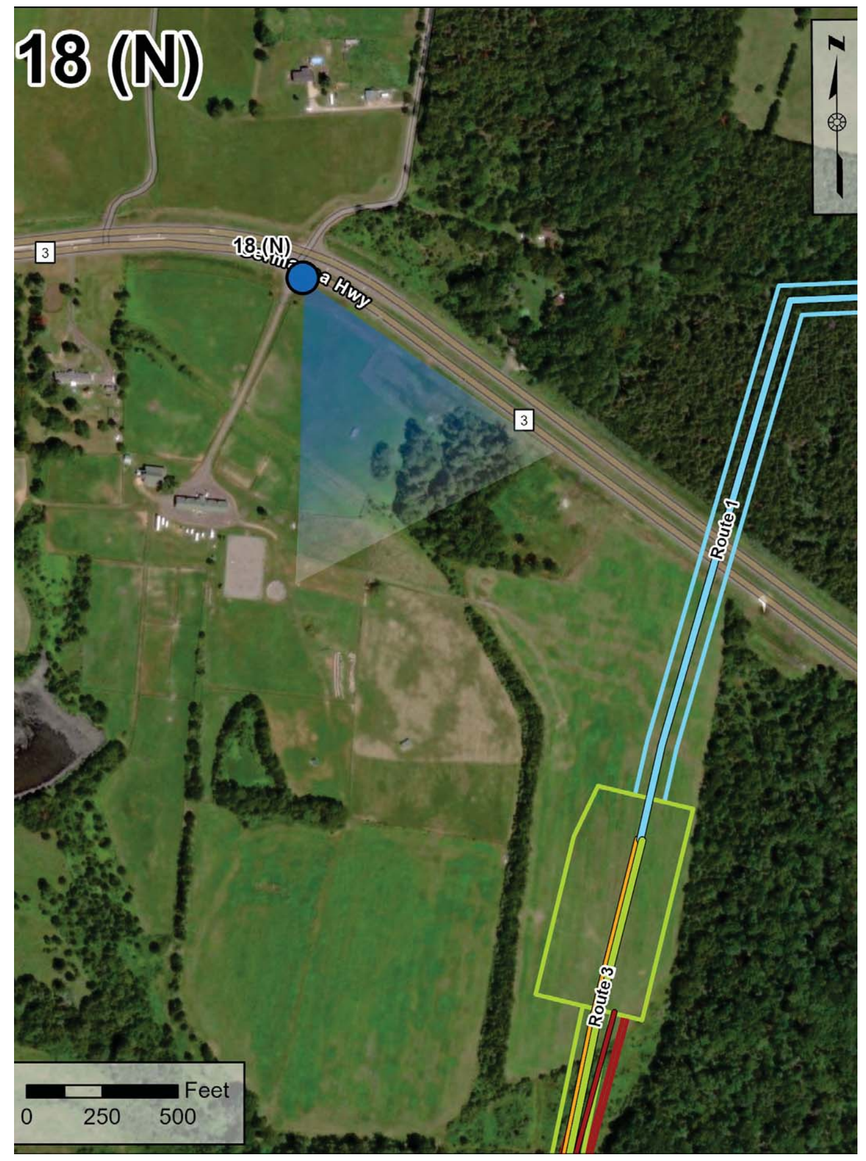
Viewpoint 18(N)

Germanna Hwy and Clay Hill Rd

Date: 8/12/22
Time: 4:07 pm
Viewing Direction: Southeast
Distance to closest feature: 0.5 mile







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The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

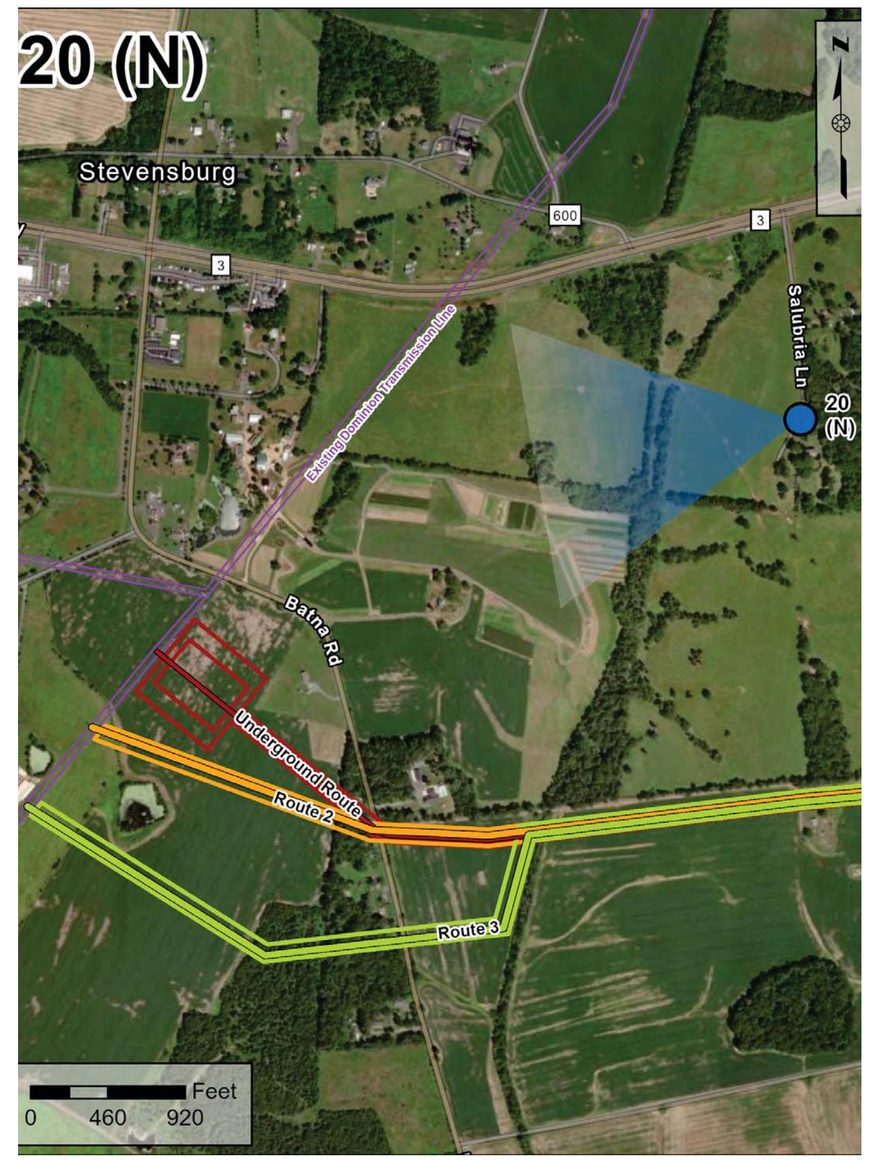
Viewpoint 20(N)

Salubria Ln N of Salubria House

Date: 8/12/22
Time: 3:33 pm
Viewing Direction: West
Distance to closest feature: 0.5 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

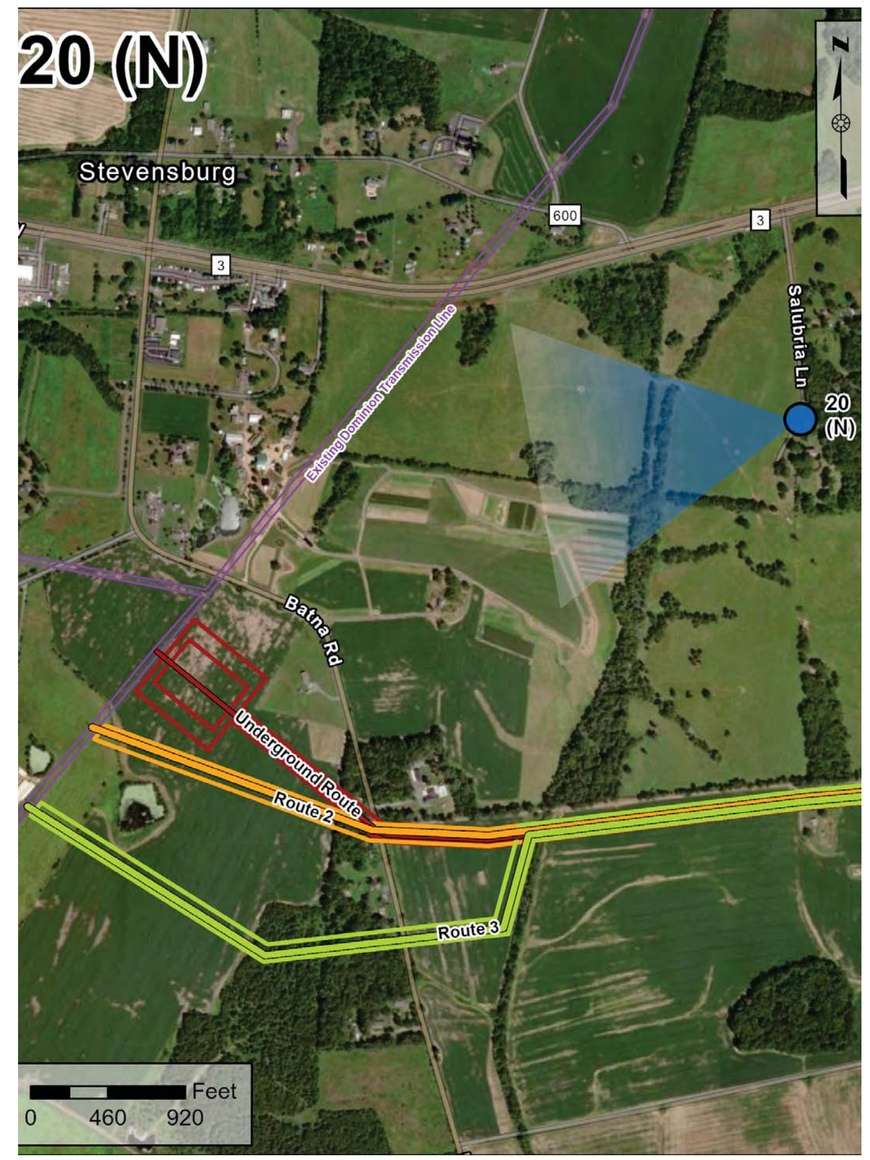
Viewpoint 20(N)

Salubria Ln N of Salubria House

Date: 8/12/22
Time: 3:33 pm
Viewing Direction: West
Distance to closest feature: 0.5 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

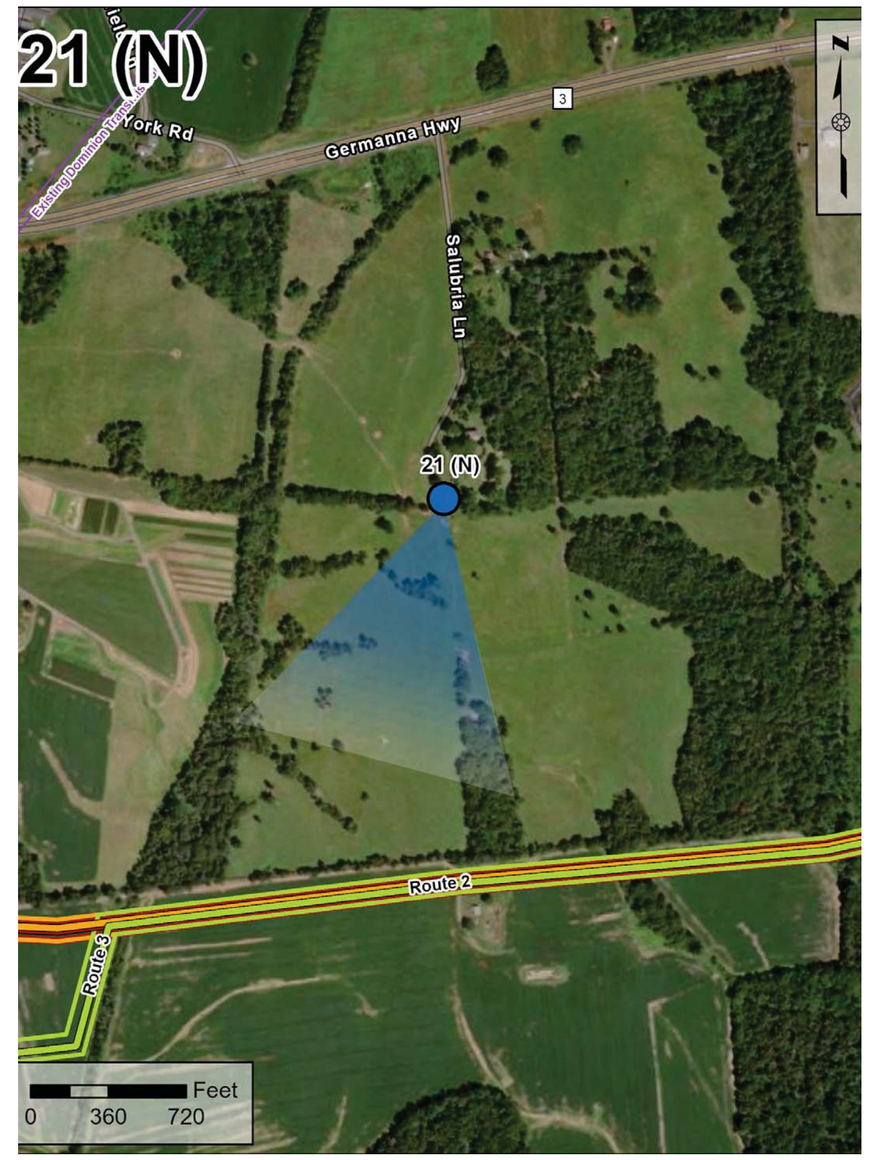
Viewpoint 21(N)

Salubria S of Salubria House

Date: 8/12/22
Time: 3:43 pm
Viewing Direction: South
Distance to closest feature: 0.3 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

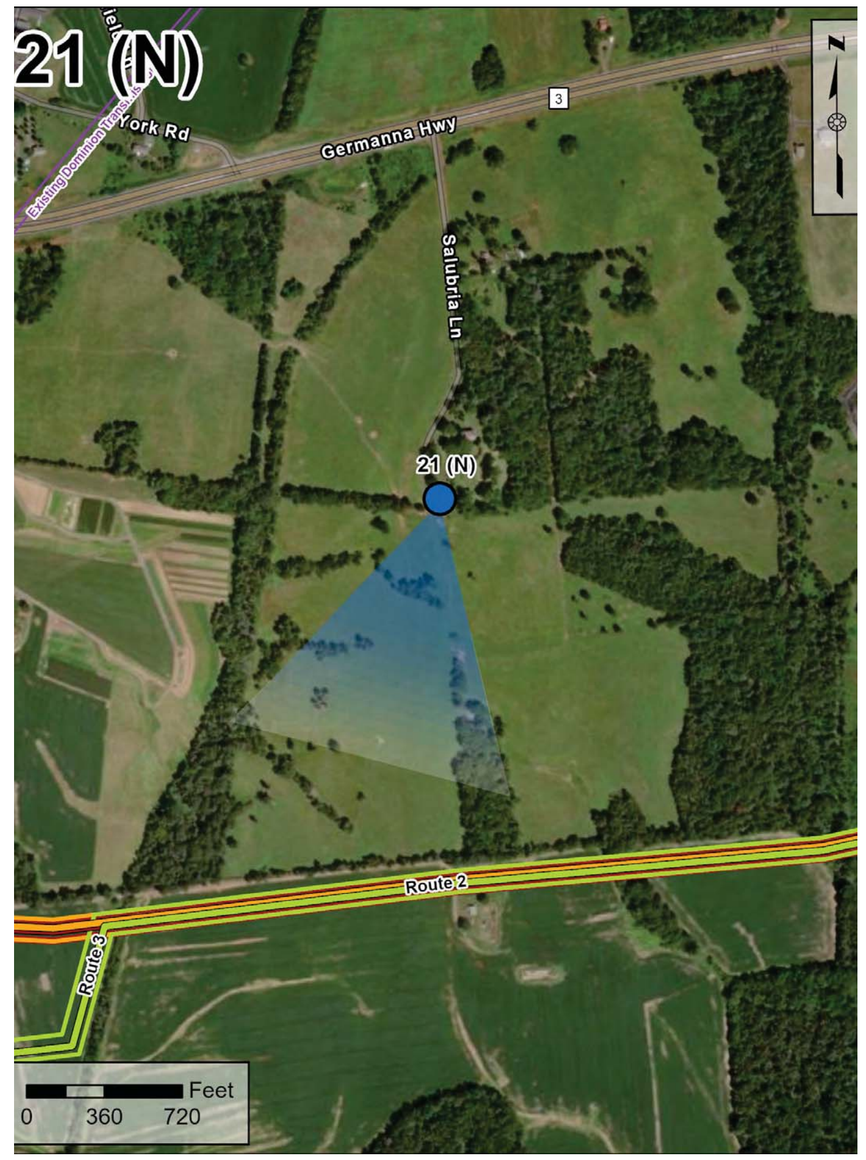
Viewpoint 21(N)

Salubria S of Salubria House

Date: 8/12/22
Time: 3:43 pm
Viewing Direction: South
Distance to closest feature: 0.3 mile







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

ERM

230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

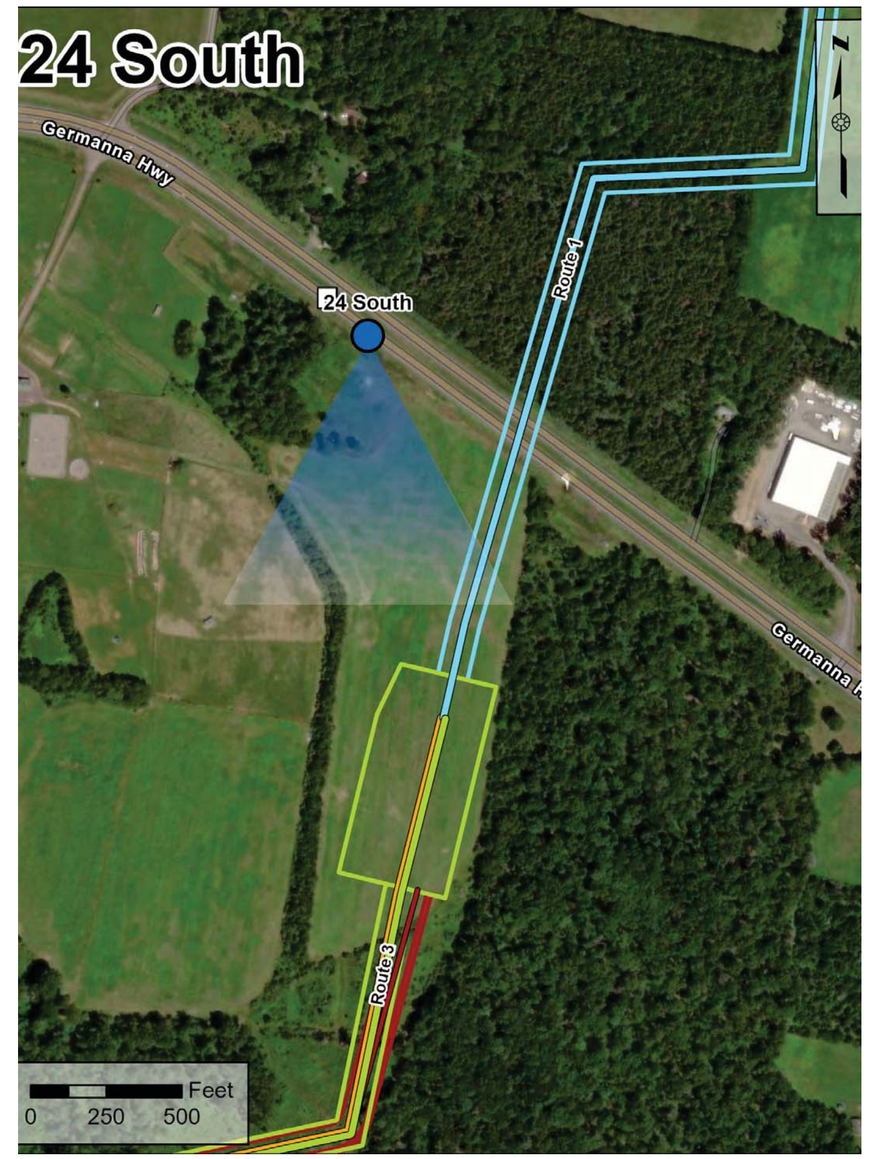
Viewpoint 24 South

Germanna Hwy E of Clay Hill Rd

Date: 8/27/23
Time: 12:14 pm
Viewing Direction: South
Distance to closest feature: 0.1 mile
Distance to Substation: 0.2 mile







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

ERM





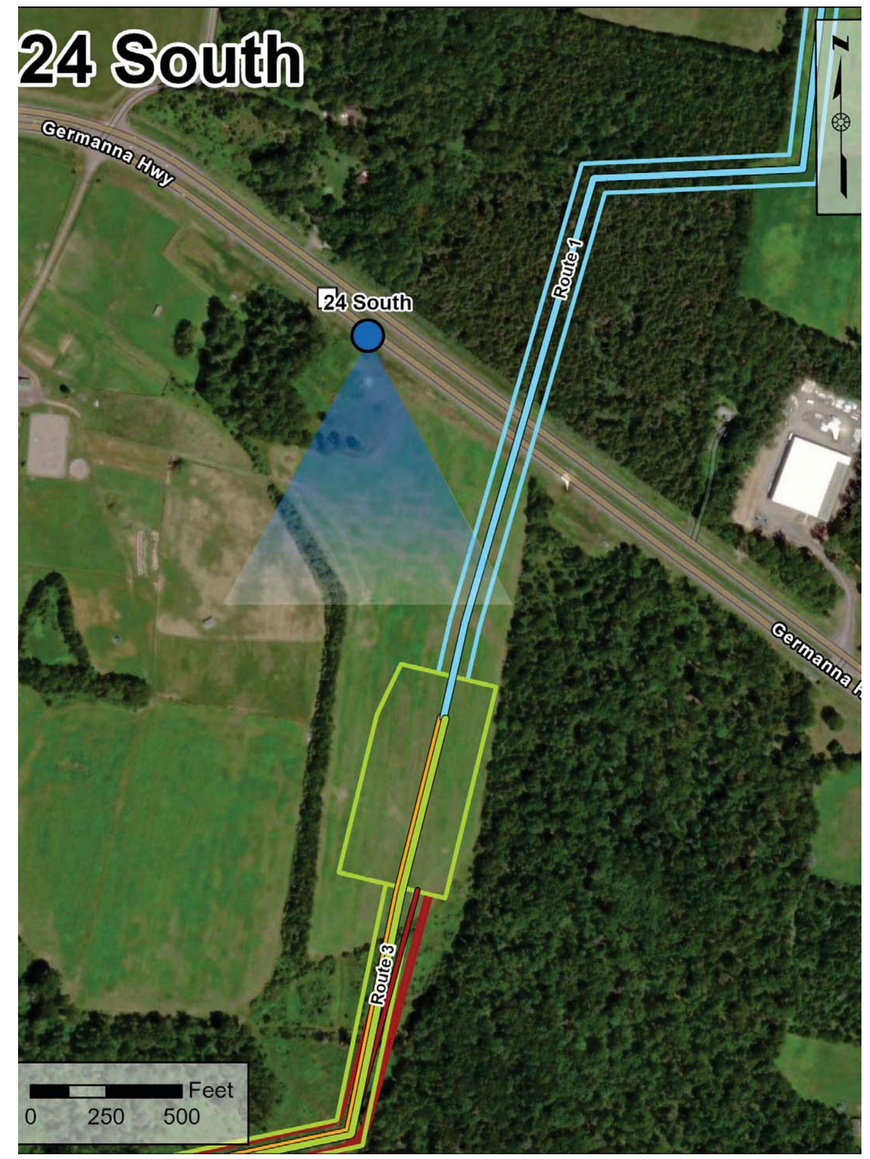
230 kV Germanna Lines
and Germanna Substation

Dominion Energy®

Viewpoint 24 South

Germanna Hwy E of Clay Hill Rd

Date: 8/27/23
Time: 12:14 pm
Viewing Direction: South
Distance to closest feature: 0.3 mile
Distance to Substation: 0.2 mile



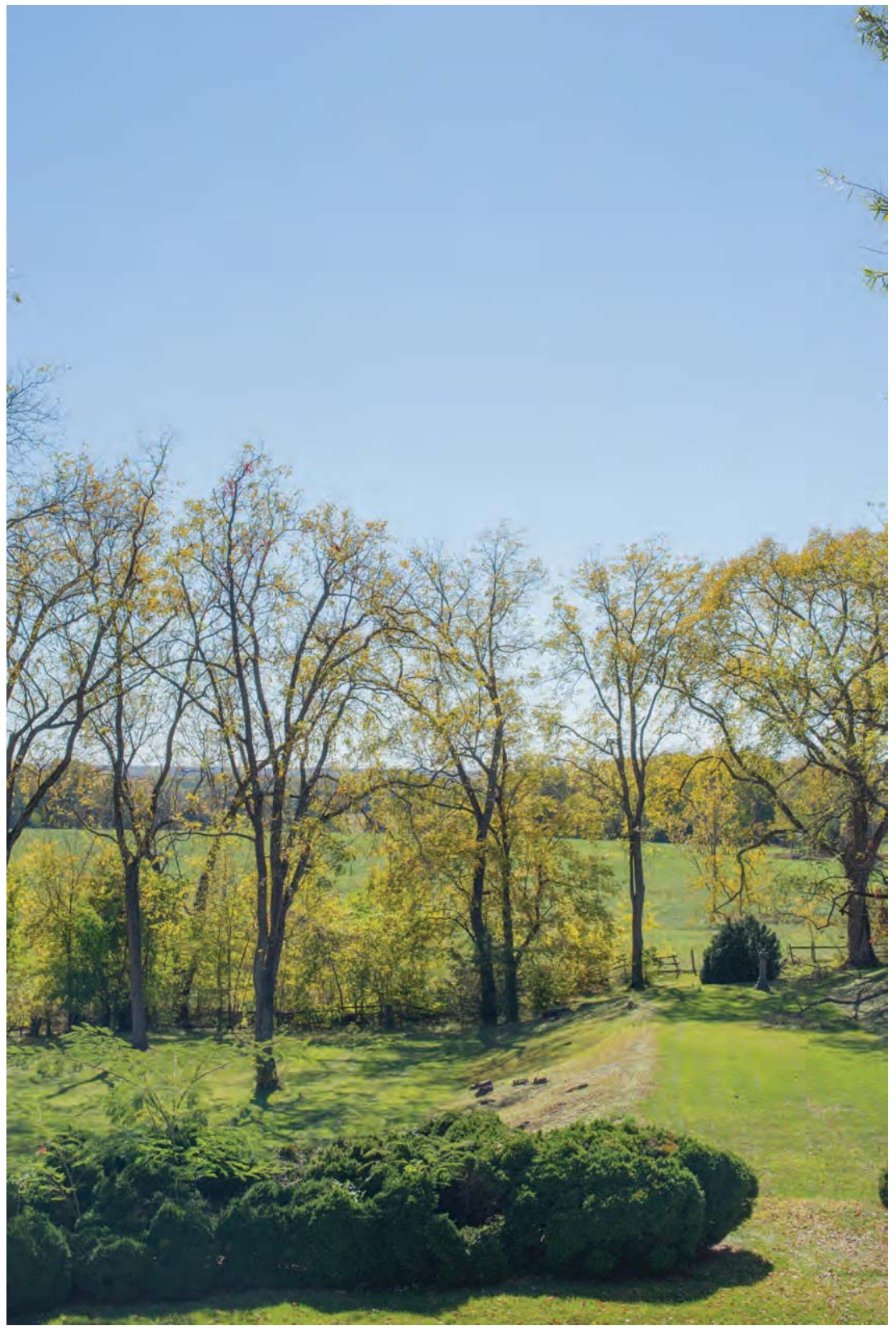
Note: Project Features illustrated are based on proposed preliminary designs
The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

ERM


70
2199
Germanna Hwy
3
Germanna Hwy
3
Germanna Hwy
3
Germanna Hwy
3
Salubria Ln
Salubria Ln
023-0020
(Salubria)
83
82
84
85
Project Location
PA
OH
WV
KY
Virginia
TN
NC
Proposed Route (Route 2)
Alternative Route 3
Existing Dominion
Transmission Line
Key Observation Point
(Photographed at request of
Historic Germanna)
N
1:4,200
0
175
350
Feet
ERM
Attachment III.B-5
Additional Key Location Simulations from Salubria
230 kV Germanna Lines and
Germanna Substation Project
Culpeper County, Virginia
Dominion Energy
MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\11\SCC_DOM_GERM_SCC_Figures_Update.aprx\Att III.B.5 Vis Sim Salubria | REVISED: 11/10/2023 | SCALE: 1:4,200 when printed at 11x17
DRAWN BY: 0239



Existing View



Proposed view showing location of transmission line structures for Route 2

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 1
Viewpoint SP 82
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of hidden transmission line structures for Route 2

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 2
Viewpoint SP 82
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 2.

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 3
Viewpoint SP 83
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of hidden transmission line structures for Route 3

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 4
Viewpoint SP 84
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 2

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 5
Viewpoint SP 84
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 2.

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	248054E 4258280N
View Direction:	168 degrees
Viewpoint Elevation:	385 feet
Distance to Development:	2126 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 13:24
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 6
Viewpoint SP 85
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 3

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 7
Viewpoint SP 82
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of hidden transmission line structures for Route 3

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 8
Viewpoint SP 82
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 3.

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 9
Viewpoint SP 83
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 3

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 10
Viewpoint SP 84
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of hidden transmission line structures for Route 3.

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	248078E 4258383N
View Direction:	177 degrees
Viewpoint Elevation:	400 feet
Distance to Development:	2549 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches



VIEWPOINT CONTEXT

Figure 11
Viewpoint SP 84
Salubria Ln S of Germanna Hwy
023-0020



Existing View



Proposed view showing location of transmission line structures for Route 3.

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	248054E 4258280N
View Direction:	168 degrees
Viewpoint Elevation:	385 feet
Distance to Development:	2126 feet
Horizontal Field of View:	89 degrees

Date of Photography:	10th October 2023 13:24
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 12
Viewpoint SP 85
Salubria Ln S of Germanna Hwy
023-0020



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: No buildings would have to be demolished or relocated to construct the proposed Project along the Proposed Route (Route 2) or Alternative Routes 1 or 3.

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: The Proposed and Alternative Routes do not parallel existing physical facilities such as railroad tracks, highways, or pipelines, nor do they parallel existing transmission lines. As identified in the table below, the Proposed Route and Alternative Routes parallel or are collocated with future industrial facilities and industrial zoned land that may be considered a collocation opportunity in an otherwise rural and agricultural area.

Planned Facility Feature (Mi)	Proposed Route (Route 2)	Alternative Route 1	Alternative Route 3
Within Future Greenwood Solar Facility Landscape Buffer	0.6	0.0	0.6
Within Customer's Future Data Center Transmission Line Right-of-Way	0.5	0.1	0.5
Total Collocation Length (Total Route Length)	**1.1 (1.8)**	**0.1 (2.4)**	**1.1 (2.0)**

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 Culpeper County Comprehensive Plan, the future Greenwood Solar Facility site plan, and the Customer's future data center site plan have the potential to be affected by the Proposed Route and/or the Alternative Routes. The 2023 Culpeper County Comprehensive Plan[26] provides policy guidance for future land use and planning. The Comprehensive Plan emphasizes economic growth objectives that support existing businesses and agricultural operations. To minimize development in agricultural areas, four Future Growth Areas are identified in the Comprehensive Plan as locations with existing infrastructure for growth. These areas include Braggs Corner/Eastern Business Area, Clevenger's Corner, Catalpa, and South Culpeper. All four Future Growth Areas are greater than three miles from the Project study area. The Comprehensive Plan promotes policies to maintain agriculture as a viable business at present and in the future as well as to protect agricultural and forested areas from incompatible land use and development, with new construction is encouraged in existing residential and/or industrial zones.

The Proposed Route is in general compliance with the Comprehensive Plan, as it minimizes impacts to agricultural lands and has the greatest percentage of collocation with approved industrial land uses (*i.e.*, the future Greenwood Solar Facility and the Customer's future data center campus). Importantly, by its October 3, 2023 Resolution, the Culpeper County Board of Supervisors unanimously indicated its support for either the Proposed Route or Alternative Route 3 to serve the Germanna Substation. Specifically, the Resolution indicates that a southern approach (*i.e.*, the Proposed Route or Alternative Route 3) are preferable based "a number of factors, including proximity to existing transmission lines, the Culpeper County Comprehensive Plan and the impact on landowners, with a particular concern for the protection of active agricultural land;…" See Attachment III.E.1 for a copy of the resolution.

As discussed above in Section III.A, the future Greenwood Solar Facility was issued a conditional use permit by the Culpeper County Board of Supervisors in 2018 with full site plan approval issued in 2022. The conditional use permit for the future utility-scale solar facility encompasses multiple parcels in a 1,000-acre lease area. The Proposed Route and Alternative Route 3 collocate with a landscape buffer on the northern perimeter of the solar site. Because this portion of the routes is between the landscape buffer and the future solar arrays, the collocation provides additional screening of the transmission line and structures. The Proposed Route

[26] Culpeper County, 2023. Culpeper County 2022 Comprehensive Plan. Accessed June 2023. Available online at https://web.culpepercounty.gov/planning/page/2023-comprehensive-plan.

and Alternative Route 3 avoid solar arrays within the site and are not anticipated to negatively impact construction or operation of the development.

The Culpeper Board of Supervisors approved a rezoning request for the Customer's future data center campus by resolution in April 2022, which rezoned 243 acres of A-1 (Agricultural) to LI (Light Industrial). The Customer's data center site plan includes the proposed Germanna Substation and a dedicated 100-foot-wide transmission right-of-way corridor for the Germanna Lines. The Germanna Lines avoid the future data center buildings, and both the Proposed Route and Alternative Route 3 follow the dedicated transmission right-of-way corridor. The Germanna Lines directly support the Germanna Substation, which will serve the Customer's future data center campus, and do not negatively impact the proposed development.

The Company met with the four landowners crossed by the Proposed Route to inform them of the Project and to solicit their potential willingness to engage with the Company on conveying property rights if the Proposed Route is selected by the Commission. All four landowners expressed a willingness to cooperate with the Company. Specifically, three of the landowners (DaSilva, Rinker, Spillman) voluntarily submitted letters in support of the Project, and the fourth landowner (the Customer) provided verbal support for the Project. The support letters from DaSilva, Rinker, and Spillman are included as Attachments III.E.2, III.E.3, and III.E.4, respectively.[27]

Additionally, the Company met with the four landowners crossed by Alternative Route 3 to inform them of the Project and to solicit their potential willingness to engage with the Company on conveying property rights if Alternative Route 3 is selected by the Commission. All four landowners expressed a willingness to cooperate with the Company. Specifically, three of the landowners (Spillman, Hunt, and DaSilva) voluntarily submitted letters in support of the Project, and the fourth landowner (the Customer) provided verbal support for the Project. As noted above, the support letters from DaSilva and Spillman are included as Attachments III.E.2 and III.E.4, and the support letter from Hunt is included as Attachment III.E.5.

The Company also contacted the developer of the future Greenwood Solar Facility who is currently under contract to lease land from two of the affected landowners (DaSilva and Spillman) on the Proposed Route and Alternative Route 3. The solar operator has already obtained local land use approvals to develop a utility-scale solar facility under a County-issued conditional use permit, as discussed above. Based on the foregoing, neither the Proposed Route nor Alternative Route 3 would adversely affect the construction or operation of the future solar facility.

[27] The parcels owned by DaSilva and Spillman would be crossed either by the Proposed Route or Alternative Route 3. As such, the support letters provided by DaSilva and Spillman indicate that they would not object to either route. *See* Attachments III.E.2 and III.E.4.

RESOLUTION OF THE BOARD OF SUPERVISORS OF CULPEPER COUNTY, VIRGINIA

A RESOLUTION REQUESTING THAT DOMINION ENERGY PURSUE, AND THE STATE CORPORATION COMMISSION APPROVE, A SOUTHERN ROUTING OPTION FOR THE TRANSMISSION LINE 2199 EXTENSION IN THE GERMANNA PROJECT

WHEREAS, Dominion Energy is currently pursuing a project involving the construction of a 230 kilovolt (kV) transmission line and substation driven by the AWS data center to be constructed in Stevensburg, VA, known as the Germanna Line 2199 Extension Project; and

WHEREAS, it is the understanding of the Culpeper County Board of Supervisors that three routes are being considered for this transmission line, one of which would come from north of the data center site and two which would come from the south; and

WHEREAS, after considering the Project Study Area Map and the Route Alternatives Map, the Board of Supervisors has concluded that a southern approach for the new transmission line would be preferable based upon a number of factors, including proximity to existing transmission lines, the Culpeper County Comprehensive Plan and the impact upon landowners, with a particular concern for the protection of active agricultural land; and

WHEREAS, the Board wishes to provide its clear support for, and recommendation for approval of a southern route;

NOW, THEREFORE BE IT RESOLVED, that the Culpeper County Board of Supervisors does hereby urge Dominion Energy to pursue the Board's preferred route, and;

BE IT FURTHER RESOLVED, that the Culpeper County Board of Supervisors does hereby urge the State Corporation Commission to approve the Board's preferred route.

Done this 3rd day of October, 2023.

VOTING AYE: BATES, CAMPBELL, DEAL, DURR, GUGINO, ROSENBERGER, UNDERWOOD

VOTING NAY: NONE

ABSTAINING: NONE

ABSENT: NONE

BOARD OF SUPERVISORS OF CULPEPER COUNTY, VIRGINIA

Gary Deal, Chairman
Board of Supervisors of Culpeper County, Virginia

ATTEST:

John Egertson, County Administrator

Jerry Calico DaSilva EXE ST ALS
Parcel ID's: 53-44 & 53-45

October 24, 2023

Brach Prough, PE
Project Manager/Contractor
Dominion Energy
319-931-7916

Re: Support for Dominion Energy Virginia's Application for the Germanna 230 kV Transmission Line Project

Dear Mr. Prough:

I am writing to provide support for Dominion's application to the Virginia State Corporation Commission for approval of the above referenced project ("Project"). Through our discussions, I understand that this Project is important to support continued economic growth in Culpeper County, and in this case will support the connection of a new data center campus near my property.

I appreciate Dominion's efforts to engage the public, stakeholders, and me and work cooperatively with all parties as it develops the Project. Through our discussions, Dominion has shared with me potential routing alternatives for the Project. Route 2 and Route 3 is a route that would traverse my property. Based on our discussions, I do not object to these routes, and would agree to work cooperatively with Dominion to permit the Project to be located on my property if that routes are approved by the State Corporation Commission.

Please feel free to contact us with any questions, and we look forward to our continued cooperation.

Sincerely,

Jerry Calico DaSilva, EXE ST ALS
Landowner

Eleanor Rinker ET AL
Parcel ID: 53-41

August 9, 2023

Brach Prough, PE
Project Manager/Contractor
Dominion Energy
319-931-7916

Re: Support for Dominion Energy Virginia's Application for the Germanna 230 kV Transmission Line Project

Dear Mr. Prough:

I am writing to provide support for Dominion's application to the Virginia State Corporation Commission for approval of the above referenced project ("Project"). Through our discussions, I understand that this Project is important to support continued economic growth in Culpeper County, and in this case will support the connection of a new data center campus nearby my property.

I appreciate Dominion's efforts to engage the public, stakeholders, and me and work cooperatively with all parties as it develops the Project. Through our discussions, Dominion has shared with me potential routing alternatives for the Project. Route 2 is a route that would traverse my property. Based on our discussions, I do not object to this route, and would agree to work cooperatively with Dominion to permit the Project to be located on my property if that route is approved by the State Corporation Commission.

Please feel free to contact us with any questions, and we look forward to our continued cooperation.

Sincerely,

D. V. R. POA

Eleanor Rinker ET AL
Landowner

William A. Spillman III TR ET AL
Parcel ID: 53-72

October 24, 2023

Brach Prough, PE
Project Manager/Contractor
Dominion Energy
319-931-7916

Re: Support for Dominion Energy Virginia's Application for the Germanna 230 kV Transmission Line Project

Dear Mr. Prough:

I am writing to provide support for Dominion's application to the Virginia State Corporation Commission for approval of the above referenced project ("Project"). Through our discussions, I understand that this Project is important to support continued economic growth in Culpeper County, and in this case will support the connection of a new data center campus near my property.

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Please feel free to contact us with any questions, and we look forward to our continued cooperation.

Sincerely,

William A. Spillman III, Trustee

William A. Spillman III, Trustee
Landowner

LaStarza Hunt
Parcel ID: 53-71C

October 24, 2023

Brach Prough, PE
Project Manager/Contractor
Dominion Energy
319-931-7916

Re: Support for Dominion Energy Virginia's Application for the Germanna 230 kV Transmission Line Project

Dear Mr. Prough:

I am writing to provide support for Dominion's application to the Virginia State Corporation Commission for approval of the above referenced project ("Project"). Through our discussions, I understand that this Project is important to support continued economic growth in Culpeper County, and in this case will support the connection of a new data center campus nearby my property.

I appreciate Dominion's efforts to engage the public, stakeholders, and me and work cooperatively with all parties as it develops the Project. Through our discussions, Dominion has shared with me potential routing alternatives for the Project. Route 3 is a route that would traverse my property. Based on our discussions, I do not object to this route, and would agree to work cooperatively with Dominion to permit the Project to be located on my property if that route is approved by the State Corporation Commission.

Please feel free to contact us with any questions, and we look forward to our continued cooperation.

Sincerely,

La Starza Hunt

LaStarza Hunt
Landowner

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) Culpeper County designates important farmland within their jurisdiction through the voluntary enrollment of land into AFDs. AFDs conserve, protect, and encourage the development and improvement of a locality's agricultural and forested lands for the production of food and other products, while also conserving and protecting land as valued natural and ecological resources. AFD enrollments are voluntary agreements between landowners and the locality which offer benefits to landowners when they agree to keep their agricultural land preserved for between four and 10 years. AFD guidelines are set forth by Va. Code § 15.2-4300. AFD eligibility is informed, in part, by parcel size, current use, and soils surveys and classifications under the Virginia Agricultural Model, which is used to determine the agricultural value of lands. The Virginia Agricultural Model was developed to quantify the relative suitability of lands for agricultural activity across the state and is assessed primarily based on inherent soil suitability, but also accounts for current land cover as well as travel time between agricultural producers and consumers. The model ranks land into five classes based on the suitability determination (Class I being low suitability and Class V being high suitability).

Neither the Proposed Route nor Route Alternative 3 cross Culpeper County AFDs. Alternative Route 1 crosses 0.7 mile of land within the Stevensburg AFD.

(2) (a) Attachment III.A.1 depicts Prime Farmland and Farmland of Statewide Importance in the Project area. Attachment II.A.2 depicts constraints in the Project area including land currently enrolled in the Stevensburg AFD.

(2) (b) Not applicable.

(2) (c) The Proposed Route does not cross an AFD, but does cross land currently used for row crops and pasture. The Project is not expected to significantly affect farmland because agricultural uses are largely consistent with transmission line corridors and permanent impacts are limited to structure foundations.

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

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

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

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

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

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

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

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

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

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

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

10. **Any state scenic river;**

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

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

Response: (1) None.

(2) One resource (023-5055) is potentially eligible for listing in the NRHP and is within and adjacent to Alternative Route 1. This information is provided in Table I-1 of the DEQ Supplement. Section I of the DEQ Supplement provides additional discussion.

(3) None.

(4) None.

(5) None.

(6) None.

(7) None.

(8) None.

(9) No conservation easements are crossed by the Proposed Route (Route 2) or Alternative Routes 1 and 3. The Proposed Route and Alternative Route 3 are adjacent to VOF easement #517 (Blue Ridge Farm, Inc.). See Section 2.L of the DEQ Supplement for additional discussion.

(10) None.

(11) None.

(12) Refer to III.G.2 and III.G.9. above.

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

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

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

The Company has reviewed the FAA's website[28] to identify airports within 10.0 miles of the proposed Project. Based on this review, the following FAA-restricted airports are located within 10.0 miles of the Project:

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles)	Use
The Greenhouse Airport	o 0.5 mile southeast of Alternative Route 1 o 0.7 mile east of Germanna Substation	Private Use
Culpeper Regional Airport	o 3.5 miles north of Alternative Route 1	Public Use
Rular Airport	o 5.4 miles north of Alternative Route 1	Private Use
Berryvale Airport	o 5.9 miles northwest of Alternative Route 1	Private Use
UVA Culpeper Medical Center Heliport	o 6.2 miles west of the Proposed Route (Route 2) and Alternative Route 3	Private Use
Belmont Farm Airport	o 6.3 miles southwest of Alternative Route 3	Private Use
Pleasantdale Field Airport	o 7.3 miles northwest of Alternative Route 1	Private Use
Homeland Airport	o 7.7 miles northwest of Alternative Route 1	Private Use

[28] *See* https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles)	Use
Simpsonville Airport	o 7.8 miles south of Alternative Route 3	Private Use
Rhynalds Ranch Airport	o 8.2 miles northeast of Alternative Route 1	Private Use
Flying Circus Airport	o 9.9 miles northeast of Alternative Route 1	Private Use

As to public use airports, it was determined that the Culpeper Regional Airport was in close enough proximity to potentially impact navigable airspace. The Company conducted an airport analysis to determine if any of the FAA defined Civil Airport Imaginary Surface would be penetrated by structures associated with the Project. The Company hired ERM to conduct the review. ERM reviewed the height limitations associated with FAA-defined imaginary surfaces for runway 1/19 associated with the airport. Standard GIS tools, including ESRI's ArcMap 3D and Spatial Extension software were used to create and geo-reference the imaginary surfaces in space, and in relation to the locations and proposed heights of the transmission structures. Ground surface data for the study area was derived by using a USGS 10 Meter Digital Elevation Model. Based on the results of this review, it was determined there would be no potential for penetration into any of the proposed imaginary surfaces associated with the Culpeper Regional Airport and thus there would be no impacts to navigable airspace from the proposed Project.

The regulations that govern objects that may affect navigable airspace are codified in the Code of Federal Regulations, Title 14, Part 77. In these regulations it states that restrictions to structure heights only apply to public use airports and do not apply to privately owned airports. The privately owned Greenhouse Airport is located 0.7 mile (3,550 feet) east of the proposed Germanna Substation. The airport's runway is oriented in a northwest/southeast direction. If this airport were to change to a public use airport it would be classified as a utility runway with a visual approach. In this scenario, given the distance from the proposed tower locations to the airport's runway, and the similar ground elevation of the airport and the Project area, there would be no penetration of any of the airport's imaginary surfaces by the Project. Even though the Greenhouse Airport is not granted the same height restrictions of the surrounding area (as opposed to a public use airport), the Project should not have any impacts on the navigable airspace of the airport.

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

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

Response: No scenic byways are in close proximity to the study area for the proposed Project or would be crossed by any of the route alternatives. Perpendicular road crossings, which are preferred by VDOT and Culpeper County, will be utilized at other road crossings.

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

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

Response: As described in detail in Sections III.B and V.D of the Appendix, the Company solicited feedback from Culpeper County regarding the proposed Project. Below is a list of coordination that has occurred with municipal, state, and federal agencies:

- In February 2022, Company representatives met with Culpeper County Economic Development and Planning staff to brief them on the Project and solicit their feedback.

- In May 2022, Company representatives met with the Culpeper County Administrator to brief him on the Project and solicit his feedback.

- In June 2022, Company representatives met with the Culpeper County Board Supervisor for the Stevensburg District to brief her on the Project and solicit her feedback.

- In April 2023, a Company representative reached out via email to Culpeper County Economic Development, Planning, and Administration staff, as well as to the Board Supervisor for the Stevensburg District to provide an update on Project and solicit feedback.

- In September 2023, Company representatives briefed the Culpeper County Board of Supervisors during a public work session on transmission planning in the area, which included discussion of this Project.

- Coordination with the U.S. Army Corps of Engineers, DEQ, and VDOT will take place as appropriate to obtain necessary approvals for the Project.

- In October 2023 and November 2023, letters were submitted to Culpeper County to describe the Project and request comments. See Section V.D.

- In October 2023, letters were submitted to the agencies listed in Section V.C, describing the Project and requesting comment. In November 2023, a second letter was submitted to certain agencies listed in Section V.C. See Attachments 2 and 2.1 to the DEQ Supplement.

- A Stage I Pre-Application Analysis has been prepared and was submitted to VDHR on November 17, 2023. See Attachment 2.I.1 to the DEQ Supplement.

- In September 2023, the Company solicited comments via letter from several federal and state recognized Native American tribes, including:

Cheroenhaka (Nottoway) Indian Tribe
Chickahominy Indian Tribe
Chickahominy Indian Tribe Eastern Division
Chickahominy Tribe
Mattaponi Tribe
Monacan Indian Nation
Nansemond Indian Tribe of Virginia
Nottoway Indian Tribe of Virginia
Pamunkey Indian Tribe
Pamunkey Indian Tribal Resource Office
Patawomeck Indian Tribe of Virginia
Rappahannock Tribe
Upper Mattaponi Indian Tribe
Delaware Nation, Oklahoma

A copy of the letter template and overview map is included as Attachment III.J.1.

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

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

September 28, 2023

Electric Transmission Line Infrastructure Project in Culpeper County

Dear _____:

At Dominion Energy, we are dedicated to maintaining reliable and secure electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we would like to inform you of the need for an electric transmission line infrastructure project in Stevensburg, Culpeper County, VA.

The Germanna 230 kilovolt (kV) Transmission Line and Substation project, will support a new data center customer located on the former Magnolia Equestrian Center property off Route 3/Germanna Highway in Stevensburg. This project will require a new 230 (kV) double-circuit electric transmission line, substation and right of way to provide service to the customer site. Our team is currently evaluating three conceptual routes to serve the site (please reference attached map); note, only one of these would be required to serve the customer site. We currently anticipate filing an application for this project with the State Corporation Commission (SCC) later this year.

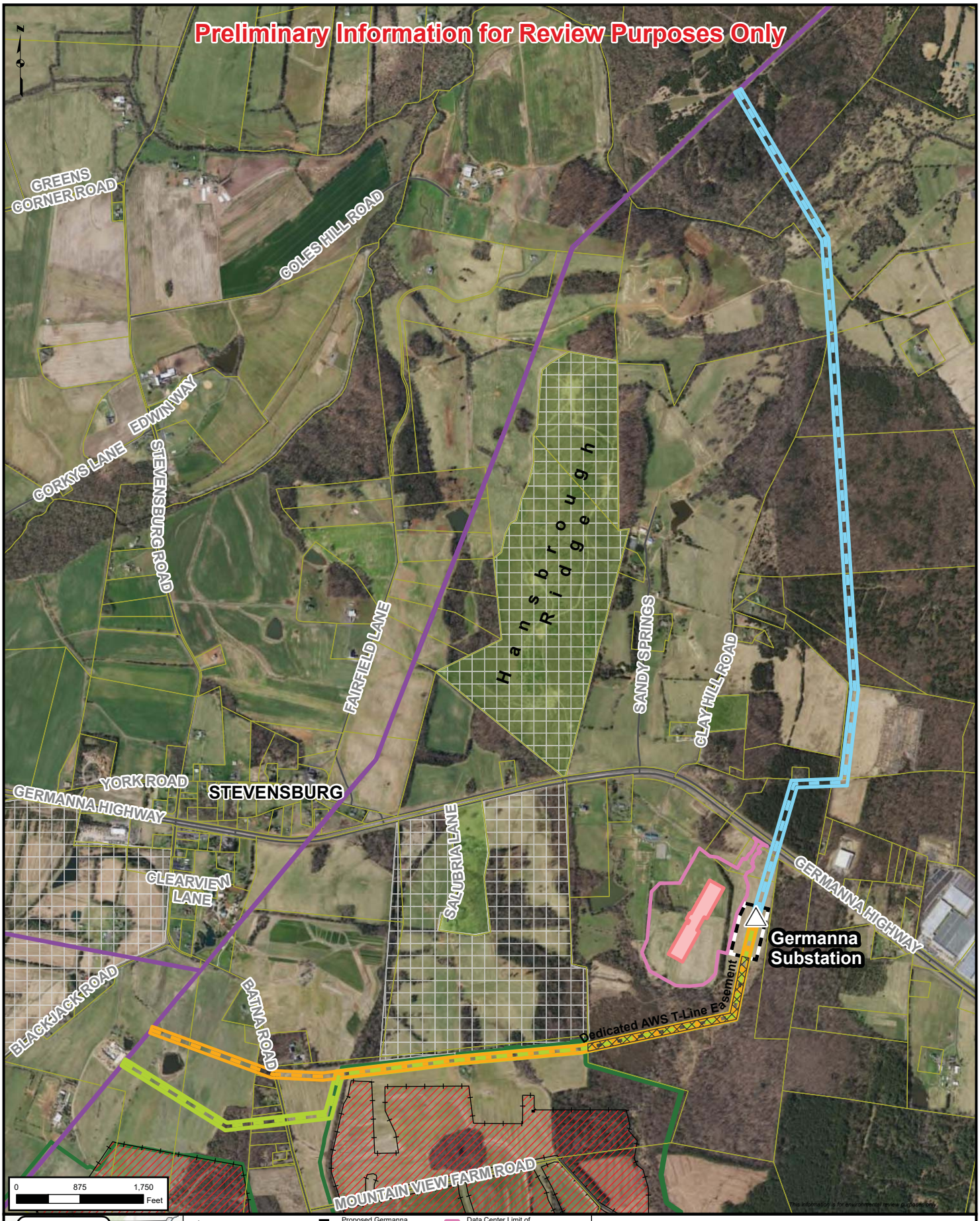
You can follow the status of the project and/or view maps and other collateral at www.dominionenergy.com/germanna.

Please feel free to notify other relevant organizations that may have an interest in the project area. For reference, recipients of this letter include other county and statewide historic, cultural and scenic organizations and Native American Tribes.

If you would like to meet to discuss, or if you have any initial questions, please do not hesitate to contact us by sending an email to Stephen.S.Precker@dominionenergy.com or calling 888-291-0190. You may also contact Tribal Relations Manager Ken Custalow by sending an email to Ken.Custalow@dominionenergy.com.

Sincerely,

Steve Precker
The Electric Transmission Project Team


Preliminary Information for Review Purposes Only
GREENS CORNER ROAD
COLES HILL ROAD
EDWIN WAY
CORKYS LANE
STEVENSBURG ROAD
FAIRFIELD LANE
Hansbrough Ridge
SANDY SPRINGS
CLAY HILL ROAD
YORK ROAD
STEVENSBURG
GERMANNA HIGHWAY
CLEARVIEW LANE
SALUBRIA LANE
GERMANNA HIGHWAY
Germanna Substation
BLACKJACK ROAD
BATNA ROAD
Dedicated AWS T-Line Easement
MOUNTAIN VIEW FARM ROAD
0
875
1,750
Feet
Project Location
Virginia
Proposed Substation
Centerline & Right of Way (100-Foot)
Route 1 (2.4 miles)
Route 2 (1.8 miles)
Route 3 (2.0 miles)
Proposed Germanna Substation Boundary
Existing Dominion Transmission Line
Parcel Boundary
Dedicated AWS Transmission Line Easement
Future Data Center Building
Data Center Limit of Disturbance
Approved Landscape Screening
Permitted Solar Panel Area
VOF Easement
DHR Easement
ERM
Route Alternatives
Germanna 230 kV Transmission Line and Substation Project
Culpeper County, Virginia
Dominion Energy
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III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

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

Response: In September 2023, the Company solicited comments via letter from the community leaders, environmental groups, and business groups identified below. A copy of the letter template is included as Attachment III.K.1.

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, PhD, RPA	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, Dean	Norfolk State University
Mr. Roger Kirchen, Archaeologist	Virginia Department of Historic Resources
Ms. Adrienne Birge-Wilson	Virginia Department of Historic Resources
Mr. Dave Dutton	Dutton + Associates, LLC

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

September 28, 2023

Electric Transmission Line Infrastructure Project in Culpeper County

Dear _____:

At Dominion Energy, we are dedicated to maintaining reliable and secure electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we would like to inform you of the need for an electric transmission line infrastructure project in Stevensburg, Culpeper County, VA.

The Germanna 230 kilovolt (kV) Transmission Line and Substation project, will support a new data center customer located on the former Magnolia Equestrian Center property off Route 3/Germanna Highway in Stevensburg. This project will require a new 230 (kV) double-circuit electric transmission line, substation and right of way to provide service to the customer site. Our team is currently evaluating three conceptual routes to serve the site (please reference attached map); note, only one of these would be required to serve the customer site. We currently anticipate filing an application for this project with the State Corporation Commission (SCC) later this year.

We invite you to discuss this project with us at our upcoming, in-person community meeting. Details are as follows:

When: Tuesday, October 17, 2023
5 pm – 7 pm

Where: The Refinery
120 West Culpeper Street
Culpeper, VA 22701

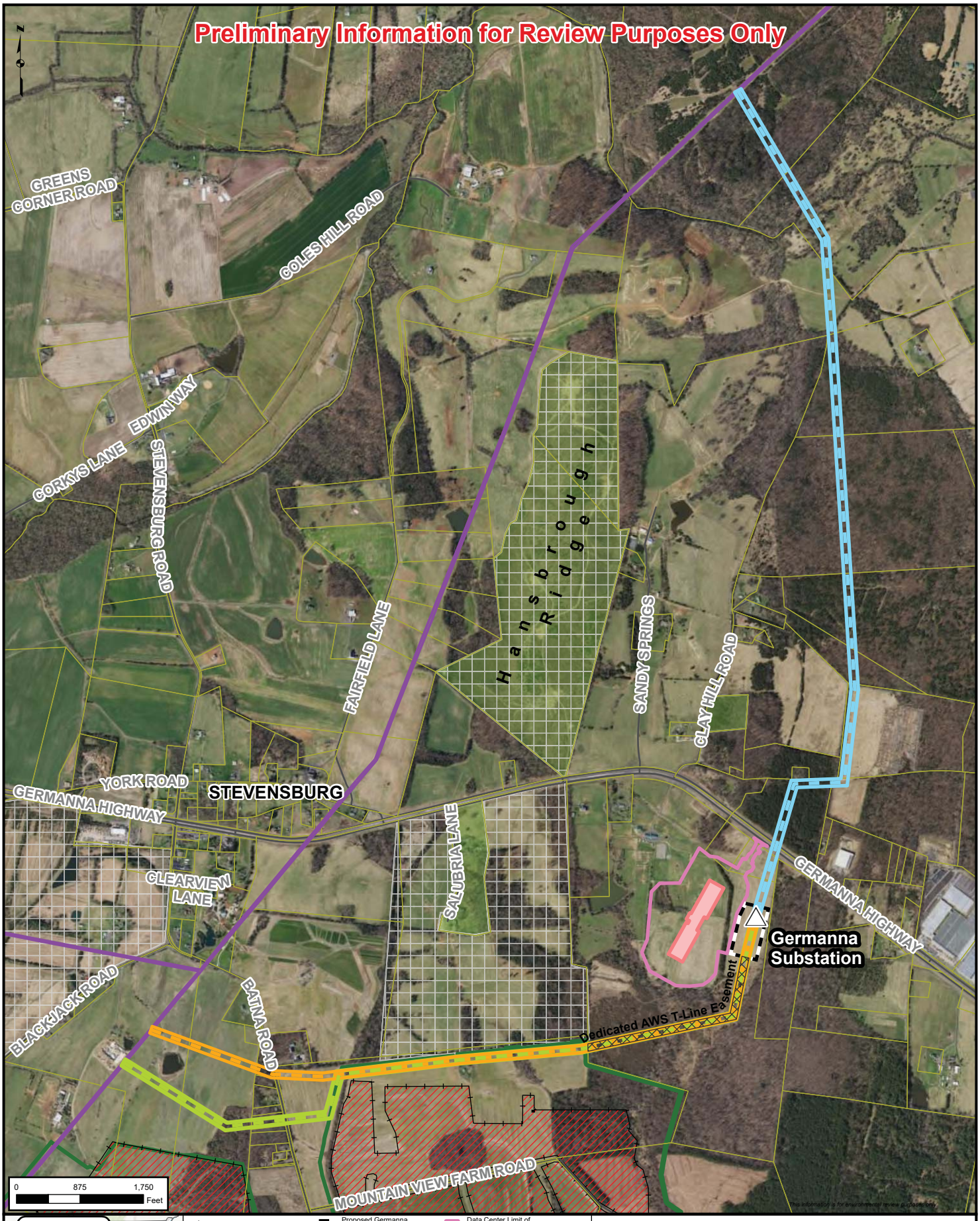
The community meeting will be open house style, with visual displays and maps for your reference. We will have our project team subject matter experts available to answer your questions. We hope you can join us!

You can also follow the status of the project and/or view maps and other collateral at www.dominionenergy.com/germanna.

If you would like to schedule a small group or one on one meeting to discuss the project, please reach out to us at Powerline@dominionenergy.com or call 888-291-0190. Please do not hesitate to reach out with any questions.

Sincerely,

The Electric Transmission Project Team


Preliminary Information for Review Purposes Only
GREENS CORNER ROAD
COLES HILL ROAD
EDWIN WAY
CORKYS LANE
STEVENSBURG ROAD
FAIRFIELD LANE
Hansbrough Ridge
SANDY SPRINGS
CLAY HILL ROAD
YORK ROAD
STEVENSBURG
GERMANNA HIGHWAY
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Germanna 230 kV Transmission Line and Substation Project
Culpeper County, Virginia
Dominion Energy
MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\08\Figures_DOM_GERM_Mailer.aprx | REVISED: 09/25/2023 | SCALE: 1:21,000 when printed at 11x17
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III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL AND HISTORIC FEATURES

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

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

Potential Permits

Activity	Potential Permit	Agency/Organization
Impacts to wetlands and other waters of the U.S.	Nationwide Permit 57	U.S. Army Corps of Engineers
Impacts to wetlands and other waters of the U.S.	Virginia Water Protection Permit	Virginia Department of Environmental Quality
Discharge of stormwater from construction	Construction General Permit	Virginia Department of Environmental Quality
Work within VDOT rights-of-way	Land Use Permit	Virginia Department of Transportation
Airspace obstruction evaluation	FAA 7460-1	Culpeper Regional Airport

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

This section describes the levels of EMF associated with the proposed transmission lines. EMF levels are provided for future (2028) annual average and maximum (peak) loading conditions.

Existing Lines – Historical average loading (2022)

EMF levels were calculated for the existing lines at the ***historical average*** load condition (207 amps for Line #2, 171 amps for Line #70, 341 amps for Line #2199) and at an operating voltage of 120.75 and 241.5 kV when supported on the existing structures. See Attachment II.A.5.c.

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

EMF levels at the edge of the rights-of-way for the existing lines at the historical average loading.

Existing Lines – Historic Average Loading				
	Left Edge Looking Towards Remington		Right Edge Looking Towards Remington	
Attachment	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.c	0.200	13.775	0.458	15.609

Existing Lines – Historical peak loading (2022)

EMF levels were calculated for the existing lines at the ***historical peak*** load condition (422 amps for Line #2, 400 amps for Line #70, 1141 amps for Line #2199) and at an operating voltage of 120.75 and 241.5 kV when supported on the existing structures. See Attachment II.A.5.c.

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

EMF levels at the edge of the rights-of-way for the existing lines at the historical peak loading.

Existing Lines – Historic Peak Loading				
	Left Edge Looking Towards Remington		Right Edge Looking Towards Remington	
Attachment	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.c	0.192	37.472	0.430	47.896

Proposed Project – Projected average loading (2028)

EMF levels were calculated for the proposed Project at the ***projected average*** load condition (71 amps for Line #2 and 448 amps for Line #2199, 286 amps for Line #2331) and at operating voltages of 120.75 kV and 241.5 kV when supported on the proposed Project structures. See Attachments II.A.5.a, II.A.5.b, II.A.5.c, and II.A.5.d.

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 rights-of-way for the proposed Project at the projected average loading:

Proposed Lines – Projected Average Loading				
	Left Edge Looking Towards Germanna (a, b, d) Looking Towards Remington (c)		Right Edge Looking Towards Germanna (a, b, d) Looking Towards Remington (c)	
Attachment	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	0.552	3.478	0.551	9.498
II.A.5.b	0.563	4.452	0.563	10.472
II.A.5.c	0.110	9.289	0.431	15.826
II.A.5.d	0.585	4.711	0.585	10.844

Proposed Project – Projected peak loading (2028)

EMF levels were calculated for the proposed Project at the ***projected peak*** load condition (119 amps for Line #2 and 747 amps for Line #2199, 477 amps for Line #2331) and at operating voltages of 120.75 kV and 241.5 kV when supported on the proposed Project structures. See Attachments II.A.5.a, II.A.5.b, II.A.5.c, and II.A.5.d.

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

EMF levels at the edge of the rights-of-way for the proposed Project at the projected peak loading:

Proposed Lines – Projected Peak Loading				
	Left Edge **Looking Towards Germanna (a, b, d)** **Looking Towards Remington (c)**		**Right Edge** **Looking Towards Germanna (a, b, d)** **Looking Towards Remington (c)**	
Attachment	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	0.551	5.833	0.550	15.893
II.A.5.b	0.562	7.444	0.561	17.507
II.A.5.c	0.110	15.508	0.428	26.517
II.A.5.d	0.585	7.873	0.583	18.119

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 three decades are the foundation of the Company's opinion that no adverse health effects are anticipated to result from the operation of the proposed Project. Each of these panels has evaluated the scientific research related to health and 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, and 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-related biological and health research have been conducted by numerous scientific and health agencies, including, for example, the European Health Risk Assessment Network on Electromagnetic Fields Exposure ("EFHRAN"), the International Commission on Non-Ionizing Radiation Protection ("ICNIRP"), the World Health Organization ("WHO"), the IEEE's International Committee on Electromagnetic Safety ("ICES"), the Scientific Committee on Emerging and Newly Identified Health Risks ("SCENIHR") of the European Commission, and the Swedish Radiation Safety Authority ("SSM") (formerly the Swedish Radiation Protection Authority ["SSI"]) (WHO, 2007; SCENIHR, 2009, 2015; EFHRAN, 2010, 2012; ICNIRP, 2010; SSM, 2015, 2016, 2018, 2019, 2020, 2021, 2022; ICES, 2019). The general scientific consensus of the agencies that have reviewed this research, relying on generally accepted scientific methods, is that the scientific evidence does not confirm that common sources of EMF in the environment, including transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects.

The most recent reviews on this topic include the 2015 report by SCENIHR and annual reviews published by SSM (*i.e.*, for the years 2015 through 2022). These reports, similar to previous reviews, found that the scientific evidence does not confirm the existence of any adverse health effects caused by environmental or

community exposure to EMF.

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

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

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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."[29]

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, which 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 2022; and,
- EFHRAN, which published its reviews in 2010 and 2012.

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

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

comprehensive review of the literature by SCENIHR, published in 2015, concluded that "no mechanisms have been identified and no support is existing [*sic*] from experimental studies that could explain these findings, which, together with shortcomings of the epidemiological studies prevent a causal interpretation" (SCENIHR, 2015, p. 16).

While research is continuing on multiple aspects of EMF exposure and health, many of the recent publications have focused on an epidemiologic assessment of the relationship between EMF exposure and childhood leukemia and EMF exposure and neurodegenerative diseases. Of these, the following recent publications, published following the inclusion date (June 2014) for the SCENIHR (2015) report through May 2023, 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.

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

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

- Pedersen et al. (2015) published a case-control study that investigated the potential association between residential proximity to power lines and childhood cancer in Denmark. The study included all cases of leukemia (n=1,536), central nervous system 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 periods (1980 and on), and consistent pattern for the periods prior to 1980.

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

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

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

- Kyriakopoulou et al. (2018) assessed the association between childhood acute leukemia and parental occupational exposure to social contacts, chemicals, and electromagnetic fields. The study was conducted at a major pediatric hospital in Greece and included 108 cases and 108 controls matched for age, gender,

and ethnicity. Statistically non-significant associations were observed between paternal exposure to magnetic fields and childhood acute leukemia for any of the exposure periods examined (1 year before conception; during pregnancy; during breastfeeding; and from birth until diagnosis); maternal exposure was not assessed due to the limited sample size. No associations were observed between childhood acute leukemia and exposure to social contacts or chemicals.

- Auger et al. (2019) examined the relationship between exposure to EMF during pregnancy and risk of childhood cancer in a cohort of 784,000 children born in 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 ["μT"]) (i.e., ≥ 4 milligauss ["mG"]). No associations were observed with low-voltage power lines (< 200 kV). In a subsequent study, Amoon et al. (2020) examined the potential impact of dwelling type on the associations reported in Crespi et al. (2019). Amoon et al. (2020) concluded that while the type of dwelling at which a child resides (e.g., single-family home, apartment, duplex, mobile home) was associated with socioeconomic status and race or ethnicity, it was not associated with childhood leukemia and did not appear to be a potential confounder in the relationship between childhood leukemia and magnetic-field exposure in this study population.

- Swanson et al. (2019) conducted a meta-analysis of 41 epidemiologic studies of childhood leukemia and magnetic-field exposure published between 1979 and 2017 to examine trends in childhood leukemia development over time. The authors reported that while the estimated risk of childhood leukemia initially increased during the earlier period, a statistically non-significant decline in estimated risk has been observed from the mid-1990s until the present (i.e., 2019).

- Talibov et al. (2019) conducted a pooled analysis of 9,723 cases and 17,099 controls from 11 epidemiologic studies to examine the relationship between parental occupational exposure to magnetic fields and childhood leukemia. No statistically significant association was found between either paternal or maternal exposure and leukemia (overall or by subtype). No associations were

observed in the meta-analyses.

- Núñez-Enríquez et al. (2020) assessed the relationship between residential magnetic-field exposure and B-lineage acute lymphoblastic leukemia ("B-ALL") in children under 16 years of age in Mexico. The study included 290 cases and 407 controls matched on age, gender, and health institution; magnetic-field exposure was assessed through the collection of 24-hour measurements in the participants' bedrooms. While the authors reported some statistically significant associations between elevated magnetic-field levels and development of B-ALL, the results were dependent on the chosen cut-points.

- Seomun et al. (2021) performed a meta-analysis based on 33 previously published epidemiologic studies investigating the potential relationship between magnetic-field exposure and childhood cancers, including leukemia and brain cancer. For childhood leukemia, the authors reported statistically significant associations with some, but not all, of the chosen cut-points for magnetic-field exposure. The associations between magnetic-field exposure and childhood brain cancer were statistically non-significant. The study provided limited new insight as most of the studies included in the current meta-analysis, were included in previously conducted meta- and pooled analyses.

- Amoon et al. (2022) conducted a pooled analysis of four studies of residential exposure to magnetic fields and childhood leukemia published following a 2010 pooled analysis by Kheifets et al. (2010). The study by Amoon et al. (2022) compared the exposures of 24,994 children with leukemia to the exposures of 30,769 controls without leukemia in California, Denmark, Italy, and the United Kingdom. Exposure was assessed by measured or calculated magnetic fields at their residences. The exposure of these two groups to magnetic fields were found not to significantly differ. A decrease in the combined effect estimates in epidemiologic studies was observed over time, and the authors concluded that their findings, based on the most recent studies, were "not in line" with previous pooled analyses that reported an increased risk of childhood leukemia.

- Brabant et al. (2022) performed a literature review and meta-analysis of studies of childhood leukemia and magnetic-field exposure. The overall analysis included 21 epidemiologic studies published from 1979 to 2020. The authors reported a statistically significant association, which they noted was "mainly explained by the studies conducted before 2000." The authors reported a statistically significant association between childhood leukemia and measured or calculated magnetic-field exposures > 0.4 μT (4 mG); no statistically significant overall associations were reported between childhood leukemia and lower magnetic-field exposures (< 0.4 μT [4 mG]), residential distance from power lines, or wire coding configuration. An association between childhood leukemia and electric blanket use was also reported. The overall results were likely influenced by the inclusion of a large number of earlier studies; 10 of the 21 studies in the main analysis were published prior to 2000. Studies published prior to 2000 included fewer studies deemed to be of higher study quality, as

determined by the authors, compared to studies published after 2000.

- Nguyen et al. (2022) investigated whether potential pesticide exposure from living in close proximity to commercial plant nurseries confounds the association between magnetic-field exposure and childhood leukemia development reported within the California study population previously analyzed in Crespi et al. (2016) and Kheifets et al. (2017). The authors in Nguyen et al. (2022) noted that while the association between childhood leukemia and magnetic-field exposure was "slightly attenuated" after adjusting for nursery proximity or when restricting to subjects living > 300 meters from nurseries, their results "do not support plant nurseries as an explanation for observed childhood leukemia risks." The authors further noted that close residential proximity to nurseries may be an independent risk factor for childhood leukemia.

- Zagar et al. (2023) examined the relationship between magnetic fields and childhood cancers, including childhood leukemia, in Slovenia. Cancer cases, including 194 cases of leukemia, were identified from the Slovenian Cancer Registry; cases were then classified into one of five calculated magnetic-field exposure levels (ranging from < 0.1 μT to ≥ 0.4 μT) based on residential distance to high voltage (e.g., 110-kV, 220-kV, and 400-kV) power lines. The authors reported that less than 1% of Slovenian children and adolescents lived in an area near high voltage power lines. No differences in the development of childhood cancers, including leukemia, brain tumors, or all cancers combined, were reported across the five exposure categories.

Epidemiologic studies of EMF and neurodegenerative diseases published during the above referenced period include:

- Seelen et al. (2014) conducted a population-based case-control study in the Netherlands and included 1,139 cases diagnosed with amyotrophic lateral sclerosis ("ALS") between 2006 and 2013 and 2,864 frequency-matched controls. The shortest distance from the case and control residences to the nearest high voltage power line (50 to 380 kV) was determined by geocoding. No statistically significant associations between residential proximity to power lines with voltages of either 50 to 150 kV or 220 to 380 kV and ALS were reported.

- Sorahan and Mohammed (2014) analyzed mortality from neurodegenerative diseases in a cohort of approximately 73,000 electricity supply workers in the United Kingdom. Cumulative occupational exposure to magnetic-fields was calculated for each worker in the cohort based on their job titles and job locations. Death certificates were used to identify deaths from neurodegenerative diseases. No associations or trends for any of the included neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, and ALS) were observed with various measures of calculated magnetic fields.

- Koeman et al. (2015, 2017) analyzed data from the Netherlands Cohort Study of approximately 120,000 men and women who were enrolled in the cohort in 1986 and followed up until 2003. Lifetime occupational history, obtained through questionnaires, and job-exposure matrices on ELF magnetic fields and other occupational exposures were used to assign exposure to study subjects. Based on 1,552 deaths from vascular dementia, the researchers reported a statistically not significant association of vascular dementia with estimated exposure to metals, chlorinated solvents, and ELF magnetic fields. However, because no exposure-response relationship for cumulative exposure was observed and because magnetic fields and solvent exposures were highly correlated with exposure to metals, the authors attributed the association with ELF magnetic fields and solvents to confounding by exposure to metals (Koeman et al., 2015). Based on a total of 136 deaths from ALS among the cohort members, the authors reported a statistically significant, approximately two-fold association with ELF magnetic fields in the highest exposure category. This association, however, was no longer statistically significant when adjusted for exposure to insecticides (Koeman et al., 2017).

- Fischer et al. (2015) conducted a population-based case-control study that included 4,709 cases of ALS diagnosed between 1990 and 2010 in Sweden and 23,335 controls matched to cases on year of birth and sex. The study subjects' occupational exposures to ELF magnetic fields and electric shocks were classified based on their occupations, as recorded in the censuses and corresponding job-exposure matrices. Overall, neither magnetic fields nor electric shocks were related to ALS.

- Vergara et al. (2015) conducted a mortality case-control study of occupational exposure to electric shock and magnetic fields and ALS. They analyzed data on 5,886 deaths due to ALS and over 58,000 deaths from other causes in the United States between 1991 and 1999. Information on occupation was obtained from death certificates and job-exposure matrices were used to categorize exposure to electric shocks and magnetic fields. Occupations classified as "electric occupations" were moderately associated with ALS. The authors reported no consistent associations for ALS, however, with either electric shocks or magnetic fields, and they concluded that their findings did not support the hypothesis that exposure to either electric shocks or magnetic fields explained the observed association of ALS with "electric occupations."

- Pedersen et al. (2017) investigated the occurrence of central nervous system diseases among approximately 32,000 male Danish electric power company workers. Cases were identified through the national patient registry between 1982 and 2010. Exposure to ELF magnetic fields was determined for each worker based on their job titles and area of work. A statistically significant increase was reported for dementia in the high exposure category when compared to the general population, but no exposure-response pattern was identified, and no similar increase was reported in the internal comparisons among the workers. No other statistically significant increases among workers

were reported for the incidence of Alzheimer's disease, Parkinson's disease, motor neuron disease, multiple sclerosis, or epilepsy, when compared to the general population, or when incidence among workers was analyzed across estimated exposure levels.

- Vinceti et al. (2017) examined the association between ALS and calculated magnetic-field levels from high voltage power lines in Italy. The authors included 703 ALS cases and 2,737 controls; exposure was assessed based on residential proximity to high voltage power lines. No statistically significant associations were reported and no exposure-response trend was observed. Similar results were reported in subgroup analyses by age, calendar period of disease diagnosis, and study area.

- Checkoway et al. (2018) investigated the association between Parkinsonism[30] 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

[30] 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).

occupational exposure to magnetic fields and Alzheimer's disease. The authors reported a moderate, statistically significant overall association; however, they noted substantial heterogeneity among studies and evidence for publication bias.

- Röösli and Jalilian (2018) performed a meta-analysis using data from five epidemiologic studies examining residential exposure to magnetic fields and ALS. A statistically non-significant negative association was reported between ALS and the highest exposed group, where exposure was defined based on distance from power lines or calculated magnetic-field level.

- Gervasi et al. (2019) assessed the relationship between residential distance to overhead power lines in Italy and risk of Alzheimer's dementia and Parkinson's disease. The authors included 9,835 cases of Alzheimer's dementia and 6,810 cases of Parkinson's disease; controls were matched by sex, year of birth, and municipality of residence. A weak, statistically non-significant association was observed between residences within 50 meters of overhead power lines and both Alzheimer's dementia and Parkinson's disease, compared to distances of over 600 meters.

- Peters et al. (2019) examined the relationship between ALS and occupational exposure to both magnetic fields and electric shock in a pooled study of data from three European countries. The study included 1,323 ALS cases and 2,704 controls matched for sex, age, and geographic location; exposure was assessed based on occupational title and defined as low (background), medium, or high. Statistically significant associations were observed between ALS and ever having been exposed above background levels to either magnetic fields or electric shocks; however, no clear exposure-response trends were observed with exposure duration or cumulative exposure. The authors also noted significant heterogeneity in risk by study location.

- Filippini et al. (2020) investigated the associations between ALS and several environmental and occupational exposures, including electromagnetic fields, within a case-control study in Italy. The study included 95 cases and 135 controls matched on age, gender, and residential province; exposure to electromagnetic fields was assessed using the participants' responses to questions related to occupational use of electric and electronic equipment, occupational EMF exposure, and residential distance to overhead power lines. The authors reported a statistically significant association between ALS and residential proximity to overhead power lines and a statistically non-significant association between ALS and occupational exposure to EMF; occupational use of electric and electronic equipment was associated with a statistically non-significant decrease in ALS development.

- Huang et al. (2020) conducted a meta-analysis of 43 epidemiologic studies examining potential occupational risk factors for dementia or mild cognitive impairment. The authors included five cohort studies and seven case-control

studies related to magnetic-field exposure. For both study types, the authors reported positive associations between dementia and work-related magnetic-field exposures. The paper, however, provided no information on the occupations held by the study participants, their magnetic-field exposure levels, or how magnetic-field levels were assessed; therefore, the results are difficult to interpret. The authors also reported a high level of heterogeneity among studies. Thus, this analysis adds little, if any, to the overall weight of evidence on a potential association between dementia and magnetic fields.

- Jalilian et al. (2020) conducted a meta-analysis of ALS and occupational exposure to both magnetic fields and electric shocks within 27 studies from Europe, the United States, and New Zealand. A weak, statistically significant association was reported between magnetic-field exposure and ALS; however, the authors noted evidence of study heterogeneity and publication bias. No association was observed between ALS and electric shocks.

- Chen et al. (2021) conducted a case-control study to examine the association between occupational exposure to electric shocks, magnetic fields, and motor neuron disease ("MND") in New Zealand. The study included 319 cases with a MND diagnosis (including ALS) and 604 controls, matched on age and gender; exposure was assessed using the participants' occupational history questionnaire responses and previously developed job-exposure matrices for electric shocks and magnetic fields. The authors reported no associations between MND and exposure to magnetic fields; positive associations were reported between MND and working at a job with the potential for electric shock exposure.

- Grebeneva et al. (2021) evaluated disease rates among electric power company workers in the Republic of Kazakhstan. The authors included three groups of "exposed" workers who "were in contact with equipment generating [industrial frequency EMF]" (a total of 161 workers), as well as 114 controls "who were not associated with exposure to electromagnetic fields." Disease rates were assessed "based on analyzing the sick leaves of employees" from 2010 to 2014 and expressed as "incidence rate per 100 employees." The authors reported a higher "incidence rate" of "diseases of the nervous system" in two of the exposed categories compared to the non-exposed group. No meaningful conclusions from the study could be drawn, however, because no specific diagnoses within "*diseases of the nervous system*" were identified in the paper and no clear description was provided on how the authors defined and calculated "incidence rate" for the evaluated conditions. In addition, no measured or calculated magnetic-field levels were presented by the authors.

- Filippini et al. (2021) conducted a meta-analysis to assess the dose-response relationship between residential exposure to magnetic fields and ALS. The authors identified six ALS epidemiologic studies, published between 2009 and 2020, that assessed exposure to residential magnetic fields by either distance from overhead power lines or magnetic-field modeling. They reported a

decrease in risk of ALS in the highest exposure categories for both distance-based and modeling-based exposure estimates. The authors also reported that their dose-response analyses "showed little association between distance from power lines and ALS"; the data were too sparse to conduct a dose-response analysis for modeled magnetic-field estimates. The authors noted that their study was limited by small sample size, "imprecise" exposure categories, the potential for residual confounding, and by "some publication bias."

- Jalilian et al. (2021) conducted a meta-analysis of occupational exposure to ELF magnetic fields and electric shocks and development of ALS. The authors included 27 studies from Europe, the United States, and New Zealand that were published between 1983 and 2019. A weak, statistically significant association was reported between magnetic-field exposure and ALS, and no association was observed between electric shocks and ALS. Indications of publication bias and "moderate to high" heterogeneity were identified for the studies of magnetic-field exposure and ALS, and the authors noted that "the results should be interpreted with caution."

- Sorahan and Nichols (2022) investigated magnetic-field exposures and mortality from MND in a large cohort of employees of the former Central Electricity Generating Board of England and Wales. The study included nearly 38,000 employees first hired between 1942 and 1982 and still employed in 1987. Estimates of exposure magnitude, frequency, and duration were calculated using data from the power stations and the employees' job histories, and were described in detail in a previous publication (Renew et al., 2003). Mortality from MND in the total cohort was observed to be similar to national rates. No statistically significant dose-response trends were observed with lifetime, recent, or distant magnetic-field exposure; statistically significant associations were observed for some categories of recent exposure, but not for the highest exposure category.

- Vasta et al. (2023) examined the relationship between residential distance to power lines and ALS development in a cohort study of 1,098 participants in Italy. The authors reported no differences in the age of ALS onset or ALS progression rate between low-exposed and high-exposed participants based on residential distance to power lines at the time of the participants' diagnosis. Similarly, no differences were observed when exposure was based on residential distance to repeater antennas.

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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 overhead Proposed Route (Route 2) and overhead Alternative Route 1 and Alternative Route 3 for the proposed Germanna Lines is provided in Attachment V.A. A written description of the Proposed and Alternative Routes is as follows:

Proposed Route (Route 2)

The Proposed Route (Route 2) of the Germanna Lines is approximately 1.8 miles in length. Beginning at the cut-in location at Structure #2199/102, the route travels approximately 0.3 mile southwest, crosses Batna Road, then turns east for approximately 1.5 miles before turning north for another 0.1 mile, terminating at the proposed Germanna Substation.

The Proposed Route of the Germanna Lines will be constructed on new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles. For the Proposed Route, the minimum structure height is 105 feet, the maximum structure height is 125 feet, and the average structure height is 113 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

Alternative Route 1

Alternative Route 1 of the Germanna Lines is approximately 2.4 miles in length. Beginning at the cut-in location at Structure #2199/76, the route travels approximately 0.5 mile southeast, then turns south for 1.4 miles. The route then turns west for 0.1 mile before turning south for another 0.4 mile, terminating at the proposed Germanna Substation.

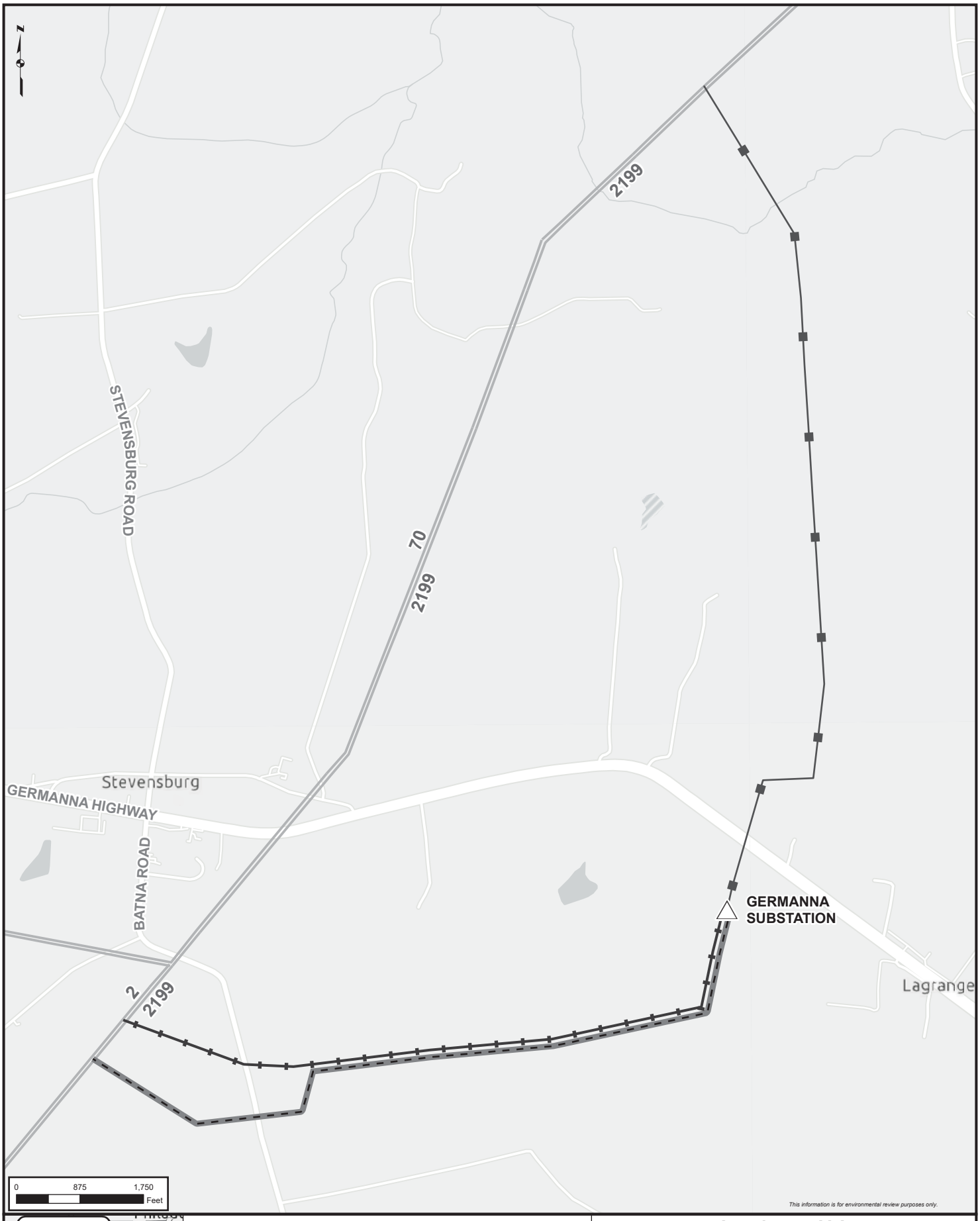
Alternative Route 1 of the Germanna Lines will be constructed on new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles. For Alternative Route 1, the minimum structure height is 105 feet, the maximum structure height is 125 feet, and the average structure height is 117 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.

Alternative Route 3

Alternative Route 3 of the Germanna Lines is approximately 2.0 miles in length. Beginning at the cut-in location at Structure #2199/103, the route travels approximately 0.3 mile southwest, turns east for approximately 0.2 mile, crossing

Batna Road, then turns north for 0.1 mile before turning east for 1.0 mile, then turns north for another 0.1 mile, terminating at the proposed Germanna Substation.

Alternative Route 3 of the Germanna Lines will be constructed on new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles. For Alternative Route 3, the minimum structure height is 105 feet, the maximum structure height is 125 feet, and the average structure height is 112 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.



Attachment V.A
Notice Map
230 kV Germanna Lines and
Germanna Substation Project
Culpeper County, Virginia

ERM

Dominion Energy

MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\11\SCC_DOM_GERM_SCC_Figures_Update.aprx | REVISED: 11/10/2023 | SCALE: 1:21,000

DRAWN BY: MPLS GIS

V. NOTICE

B. List Applicant offices where members of the public may inspect the application. If applicable, provide a link to website(s) where the application may be found.

Response: Shortly after filing, the Application will be made available electronically for public inspection at: www.dominionenergy.com/germanna.

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
Office of Environmental Impact Review
Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218

Ms. S. Rene Hypes
Virginia Department of Conservation and Recreation
Environmental Review Coordinator, Natural Heritage Program
600 East Main Street, Suite 1400
Richmond, Virginia 23219

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

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

Ms. Amy M. Ewing
Virginia Department of Wildlife Resources
P.O. Box 90778
Henrico, Virginia 23228

Mr. Keith Tignor
Endangered Plant and Insect Species Program
Virginia Department of Agriculture and Consumer Affairs
102 Governor Street
Richmond, Virginia 23219

Mr. Terry Lasher
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, Virginia 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

Mike Helvey
Obstruction Evaluation Group Manager
Federal Aviation Administration, FAA Eastern Regional Office
800 Independence Ave, SW, Room 400 East
Washington, DC 20591

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 2321

Mr. Sean Nelson, P.E.
Culpeper District Engineer
Virginia Department of Transportation
1601 Orange Road
Culpeper, Virginia 22701

Mr. D. Mark Nesbit, P.E.
Warrenton Residence Engineer, Culpeper District
Virginia Department of Transportation
475 E. Shirley Ave.
Warrenton, Virginia 20186

John C. Egertson
Culpeper County Administrator
302 North Main Street
Culpeper, Virginia 22701

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, letters dated October 18, 2023 and November 13, 2023, were delivered to Mr. John Egertson, Culpeper County Administrator, where the Project is located. The letters stated the Company's intention to file this Application and invited the County to consult with the Company about the Project. These letters are included as Attachment V.D.1.

Dominion Energy Virginia
5000 Dominion Blvd; 3rd Floor
Glen Allen, VA 23060
DominionEnergy.com

October 18, 2023

Mr. John Egertson
Culpeper County Administrator
302 North Main Street
Culpeper, VA 22701

Reference: Dominion Energy Virginia's Proposed 230 kV Germanna Lines and Germanna Substation in Culpeper County, Virginia
Notice Pursuant to Va. Code § 15.2-2202 E

Dear Mr. Egertson,

Dominion Energy Virginia (the "Company") is proposing to construct a new overhead 230 kV double circuit transmission line (the "Germanna Lines") on new right-of-way by cutting the Company's existing 230 kV overhead Line #2199 and extending the lines to the Company's proposed new 230 kV substation (the "Germanna Substation"), in Culpeper County, Virginia (collectively, the "Project").

The Project is necessary to assure that Dominion Energy Virginia can provide service requested by a data center customer in Culpeper County, Virginia, maintain reliable service for the overall growth in the load area surrounding the Company's existing Culpeper Substation, and comply with mandatory North American Electric Reliability Corporation Reliability Standards.

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"). At this time, in advance of the 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.

Enclosed is a Project Overview Map depicting the proposed and alternative routes of the Germanna Lines, as well as the general Project location. All final materials, including maps, will be available in the Company's application filing to the Commission.

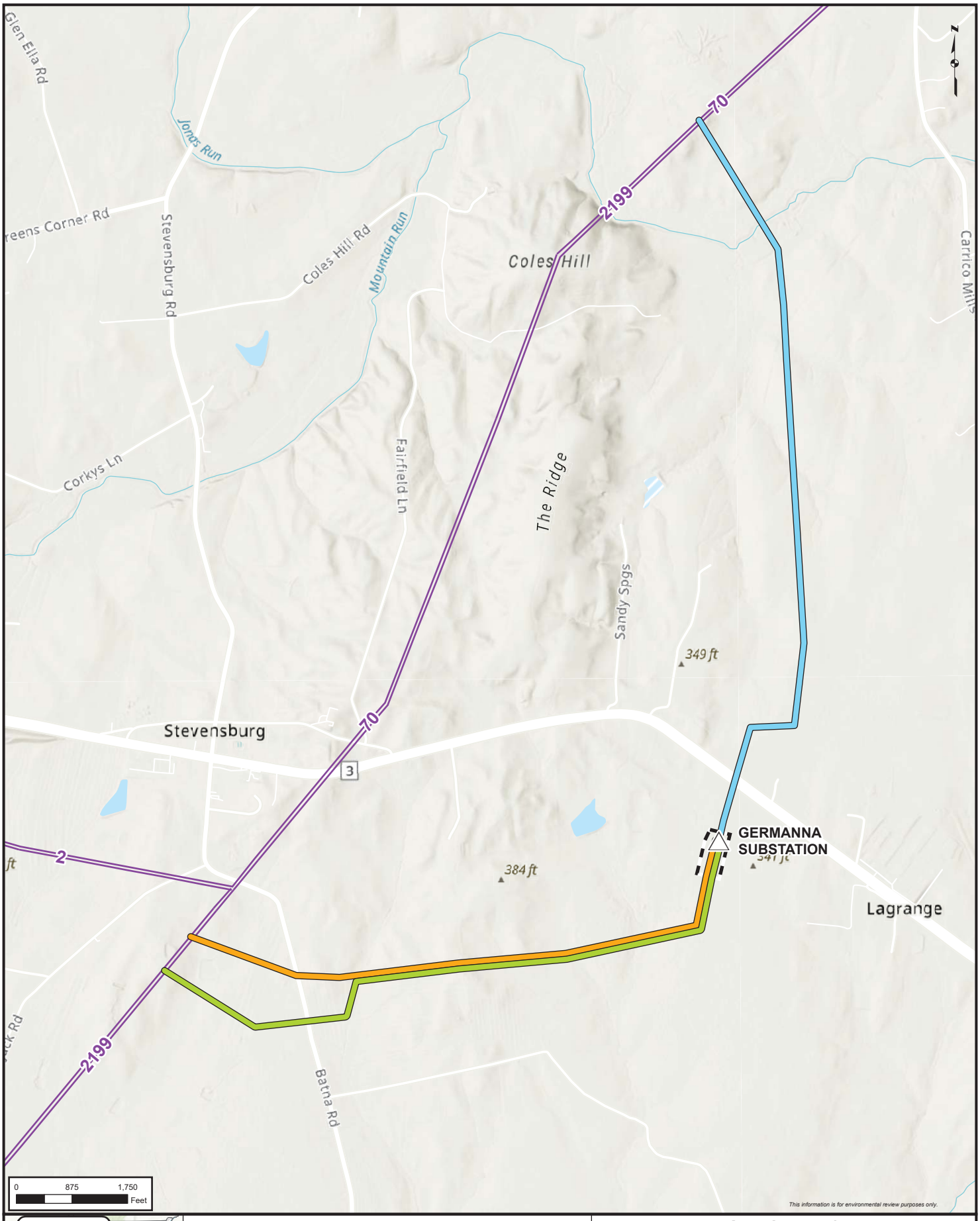
If you would like to receive a GIS shapefile of the transmission line routes to assist in the project review or if there are any questions, please do not hesitate to contact Greg Baka at (804) 201-3053 or greg.r.baka@dominionenergy.com. We appreciate your assistance with this project review and look forward to any additional information you may have to offer.

Sincerely,

Greg Baka

Greg Baka
Local Permitting Consultant

Attachment: Project Map


Glen Ella Rd
Jones Run
reens Corner Rd
Stevensburg Rd
Coles Hill Rd
Mountain Run
Coles Hill
Carrico Mills
70
2199
Corkys Ln
Fairfield Ln
The Ridge
Sandy Spgs
349 ft
Stevensburg
3
70
GERMANNA
SUBSTATION
2
384 ft
Lagrange
2199
Batna Rd
0
875
1,750
Feet
This information is for environmental review purposes only.
Project Location
Virginia
Proposed Substation
Proposed Germanna Substation Boundary
Existing Dominion Transmission Line
Proposed Route
Alternative Route 1
Alternative Route 2
ERM
Attachment 1
Overview Map
Germanna 230 kV Transmission Lines and Substation Project
Culpeper County, Virginia
Dominion Energy
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Dominion Energy Virginia
5000 Dominion Blvd; 3rd Floor
Glen Allen, VA 23060
DominionEnergy.com

November 13, 2023

Mr. John Egertson
Culpeper County Administrator
302 North Main Street
Culpeper, VA 22701

Reference: Dominion Energy Virginia's Proposed 230 kV Germanna Lines and Germanna Substation in Culpeper County, Virginia
Notice Pursuant to Va. Code § 15.2-2202 E

Dear Mr. Egertson,

By letter dated October 18, 2023, Dominion Energy Virginia (the "Company") informed you of its proposal to construct a new overhead 230 kV double circuit transmission line (the "Germanna Lines") on new right-of-way by cutting the Company's existing 230 kV overhead Line #2199 and extending the lines to the Company's proposed new 230 kV substation (the "Germanna Substation"), in Culpeper County, Virginia (collectively, the "Project"). The Project is necessary to assure that Dominion Energy Virginia can provide service requested by a data center customer in Culpeper County, Virginia, maintain reliable service for the overall growth in the load area surrounding the Company's existing Culpeper Substation, and comply with mandatory North American Electric Reliability Corporation Reliability Standards.

As noted in the October 18th letter, the Company is in the process of preparing an application for a Certificate of Public Convenience and Necessity from the State Corporation Commission of Virginia (the "Commission"). Enclosed with that letter was a Project Overview Map depicting the proposed and alternative routes of the Germanna Lines, as well as the general Project location. Note that the attached Project Overview Map has been updated to remove the designation of "Proposed Route." There are no other changes to the map that was provided with the October 18th letter. All final materials, including maps, will be available in the Company's application filing to the Commission.

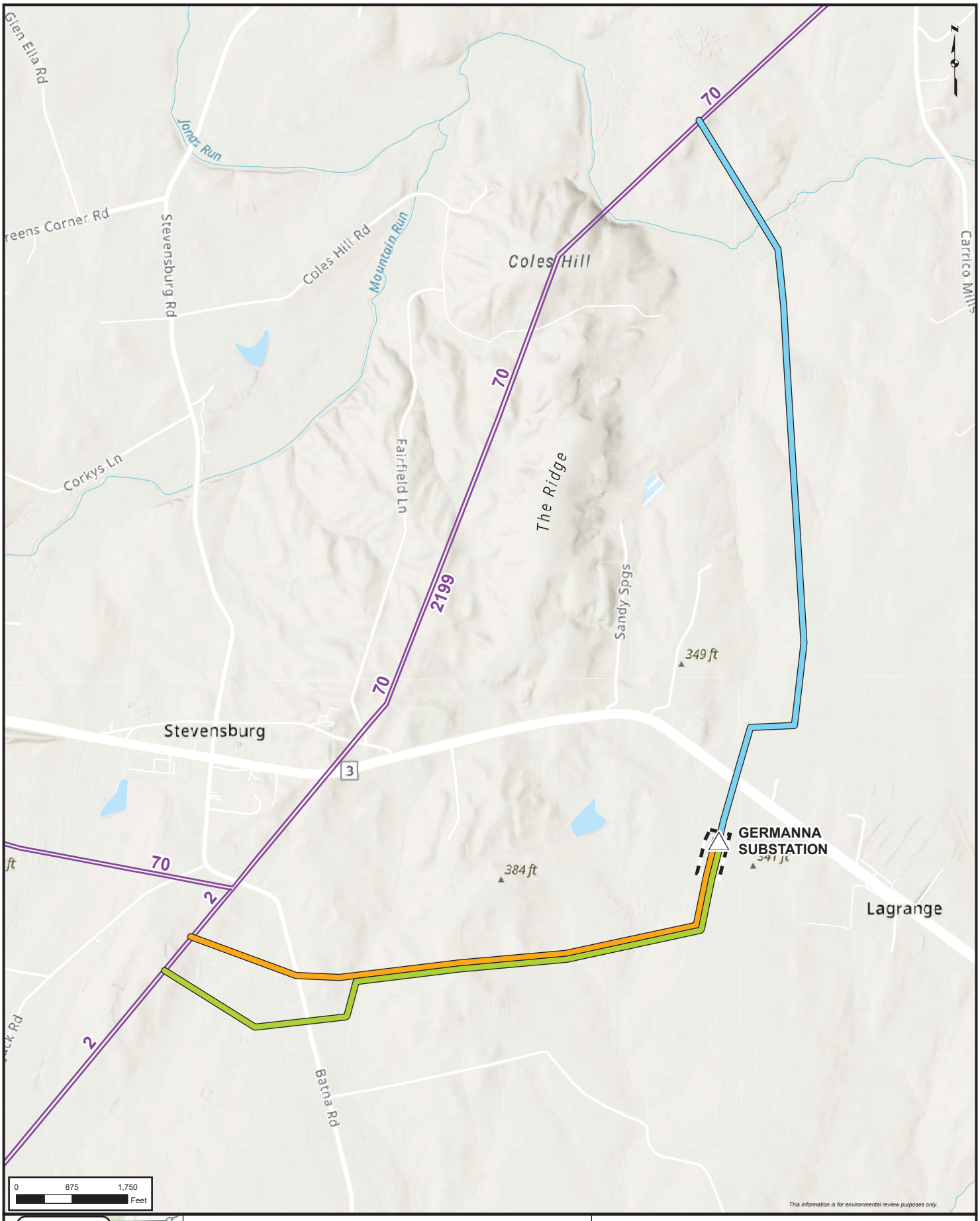
If there are any questions, please do not hesitate to contact Greg Baka at (804) 201-3053 or greg.r.baka@dominionenergy.com. We appreciate your assistance with this project review and look forward to any additional information you may have to offer.

Sincerely,

Greg Baka

Greg Baka
Local Permitting Consultant

Attachment: Updated Project Map


Glen Ella Rd
Jones Run
reens Corner Rd
Stevensburg Rd
Coles Hill Rd
Mountain Run
Coles Hill
Carrico Mills
70
70
Fairfield Ln
The Ridge
2199
Corkys Ln
Sandy Spgs
349 ft
70
Stevensburg
3
GERMANNA
SUBSTATION
70
2
384 ft
Lagrange
2
Batna Rd
0
875
1,750
Feet
This information is for environmental review purposes only.
Project Location
Virginia
Proposed Substation
Proposed Germanna Substation Boundary
Existing Dominion Transmission Line
Route 1
Route 2
Route 3
ERM
Project Overview
Germanna 230 kV Transmission Line and Substation Project
Culpeper County, Virginia
Dominion Energy
MPLS M:\US\Projects\D-F\Dominion\Germanna\ArcGIS\2023\10\Agency_Letter_DOM_GERM_Agency_Letter.aprx | REVISED: 10/10/2023 | SCALE: 1: when printed at 11x17
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COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2023-00206
	)	
For approval and certification of electric transmission facilities: 230 kV Germanna Lines and Germanna Substation	)	

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

Zhangxin Zhou

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

Nerlyn Echevarría

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

Jared B. McPherson

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

Gregory R. Baka

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

Jacob M. Rosenberg

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Zhangxin Zhou

Title: Engineer III – Electric Transmission Planning

Summary:

Company Witness Zhangxin Zhou 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.G: This section provides a system map for the affected area.
- Section I.J: This section provides information about the project if approved by the RTO.
- Section I.K: This section, when applicable, provides outage history and maintenance history for existing transmission lines if the proposed project is a rebuild and is due in part to reliability issues.
- Section I.M: This section, when applicable, contains information for transmission lines interconnecting a non-utility generator.
- Section II.A.3: This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.
- Section II.A.10: This section provides details of the construction plans for the proposed project, including requested line outage schedules.

Additionally, Company Witness Zhou co-sponsors the following sections of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Nerlyn Echevarría, Logan J. Manzuk, Jared B. McPherson, Gregory R. Baka, and Jacob M. Rosenberg): This section details the primary justifications for the proposed project.
- Section I.B (co-sponsored with Company Witness Nerlyn Echevarría,): This section details the engineering justifications for the proposed project.
- Section I.C (co-sponsored with Company Witness Nerlyn Echevarría): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.
- Section I.D (co-sponsored with Company Witness Nerlyn Echevarría): This section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E (co-sponsored with Company Witness Nerlyn Echevarría): This section explains feasible project alternatives, when applicable.
- Section I.H (co-sponsored with Company Witnesses Nerlyn Echevarría and Gregory R. Baka): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section I.L (co-sponsored with Company Witness Logan J. Manzuk): This section, when applicable, provides details on the deterioration of structures and associated equipment.
- Section I.N (co-sponsored with Company Witness Nerlyn Echevarría): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

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

DIRECT TESTIMONY
OF
ZHANGXIN ZHOU
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00206

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 Zhangxin Zhou, and I am an Engineer III in the Electric Transmission Planning Department for the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for planning the Company's electric transmission system for voltages of 69 kilovolt ("kV") through 500 kV.

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

A. In order to provide service requested by a data center customer, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation Reliability Standards, Dominion Energy Virginia proposes in Culpeper County, Virginia, to:

- Construct a new overhead 230 kV double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199 at Structure #2199/102, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles

utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;

- Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and
- Perform relay resets at the Company's existing Gordonsville and Remington Substations.

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

The purpose of my testimony is to describe the Company's electric transmission system and the need for, and benefits of, the proposed Project. I am sponsoring Sections I.G, I.J, I.K, I.M, II.A.3, and II.A.10 of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Nerlyn Echevarría, Logan J. Manzuk, Jared B. McPherson, Gregory R. Baka, and Jacob M. Rosenberg; Sections I.B, I.C, I.D, I.E, and I.N with Company Witness Nerlyn Echevarría; Section I.H with Company Witnesses Nerlyn Echevarría and Gregory R. Baka; and Section I.L with Company Witness Logan J. Manzuk.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF ZHANGXIN ZHOU

Zhangxin Zhou received a Bachelor's degree in Electrical Engineering & Automation from Xi'an Jiaotong University and Master of Science degree in Electrical Engineering from Texas A&M University. He received a Ph.D. degree in Electrical Engineering from Texas A&M University in 2022. Dr. Zhou has worked with Electric Power Research Institute and Argonne National Laboratory, and he joined the Company in January 2023.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Nerlyn Echevarría

Title: Engineer III – Distribution Data Center Planning Team

Summary:

Company Witness Nerlyn Echevarría co-sponsors those sections of the Appendix describing the Company's electric distribution system and the need for, and benefits of, the proposed Project, as follows:

- Section I.A (co-sponsored with Company Witnesses Zhangxin Zhou, Logan J. Manzuk, Jared B. McPherson, Gregory R. Baka, and Jacob M. Rosenberg): This section details the primary justifications for the proposed project.

- Section I.B (co-sponsored with Company Witness Zhangxin Zhou): This section details the engineering justifications for the proposed project.

- Section I.C (co-sponsored with Company Witness Zhangxin Zhou): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.

- Section I.D (co-sponsored with Company Witness Zhangxin Zhou): Although not applicable to the proposed project, this section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.

- Section I.E (co-sponsored with Company Witness Zhangxin Zhou): This section explains feasible project alternatives, when applicable.

- Section I.H (co-sponsored with Company Witnesses Zhangxin Zhou and Gregory R. Baka): This section provides the desired in-service date of the proposed project and the estimated construction time.

- Section I.N (co-sponsored with Company Witness Zhangxin Zhou): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

A statement of Ms. Echevarría's background and qualifications is attached to her testimony as Appendix A.

DIRECT TESTIMONY
OF
NERLYN ECHEVARRÍA
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00206

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 Nerlyn Echevarría, and I am an Engineer III in the Company's Distribution Data Center Planning Team. My business address is 600 East Canal Street, Richmond Virginia 23219. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for planning the Company's electric distribution system that serves data centers. My areas of responsibilities are throughout the Company's Virginia service territory.

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

A. In order to provide service requested by a data center customer, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation Reliability Standards, Dominion Energy Virginia proposes in Culpeper County, Virginia, to:

- Construct a new overhead 230 kilovolt ("kV") double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199 at Structure #2199/102, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-

way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;

- Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and

- Perform relay resets at the Company's existing Gordonsville and Remington Substations.

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

The purpose of my testimony is to describe the Company's electric distribution system and the need for, and benefits of, the proposed Project. I co-sponsor the Executive Summary and Section I.A with Company Witnesses Zhangxin Zhou, Logan J. Manzuk, Jared B. McPherson, Gregory R. Baka, and Jacob M. Rosenberg. Additionally, I co-sponsor Sections I.B, I.C, I.D, I.E, and I.N of the Appendix with Company Witness Zhangxin Zhou; and Section I.H with Company Witnesses Zhangxin Zhou and Gregory R. Baka.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF NERLYN ECHEVARRÍA

Nerlyn Echevarría received a Bachelor of Science degree in Electrical Engineering from the University of Puerto Rico in December 2006. She has been employed by the Company since 2007. During this time, Ms. Echevarría has worked on a variety of subjects, including system protection calculations, substation engineering physical and protection design, substation project conceptual and estimates and distribution data center planning.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Logan J. Manzuk

Title: Engineer II—Electric Transmission Line Engineering

Summary:

Company Witness Logan J. Manzuk sponsors those sections of the Appendix providing an overview of the design characteristics of the transmission facilities for the proposed Project, and discussing electric and magnetic field levels, as follows:

- Section I.F: This section, when applicable, describes any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed project.
- Section II.A.5: This section provides drawings of the right-of-way cross section showing typical transmission lines structure placements.
- Sections II.B.1 to II.B.2: These sections provide the line design and operational features of the proposed project, as applicable.
- Section IV: This section provides analysis on the health aspects of electric and magnetic field levels.

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

- Section I.A (co-sponsored with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Jared B. McPherson, Gregory R. Baka, and Jacob M. Rosenberg): This section details the primary justifications for the proposed project.
- Section I.I. (co-sponsored with Company Witness Jared B. McPherson): This section provides the estimated total cost of the proposed project.
- Section I.L (co-sponsored with Company Witness Zhangxin Zhou): This section, when applicable, provides details on the deterioration of structures and associated equipment.
- Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Gregory R. Baka): These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- Section II.B.6 (co-sponsored with Company Witnesses Gregory R. Baka and Jacob M. Rosenberg): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section V.A (co-sponsored with Company Witnesses Gregory R. Baka and Jacob M. Rosenberg): This section provides the proposed route description and structure heights for notice purposes.

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
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00206

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 Logan J. Manzuk, and I am an Engineer II in the Electric Transmission Line Engineering Department of the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for the estimating, conceptual, and final design of high voltage transmission line projects from 69 kilovolt ("kV") to 500 kV.

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

A. In order to provide service requested by a data center customer, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation Reliability Standards, Dominion Energy Virginia proposes in Culpeper County, Virginia, to:

- Construct a new overhead 230 kV double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199 at Structure #2199/102, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles

utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;

- Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and
- Perform relay resets at the Company's existing Gordonsville and Remington Substations.

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

The purpose of my testimony is to describe the design characteristics of the transmission facilities for the proposed Project and to discuss electric and magnetic field levels. I am sponsoring Sections I.F, II.A.5, II.B.1, II.B.2, and IV of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Jared B. McPherson, Gregory R. Baka, and Jacob M. Rosenberg; Section I.I with Company Witness Jared B. McPherson; Section I.L with Company Witness Zhangxin Zhou; Sections II.B.3 to II.B.5 with Company Witness Gregory R. Baka; and Sections II.B.6 and V.A with Company Witnesses Gregory R. Baka and Jacob M. Rosenberg.

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

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.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Jared B. McPherson

Title: Engineer III – Substation Engineering

Summary:

Company Witness Jared B. McPherson sponsors or co-sponsors the following sections of the Appendix describing the substation work to be performed for the proposed Project as follows:

- Section I.A (co-sponsored with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Gregory R. Baka, and Jacob M. Rosenberg): This section details the primary justifications for the proposed project.

- Section I.I (co-sponsored with Company Witness Logan J. 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 associated with the proposed project.

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

DIRECT TESTIMONY
OF
JARED B. MCPHERSON
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00206

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 Jared B. McPherson, and I am an Engineer III in the Substation Engineering section of the Electric Transmission group of the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

Q. What are your responsibilities as a Consulting Engineer?

A. I am responsible for evaluation of the substation project requirements, feasibility studies, conceptual physical design, scope development, preliminary engineering, and cost estimating for high voltage transmission and distribution substations.

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

A. In order to provide service requested by a data center customer, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation Reliability Standards, Dominion Energy Virginia proposes in Culpeper County, Virginia, to:

- Construct a new overhead 230 kilovolt ("kV") double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199 at Structure #2199/102, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-

way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;

- Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and

- Perform relay resets at the Company's existing Gordonsville and Remington Substations.

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

The purpose of my testimony is to describe the work to be performed as part of the Project. As it pertains to station work, I sponsor Section II.C of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Gregory R. Baka, and Jacob M. Rosenberg; and Section I.I of the Appendix with Company Witness Logan J. Manzuk.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF JARED B. MCPHERSON

Jared B. McPherson received a Bachelor of Science degree in Electrical Engineering from Western Carolina University in 2013. Mr. McPherson's responsibilities include developing substation single line diagrams, designing substation physical layouts, creating detailed physical drawings and populating bill of materials, confirming the design satisfies current Substation Standards, and supporting physical construction crews during installation of designs. Mr. McPherson joined the Dominion Energy Virginia Substation Engineering Standards department in 2014 as an Engineer I and was later promoted to Engineer II. Mr. McPherson then joined the Substation Engineering Physical Design team in 2019 and was promoted to his current position, Engineer III, in 2021.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Gregory R. Baka

Title: Electric Transmission Local Permitting Consultant

Summary:

Company Witness Gregory R. Baka will sponsor those sections of the Appendix providing an overview of the design of the route for the proposed Project, and related permitting, as follows:

- Section II.A.12: This section identifies the counties and localities through which the proposed project will pass and provides General Highway Maps for these localities.
- Sections V.B–D: These sections provide information related to public notice of the proposed project.

Additionally, Gregory R. Baka co-sponsors the following portion of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Jared B. McPherson, and Jacob M. Rosenberg): This section details the primary justifications for the proposed project.
- Section I.H (co-sponsored with Company Witnesses Zhangxin Zhou and Nerlyn Echevarría): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section II.A.1 (co-sponsored with Company Witness Jacob M. Rosenberg): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Jacob M. Rosenberg): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Jacob M. Rosenberg): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Jacob M. Rosenberg): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Jacob M. Rosenberg): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Jacob M. Rosenberg): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Logan J. Manzuk): These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- Section II.B.6 (co-sponsored with Company Witnesses Logan J. Manzuk and Jacob M. Rosenberg): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Jacob M. Rosenberg): This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V.A (co-sponsored with Company Witnesses Logan J. Manzuk and Jacob M. Rosenberg): This section provides the proposed route description and structure heights for notice purposes.

Finally, Mr. Baka co-sponsors the DEQ Supplement filed with the Application with Company Witness Jacob M. Rosenberg. A statement of Mr. Baka's background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY
OF
GREGORY R. BAKA
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00206

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 Gregory R. Baka, and I am an Electric Transmission Local Permitting Consultant for the Company. My business address is 5000 Dominion Boulevard, 3rd Floor, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for identifying appropriate routes for transmission lines and obtaining necessary federal, state, and local approvals and environmental permits for those facilities. In this position, I work closely with government officials, permitting agencies, property owners, and other interested parties, as well as with other Company personnel, to develop facilities needed by the public so as to reasonably minimize environmental and other impacts on the public in a reliable, cost-effective manner.

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

A. In order to provide service requested by a data center customer, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation Reliability Standards, Dominion Energy Virginia proposes in Culpeper County, Virginia, to:

- Construct a new overhead 230 kilovolt ("kV") double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199 at Structure #2199/102, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;

- Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and

- Perform relay resets at the Company's existing Gordonsville and Remington Substations.

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

The purpose of my testimony is to provide an overview of the route and permitting for the proposed Project. I sponsor Sections II.A.12 and V.B to V.D of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Jared B. McPherson and Jacob M. Rosenberg; Section I.H with Company Witnesses Zhangxin Zhou and Nerlyn Echevarría; Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.9, II.A.11, and III with Company Witness Jacob M. Rosenberg; Sections II.B.3 to II.B.5 with Company Witness Logan J. Manzuk; and Sections II.B.6 and V.A with Company Witnesses Logan J. Manzuk and Jacob M. Rosenberg. Finally, I co-sponsor the DEQ Supplement with Company Witness Jacob M. Rosenberg.

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

A. Yes. In accordance with Va. Code § 15.2-2202 E, letters dated October 18, 2023 and

November 13, 2023, were delivered to Mr. John Egertson, Culpeper County Administrator, where the Project is located. The letters stated the Company's intention to file this Application and invited the County to consult with the Company about the Project. These letters are included as Attachment V.D.1 to the Appendix.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF GREGORY R. BAKA

Mr. Greg R. Baka graduated from the University of Richmond in 1989 with a Bachelor of Arts degree in Urban Studies and Political Science. From 1990 to 1992, he worked as a Zoning Analyst for the City of Gaithersburg, Maryland. From 1992 to 1995, he worked as the Zoning Administrator for King William County, Virginia. From 1995 to 1998, he served Hanover County, Virginia as a Planner and was promoted to Senior Comprehensive Planner. He returned to King William County from 1998 to 2000 and served as their Director of Planning and Community Development. He then worked at Resource International, Ltd. as a Municipal Planner between 2001 and 2003. From 2004 to 2011, Mr. Baka owned and operated Viewshed Consulting, LLC, serving clients as a Land Planning Consultant. From 2011 to 2013, he worked as the Director of Economic Development for Cumberland County, Virginia. He joined the Company's Transmission Right-of-Way group in 2013 as Senior Siting & Permitting Specialist, was promoted to Supervisor of Siting, Permitting, and Real Estate in 2015, and became a Local Permitting Consultant, his current position, in 2019. Mr. Baka has served on several land planning and development-related local boards and commissions.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Jacob M. Rosenberg

Title: Principal Consultant, Environmental Resource Management

Summary:

Company Witness Jacob M. Rosenberg sponsors the Environmental Routing Study provided as part of the Company's Application.

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

- Section I.A (co-sponsored with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Jared B. McPherson, and Gregory R. Baka): This section details the primary justifications for the proposed project.
- Section II.A.1 (co-sponsored with Company Witness Gregory R. Baka): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Gregory R. Baka): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Gregory R. Baka): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Gregory R. Baka): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Gregory R. Baka): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Gregory R. Baka): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.B.6 (co-sponsored with Company Witnesses Logan J. Manzuk and Gregory R. Baka): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Gregory R. Baka): This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V.A (co-sponsored with Company Witnesses Logan J. Manzuk and Gregory R. Baka): This section provides the proposed route description and structure heights for notice purposes.

Finally, Mr. Rosenberg co-sponsors the DEQ Supplement filed with this Application with Company Witness Gregory R. Baka.

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

DIRECT TESTIMONY
OF
JACOB M. ROSENBERG
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00206

Q. Please state your name, position and place of employment and business address.

A. My name is Jacob M. Rosenberg. I am employed as a Principal Consultant with Environmental Resources Management ("ERM"). My business address is 222 South 9th Street, Suite 2900, Minneapolis, Minnesota 55402. A statement of my qualifications and background is provided as Appendix A.

Q. What professional experience does ERM have with the routing of linear energy transportation facilities?

A. ERM has extensive experience in the routing, feasibility assessments, and permitting of energy infrastructure projects. It has assisted its clients in the identification, evaluation and development of linear energy facilities for the past 30 years. During this time, it has developed a consistent approach for linear facility routing and route selection based on the identification, mapping and comparative evaluation of routing constraints and opportunities within defined study areas. ERM uses data-intensive Geographic Information System spatial and dimensional analysis and the most current and refined data layers and aerial photography resources available for the identification, evaluation and selection of transmission line routes.

In addition to Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), its clients include some of the largest energy companies in the United

States, Canada, and the world, including ExxonMobil, TC Energy, Shell, NextEra Energy, Phillips 66, Kinder Morgan, British Petroleum, Enbridge Energy, and others. ERM also routinely assists the staff of the Federal Energy Regulatory Commission, United States Army Corps of Engineers, and the U.S. Forest Service in the identification and/or evaluation of linear energy routes to support federal National Environmental Policy Act evaluations. ERM works on both small and large energy projects and has assisted in or conducted the routing and route evaluation of some of the largest electric transmission line and pipeline facilities in North America.

In Virginia, ERM served as routing consultant to Dominion Energy Virginia for many projects over the last 15 years, including:

- Cannon Branch-Cloverhill 230 kilovolt ("kV") transmission line project in the City of Manassas and Prince William County (Case No. PUE-2011-00011);
- Dahlgren 230 kV double circuit transmission line project in King George County (Case No. PUE-2011-00113);
- Surry-Skiffes Creek-Whealton 500 and 230 kV transmission lines (Case No. PUE-2012-00029);
- Remington CT-Warrenton 230 kV double circuit transmission line (Case No. PUE-2014-00025);
- Haymarket 230 kV Line and Substation Project (Case No. PUE-2015-00107);
- Remington-Gordonsville Electric Transmission Project (Case No. PUE-2015-00117);
- Norris Bridge (Case No. PUE-2016-00021);
- Idylwood-Tysons 230 kV single circuit underground transmission line, Tysons Substation rebuild, and related transmission facilities (Case No. PUR-2017-00143);
- Lockridge 230 kV Line Loop and Substation (Case No. PUR-2019-00215);
- Coastal Virginia Offshore Wind Commercial Project (Case No. PUR-2021-00142);
- DTC 230 kV Line Loop and DTC Substation (Case No. PUR-2021-00280);
- Aviator 230 kV Line Loop and Substation (Case. No. PUR-2022-00012);
- Nimbus Substation and 230 Farmwell-Nimbus Transmission Line (Case No. PUR-2022-00027);

- 500-230 kV Wishing Star Substation, 500 kV and 230 kV Mars-Wishing Star Lines, 500-230 kV Mars Substation, and Mars 230 kV Loop (Case No. PUR-2022-00183);
- 500-230 kV Unity Switching Station, 230 kV Tunstall-Unity Lines #2259 and #2262, 230-36.5 kV Tunstall, Evans Creek, Raines Substations, and 230 kV Substation Interconnect Lines (Case No. PUR-2022-00167);
- Butler Farm to Clover 230 kV Line and Butler Farm to Finneywood 230 kV Line (Case No. PUR-2022-00175);
- 230 kV Altair Loop and Altair Switching Station (Case No. PUR-2022-00197); and
- 230 kV Finneywood-Jeffress Lines and Jeffress Switching Station Conversion (Case No. PUR-2023-00088).

Most recently, ERM served as the routing consultant for the Company's 230 kV White Oak Lines and White Oak Substation Expansion, in Case No. PUR-2023-00110.

ERM's role as routing consultant for each of these transmission line projects included preparation of an Environmental Routing Study for the project and submission of testimony sponsoring it.

Q. What were you asked to do in connection with this case?

A. In order to provide service requested by a data center customer, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation Reliability Standards, Dominion Energy Virginia proposes in Culpeper County, Virginia, to:

- Construct a new overhead 230 kV double circuit transmission line by cutting the Company's 230 kV Cirrus-Gordonsville Line #2199 at Structure #2199/102, resulting in 230 kV Cirrus-Germanna Line #2331 and 230 kV Germanna-Gordonsville Line #2199 (the "Germanna Lines"). From the cut-in location, the Germanna Lines will extend approximately 1.8 miles to the proposed Germanna Substation. While the proposed cut-in location is in existing right-of-way, the proposed Germanna Lines will be constructed on entirely new 100-foot-wide right-of-way primarily supported by double circuit weathering steel monopoles utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA;

- Construct a new 230-34.5 kV substation in Culpeper County, Virginia ("Germanna Substation") on property to be obtained by the Company; and
- Perform relay resets at the Company's existing Gordonsville and Remington Substations.

The Germanna Lines, Germanna Substation, and other related substation work are collectively referred to as the "Project."

ERM was engaged on behalf of the Company to assist it in the identification and evaluation of route alternatives to resolve the identified electrical need that would meet the applicable criteria of Virginia law and the Company's operating needs.

The purpose of my testimony is to introduce and sponsor the Environmental Routing Study, which is included as part of the Application filed by the Company in this proceeding. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Zhangxin Zhou, Nerlyn Echevarría, Logan J. Manzuk, Jared B. McPherson, and Gregory R. Baka; Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.9, II.A.11, and III with Company Witness Gregory R. Baka; and Sections II.B.6 and V.A with Company Witnesses Logan J. Manzuk and Gregory R. Baka. Lastly, I co-sponsor the DEQ Supplement with Company Witness Gregory R. Baka.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF JACOB M. ROSENBERG

Jacob M. Rosenberg earned a Bachelor of Arts degree and a Master of Science degree from University of Iowa. He has approximately nine years of experience working in the energy-related consulting field specializing in the siting and regulatory permitting of major linear energy facilities, including both interstate and intrastate electric transmission lines and gas and oil pipelines throughout the United States, as well as seven years of experience working in local government specializing in urban and regional planning and community development. During this time, he was employed for three years with the Routt County Planning Department; three years with the City of Brooklyn Park Community Development Department; and eight years with ERM, a privately-owned consulting company specializing in the siting, licensing and environmental construction compliance of large, multi-state energy transportation facilities.

Mr. Rosenberg's professional experience related to electric transmission line projects includes the direct management of field studies, impact assessments and agency consultations associated with the routing and licensing of multiple transmission line projects in the mid-Atlantic region, including the management and/or supervision of the routing and permitting. Work on these projects included studies to identify and delineate routing constraints and options; identification and evaluation of route alternatives; and the direction of field studies to inventory wetlands, stream crossings, cultural resources and sensitive habitats and land uses. Within the last several years he has assisted with or managed the identification and evaluation of seven 230 kV transmission line projects and three 500/230 kV transmission line projects in the Commonwealth for Virginia Electric and Power Company.

Mr. Rosenberg has previously submitted pre-filed direct testimony to the State Corporation Commission of Virginia.