

Culpeper, Fauquier, and Orange County, Virginia



Overhead renderings are for discussion purposes only. The final design is subject to change pending public, engineering, and regulatory review.





Culpeper, Fauquier, and Orange County, Virginia

Mt. Pony Route 2



Mt. Pony Hybrid Route





This depiction of the route options serves as a representation of the project area and is not intended for detailed engineering and/or regulatory purposes.



Culpeper, Fauquier, and Orange County, Virginia



Existing Conditions





Culpeper, Fauquier, and Orange County, Virginia



Mt. Pony Hybrid Route





Culpeper, Fauquier, and Orange County, Virginia





State Route 3

Culpeper Tech Zone 230kV Electric Transmission Project

Culpeper, Fauquier, and Orange County, Virginia

387







Tech Park Route 2 Tech Park Route 1





This depiction of the route options serves as a representation of the project area and is not intended for detailed engineering and/or regulatory purposes.



Culpeper, Fauquier, and Orange County, Virginia



Existing Conditions



PROPOSED CONDITIONS

389

Culpeper Tech Zone 230kV Electric Transmission Project

Culpeper, Fauquier, and Orange County, Virginia





Tech Park Route 1

Overhead renderings are for discussion purposes only. The final design is subject to change pending public, engineering, and regulatory review.



PROPOSED CONDITIONS

390

Culpeper Tech Zone 230kV Electric Transmission Project

Culpeper, Fauquier, and Orange County, Virginia





Tech Park Route 2&3



Project Overview Map Culpeper Tech Zone 230 kV Electric Transmission Project







Map Index

Culpeper Tech Zone 230 kV Electric Transmission Project



Map Page 1 Culpeper Tech Zone 230 kV Electric Transmission Project



- Approved Future Substation
- \triangle Proposed Substation

Approved Future Transmission Line

Proposed Substation Footprint



Local Lands

(Mt. Pony Route 1) — Mt. Pony Route 2

(Tech Park Route 1) Tech Park Route 2 — Tech Park Route 3

Map Page 2Culpeper Tech Zone 230 kV Electric Transmission Project





Approved Future Substation

Existing Dominion Transmission Line Approved Future Transmission Line

Existing Dominion Right of Way Proposed Right-of-Way VA Outdoors Foundation Easement

Parcel Boundary Mt. Pony Lines

Proposed Route (Mt. Pony Route 1)







Map Page 3Culpeper Tech Zone 230 kV Electric Transmission Project

Existing Dominion Right of Way Proposed Right-of-Way

Parcel Boundary Mt. Pony Lines

Proposed Route (Mt. Pony Route 1)



Map Page 4Culpeper Tech Zone 230 kV Electric Transmission Project





▲ Existing Substation Approved Future Substation \triangle Proposed Substation

Existing Dominion Transmission Line ---- County Boundary

Existing Dominion Right of Way Proposed Right-of-Way

Parcel Boundary Proposed Data Center Building Proposed Substation Footprint

Public Lands

Federal Lands State Lands Local Lands

Mt. Pony Lines

- Proposed Route
- Mt. Pony Route 2



Tech Park Lines

Proposed Route (Tech Park Route 1) (Mt. Pony Route 1) Tech Park Route 2 Tech Park Route 3

Map Page 5Culpeper Tech Zone 230 kV Electric Transmission Project





Existing Dominion Transmission Line

Existing Dominion Right of Way Proposed Right-of-Way

Parcel Boundary Mt. Pony Lines

- Mt. Pony Route 2



Map Page 6Culpeper Tech Zone 230 kV Electric Transmission Project



Proposed Right-of-Way

Parcel Boundary **Mt. Pony Lines** — Mt. Pony Route 2



Map Page 7 Culpeper Tech Zone 230 kV Electric Transmission Project





Proposed Right-of-Way

Parcel Boundary Public Lands

Mt. Pony Lines Federal Lands 🛛 — Mt. Pony Route 2





 \triangle Proposed Substation

Existing Dominion Transmission Line ---- County Boundary



Map Page 8Culpeper Tech Zone 230 kV Electric Transmission Project

Existing Dominion Right of Way Proposed Right-of-Way

Parcel Boundary Proposed Data Center Building Proposed Substation Footprint

Public Lands

Federal Lands State Lands Local Lands

Mt. Pony Lines

- Proposed Route (Mt. Pony Route 1)
- Mt. Pony Route 2



Tech Park Lines

Proposed Route (Tech Park Route 1) Tech Park Route 2 — Tech Park Route 3

Map Page 9 Culpeper Tech Zone 230 kV Electric Transmission Project



Existing Dominion Transmission Line



Existing Dominion Proposed Right-of-Way Natural Resource Conservation Service Easement Piedmont Environmental Council Easement



VA Outdoors Foundation Easement Oak Green Lines Parcel Boundary



Proposed Route — (Oak Green Rebuild and Relocation)

Map Page 10Culpeper Tech Zone 230 kV Electric Transmission Project





Existing Substation \triangle Proposed Substation Existing Dominion Transmission Line

Existing Dominion Right of Way Proposed Right-of-Way VA Outdoors Foundation Easement Proposed Substation Footprint Oak Green Lines

Proposed Route
Oak Green Rebuild and Relocation)



Map Page 11 Culpeper Tech Zone 230 kV Electric Transmission Project



Existing Substation

Existing Dominion Transmission Line

Existing Dominion Right of Way Proposed Right-of-Way Fauquier County BOS Easement Parcel Boundary **Remington Lines**

Proposed Route (Remington Rebuild)



Routes Rejected from Consideration Culpeper Tech Zone 230 kV Electric Transmission Project



▲ Existing Substation Approved Future Substation \triangle Proposed Substation **Proposed Substation Footprint** Right-of-Way

Proposed Data Center Building Existing Dominion Transmission Line Approved Future Transmission Line

Rejected Overhead Routes

Mt. Pony Road Route Tech Park Germanna Highway Route

Rejected Mt. Pony Hybrid Route

- --- Centerline (Overhead)
- ---- Centerline (Underground)





North UG Transition Station South UG Transition Station



Culpeper, Fauquier, and Orange County, Virginia

Typical Proposed Structures



Existing



115 kV Monopole **Tangent Structure**

Culpeper Tech Zone 230 kV **Electric Transmission Project**

Culpeper, Fauquier, and Orange County, Virginia



Rebuild Segment Typical Existing and Proposed Structures





230 kV Monopole







Environmental Justice: Ongoing Commitment to Our Communities

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

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

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

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

November 2018

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

- C. Detail the nature, location, and ownership of each building that would have to be demolished or relocated if the project is built as proposed.
- Response: The Company did not identify any buildings that would have to be demolished or relocated to construct the Proposed Project.

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: Portions of the Proposed and Alternative Routes parallel existing facilities, including transmission lines and roads. See Section II.A.4.

Existing Facility Feature	Mt. Pony Proposed Route (Route 1)	Mt. Pony Alternative Route 2
Transmission Lines #2/#70 miles (percent)	3.7 (71%)	0.0 (0%)
Existing Roadway miles (percent)	0.8 (16%)	0.3 (6%)
Total Collocation Miles (percent)	4.5 (87%)	0.3 (6%)

Mt. Pony Lines

The existing Lines #2/#70 corridor has been an existing 115 kV corridor since as early as the 1940s but was approved by the Commission in Case No. PUR-2022-00198²³ to be upgraded to 230 kV in the area collocated with the Mt. Pony Proposed Route. Mt. Pony Proposed Route would be collocated along Alvere Road, a one-lane private rural roadway. Mt. Pony Alternative Route 2 would be collocated along US 522, a two-lane rural highway.

Tech Park Lines

Existing Facility Feature	Tech Park Proposed Route (Route 1)	Tech Park Alternative Route 2	Tech Park Alternative Route 3
Transmission Lines #2/#70 miles (percent)	0.5 (14%)	0.2 (6%)	0.2 (6%)
Existing Roadway miles (percent)	0.0 (0%)	0.0 (0%)	0.2 (6%)
Future Roadway miles (percent)	0.2 (5%)	0.2 (5%)	0.2 (5%)

²³ See supra n. 5.

Existing Facility Feature	Tech Park	Tech Park	Tech Park
	Proposed Route	Alternative	Alternative
	(Route 1)	Route 2	Route 3
Total Collocation Miles (percent)	0.7 (19%)	0.4 (11%)	0.6 (17%)

The existing Lines #2/#70 corridor has been an existing 115 kV corridor since as early as the 1940s but was approved by the Commission in Case No. PUR-2022-00198²⁴ to be upgraded to 230 kV for 0.3 mile of the length collocated with Tech Park Proposed Route. The 0.2-mile segment of Line #2 collocated with all the Tech Park Proposed and Alternative Routes, which is located west of McDevitt Drive, will remain a single-circuit 115 kV transmission line. The Tech Park Proposed and Alternative Routes with 0.2 mile of the relocated Frank Turnage Drive, a two-lane local roadway. Tech Park Alternative Route 3 would also collocate with Technology Drive, a two-lane local roadway.

Oak Green Rebuild and Relocation

Approximately 2.5 miles of the 2.9-mile Oak Green Rebuild Proposed Route is located along existing 75-foot-wide right-of-way which has been in use since approximately 1963. See Section II.A.4.

Remington Rebuild

The entire 0.7-mile Remington Rebuild Proposed Route is within an existing transmission line corridor that has been in use as early as 1928. See_Section II.A.4.

²⁴ See supra n. 5.

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

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

Response: The Project components are located in Culpeper County, the Town of Culpeper, Fauquier County, and Orange County, each of which have a comprehensive plan and a zoning ordinance. The Company reviewed these plans and ordinances, as well as publicly available information on planned developments crossed by the Project. The Company believes that the Project generally complies with these plans, especially through the use of collocated or existing rights-of-way, and that the Project will not prevent any of the planned developments that were identified. A summary of key items from these land use plans are below and described in detail in Sections 5.1.3 and 5.1.6 of the Environmental Routing Study.

In addition to reviewing these land use plans, the Company met with planning and zoning staff from Culpeper County (on April 23 and August 21, 2024), Town of Culpeper (on April 22, 2024), and Orange County (on August 20, 2024), as these three jurisdictions will have new or expanded Project rights-of-way. While these staff did identify potential planned developments near the Project, they did not identify any conflicts between the Project and existing land use plans.

Culpeper County

The Mt Pony Lines, Tech Park Lines, and part of the Oak Green Rebuild components are located within Culpeper County. The Culpeper County Comprehensive Plan ("Culpeper Plan") was adopted in 2023²⁵ and provides policy guidance for future land uses and planning, including specific guidance for Utilities (Chapter 7) and Land Use and Development (Chapter 2). The Culpeper Plan emphasizes economic growth objectives that support existing businesses and agricultural operations.

Chapter 7 of the Culpeper Plan discusses utilities. While Commission regulated transmission lines are not subject to local regulations, page 7-13 of the Culpeper Plan states that, "The development of future electrical transmission lines should be limited while meeting electrical demands of the County. Expansion within existing transmission line corridors must be the first option pursued. In any instance where new or expanded transmission lines are proposed, utility providers shall notify the County at least 6 months prior to filing with the State Corporation Commission (SCC)." The Company has been in communication with Culpeper County about the need for new transmission lines associated with the Project, and supports the Mt. Pony Proposed Route, Tech Park Proposed Route, and Oak Green Rebuild Proposed Route because they follow this guideline and maximize expansion of

²⁵ Culpeper County, Culpeper County 2023 Comprehensive Plan (2024),

https://web.culpepercounty.gov/planning/page/2023-comprehensive-plan (accessed Nov. 2024).

existing transmission line corridor expansion through both collocation and rebuilding within existing rights-of-way.

Chapter 2, Land Use and Development, discusses existing and planned land uses, and identifies actions needed to meet the goals of the Culpeper Plan. While transmission lines are not specifically discussed in this chapter of the Culpeper Plan, transmission lines are needed to meet the Culpeper Plan land use goals, specifically to support new industrial and technology development in the identified Future Growth Areas and Technology Overlay Zones, some of which are crossed by the Project. Outside of these identified development areas, the Project is in general compliance with the Culpeper Plan in that the Proposed Routes in nonindustrial areas utilize existing corridor collocation to the extent practicable.

In addition to the Culpeper Plan, in March 2024, Culpeper County announced the creation of the Culpeper Technology Zone, which is a 950-acre campus designated to host data centers, public work entities, and educational institutions supporting the County's science, technology, engineering, and manufacturing (STEM) initiatives²⁶. All Mt. Pony and Tech Park Proposed and Alternative Routes cross a part of this newly created technology zone. The Company has coordinated with the landowners crossed by the Proposed and Alternative Routes within the Culpeper Tech Zone, who all support the Mt. Pony and Tech Park Proposed Routes. The Project is needed to support the goals outlined for the Culpeper Tech Zone.

Town of Culpeper

Portions of the Tech Park Proposed and Alternative Roues are located within the Town of Culpeper (the "Town"). The Town's Comprehensive Plan ("Town Plan") was adopted in 2016 and describes and outlines standards for various Character Areas. The Project is located in the Mixed-Use Business Character Area; however, because the Project does not involve the construction of buildings, the standards outlined for the Mixed-Use Business Character Area are not applicable to the Project. The Town Plan also includes guidelines for growth areas, which are areas that can potentially accommodate future development. The Tech Park Proposed and Alternative Routes are located within Growth Area 3, and according to the Town Plan, the vision for Growth Area 3 is industrial and business development, which is compatible with the Project.

A component of the Town Plan is the Strategic Vision Plan ("Culpeper 2030"), which provides implementation strategies to achieve the long-term goals outlined in the Town Plan. The Project is located in the Eastern Gateway Focus Area, which Culpeper 2030 states is positioned to grow into a technology and major industry

²⁶ **Culpeper County Gov't,** *The Culpeper Tech Zone: Creating an Ecosystem of Innovation* (2024), <u>https://chooseculpeper.com/culpeper-tech-zone/the-culpeper-tech-zone-creating-an-ecosystem-of-innovation/</u> (accessed Nov. 2024).

employment center. The vision for future development in the focus area is consistent with the construction of the Project.

Fauquier County

The Fauquier County Comprehensive Plan ("Fauquier Plan") was adopted in 2015 and addresses public facilities and utilities including electric transmission lines.²⁷ The Fauquier Plan encourages the construction of new and improved electric transmission lines to follow existing transmission corridors in the County. The Remington Rebuild component of the Project located in Fauquier County is a rebuild of the existing Line #2 and would not require any new right-of-way. Fauquier Plan outlines future land use by service districts, which are the County's urban growth areas and guide the growth of more intensive and dense uses. The Project is located in the Remington Service District, and future land use for the district designates much of the land in the study area as Light Industrial/Employment Center and Low Density Residential. The Remington Service District plan highlights the district's water, sewer, and electrical infrastructure as ideal to support Light Industrial/Employment Center developments, including data center developments, which are compatible with the Remington Rebuild component of the Project.

Orange County

The Orange County Comprehensive Plan ("Orange Plan") was updated in 2023²⁸. Orange County's existing and future land use plans designate the area crossed by the Oak Green Rebuild as agricultural and discourages development that will significantly alter the prevailing characteristics of the area. As the Oak Green Rebuild and Relocation component of the Project consists of a rebuild and upgrade of the existing Lines #1065/#11, a variable right-of-way width expansion of the existing corridor, and the relocation of the Oak Green Switching Station, it is consistent with the goals outlined in the Orange Plan because the Project will not significantly change the character of the area which currently has this existing transmission line infrastructure.

See Figure 5.1.3-1 and Figure 5.1.6-1 of Environmental Routing Study for maps detailing the zoning districts and planned developments crossed by the Project.

²⁷ **Fauquier County Gov't,** *Fauquier County Comprehensive Plan* (2023), Fauquier County, Va., <u>https://www.fauquiercounty.gov/government/departments-a-g/community-development/comprehensive-plan</u> (accessed Nov. 2024).

²⁸ **Orange County Gov't,** *Orange County Comprehensive Plan* (2023), Orange County, Va., <u>https://orangecountyva.gov/328/Comprehensive-Plan</u> (accessed Nov. 2024).

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 has designated important farmland within their jurisdiction through the implementation of Agricultural and Forestal Districts ("AFDs"). The Virginia Agricultural and Forestal Districts Act provides for the creation of conservation districts. These districts are designed to 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. These districts are voluntary agreements between landowners and the locality and, offer benefits to landowners when they agree to keep their land in its current use for between four and ten years. AFDs are established under the guidelines set forth by the Code of Virginia, § 15.2-4300; a district must contain at least 200 acres. Conservation efforts, such as AFDs, are informed by the soils surveys and classifications under the Virginia Agricultural Model, which is used to determine the agricultural value of lands crossed by the proposed routes. 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).

Approximately 2.2 miles of the Mt. Pony Proposed Route and 0.2 mile of the Teck Park Proposed Route cross through the Stevensburg AFD. Approximately 0.1 mile of Mt. Pony Alternative Route 2 crosses through the Racoon Ford AFD, and approximately 0.2 mile of the Oak Green Rebuild and Relocation passes through the Brandywine AFD.

No AFDs are crossed by the Project in Orange or Fauquier Counties.

- (2)(a) See Figure 5.1.7-1 in Environmental Routing Study Appendix A.
- (2)(b) The new permanent right-of-way for the Mt. Pony Proposed Route crossing the Stevensburg AFD is entirely collated with the existing Line #2/#70. Crossing this AFD is required to follow the Culpeper County Comprehensive Plan guidelines for utilities which state that existing corridors should be used rather than create new utility corridors within the County.

If Mt. Pony Alternative Route 2 is selected by the Commission over the Mt. Pony Proposed Route, then a 0.3mile segment of Tech Park Proposed Route adjacent to US 15/29 would cross the Stevensburg AFD.²⁹

The crossing of the Racoon Ford AFD by Mt. Pony Alternative Route 2 occurs at the cut-in on existing Line #1065/#2331. This crossing of the AFD allows for the most direct and perpendicular approach to the existing Line.

The crossing location of Brandywine AFD by the Oak Green Rebuild and Relocation does not require additional new right-of-way, so new permanent impacts are not anticipated.

(2)(c) The Project is not expected to impact this farmland, as the majority of the routes collocate with existing lines across agricultural lands, rather than forested areas that would require tree clearing, and agricultural uses are largely consistent with transmission line corridors.

²⁹ *See supra* n. 4.

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) The known NRHP-listed resources that are in or adjacent to the Mt. Pony Lines, Tech Park Lines, Oak Green Proposed Route, or Remington Proposed Route are summarized in the table below.

Historic Property	NRHP Status	Route Alternative
Rose Hill		
(VDHR ID# 023-	Listed	Mt. Pony Proposed Route
0018)		
Mount Castle		
(VDHR ID# 023-	Listed	Mt. Pony Proposed Route
5023)		
Croftburn Farm		Mt Dony Proposed Pouto
(VDHR ID# 023-	Listed	Tash Park Proposed Route
5040)		Teen Fark Troposed Route

(2) The known NRHP-listed, eligible, or potentially eligible resources that are in or adjacent to the Mt. Pony Lines, Tech Park Lines, Oak Green Rebuild, or Remington Rebuild Proposed Routes are summarized in the table below.

Historic Property	NRHP Status	Route Alternative
Rose Hill (VDHR ID# 023- 0018)	Listed	Mt. Pony Proposed Route
Mount Pony Rural Historic District (VDHR ID# 023- 0084)	Eligible	Mt. Pony Proposed Route Tech Park Proposed Route
Mount Castle (VDHR ID# 023- 5023)	Listed	Mt. Pony Proposed Route
Croftburn Farm (VDHR ID# 023- 5040)	Listed	Mt. Pony Proposed Route Tech Park Proposed Route
Rappahannock Station Battlefield II	Potentially Eligible	Remington Proposed Route
House (VDHR ID# 023- 5494)	Eligible	Mt. Pony Proposed Route
Morton Hall (VDHR ID# 068- 0031)	Eligible	Oak Green Proposed Route
Historic Property	NRHP Status	Route Alternative
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Battle of Morton's		
Ford	Potentially	Mt. Dony Dropogod Douto
(VDHR ID# 068-	Eligible	Mi. Folly Floposed Route
5007)		
Rapidan River and		
Clark Mountain Rural		
Historic District	Eligible	Oak Green Proposed Route
(VDHR ID# 068-		
5033)		

- (3) None.
- (4) There are seven known archaeological sites in the right-of-way for the Mt. Pony Proposed Route and the Tech Park Lines. Of these, five have had no formal determinations and are unevaluated, while two are not eligible for the NRHP. None of the previously recorded archaeological sites are cemeteries. No previously recorded archaeological sites were identified within the right-of-way for Mt. Pony Route Alternative 2, the Remington Proposed Route, or the Oak Green Proposed Route.

Site Number	Description	NRHP Status	Route Alternative
44CU0137	Road bed (Contact Period, Colony to Nation, Early National Period)	Unevaluated	Mt. Pony Proposed Route Tech Park Proposed Route
44CU0188	Temporary camp (Early Archaic Period, Middle Archaic Period, Late Archaic Period)	Not Eligible	Mt. Pony Proposed Route
44CU0189	Temporary camp (Early Archaic Period, Middle Archaic Period, Late Archaic Period)	Not Eligible	Mt. Pony Proposed Route
44CU0219	Artifact scatter (Pre- Contact) and Artifact fragment (Early National Period, Antebellum Period, Civil War, Reconstruction and	Unevaluated	Tech Park Route Alternative 3

Site Number	Description	NRHP Status	Route Alternative
	Growth, World War I to World War II)		
44CU0220	Multicomponent artifact scatter (Pre-Contact, Early National Period, Antebellum Period, Civil War, Reconstruction and Growth)	Unevaluated	Tech Park Route Alternative 3
44CU0221	Dwelling (Antebellum Period, Civil War, Reconstruction and Growth)	Unevaluated	Tech Park Proposed Route Tech Park Route Alternative 2 Tech Park Route Alternative 3
44CU0222	Multicomponent artifact scatter (Pre-Contact, Antebellum Period, Civil War, Reconstruction and Growth)	Unevaluated	Tech Park Proposed Route Tech Park Route Alternative 2 Tech Park Route Alternative 3

- (5) None.
- (6) None.
- (7) None.
- (8) None.
- (9) Three existing Virginia Outdoors Foundation (VOF) easements are located adjacent to or crossed by the Project. One VOF easement, located at Rose Hill Farm in Culpeper County, is located directly adjacent to but not crossed by the Mt. Pony Proposed Route. Two existing VOF easement are crossed by the Oak Green Rebuild Proposed Route, including one in Culpeper County and one in Orange County. The Oak Green Rebuild will utilize only existing Company rights-of-way across these two existing easements. The location of these easements is shown on <u>Attachment II.A.6</u>.
- (10) None.
- (11) No municipal or school district-owned lands are located near the Mt. Pony Lines, Oak Green Rebuild, and Remington Rebuild. Lands owned by the Town of Culpeper are located near the Tech Park Proposed Route and include a wastewater treatment plant, a public water well, and developed

land that includes a daycare center and community social services. None of these municipality owned lands are crossed by the Project. The Culpeper Technical Education Center is operated by Culpeper County Public Schools but is on land owned by the VCCS. It is located approximately 180 feet north of the Tech Park Proposed Route. The Company has coordinated with VCCS regarding the crossing of this land used by the Culpeper County School Board.

(12) None.

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 federallydefined 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 website³⁰ to identify airports within 10.0 nautical miles of the proposed Project. Based on this review, the following FAA-restricted airports are located within 10.0 nautical miles of the Mt. Pony Routes and Tech Park Routes:

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles)	Use
UVA Culpeper Medical Center heliport	1.2 mi west of Tech Park Route 1, 2 and3, Chandler Substation and McDevittSubstation	Private
The Greenhouse Airport	2.5 mi east of Mt. Pony Route 1	Private
Belmont Farm Airport	2.9 mi southwest of the Mt. Pony Route2 southern cut-in	Private
Berryvale Airport	3.6 mi north of Tech Park Route 1, 2 and 3, and 3.8 mi north of the Palomino Substation	Private
Simpsonville Airport	5.2 mi southeast of Mt. Pony Route 2 southern cut-in	Private
Culpeper Regional Airport	5.6 mi northeast of Mt. Pony Route 1	Public
Pleasantdale Field Airport	6.8 mi north of Tech Park Route 1, 2 and 3	Private
Rular Airport	7.4 mi northeast of Mt. Pony Route 1	Private

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

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles)	Use
Arrowpoint Airport	9.3 mi southwest of Mt. Pony Route 2 southern cut-in	Private
Rhynalds Ranch Airport	9.8 mi northeast of Mt. Pony Route 1	Private

The following FAA-restricted airports are located within 10.0 nautical miles of the Oak Green Rebuild and Relocation:

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles)	Use
Belmont Farm Airport	1.1 mi northwest of the northernmost rebuild structure	Private
Simpsonville Airport	3.8 mi east of the southernmost rebuild structure	Private
UVA Culpeper Medical Center Heliport	6.0 mi north of the northernmost rebuild structure	Private
Arrowpoint Airport	6.5 mi southwest of the northernmost rebuild structure	Private
Orange County Airport	6.7 mi southwest of the southernmost rebuild structure	Public
The Greenhouse Airport	7.4 mi northeast of all rebuild structures	Private
Berryvale Airport	9.9 mi north of the northernmost rebuild structure	Private

The following FAA-restricted airports are located within 10.0 nautical miles of the Remington Rebuild:

Airport Nan	ne	Approximate Distance and Direction from Proposed Project (nautical miles (approx.))	Use
Rular Airport		1.8 mi west of the westernmost rebuild structure	Private
Rhynalds Airport	Ranch	1.9 mi east of the easternmost rebuild structure	Private
Flying Aerodrome Airpo	Circus ort	3.0 mi northeast of the easternmost rebuild structure	Private

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles (approx.))	Use
Culpeper Regional Airport	3.2 mi west of the westernmost rebuild structure	Public
Warrenton/Fauquier Airport	4.2 mi northeast of the easternmost rebuild structure	Public
Rambo Airfield Airport	4.3 mi east of the easternmost rebuild structure	Private
Aviacres Airport	5.0 mi north of the easternmost rebuild structure	Private
Horse Feathers Airport	5.7 mi north off the easternmost rebuild structure	Private
Pleasantdale Field Airport	6.4 mi northwest of the westernmost rebuild structure	Private
Lost Griz Aerodrome Airport	6.7 mi north of the easternmost rebuild structure	Private
The Greenhouse Airport	6.9 mi southwest of the westernmost rebuild structure	Private
Walnut Hill Airport	7.0 mi northeast of the easternmost rebuild structure	Private
Berryvale Airport	8.0 mi west of the westernmost rebuild structure	Private
Maples Field Airport	9.9 mi northeast of the easternmost rebuild structure	Private

In addition to the airports listed above, two additional private runway/airfield facility were identified within 10 nm of the project components during the routing study that do not appear to be established airports registered with the FAA. The first site is located at 20634 Mt. Pony Road, Culpeper, VA 22701, and was formerly used as the business address for Kritter Cropdusting, Inc ("Kritter Site"). The second site is located at 21482 Mt Pony Road, Culpeper, VA 22701, and was identified via aerial imagery and conversations with the owner of the Kritter site, and is owned by David Maitland ("Maitland Site"). Based on available aerial imagery, the Kritter Site maintains an approximately 3,200-foot-long turf runway along its southern property boundary and is surrounded by mature oak forest and managed timber, which is assumed to be approximately 60 feet or taller and the Maitland Site is a single east-west oriented runway on site is approximately 2,200 feet in length and is surrounded by fields and forested areas, and located directly perpendicular to the existing Lines #1065/#2331. Although these sites are not public use facilities and does not appear to be registered with the FAA, Mt. Pony Alternative Route 2 is routed in an area that minimizes conflicts with these sites,

and no impacts to these sites from the Project are anticipated. See Section 5.1.11 of the Environmental Routing Study for additional details.

Based on this review, there are no public airports, or heliports located within three nautical miles of the proposed alignment and the proposed heights of the structures no FAA height limitations are anticipated, and the Company is not expecting to need to file FAA Form 7460-1, Notice of Proposed Construction or Alteration.

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: There is one Virginia Scenic Byway nearby, but not crossed by the Project. The Journey through Hallowed Ground National Scenic Byway, a 180-mile route from Gettysburg, Pennsylvania, to Monticello, Virginia, runs through the Town of Culpeper along Main Street and is approximately 0.3 mile west of the Tech Park Proposed and Alternative Routes. The Project is anticipated to have no impact on this scenic byway.

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

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

- Response: The Company solicited feedback from Culpeper County, Orange County, and Fauquier County regarding the proposed Project. Below is a list of coordination that has occurred with municipal, state, and federal agencies:
 - Coordination with the U.S. Army Corps of Engineers, DEQ, and VDOT will take place as appropriate to obtain necessary approvals for the Project.
 - A letter dated January 21, 2025 was submitted to Culpeper County, Orange County, and Fauquier County to describe the Project and request comments. See Section V.D.
 - A Stage I Pre-Application Analysis has been prepared and was submitted to VDHR on February 19, 2025. See Attachment 2.I.1 to the DEQ Supplement.
 - On January 6, 2025, the Company solicited comments via letter from several federally recognized Native American tribes, including:

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

Name	Tribe
Chief W. Frank Adams	Upper Mattaponi Indian Tribe
Leigh Mitchell	Upper Mattaponi Indian Tribe
Katelyn Lucas	Delaware Nation, Oklahoma
Deborah Dotson	Delaware Nation, Oklahoma

A copy of the letter template and map is included as <u>Attachment III.J.1</u>.

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



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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear⊠hie⊠⊠stalo⊠,

Dominion Energy is dedicated to maintaining sate, reliate, and attordate electric sertice in the commonities to e serte. Not are receiving this to recent annown cement letter as the total of the common term interest in this area. Not retain the receiver the term interest in this area. Not retain the rest of the term interest in this area. Not retain the rest of the term is not a notification of the term and contines to the committee to the common term and the term and contines to the committee to the term and the term and contines to the committee to the term and term and the term and term and the term and the term and the term and term and the term and term and the term and te

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear ⊠hie⊠Anderson,

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear ⊠hie⊠Allston,

Dominion Energy is dedicated to maintaining sate, reliate, and attordate electric sertice in the commonities to e serte. Not are receiving this to recent annown cement letter as the total of the common term interest in this area. Not retain the receiver the term interest in this area. Not retain the rest of the term interest in this area. Not retain the rest of the term is not a notification of the term and contines to the committee to the common term and the term and contines to the committee to the term and the term and contines to the committee to the term and term and the term and term and the term and the term and the term and term and the term and term and the term and te

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ø s. Roach,

Dominion Energy is dedicated to maintaining sale, reliable, and altordable electric serbice in the commonities to eserbe. So are receiving this to relect annown cement letter as the start of the common serbic early to the the the term interest in this area. So are entry to the term interest in this area. So are the serbic early to the term interest in this area. So are the serbic early to the term interest in the serbic early to the term interest early the term is not a notification on the term interest the term interest early the term is not a notification on the term interest to the term interest early term inte

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear⊠hie⊠⊠ ray,

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear ⊠hie⊠Richardson,

Dominion Energy is dedicated to maintaining sate, reliate, and attordate electric sertice in the commonities to e serte. Not are receiving this to recent annown cement letter as the total of the common term interest in this area. Not retain the receiver the term interest in this area. Not retain the rest of the term interest in this area. Not retain the rest of the term is not a notification of the term and contines to the committee to the common term and the term and contines to the committee to the term and the term and contines to the committee to the term and term and the term and term and the term and the term and the term and term and the term and term and the term and te

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⊠an⊠ary 6, 2⊠2⊠

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Assistant Nhie

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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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: On December 20, 2024 the Company solicited comments via letter from the community leaders, environmental groups, and business groups identified below. A copy of the letter template and map is included as <u>Attachment III.K.1</u>.

Correspondence from VOF dated May 28, 2024, and December 11, 2024 indicate VOF will not grant additional right-of-way to the Company for the Project as indicated in <u>Attachment III.K.2</u> and <u>III.K.3</u>, respectively.

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



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ms. Kostelny,

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in an upcoming electric transmission project in Culpeper, Fauquier, and Orange counties in Virginia.

New energy infrastructure is needed to support recent and future data center load growth within the Culpeper Tech Zone. This new infrastructure will also support area reliability and keep the grid operating efficiently. This project includes four components:

- Building four new substations within the Culpeper Tech Zone and a 230 kV transmission line to connect them to the electrical grid in the Town of Culpeper and Culpeper County;
- Upgrading 0.6 mile of existing 115 kV transmission line in Fauquier County to 230 kV;
- Upgrading 2.7 miles of existing 115 kV transmission line in Culpeper and Orange Counties to 230 kV; and
- Upgrading and relocating the existing Oak Green Substation to a parcel nearby its existing location.

The project is currently in the conceptual phase and we are seeking your input prior to filing an application with the Virginia State Corporation Commission. Doing so allows us to hear any concerns you may have as we work to meet the project's needs. Toward that end, if you are available, we invite you participate in one of two upcoming community meetings for the project.

Monday, January 13, 2025

5:00 p.m. – 7:00 p.m. The Refinery 120 W. Culpeper Street Culpeper, VA 22701

Tuesday, January 14, 2025

5:30 p.m. – 7:30 p.m. Unionville Elementary School 10285 Zachary Taylor Hwy Unionville, VA 22567

The information at these community meetings will be identical and there will be no formal presentation. Please feel free to drop by at any time during the meeting window and please feel free to notify other relevant organizations that may have an interest in the project area. For reference, other recipients of this letter include countywide and statewide historic, cultural, and scenic organizations, as well as Tribal Nations.

A project overview map showing the initial routes under consideration is enclosed. We appreciate your feedback as we move through the planning process. If you have questions or would like to set up a meeting to discuss the project, you may contact us by calling 888-291-0190 or sending an email to <u>Powerline@dominionenergy.com</u>.

Sincerely,

The Dominion Energy Electric Transmission Communications Team



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Mr. Gilmore,

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in an upcoming electric transmission project in Culpeper, Fauquier, and Orange counties in Virginia.

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Sincerely,

The Dominion Energy Electric Transmission Communications Team



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

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- Upgrading 0.6 mile of existing 115 kV transmission line in Fauquier County to 230 kV;
- Upgrading 2.7 miles of existing 115 kV transmission line in Culpeper and Orange Counties to 230 kV; and
- Upgrading and relocating the existing Oak Green Substation to a parcel nearby its existing location.

The project is currently in the conceptual phase and we are seeking your input prior to filing an application with the Virginia State Corporation Commission. Doing so allows us to hear any concerns you may have as we work to meet the project's needs. Toward that end, if you are available, we invite you participate in one of two upcoming community meetings for the project.

Monday, January 13, 2025

5:00 p.m. – 7:00 p.m. The Refinery 120 W. Culpeper Street Culpeper, VA 22701

Tuesday, January 14, 2025

5:30 p.m. – 7:30 p.m. Unionville Elementary School 10285 Zachary Taylor Hwy Unionville, VA 22567

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A project overview map showing the initial routes under consideration is enclosed. We appreciate your feedback as we move through the planning process. If you have questions or would like to set up a meeting to discuss the project, you may contact us by calling 888-291-0190 or sending an email to <u>Powerline@dominionenergy.com</u>.

Sincerely,

The Dominion Energy Electric Transmission Communications Team


Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Mr. Hokit,

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in an upcoming electric transmission project in Culpeper, Fauquier, and Orange counties in Virginia.

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Mr. Williams,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ms. Breen,

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in an upcoming electric transmission project in Culpeper, Fauquier, and Orange counties in Virginia.

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ms. Powell,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ms. Chang,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ms. Bolthouse,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Mr. McCarthy,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Dr. Newby-Alexander,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Mr. Kirchen,

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Ms. Birge-Wilson,

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in an upcoming electric transmission project in Culpeper, Fauquier, and Orange counties in Virginia.

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Sincerely,



Dec. 20, 2024

Proposed Culpeper Tech Zone 230 kV Electric Transmission Project

Dear Mr. Dutton,

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Sincerely,



Greg R Baka (DEV Trans Distribution - 1)

Martha Little <mlittle@vof.org></mlittle@vof.org>
Tuesday, May 28, 2024 11:30 AM
Greg R Baka (DEV Trans Distribution - 1); Erika Richardson
Chris A Lybolt (Services - 6)
[EXTERNAL] RE: Culpeper Tech Zone VOF Easement Map

CAUTION! This message was NOT SENT from DOMINION ENERGY

Are you expecting this message to your DE email? Suspicious? Use PhishAlarm to report the message. Open a browser and type in the name of the trusted website instead of clicking on links. DO NOT click links or open attachments until you verify with the sender using a known-good phone number. Never provide your DE password.

Greg,

Thanks for the additional information and the photo simulation.

We greatly appreciate your willingness to discuss this with us early in the process and share your data (which we will not share externally).

We have had a chance to discuss this internally now and wanted to share our feedback with you.

Although we understand the benefits of collocation from a global perspective, we don't see any way of allowing the additional ROW on the VOF easement at this time.

As we understand it, for the proposed expansion on Project 723, Dominion would require an additional 60-feet of ROW to permit new towers for a total of ~3.6 acres of impact.

As you know, VOF has a policy that requires avoidance of impacts to VOF held open space easements unless there are no feasible alternatives. Unfortunately in this case there are alternative routes that would prevent any negative impacts to the VOF easement, other than being visible from the property.

Here are some additional reasons why we think this easement in particular would be harmed by the additional line:

First, this easement property has significant conservation values that are protected in perpetuity by VOF including open-space, historic and scenic. Although the original easement was recorded in 1999, VOF and Mr. Covington recently recorded a restated easement that vastly improves the protections to these important conservation values. The 208-acre property, known as Rose Hill Farm, is on the National Register of Historic Places and the Virginia Landmarks Register with four contributing buildings including the mid-19th century Rose Hill dwelling, detached kitchen, "old hall" or school and the smokehouse as well as the Nalle and Ashby-Covington cemeteries. The amendment removes one of the permitted division rights, adds an impervious cover cap which limits infrastructure, adds setbacks along Rt. 3 (1,200 feet from centerline) and State Route 663 (500 feet from centerline), and adds protections for the historic buildings and sites identified above. Based on GIS map review, the existing corridor is only ~400 feet from the historic infrastructure. Therefore, to permit an expansion of the existing ROW and additional towers on the property would be directly in conflict with the conservation values VOF is responsible to protect in perpetuity.

Please don't hesitate to reach out if you have additional questions and I hope this is helpful for your project planning.

All the best, Martha

Martha H. Little

Deputy Director of Conservation Virginia Outdoors Foundation Phone: 8045773337 Email: mlittle@vof.org

From: Greg.R.Baka@dominionenergy.com <Greg.R.Baka@dominionenergy.com>
Sent: Friday, May 17, 2024 6:46 PM
To: Martha Little <mlittle@vof.org>; Erika Richardson <erichardson@vof.org>
Cc: Chris.A.Lybolt@dominionenergy.com
Subject: Culpeper Tech Zone -- VOF Easement Map

Alert: This email originated from outside VOF

Martha and Erika,

We enjoyed the opportunity to meet with you recently re: the Culpeper Tech Zone project where we discussed the need to feed a new substation near Culpeper with a new double-circuit 230kV transmission line and wanted to follow-up with you.

Per your request, please see attached map of a possible route to the new substation by way of Rose Hill Farm. We're very interested to hear the feedback from the VOF re: whether you would consider the collocation of an additional 60' of electric transmission right-of-way along the south side of the existing 100' right-of-way (currently being upgraded from 115kV to 230kV as part of the approved Cirrus/Kyser project) to minimize overall impacts and what process would this entail. The alternative to acquiring the additional 60' (or ~3.81 acres) on this VOF easement (Rose Hill Farm) would be to create a separate corridor of 100' right-of-way south of the VOF easement with new impacts.

Also attached is a photo simulation from the Cirrus/Kyser project showing a double-circuit 230kV monopole -- the same structure type to be used for our Culpeper Tech Zone project. This photo is taken from Blackjack Road looking northeast at the existing transmission line that crosses thru Rose Hill Farm.

Since we have not yet had the opportunity to share this route with the public, we wanted to ask you to please <u>not</u> share this information publicly at this time. We intend to reach out to the property owner soon to seek their feedback. Thank you for your cooperation.

Should you have any questions, please don't hesitate to contact me.

Thank you,

Greg Baka Electric Transmission – Local Permitting Consultant Dominion Energy 5000 Dominion Blvd; 3rd Floor Glen Allen, VA 23060 804-201-3053 cell greg.r.baka@dominionenergy.com



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Greg R Baka (DEV Trans Distribution - 1)

Martha Little <mlittle@vof.org></mlittle@vof.org>		
Wednesday, December 11, 2024 8:35 AM		
Greg R Baka (DEV Trans Distribution - 1)		
Erika Richardson		
[EXTERNAL] Oak Green Line		

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Hi Greg-

We have reviewed Dominion's request for additional right-of-way (ROW) on the existing Oak Green electric line located on two VOF easement properties in Culpeper County and Orange County. From our conversation on October 24, 2004, there are two options for improvements to this existing utility corridor including expanding the existing 75-foot ROW by 25 feet to reduce the number of new utility poles required or adding one new utility pole within the existing ROW on each property.

Easement Project 2214, owned by Clark, has the following pertinent language:

6. Buildings and Structures: No permanent or temporary building or structure may be built or maintained on the Property other than:

Private roads and utilities that serve permitted buildings or structures in this Paragraph 6 may be constructed.

Easement Project 1850, owned by Grano, has the following pertinent language:

6. Buildings and Structures: No permanent or temporary building or structure may be built or maintained on the Property other than:

(iv) private roads and utilities that serve permitted buildings, structures and permitted uses 6 may be constructed.

As neither easement permits "public" utilities, those that cross the property but do not directly serve the property, it is the VOF determination that Dominion should utilize its existing ROW as no additional ROW is permitted under the existing easements without the conversion/diversion ("1704") process. We understand that this will necessitate adding one pole to each project within the Dominion's ROW. We were able to communicate directly with Mr. Clark who agrees that the preferred option is for an additional pole. However, our efforts to communicate with Mr. Grano were unsuccessful to date.

Please let us know if you have any additional questions.

All the best,

Martha

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.

Activity	Potential Permit	Agency/Organization
Impacts to wetlands and	Nationwide Permit 57	U.S. Army Corps of
other waters of the U.S.		Engineers
Impacts to state surface	Virginia Water	Virginia Department of
waters	Protection Permit	Environmental Quality
Non-tidal waterbody	Crossing Permit	Virginia Marine
crossing		Resources Commission
Discharge of stormwater	Construction General	Virginia Department of
from construction	Permit	Environmental Quality
Work within VDOT	Land Use Permit	Virginia Department of
rights-of-way		Transportation

Potential Permits

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

- A. Provide the calculated maximum electric and magnetic field levels that are expected to occur at the edge of the ROW. If the new transmission line is to be constructed on an existing electric transmission line ROW, provide the present levels as well as the maximum levels calculated at the edge of ROW after the new line is operational.
- Response: Public exposure to magnetic fields associated with high voltage power lines is best estimated by field levels calculated at annual average loading. For any day of the year, the EMF levels associated with average conditions provide the best estimate of potential exposure. Maximum (peak) values are less relevant as they may occur for only a few minutes or hours each year.

This section describes the levels of EMF associated with the proposed transmission lines. Loading (Amp) levels are provided for historical average, future (2029) annual average and maximum (peak) loading conditions but EMF levels will be provided for the maximum (peak) loading conditions. See <u>Attachments II.A.5.a</u> through <u>II.A.5.x</u>.

Line No.	Historical Average Loading (Amps)	
2	242	
11	235	
153	118	
2199	508	
2331	N/A	
2276	N/A	
2439	N/A	
2437	N/A	
2438	N/A	
2429	N/A	
2430	N/A	
2431	N/A	
2432	N/A	
2433	N/A	
2434	N/A	
2435	N/A	

Proposed Project – Historical Average Loading in 2024

Line No.	Projected Average Loading (Amps)		
11	421		
153	25		
2199	1133		
2331	1031		
2276	200		
2439	157		
2437	175		
2438	221		
2429	49		
2430	112		
2431	112		
2432	186		
2433	186		
2434	273		
2435	273		

Proposed Project – Projected Average Loading in 2029

Proposed Project – Projected Peak Loading in 2029

Line No.	Projected Peak Loading (Amps)	
11	702	
153	42	
2199	1888	
2331	1718	
2276	333	
2439	262	
2437	291	
2438	369	
2429	81	
2430	187	
2431	187	
2432	310	
2433	310	
2434	455	

Line No.	Projected Peak Loading (Amps)
2435	455

Proposed Project – Maximum Designed Loading

Line No.	Max Loading (Amps)
11	4000
153	4000
2199	4000
2331	4000
2276	4000
2439	4000
2437	4000
2438	4000
2429	4000
2430	4000
2431	4000
2432	4000
2433	4000
2434	4000
2435	4000

These field levels were calculated at mid-span where the conductors are closest to the ground at the maximum designed load operating temperature. Values were calculated under the assumption that the current travels in the same direction for all lines.

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

Proposed Double Circuit 230 kV in 75' ROW – Maximum Designed Loading				
Attachment	Left Edge Per II.A.5 Drawing	Right Edge Per II.A.5 Drawing		

	Electric Field	Magnetic Field	Electric Field	Magnetic Field
	(kV/m)	(mG)	(kV/m)	(mG)
II.A.5.X	2.029	785.671	2.029	785.671

Proposed Double Circuit 230 kV in 100' ROW – Maximum Designed Loading					
Attachment	Left Per II.A.	Edge 5 Drawing	Righ Per II.A	t Edge 5 Drawing	
	Electric Field	Magnetic Field	Electric Field	Magnetic Field	

	Electric Field	Magnetic Field	Electric Field	Magnetic Field
	(kV/m)	(mG)	(kV/m)	(mG)
II.A.5.X	1.095	579.212	1.095	579.212

Proposed Two (2) Double Circuit 230 kV in 160' ROW – Maximum Designed Loading			
Attachment	Left Edge Per II.A.5 Drawing	Right Edge Per II.A.5 Drawing	

	Electric Field	Magnetic Field	Electric Field	Magnetic Field
_	(kV/m)	(mG)	(kV/m)	(mG)
II.A.5.X	1.134	607.124	1.134	607.124

Proposed Single Circuit 230 kV in 100' ROW – Maximum Designed Loading

Attachment	Left Edge Per II.A.5 Drawing		Right Edge Per II.A.5 Drawing	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.X	0.819	275.717	0.819	275.717
Proposed Remington Cross Section 1 Double Circuit 230 kV and Existing 500 kV in 250' ROW - Maximum Designed				
Attachment	Left Edge Per II.A.5 Drawing		Right Edge Per II.A.5 Drawing	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.X	0.453	246.987	0.453	246.987
Proposed Remington Cross Section 2 Double Circuit 230 kV and Existing 500 kV in 250' ROW – Maximum Designed Loading				
Attachment	Left Edge Per II.A.5 Drawing		Right Edge Per II.A.5 Drawing	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)

Proposed Remington Cross Section 3 Double Circuit 230 kV and Existing 500 kV in 250' ROW Projected Maximum Loading			
Attachment	Left Edge Per II.A.5 Drawing	Right Edge Per II.A.5 Drawing	

323.321

2.111

323.321

II.A.5.X

2.111

	Electric Field	Magnetic Field	Electric Field	Magnetic Field
	(kV/m)	(mG)	(kV/m)	(mG)
II.A.5.X	1.225	462.727	1.225	462.727

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

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

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

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

The most recent reviews on this topic include the 2015 and 2023 reports by SCENIHR and SCHEER, respectively, and annual reviews published by SSM (i.e., for the years 2015 through 2022). These reports, similar to previous reviews, found that the scientific evidence does not confirm the existence of any adverse health effects caused by environmental or community exposure to EMF.

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

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

References

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

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

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

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

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

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

Scientific Committee on Health, Environmental and Emerging Risks (SCHEER). Preliminary Opinion on Potential Health Effects of Exposure to Electromagnetic Fields (EMF): Update with regard to frequencies between 1Hz and 100 kHz. Brussels, Belgium: European Commission, 2023. Swedish Radiation Safety Authority (SSM). Research 2015:19. Recent Research on EMF and Health Risk - Tenth report from SSM's Scientific Council on Electromagnetic Fields. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2015.

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

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

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

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

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

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

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

- C. Describe and cite any research studies on EMF the Applicant is aware of that meet the following criteria:
 - 1. Became available for consideration since the completion of the Virginia Department of Health's most recent review of studies on EMF and its subsequent report to the Virginia General Assembly in compliance with 1985 Senate Joint Resolution No. 126;
 - 2. Include findings regarding EMF that have not been reported previously and/or provide substantial additional insight into findings; and
 - 3. Have been subjected to peer review.
- Response: The Virginia Department of Health ("VDH") conducted its most recent review and issued its report on the scientific evidence on potential health effects of extremely low frequency ELF EMF in 2000: "[T]he Virginia Department of Health is of the opinion that there is no conclusive and convincing evidence that exposure to extremely low frequency EMF emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans."³¹

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

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

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

³¹ See <u>http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/highfinal.pdf</u>.

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

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

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

- Bunch et al. (2015) assessed the potential association between residential proximity to high voltage underground cables and development of childhood cancer in the United Kingdom largely using the same epidemiologic data as in a previously published study on overhead transmission lines (Bunch et al., 2014). No statistically significant associations or trends were reported with either distance to underground cables or calculated magnetic fields from underground cables for any type of childhood cancers.
- Pedersen et al. (2015) published a case-control study that investigated the potential association between residential proximity to power lines and childhood cancer in Denmark. The study included all cases of leukemia (n=1,536), central nervous system tumors, and malignant lymphoma (n=417) diagnosed before the age of 15 between 1968 and 2003 in Denmark, along with 9,129 healthy control children matched on sex and year of birth. Considering the entire study period, no statistically significant increases were reported for any of the childhood cancer types.
- Salvan et al. (2015) compared measured magnetic-field levels in the bedroom for 412 cases of childhood leukemia under the age of 10 and 587 healthy control children in Italy. Although the statistical power of the study was limited because of the small number of highly exposed subjects, no consistent statistical associations or trends were reported between measured magnetic-field levels and the occurrence of leukemia among children in the study.

- Bunch et al. (2016) and Swanson and Bunch (2018) published additional analyses using data from an earlier study (Bunch et al., 2014). Bunch et al. (2016) reported that the association with distance to power lines observed in earlier years was linked to calendar year of birth or year of cancer diagnosis, rather than the age of the power lines. Swanson and Bunch (2018) re-analyzed data using finer exposure categories (e.g., cut-points of every 50-meter distance) and broader groupings of diagnosis date (e.g., 1960-1979, 1980-1999, and 2000 and after) and reported no overall associations between exposure categories and childhood leukemia for the later periods (1980 and after), and consistent pattern for the periods prior to 1980.
- Crespi et al. (2016) conducted a case-control epidemiologic study of childhood cancers and residential proximity to high voltage power lines (60 kV to 500 kV) in California. Childhood cancer cases, including 5,788 cases of leukemia and 3,308 cases of brain tumor, diagnosed under the age of 16 between 1986 and 2008, were identified from the California Cancer Registry. Controls, matched on age and sex, were selected from the California Birth Registry. Overall, no consistent statistically significant associations for leukemia or brain tumor and residential distance to power lines were reported.
- Kheifets et al. (2017) assessed the relationship between calculated magnetic-• field levels from power lines and development of childhood leukemia within the same study population evaluated in Crespi et al. (2016). In the main analyses, which included 4,824 cases of leukemia and 4,782 controls matched on age and sex, the authors reported no consistent patterns, or statistically significant associations between calculated magnetic-field levels and childhood Similar results were reported in subgroup and leukemia development. sensitivity analyses. In two subsequent studies, Amoon et al. (2018a, 2019) examined the potential impact of residential mobility (i.e., moving residences between birth and diagnosis) on the associations reported in Crespi et al. (2016) and Kheifets et al. (2017). Amoon et al. (2018a) concluded that changing residences was not associated with either calculated magnetic-field levels or proximity to the power lines, while Amoon et al. (2019) concluded that while uncontrolled confounding by residential mobility had some impact on the association between EMF exposure and childhood leukemia, it was unlikely to be the primary driving force behind the previously reported associations in Crespi et al. (2016) and Kheifets et al. (2017).
- Amoon et al. (2018b) conducted a pooled analysis of 29,049 cases and 68,231 controls from 11 epidemiologic studies of childhood leukemia and residential distance from high voltage power lines. The authors reported no statistically-significant association between childhood leukemia and proximity to transmission lines of any voltage. Among subgroup analyses, the reported associations were slightly stronger for leukemia cases diagnosed before 5 years of age and in study periods prior to 1980. Adjustment for various potential confounders (e.g., socioeconomic status, dwelling type, residential mobility) had little effect on the estimated associations.

- Kyriakopoulou et al. (2018) assessed the association between childhood acute leukemia and parental occupational exposure to social contacts, chemicals, and electromagnetic fields. The study was conducted at a major pediatric hospital in Greece and included 108 cases and 108 controls matched for age, gender, and ethnicity. Statistically non-significant associations were observed between paternal exposure to magnetic fields and childhood acute leukemia for any of the exposure periods examined (1 year before conception; during pregnancy; during breastfeeding; and from birth until diagnosis); maternal exposure was not assessed due to the limited sample size. No associations were observed between childhood acute leukemia and exposure to social contacts or chemicals.
- Auger et al. (2019) examined the relationship between exposure to EMF during pregnancy and risk of childhood cancer in a cohort of 784,000 children born in Quebec. Exposure was defined using residential distance to the nearest high voltage transmission line or transformer station. The authors reported statistically non-significant associations between proximity to transformer stations and any cancer, hematopoietic cancer, or solid tumors. No associations were reported with distance to transmission lines.
- Crespi et al. (2019) investigated the relationship between childhood leukemia and distance from high voltage lines and calculated magnetic-field exposure, separately and combined, within the California study population previously analyzed in Crespi et al. (2016) and Kheifets et al. (2017). The authors reported that neither close proximity to high voltage lines nor exposure to calculated magnetic fields alone were associated with childhood leukemia; an association was observed only for those participants who were both close to high voltage lines (< 50 meters) and had exposure to high calculated magnetic fields (≥ 0.4 microtesla [" μ T"]) (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 μ T (4 mG); no statistically significant overall associations were reported between childhood leukemia and lower magnetic-field exposure (< 0.4 μ T [4 mG]), residential distance from power lines, or wire coding configuration. An association between childhood

leukemia and electric blanket use was also reported. The overall results were likely influenced by the inclusion of a large number of earlier studies; 10 of the 21 studies in the main analysis were published prior to 2000. Studies published prior to 2000 included fewer studies deemed to be of higher study quality, as determined by the authors, compared to studies published after 2000.

- Nguyen et al. (2022) investigated whether potential pesticide exposure from living in close proximity to commercial plant nurseries confounds the association between magnetic-field exposure and childhood leukemia development reported within the California study population previously analyzed in Crespi et al. (2016) and Kheifets et al. (2017). The authors in Nguyen et al. (2022) noted that while the association between childhood leukemia and magnetic-field exposure was "slightly attenuated" after adjusting for nursery proximity or when restricting to subjects living > 300 meters from nurseries, their results "do not support plant nurseries as an explanation for observed childhood leukemia risks." The authors further noted that close residential proximity to nurseries may be an independent risk factor for childhood leukemia.
- Guo et al. (2023) reported conducting a systematic review and meta-analysis of • studies published from 2015 to 2022 that evaluated associations between magnetic-field exposure and childhood leukemia development. Three metaanalyses were conducted to evaluate the relationship using different exposure metrics. In the first meta-analysis, magnetic-field levels ranging from 0.4 µT (4 mG) to $0.2 \mu \text{T} (2 \text{ mG})$ were associated with a statistically significant reduced risk of childhood leukemia development (i.e., a protective association). In the second meta-analysis, exposure was based on wiring configuration codes, and the reported pooled relative risk estimates demonstrated a statistically significant increased association with childhood leukemia. In the third metaanalysis, exposure was categorized into groupings of magnetic-field strength; no statistically significant associations with childhood leukemia were reported for any of the groupings, including for magnetic-field levels $\geq 0.4 \ \mu T \ (4 \ mG)$. There are significant limitations of this study that prevent meaningful interpretations of the results. Most of the analyses of magnetic fields did not state whether measurements and calculations were included, and the authors provided no description of the methods used for their analyses, no data tables to support their findings, and no references to the number and type of studies included. In fact, much of the article's introduction discusses ionized radiation. The authors also do not report relevant metrics for evaluating meta-analyses such as study heterogeneity.
- Malagoli et al. (2023) examined associations between exposure to magnetic fields from high voltage power lines (≥ 132 kV) and childhood leukemia development in a case-control study of children in Italy. The study included 182 cases diagnosed with childhood leukemia between 1998 and 2019 and 726 controls matched based on age, sex, and Italian province. The authors assessed magnetic-field exposure by calculating the distance from each participant's

residence to the nearest high voltage power line and classifying that distance into one of three exposed categories (participants living < 100 meters, 100 to < 200 meters, or 200 to < 400 meters from the power lines) or as unexposed (participants living \geq 400 meters from the power lines). The authors reported a non-statistically significant association between childhood leukemia and a residence distance of <100 meters; no statistically significant associations were reported for any distance, including when stratifying by age (< 5 or \geq 5 years) or when restricting to acute lymphoblastic leukemia (ALL).

- Nguyen et al. (2023) extended their previous investigation (Nguyen et al., 2022) into whether pesticide exposure was an independent risk factor or confounder for childhood leukemia in the presence of magnetic-field exposure from high voltage power lines by examining the potential impact of specific pesticide exposure factors (e.g., intended use, chemical class, active ingredient). The authors found no statistically significant associations between distance to high voltage power lines or magnetic-field exposure and childhood leukemia, including when adjusting for pesticide exposures. Several of the examined pesticides were determined by the authors to be potential independent risk factors for childhood leukemia.
- Zagar et al. (2023) examined the relationship between magnetic fields and childhood cancers, including childhood leukemia, in Slovenia. Cancer cases, including 194 cases of leukemia, were identified from the Slovenian Cancer Registry; cases were then classified into one of five calculated magnetic-field exposure levels (ranging from < 0.1 μ T [< 1 mG] to \ge 0.4 μ T [\ge 4 mG]) based on residential distance to high voltage (e.g., 110-kV, 220-kV, and 400-kV) power lines. The authors reported that less than 1% of Slovenian children and adolescents lived in an area near high voltage power lines. No differences in the development of childhood cancers, including leukemia, brain tumors, or all cancers combined, were reported across the five exposure categories.
- Crespi et al. (2024) assessed the association between residential proximity to ٠ electricity transformers in multi-story residential buildings and childhood leukemia development in the International Transformer Exposure study. Participants were required to live in an apartment building that contained a built-in transformer; exposure was estimated using the participants' apartment location relative to the transformer and categorized as high exposure (located above or adjacent to the transformer), intermediate exposure (located on the same floor as apartments in the high exposure category), or unexposed (all other apartments). In the pooled analyses of five countries' data, a total of 74 cases and 20,443 controls were included; 18 of the 74 cases were identified in the intermediate or high exposure categories. No significant associations were reported between proximity to residential transformers and childhood leukemia. Sensitivity analyses performed using the data from one of the five countries (Finland) where a cohort study design was used, also reported no significant associations. The authors concluded that the evidence for an elevated risk of childhood leukemia from proximity to residential transformers was "weak."

- Duarte-Rodríguez et al. (2024) conducted a population-based case-control study to examine the geographical distribution of childhood ALL cases in Mexico City, Mexico. Cases and controls were geolocated using the most recent residential address, and a spatial scan statistic was used to detect spatial clusters of cancer cases. The authors identified eight spatial clusters of cases, representing nearly 40% of all cases included in the study (n=1,054 cases). The authors noted that six of the eight spatial clusters were located in proximity to high voltage power lines and high voltage electric installations (distances not specified), and that the remaining two clusters were located near former petrochemical industrial facility sites. Since the study did not directly assess magnetic-field exposure and made no conclusions about magnetic-field exposure and cancer development, this study adds little value to the existing literature regarding a potential association between exposure to ELF EMF and childhood leukemia development.
- Malavolti et al. (2024) examined the association between magnetic-field exposure from transformer stations and childhood leukemia in the same Italian study population as Malagoli et al. (2023). Magnetic-field exposure was estimated based on residential distance to the nearest transformer station, and participants were then categorized as exposed or unexposed using two different distance cut-points: residing within a radius of 15 or 25 meters from the transformer station (exposed); residing ≥ 15 meters or ≥ 25 meters from the transformer station (unexposed). No significant associations were reported for all leukemias, or ALL specifically, when either distance cut-point was used, and in fact no association at all (an odds ratio = 1.0) was observed when the more stringent cut-point of 15 meters was used. In sub-analyses that stratified by participant age (< 5 years vs. ≥ 5 years), no significant associations were reported for either age category.</p>

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 Parkinsonism³² 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

³² Parkinsonism is defined by Checkoway et al. (2018) as "a syndrome whose cardinal clinical features are bradykinesia, rest tremor, muscle rigidity, and postural instability. Parkinson disease is the most common neurodegenerative form of [parkinsonism]" (p. 887).

bias, and a lack of a clear exposure-response relationship between exposure and ALS.

- Jalilian et al. (2018) conducted a meta-analysis of 20 epidemiologic studies of occupational exposure to magnetic fields and Alzheimer's disease. The authors reported a moderate, statistically significant overall association; however, they noted substantial heterogeneity among studies and evidence for publication bias.
- Röösli and Jalilian (2018) performed a meta-analysis using data from five epidemiologic studies examining residential exposure to magnetic fields and ALS. A statistically non-significant negative association was reported between ALS and the highest exposed group, where exposure was defined based on distance from power lines or calculated magnetic-field level.
- Gervasi et al. (2019) assessed the relationship between residential distance to overhead power lines in Italy and risk of Alzheimer's dementia and Parkinson's disease. The authors included 9,835 cases of Alzheimer's dementia and 6,810 cases of Parkinson's disease; controls were matched by sex, year of birth, and municipality of residence. A weak, statistically non-significant association was observed between residences within 50 meters of overhead power lines and both Alzheimer's dementia and Parkinson's disease, compared to distances of over 600 meters.
- Peters et al. (2019) examined the relationship between ALS and occupational exposure to both magnetic fields and electric shock in a pooled study of data from three European countries. The study included 1,323 ALS cases and 2,704 controls matched for sex, age, and geographic location; exposure was assessed based on occupational title and defined as low (background), medium, or high. Statistically significant associations were observed between ALS and ever having been exposed above background levels to either magnetic fields or electric shocks; however, no clear exposure-response trends were observed with exposure duration or cumulative exposure. The authors also noted significant heterogeneity in risk by study location.
- Filippini et al. (2020) investigated the associations between ALS and several environmental and occupational exposures, including electromagnetic fields, within a case-control study in Italy. The study included 95 cases and 135 controls matched on age, gender, and residential province; exposure to electromagnetic fields was assessed using the participants' responses to questions related to occupational use of electric and electronic equipment, occupational EMF exposure, and residential distance to overhead power lines. The authors reported a statistically significant association between ALS and residential proximity to overhead power lines and a statistically non-significant association between ALS and occupational exposure to EMF; occupational use of electric and electronic equipment was associated with a statistically non-significant decrease in ALS development.

- Huang et al. (2020) conducted a meta-analysis of 43 epidemiologic studies examining potential occupational risk factors for dementia or mild cognitive impairment. The authors included five cohort studies and seven case-control studies related to magnetic-field exposure. For both study types, the authors reported positive associations between dementia and work-related magnetic-field exposures. The paper, however, provided no information on the occupations held by the study participants, their magnetic-field exposure levels, or how magnetic-field levels were assessed; therefore, the results are difficult to interpret. The authors also reported a high level of heterogeneity among studies. Thus, this analysis adds little, if any, to the overall weight of evidence on a potential association between dementia and magnetic fields.
- Jalilian et al. (2020) conducted a meta-analysis of ALS and occupational exposure to both magnetic fields and electric shocks within 27 studies from Europe, the United States, and New Zealand. A weak, statistically significant association was reported between magnetic-field exposure and ALS; however, the authors noted evidence of study heterogeneity and publication bias. No association was observed between ALS and electric shocks.
- Chen et al. (2021) conducted a case-control study to examine the association between occupational exposure to electric shocks, magnetic fields, and motor neuron disease ("MND") in New Zealand. The study included 319 cases with a MND diagnosis (including ALS) and 604 controls, matched on age and gender; exposure was assessed using the participants' occupational history questionnaire responses and previously developed job-exposure matrices for electric shocks and magnetic fields. The authors reported no associations between MND and exposure to magnetic fields; positive associations were reported between MND and working at a job with the potential for electric shock exposure.
- Grebeneva et al. (2021) evaluated disease rates among electric power company workers in the Republic of Kazakhstan. The authors included three groups of "exposed" workers who "were in contact with equipment generating [industrial frequency EMF]" (a total of 161 workers), as well as 114 controls "who were not associated with exposure to electromagnetic fields." Disease rates were assessed "based on analyzing the sick leaves of employees" from 2010 to 2014 and expressed as "incidence rate per 100 employees." The authors reported a higher "incidence rate" of "diseases of the nervous system" in two of the exposed categories compared to the non-exposed group. No meaningful conclusions from the study could be drawn, however, because no specific diagnoses within "diseases of the nervous system" were identified in the paper and no clear description was provided on how the authors defined and calculated "incidence rate" for the evaluated conditions. In addition, no measured or calculated magnetic-field levels were presented by the authors.
- Filippini et al. (2021) conducted a meta-analysis to assess the dose-response relationship between residential exposure to magnetic fields and ALS. The

authors identified six ALS epidemiologic studies, published between 2009 and 2020, that assessed exposure to residential magnetic fields by either distance from overhead power lines or magnetic-field modeling. They reported a decrease in risk of ALS in the highest exposure categories for both distance-based and modeling-based exposure estimates. The authors also reported that their dose-response analyses "showed little association between distance from power lines and ALS"; the data were too sparse to conduct a dose-response analysis for modeled magnetic-field estimates. The authors noted that their study was limited by small sample size, "imprecise" exposure categories, the potential for residual confounding, and by "some publication bias."

- Jalilian et al. (2021) conducted a meta-analysis of occupational exposure to ELF magnetic fields and electric shocks and development of ALS. The authors included 27 studies from Europe, the United States, and New Zealand that were published between 1983 and 2019. A weak, statistically significant association was reported between magnetic-field exposure and ALS, and no association was observed between electric shocks and ALS. Indications of publication bias and "moderate to high" heterogeneity were identified for the studies of magnetic-field exposure and ALS, and the authors noted that "the results should be interpreted with caution."
- Goutman et al. (2022) examined occupational exposures, including "electromagnetic radiation" exposure, and associations with ALS in a casecontrol study of Michigan workers across various industries. The study included 381 cases diagnosed with ALS, all patients at the University of Michigan's Pranger ALS clinic, and 272 controls recruited from an online database for the University of Michigan. Participants were enrolled from 2010 to 2020 and completed a written survey of their work history and occupational exposures to nine exposure categories, including electromagnetic fields, particulate matter (PM), and pesticides. Exposure to electromagnetic fields was ascertained with a binary question asking whether they were "[e]xposed to power lines, transformation [sic] stations or other EM [electromagnetic radiation]?" The analysis was adjusted for age, sex, and military service. No association was observed between electromagnetic field exposure and ALS, while exposure to PM, pesticides, and metals, among others, were determined by the authors to be "associated with an increased ALS risk in this cohort."
- Sorahan and Nichols (2022) investigated magnetic-field exposure and mortality from MND in a large cohort of employees of the former Central Electricity Generating Board of England and Wales. The study included nearly 38,000 employees first hired between 1942 and 1982 and still employed in 1987. Estimates of exposure magnitude, frequency, and duration were calculated using data from the power stations and the employees' job histories, and were described in detail in a previous publication (Renew et al., 2003). Mortality from MND in the total cohort was observed to be similar to national rates. No statistically significant dose-response trends were observed with lifetime, recent, or distant magnetic-field exposure; statistically significant associations

were observed for some categories of recent exposure, but not for the highest exposure category.

- Duan et al. (2023) conducted a meta-summary of ALS and exposure to magnetic fields, which was 1 of 22 non-genetic risk factors evaluated across 67 studies for its association with ALS. Six of the 67 studies examined magnetic-field exposure and associations with ALS; of the six studies identified, the authors included four case-control studies and one cohort study in their meta-analysis. Pooling results from these studies resulted in significant increased odds of ALS among individuals with higher (but undefined) exposure to magnetic fields. However, this pooled odds ratio for magnetic-field exposure (1.22) was below the minimum odds ratio threshold of 1.3 set by the authors as the criterion for defining an exposure as an ALS risk factor. In addition, the authors identified "substantial" heterogeneity between studies evaluating magnetic-field exposure and ALS.
- In a subsequent publication of the same study as Goutman et al. (2022), Goutman et al. (2023) assessed the potential for the same nine exposure categories, including "electromagnetic radiation" exposure, to be risk factors for ALS progression, including survival and onset segment (bulbar, cervical, lumbar). Electromagnetic field exposure was not significantly associated with ALS survival or with bulbar onset compared to lumbar, but was significantly associated with cervical onset compared to lumbar. It is worth noting that an association with cervical onset compared to lumbar was observed in the majority (7/9) of the exposure categories. The authors make no concluding statements on electromagnetic field exposure and ALS and instead emphasize that occupational pesticide exposure and working in military operations were significantly associated with worse ALS survival.
- Saucier et al. (2023) carried out three systematic reviews of studies that evaluated relationships between urbanization, air pollution, and water pollution, and ALS development. The authors identified five studies that assessed whether electromagnetic fields (of varying frequencies) and high voltage infrastructure were significant urbanization risk factors for ALS, but make no conclusion about magnetic-field exposure and ALS development based on these studies, therefore adding little value to the existing literature.
- Vasta et al. (2023) examined the relationship between residential distance to power lines and ALS development in a cohort study of 1,098 participants in Italy. The authors reported no differences in the age of ALS onset or ALS progression rate between low-exposed and high-exposed participants based on residential distance to power lines at the time of the participants' diagnosis. Similarly, no differences were observed when exposure was based on residential distance to repeater antennas.
- Vitturi et al. (2023) conducted a systematic review and meta-analysis of casecontrol studies examining potential occupational risk factors related to multiple

sclerosis, including solvents, mercury, pesticides, and low-frequency magnetic fields. The authors included 24 studies in their review, but only one of the included studies investigated exposure to magnetic fields (Pedersen et al., 2017, discussed above), thereby adding little new information to the existing body of research.

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V. NOTICE

- A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposed to be noticed, provide minimum, maximum and average structure heights.
- Response: Dominion Energy Virginia's Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project includes construction of the new overhead double circuit 230 kV Mt. Pony –Potato Run Line #2437 and Mt. Pony Oak Green Line #2438, the new overhead double circuit 230 kV Cirrus Mt. Pony Line #2, the conversion and rebuild of the existing 115 kV Remington-Oak Green Line #2 to 230 kV, the conversion and rebuild of the existing 115 kV Line #1065 to 230 kV and relocation of the existing Oak Green Switching Station, and construction of four new substations: Mt. Pony Substation, Chandler Substation, McDevitt Substation, and Palomino Substation in Culpeper County, Town of Culpeper, Orange County, and Fauquier County.

A map is provided in <u>Attachment V.A</u> showing the overhead Proposed Route and Alternative Route for the Mt. Pony Lines and Tech Park Lines, and the Oak Green Rebuild and Relocation Proposed Route and Remington Rebuild Proposed Route, as well as the location of the new Mt. Pony, McDevitt, Chandler, and Palomino Substation and the relocated Oak Green Switching Station.

A written description of the Proposed Routes is as follows:

Mt. Pony Proposed Route (Route 1)

Mt. Pony Proposed Route originates at a cut-in location on the Company's existing transmission lines one mile south of Stevensburg. From the cut-in location, the route parallels Blackjack Road north for approximately 0.6 mile, then parallels Alvere Road to the west and north for approximately 0.6 mile where it joins the corridor for the Company's existing Lines #2/#70. Mt. Pony Proposed Route then runs west, collocated with the Company's Lines #2/#70 for approximately 3.1 miles. Mt. Pony Route 1 then turns northwest, crosses Rt. 3 and runs another 0.6 mile (collocated with existing Lines #2/#70) before reaching the south side of US 15/29. At this point, Mt. Pony Proposed Route turns southwest, paralleling the south side of US 15/29 for 0.3 mile before terminating at the proposed Mt. Pony Substation. In total, the Mt. Pony Proposed Route is approximately 5.2 miles in length.

Mt. Pony Route 1 would be constructed within a new 100-foot right-of-way in areas where not collocated with existing transmission lines. The 3.7-mile portion of Mt. Pony Route 1 that would be collocated with existing Lines #2/#70 would require a new 60-foot new right-of-way adjacent to the existing 100-foot right-of-way, creating a 160-foot-wide right-of-way. The Proposed Route primarily will be supported by double circuit monopole structures. For the Proposed Route, the

minimum structure height is 75 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.

Mt. Pony Alternative Route 2

Mt. Pony Alternative Route 2 originates at a cut-in location on the Company's existing Lines about 0.75 mile south of Mt. Pony Road. From the cut-in location, the route heads northwest through forested and open land for approximately 3.5 miles and crosses Woolens Lane. The route then turns northeast, parallels the east side of US 522 for approximately 0.3-mile, crosses Rt. 3, and continues north across forested and open lands for approximately 0.5 mile before terminating at the proposed Mt. Pony Substation. In total, the Mt. Pony Alternative Route 2 measures approximately 4.8 miles long.

Mt. Pony Alternative Route 2 would be constructed entirely within a new 100-footwide right-of-way. The Alternative Route primarily will be supported by double circuit monopole structures. For the Mt. Pony Alternative Route 2, the minimum structure height is 75 feet, the maximum structure height is 130 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.

Tech Park Proposed Route (Route 1)

Tech Park Proposed Route 1 originates at the proposed Mt. Pony Substation. From the proposed Mt. Pony Substation, Tech Park Route 1 heads northeast for approximately 0.3 mile on the south side of US 15/29, then turns northwest for approximately 0.2 mile. This segment crosses US 15/29 and would be collocated with the Company's existing Lines #2/#70. The route then runs southwest and west along the southern and western edges of a planned data center campus for 0.6 mile (including a crossing of McDevitt Drive), then crosses two additional data center campuses as part of a 2.0-mile loop that connects the proposed McDevitt, Chandler, and Palomino Substations. Tech Park Proposed Route then follows the existing 115 kV Line #70 corridor to the southeast and south for approximately 0.5 mile and terminates at the approved future Cirrus Switching Station. In total, Tech Park Proposed Route (Route 1) measures approximately 3.7 miles long.

Tech Park Proposed Route would be constructed within a new 100-foot right-ofway, except for two 0.2-mile segments where it is collocated with the existing Lines #2/#70 right-of-way and would require only 60 additional feet of right-of-way. The Proposed Route primarily will be supported by double circuit monopole structures. For the Proposed Route, the minimum structure height is 75 feet, the maximum structure height is 125 feet, and the average structure height is 111 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Tech Park Alternative Route 2

Tech Park Alternative Route 2 originates at the proposed Mt. Pony Substation. From the proposed Mt. Pony Substation, Tech Park Alternative Route 2 heads southwest for approximately 0.2 mile along the south side of US 15/29. The route then turns northwest, crosses US 15/29, and continues northwest and north for approximately 0.6 mile, crossing Technology Drive. Tech Park Alternative Route 2 turns west and follows the southern and western edges of a planned data center for 0.4 mile (including a crossing of McDevitt Drive), then crosses two additional planned data center campuses as part of a 2.0-mile loop that connects the proposed McDevitt, Chandler, and Palomino Substations. Tech Park Alternative Route 2 then follows the existing 115 kV Line #70 corridor to the southeast and south for approximately 0.5 mile and terminates at the approved future Cirrus Switching Station. In total, Tech Park Alternative Route 2 measures approximately 3.5 miles long.

Tech Park Alternative Route 2 would be constructed within a new 100-foot rightof-way, except for one 0.2-mile segment where it is collocated with the existing Line #70 right-of-way and would require only 60 additional feet of right-of-way. The Alternative Route primarily will be supported by double circuit monopole structures. For the Tech Park Alternative Route 2, the minimum structure height is 75 feet, the maximum structure height is 130 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.

Tech Park Alternative Route 3

Tech Park Alternative Route 3 originates at the proposed Mt. Pony Substation. From the proposed Mt. Pony Substation, Tech Park Alternative Route 3 heads southwest for approximately 0.2 mile along the south side of US 15/29. The route turns northwest, crossing US 15/29, and continues generally northwest for approximately 0.8 mile generally parallel to Technology Drive and crossing McDevitt Drive. Tech Park Alternative Route 3 then crosses two planned data center campuses as part of a 2.0-mile loop that connects the proposed McDevitt, Chandler, and Palomino Substations. Tech Park Alternative Route 3 then follows the existing 115 kV Line #70 corridor to the southeast and south for approximately 0.5 mile and terminates at the future Cirrus Switching Station (approved as part of a separate filing).³³ In total, Tech Park Alternative Route 3 measures approximately 3.5 miles long.

Tech Park Alternative Route 3 would be constructed within a new 100-foot rightof-way, except for one 0.2-mile segment where it is collocated with the existing Line #70 right-of-way and would require only 60 additional feet of right-of-way. The Alternative Route primarily will be supported by double circuit monopole

³³ See supra n. 5.

structures. For the Tech Park Alternative Route 2, the minimum structure height is 75 feet, the maximum structure height is 130 feet, and the average structure height is 114 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Oak Green Rebuild Proposed Route

The Oak Green Rebuild begins at a cut-in location on the Company's existing Lines 0.4 mile south of US 522 in Culpeper County. From the cut-in, the Oak Green Rebuild Proposed Route would follow the Company's existing Lines #1065/#11 southeast for approximately 2.5 miles to the existing Oak Green Switching Station. This segment crosses the Rapidan River, enters Orange County, and crosses US 522 about 1.5 miles east of the County boundary. The Oak Green Rebuild Proposed Route passes through the existing Oak Green Switching Station (which would be partially removed, although the transmission structures within the existing substation site would be retained) and continues approximately 0.2 mile south to the relocated proposed Oak Green Switching Station site. The Oak Green Rebuild Proposed Route also includes an approximately 0.1-mile segment of new 75-foot right-of-way south of the relocated proposed Oak Green Rebuild Proposed Oak Green Switching Station to interconnect the existing 115 kV Line #153 to the relocated proposed Oak Green Switching Station. In total, the Oak Green Rebuild Proposed Route measures approximately 2.9 miles long.

The Oak Green Rebuild Proposed Route would be primarily within a 100-foot-wide right-of-way, which is comprised of the existing 75-foot-wide right-of-way for existing Lines #1065/#11, plus a 25-foot expansion. The exceptions to this right-of-way expansion include a 0.2-mile segment west of the Rapidan River in Culpeper County and 0.3-mile segment south of River Road in Orange County that cross existing conservation easements and will be maintained within the existing 75-footwide rights-of-way. In addition, an approximately 0.2-mile segment south of the existing Oak Green Switching Station, a new variable width right-of-way will be used to connect the existing Oak Green Switching Station. The Proposed Route primarily will be supported by double circuit monopole structures. For the Oak Green Rebuild Proposed Route, the minimum structure height is 130 feet, and the average structure height is 118 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Remington Rebuild Proposed Route

The Remington Rebuild begins at a cut-in location on the Company's existing Lines #5/#535 near Lucky Hill Road east of the Town of Remington in Fauquier County. From the cut-in, the Remington Rebuild heads east/northeast within the existing Line #2/#535 right-of-way for approximately 0.7 mile, where it terminates in the existing Remington Substation.

The Remington Rebuild Proposed Route would be located entirely within existing variable width rights-of-way and Dominion Energy Virginia property. For the Remington Rebuild Proposed Route, the minimum structure height is 45 feet, the maximum structure height is 125 feet, and the average structure height is 105 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.



Attachment V.A

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: <u>www.dominionenergy.com/ctz.</u>

V. NOTICE

C. List all federal, state, and local agencies and/or officials that may reasonably be expected to have an interest in the proposed construction and to whom the Applicant has furnished or will furnish a copy of the application.

Response:

Ms. Bettina Rayfield Virginia Department of Environmental Quality Office of Environmental Impact Review 1111 East Main Street, Suite 1400 Richmond, Virginia 23219

Ms. Michelle Henicheck Virginia Department of Environmental Quality Office of Wetlands and Streams 1111 East Main Street, Suite 1400 Richmond, Virginia 23219

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

Environmental Reviewer Virginia Department of Conservation and Recreation Planning & Recreation Bureau 600 East Main Street, 17th Floor Richmond, Virginia 23219

Ms. Hannah Schul Virginia Department of Wildlife Resources Wildlife Information and Environmental Services 7870 Villa Park, Suite 400 Henrico, Virginia 23228

Mr. Keith Tignor Virginia Department of Agriculture and Consumer Services Office of Plant Industry Services 102 Governor Street Richmond, Virginia 23219

Mr. Clint Folks Virginia Department of Forestry Forestland Conservation Division 900 Natural Resources Drive, Suite 800 Charlottesville, Virginia 22903

Scoping at VMRC Virginia Marine Resources Commission Habitat Management Division Building 96, 380 Fenwick Road Ft. Monroe, Virginia 23651

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

Ms. Regena Bronson U.S. Army Corps of Engineers Fredericksburg Field Office 10300 Spotsylvania Parkway, Suite 230 Fredericksburg, VA 22408

Ms. Arlene Fields Warren Virginia Department of Health Office of Drinking Water 109 Governor Street, 6th Floor Richmond, VA 23219

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 January 20, 2025, were delivered on January 21, 2025 to John Egertson, Administrator of Culpeper County Administrator, Chris Hively, Culpeper Town Manager, Ted Voorhees, Orange County Administrator, and Janelle Downes, Fauquier County Administrator, where the Project is located. The letters stated the Company's intention to file this Application and invited each County and the Town of Culpeper to consult with the Company about the Project. These letters are included as <u>Attachment V.D.</u>



January 20, 2025

Mr. John Egertson Culpeper County Administrator 302 North Main Street Culpeper, VA 22701

RE: Dominion Energy Virginia's Proposed Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Notice Pursuant to Va. Code § 15.2-2202 E

Dear Mr. Egertson:

In order to ensure that Dominion Energy Virginia (the "Company") can provide service requested by three data center customers, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company is proposing the Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project in Culpeper County, the Town of Culpeper, Orange County, and Fauquier County, Virginia (the Project"). The Project includes new 230 kV transmission lines (Mt. Pony – Potato Run, Mt. Pony – Oak Green, and Cirrus – Mt. Pony); a conversion of the Company's existing 115 kV Oak Green – Remington line to 230 kV and a rebuild of the Gordonsville – Oak Green 230 kV line; a conversion and rebuild of a segment of the Company's existing 230 kV Oak Green – Remington line with a distribution underbuild; and construction of four new 230 kV substations (Mt. Pony Substation, McDevitt Substation, Chandler Substation, and Palomino Substation) and relocation of one 230 kV switching station (Oak Green Switching Station).

The Company is preparing to file an application for a certificate of public convenience and necessity ("CPCN") with the State Corporation Commission (the "Commission"). Pursuant to § 15.2-2202 E of the Code of Virginia, the Company is writing to notify Culpeper County of the proposed Project in advance of the CPCN application filing and respectfully requests that you submit any comments or additional information you feel would have bearing on the Project within 30 days of the date of this letter. Once filed, the CPCN application filing will be available for review on the Company's website at www.dominionenergy.com/ctz.



Enclosed is a Project Overview Map depicting the Project's alternative routes, as well as the general Project location. All final materials, including maps, will be available in the Company's CPCN filing to the Commission.

If you would like to receive a GIS shapefile of the alternative routes to assist in your Project review or if you have any questions, please do not hesitate to contact me at (804) 201-3053 or greg.r.baka@dominionenergy.com.

Dominion Energy Virginia appreciates your assistance with this Project review and looks forward to any additional information you may have to offer.

Sincerely,

Greg Baka

Greg Baka Local Permitting Consultant

Attachment: Project Overview Map



January 20, 2025

Mr. Chris Hively Culpeper Town Manager 400 South Main Street, Suite 101 Culpeper, VA 22701

RE: Dominion Energy Virginia's Proposed Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Notice Pursuant to Va. Code § 15.2-2202 E

Dear Mr. Hively:

In order to ensure that Dominion Energy Virginia (the "Company") can provide service requested by three data center customers, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company is proposing the Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project in Culpeper County, the Town of Culpeper, Orange County, and Fauquier County, Virginia (the Project"). The Project includes new 230 kV transmission lines (Mt. Pony – Potato Run, Mt. Pony – Oak Green, and Cirrus – Mt. Pony); a conversion of the Company's existing 115 kV Oak Green – Remington line to 230 kV and a rebuild of the Gordonsville – Oak Green 230 kV line; a conversion and rebuild of a segment of the Company's existing 230 kV Oak Green – Remington line with a distribution underbuild; and construction of four new 230 kV substations (Mt. Pony Substation, McDevitt Substation, Chandler Substation, and Palomino Substation) and relocation of one 230 kV switching station (Oak Green Switching Station).

The Company is preparing to file an application for a certificate of public convenience and necessity ("CPCN") with the State Corporation Commission (the "Commission"). Pursuant to § 15.2-2202 E of the Code of Virginia, the Company is writing to notify the Town of Culpeper of the proposed Project in advance of the CPCN application filing and respectfully requests that you submit any comments or additional information you feel would have bearing on the Project within 30 days of the date of this letter. Once filed, the CPCN application filing will be available for review on the Company's website at www.dominionenergy.com/ctz.



Enclosed is a Project Overview Map depicting the Project's alternative routes, as well as the general Project location. All final materials, including maps, will be available in the Company's CPCN filing to the Commission.

If you would like to receive a GIS shapefile of the alternative routes to assist in your Project review or if you have any questions, please do not hesitate to contact me at (804) 201-3053 or greg.r.baka@dominionenergy.com.

Dominion Energy Virginia appreciates your assistance with this Project review and looks forward to any additional information you may have to offer.

Sincerely,

Greg Baka

Greg Baka Local Permitting Consultant

Attachment: Project Overview Map



January 20, 2025

Ted Voorhees Orange County Administrator 112 W. Main St. Orange, Virginia 22960

RE: Dominion Energy Virginia's Proposed Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Notice Pursuant to Va. Code § 15.2-2202 E

Dear Mr. Voorhees:

In order to ensure that Dominion Energy Virginia (the "Company") can provide service requested by three data center customers, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company is proposing the Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project in Culpeper County, the Town of Culpeper, Orange County, and Fauquier County, Virginia (the Project"). The Project includes new 230 kV transmission lines (Mt. Pony – Potato Run, Mt. Pony – Oak Green, and Cirrus – Mt. Pony); a conversion of the Company's existing 115 kV Oak Green – Remington line to 230 kV and a rebuild of the Gordonsville – Oak Green 230 kV line; a conversion and rebuild of a segment of the Company's existing 230 kV Oak Green – Remington line with a distribution underbuild; and construction of four new 230 kV substations (Mt. Pony Substation, McDevitt Substation, Chandler Substation, and Palomino Substation) and relocation of one 230 kV switching station (Oak Green Switching Station).

The Company is preparing to file an application for a certificate of public convenience and necessity ("CPCN") with the State Corporation Commission (the "Commission"). Pursuant to § 15.2-2202 E of the Code of Virginia, the Company is writing to notify Orange County of the proposed Project in advance of the CPCN application filing and respectfully requests that you submit any comments or additional information you feel would have bearing on the Project within 30 days of the date of this letter. Once filed, the CPCN application filing will be available for review on the Company's website at www.dominionenergy.com/ctz.



Enclosed is a Project Overview Map depicting the Project's alternative routes, as well as the general Project location. All final materials, including maps, will be available in the Company's CPCN filing to the Commission.

If you would like to receive a GIS shapefile of the alternative routes to assist in your Project review or if you have any questions, please do not hesitate to contact me at (804) 201-3053 or greg.r.baka@dominionenergy.com.

Dominion Energy Virginia appreciates your assistance with this Project review and looks forward to any additional information you may have to offer.

Sincerely,

Greg Baka

Greg Baka Local Permitting Consultant

Attachment: Project Overview Map



January 20, 2025

Ms. Janelle Downes Fauquier County Administrator 10 Hotel Street, 3rd Floor Warrenton, VA 20186

RE: Dominion Energy Virginia's Proposed Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Notice Pursuant to Va. Code § 15.2-2202 E

Dear Ms. Downes:

In order to ensure that Dominion Energy Virginia (the "Company") can provide service requested by three data center customers, to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company is proposing the Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project in Culpeper County, the Town of Culpeper, Orange County, and Fauquier County, Virginia (the Project"). The Project includes new 230 kV transmission lines (Mt. Pony – Potato Run, Mt. Pony – Oak Green, and Cirrus – Mt. Pony); a conversion of the Company's existing 115 kV Oak Green – Remington line to 230 kV and a rebuild of the Gordonsville – Oak Green 230 kV line; a conversion and rebuild of a segment of the Company's existing 230 kV Oak Green – Remington line with a distribution underbuild; and construction of four new 230 kV substations (Mt. Pony Substation, McDevitt Substation, Chandler Substation, and Palomino Substation) and relocation of one 230 kV switching station (Oak Green Switching Station).

The Company is preparing to file an application for a certificate of public convenience and necessity ("CPCN") with the State Corporation Commission (the "Commission"). Pursuant to § 15.2-2202 E of the Code of Virginia, the Company is writing to notify Fauquier County of the proposed Project in advance of the CPCN application filing and respectfully requests that you submit any comments or additional information you feel would have bearing on the Project within 30 days of the date of this letter. Once filed, the CPCN application filing will be available for review on the Company's website at www.dominionenergy.com/ctz.



Enclosed is a Project Overview Map depicting the Project's alternative routes, as well as the general Project location. All final materials, including maps, will be available in the Company's CPCN filing to the Commission.

If you would like to receive a GIS shapefile of the alternative routes to assist in your Project review or if you have any questions, please do not hesitate to contact me at (804) 201-3053 or greg.r.baka@dominionenergy.com.

Dominion Energy Virginia appreciates your assistance with this Project review and looks forward to any additional information you may have to offer.

Sincerely,

Greg Baka

Greg Baka Local Permitting Consultant

Attachment: Project Overview Map



COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF)
VIRGINIA ELECTRIC AND POWER COMPANY) Case No. PUR-2025-00032
For approval and certification of electric transmission facilities: Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project)))

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

Vishal S. Dixit

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

Wesley Strunk

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

Mohammad M. Othman

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

Gregory R. Baka

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

Jared Brandell-Douglas

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Vishal S. Dixit

<u>Title</u>: Engineer I – Electric Transmission Planning Group

Summary:

Company Witness Vishal S. Dixit sponsors those portions of the Appendix describing the Company's electric transmission system and the need for, and benefits of, the proposed Project, as follows:

- <u>Section I.B</u>: This section details the engineering justifications for the proposed Project.
- <u>Section I.C</u>: This section describes the present system and details how the proposed Project will effectively satisfy present and projected future load demand requirements.
- <u>Section I.D</u>: This section describes critical contingencies and associated violations due to the inadequacy of the existing system.
- <u>Section I.E</u>: This section explains feasible project alternatives, when applicable.
- <u>Section I.G</u>: This section provides a system map of the affected area.
- <u>Section I.H</u>: This section provides the desired in-service date of the proposed Project and the estimated construction time.
- <u>Section I.J</u>: This section provides information about the project if approved by the RTO.
- <u>Section I.K</u>: Although not applicable to the proposed Project, 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.
- <u>Section I.M</u>: Although not applicable to the proposed Project, this section, when applicable, contains information for transmission lines interconnecting a non-utility generator.
- <u>Section I.N</u>: 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.
- <u>Section II.A.10</u>: This section provides details of the construction plans for the proposed Project, including requested line outage schedules.

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

- <u>Section I.A (co-sponsored with Company Witnesses Wesley Strunk, Mohammad O.</u> <u>Othman, Gregory R. Baka, and Jared Brandell-Douglas</u>): This section details the primary justifications for the proposed Project.
- <u>Section I.L (co-sponsored with Company Witness Wesley Strunk)</u>: Although not applicable to the proposed Project, this section, when applicable, provides details on the deterioration of structures and associated equipment.

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

DIRECT TESTIMONY OF VISHAL S. DIXIT ON BEHALF OF VIRGINIA ELECTRIC AND POWER COMPANY BEFORE THE STATE CORPORATION COMMISSION OF VIRGINIA CASE NO. PUR-2025-00032

1	Q.	Please state your name, position with Virginia Electric and Power Company
2		("Dominion Energy Virginia" or the "Company"), and business address.
3	A.	My name is Vishal S. Dixit, and I am an Engineer I in the Electric Transmission Planning
4		group of the Company. My business address is 5000 Dominion Blvd, Glen Allen,
5		Virginia 23060.
6	Q.	Please describe your areas of responsibility with the Company.
7	A.	I am responsible for planning the Company's electric transmission system for voltages of
8		69 kilovolt ("kV") through 500 kV.
9	Q.	What is the purpose of your testimony in this proceeding?
10	A.	In order to provide service requested by three Customers developing separate new data
11		center campuses in Culpeper County and the Town of Culpeper, Virginia, to maintain
12		reliable service for the overall load growth in the area, and to comply with mandatory
13		North American Electric Reliability Corporation ("NERC") Reliability Standards,
14		Dominion Energy Virginia proposes in Culpeper County, the Town of Culpeper, Orange
15		County, and Fauquier County, Virginia, to:
16 17 18 19 20 21		(i) Construct new approximately 5.2-mile overhead 230 kilovolt ("kV") double circuit transmission lines: Mt. Pony – Potato Run Line #2437 ("Mt. Pony – Potato Run Line") and the Mt. Pony – Oak Green Line #2438 ("Mt. Pony – Oak Green Line") (collectively the "Mt. Pony Lines") primarily on new right-of-way. The new transmission lines will extend from the converted Potato Run – Remington and Oak Green – Potato Run Lines near Structures #1065/496 / #2331/110, as described below, to the proposed Mt. Pony

Substation. The proposed Mt. Pony – Potato Run Line and the Mt. Pony – Oak Green Line will be constructed primarily with double circuit weathering steel monopole structures, utilizing two circuits of three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA. The Mt. Pony Lines will utilize a total of 100 or 160 feet of right-of-way, which includes both new 100-foot-wide right-of-way, and collocated 160-foot right-of-way. The amount of new right-of-way width for this line will vary from 60 feet to 100 feet.¹

(ii) Construct a new approximately 3.7-mile² overhead 230 kV double circuit transmission line (the "Cirrus – Mt. Pony Line" of the "Tech Park Lines") primarily on new right-of-way and planned data center campuses. The Tech Park Lines will extend from the proposed 230 kV Mt. Pony Substation to the future 230 kV Cirrus Switching Station³ and interconnect the proposed 230 kV Chandler, McDevitt, and Palomino Substations. The Tech Park Lines will be constructed primarily with double circuit pre-dulled galvanized steel monopole structures, utilizing two circuits of three-phase twinbundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA. The amount of new right-of-way width for this line will vary from 100 feet to 160 feet.⁴

² If Mt. Pony Proposed Route (Route 1) and Tech Park Proposed Route (Route 1) are selected by the Commission, then a 0.3-mile segment of 100-foot wide right-of-way along the south side of US 15/29 will not be needed by the Tech Park Proposed Route, as the Tech Park Proposed Route will tap into the Mt. Pony Proposed Route at proposed Structure # 2437/168 / 2438/126 rather than beginning at the proposed Mt. Pony Substation. In this scenario, the Tech Park Proposed Route is 3.4 miles in length, rather than 3.7 miles, and the Tech Park Proposed Route right-of-way would be reduced by approximately 3.7 acres. If Mt. Pony Alternative Route 2 is selected by the Commission, this 0.3-mile (3.7 acre) segment will be included. To ensure that all potential Project impacts are evaluated, this 0.3-mile segment is included in both the Mt. Pony Proposed Route and Tech Park Proposed Route impacts in this filing.

³ 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, Final Order (Oct. 23, 2023).

⁴ Approximately 3.3 miles of the total 3.7-mile Tech Park Proposed Route would be located within new 100-foot-wide right-of-way, with one 0.2-mile segment collocated with the existing Company Lines #2 and #70, and one 0.2-mile segment collocated with the Company's existing Line #2 rights-of-way that require only 60 additional feet in width. Approximately 0.4 mile, or approximately 11% of the total length, will be collocated with the existing right-of-way. This collocated 0.4 mile will require 60 feet of new right-of-way width adjacent to the Company's existing 100-foot right-of-way, utilizing a total 160-foot-wide right-of-way.

¹ Approximately 1.5 miles of the Mt. Pony Proposed Route will be within new 100-foot right-ofway, including a 1.2-mile segment from the cut-in at existing Structure #2/496 / #2199/110 and the 0.3mile segment along James Madison Highway that terminates at the proposed Mt. Pony Substation. Approximately 3.7 miles, or approximately 71% of the total length, will be collocated along the existing right-of-way. This collocated 3.7 miles will have 60 feet of new right-of-way adjacent to the Company's existing 100-foot right-of-way, utilizing a total right-of-way width of 160 feet.
1	(iii) Convert and rebuild the Company's existing 2.5-mile overhead double circuit 115 kV
2	Oak Green – Potato Run Line #1065 to 230 kV and rebuild Gordonsville – Oak Green
3	Line #11 to 230 kV ⁵ from the existing Oak Green Switching Station to existing
4	Structure #2199/164 / #11/550 / #1065/550. This uprate of Line #1065 will create the
5	new Oak Green – Mt Pony Line #2438. A 25-foot expansion of the existing 75-foot
6	right-of-way is required, except where not feasible on Virginia Outdoors Foundation
7	("VOF") conservation easements. Construct approximately 0.2 mile of two new single
8	circuit 230 kV lines to extend Line #1065 and Line #11 into the relocated Oak Green
9	Switching Station within a variable width right-of-way. Relocation of the existing Oak
10	Green Switching Station will also require construction of 0.2-mile of new single circuit
11	115 kV transmission line (designed to 230 kV) to extend the existing Oak Green – Pine
12	Glade Line #153 into the new Oak Green Switching Station. The relocation of the
13	existing Oak Green Switching Station is necessary to accommodate the installation of
14	230 kV and 115 kV ring busses and two 230 -115 kV transformers ("Oak Green
15	Rebuild and Relocation").
16	(iv) Convert and rebuild an approximately 0.7-mile segment of the Company's existing
17	115 kV Potato Run – Remington Line #2 from existing Structure #2/147 to Remington
18	Substation as double circuit 230 kV. This portion of Line #2 is currently double circuit
19	with Company's distribution line #655, which will be rebuilt and converted to 230 kV
20	to accommodate a double circuit 230 kV line, with Line #655 operating at distribution
21	voltage ("Remington Rebuild").
22	(v) Construct four new 230 kV substations and one relocated 230 kV switching station
23	(i.e., the Oak Green Switching Station as described previously) in Culpeper County,
24	the Town of Culpeper, and Orange County, Virginia (the "Mt. Pony Substation,"
25	"McDevitt Substation," "Chandler Substation," "Palomino Substation," and
26	"Relocated Oak Green Switching Station"). The proposed Mt. Pony Substation and
27	Palomino Substation will be on an easement to be acquired by the Company, and the
28	proposed Chandler Substation, McDevitt Substation, and Relocated Oak Green
29	Switching Station will be on Company property. The Mt. Pony Substation will be in
30	Culpeper County; the Chandler, McDevitt, and Palomino Substations will be in the
31	Town of Culpeper; and the Oak Green Switching Station will be relocated within
32	Orange County, Virginia.
33	The components described above are collectively referred to as the "Project."

34 The purpose of my testimony is to describe the Company's electric transmission system

35 and the need for, and benefits of, the proposed Project. I sponsor Sections I.B, I.C, I.D,

 $^{^5}$ This portion of Line #11 will initially operate at 115 kV, but will be constructed for operations at 230 kV.

5	Q.	Does this conclude your pre-filed direct testimony?
4		with Company Witness Wesley Strunk.
3		Mohammad O. Othman, Gregory R. Baka, and Jared Brandell-Douglas; and Section I.L
2		the Executive Summary and Sections I.A with Company Witnesses Wesley Strunk,
1		I.E, I.G, I.H, I.J, I.K, I.M, I.N, and II.A.10 of the Appendix. Additionally, I co-sponsor

6 A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF VISHAL S. DIXIT

Vishal S. Dixit received a Master's degree in Electrical Engineering from Virginia Tech in

2024. He has been with the Company since June 2024, working as an Area Planner in the Electric

Transmission Group.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Wesley Strunk

<u>Title</u>: Transmission Line Design Engineer

Summary:

Company Witness Wesley Strunk sponsors those portions of the Appendix providing an overview of the design characteristics of the transmission facilities for the proposed Project, and discussing electric and magnetic field levels, as follows:

- <u>Section I.F</u>: This section describes any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed Project.
- <u>Section II.A.5</u>: This section provides drawings of the right-of-way cross sections showing typical transmission lines structure placements.
- <u>Sections II.B.1 to II.B.2</u>: These sections provide the line design and operational features of the proposed Project, as applicable.
- <u>Section IV</u>: This section provides analysis on the health aspects of electric and magnetic field levels.

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

- <u>Section I.A (co-sponsored with Company Witnesses Vishal S. Dixit, Mohammad O.</u> <u>Othman, Gregory R. Baka, and Jared Brandell-Douglas</u>): This section details the primary justifications for the proposed Project.
- <u>Section I.I (co-sponsored with Company Witness Mohammad O. Othman)</u>: This section provides the estimated total cost of the proposed Project.
- <u>Section I.L (co-sponsored with Company Witness Vishal S. Dixit)</u>: This section, when applicable, provides details on the deterioration of structures and associated equipment.
- <u>Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Gregory R. Baka)</u>: These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- <u>Section II.B.6 (co-sponsored with Company Witnesses Gregory R. Baka and Jared</u> <u>Brandell-Douglas</u>): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- <u>Section V.A (co-sponsored with Company Witnesses Gregory R. Baka and Jared</u> <u>Brandell-Douglas)</u>: This section provides the proposed route description and structure heights for notice purposes.

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

DIRECT TESTIMONY OF WESLEY STRUNK ON BEHALF OF VIRGINIA ELECTRIC AND POWER COMPANY BEFORE THE STATE CORPORATION COMMISSION OF VIRGINIA CASE NO. PUR-2025-00032

1	Q.	Please state your name, position with Virginia Electric and Power Company
2		("Dominion Energy Virginia" or the "Company"), and business address.
3	A.	My name is Wesley Strunk, and I am a Senior Engineer with the Company. My business
4		address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my
5		qualifications and background is provided as Appendix A.
6	Q.	Please describe your areas of responsibility with Strunk Robertson Consulting
7		Group.
8	A.	I am responsible for the estimating, conceptual, and final design of high voltage
9		transmission line projects from 69 kilovolt ("kV") to 500 kV.
10	Q.	What is the purpose of your testimony in this proceeding?
11	A.	In order to provide service requested by three Customers developing separate new data
12		center campuses in Culpeper County and the Town of Culpeper, Virginia, to maintain
13		reliable service for the overall load growth in the area, and to comply with mandatory
14		North American Electric Reliability Corporation ("NERC") Reliability Standards,
15		Dominion Energy Virginia proposes in Culpeper County, the Town of Culpeper, Orange
16		County, and Fauquier County, Virginia to:
17 18 19 20		 (i) Construct new approximately 5.2-mile overhead 230 kilovolt ("kV") double circuit transmission lines: Mt. Pony – Potato Run Line #2437 ("Mt. Pony – Potato Run Line") and the Mt. Pony – Oak Green Line #2438 ("Mt. Pony – Oak Green Line") (collectively the "Mt. Pony Lines") primarily on new right-of-way. The new transmission lines will

extend from the converted Potato Run – Remington and Oak Green – Potato Run Lines near Structures #1065/496 / #2331/110, as described below, to the proposed Mt. Pony Substation. The proposed Mt. Pony – Potato Run Line and the Mt. Pony – Oak Green Line will be constructed primarily with double circuit weathering steel monopole structures, utilizing two circuits of three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA. The Mt. Pony Lines will utilize a total of 100 or 160 feet of right-of-way, which includes both new 100-footwide right-of-way, and collocated 160-foot right-of-way. The amount of new right-ofway width for this line will vary from 60 feet to 100 feet.⁶

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(ii) Construct a new approximately 3.7-mile⁷ overhead 230 kV double circuit transmission 10 line (the "Cirrus - Mt. Pony Line" of the "Tech Park Lines") primarily on new right-11 12 of-way and planned data center campuses. The Tech Park Lines will extend from the 13 proposed 230 kV Mt. Pony Substation to the future 230 kV Cirrus Switching Station⁸ 14 and interconnect the proposed 230 kV Chandler, McDevitt, and Palomino Substations. 15 The Tech Park Lines will be constructed primarily with double circuit pre-dulled galvanized steel monopole structures, utilizing two circuits of three-phase twin-16 bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 17 18 MVA. The amount of new right-of-way width for this line will vary from 100 feet to 19 160 feet.⁹

⁷ If Mt. Pony Proposed Route (Route 1) and Tech Park Proposed Route (Route 1) are selected by the Commission, then a 0.3-mile segment of 100-foot wide right-of-way along the south side of US 15/29 will not be needed by the Tech Park Proposed Route, as the Tech Park Proposed Route will tap into the Mt. Pony Proposed Route at proposed Structure # 2437/168 / 2438/126 rather than beginning at the proposed Mt. Pony Substation. In this scenario, the Tech Park Proposed Route is 3.4 miles in length, rather than 3.7 miles, and the Tech Park Proposed Route right-of-way would be reduced by approximately 3.7 acres. If Mt. Pony Alternative Route 2 is selected by the Commission, this 0.3-mile (3.7 acre) segment will be included. To ensure that all potential Project impacts are evaluated, this 0.3-mile segment is included in both the Mt. Pony Proposed Route and Tech Park Proposed Route impacts in this filing.

⁸ 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, Final Order (Oct. 23, 2023).

⁹ Approximately 3.3 miles of the total 3.7-mile Tech Park Proposed Route would be located within new 100-foot-wide right-of-way, with one 0.2-mile segment collocated with the existing Company Lines #2 and #70, and one 0.2-mile segment collocated with the Company's existing Line #2 rights-of-way that require only 60 additional feet in width. Approximately 0.4 mile, or approximately 11% of the total length, will be collocated with the existing right-of-way. This collocated 0.4 mile will require 60 feet of new right-

⁶ Approximately 1.5 miles of the Mt. Pony Proposed Route will be within new 100-foot right-ofway, including a 1.2-mile segment from the cut-in at existing Structure #2/496 / #2199/110 and the 0.3mile segment along James Madison Highway that terminates at the proposed Mt. Pony Substation. Approximately 3.7 miles, or approximately 71% of the total length, will be collocated along the existing right-of-way. This collocated 3.7 miles will have 60 feet of new right-of-way adjacent to the Company's existing 100-foot right-of-way, utilizing a total right-of-way width of 160 feet.

1	(iii) Convert and rebuild the Company's existing 2.5-mile overhead double circuit 115 kV
2	Oak Green – Potato Run Line #1065 to 230 kV and rebuild Gordonsville – Oak Green
3	Line #11 to 230 kV ¹⁰ from the existing Oak Green Switching Station to existing
4	Structure #2199/164 / #11/550 / #1065/550. This uprate of Line #1065 will create the
5	new Oak Green – Mt Pony Line #2438. A 25-foot expansion of the existing 75-foot
6	right-of-way is required, except where not feasible on Virginia Outdoors Foundation
7	("VOF") conservation easements. Construct approximately 0.2 mile of two new single
8	circuit 230 kV lines to extend Line #1065 and Line #11 into the relocated Oak Green
9	Switching Station within a variable width right-of-way. Relocation of the existing Oak
10	Green Switching Station will also require construction of 0.2-mile of new single circuit
11	115 kV transmission line (designed to 230 kV) to extend the existing Oak Green – Pine
12	Glade Line #153 into the new Oak Green Switching Station. The relocation of the
13	existing Oak Green Switching Station is necessary to accommodate the installation of
14	230 kV and 115 kV ring busses and two 230 -115 kV transformers ("Oak Green
15	Rebuild and Relocation").
16	(iv) Convert and rebuild an approximately 0.7-mile segment of the Company's existing
17	115 kV Potato Run – Remington Line #2 from existing Structure #2/147 to Remington

115 kV Potato Run – Remington Line #2 from existing Structure #2/147 to Remington Substation as double circuit 230 kV. This portion of Line #2 is currently double circuit with Company's distribution line #655, which will be rebuilt and converted to 230 kV to accommodate a double circuit 230 kV line, with Line #655 operating at distribution voltage ("Remington Rebuild").

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22 (v) Construct four new 230 kV substations and one relocated 230 kV switching station 23 (i.e., the Oak Green Switching Station as described previously) in Culpeper County, the Town of Culpeper, and Orange County, Virginia (the "Mt. Pony Substation," 24 "McDevitt Substation," "Chandler Substation," "Palomino Substation," and 25 26 "Relocated Oak Green Switching Station"). The proposed Mt. Pony Substation and 27 Palomino Substation will be on an easement to be acquired by the Company, and the proposed Chandler Substation, McDevitt Substation, and Relocated Oak Green 28 29 Switching Station will be on Company property. The Mt. Pony Substation will be in 30 Culpeper County; the Chandler, McDevitt, and Palomino Substations will be in the Town of Culpeper; and the Oak Green Switching Station will be relocated within 31 32 Orange County, Virginia.

33 The components described above are collectively referred to as the "Project."

of-way width adjacent to the Company's existing 100-foot right-of-way, utilizing a total 160-foot-wide right-of-way.

¹⁰ This portion of Line #11 will initially operate at 115 kV, but will be constructed for operations at 230 kV.

1	The purpose of my testimony is to describe the design characteristics of the transmission
2	facilities for the proposed Project, and to discuss electric and magnetic field levels. I
3	sponsor Sections I.F, II.A.5, II.B.1, II.B.2, and IV of the Appendix. Additionally, I co-
4	sponsor the Executive Summary and Sections I.A with Vishal S. Dixit, Mohammad O.
5	Othman, Gregory R. Baka, and Jared Brandell-Douglas; Section I.I with Company
6	Witness Mohammad O. Othman; Section I.L with Company Witness Vishal S. Dixit;
7	Sections II.B.3 to II.B.5 with Company Witness Gregory R. Baka; Section II.B.6 and
8	V.A with Company Witnesses Gregory R. Baka and Jared Brandell-Douglass.

- 9 Q. Does this conclude your pre-filed direct testimony?
- 10 A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF WESLEY STRUNK

Wesley Strunk received a Bachelor of Science degree in Civil Engineering from the University of Kentucky in 2014 and is a licensed Professional Engineer in the state of Virginia. Mr. Strunk worked as a transmission line design engineer at Kentucky Utilities part time during college for four years, then worked as a transmission line design consulting engineer for eight years before becoming a Dominion Energy contractor in January 2021. Mr. Strunk's experience with the Company includes Overhead Electric Transmission Line Design.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Mohammad M. Othman

<u>Title</u>: Consulting Engineer – Substation Engineering

Summary:

Company Witness Mohammad M. Othman sponsors or co-sponsors the following sections of the Appendix describing the substation work to be performed for the proposed Project as follows:

- <u>Section I.A (co-sponsored with Company Witnesses Vishal S. Dixit, Wesley Strunk,</u> <u>Gregory R. Baka, and Jared Brandell-Douglas)</u>: This section details the primary justifications for the proposed Project.
- <u>Section I.I (co-sponsored with Company Witness Wesley Strunk)</u>: This section provides the estimated total cost of the proposed Project.
- <u>Section II.C</u>: This section describes and furnishes a one-line diagram of the substations associated with the proposed Project.

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

DIRECT TESTIMONY OF MOHAMMAD O. OTHMAN ON BEHALF OF VIRGINIA ELECTRIC AND POWER COMPANY BEFORE THE STATE CORPORATION COMMISSION OF VIRGINIA CASE NO. PUR-2025-00032

1	Q.	Please state your name, position with Virginia Electric and Power Company
2		("Dominion Energy Virginia" or the "Company"), and business address.
3	A.	My name is Mohammad O. Othman. I am Consulting Engineer in the Substation
4		Engineering section of the Electric Transmission group with the Company. My business
5		address is 5000 Dominion Blvd, Glen Allen, 23060. A statement of my qualifications
6		and background is provided as Appendix A.
7	Q.	Please describe your areas of responsibility with the Company.
8	A.	I am responsible for evaluation of the substation project requirements, feasibility studies,
9		conceptual physical design, scope development, preliminary engineering, and cost
10		estimating for high voltage transmission and distribution substations.
11	Q.	What is the purpose of your testimony in this proceeding?
12	A.	In order to provide service requested by three Customers developing separate new data
13		center campuses in Culpeper County and the Town of Culpeper, Virginia, to maintain
14		reliable service for the overall load growth in the area, and to comply with mandatory
15		North American Electric Reliability Corporation ("NERC") Reliability Standards,
16		Dominion Energy Virginia proposes in Culpeper County, the Town of Culpeper, Orange
17		County, and Fauquier County, Virginia, to:
18 19		(i) Construct new approximately 5.2-mile overhead 230 kilovolt ("kV") double circuit transmission lines: Mt. Pony – Potato Run Line #2437 ("Mt. Pony – Potato Run

1 Line") and the Mt. Pony – Oak Green Line #2438 ("Mt. Pony – Oak Green Line") 2 (collectively the "Mt. Pony Lines") primarily on new right-of-way. The new 3 transmission lines will extend from the converted Potato Run – Remington and Oak 4 Green – Potato Run Lines near Structures #1065/496 / #2331/110, as described below, 5 to the proposed Mt. Pony Substation. The proposed Mt. Pony – Potato Run Line and 6 the Mt. Pony – Oak Green Line will be constructed primarily with double circuit 7 weathering steel monopole structures, utilizing two circuits of three-phase twin-8 bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 9 MVA. The Mt. Pony Lines will utilize a total of 100 or 160 feet of right-of-way, 10 which includes both new 100-foot-wide right-of-way, and collocated 160-foot rightof-way. The amount of new right-of-way width for this line will vary from 60 feet to 11 100 feet.¹¹ 12

(ii) Construct a new approximately 3.7-mile¹² overhead 230 kV double circuit transmission 13 line (the "Cirrus – Mt. Pony Line" of the "Tech Park Lines") primarily on new right-14 15 of-way and planned data center campuses. The Tech Park Lines will extend from the proposed 230 kV Mt. Pony Substation to the future 230 kV Cirrus Switching Station¹³ 16 and interconnect the proposed 230 kV Chandler, McDevitt, and Palomino Substations. 17 The Tech Park Lines will be constructed primarily with double circuit pre-dulled 18 19 galvanized steel monopole structures, utilizing two circuits of three-phase twin-20 bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 21 MVA. The amount of new right-of-way width for this line will vary from 100 feet to 160 feet.¹⁴ 22

¹² If Mt. Pony Proposed Route (Route 1) and Tech Park Proposed Route (Route 1) are selected by the Commission, then a 0.3-mile segment of 100-foot wide right-of-way along the south side of US 15/29 will not be needed by the Tech Park Proposed Route, as the Tech Park Proposed Route will tap into the Mt. Pony Proposed Route at proposed Structure # 2437/168 / 2438/126 rather than beginning at the proposed Mt. Pony Substation. In this scenario, the Tech Park Proposed Route is 3.4 miles in length, rather than 3.7 miles, and the Tech Park Proposed Route right-of-way would be reduced by approximately 3.7 acres. If Mt. Pony Alternative Route 2 is selected by the Commission, this 0.3-mile (3.7 acre) segment will be included. To ensure that all potential Project impacts are evaluated, this 0.3-mile segment is included in both the Mt. Pony Proposed Route and Tech Park Proposed Route impacts in this filing.

¹³ 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, Final Order (Oct. 23, 2023).

¹⁴ Approximately 3.3 miles of the total 3.7-mile Tech Park Proposed Route would be located within new 100-foot-wide right-of-way, with one 0.2-mile segment collocated with the existing Company Lines #2 and #70, and one 0.2-mile segment collocated with the Company's existing Line #2 rights-of-way that require only 60 additional feet in width. Approximately 0.4 mile, or approximately 11% of the total length,

¹¹ Approximately 1.5 miles of the Mt. Pony Proposed Route will be within new 100-foot right-ofway, including a 1.2-mile segment from the cut-in at existing Structure #2/496 / #2199/110 and the 0.3mile segment along James Madison Highway that terminates at the proposed Mt. Pony Substation. Approximately 3.7 miles, or approximately 71% of the total length, will be collocated along the existing right-of-way. This collocated 3.7 miles will have 60 feet of new right-of-way adjacent to the Company's existing 100-foot right-of-way, utilizing a total right-of-way width of 160 feet.

1	(iii) Convert and rebuild the Company's existing 2.5-mile overhead double circuit 115 kV
2	Oak Green – Potato Run Line #1065 to 230 kV and rebuild Gordonsville – Oak Green
3	Line #11 to 230 kV ¹⁵ from the existing Oak Green Switching Station to existing
4	Structure #2199/164 / #11/550 / #1065/550. This uprate of Line #1065 will create the
5	new Oak Green – Mt Pony Line #2438. A 25-foot expansion of the existing 75-foot
6	right-of-way is required, except where not feasible on Virginia Outdoors Foundation
7	("VOF") conservation easements. Construct approximately 0.2 mile of two new single
8	circuit 230 kV lines to extend Line #1065 and Line #11 into the relocated Oak Green
9	Switching Station within a variable width right-of-way. The relocation of the existing
10	Oak Green Switching Station will also require construction of 0.2-mile of new single
11	circuit 115 kV transmission line (designed to 230 kV) to extend the existing Oak Green
12	- Pine Glade Line #153 into the new Oak Green Switching Station. Relocation of the
13	existing Oak Green Switching Station is necessary to accommodate the installation of
14	230 kV and 115 kV ring busses and two 230 -115 kV transformers ("Oak Green
15	Rebuild and Relocation").

(iv) Convert and rebuild an approximately 0.7-mile segment of the Company's existing
115 kV Potato Run – Remington Line #2 from existing structure #2/147 to Remington
Substation as double circuit 230 kV. This portion of Line #2 is currently double circuit
with Company's distribution line #655, which will be rebuilt and converted to 230 kV
to accommodate a double circuit 230 kV line, with Line #655 operating at distribution
voltage ("Remington Rebuild").

22 (v) Construct four new 230 kV substations and one relocated 230 kV switching station 23 (i.e., the Oak Green Switching Station as described previously) in Culpeper County, the Town of Culpeper, and Orange County, Virginia (the "Mt. Pony Substation," 24 "McDevitt Substation," "Chandler Substation," "Palomino Substation," 25 and 26 "Relocated Oak Green Switching Station"). The proposed Mt. Pony Substation and Palomino Substation will be on an easement to be acquired by the Company, and the 27 proposed Chandler Substation, McDevitt Substation, and Relocated Oak Green 28 29 Switching Station will be on Company property. The Mt. Pony Substation will be in 30 Culpeper County; the Chandler, McDevitt, and Palomino Substations will be in the Town of Culpeper; and the Oak Green Switching Station will be relocated within 31 32 Orange County, Virginia.

33 The components described above are collectively referred to as the "Project."

will be collocated with the existing right-of-way. This collocated 0.4 mile will require 60 feet of new right-of-way width adjacent to the Company's existing 100-foot right-of-way, utilizing a total 160-foot-wide right-of-way.

¹⁵ This portion of Line #11 will initially operate at 115 kV, but will be constructed for operations at 230 kV.

7	Q.	Does this conclude your pre-filed direct testimony?
6		and Section I.I of the Appendix with Company Witness Wesley Strunk.
5		Witnesses Vishal S. Dixit, Wesley Strunk, Gregory R. Baka, and Jared Brandell-Douglas;
4		Additionally, I co-sponsor the Executive Summary and Section I.A with Company
3		the Project. As it pertains to station work, I sponsor Section II.C of the Appendix.
2		behalf of Dominion Energy Virginia, is to describe the work to be performed as part of
1		Specifically, the purpose of my testimony in this proceeding, which I am submitting on

8 A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF MOHAMMAD M. OTHMAN

Mohammad M. Othman received a Bachelor of Science degree in Electrical Engineering from Virginia Commonwealth University in 2008. Mr. Othman's responsibilities include the evaluation of the substation project requirements, development of scope documents and schedules, preparation of estimates and proposals, preparation of specifications and bid documents, material procurement, design substation physical layout, development of detailed physical drawings, bill of materials, electrical schematics and wiring diagrams. Mr. Othman joined the Dominion Energy Virginia Substation Engineering department in 2010 as an Engineer II and was later promoted to Engineer III, the title he currently holds.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness:Gregory R. BakaTitle:Local Permitting Consultant

Summary:

Company Witness Gregory R. Baka will sponsor those portions of the Appendix providing an overview of the design of the route for the proposed Project, and related permitting, as follows:

- <u>Section II.A.12</u>: This section identifies the counties and localities through which the proposed Project will pass and provides General Highway Maps for these localities.
- <u>Sections V.B-D</u>: These sections provide information related to public notice of the proposed Project.

Additionally, Mr. Baka co-sponsors the following section of the Appendix:

- <u>Section I.A (co-sponsored with Company Witnesses Vishal S. Dixit, Wesley Strunk,</u> <u>Mohammad O. Othman, and Jared Brandell-Douglas)</u>: This section details the primary justifications for the proposed Project.
- <u>Section II.A.1 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section provides the length of the proposed corridor and viable alternatives to the proposed Project.
- <u>Section II.A.2 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section provides a map showing the route of the proposed Project in relation to notable points close to the proposed Project.
- <u>Section II.A.3 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed Project.
- <u>Section II.A.4 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section explains why the existing right-of-way is not adequate to serve the need.
- <u>Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: These sections provide detail regarding the right-of-way for the proposed Project.
- <u>Section II.A.9 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section describes the proposed route selection procedures and details alternative routes considered.
- <u>Section II.A.11 (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section details how the construction of the proposed Project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- <u>Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Wesley Strunk)</u>: These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- <u>Section II.B.6 (co-sponsored with Company Witnesses Wesley Strunk and Jared Brandell-Douglas)</u>: This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- <u>Section III (co-sponsored with Company Witness Jared Brandell-Douglas)</u>: This section details the impact of the proposed project on scenic, environmental, and historic features.
- <u>Section V.A (co-sponsored with Company Witnesses Wesley Strunk and Jared Brandell-Douglas)</u>: 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 Jared Brandell-Douglas. 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-2025-00032

1	Q.	Please state your name, position with Virginia Electric and Power Company
2		("Dominion Energy Virginia" or the "Company"), and business address.
3	A.	My name is Gregory R. Baka, and I am a Local Permitting Consultant for the Company.
4		My business address is 5000 Dominion Boulevard, 3 rd Floor, Glen Allen, Virginia
5		23060. A statement of my qualifications and background is provided as Appendix A.
6		Please describe your areas of responsibility with the Company.
7	Q.	I am responsible for identifying appropriate routes for transmission lines and obtaining
8	A.	necessary federal, state, and local approvals and any non-environmental permits for those
9		facilities. In this position, I work closely with government officials, permitting agencies,
10		property owners, and other interested parties, as well as with other Company personnel,
11		to develop facilities needed by the public to reasonably minimize environmental and
12		other impacts on the public in a reliable, cost-effective manner.
13		What is the purpose of your testimony in this proceeding?
14	Q.	In order to provide service requested by three Customers developing separate new data
15	A.	center campuses in Culpeper County and the Town of Culpeper, Virginia, to maintain
16		reliable service for the overall load growth in the area, and to comply with mandatory
17		North American Electric Reliability Corporation ("NERC") Reliability Standards,
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- 1 Dominion Energy Virginia proposes in Culpeper County, the Town of Culpeper, Orange
- 2 County, and Fauquier County, Virginia, to:

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- (i) Construct new approximately 5.2-mile overhead 230 kilovolt ("kV") double circuit transmission lines: Mt. Pony Potato Run Line #2437 ("Mt. Pony Potato Run Line") and the Mt. Pony Oak Green Line #2438 ("Mt. Pony Oak Green Line") (collectively the "Mt. Pony Lines") primarily on new right-of-way. The new transmission lines will extend from the converted Potato Run Remington and Oak Green Potato Run Lines near Structures #1065/496 / #2331/110, as described below, to the proposed Mt. Pony Substation. The proposed Mt. Pony Potato Run Line and the Mt. Pony Oak Green Line will be constructed primarily with double circuit weathering steel monopole structures, utilizing two circuits of three-phase twinbundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA. The Mt. Pony Lines will utilize a total of 100 or 160 feet of right-of-way, which includes both new 100-foot-wide right-of-way, and collocated 160-foot right-of-way. The amount of new right-of-way width for this line will vary from 60 feet to 100 feet.¹⁶
- (ii) Construct a new approximately 3.7-mile¹⁷ overhead 230 kV double circuit transmission
 line (the "Cirrus Mt. Pony Line" of the "Tech Park Lines") primarily on new rightof-way and planned data center campuses. The Tech Park Lines will extend from the
 proposed 230 kV Mt. Pony Substation to the future 230 kV Cirrus Switching Station¹⁸
 and interconnect the proposed 230 kV Chandler, McDevitt, and Palomino Substations.
 The Tech Park Lines will be constructed primarily with double circuit pre-dulled
 galvanized steel monopole structures, utilizing two circuits of three-phase twin-

¹⁶ Approximately 1.5 miles of the Mt. Pony Proposed Route will be within new 100-foot right-ofway, including a 1.2-mile segment from the cut-in at existing Structure #2/496 / #2199/110 and the 0.3mile segment along James Madison Highway that terminates at the proposed Mt. Pony Substation. Approximately 3.7 miles, or approximately 71% of the total length, will be collocated along the existing right-of-way. This collocated 3.7 miles will have 60 feet of new right-of-way adjacent to the Company's existing 100-foot right-of-way, utilizing a total right-of-way width of 160 feet.

¹⁷ If Mt. Pony Proposed Route (Route 1) and Tech Park Proposed Route (Route 1) are selected by the Commission, then a 0.3-mile segment of 100-foot wide right-of-way along the south side of US 15/29 will not be needed by the Tech Park Proposed Route, as the Tech Park Proposed Route will tap into the Mt. Pony Proposed Route at proposed Structure # 2437/168 / 2438/126 rather than beginning at the proposed Mt. Pony Substation. In this scenario, the Tech Park Proposed Route is 3.4 miles in length, rather than 3.7 miles, and the Tech Park Proposed Route right-of-way would be reduced by approximately 3.7 acres. If Mt. Pony Alternative Route 2 is selected by the Commission, this 0.3-mile (3.7 acre) segment will be included. To ensure that all potential Project impacts are evaluated, this 0.3-mile segment is included in both the Mt. Pony Proposed Route and Tech Park Proposed Route impacts in this filing.

¹⁸ 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, Final Order (Oct. 23, 2023).

bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA. The amount of new right-of-way width for this line will vary from 100 feet to 160 feet.¹⁹

4 (iii) Convert and rebuild the Company's existing 2.5-mile overhead double circuit 115 kV Oak Green – Potato Run Line #1065 to 230 kV and rebuild Gordonsville – Oak Green 5 Line #11 to 230 kV²⁰ from the existing Oak Green Switching Station to existing 6 7 Structure #2199/164 / #11/550 / #1065/550. This uprate of Line #1065 will create the 8 new Oak Green – Mt Pony Line #2438. A 25-foot expansion of the existing 75-foot 9 right-of-way is required, except where not feasible on Virginia Outdoors Foundation 10 ("VOF") conservation easements. Construct approximately 0.2 mile of two new single circuit 230 kV lines to extend Line #1065 and Line #11 into the relocated Oak Green 11 Switching Station within a variable width right-of-way. Relocation of the existing Oak 12 13 Green Switching Station will also require construction of 0.2-mile of new single circuit 14 115 kV transmission line (designed to 230 kV) to extend the existing Oak Green - Pine 15 Glade Line #153 into the new Oak Green Switching Station. The relocation of the 16 existing Oak Green Switching Station is necessary to accommodate the installation of 230 kV and 115 kV ring busses and two 230 -115 kV transformers ("Oak Green 17 18 Rebuild and Relocation").

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(iv) Convert and rebuild an approximately 0.7-mile segment of the Company's existing
115 kV Potato Run – Remington Line #2 from existing Structure #2/147 to Remington
Substation as double circuit 230 kV. This portion of Line #2 is currently double circuit
with Company's distribution line #655, which will be rebuilt and converted to 230 kV
to accommodate a double circuit 230 kV line, with Line #655 operating at distribution
voltage ("Remington Rebuild").

(v) Construct four new 230 kV substations and one relocated 230 kV switching station (i.e., the Oak Green Switching Station as described previously) in Culpeper County, the Town of Culpeper, and Orange County, Virginia (the "Mt. Pony Substation," "McDevitt Substation," "Chandler Substation," "Palomino Substation," and "Relocated Oak Green Switching Station"). The proposed Mt. Pony Substation and Palomino Substation will be on an easement to be acquired by the Company, and the proposed Chandler Substation, McDevitt Substation, and Relocated Oak Green Switching Station will be on Company property. The Mt. Pony Substation will be in

¹⁹ Approximately 3.3 miles of the total 3.7-mile Tech Park Proposed Route would be located within new 100-foot-wide right-of-way, with one 0.2-mile segment collocated with the existing Company Lines #2 and #70, and one 0.2-mile segment collocated with the Company's existing Line #2 rights-of-way that require only 60 additional feet in width. Approximately 0.4 mile, or approximately 11% of the total length, will be collocated with the existing right-of-way. This collocated 0.4 mile will require 60 feet of new right-of-way width adjacent to the Company's existing 100-foot right-of-way, utilizing a total 160-foot-wide right-of-way.

 $^{^{20}}$ This portion of Line #11 will initially operate at 115 kV, but will be constructed for operations at 230 kV.

1 2 3		Culpeper County; the Chandler, McDevitt, and Palomino Substations will be in the Town of Culpeper; and the Oak Green Switching Station will be relocated within Orange County, Virginia.
4		The components described above are collectively referred to as the "Project."
5		The purpose of my testimony is to provide an overview of the route and permitting for
6		the proposed Project. I sponsor Sections II.A.11 and V.B to V.D of the Appendix.
7		Additionally, I co-sponsor the Executive Summary and Section I.A with Company
8		Witnesses Vishal S. Dixit, Wesley Strunk, Mohammad O. Othman, and Jared Brandell-
9		Douglas; Sections II.A.1, II.A.2, II.A.3, II.A.4, II.A.6 to II.A.9, II.A.11, and III with
10		Company Witness Jared Brandell-Douglas; Sections II.B.3 to II.B.5 with Company
11		Witness Wesley Strunk; and Sections II.B.6 and V.A with Company Witnesses Wesley
12		Strunk and Jared Brandell-Douglas. Finally, I co-sponsor the DEQ Supplement with
13		Company Witness Jared Brandell-Douglas.
14	Q.	Has the Company complied with Va. Code § 15.2-2202 E?
15	А.	Yes. In accordance with Va. Code § 15.2-2202 E, letters dated January 20, 2025, were
16		delivered on January 21,2025 to John Egertson, Administrator of Culpeper County
17		Administrator; Chris Hively, Culpeper Town Manager; Ted Voorhees, Orange County
18		Administrator; and Janelle Downes, Fauquier County Administrator, where the Project is
19		located. The letters stated the Company's intention to file this Application and invited
20		each County and the Town of Culpeper to consult with the Company about the proposed
21		Project. A copy of this letter is included as Attachment V.D. to the Appendix.
22	Q.	Does this conclude your pre-filed direct testimony?

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF GREGORY R. BAKA

Gregory 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. Mr. Baka returned to King William County from 1998 to 2000 and served as their Director of Planning and Community Development. Mr. Baka then worked at Resource International, Ltd. as a Municipal Planner between 2001 and 2003. From 2004 to 2011, he 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.

Mr. Baka joined Dominion Virginia Power in May 2013 in his current position in the Transmission Right-of-Way group. He has served on a number of land planning and developmentrelated local boards and commissions.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Jared Brandell-Douglas

<u>Title:</u> Principal Consultant, Environmental Resource Management

Summary:

Company Witness Jared Brandell-Douglas sponsors the Environmental Routing Study provided as part of the Company's Application.

Additionally, Mr. Brandell-Douglas co-sponsors the following portions of the Appendix:

- <u>Section I.A (co-sponsored with Company Witnesses Vishal S. Dixit, Wesley Strunk,</u> <u>Mohammad M. Othman, and Gregory R. Baka</u>): This section details the primary justifications for the proposed Project.
- <u>Section II.A.1 (co-sponsored with Company Witness Gregory R. Baka)</u>: This section provides the length of the proposed corridor and viable alternatives to the proposed Project.
- <u>Section II.A.2 (co-sponsored with Company Witness Gregory R. Baka)</u>: This section provides a map showing the route of the proposed Project in relation to notable points close to the proposed Project.
- <u>Section II.A.3 (co-sponsored with Company Witness Gregory R. Baka)</u>: This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed Project.
- <u>Section II.A.4 (co-sponsored with Company Witness Gregory R. Baka)</u>: This section explains why the existing right-of-way is not adequate to serve the need.
- <u>Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Gregory R. Baka)</u>: These sections provide detail regarding the right-of-way for the proposed Project.
- <u>Section II.A.9 (co-sponsored with Company Witness Gregory R. Baka)</u>: This section describes the proposed route selection procedures and details alternative routes considered.
- <u>Section II.A.11 (co-sponsored with Company Witness Gregory R. Baka)</u>: This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- <u>Section II.B.6 (co-sponsored with Company Witnesses Wesley Strunk and Gregory R.</u> <u>Baka</u>): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- <u>Section III (co-sponsored with Company Witness Gregory R. Baka)</u>: This section details the impact of the proposed Project on scenic, environmental, and historic features.
- <u>Section V.A (co-sponsored with Company Witnesses Wesley Strunk and Gregory R. Baka)</u>: This section provides the proposed route description and structure heights for notice purposes.

Finally, Mr. Brandell-Douglas co-sponsors the DEQ Supplement filed with this Application with Company Witness Gregory R. Baka.

A statement of Mr. Brandell-Douglas' background and qualifications is attached to his testimony as Appendix A.

DIRECT TESTIMONY OF JARED BRANDELL-DOUGLAS ON BEHALF OF VIRGINIA ELECTRIC AND POWER COMPANY BEFORE THE STATE CORPORATION COMMISSION OF VIRGINIA CASE NO. PUR-2025-00032

1	Q.	Please state your name, position and place of employment and business address.
2	А.	My name is Jared Brandell-Douglas. I am employed as a Principal Consultant with
3		Environmental Resources Management ("ERM"). My business address is 222 South 9th
4		Street, Suite 2900, Minneapolis, Minnesota 55402. A statement of my qualifications and
5		background is provided as Appendix A.
6	Q.	What professional experience does ERM have with the routing of linear energy
7		transportation facilities?
8	A.	ERM has extensive experience in the routing, feasibility assessments, and permitting of
9		energy infrastructure projects. It has assisted its clients in the identification, evaluation
10		and development of linear energy facilities for the past 30 years. During this time, it has
11		developed a consistent approach for linear facility routing and route selection based on
12		the identification, mapping and comparative evaluation of routing constraints and
13		opportunities within defined study areas. ERM uses data-intensive Geographic
14		Information System spatial and dimensional analysis and the most current and refined
15		data layers and aerial photography resources available for the identification, evaluation
16		and selection of transmission line routes.
17		In addition to Virginia Electric and Power Company ("Dominion Energy Virginia" or the
18		"Company"), its clients include some of the largest energy companies in the United

1	States, Canada, and the world, including ExxonMobil, TC Energy, Shell, NextEra
2	Energy, Phillips 66, Kinder Morgan, British Petroleum, Enbridge Energy, and others.
3	ERM also routinely assists the staff of the Federal Energy Regulatory Commission,
4	United States Army Corps of Engineers, and the U.S. Forest Service in the identification
5	and/or evaluation of linear energy routes to support federal National Environmental
6	Policy Act evaluations. ERM works on both small and large energy projects and has
7	assisted in or conducted the routing and route evaluation of some of the largest electric
8	transmission line and pipeline facilities in North America.
9	In Virginia, ERM served as routing consultant to Dominion Energy Virginia for many
10	projects over the last 15 years, including:
11 12	• Cannon Branch-Cloverhill 230 kV transmission line project in the City of Manassas and Prince William County (Case No. PUE-2011-00011);
13 14	• Dahlgren 230 kV double circuit transmission line project in King George County (Case No. PUE-2011-00113);
15 16	• Surry-Skiffes Creek-Whealton 500 and 230 kV transmission lines (Case No. PUE-2012-00029);
17 18	• Remington CT-Warrenton 230 kV double circuit transmission line (Case No. PUE-2014-00025);
19	• Haymarket 230 kV Line and Substation Project (Case No. PUE-2015-00107);
20	• Remington-Gordonsville Electric Transmission Project (Case No. PUE-2015-00117);
21	• Norris Bridge (Case No. PUE-2016-00021);
22 23	• Idylwood-Tysons 230 kV single circuit underground transmission line, Tysons Substation rebuild, and related transmission facilities (Case No. PUR-2017-00143);
24	• Lockridge 230 kV Line Loop and Substation (Case No. PUR-2019-00215);
25	• Coastal Virginia Offshore Wind Commercial Project (Case No. PUR-2021-00142);
26	• DTC 230 kV Line Loop and DTC Substation (Case No. PUR-2021-00280);

1	• Aviator 230 kV Line Loop and Substation (Case. No. PUR-2022-00012);
2 3	• Nimbus Substation and 230 Farmwell-Nimbus Transmission Line (Case No. PUR-2022-00027);
4 5	• 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);
6 7 8	 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);
9 10	• Butler Farm to Clover 230 kV Line and Butler Farm to Finneywood 230 kV Line (Case No. PUR-2022-00175);
11	• 230 kV Altair Loop and Altair Switching Station (Case No. PUR-2022-00197);
12 13	• 230 kV Finneywood-Jeffress Lines and Jeffress Switching Station Conversion (Case No. PUR-2023-00088);
14 15	• 230 kV White Oak Lines and White Oak Substation Expansion (Case No. PUR-2023-00110);
16	• 230 kV Germanna Lines and Germanna Substation (Case No. PUR-2023-00206); and
17	• Daves Store 230 kV Line Extension (Case No. PUR-2024-00021).
18	Most recently, ERM served as the routing consultant for the Company's the Aspen-
19	Golden 500-230 kV Electric Transmission Project, in Case No. PUR-2024-00032; the
20	Apollo-Twin Creeks Electric Transmission Project, in Case No. PUR-2024-00044; the
21	230 kV Rebuild, Reconductoring, and New Line Projects to Network Takeoff Substation,
22	in Case No. PUR-2024-00131; and Centreport 230 kV Electric Transmission Project, in
23	Case No. PUR-2024-00170.
24	ERM's role as routing consultant for each of these transmission line projects included
25	preparation of an Environmental Routing Study for the project and submission of
26	testimony sponsoring it.

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Q. What were you asked to do in connection with this case?

- 2 A. In order to provide service requested by three Customers developing separate new data 3 center campuses in Culpeper County and the Town of Culpeper, Virginia, to maintain 4 reliable service for the overall load growth in the area, and to comply with mandatory 5 North American Electric Reliability Corporation ("NERC") Reliability Standards, 6 Dominion Energy Virginia proposes in Culpeper County, the Town of Culpeper, Orange 7 County, and Fauquier County, Virginia, to: 8 (i) Construct new approximately 5.2-mile overhead 230 kilovolt ("kV") double circuit 9 transmission lines: Mt. Pony – Potato Run Line #2437 ("Mt. Pony – Potato Run Line") and the Mt. Pony – Oak Green Line #2438 ("Mt. Pony – Oak Green Line") 10 (collectively the "Mt. Pony Lines") primarily on new right-of-way. The new 11 transmission lines will extend from the converted Potato Run – Remington and Oak 12 13 Green – Potato Run Lines near Structures #1065/496 / #2331/110, as described below, 14 to the proposed Mt. Pony Substation. The proposed Mt. Pony – Potato Run Line and 15 the Mt. Pony – Oak Green Line will be constructed primarily with double circuit 16 weathering steel monopole structures, utilizing two circuits of three-phase twin-17 bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 18 MVA. The Mt. Pony Lines will utilize a total of 100 or 160 feet of right-of-way, 19 which includes both new 100-foot-wide right-of-way, and collocated 160-foot rightof-way. The amount of new right-of-way width for this line will vary from 60 feet to 20 100 feet.²¹ 21
 - (ii) Construct a new approximately 3.7-mile²² overhead 230 kV double circuit transmission line (the "Cirrus – Mt. Pony Line" of the "Tech Park Lines") primarily on new right-

²¹ Approximately 1.5 miles of the Mt. Pony Proposed Route will be within new 100-foot right-ofway, including a 1.2-mile segment from the cut-in at existing Structure #2/496 / #2199/110 and the 0.3mile segment along James Madison Highway that terminates at the proposed Mt. Pony Substation. Approximately 3.7 miles, or approximately 71% of the total length, will be collocated along the existing right-of-way. This collocated 3.7 miles will have 60 feet of new right-of-way adjacent to the Company's existing 100-foot right-of-way, utilizing a total right-of-way width of 160 feet.

²² If Mt. Pony Proposed Route (Route 1) and Tech Park Proposed Route (Route 1) are selected by the Commission, then a 0.3-mile segment of 100-foot wide right-of-way along the south side of US 15/29 will not be needed by the Tech Park Proposed Route, as the Tech Park Proposed Route will tap into the Mt. Pony Proposed Route at proposed Structure # 2437/168 / 2438/126 rather than beginning at the proposed Mt. Pony Substation. In this scenario, the Tech Park Proposed Route is 3.4 miles in length, rather than 3.7 miles, and the Tech Park Proposed Route right-of-way would be reduced by approximately 3.7 acres. If Mt. Pony Alternative Route 2 is selected by the Commission, this 0.3-mile (3.7 acre) segment will be

of-way and planned data center campuses. The Tech Park Lines will extend from the proposed 230 kV Mt. Pony Substation to the future 230 kV Cirrus Switching Station²³ and interconnect the proposed 230 kV Chandler, McDevitt, and Palomino Substations. The Tech Park Lines will be constructed primarily with double circuit pre-dulled galvanized steel monopole structures, utilizing two circuits of three-phase twinbundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1,573 MVA. The amount of new right-of-way width for this line will vary from 100 feet to 160 feet.²⁴

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- 9 (iii) Convert and rebuild the Company's existing 2.5-mile overhead double circuit 115 kV Oak Green - Potato Run Line #1065 to 230 kV and rebuild Gordonsville - Oak Green 10 Line #11 to 230 kV²⁵ from the existing Oak Green Switching Station to existing 11 Structure #2199/164 / #11/550 / #1065/550. This uprate of Line #1065 will create the 12 13 new Oak Green - Mt Pony Line #2438. A 25-foot expansion of the existing 75-foot 14 right-of-way is required, except where not feasible on Virginia Outdoors Foundation 15 ("VOF") conservation easements. Construct approximately 0.2 mile of two new single circuit 230 kV lines to extend Line #1065 and Line #11 into the relocated Oak Green 16 17 Switching Station within a variable width right-of-way. The relocation of the existing Oak Green Switching Station will also require construction of 0.2-mile of new single 18 19 circuit 115 kV transmission line (designed to 230 kV) to extend the existing Oak Green 20 - Pine Glade Line #153 into the new Oak Green Switching Station. Relocation of the 21 existing Oak Green Switching Station is necessary to accommodate the installation of 22 230 kV and 115 kV ring busses and two 230 -115 kV transformers ("Oak Green 23 Rebuild and Relocation").
- (iv) Convert and rebuild an approximately 0.7-mile segment of the Company's existing
 115 kV Potato Run Remington Line #2 from existing Structure #2/147 to Remington
 Substation as double circuit 230 kV. This portion of Line #2 is currently double circuit
 with Company's distribution line #655, which will be rebuilt and converted to 230 kV

²³ 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, Final Order (Oct. 23, 2023).

included. To ensure that all potential Project impacts are evaluated, this 0.3-mile segment is included in both the Mt. Pony Proposed Route and Tech Park Proposed Route impacts in this filing.

²⁴ Approximately 3.3 miles of the total 3.7-mile Tech Park Proposed Route would be located within new 100-foot wide right-of-way, with one 0.2-mile segment collocated with the existing Company Lines #2 and #70, and one 0.2-mile segment collocated with the Company's existing Line #2 rights-of-way that require only 60 additional feet in width. Approximately 0.4 mile, or approximately 11% of the total length, will be collocated with the existing right-of-way. This collocated 0.4 mile will require 60 feet of new right-of-way width adjacent to the Company's existing 100-foot right-of-way, utilizing a total 160-foot-wide right-of-way.

²⁵ This portion of Line #11 will initially operate at 115 kV, but will be constructed for operations at 230 kV.

1 2		to accommodate a double circuit 230 kV line, with Line #655 operating at distribution voltage ("Remington Rebuild").
3		(v) Construct four new 230 kV substations and one relocated 230 kV switching station
4		(i.e., the Oak Green Switching Station as described previously) in Culpeper County,
5		the Town of Culpeper, and Orange County, Virginia (the "Mt. Pony Substation,"
6 7		"McDevitt Substation," "Chandler Substation," "Palomino Substation," and "Palaested Oak Crean Switching Station"). The proposed Mt. Party Sylvetotics and
/		Palomino Substation will be on an easement to be acquired by the Company, and the
9		proposed Chandler Substation, McDevitt Substation, and Relocated Oak Green
10		Switching Station will be on Company property. The Mt. Pony Substation will be in
11		Culpeper County; the Chandler, McDevitt, and Palomino Substations will be in the
12		Town of Culpeper; and the Oak Green Switching Station will be relocated within
13		Orange County, Virginia.
14		The components described above are collectively referred to as the "Project."
15		ERM was engaged on behalf of the Company to assist it in the identification and
16		evaluation of route alternatives to resolve the identified electrical need that would meet
10		evaluation of foure anomatives to resolve the identified electrical field that would fleet
17		the applicable criteria of Virginia law and the Company's operating needs.
18		The purpose of my testimony is to introduce and sponsor the Environmental Routing
19		Study, which is included as part of the Application filed by the Company in this
20		proceeding. Additionally, I co-sponsor the Executive Summary and Section I.A with
21		Company Witnesses Vishal S. Dixit, Wesley Strunk, Mohammad O. Othman, and
22		Gregory R. Baka; Sections II.A.1, II.A.2, II.A.3, II.A.4, II.A.6 to II.A.9, II.A.11, and III
23		with Company Witness Gregory R. Baka; and Sections II.B.6 and V.A with Company
24		Witnesses Wesley Strunk and Gregory R. Baka. Lastly, I co-sponsor the DEQ
25		Supplement with Company Witness Gregory R. Baka.
26	Q.	Does this conclude your pre-filed direct testimony?

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF JARED BRANDELL-DOUGLAS

Jared Brandell-Douglas earned a Bachelor of Arts in Biology and Environmental Studies from St. Olaf College. He has approximately ten years of experience supporting land use permitting, zoning, and the siting and regulatory permitting of large-scale linear energy facilities, including electric transmission lines, throughout the eastern and Midwestern United States. During this time, he was employed by various private- and publicly-owned consulting companies, including Natural Resource Group, LLC, Environmental Resources Management (ERM), Tetra Tech, Inc. and again most recently over two 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. Brandell-Douglas' professional experience related to electric transmission line projects includes the direct management of impact assessments and agency consultations associated with the routing and siting of multiple transmission line projects as well as the management of the routing of these facilities. His work on these projects included conducting studies to identify and delineate routing constraints and opportunities; identification and evaluation of route alternatives; public and stakeholder engagement; and analysis of route alternatives. Within the last several years, he has managed and supported the siting and evaluation of over 30 miles of 230 and 500 kV transmission line route alternatives in the Commonwealth for Virginia Electric and Power Company.