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April 6, 2023

BY ELECTRONIC FILING

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

Re: Application of Virginia Electric and Power Company for Approval and Certification of Electric Transmission Facilities: Chesterfield-Hopewell Lines #211 and #228 Partial Rebuild Project – Case No. PUR-2023-00054.

Dear Mr. Logan:

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

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

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

Sincerely,

Andrew J. Flavin



Timothy L. McHugh



Enclosures

cc: William H. Chambliss, Esq.
Mr. David Essah (without enclosures)
Mr. Neil Joshipura (without enclosures)
Mr. Michael A. Cizenski (without enclosures)
David J. DePippo, Esq.
Annie C. Larson, Esq.
Bonnie S. Gill, Esq.
William H. Smith, III, Esq.



**Dominion
Energy[®]**

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

**Before the State Corporation
Commission of Virginia**

**Chesterfield-Hopewell Lines #211
and #228 Partial Rebuild Project**

Application No. 324

Case No. PUR-2023-00054

Filed: April 6, 2023

Volume 1 of 2

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

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

Chesterfield-Hopewell Lines
#211 and #228 Partial Rebuild Project

Application No. 324

Case No. PUR-2023-00054

Filed: April 6, 2023

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER	)	Case No. PUR-2023-00054
COMPANY	)	
	)	
For approval and certification of electric	)	
transmission facilities: Chesterfield –	)	
Hopewell Lines #211 and #228 Partial	)	
Rebuild Project	)	

**APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY
FOR APPROVAL AND CERTIFICATION OF
ELECTRIC TRANSMISSION FACILITIES:
CHESTERFIELD-HOPEWELL LINES #211 AND #228 PARTIAL REBUILD PROJECT**

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

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

2. In order to perform its legal duty to furnish adequate and reliable electric service, Dominion Energy Virginia must, from time to time, replace existing transmission facilities or construct new transmission facilities in its system.

3. In this Application, in order to resolve potential criteria violations of mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards by increasing transmission capacity and consistent with sound engineering judgment, the Company proposes in Chesterfield County, Virginia, the following:

- Rebuild, entirely within existing right-of-way or on Company-owned property, approximately 2.9 miles of 230 kV Lines #211 and #228 on double-circuit weathering steel structures between Chesterfield Substation and Hopewell Substation.
- Reconductor approximately 0.09 miles of Line #228 outside of Hopewell Substation.¹
- Complete work at Chesterfield and Hopewell Substations to support the new line rating.

(collectively, the “Rebuild Project”).

4. The proposed Rebuild Project is necessary to comply with mandatory NERC Reliability Standards and to maintain reliable service to accommodate overall growth in the area. The Rebuild Project is needed to resolve overloading issues on 230 kV Lines #211 and #228 identified during PJM’s 2026 Summer Generator Deliverability Analysis. The current line rating is limited by 2.9 miles of 1109 ACAR conductor, which has a summer emergency rating of 478

¹ While required by the proposed Rebuild Project and included in the total costs of the Rebuild Project, the Company considers the work associated with Line #228 outside of Hopewell Substation, which includes the reconductoring of approximately 0.09 miles of conductor, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to § 56-265.2 A 1 of the Code of Virginia (“Va. Code”) and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity (“CPCN”) from the State Corporation Commission of Virginia (“Commission”). Because the Company considers this work to be ordinary course, detailed supporting documentation has not been provided in the Appendix. Should the Commission determine that a CPCN is required for the work associated with Line #228 outside of Hopewell Substation as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding. This reconductoring work, and the work to support the new line rating at the Hopewell Substation, will be performed in the City of Hopewell.

MVA. The Rebuild Project will rebuild this portion of Lines #211 and #228 to a minimum summer emergency rating of 1573 MVA.

5. The total length of the existing right-of-way and Company-owned property to be used for the Rebuild Project is approximately 2.9 miles. Because the existing right-of-way and Company-owned property are adequate to construct the proposed Rebuild Project, no new rights-of-way are necessary. Given the availability of existing rights-of-way, the statutory preference to use existing rights-of-way, and the additional costs and environmental impacts that would be associated with the acquisition and construction of new rights-of-way, the Company did not consider any alternate routes requiring new rights-of-way for the Rebuild Project.

6. The desired in-service date for the Rebuild Project is June 1, 2025. The Company estimates it will take approximately 16 months for detailed engineering, materials, procurement, permitting, and construction after a final order from the Commission. Accordingly, to support this estimated pre-construction activity timeline and construction plan, the Company respectfully requests a final order by February 1, 2024. Should the Commission issue a final order by February 1, 2024, the Company estimates that construction should begin on November 1, 2024 and be completed by June 1, 2025. This construction timeline will enable the Company to meet the targeted in-service date for the Rebuild Project. This schedule is contingent upon obtaining the necessary permits and outages. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages or unpredictable delays due to labor shortages and/or materials/supply issues based on other extensive project work ongoing in the vicinity of the Rebuild Project.

7. The total estimated conceptual cost of the Rebuild Project is approximately \$14.3 million (in 2022 dollars), which includes \$9.2 million for transmission-related work, and \$5.1 million for substation-related work (2022 dollars).

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

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

10. Based on the Company’s experience, the advice of consultants, and a review of published studies by experts in the field, the Company believes that there is no causal link to harmful health or safety effects from electric and magnetic fields generated by the Company’s existing or proposed facilities. Section IV of the Appendix provides further details on Dominion Energy Virginia’s consideration of the health aspects of electric and magnetic fields.

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

12. In addition to the information provided in the Appendix and the DEQ Supplement, this Application is supported by the pre-filed direct testimony of Company Witnesses Mark R. Gill, Trey M. Rydel, Blair Parks, and Antoaneta Yanev filed with this Application.

13. Because this Application seeks approval to partially rebuild an existing line entirely within existing right-of-way or Company-owned property, the Company respectfully requests, in the interest of judicial economy, that the Commission issue an Order for Notice and Comment

setting forth a procedural schedule in this proceeding without a scheduled evidentiary hearing, but with an opportunity for interested persons to request an evidentiary hearing if the issues raised cannot be addressed adequately without a hearing. An Order for Notice and Comment will still allow the Company, Commission Staff, and any interested parties that join the proceeding to develop a complete record without prejudice, as Commission Staff or any party may file with the Commission a request for hearing.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission:

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

VIRGINIA ELECTRIC AND POWER COMPANY

By: _____



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Counsel for Virginia Electric and Power Company

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COMMONWEALTH OF VIRGINIA
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Chesterfield-Hopewell Lines
#211 and #228 Partial Rebuild Project

Application No. 324

Appendix

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

Case No. PUR-2023-00054

Filed: April 6, 2023

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EXECUTIVE SUMMARY

In order to resolve potential criteria violations of mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards and consistent with sound engineering judgment, Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) proposes the following rebuild project located within existing right-of-way or on Company-owned property in Chesterfield County, Virginia, the following:

- (i) Rebuild, entirely within existing right-of-way or on Company-owned property, approximately 2.9 miles of 230 kV Lines #211 and #228 on double-circuit weathering steel structures between Chesterfield Substation and Hopewell Substation.
- (ii) Reconductor approximately 0.09 miles of Line #228 outside of Hopewell Substation.¹
- (iii) Complete work at Chesterfield and Hopewell Substations to support the new line rating.

(collectively, the “Rebuild Project”).

In summary, the proposed Rebuild Project is necessary to comply with mandatory NERC Reliability Standards and to maintain reliable service to accommodate overall growth in the area. The Rebuild Project is needed to resolve overloading issues on 230 kV Lines #211 and #228 identified during PJM’s 2026 Summer Generator Deliverability Analysis. The current line rating is limited by 2.9 miles of 1109 ACAR conductor, which has a summer emergency rating of 478 MVA. The Rebuild Project will rebuild this portion of Lines #211 and #228 to a minimum summer emergency rating of 1573 MVA.

The total length of the existing right-of-way and Company-owned property to be used for the Rebuild Project is approximately 2.9 miles. Because the existing right-of-way and Company-owned property are adequate to construct the proposed Rebuild Project, no new rights-of-way are necessary. Given the availability of existing rights-of-way, the statutory preference to use existing rights-of-way, and the additional costs and environmental impacts that would be associated with the acquisition and construction of new rights-of-way, the Company did not consider any alternate

¹ While required by the proposed Rebuild Project and included in the total costs of the Rebuild Project, the Company considers the work associated with Line #228 outside of Hopewell Substation, which includes the reconductoring of approximately 0.09 miles of conductor, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to § 56-265.2 A 1 of the Code of Virginia (“Va. Code”) and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity (“CPCN”) from the State Corporation Commission of Virginia (“Commission”). Because the Company considers this work to be ordinary course, detailed supporting documentation has not been provided in the Appendix. Should the Commission determine that a CPCN is required for the work associated with Line #228 outside of Hopewell Substation as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding. This reconductoring work, and the work to support the new line rating at the Hopewell Substation, will be performed in the City of Hopewell.

routes requiring new rights-of-way for the Rebuild Project.

The total estimated conceptual cost of the Rebuild Project is approximately \$14.3 million (in 2022 dollars), which includes \$9.2 million for transmission-related work, and \$5.1 million for substation-related work (2022 dollars).

The desired in-service date for the Rebuild Project is June 1, 2025. The Company estimates it will take approximately 16 months for detailed engineering, materials, procurement, permitting, and construction after a final order from the Commission. Accordingly, to support this estimated pre-construction activity timeline and construction plan, the Company respectfully requests a final order by February 1, 2024. Should the Commission issue a final order by February 1, 2024, the Company estimates that construction should begin on November 1, 2024 and be completed by June 1, 2025. This construction timeline will enable the Company to meet the targeted in-service date for the Rebuild Project. This schedule is contingent upon obtaining the necessary permits and outages. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages or unpredictable delays due to labor shortages and/or materials/supply issues based on other extensive project work ongoing in the vicinity of the Rebuild Project.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The proposed Rebuild Project is necessary to comply with mandatory NERC Reliability Standards and to maintain reliable service to accommodate overall growth in the area. See Attachment I.A.1 for an overview map of the Rebuild Project.

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

Dominion Energy Virginia is part of PJM Interconnection, LLC (“PJM”), the regional transmission organization that provides service to a large portion of the eastern United States. PJM currently is responsible for ensuring the reliability of, and coordinating the movement of, electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. This service area has a population of approximately 65 million and on August 2, 2006, set a record high of 166,929 megawatts (“MW”) for summer peak demand, of which Dominion Energy Virginia’s load portion was approximately 19,256 MW serving 2.4 million customers. On August 9, 2022, the Company set a record high of 21,156 MW for summer peak demand. On December 24, 2022, the Company set a winter and all-time record demand of 22,189 MW. Based on the 2023 PJM load forecast, the Dominion Energy Zone is expected to grow with average growth rates of 5.0% summer and 4.8% winter over the next 10 years compared to the PJM average of 0.8% and 1.0% over the same period for the summer and winter, respectively.

Dominion Energy Virginia is also part of the Eastern Interconnection transmission grid, meaning its transmission system is interconnected, directly or indirectly, with all of the other transmission systems in the United States and Canada between the Rocky Mountains and the Atlantic Coast, except for Quebec and most of Texas. All of the transmission systems in the Eastern Interconnection are dependent on

each other for moving bulk power through the transmission system and for reliability support. Dominion Energy Virginia's service to its customers is extremely reliant on a robust and reliable regional transmission system.

NERC has been designated by the Federal Energy Regulatory Commission ("FERC") as the electric reliability organization for the United States. Accordingly, NERC requires that the planning authority and transmission planner develop planning criteria to ensure compliance with NERC Reliability Standards. Mandatory NERC Reliability Standards require that a transmission owner ("TO") develop facility interconnection requirements that identify load and generation interconnection minimum requirements for a TO's transmission system, as well as the TO's reliability criteria.²

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

PJM's Regional Transmission Expansion Plan ("RTEP") is the culmination of an annual transmission planning process, approved by FERC, which includes extensive analysis of the electric transmission system to determine any needed improvements.³ PJM's annual RTEP is based on the effective criteria in place at the time of the analyses, including applicable standards and criteria of NERC, PJM, and local reliability planning criteria, among others.⁴ Projects identified through the RTEP process are developed by the TO in coordination with PJM, and are presented at the Transmission Expansion Advisory Committee ("TEAC") meetings prior to inclusion in the RTEP that is then presented for approval by the PJM Board of Managers (the "PJM Board"). PJM's generation deliverability test for reliability analysis ensures the transmission system is capable of delivering the aggregate system generating capacity at peak load with all firm transmission service modeled. Generation deliverability is a critical system condition test that is part of the PJM reliability standards and, thus, also is required to be satisfied by NERC Reliability Standards.

Outcomes of the RTEP process include three types of transmission system upgrades or projects: (i) baseline upgrades are those that resolve a system reliability criteria violation, which can include planning criteria from NERC, Reliability-First

² See FAC-001-3 (R1, R3) (effective April 1, 2021), which can be found at <https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-interconnection-requirements-signed.pdf>.

³ PJM Manual 14B (effective July 1, 2021) focuses on the RTEP process and can be found at <https://www.pjm.com/-/media/documents/manuals/m14b.ashx>.

⁴ See PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria.

Corporation, SERC Reliability Corporation, PJM, and TOs; (ii) network upgrades are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission, or long-term firm transmission service requests; (iii) supplemental projects are projects initiated by the TO in order to interconnect new customer load, address degraded equipment performance, improve operational flexibility and efficiency, and increase infrastructure resilience. While supplemental projects are included in the RTEP, and the PJM Board administers stakeholder review of supplemental projects as part of the RTEP process, the PJM Board does not actually approve such projects.

As supported by Section I.J and discussed below, this Rebuild Project is classified as a baseline upgrade to resolve NERC reliability violations identified using the 2026 RTEP model case and awarded to the Company through PJM's competitive planning process (2021 RTEP Proposal Window #1). The following baseline upgrade numbers have been assigned by PJM for the various components of the Rebuild Project: b3694.10 (rebuild Line #211), b3695.11 (rebuild Line #228), b3694.12 (Chesterfield Substation terminal upgrade), and b3694.13 (Hopewell Substation terminal upgrade). See Section I.J for a discussion of the PJM process as it relates to the Rebuild Project.

Need for the Project

The Rebuild Project is located in the Company's Chesterfield Load Area, which encompasses the Company's transmission facilities located in all or part of Chesterfield, Dinwiddie, Greenville, Powhatan, Prince George and Sussex Counties, including the cities of Hopewell, Petersburg, and Richmond. Specifically, the Rebuild Project area is within Chesterfield County, in the transmission corridor leaving Chesterfield Power Station to the south with three additional 230 kV lines and one 115 kV line, and continuing for approximately three spans south of the Company's Tyler Substation.

The Rebuild Project is needed to resolve overloading issues on 230 kV Line #211 and Line #228 identified during the PJM's 2026 Summer Generator Deliverability Analysis. The current line rating is limited by 2.9 miles of 1109 ACAR conductor, which has a summer emergency rating of 478 MVA. The Rebuild Project will rebuild Line #211 and Line #228 to a minimum summer emergency rating of 1573 MVA.

This Rebuild Project was initially presented (first read) at the November 2, 2021 PJM Transmission Expansion Advisory Committee ("TEAC") meeting. The second review took place at the November 30, 2021 TEAC meeting, and was approved by the PJM Board as a baseline project on February 16, 2022. See Attachments I.A.2, I.A.3, and I.A.4 for relevant slides from the first read, second review, and TEAC recommendations to the PJM Board – Staff White Paper, respectively, as mentioned above.

As noted in the Problem Statement of the slides presented at the TEAC meetings and in the Staff White Paper presented to the PJM Board, a Generator Deliverability analysis using the 2026 RTEP summer case indicated that 230 kV Line #228 is overloaded for a single and breaker contingency. Attachment I.A.5 details the Problem Statement and Requirements for the 2021 RTEP Proposal Window #1, which was open between July 2, 2021, and August 31, 2021, and sought proposals to resolve the potential reliability criteria violations identified during analysis of the 2026 RTEP model. Attachment I.A.6 identifies the percentage of thermal overload on Line #211 and Line #228 for the 2.9 miles of 230 kV Lines #211 and 230 from Chesterfield Substation to Structure #211/19 and #228/19. As seen in Attachment I.A.6, the single contingency loss of Line #211 creates an overload on adjacent Line #228 of approximately 103% while a single contingency loss of Line #228 creates an overload of approximately 101% on adjacent Line #211. Further, the breaker-failure contingency of 211T2124 involving the loss of Line #211 and Line #2124 (Hopewell-Prince-George) creates an overload on Line #228 of approximately 105%.

As part of the Rebuild Project, the Company also plans to upgrade Line #211 and Line #228 Line terminal equipment at Chesterfield and Hopewell Substations to a 4000-Ampere (“amp” or “A”) rating to support the new line rating, including upgrading: (1) circuit breakers; (2) switches; (3) bus work; and (4) wave traps.

In summary, proposed Rebuild Project is necessary to comply with mandatory NERC Reliability Standards and to maintain reliable service to accommodate overall growth in the Company’s Chesterfield Load Area.

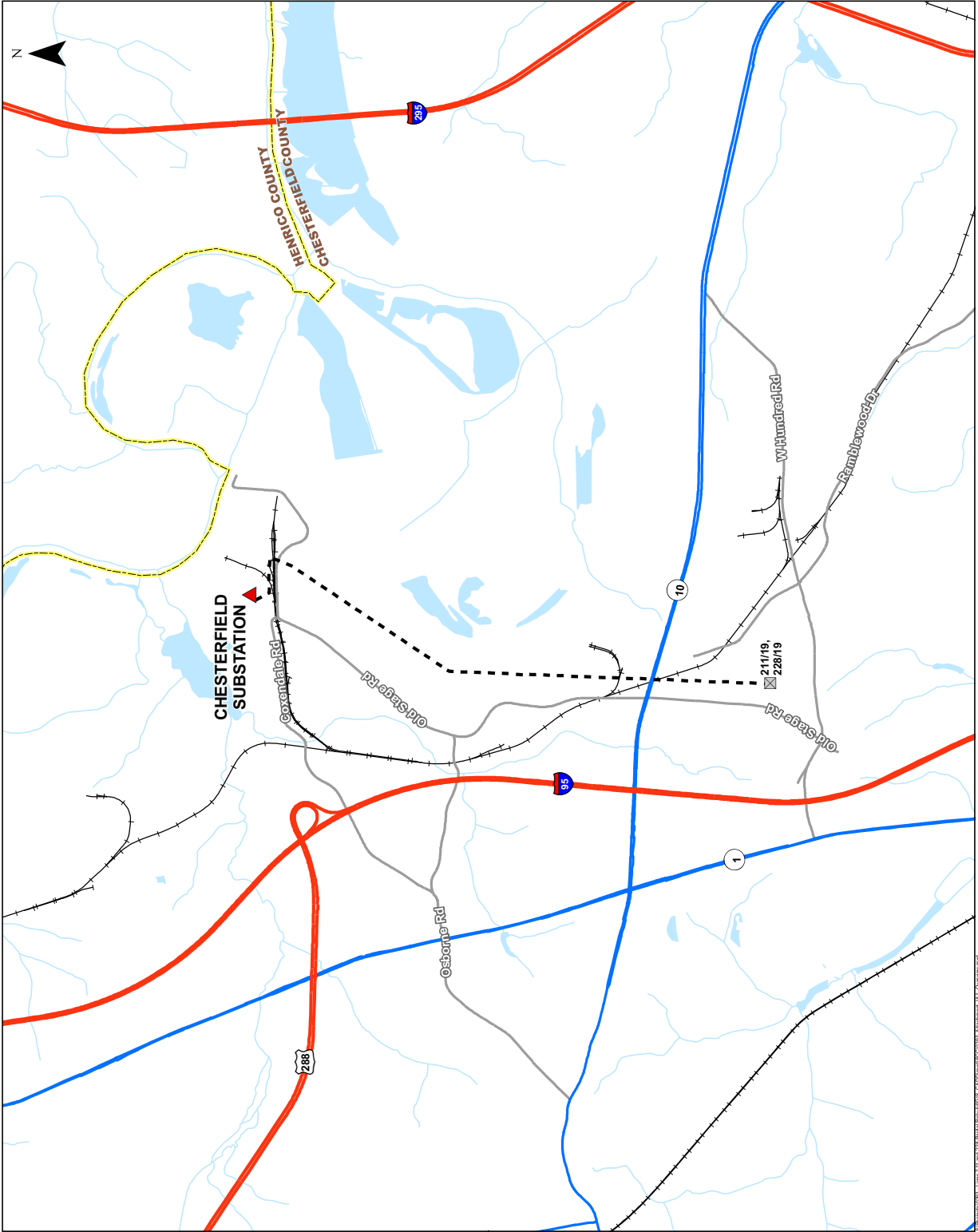
ATTACHMENT I.A.1
PROJECT OVERVIEW MAP
Chesterfield-Hopewell Lines #211 and #228
Partial Rebuild Project
Chesterfield County, Virginia
Owner/ Applicant:
Dominion Energy Virginia
C2 Env Project: Prepared By: Date:
0293 TMP 12/02/22

0 0.25 0.5 1 Miles

Scale is 1 in = 0.5 Mi when printed at original size of 11x17

LEGEND

- Existing Lines #211 and #228 Project Centerline
- ⊠ Existing Structure
- ⊠ Existing Substation
- ▲ Limited Access Highway
- US or VA Primary Highway
- Local or Main Road
- Railroad
- County Boundary
- NHD Stream/River
- NHD Waterbody



Notes:

- 1. Basemap from ESRI Topographic Map
- 2. Projected and unprojected data from Dominion Energy
- 3. Roads and railroads from VGIN
- 4. Streams, rivers and waterbodies from USGS National Hydrography Data

APPROXIMATE PROJECT LOCATION

The inset map shows the state of Virginia with surrounding states: West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, and Georgia. A star marks the project location in the western part of Virginia, near the border with West Virginia and Kentucky.

Dominion Energy

ENVIRONMENTAL

SHEET 1 OF 1



Reliability Analysis Update

Aaron Berner, Senior Manager

Transmission Expansion Advisory Committee
Tuesday, November 2, 2021

Attachment I.A.2



First Read

Baseline Reliability Projects



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Process Stage: First Read

Criteria: Generator Deliverability, FERC Form 715 (C.2.1.3 Critical Stress Case) & N-1

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

In the 2026 RTEP summer case:

Fredericksburg (Group 1: N2-SLD1, N2-SLD2, GD-S16, GD-S467, DOM-T5)

- 230kV Line #2104 Cranes Corner to Stafford is overloaded for a single and breaker contingency under Generator Deliverability and is also overloaded under Dominion stress case criteria.
- Load loss of 307 MW under N-1-1.

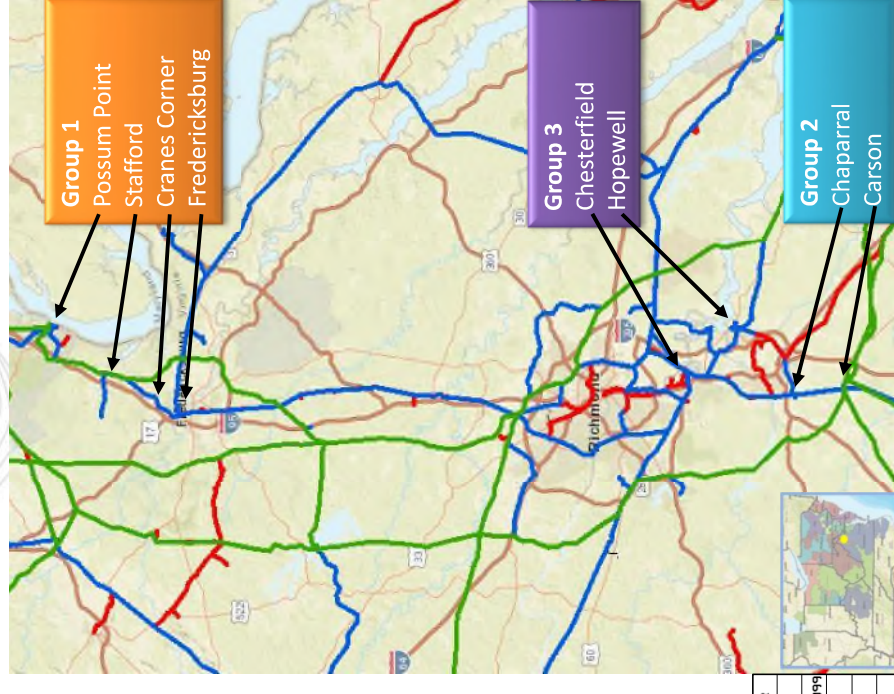
Carson (Group 2: GD-S465, GD-S39)

- Carson 500/230kV transformer #2 is overloaded for a breaker contingency under Generator Deliverability.
- 230kV Line #249 Carson to Chaparral is overloaded for a single contingency under Generator Deliverability.

Hopewell (Group 3: GD-S18, GD-S33, GD-S436)

- 230kV Line #211 is overloaded for a single contingency under Generator Deliverability.
- 230kV Line #228 is overloaded for a single and breaker contingency under Generator Deliverability.

Continued on next slide....



COLOR	VOLTAGE	TRANSMISSION LINE NUMBER
Green	500 KV.	500 thru 599
Blue	230 KV.	200 thru 299 & 2000 thru 2099
Red	115 KV.	1 thru 199
Orange	138 KV.	AS NOTED
Light Blue	69 KV.	AS NOTED



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Existing Facility Rating:

Area	Branch	SN/SE/WN/WE (MVA)
Fredericksburg	6CRANES – 6STAFORD 230kV	722/722/914/914
Carson	8CARSON – 6CARSON 500kV	928.1/961.6/1192.8/1238.1
Carson	6CARSON – 6CHAPARRAL T 230kV	595/595/659/659
Carson	6LOCKS – 6CHAPARRAL T 230kV	595/595/659/659
Carson	6LOCKS – 3HARROWG 115kV	147/147/185/185
Hopewell	6HOPEWELL – 6CHESTF A 230kV	478/478/606/606
Hopewell	6HOPEWELL – 6CHESTF B 230kV	478/478/606/606

As part of the 2021 RTEP Window #1, the following project was proposed to address violations at Fredericksburg, Carson and Hopewell:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
224	Dominion	Fredericksburg: Convert 115kV Line #29 to 230 kV; Reconductor 230kV Line #2104 Cranes Corner to Aquia Harbor. Feed Quantico via Fuller Road Substation	93.412
		Carson: Energize Carson 500/230kV Tx#1; Reconductor 230kV Line #249 Carson to Locks; Partial Rebuild 115kV Line #100 Locks to Harrowgate	
		Hopewell: Partial rebuild 2.9 miles of double circuit 230kV Lines #211/228	

Continued on next slide



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Proposed Solution: Proposal #2021_1-224

Carson

- Energize in-service spare 500/230kV Carson Tx#1
- Partial wreck and rebuild 10.34 miles of 230kV Line #249 Carson - Locks to achieve a minimum summer emergency rating of 1047 MVA. Upgrade terminal equipment at Carson and Locks to not limit the new conductor rating. **Estimated cost: \$15.365M**
- Wreck and rebuild 5.4 miles of 115kV Line #100 Locks - Harrowgate to achieve a minimum summer emergency rating of 393 MVA. Upgrade terminal equipment at Locks and Harrowgate to not limit the new conductor rating and perform Line #100 Chesterfield terminal relay work. **Estimated cost: \$9.097M**

Hopewell

- Reconductor approximately 2.9 miles of 230 kV Line #211 Chesterfield – Hopewell to achieve a minimum summer emergency rating of 1046 MVA. **Estimated cost: \$4.914M**
- Reconductor approximately 2.9 miles of 230 kV Line #228 Chesterfield - Hopewell to achieve a minimum summer emergency rating of 1046 MVA. **Estimated cost: \$4.914M**
- Upgrade equipment at Chesterfield substation to not limit ratings on Lines 211 and 228. **Estimated cost: \$0.759M**
- Upgrade equipment at Hopewell substation to not limit ratings on Lines 211 and 228. **Estimated cost: \$1.714M**

Total Estimated Cost: \$93.412M

Required IS Date: 6/1/2026

Facilitator:
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Reliability Analysis Update



Member Hotline

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Version No.	Date	Description
1	10/28/2021	Original slides posted
2	10/29/2021	Added slides 7, 8, 9, and 10, plus made a date correction on slide #6
3	11/1/2021	Corrected slide 13 header information
4	11/4/2021	Corrected transformer # on slide 8 (Lawrence 230/69 kV 220-4)
5	11/9/2021	Corrected FG#s on slide 58
6	11/15/2021	Corrected preliminary facility ratings on slide 42
7	12/13/2021	Slide #16, changed the 2nd “Required IS date” to “Projected IS date”



Reliability Analysis Update

Aaron Berner, Senior Manager

Transmission Expansion Advisory Committee
Tuesday, November 30, 2021

Attachment I.A.3



2021 RTEP Proposal Window

Second Review

Baseline Reliability Projects

Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Process Stage: Second Review

Criteria: Generator Deliverability, FERC Form 715 (C.2.1.3 Critical Stress Case) & N-1

Assumption Reference: 2026 RTEP assumption

Model Used for Analysis: 2026 RTEP cases

Proposal Window Exclusion: None

Problem Statement:

In the 2026 RTEP summer case:

Fredericksburg (Group 1: N2-SLD1, N2-SLD2, GD-S16, GD-S467, DOM-T5)

- 230kV Line #2104 Cranes Corner to Stafford is overloaded for a single and breaker contingency under Generator Deliverability and is also overloaded under Dominion stress case criteria.
- Load loss of 307 MW under N-1-1.

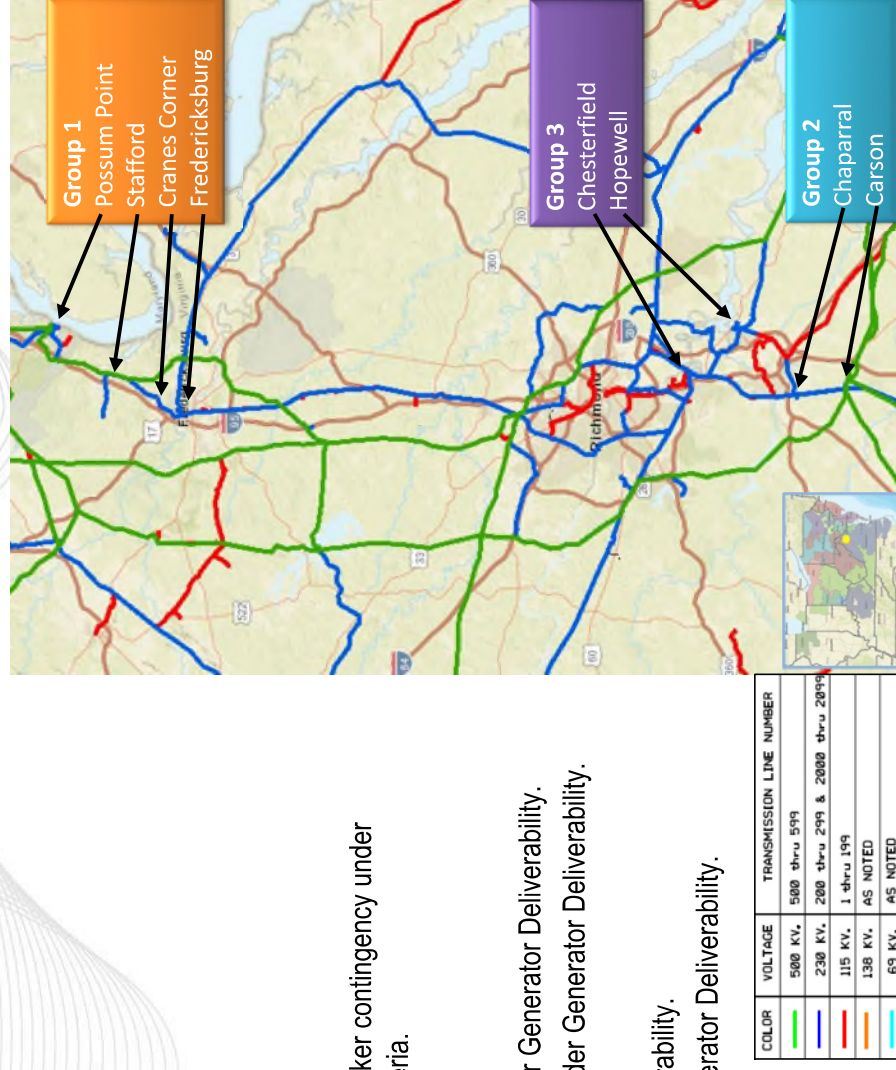
Carson (Group 2: GD-S465, GD-S39)

- Carson 500/230kV transformer #2 is overloaded for a breaker contingency under Generator Deliverability.
- 230kV Line #249 Carson to Chaparral is overloaded for a single contingency under Generator Deliverability.

Hopewell (Group 3: GD-S18, GD-S33, GD-S436)

- 230kV Line #211 is overloaded for a single contingency under Generator Deliverability.
- 230kV Line #228 is overloaded for a single and breaker contingency under Generator Deliverability.

Continued on next slide....



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Existing Facility Rating:

Area	Branch	SN/SE/WN/WE (MVA)
Fredericksburg	6CRANES – 6STAFORD 230kV	722/722/914/914
Carson	8CARSON – 6CARSON 500/230kV #2	928.1/961.6/1192.8/1238.1
Carson	6CARSON – 6CHAPARRAL T 230kV	595/595/659/659
Carson	6LOCKS – 6CHAPARRAL T 230kV	595/595/659/659
Carson	6LOCKS – 3HARROWG 115kV	147/147/185/185
Hopewell	6HOPEWELL – 6CHESTF A 230kV	478/478/606/606
Hopewell	6HOPEWELL – 6CHESTF B 230kV	478/478/606/606

As part of the 2021 RTEP Window #1, the following project was proposed to address violations at Fredericksburg, Carson and Hopewell:

Proposal ID	Proposing Entity	Upgrade Description	Upgrade Cost (\$M)
224	Dominion	Fredericksburg: Convert 115kV Line #29 to 230 kV; Reconductor 230kV Line #2104 Cranes Corner to Aquia Harbor. Feed Quantico via Fuller Road Substation	93.412
		Carson: Energize Carson 500/230kV Tx#1; Reconductor 230kV Line #249 Carson to Locks; Partial Rebuild 115kV Line #100 Locks to Harrowgate	
		Hopewell: Partial rebuild 2.9 miles of double circuit 230kV Lines #211/228	

Continued on next slide



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Recommended Solution: Proposal #2021_1-224

Carson

- Energize in-service spare 500/230kV Carson Tx#1 **(b3694.7)**
- Partial wreck and rebuild 10.34 miles of 230kV Line #249 Carson - Locks to achieve a minimum summer emergency rating of 1047 MVA. Upgrade terminal equipment at Carson and Locks to not limit the new conductor rating. **Estimated cost: \$15.365M (b3694.8)**
- Wreck and rebuild 5.4 miles of 115kV Line #100 Locks - Harrowgate to achieve a minimum summer emergency rating of 393 MVA. Upgrade terminal equipment at Locks and Harrowgate to not limit the new conductor rating and perform Line #100 Chesterfield terminal relay work. **Estimated cost: \$9.097M (b3694.9)**

Hopewell

- Rebuild approximately 2.9 miles of 230 kV Line #211 Chesterfield – Hopewell to achieve a minimum summer emergency rating of 1046 MVA. **Estimated cost: \$4.914M (b3694.10)**
- Rebuild approximately 2.9 miles of 230 kV Line #228 Chesterfield - Hopewell to achieve a minimum summer emergency rating of 1046 MVA. **Estimated cost: \$4.914M (b3694.11)**
- Upgrade equipment at Chesterfield substation to not limit ratings on Lines 211 and 228. **Estimated cost: \$0.759M (b3694.12)**
- Upgrade equipment at Hopewell substation to not limit ratings on Lines 211 and 228. **Estimated cost: \$1.714M (b3694.13)**

Continued on next slide....



Dominion Transmission Zone: Baseline Fredericksburg/Carson/Hopewell Area

Preliminary Facility Rating:

Area	Branch	SN/SE/WN/WE (MVA)
Fredericksburg	6CRANES – 6STAFORD 230kV	1047/1047/1160/1160
Carson	8CARSON – 6CARSON 500/230kV #1	889.2/939.4/1140/1193.7
Carson	6CARSON – 6CHAPARRAL T 230kV	1047/1047/1160/1160
Carson	6LOCKS – 6CHAPARRAL T 230kV	1047/1047/1160/1160
Carson	6LOCKS – 3HARROWG 115kV	393/393/412/412
Hopewell	6HOPEWLL – 6CHESTF A 230kV	1046/1046/1095/1095
Hopewell	6HOPEWLL – 6CHESTF B 230kV	1046/1046/1095/1095

Total Estimated Cost: \$93.412M

Projected In-Service Date: 6/1/2026

Required In-Service Date: 6/1/2026

Previously Presented: 11/2/2021

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Reliability Analysis Update



Member Hotline
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Version No.	Date	Description
1	11/23/2021	Original slides posted
2	12/13/2021	Slide #6, Changed the 2nd “Required IS date” to “Projected IS date”
3	4/27/2022	Slide #29, Changed “Reconductor” to “Rebuild” for the 211/228 updates in the Hopewell area.



Transmission Expansion Advisory Committee (TEAC) Recommendations to the PJM Board

PJM Staff White Paper

PJM Interconnection
February 2022

For Public Use

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I. Executive Summary

On December 8, 2021, the PJM Board of Managers approved changes to the Regional Transmission Expansion Plan (RTEP), totaling a net increase of \$95.65 million for baseline projects, to resolve baseline reliability criteria violations and address changes to existing projects. The PJM Board of Managers also approved a net increase of \$39.14 million for network upgrades to address new projects with signed ISAs, project scope changes and project cancellations.

Since then, PJM has identified additional baseline reliability criteria violations, and the transmission system enhancements needed to solve them, at an estimated cost of \$519.37 million. Scope/cost changes to an existing project will result in a net increase of \$3.54 million, and cancellation to an existing project will result in a net decrease of \$7.5 million. This yields an overall RTEP net increase of \$515.41 million, for which PJM recommended Board approval. With these changes, RTEP projects will total approximately \$39,448.9 million since the first Board approvals in 2000.

PJM sought Reliability and Security Committee consideration and full Board approval of the RTEP baseline projects summarized in this white paper. On February 16, 2022, the Board approved the addition of RTEP baseline projects as well as other changes to the RTEP as summarized in this paper.

II. Baseline Project Recommendations

A key dimension of PJM's RTEP process is baseline reliability evaluation, which is necessary before subsequent interconnection requests can be analyzed. Baseline analysis identifies system violations to reliability criteria and standards, determines the potential to improve the market efficiency and operational performance of the system, and incorporates any public policy requirements. PJM then develops transmission system enhancements to solve identified violations and reviews them with stakeholders through the Transmission Expansion Advisory Committee (TEAC) and Subregional RTEP committees prior to submitting its recommendation to the Board. Baseline reliability transmission enhancement costs are allocated to PJM responsible customers.

III. Baseline Reliability Projects Summary

A summary of baseline projects with estimated costs equal to or greater than \$10 million, as well as one operational performance driven project, is provided below. A complete listing of all recommended projects and their associated cost allocations is included in Attachment A (allocations to a single zone) and Attachment B (allocations to multiple zones). Projects with estimated costs less than \$10 million typically include, by way of example, transformer replacements, line reconductoring, breaker replacements and upgrades to terminal equipment, including relay and wave trap replacements.

A. AEP Transmission Zone

- Baseline project b3353 – Allen 46 kV Station Rebuild Baseline Conversion: \$16 million
- Baseline project b3348 – Dehue Area Improvements: \$65.8 million
- Baseline project b3361 – Prestonsburg-Thelma 46 kV Rebuild: \$33.01 million

B. APS Transmission Zone

- Baseline project b3683 – Messick Road-Ridgeley 138 kV Upgrades: \$11.2 million

C. ComEd Transmission Zone

- Baseline project b3677 – LaSalle-Mazon 138 kV Rebuild: \$42.06 million

D. Dominion Transmission Zone

- Baseline project b3686 – Bremono-Columbia D.P. 115 kV Switching Station: \$16 million
- Baseline project b3687 – Bristers-Minnieville D.P. 115 kV Rebuild: \$30 million
- Baseline project b3684 – Earleys-Kelford 115 kV Rebuild: \$18.75 million
- Baseline project b3692 – Elmont-Chickahominy 500 kV Rebuild: \$58.16 million
- Baseline project b3694 – Fredericksburg/Carson/Hopewell Area Improvements: \$93.41 million
- Baseline project b3689 – Remington CT-Gainesville 230 kV Reconnector: \$30.68 million

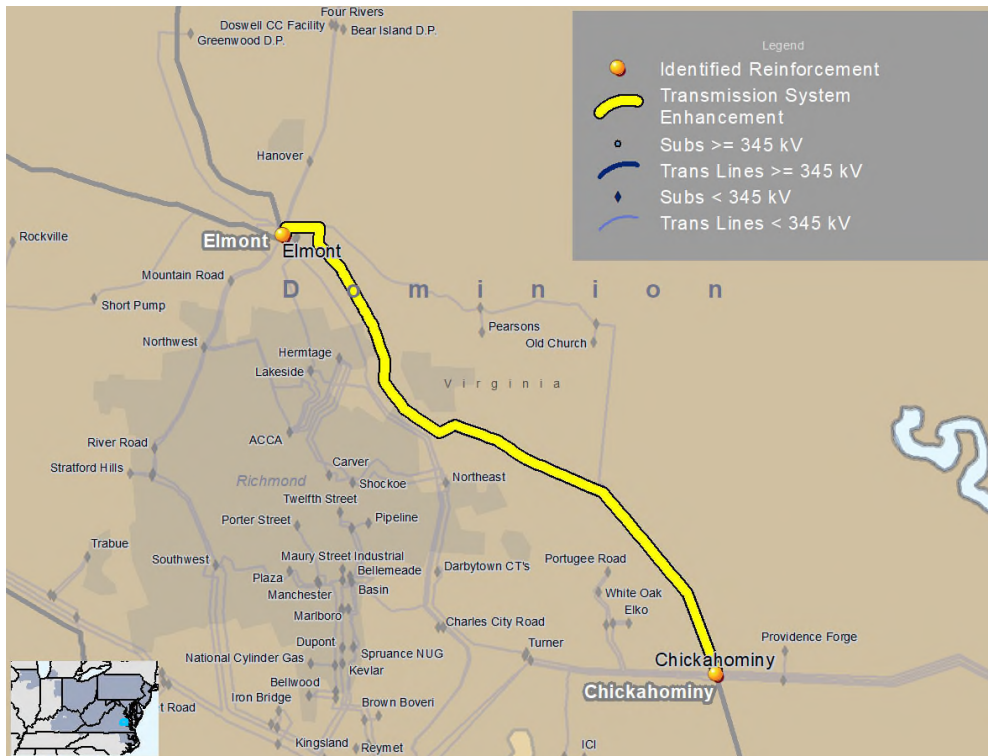
PJM also recommended projects totaling \$79.53 million, which include a 115 kV and multiple 69 kV line rebuilds, 230 kV line reconnector, a 345/138 kV transformer installation, 138/69/46 kV and 138/69 kV transformer replacements, capacitor bank installations, a reactor installation, circuit breaker and disconnect switch installations/replacements, and other substation and terminal equipment upgrades/replacements, whose individual cost estimates are less than \$10 million.

A more detailed description of the larger-scope projects that PJM recommended to the Board is provided below.

E. Baseline Reliability Project Details**Baseline Project b3353: Allen 46 kV Station Rebuild Baseline Conversion****AEP Transmission Zone**

In the 2026 RTEP winter case, the Starville-Allen 46 kV line section is overloaded for multiple N-1 outage combination.

Map 9. b3692: Elmont-Chickahominy 500 kV



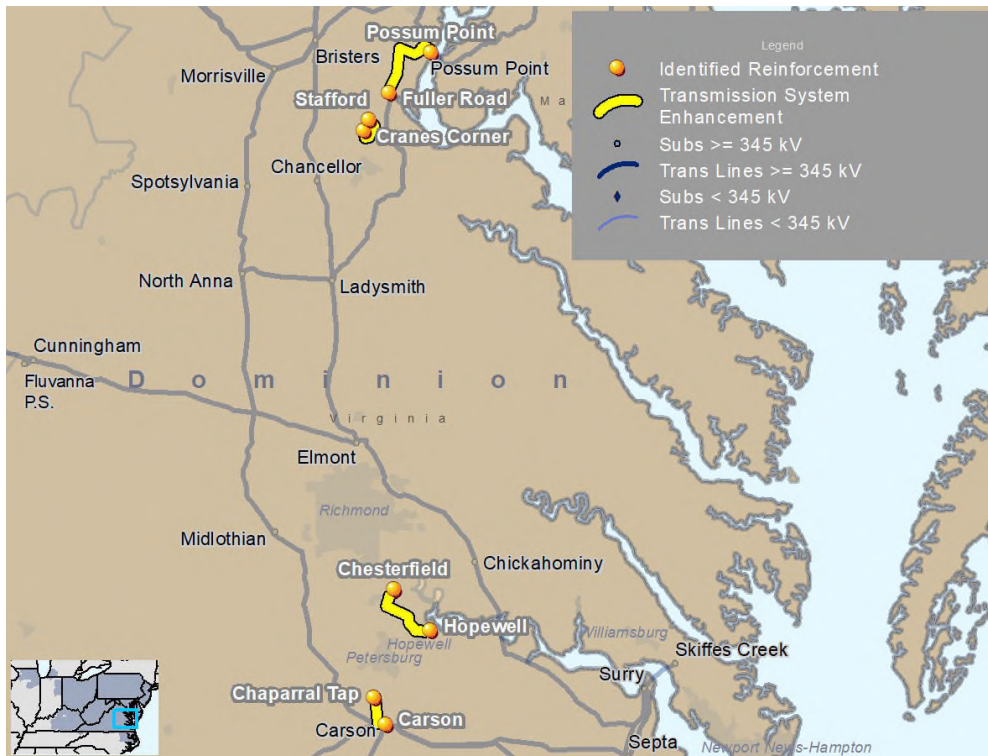
The recommended solution, solicited through the 2021 Window 1 competitive proposal process, is to rebuild approximately 27.7 miles of 500 kV transmission line from Elmont to Chickahominy with current 500 kV standards construction practices to achieve a summer rating of 4330 MVA. The estimated cost for this project is \$58.16 million, with a required and projected in-service date of June 2026. The local transmission owner, Dominion, will be designated to complete this work.

Baseline Project b3694: Fredericksburg/Carson/Hopewell Area Improvements

Dominion Transmission Zone

In the 2026 RTEP summer case, in the Fredericksburg area, the Cranes Corner-Stafford 230 kV line (No. 2104) is overloaded for an N-1 and N-2 outage as well as under Dominion stress case criteria, and there is load loss of 307 MW for N-1 outage combinations. In the Carson area, the Carson 500/230 kV transformer No. 2 is overloaded for an N-2 outage, and the Carson-Chaparral 230 kV line (No. 249) is overloaded for an N-1 outage. In the Hopewell area, the Chesterfield-Hopewell 230 kV line (No. 211) is overloaded for an N-1 outage, and the Chesterfield-Hopewell 230 kV line (No. 228) is overloaded for an N-1 and N-2 outage.

Map 10. b3694: Fredericksburg/Carson/Hopewell Area Improvements



The recommended solution, solicited through the 2021 Window 1 competitive proposal process, is a comprehensive project that addresses all three areas.

In the Fredericksburg area, the project will convert 115 kV line No. 29 (Aquia Harbor-Possum Point) to 230 kV (extended line No. 2104) and swap line No. 2104 (Cranes Corner-Stafford 230 kV) and converted line No. 29 at Aquia Harbor backbone termination. The project will also upgrade terminal equipment at Possum Point, Aquia Harbor and Fredericksburg 230 kV. The project will add a new breaker at the Fredericksburg 230 kV bay and reconfigure 230 kV line terminations. Approximately 7.6 miles of 230 kV line No. 2104 (Cranes Corner-Stafford) and approximately 0.34 miles of 230 kV line No. 2104 (Stafford-Aquia Harbor) will be reconducted/rebuilt to achieve a summer rating of 1047 MVA (terminal equipment at Cranes Corner will be upgraded to not limit the new conductor rating). The project will upgrade the wave trap and line leads at 230 kV line No. 2090 Ladysmith CT terminal to achieve 4000 A rating. The Fuller Road substation will be upgraded to feed the Quantico substation via a 115 kV radial line, and a four-breaker ring will be installed to break 230 kV line No. 252 into two new lines: 1) No. 252 between Aquia Harbor to Fuller Road, and 2) No. 9282 between Fuller Road and Possum Point. A 230/115 kV transformer will also be installed, which will serve Quantico substation.

In the Carson area, the project will energize the in-service spare 500/230 kV Carson No. 1 transformer, and partially wreck and rebuild 10.34 miles of 230 kV line No. 249 (Carson-Locks) to achieve a minimum summer emergency rating of 1047 MVA (terminal equipment at Carson and Locks will be upgraded to not limit the new conductor rating). The project includes the wreck and rebuild of 5.4 miles of 115 kV line No. 100 (Locks-Harrowgate) to achieve a

minimum summer emergency rating of 393 MVA (terminal equipment at Locks and Harrowgate will be upgraded to not limit the new conductor rating), and will perform line No. 100 Chesterfield terminal relay work.

In the Hopewell area, the project will reconductor approximately 2.9 miles each of 230 kV lines No. 211 (Chesterfield-Hopewell) and No. 228 (Chesterfield-Hopewell) to achieve a minimum summer emergency rating of 1046 MVA (equipment at Chesterfield and Hopewell substations will be upgraded to not limit ratings on lines No. 211 and No. 228).

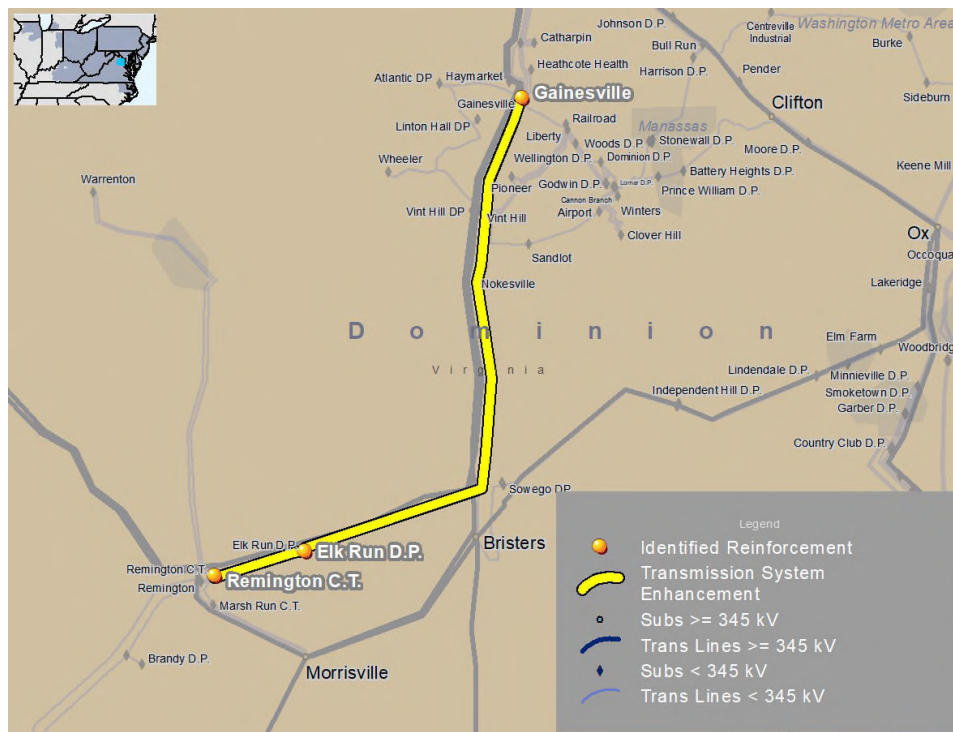
The total estimated cost for this project is \$93.41 million, with a required and projected in-service date of June 2026. The local transmission owner, Dominion, will be designated to complete this work.

Baseline Project b3689: Remington CT-Gainesville 230 kV Reconductor

Dominion Transmission Zone

In the 2026 RTEP summer case, the Remington CT-Gainesville 230 kV line (No. 2114) is overloaded for multiple N-1 and N-2 outages.

Map 11. b3689: Remington CT-Gainesville 230 kV



The recommended solution, solicited through the 2021 Window 1 competitive proposal process, is to reconductor approximately 24.42 miles of Remington CT-Elk Run-Gainesville 230 kV line (No. 2114) to achieve a summer rating of 1574 MVA (by fully reconductoring the line and upgrading the wave trap and substation conductor at Remington CT and Gainesville 230 kV). The project will replace 230 kV breakers SC102, H302, H402 and 218302 at

Attachment A – Reliability Project Single-Zone Allocations

Upgrade ID	Description	Cost Estimate (\$M)	Transmission Owner	Cost Responsibility	Required In-Service Date
b3346.1	Rebuild approximately 3.5 miles of overloaded 69 kV line between North Delphos-East Delphos-Elida Road switch. This includes approximately 1.1 miles of double circuit line that makes up a portion of the North Delphos-South Delphos 69 kV line and the North Delphos-East Delphos 69 kV line. Approximately 2.4 miles of single circuit line will also be rebuilt between the double circuit portion to East Delphos station and from East Delphos to Elida Road Switch.	\$8.43	AEP	AEP	6/1/2026
b3346.2	Replace the line entrance spans at South Delphos to eliminate the overloaded 4/0 Copper and 4/0 ACSR conductor.	\$0.44	AEP	AEP	6/1/2026
b3348.1	Construct a 138 kV single bus station (Tin Branch) consisting of a 138 kV box bay with a distribution transformer and 12 kV distribution bay. Two 138 kV lines will feed this station (from Logan and Sprigg stations), and distribution will have one 12 kV feed. Install two 138 kV circuit breakers on the line exits. Install 138 kV circuit switcher for the new transformer.	\$5.58	AEP	AEP	11/1/2026
b3348.2	Construct a new 138/46/12 kV Argyle station to replace Dehue station. Install a 138 kV ring bus using a breaker-and-a-half configuration, with an autotransformer with a 46 kV feed and a distribution transformer with a 12 kV distribution bay. Two 138 kV lines will feed this station (from Logan and Wyoming stations). There will also be a 46 kV feed from this station to Becco station. Distribution will have two 12 kV feeds. Retire Dehue station in its entirety.	\$10.00	AEP	AEP	11/1/2026
b3348.3	Bring the Logan-Sprigg #2 138 kV circuit in and out of Tin Branch station by constructing approximately 1.75 miles of new overhead double circuit 138 kV line. Double circuit T3 series lattice towers will be used along with 795,000 cm ACSR 26/7 conductor. One shield wire will be conventional 7 #8 ALUMOWELD, and one shield wire will be OPGW.	\$8.58	AEP	AEP	11/1/2026

Upgrade ID	Description	Cost Estimate (\$M)	Transmission Owner	Cost Responsibility	Required In-Service Date
b3687	Rebuild approximately 15.1-mile-long line segment between 115 kV line #183 Bristers and Minnieville D.P. with 2-768 ACSS and 4000 A supporting equipment from Bristers to Ox to allow for future 230 kV capability of 115 kV line #183. The continuous summer normal rating will be 523 MVA from Ox-Minnieville. The continuous summer normal rating will be 786 MVA from Minnieville-Bristers.	\$30.00	Dominion	Dominion	6/1/2026
b3689.1	Reconductor approximately 24.42 miles of 230 kV line #2114 Remington CT-Elk Run-Gainesville to achieve a summer rating of 1574 MVA by fully reconductoring the line and upgrading the wave trap and substation conductor at Remington CT and Gainesville.	\$28.99	Dominion	Dominion	6/1/2026
b3689.2	Replace 230 kV breakers SC102, H302, H402 and 218302 at Brambleton substation with 4000A 80 kA breakers and associated equipment including breaker leads as necessary to address breaker duty issues identified in short circuit analysis.	\$1.69	Dominion	Dominion	6/1/2026
b3690	Reconductor approximately 1.07 miles of 230 kV line #2008 segment from Cub Run-Walney to achieve a summer rating of 1574 MVA. Replace line switch 200826 with a 4000A switch.	\$1.93	Dominion	Dominion	6/1/2026
b3691	Reconductor approximately 1.4 miles of 230 kV line #2141 from Lakeview-Carolina to achieve a summer rating of 1047 MVA.	\$1.19	Dominion	Dominion	6/1/2026
b3694.1	Convert line #29 Aquia Harbor to Possum Point to 230 kV (Extended line #2104) and swap line #2104 and converted line #29 at Aquia Harbor backbone termination. Upgrade terminal equipment at Possum Point to terminate converted line 29 (now extended line #2104). (Line #29 from Fredericksburg to Aquia Harbor is being rebuilt under baseline b2981 to 230kV standards.)	\$9.39	Dominion	Dominion	6/1/2026
b3694.10	Reconductor approximately 2.9 miles of 230 kV line #211 Chesterfield-Hopewell to achieve a minimum summer emergency rating of 1046 MVA.	\$4.91	Dominion	Dominion	6/1/2026
b3694.11	Reconductor approximately 2.9 miles of 230 kV line #228 Chesterfield-Hopewell to achieve a minimum summer emergency rating of 1046 MVA.	\$4.91	Dominion	Dominion	6/1/2026
b3694.12	Upgrade equipment at Chesterfield substation to not limit ratings on lines 211 and 228.	\$0.76	Dominion	Dominion	6/1/2026

Upgrade ID	Description	Cost Estimate (\$M)	Transmission Owner	Cost Responsibility	Required In-Service Date
b3694.13	Upgrade equipment at Hopewell substation to not limit ratings on lines 211 and 228.	\$1.71	Dominion	Dominion	6/1/2026
b3694.2	Upgrade Aquia Harbor terminal equipment to not limit 230 kV line #9281 conductor rating.	\$0.63	Dominion	Dominion	6/1/2026
b3694.3	Upgrade Fredericksburg terminal equipment by rearranging 230 kV bus configuration to terminate converted line 29 (now becoming 9281). The project will add a new breaker at the 230 kV bay and reconfigure line termination of 230 kV lines #2157, #2090 and #2083.	\$2.73	Dominion	Dominion	6/1/2026
b3694.4	Reconductor/rebuild approximately 7.6 miles of 230 kV line #2104 Cranes Corner-Stafford to achieve a summer rating of 1047 MVA(1). Reconductor/rebuild approximately 0.34 miles of 230 kV line #2104 Stafford-Aquia Harbor to achieve a summer rating of 1047 MVA. Upgrade terminal equipment at Cranes Corner to not limit the new conductor rating.	\$19.60	Dominion	Dominion	6/1/2026
b3694.5	Upgrade wave trap and line leads at 230 kV line #2090 Ladysmith CT terminal to achieve 4000A rating.	\$0.15	Dominion	Dominion	6/1/2026
b3694.6	Upgrade Fuller Road substation to feed Quantico substation via 115 kV radial line. Install four-breaker ring and break 230 kV line #252 into two new lines: 1) #252 between Aquia Harbor to Fuller Road and 2) #9282 between Fuller Road and Possum Point. Install a 230/115 kV transformer which will serve Quantico substation.	\$24.16	Dominion	Dominion	6/1/2026
b3694.7	Energize in-service spare 500/230 kV Carson Tx#1.	\$0.00	Dominion	Dominion	6/1/2026
b3694.8	Partial wreck and rebuild 10.34 miles of 230 kV line #249 Carson-Locks to achieve a minimum summer emergency rating of 1047 MVA. Upgrade terminal equipment at Carson and Locks to not limit the new conductor rating.	\$15.37	Dominion	Dominion	6/1/2026
b3694.9	Wreck and rebuild 5.4 miles of 115 kV line #100 Locks-Harrowgate to achieve a minimum summer emergency rating of 393 MVA. Upgrade terminal equipment at Locks and Harrowgate to not limit the new conductor rating and perform line #100 Chesterfield terminal relay work.	\$9.10	Dominion	Dominion	6/1/2026
b3697	Replace station conductor and metering inside Whipain and Plymouth substations to increase the ratings of the 220-13/220-14 Whipain-Plymouth 230 kV line facilities.	\$0.62	PECO	PECO	6/1/2025

PJM RTEP - 2021 RTEP PROPOSAL WINDOW #1

PROBLEM STATEMENT & REQUIREMENTS

**Document Scope: 2026 Summer Reliability Analysis: 2026 Winter Reliability Analysis;
2026 Light Load Reliability Analysis**

2021 RTEP PROPOSAL WINDOW #1

Purpose of Proposal Window

PJM seeks technical solutions, also called proposals, to resolve potential reliability criteria violations on facilities identified below in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria).

Criterion Applied by PJM for this Proposal Window

- 2026 Summer Baseline Thermal and Voltage N-1 Contingency Analysis
- 2026 Summer Generator Deliverability and Common Mode Reliability Analysis
- 2026 Summer Load Deliverability Thermal and Voltage Analysis
- 2026 Summer N-1-1 Thermal and Voltage Analysis and Voltage Collapse
- 2026 Winter Baseline Thermal and Voltage N-1 Contingency Analysis
- 2026 Winter Generator Deliverability and Common Mode Reliability Analysis
- 2026 Winter Load Deliverability Thermal and Voltage Analysis
- 2026 Winter N-1-1 Thermal and Voltage Analysis and Voltage Collapse
- 2026 Light Load Baseline Thermal and Voltage N-1 Contingency Analysis
- 2026 Light Load Generator Deliverability and Common Mode Reliability Analysis

Terminology for Proposal Windows

Through the analyses listed above, PJM has compiled a list of criteria violations. The violations and the impacted facilities are identified by a table of flowgates. Descriptions of the column headings are provided below. Different analyses often use different column headings.

Typical thermal analysis column headings:

Column Heading	Title	Description
FG #	Flowgate Number	A sequential numbering of the identified potential violations
Fr Bus	From Bus Number	PSSE model bus number corresponding to one end of line identified as a potential violation
Fr Name	From Bus Name	PSSE model bus name corresponding to one end of line identified as a potential violation
To Bus	To Bus Number	PSSE model bus number corresponding to other end of line identified as a potential violation
To Name	To Bus Name	PSSE model bus name corresponding to other end of line identified as a potential violation
Monitored Facility	Monitored Facility	The circuit on which a potential violation is occurring
Base Rate (MVA)	Base Rate (MVA)	Normal Facility Rating (Rate A)
% Overload	Percentage Overload	Percentage above corresponding Facility Rating
CKT	Circuit ID	Circuit number of identified potential violation
KVs	Kilovolt level (A/B)	Kilovolt level of both sides of potential violation, if A does not equal B, potential violation is a transformer
Areas	Area Numbers (A/B)	Area numbers of both ends of potential violation (A=From Bus Area Number, B=To Bus Area Number) If A does not equal B, potential violation is a tie line
Rating	Facility Rating	Applicable thermal rating (MVA) of facility
DC Ld(%)	Direct Current Loading percentage	Percentage above Facility Rating determined from DC testing
AC Ld(%)	Alternating Current Loading percentage	Percentage above Facility Rating determined from AC testing
Cont Type	Contingency Type	Contingency categorization (e.g., Single, Bus, Line_FB, Tower)
Cont Name	Contingency Name	Contingency name as identified in associated contingency file or embedded in the spreadsheet

Contingency	Contingency	Contingency description
Violation Date	Violation Date	Date on which violation is expected to occur
Analysis Case	Analysis Case	Case title to use in replicating analysis

Typical voltage analysis column headings:

Column Heading	Title	Description
FG #	Flowgate Number	A sequential numbering of the identified potential violations
Bus #	Bus Number	PSSE model bus number corresponding to bus identified as a potential violation
KVs	Kilovolt level	Kilovolt level of bus identified as potential violation
Area	Area Number	Area number of bus identified as potential violation
ContVolt	Contingency Voltage (P.U.)	Per Unit Voltage at identified bus after contingency is applied
BaseVolt	Basecase Voltage (P.U.)	Per Unit Voltage at identified bus before contingency is applied
Low Limit	Low Voltage Limit(P.U.)	Threshold of Per Unit Low voltage, if ContVolt is under this limit, a potential violation is identified
Upper Limit	High Voltage Limit(P.U.)	Threshold of Per Unit High voltage, if ContVolt is over this limit, a potential violation is identified
Cont Type	Contingency Type	Contingency categorization (e.g., Single, Bus, Line_FB, Tower)
Vdrop (%)	Voltage drop	The percentage that the voltage has dropped as a result of the contingency
Contingency	Contingency	Contingency name as identified in associated contingency file
Contingency 1	First Contingency	N-1 (first) contingency identified
Contingency 2	Second Contingency	N-1-1 (second) contingency identified in N-1-1 analysis

Proposal Window Exclusion Definitions

The following definitions explain the basis for excluding flowgates from the competitive planning process and designating projects to the incumbent Transmission Owner.

Flowgates excluded from competition will include the underlined language in the comment field.

- Immediate Need Exclusion: For immediate reliability needs that must be addressed within three years or less and for which PJM determines a proposal window may not be feasible, these reliability violations are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity. Refer to Operating Agreement, Schedule 6 § 1.5.8(m)
- Below 200kV Exclusion: Due to the lower voltage level of the identified violations, these reliability violations are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity. Refer to Operating Agreement, Schedule 6 § 1.5.8(n)
- Substation Equipment Exclusion: For reliability violations on existing transmission substation equipment, these reliability violations are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity. Refer Operating Agreement, Schedule 6 § 1.5.8(p)

Analysis Procedure

Participants are expected to develop solutions to the identified criteria violations and perform analysis to validate that the solutions remove these violations. The competitive planning process is documented in PJM Manual 14F, which is available here: <http://www.pjm.com/-/media/documents/manuals/m14f.ashx>

Proposed solutions must also meet Transmission Owner Planning Criteria which is available here:

<http://www.pjm.com/planning/planning-criteria/to-planning-criteria.aspx>

Although PJM does its best to provide complete and accurate results, changes to the list of violations under consideration are possible. That is, flowgates may be added or removed from consideration in the proposal window. PJM works with Transmission Owners, Generation Owners, neighboring TOs and other affected parties to verify the quality of the analysis. PJM endeavors to minimize such changes and will clearly communicate any changes to the participants.

PJM regularly updates the system model to reflect changes to the transmission system. Analyses are performed to verify that violations continue to be valid, no new violations have appeared and proposed solutions still address the targeted violation(s).

PJM shall determine the more efficient or cost-effective enhancements or expansions for any violation.

Scope of Work

PJM is seeking proposals to resolve identified reliability criteria violations.

Criteria violations have been identified for facilities where the loading includes a contribution from a suspended ISA generator in the PJM New Services Queue. Due to the uncertainty, PJM is not seeking competitive proposals to address these criteria violations.

OBJECTIVES:

1. Develop complete solutions to address the identified criteria violations;
2. Develop solutions to address all new criteria violations generated as a consequence of proposed solution. Solutions to these secondary violations are required for the proposal to be considered.
3. Adhere to all applicable planning criteria, including PJM, NERC, SERC, RFC and Local Transmission Owner Criteria.

WHAT PJM PROVIDES:

The information listed below is provided to allow replication of PJM analyses. Some of this data is designated Critical Energy Infrastructure Information (CEII) and must be handled consistent with PJM's CEII request process at

[Competitive Planning Process page on the PJM website:](#)

1. Power Flow Base Cases. Identifies one or more system configurations to which planning criteria are applied.
2. Contingency List: Lists all contingency types (single, bus, tower, line w/ stuck breaker).
3. Subsystem Files: Identifies all subsystem zones to be considered in analysis.
4. Monitor Files: Identify specific ranges of facilities by area and kV level to be considered in analysis.
5. Facility Ratings: (if different from those included in the base cases)
6. Violations List: Lists all criteria violations with power flow results and additional technical notes (flowgates). The results indicate the case(s) to which the criteria violations apply.
7. Short Circuit Base Case. This case reflects the 2026 RTEP base case.
8. Breaker Change Files. Lists all over-duty breakers in a specific TO area.
9. TO Criteria Setting Files. Lists settings used for short circuit analysis for each specific TO.
10. TARA Generation Deliverability options files.

Response Back To PJM (Deliverables)

This section describes the required elements of a complete proposal. The absence of any element renders the proposal incomplete and the proposal will not be considered for selection.

Often there are several viable solutions to a given violation. Include alternate approaches in separate proposals. PJM will not accept proposals with multiple options.

Four categories of information are described below: three are required for a complete package and one is conditional.

- Technical analysis files and documentation
- Completed proposal submittal template
- Project diagrams
- Company evaluation and operations and maintenance information (if required)

Technical Analysis Files and Documentation

Include the following technical information to provide a complete project proposal package:

1. A detailed analysis spreadsheet showing the planning analysis results for the project.
2. A set of updates to the power flow cases which model the proposed solution. Provide files in a format compatible with PSS/E version 33.12. Provide only solvable and convergent solutions. Include an idv, or equivalent type, file in order to apply changes to other models. Assign a unique identifier when new busses are required. Provide contingencies in a single file for each contingency type. Organize the contingencies into one of three categories:
 - a. Modified Contingencies
 - b. New Contingencies
 - c. Deleted Contingencies
3. List of all proposed equipment along with relevant parameters and assumptions.
 - a. All necessary parameters, e.g., equipment ratings, impedances, line lengths, etc.
 - b. For reactive devices, settings and outputs
 - c. For synchronous machines, MW and MVAR output assumptions
4. An analysis report of proposed solution which identifies the issues being addressed.
5. Additional documentation required to verify the proposal.

PJM Proposal Submittal

The PJM Competitive Planner Tool is used for proposal(s) submittal and captures project details, such as the criteria violations or system constraints that are being targeted by the proposed solution, the overall and specific project descriptions and the details of cost commitment, if included. The Competitive Planner Tool and user guide are available on the Competitive Planning Process page: <https://www.pjm.com/planning/competitive-planning-process.aspx>.

All proposals will be made public and posted on pjm.com after the proposal window is closed. Mark all CEII and business confidential information for redaction from this public posting. Redact only information which meets the criteria of CEII or business proprietary and confidential information.

Redaction guidelines can be found in PJM Manual 14F, Section 6.2. Please note that this section provides guidance only. PJM reserves the right to challenge proposed redaction of information in order to ensure the appropriate level of transparency.

Project Diagrams

Provide project diagrams in the PJM Competitive Planner Tool to detail how the proposed solution will modify existing infrastructure, how new infrastructure will be configured and where new infrastructure will be sited. Project diagrams should include, but are not limited to, the following detail:

- Single line diagrams
- Substation general arrangement and station layout. If expanding the substation, identify the following:
 - Area to be modified
 - Land ownership or acquisition plan
- Line routing diagram:
 - Identify proposed route of new or upgraded transmission lines
 - Clearly identify where acquisition of additional right-of-way is required
- Detailed project schedule. Include, at minimum, the following major work activities:
 - Engineering and Design
 - Siting and Permitting
 - ROW and Land acquisition
 - Material procurement
 - Construction
 - Testing/Commissioning

Company Evaluation and Operations and Maintenance Information

For proposers seeking Designated Entity status, provide additional information which will aid PJM in understanding how the proposed solution will be developed, constructed, operated and maintained. Include this information in the PJM Competitive Planner Tool.

Relevant PJM Operating Agreement, Schedule 6, section 1.5.8(f).

Entity-Specific Criteria Considered in Determining the Designated Entity for a Project. In determining whether the entity proposing a Short-term Project, Long-lead Project or Economic-based Enhancement or Expansion recommended for inclusion in the plan shall be the Designated Entity, the Office of the Interconnection shall consider: (i) whether in its proposal, the entity indicated its intent to be the Designated Entity; (ii) whether the entity is

pre-qualified to be a Designated Entity pursuant to Operating Agreement, Schedule 6, section 1.5.8(a); (iii) information provided either in the proposing entity's submission pursuant to the Operating Agreement, Schedule 6, section 1.5.8(a) or 1.5.8(c)(2) relative to the specific proposed project that demonstrates: (1) the technical and engineering experience of the entity or its affiliate, partner, or parent company, including its previous record regarding construction, maintenance, and operation of transmission facilities relative to the project proposed; (2) ability of the entity or its affiliate, partner, or parent company to construct, maintain, and operate transmission facilities, as proposed, (3) capability of the entity to adhere to standardized construction, maintenance, and operating practices, including the capability for emergency response and restoration of damaged equipment; (4) experience of the entity in acquiring rights of way; (5) evidence of the ability of the entity, its affiliate, partner, or parent company to secure a financial commitment from an approved financial institution(s) agreeing to finance the construction, operation, and maintenance of the project, if it is accepted into the recommended plan; and (iv) any other factors that may be relevant to the proposed project, including but not limited to whether the proposal includes the entity's previously designated project(s) included in the plan.

Transmittal of Proposals

Proposal submissions along with all files required for submission will be done with the PJM Competitive Planner Tool for each submitted proposal.

Proposal Fees

All proposals, upgrade and greenfield solutions, with the exception of solutions submitted with an estimated cost of \$5M or less, submitted for consideration in the 2021 RTEP Proposal Window 1 are subject to an initial \$5,000 deposit per the PJM Operating Agreement 1.5.8(c).

Relevant PJM Operating Agreement language in Section 1.5.8(c):

(c)(1) All proposals submitted in the proposal windows must contain: (i) the name and address of the proposing entity; (ii) a statement whether the entity intends to be the Designated Entity for the proposed project; (iii) the location of proposed project, including source and sink, if applicable; (iv) relevant engineering studies, and other relevant information as described in the PJM Manuals pertaining to the proposed project; (v) a proposed initial construction schedule including projected dates on which needed permits are required to be obtained in order to meet the required in-service date; (vi) cost estimates and analyses that provide sufficient detail for the Office of Interconnection to review and analyze the proposed cost of the project; and (vii) with the exception of project proposals submitted with cost estimates of \$5 million or less, a \$5,000 non-refundable deposit must be included with each project proposal submitted by a proposing entity that indicates an intention to be the Designated Entity.

(c)(1)(i) In addition, any proposing entity indicating its intention to be the Designated Entity will be responsible for and must pay all actual costs incurred by the Transmission Provider to evaluate the submitted project proposal. To the extent the Transmission Provider incurs costs to evaluate multiple submitted project proposals where such costs are not severable by individual project proposal, the Transmission Provider shall invoice equal shares of the non-severable costs among the project proposals that cause such non-severable costs to be incurred. Notwithstanding this method of invoicing non-severable costs, non-severable costs will be jointly and severally owed by the proposing entities that cause such costs to be incurred.

(c)(1)(ii) All non-refundable deposits will be credited towards the actual costs incurred by the Transmission Provider as a result of the evaluation of a submitted project proposal.

(c)(1)(iii) Following the close of a proposal window but before the Transmission Provider incurs any third-party consultant work costs to evaluate a submitted project proposal, the Transmission Provider will issue to the proposing entity an initial invoice seeking payment of estimated costs to evaluate each submitted project proposal. The estimated costs will be determined by considering the: potential cost of consultant work, historical estimates for project proposals of similar scope, complexity and nature of the need, and/or technology and nature of the project proposal. The Transmission Provider may issue additional invoices to the proposing entity prior to the completion of the evaluation activities associated with a project proposal if the Transmission Provider receives updated actual cost information and/or upon consideration of the factors specified in this section.

(c)(1)(iv) At the completion of the evaluation activities associated with a project proposal, the Transmission Provider will reconcile the actual costs with monies paid and, to the extent necessary, issue either a final invoice or refund.

(c)(1)(v) The proposing party must pay any invoiced costs within fifteen (15) calendar days of the Transmission Provider sending the invoice to the proposing entity or its agent. For good cause shown, this fifteen (15) calendar day time period may be extended by the Transmission Provider. If the proposing entity fails to pay any invoice within the time period specified and/or extended by the Transmission Provider in accordance with this section, the proposing entity's pre-qualification status may be suspended and the proposing entity will be ineligible to be a Designated Entity for any projects that do not yet have an executed Designated Entity Agreement. Such a suspension and/or ineligibility will remain in place until the proposing entity pays in full all outstanding monies owed to the Transmission Provider as a result of the evaluation of the proposing entity's project proposal(s).

The non-refundable deposit is due at the time of submission. Pay the non-refundable deposit by wire transfer to PJM Interconnection at:

Wire transfer funds to:	PJM Interconnection, LLC
Bank Name:	PNC Bank, N.A. New Jersey
ABA Number:	031207607 (Fed Wire and ACH)
Account Number:	80-1358-9826 8013589789
Provide Reference*:	Order 1000

To ensure the non-refundable deposit is properly accounted for, include a reference to "Order 1000 – Competitive submittal PJM Id ####" in the subject, notes or addenda field of the wire transfer form. Please note that the PJM ID #### will be displayed on the confirmation email you receive after submitting the proposal and is also identified on the competitive planner tool once a competitive proposal is initially saved.

The proposer also needs to provide the following information to PJM:

Company Info, Primary contact name, Billing email & Tax ID#.

The PJM Proposal ID can be located on the Existing Proposal screen in the PJM Competitive Planner Tool

Homepage Existing Proposals Start New Proposal									
Records Per Page: 15 (1 of 1)									
PJM Proposal ID	Company Proposal ID	Project Title	TO Zone	Construction Cost (current year)	Window Name	Status	Submitter	Last Updated	Actions
2019-51-362	PJM-101	PJM Greenfield	320/363	19,378,476	Proposal Window 2019 Short Term	Complete		07/15/2020	
Records Per Page: 15 (1 of 1)									
1 records									

Timeline

7/2/2021: Opening of 2021 RTEP Proposal Window 1

8/31/2021: Close of 2021 RTEP Proposal Window 1 at 11:59 p.m. Eastern Daylight Time

Notes:

- Confidentiality of individual proposals will be maintained for the duration of the window.
- Proposals received after close of the proposal window will not be accepted.

Questions

Submit all questions about the proposal window to the PJM [Planning Community](#). Submit questions involving confidential information or CEII under the “Confidential” topic on the Planning Community. Answers will be provided to all participants in the proposal window.

Please reference 2021 RTEP Proposal Window 1 in all correspondence.

Specialized Requirements

PJM seeks proposals to evaluate the identified needs in this window. PJM has not determined specialized requirements that PJM is seeking in project proposals in this window for consideration in its evaluation.

Notice

In accordance with the Open Access Transmission Tariff, Attachment M, the MMU has access to all data submitted to PJM through PJM's competitive proposal window process. See Manual 14F, section 8.4.4.

Document Revision History

7/2/2021 - V1 - Original Problem Statement posted to the PJM Competitive Planning Process webpage:
<https://www.pjm.com/planning/competitive-planning-process.aspx>.

Attachment I.A.6 – PJM Generation Deliverability Results
Summer 2026 RTEP

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1															
2															
3															
	2026 RTEP PJM Generation Deliverability Result (Summer)														
4	Name	To Bus	Name	CKT	KVs	Areas	Ratio	FN DC Flow	FN AC Flow	FN DC %	FN AC %	Cont Label	Cont Typ	Conductor/Transformer Rating (MVA)	PJM Accepting Proposal
16	CHOPEWILL	314286	6CHESTF A	1	230	345	549	580.5	578.1	105.74	105.31	DVP_P4-2: 211T2124_SRT-A	Breaker	Conductor rating is the same as basecase model	YES
19	CHOPEWILL	314286	6CHESTF A	1	230	345	449.3	464.6	463.5	103.41	103.16	DVP_P1-2: LN 211_SRT-SL	Single	Conductor rating is the same as basecase model	YES
31	CHOPEWILL	314287	6CHESTF B	1	230	345	449.3	449.6	453.1	100.05	100.84	DVP_P1-2: LN 228_SRT-A	Single	Conductor rating is the same as basecase model	YES

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: [1] Engineering Justification for the Project

See Section I.A of the Appendix.

[2] Known Future Projects

There are no known future projects that require the Rebuild Project to be constructed. The Rebuild Project is required to resolve the potential NERC criteria violations described in Section I.A of the Appendix.

[3] Planning Studies

The planning studies run by PJM for the Generator Deliverability analysis used the most recent (at that time) RTEP case, which would have been the Summer 2026 RTEP, with all the known projects applied. The reliability studies conducted for this Rebuild Project and the study results are described in Section I.A.

[4] Facilities List

Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Attachment I.G.1 shows the portion of the Company's transmission system in the area of the Rebuild Project. Existing Lines #211 and #228 are part of the Company's 230 kV network, which supports the delivery of electric generation to retail and wholesale customers. These lines support the network in the Central Virginia area.

The Company's Chesterfield Power Station, located on the James River in Chesterfield County, has four generating units with an approximate summer generating capacity of 1,401 MW. Chesterfield Power Station Unit #6 has a summer capacity of 678 MW and is connected to the Chesterfield Substation 230 kV bus that serves Line #211 along with 230 kV Lines #2003 (Chesterfield-Poe), #205 (Chesterfield-Locks), #217 (Chesterfield-Lakeside), and #259 (Basin-Chesterfield). Chesterfield Power Station Units #5, #7 and #8 have a combined summer capacity of approximately 723 MW and are connected to another Chesterfield Substation 230 kV bus that serves Line #228, along with 230 kV Lines #208 (Chesterfield-Southwest), #287 (Chesterfield-Chickahominy), #2049 (Chesterfield-Allied). Units #5 and #6 are planned to be deactivated by May 31, 2023, which would leave approximately 386 MW of combined capacity for Units #7 and #8. Two other units (#3 and #4) at Chesterfield Power Station connected to separate Chesterfield Substation 115 kV busses serving six 115 kV lines but were deactivated in December 2018.

The Hopewell Cogeneration Facility ("HCF") Power Station, located in the City of Hopewell, has four generating units with a net summer capacity of 375 MW. The power station is connected to the Company's Hopewell Substation 230 kV bus exclusively through Line #2041. The Company's Hopewell Power Station, located in the City of Hopewell, has one generating unit with a net summer capacity of 51 MW. Hopewell Power Station is connected to the Company's network exclusively through Line #2046. The injection point into the network is also the Company's Hopewell Substation. The 92-MW Hopewell James River Cogeneration Power Station⁵ was connected to Hopewell Substation through Line #268 but was deactivated in June 2019. The 230 kV bus at Hopewell Substation serves Lines

⁵ Hopewell James River Cogeneration Power Station is also known as Cogentrix Power Station.

#211, #228, #268, #2041, and #2046 along with 230 kV Lines #2124 (Hopewell-Prince George), #212 (Hopewell-Surry), and #240 (Hopewell-Surry).

The tables in Attachment I.C.1 provide five years of historical system peak loads for the Company's Chesterfield Load Area. The tables in Attachment I.C.1 also provide the anticipated summer and winter peak loads from 2023 to 2032 for this area. The projected loads in Attachment I.C.1 represent the Company's forecasted peaks based on actual load and the PJM 2023 Load Forecast and demonstrate stable load demand in the area. Over the period from 2023 to 2032, the summer peak electrical demand for this area is projected to vary between approximately 1777 MW and 1797 MW, and the winter peak electrical demand for this area is projected to vary between approximately 2080 MW and 2093 MW.

As discussed in Section I.A., the Rebuild Project is needed to resolve overloading issues on 230 kV Lines #211 and Line #228 between Chesterfield and Hopewell Substations. These overloading issues were identified in the PJM RTEP Summer 2026 Generator Deliverability analysis. The line rating is limited by 2.9 miles of 1109 ACAR conductor, which has a summer emergency rating of 478 MVA. The Rebuild Project will rebuild Line #211 and Line #228 to a minimum summer rating of 1573 MVA.

Completing the Rebuild Project will support Dominion Energy Virginia's continued reliable electric service to retail and wholesale customers and will support overall growth and system generation capability in the area.

Attachment I.C.1 – Chesterfield Load Zone (187)

Historical and Projected Loads (Summer and Winter)

Chesterfield Load Area (Zone 187)											
SUMMER LOADS	Historical MW (Coincident with System Peak)										
Date	7/2/2018	7/20/2019	7/20/2020	8/12/2021	8/9/2022						
TOTAL	1649.7	1617.7	1734.2	1713.6	1704.1						
Chesterfield Load Area (Zone 187)											
SUMMER LOADS	Projected MW*										
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
TOTAL	1777.3	1789.1	1794.1	1797.2	1797.2	1797.2	1797.2	1797.2	1797.2	1797.2	
Chesterfield Load Area (Zone 187)											
WINTER LOADS	Historical MW (Coincident with System Peak)										
Date	1/31/2019	1/21/2020	1/29/2021	1/27/2022	12/24/2022						
TOTAL	1774.4	1666.0	1687.4	1707.0	2045.3						
Chesterfield Load Area (Zone 187)											
WINTER LOADS	Projected MW*										
Year	23/24	24/25	25/26	26/27	27/28	26/27	28/29	29/30	30/31	31/32	
TOTAL	2080.4	2088.6	2090.9	2093.4	2093.4	2093.4	2093.4	2093.4	2093.4	2093.4	
* Forecasted values are based on the PJM 2023 Load Forecast											

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: See Section I.A, including Attachment I.A.6.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Feasible Project Alternatives

As an alternative to the Rebuild Project, the Company analyzed a reconductor design, but more than 50% of the existing lattice towers experienced structural failures. As such, a complete rebuild of this portion of Line #211 and Line #228 is being proposed to improve reliability through the corridor. See Section I.A.

Analysis of Demand-Side Resources

Pursuant to the Commission's November 26, 2013, Order entered in Case No. PUE-2012-00029, and its November 1, 2018, Final Order entered in Case No. PUR-2018-00075 ("2018 Final Order"), the Company is required to provide an analysis of demand-side resources ("DSM") as incorporated into the Company's planning studies. DSM is the broad term that includes both energy efficiency ("EE") and demand response ("DR"). In this case, PJM and the Company have identified a need for the proposed Rebuild Project based on the need to maintain the overall long-term reliability of its transmission system and to comply with mandatory NERC Reliability Standards and consistent with sound engineering judgment, thereby enabling the Company to maintain the overall long-term reliability of its transmission system.⁶ Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs that are considered in PJM's fixed resource requirement plan ("FRR") because PJM only dispatches DR when the system is under stress (*i.e.*, a system emergency). Accordingly, while existing DSM is considered to the extent the load forecast accounts for it, DR that has been bid previously into PJM's reliability pricing model ("RPM") market is not a factor in this particular Application because of the identified need for the Rebuild Project. Based on these considerations, the evaluation of the Rebuild Project demonstrated that despite accounting for DSM consistent with PJM's methods, the Rebuild Project is necessary.

Incremental DSM also will not absolve the need for the Rebuild Project. As reflected in Attachment I.C.1, the peak load area for this Rebuild Project's (historic and projected) ranges from approximately 1650 MW to 2093 MW (summer and winter). By way of comparison, statewide, the Company achieved demand savings of 308.4 MW (net) / 396.8 MW (gross) from its DSM Programs in 2021.

⁶ While the PJM load forecast does not directly incorporate DR, its load forecast incorporates variables derived from Itron that reflect EE by modeling the stock of end-use equipment and its usages. Further, because PJM's load forecast considers the historical non-coincident peak ("NCP") for each load serving entity ("LSE") within PJM, it reflects the actual load reductions achieved by DSM programs to the extent an LSE has used DSM to reduce its NCPs.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Rebuild Project includes the removal and replacement of existing facilities on existing Line #211 and Line #228, as described below. There will be no lines permanently taken out of service as part of the proposed Rebuild Project.

The Company proposes to replace five (5) dead-end galvanized steel V-Series towers and foundations and twelve (12) suspension galvanized steel V-series towers and foundations with:

- Eleven (11) double circuit suspension weathering steel monopole structures with foundations; V-string insulator assemblies will be utilized to increase clearances to adjacent circuits;
- Three (3) double circuit double dead-end weathering steel two-pole structures with foundations;
- One (1) double circuit double dead-end weathering steel monopole structure with foundation;
- One (1) double circuit running angle weathering steel two-pole structure with foundations; and,
- One (1) single circuit double dead-end monopole structure with foundation.

For Line #211, approximately 2.84 miles of existing three-phase 1109 ACAR conductor and approximately 0.03 miles of existing three-phase 1534 ACAR conductor between the Chesterfield Substation and existing Structure #211/19 will be removed and replaced with three-phase twin-bundled 768.2 ACSS/TW/HS “Maumee” conductor. The conductor arms on Structure #211/16A will be removed and replaced to support the new conductor.

For Line #228, approximately 2.83 miles of existing three-phase 1109 ACAR conductor between the Chesterfield Substation and existing Structure #228/19 will be removed and replaced with three-phase twin-bundled 768.2 ACSS/TW/HS “Maumee” conductor. The conductor arms on Structure #228/68A will be removed and replaced to support the new conductor.

The existing capacity of Line #211 between the Chesterfield Substation and Structure #211/19 (#228/19) is limited by the existing three-phase 1109 ACAR conductor, which has a normal/emergency rating of 478/478 MVA summer and 606/606 MVA winter. After the proposed Rebuild Project, the capacity of the new three-phase twin-bundled 768.2 ACSS/TW/HS “Maumee” conductor within this segment of Line #211 will have a normal/emergency rating of 1,573/1,573 MVA

summer and 1,648/1,648 MVA winter.

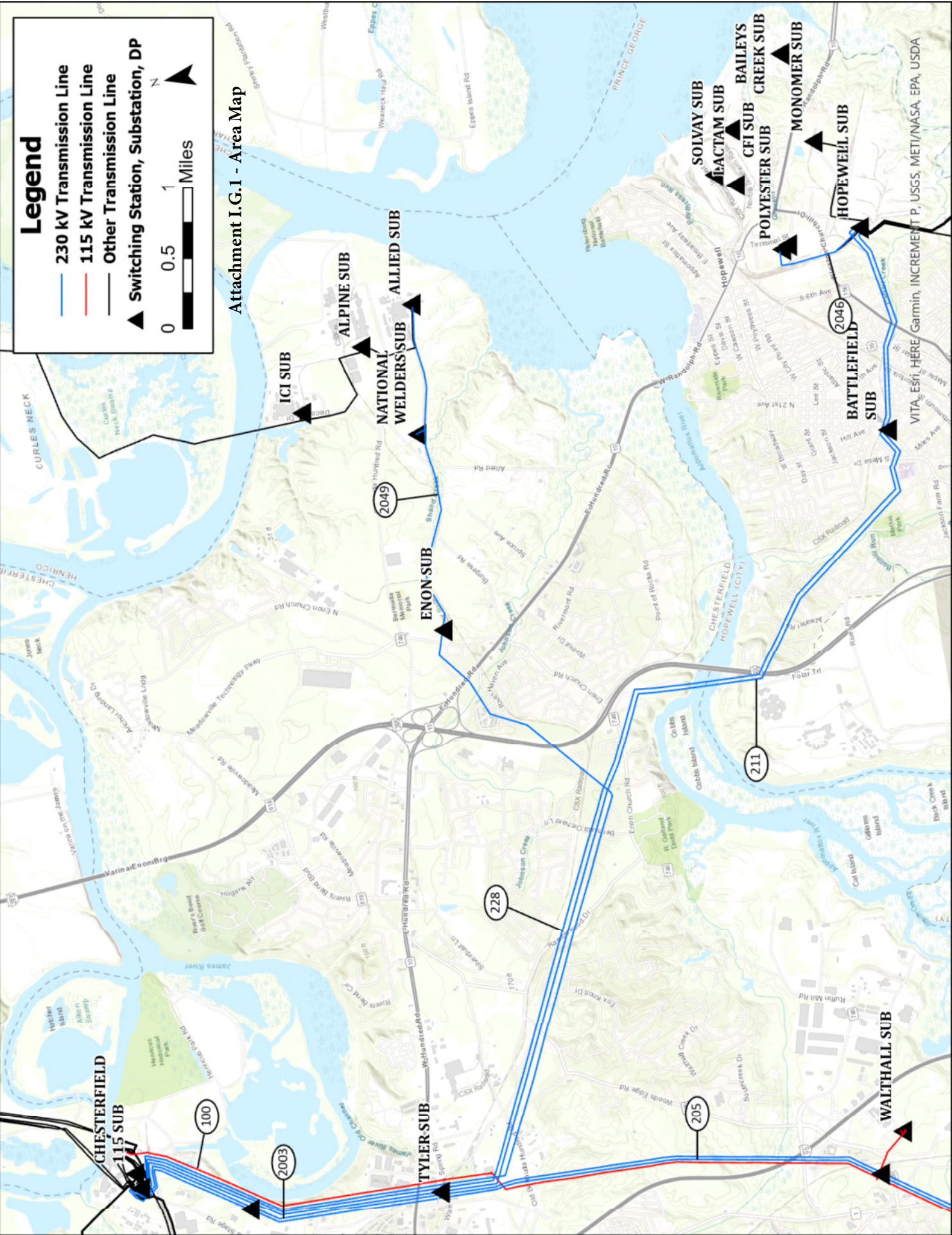
The existing capacity of Line #228 between the Chesterfield Substation and Structure #211/19 (#228/19) is limited by the existing three-phase 1109 ACAR conductor, which has a normal/emergency rating of 478/478 MVA summer and 606/606 MVA winter. After the proposed Rebuild Project, the capacity of the new three-phase twin-bundled 768.2 ACSS/TW/HS “Maumee” conductor within these segments of Line #228 will have a normal/emergency rating of 1,573/1,573 MVA summer and 1,648/1,648 MVA winter.

The existing two fiber optic shield wires were recently replaced and will be transferred to the proposed structures.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: See Attachment I.G.1.



I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The desired in-service date for the Proposed Rebuild Project is June 1, 2025.

The Company estimates that it will take approximately 16 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by February 1, 2024. Should the Commission issue a final order by February 1, 2024, the Company estimates that the construction should begin by November 1, 2024, and be completed by June 1, 2025. This construction timeline will enable the Company to meet the targeted in-service date for the Rebuild Project. This schedule is contingent upon obtaining the necessary permits and outages. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages or unpredictable delays due to labor shortages and/or materials/supply issues based on other extensive project work ongoing in the vicinity of the Rebuild Project.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The total estimated conceptual cost of the Rebuild Project is approximately \$14.3 million (in 2022 dollars), which includes \$9.2 million for transmission-related work, and \$5.1 million for substation-related work (2022 dollars).

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Rebuild Project was initially presented at the November 2, 2021 PJM Transmission Expansion Advisory Committee (“TEAC”) meeting, and was approved by the PJM Board at its February 16, 2022 meeting as a baseline project with the following numbers: b3694.10, b3694.11, b3694.12, and b3694.13. See Attachment I.A.4 and Sections I.A and I.E.

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

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable. The need for the Rebuild Project is not driven by outage history, but rather by the need to prevent potential overloading. See Sections I.A and I.C.

I. NECESSITY FOR THE PROPOSED PROJECT

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

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

I. NECESSITY FOR THE PROPOSED PROJECT

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

- 1. The full name of the NUG as it appears in its contract with the utility and the dates of initial contract and any amendments;**
- 2. A description of the arrangements for financing the facilities, including information on the allocation of costs between the utility and the NUG;**
- 3. a. For Qualifying Facilities (“QFs”) certificated by Federal Energy Regulatory Commission (“FERC”) order, provide the QF or docket number, the dates of all certification or recertification orders, and the citation to FERC Reports, if available;**
b. For self-certificated QFs, provide a copy of the notice filed with FERC;
- 4. Provide the project number and project name used by FERC in licensing hydroelectric projects; also provide the dates of all orders and citations to FERC Reports, if available; and**
- 5. If the name provided in 1 above differs from the name provided in 3 above, give a full explanation.**

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: The total length of the Rebuild Project is approximately 2.9 miles from the Chesterfield Substation to Structure #211/19 (#228/19). No alternative routes are proposed for the Rebuild Project. See Section II.A.9 of the Appendix for an explanation of the Company’s route selection process.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: See Attachment II.A.2, which includes existing linear utilities paralleled by the existing transmission line corridor. The Rebuild Project is located within existing transmission line right-of-way, which collocates and parallels Lines #2003 and #205 to the west and Lines #100 and #2049 to the east. No portion of the right-of-way is proposed to be quitclaimed or relinquished.

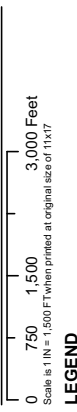
The Company will make a digital Geographic Information Systems (“GIS”) shape file available to interested persons upon request to counsel for the Company.

ATTACHMENT II.A.2

ENVIRONMENTAL CONSTRAINTS MAP

Chesterfield-Hopewell Lines #228 and #211
Partial Rebuild Project
Chesterfield County, Virginia

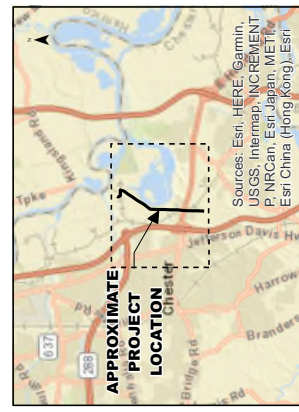
Client: Dominion Energy Virginia
C2 Env Project: Prepared By: Date:
0293 TMP 03/24/23



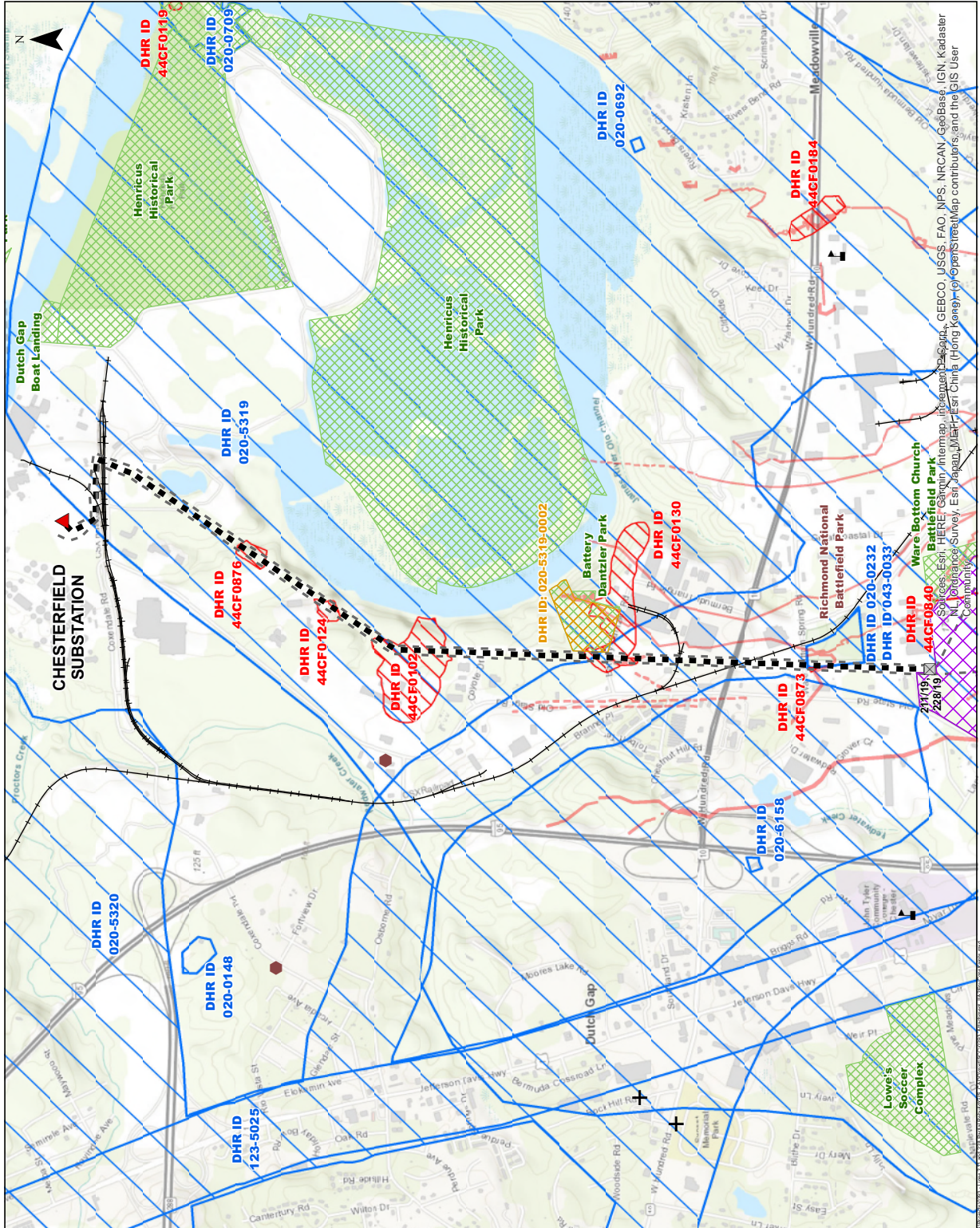
LEGEND

- Existing Lines #211 and #228 Project Centerline
- - Other Existing Overhead Transmission
- ▣ Existing Structure
- ▣ Existing Substation
- ▣ Local Park
- ▣ Virginia Department of Historic Resources Easement
- ▣ Richmond National Battlefield Park
- ▣ Capital Region Land Conservancy
- ▣ Eligible or Potentially Eligible VCRIS Architecture Resource
- ▣ Eligible or Potentially Eligible VCRIS Archaeology Resource
- ▣ Potentially Eligible Archaeology Resource
- ▣ DHR ID 44CF0578
- ▣ Place of Worship
- ▣ School
- ▣ Cemetery
- ▣ Railroad

Notes:
1. Basemap from ESRI Topographic and World Street Map
2. Project centerline provided by Dominion
3. VCRIS Data provided by Dominion
4. Places digitized from Google Earth
5. Railroads from VGIN



SHEET 1 OF 1



II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: See Attachment I.G.1.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

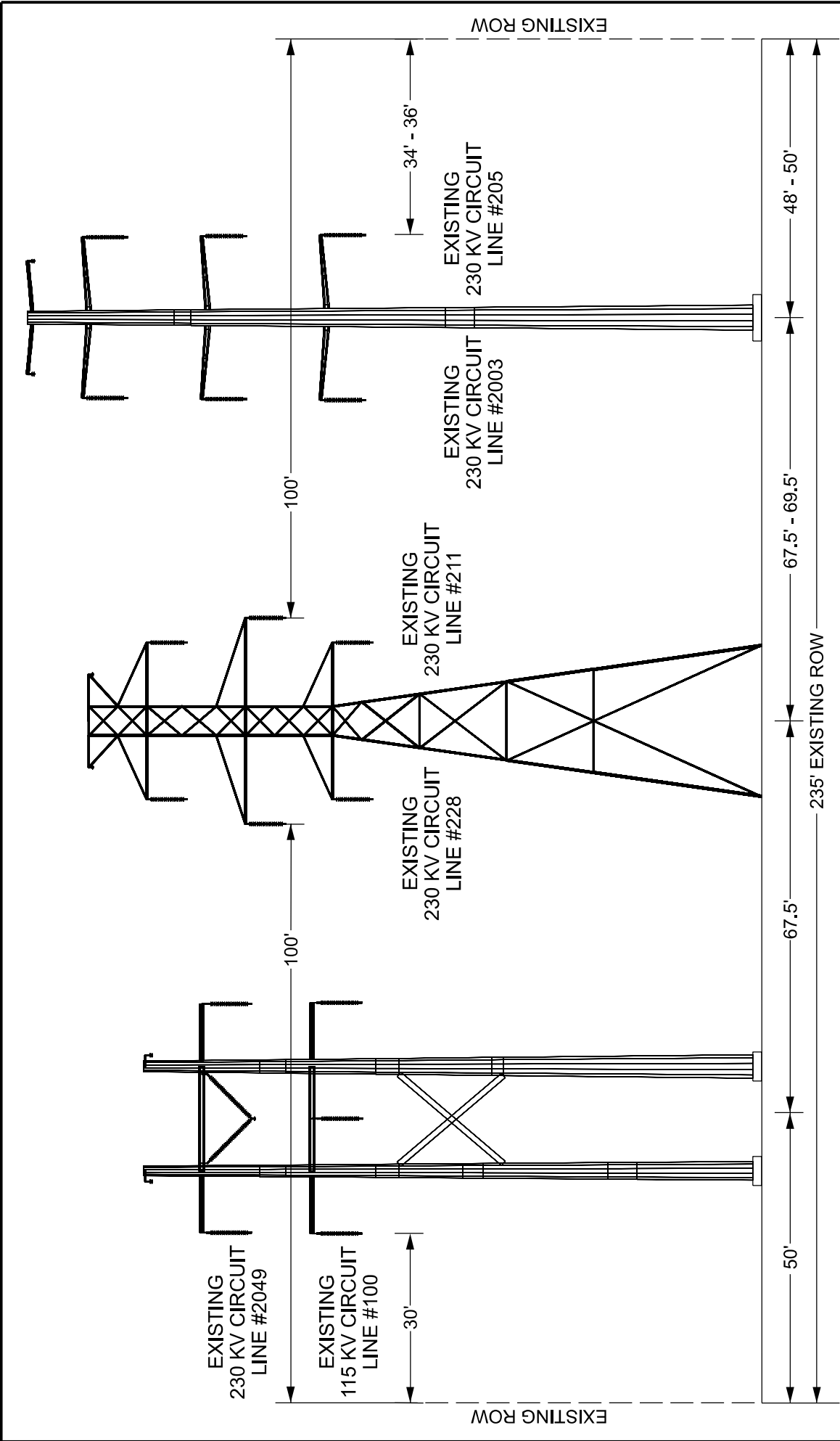
Response: Not applicable. The Rebuild Project is located within existing rights-of-way or on Company-owned property, and no additional rights-of-way are needed.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

- 5. Provide drawings of the ROW cross section showing typical transmission line structure placements referenced to the edge of the ROW. These drawings should include:**
 - a. ROW width for each cross section drawing;**
 - b. Lateral distance between the conductors and edge of ROW;**
 - c. Existing utility facilities on the ROW; and**
 - d. For lines being rebuilt in existing ROW, provide all of the above (i) as it currently exists, and (ii) as it will exist at the conclusion of the proposed project.**

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

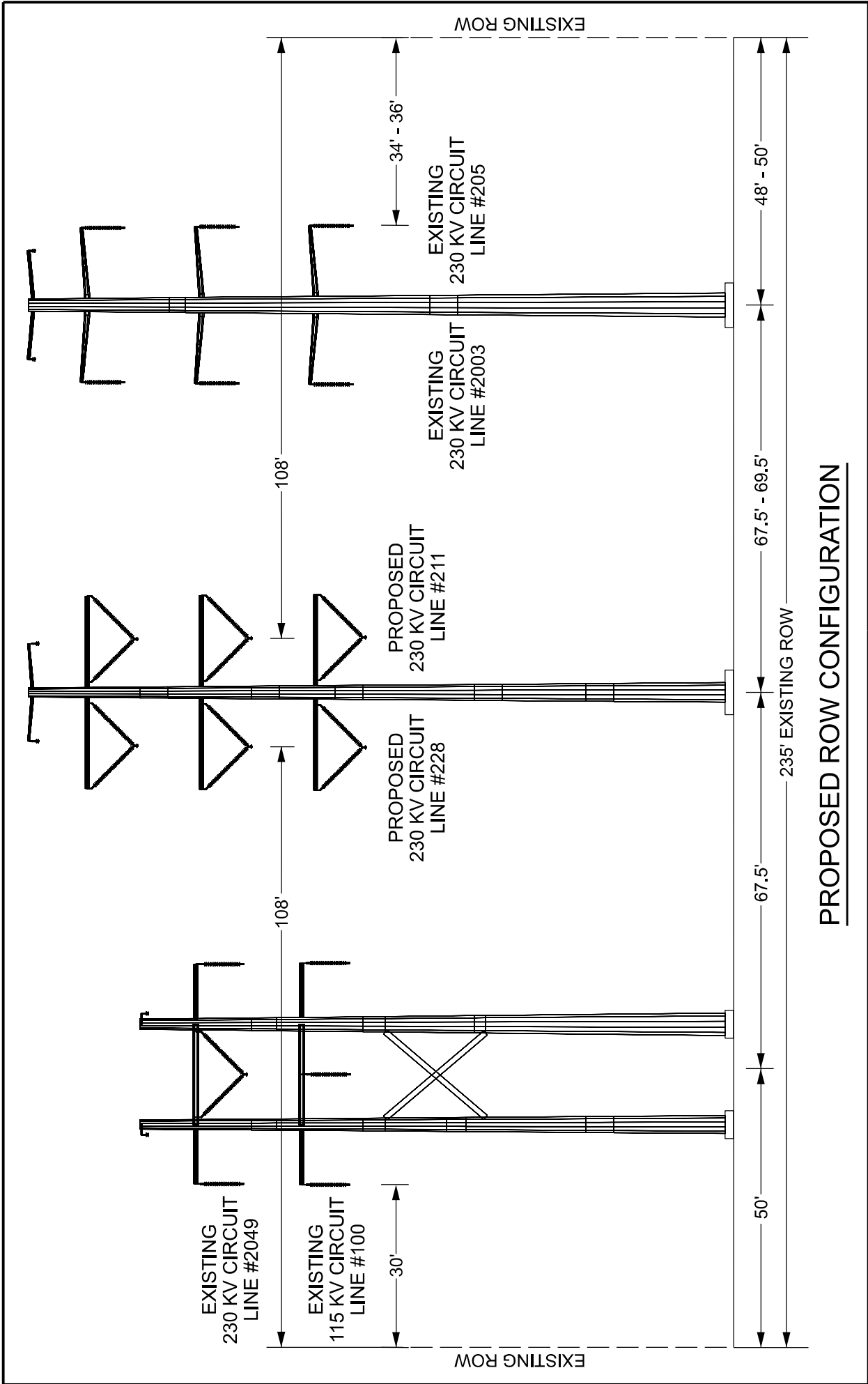


EXISTING ROW CONFIGURATION

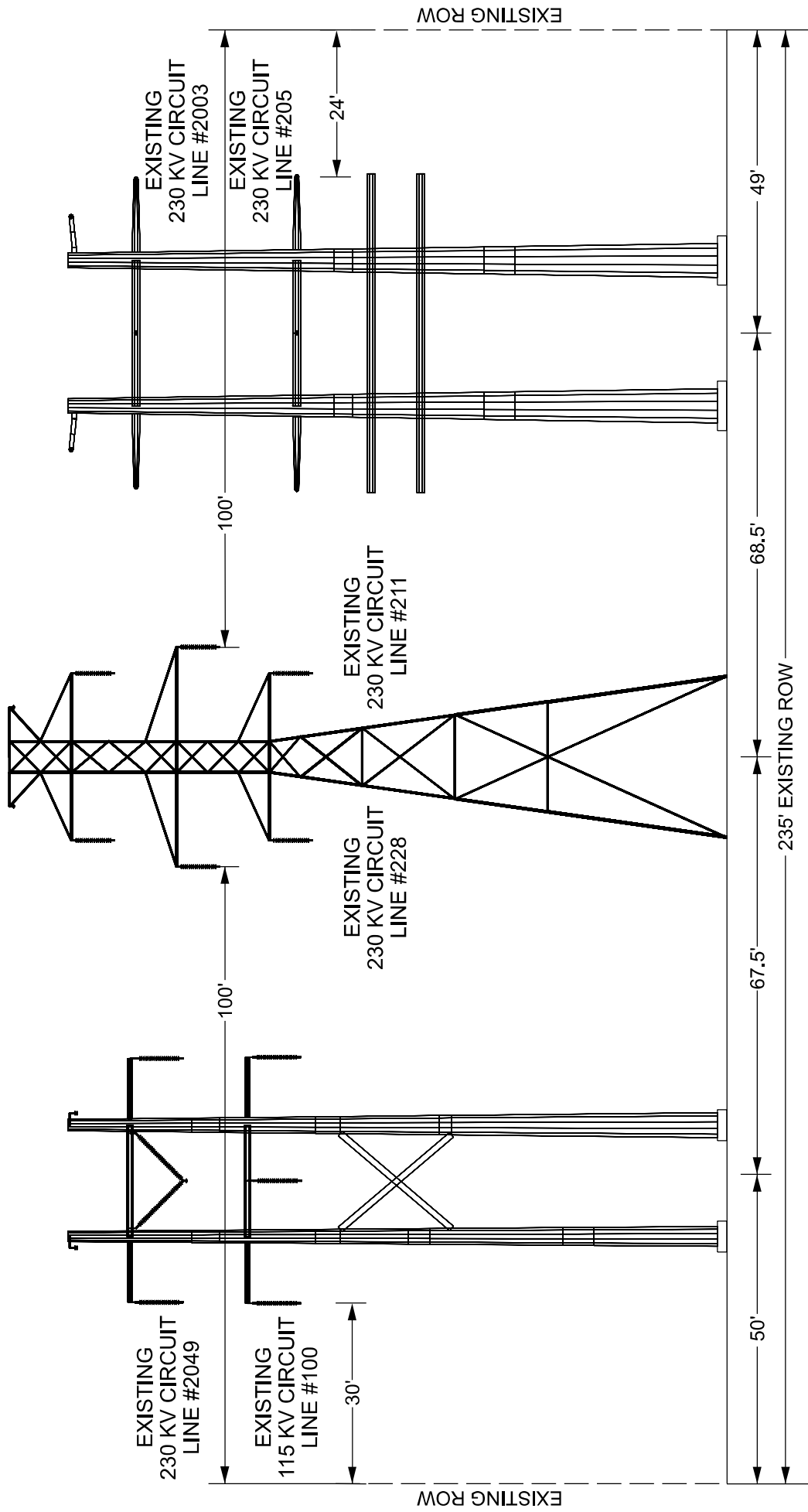
DISCLAIMER		DESCRIPTION & VIEW		ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN		Dominion Energy® Dominion Energy 10900 Nuckols Road Glen Allen, VA 23060		II.A.5.a
				DRAWN BY
		STR. 211/12 (228/12) - 211/16 (228/16) TYPICAL RIGHT OF WAY LOOKING TOWARDS HOPEWELL SUBSTATION		



Dominion Energy
10900 Nuckolls Road
Glen Allen, VA 23060

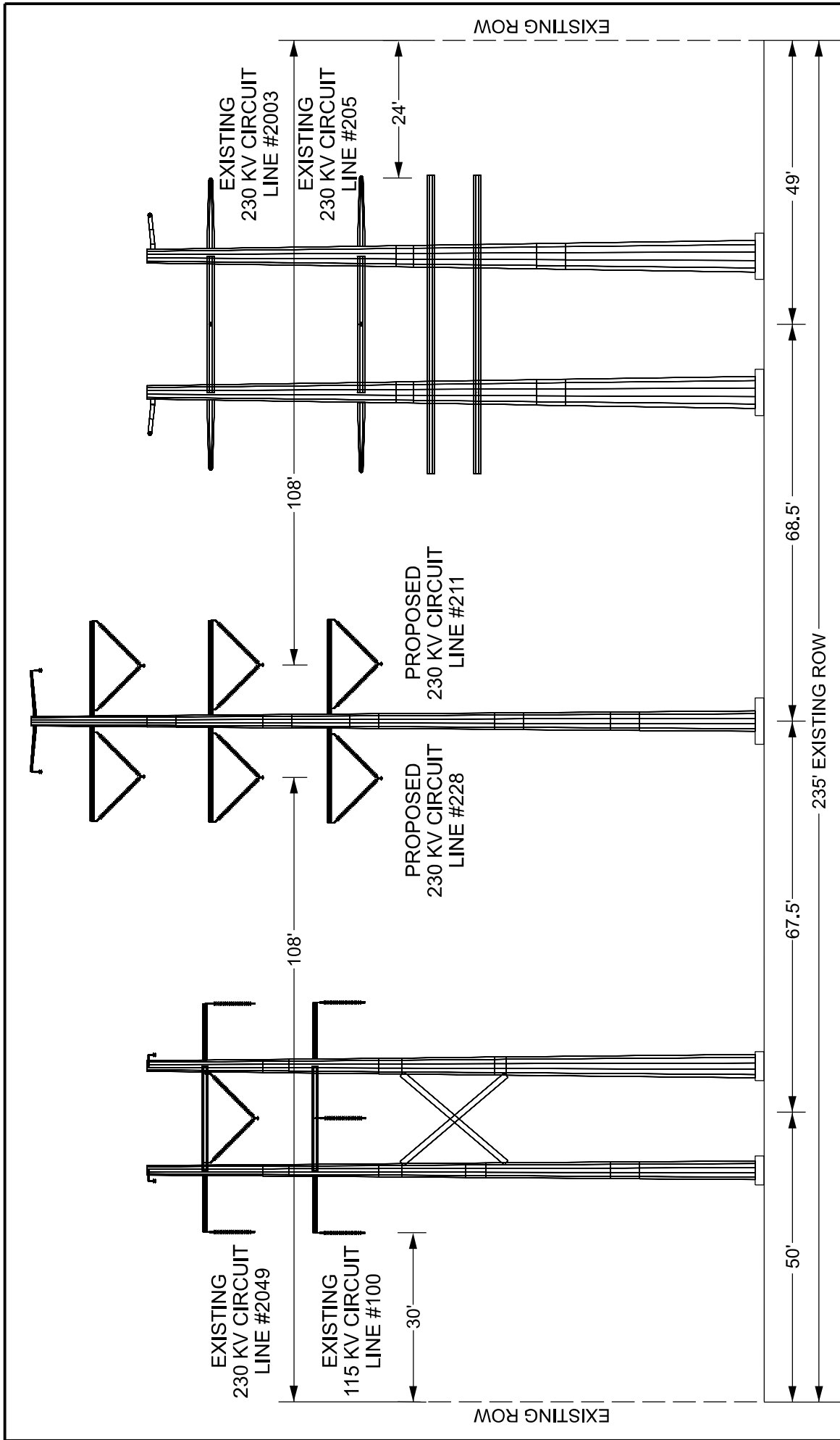


DISCLAIMER		DESCRIPTION & VIEW		ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN		 Dominion Energy® 10900 Nuckols Road Glen Allen, VA 23060	STR. 211/12 (228/12) - 211/16 (228/16)	II.A.5.b
			TYPICAL RIGHT OF WAY LOOKING TOWARDS HOPEWELL SUBSTATION	
				DRAWN BY TMR



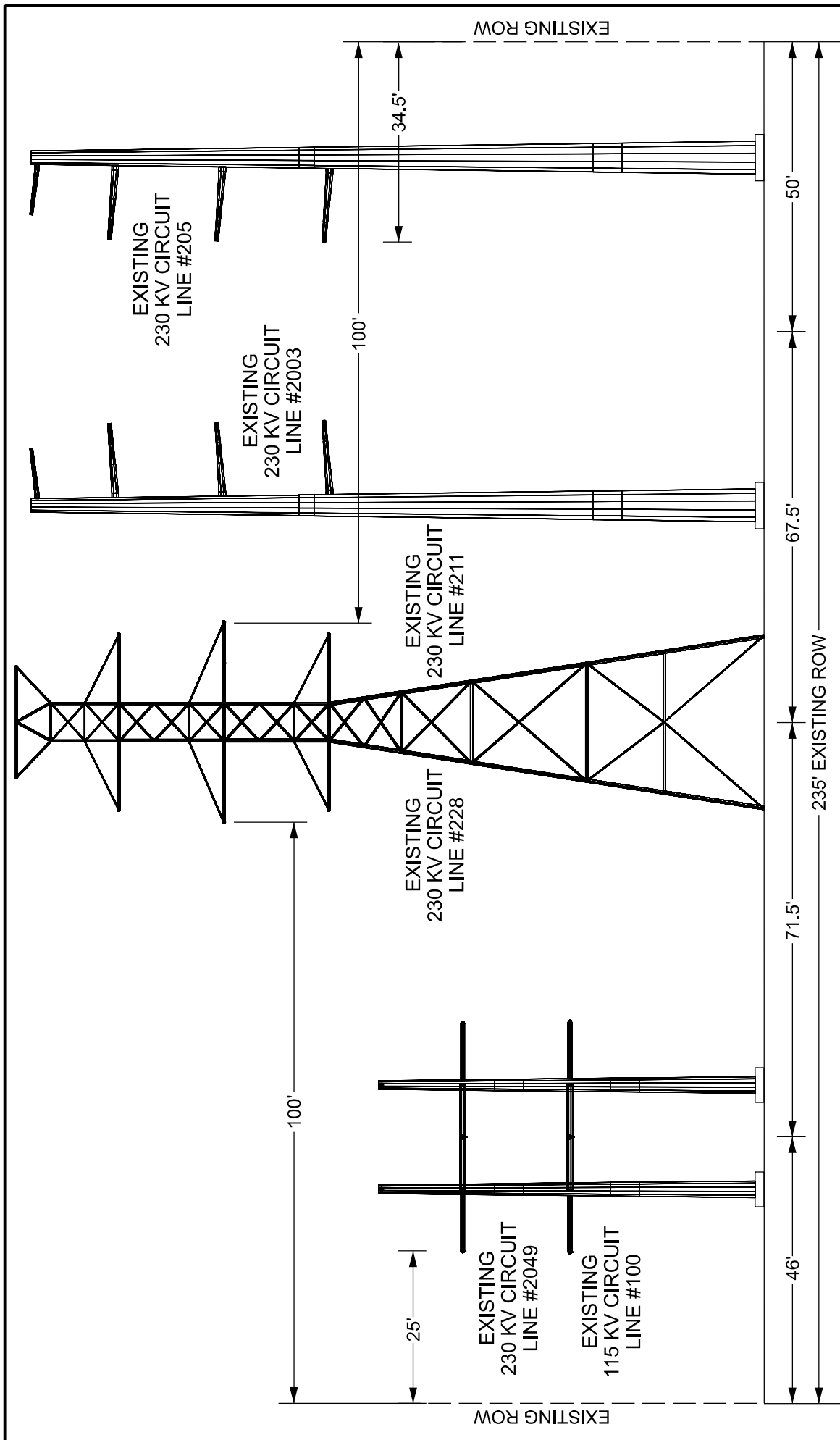
EXISTING ROW CONFIGURATION

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN		STR. 211/18 (228/18) TYPICAL RIGHT OF WAY LOOKING TOWARDS HOPEWELL SUBSTATION	II.A.5.c
 Dominion Energy® 10900 Nuckols Road Glen Allen, VA 23060			DRAWN BY TMR



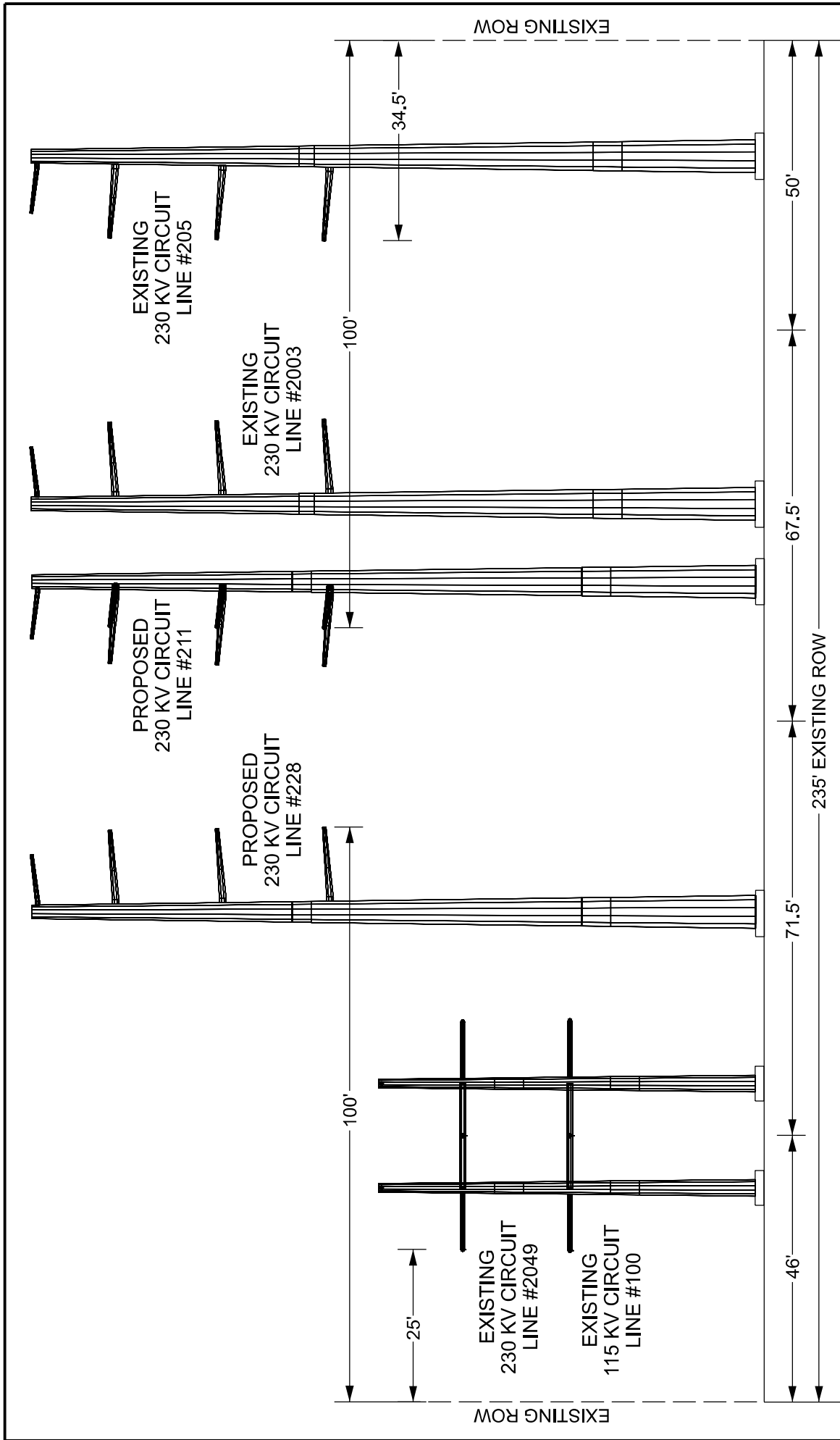
PROPOSED ROW CONFIGURATION

DISCLAIMER	DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 10900 Nuckolls Road Glen Allen, VA 23060 STR. 211/18 (228/18) TYPICAL RIGHT OF WAY LOOKING TOWARDS HOPEWELL SUBSTATION	II.A.5.d DRAWN BY TMR



EXISTING ROW CONFIGURATION

DISCLAIMER	DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 10900 Nuckols Road Glen Allen, VA 23060 STR. 211/19 (228/19) TYPICAL RIGHT OF WAY LOOKING TOWARDS HOPEWELL SUBSTATION	II.A.5.e DRAWN BY TMR



PROPOSED ROW CONFIGURATION

DISCLAIMER	DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 10900 Nuckols Road Glen Allen, VA 23060	STR. 211/19 (228/19) TYPICAL RIGHT OF WAY LOOKING TOWARDS HOPEWELL SUBSTATION II.A.5.f DRAWN BY TMR

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: The Company obtained most of its easements along the existing right-of-way of the Project corridor in 1969. The Company does not anticipate that new easements will be required, as the Rebuild Project is within existing rights-of-way or on Company-owned property.

The existing right-of-way intersects a Virginia Department of Historic Resources (“VDHR”) easement (Battery Dantzler Tract, 020-5319-0002), which was created in 2014 and a Capital region Land Conservancy easement co-held with Chesterfield County.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: The entire 235-foot width of the existing transmission line corridor is currently cleared and maintained for operation of the existing transmission facilities.

Trimming of tree limbs along the edge of the right-of-way may be conducted to support construction activities for the Rebuild Project. For any such minimal clearing, trees will be cut to no more than three inches above ground level. Trees located outside of the right-of-way that are tall enough to potentially impact the transmission facilities, commonly referred to as “danger trees,” may also need to be cut. Danger trees will be cut to be no more than three inches above ground level, limbed, and will remain where felled. No grubbing of roots or stumps will occur. Debris that is adjacent to homes will be disposed of by chipping or removal. In other areas, debris may be mulched or chipped as practicable. Danger tree removal will be accomplished by hand or from equipment placed on mats in wetland areas and within 100 feet of streams, if applicable. Care will be taken not to leave debris in streams or wetland areas that may cause an impediment to the flow of water. No mulching will occur in wetlands. Erosion control devices will be used on an ongoing basis, as appropriate, during all clearing and construction activities.

Erosion control will be maintained and temporary stabilization for all soil-disturbing activities will be used until the right-of-way has been restored. Upon completion of the Rebuild Project, the Company will restore the right-of-way utilizing site rehabilitation procedures outlined in the Company’s General Erosion and Sedimentation Control Specifications for the Construction and Maintenance of Electric Transmission Lines that was approved by the Virginia Department of Environmental Quality (“DEQ”). Time of year and weather conditions may affect when permanent stabilization takes place.

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

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

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

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: The Company’s route selection for transmission line rebuild projects begins with a review of the existing right-of-way. This approach generally minimizes impacts on the natural and human environments. This approach also is consistent with FERC Guideline #1 (included as Attachment 1 to these Guidelines), which states that existing rights-of-way should be given priority when adding new transmission facilities, and §§ 56-46.1 and 56-529 of the Code of Virginia, which promote the use of existing rights-of-way for new transmission facilities.

Because the existing right-of-way and Company-owned property are adequate to construct the Rebuild Project, no new right-of-way is necessary. Given no need for new right of way, the availability of existing right-of-way and the statutory preference given to the use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternate routes requiring new right-of-way for this Rebuild Project.

The existing right-of-way crosses one Federally-owned parcel, which is part of Richmond National Battlefield Park, and one state-managed parcel owned by the Virginia Passenger Rail Authority. The existing right-of-way also crosses two parcels owned by Chesterfield County, one of which is covered by the VDHR historic easement, Battery Dantzler Tract, and the other is covered by a Capital Regional Land Conservancy easement. See Attachment II.A.9.

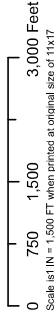
ATTACHMENT II.A.9

CONSERVATION EASEMENT MAP

Chesterfield-Hopewell Lines #211 and #228
Partial Rebuild

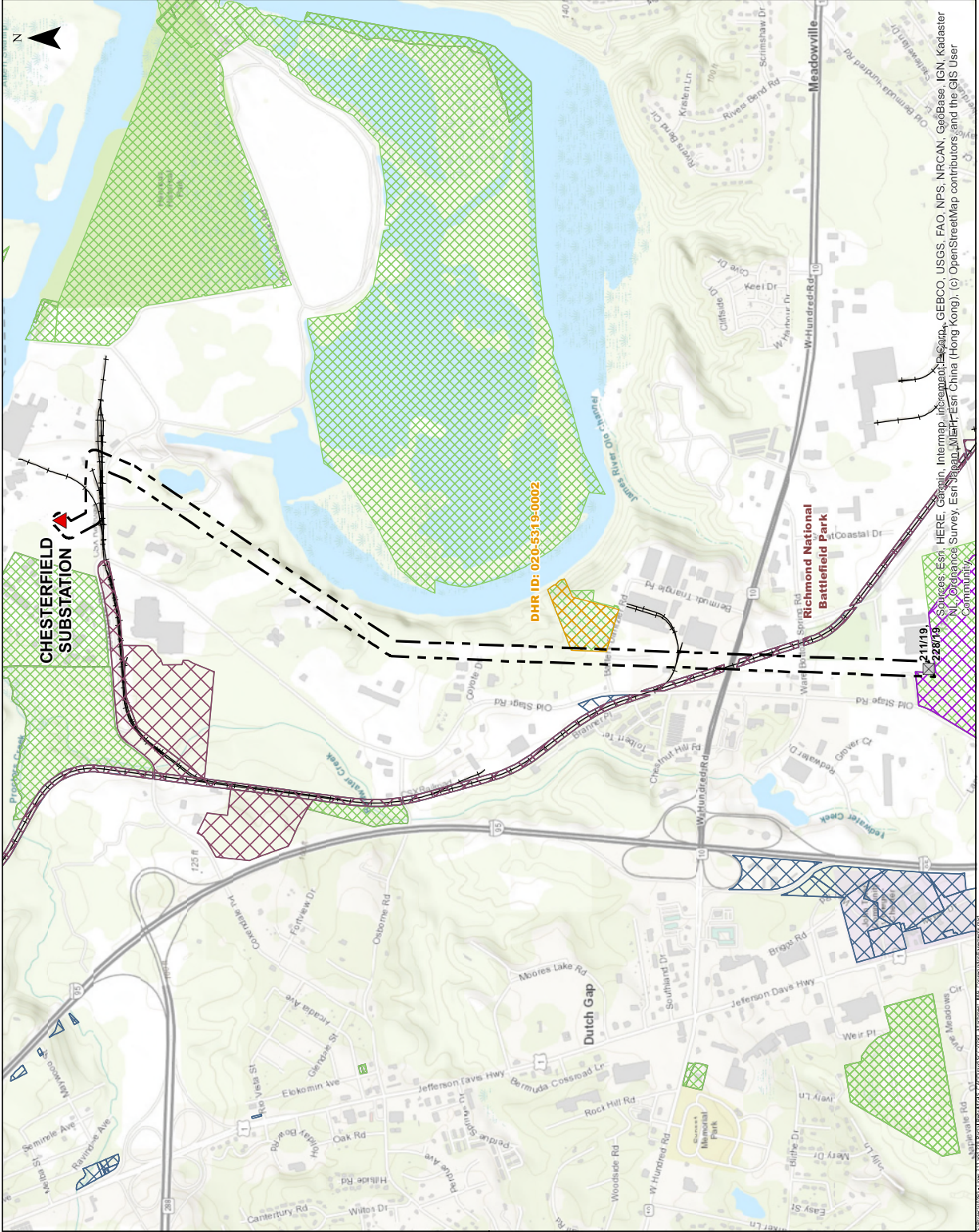
Chesterfield County, Virginia

Client:	Dominion Energy Virginia
C2 Env Project:	Prepared By:
0293	TMP
	Date:
	03/24/23

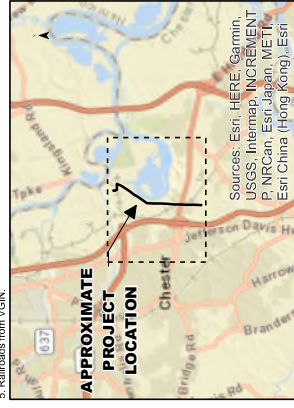


LEGEND

- Project Area
- Existing Structure #211/19 (#228/19)
- ▲ Existing Substation
- State-Managed Land
- State-Owned Land
- Federally-Owned Land
- Locally-Owned Land
- Virginia Department of Historic Resources Easement
- Capital Region Land Conservancy Easement
- Railroad



Notes:
1. Basemap from ESRI Topographic and World Street Map.
2. Project limits provided by Dominion.
3. Project limits provided by Dominion.
4. Historic easement from USGS PADUS and Chesterfield County parcel data.
5. Historic easement from VDRR.
6. Railroads from VGIN.



SHEET 1 OF 1

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: To limit service disruption to the affected load area, the Company plans to take Lines #211 and #228 out of service in two concurrent outages. The outages are scheduled to allow the adjacent infrastructure to adequately provide service to connected customers while Lines #211 and #228 are out of service. The work will be done during non-peak load times. This strategy will allow the grid to be in normal and optimal configuration during peak load times and available to respond to contingency issues should they arise. Assuming a final order by February 1, 2024, as requested in Section I.H, the current plan is to start construction on November 1, 2024, and to complete construction of the Rebuild Project by June 1, 2025. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process.

The Company has requested two concurrent outages from PJM for Lines #211 and #228 from February 2, 2025 through May 30, 2025. The eDart Numbers for those outages are 1070276 and 1070277. It is customary for PJM to not grant approval of the outages until shortly before the outages are expected to occur (up until one week prior) and, therefore, they may be subject to change.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

Response: The FERC Guidelines, included as Attachment 1 to these Guidelines, are a tool routinely used by the Company in routing its transmission line projects.

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

By utilizing the existing transmission corridor, the proposed Rebuild Project will minimize impact to any site listed on the National Register of Historic Places (“NRHP”). Thus, the Rebuild Project is consistent with Guideline #2 (where practical, rights-of-way should avoid sites listed on the National Register of Historic Places). In any event, the Company will coordinate with the VDHR regarding its plans prior to engineering and construction of the Rebuild Project to avoid or minimize impacts. See Section III.A for a discussion of the Stage I Pre-Application Analysis prepared by Dutton & Associates (“Dutton”), which was submitted to VDHR in March 2023, and is included with the DEQ Supplement as Attachment 2.I.2. The Company will coordinate with the VDHR through review of the Stage I Pre-Application Analysis regarding these initial findings.

The Company has communicated with a number of local, state, and federal agencies prior to filing this application consistent with Guideline #4 (where government land is involved the applicant should contact the agencies early in the planning process). See Section III.B and III.J of this Appendix, and the DEQ Supplement.

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

The Company also utilizes recommended Guidelines in clearing right-of-way, constructing facilities, and maintaining rights-of-way after construction. Moreover, secondary uses of rights-of-way that are consistent with the safe maintenance and operation of facilities are permitted, as noted in Section II.A.8.

II. DESCRIPTION OF THE PROPOSED PROJECT

A. Right-of-way (“ROW”)

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

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

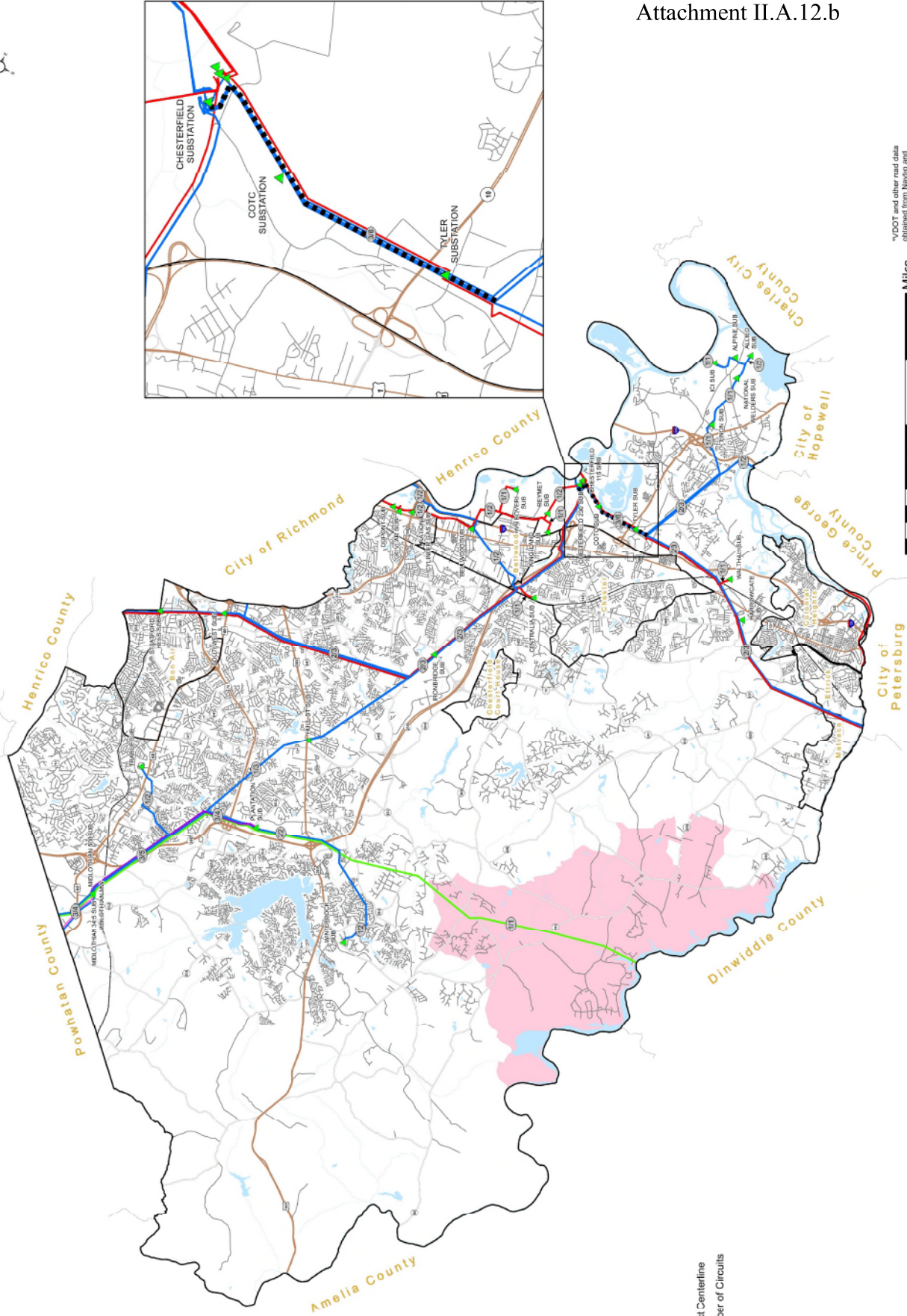
Response: a. The proposed Rebuild Project traverses Chesterfield County for a total of approximately 2.9 miles and is located entirely within the Company’s service territory.

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

Chesterfield County and Colonial Heights Road Map



The digital map depicts the Virginia Statewide Electric Grid (VSEG) and the proposed transmission facilities in this county as approved by the Virginia State Corporation Commission ("SCC"), and any proposed transmission facilities in this county as of October 6, 2022. Chesterfield County is highlighted in pink. The map is based on data provided by the SCC and may be updated on prior SCC approved county maps.



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



Chesterfield

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: The portions of Line #211 and Line #228 proposed for rebuild will be designed and operated at 230 kV and will have a summer/winter transfer capability of 1,573/1,648 MVA. No voltage upgrades are anticipated.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: The proposed conductor for 230 KV Lines #211 and #228 will be 3-phase twin-bundled 768.2 ACSS/TW/HS conductors arranged in a phase-over-phase orientation with two fiber optic shield wires that will be transferred from the existing structures to the new structures. See Attachments II.B.3.a-c for more details on conductor configurations at each structure type.

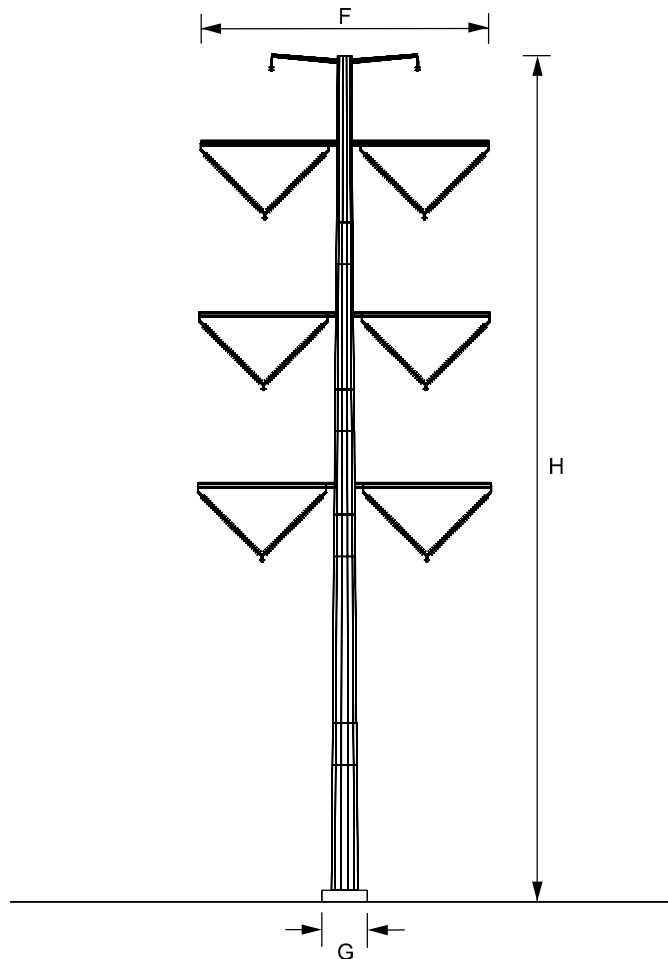
The twin-bundled 768.2 ACSS/TW/HS conductors are a Company standard for new 230 kV construction.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

- 3. With regard to the proposed supporting structures over each portion of the ROW for the preferred route, provide diagrams (including foundation reveal) and descriptions of all the structure types, to include:**
 - a. mapping that identifies each portion of the preferred route;**
 - b. the rationale for the selection of the structure type;**
 - c. the number of each type of structure and the length of each portion of the ROW;**
 - d. the structure material and rationale for the selection of such material;**
 - e. the foundation material;**
 - f. the average width at cross arms;**
 - g. the average width at the base;**
 - h. the maximum, minimum and average structure heights;**
 - i. the average span length; and**
 - j. the minimum conductor-to-ground clearances under maximum operating conditions.**

Response: See Attachments II.B.3.a-c.



TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE (V-STRING)

A. STRUCTURE MAPPING	SEE ATTACHMENT II.B.5
B. RATIONALE FOR STRUCTURE TYPE:	MAINTAINS THE EXISTING STRUCTURES VERTICAL CONFIGURATION V-STRING CHOSEN TO INCREASE CLEARANCES TO ADJACENT CIRCUITS
C. LENGTH OF ROW (STRUCTURE QTY):	1.29 MILES (5) - SEE NOTE 1
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR STRUCTURE MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE ADJACENT EXISTING WEATHERING STEEL STRUCTURES IN THE ROW
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	35'
G. AVERAGE WIDTH AT BASE:	6' DIAMETER FOUNDATION - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	127'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	142'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	135'
I. AVERAGE SPAN LENGTH (RANGE):	979' (887' - 1061') - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:

1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED PROPERTY
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL IS SUBJECT TO FINAL DESIGN
3. FINAL FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL DESIGN
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL
5. SPAN LENGTHS ARE INCLUSIVE OF THE ROW LENGTH LISTED IN LINE (C)

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



Dominion Energy
10900 Nuckols Road
Glen Allen, VA 23060

LINES 211 & 228

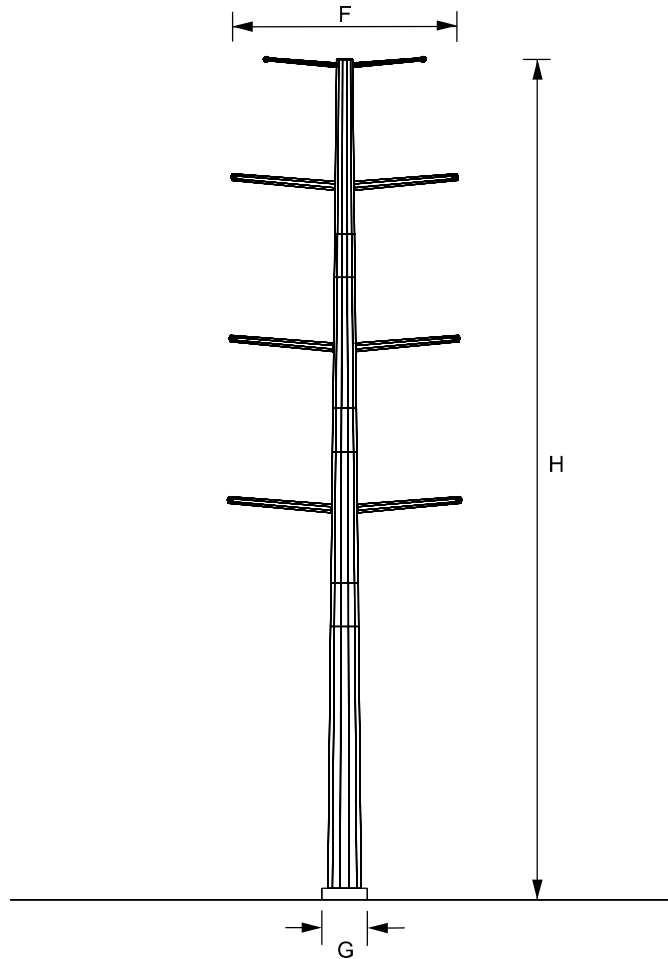
TYPICAL DC ENGINEERED MONOPOLE
SUSPENSION STRUCTURE (V-STRING)

88

ATTACHMENT NO.

II.B.3.a

DRAWN BY: TMR



TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

A. STRUCTURE MAPPING	SEE ATTACHMENT II.B.5
B. RATIONALE FOR STRUCTURE TYPE:	MAINTAINS THE EXISTING STRUCTURES VERTICAL CONFIGURATION
C. LENGTH OF RW (STRUCTURE QTY):	1.29 MILES (1) - SEE NOTE 1
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR STRUCTURE MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE ADJACENT EXISTING WEATHERING STEEL STRUCTURES IN THE ROW
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	8' DIAMETER FOUNDATION - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	132'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	132'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	132'
I. AVERAGE SPAN LENGTH:	979' (887' - 1061') - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:

1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED PROPERTY
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL IS SUBJECT TO FINAL DESIGN
3. FINAL FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL DESIGN
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL
5. SPAN LENGTHS ARE INCLUSIVE OF THE ROW LENGTH LISTED IN LINE (C)

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



Dominion Energy
10900 Nuckols Road
Glen Allen, VA 23060

LINES 211 & 228

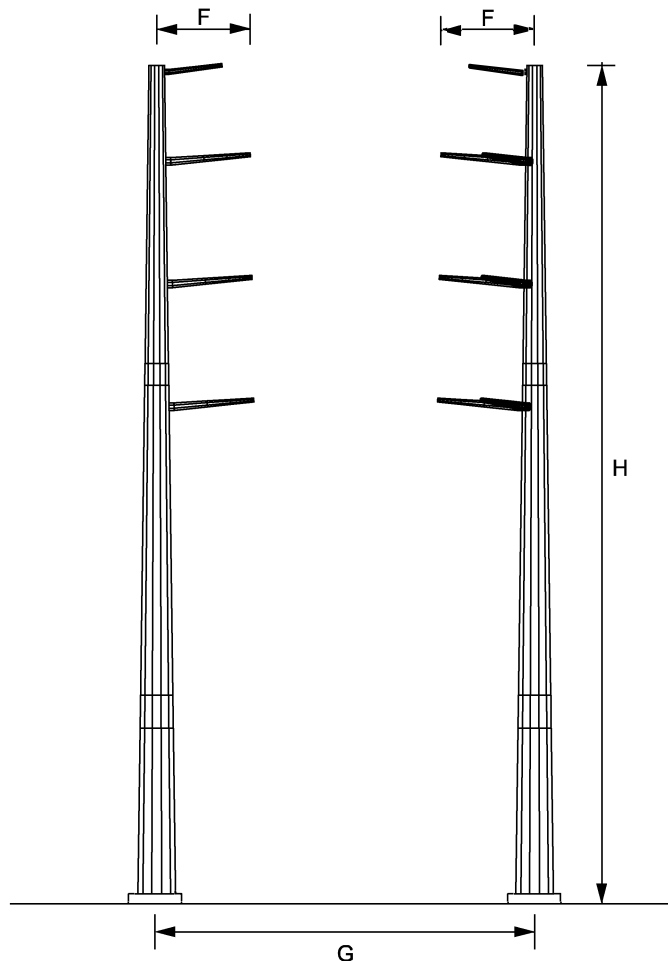
TYPICAL DC ENGINEERED MONOPOLE
DOUBLE DEADEND STRUCTURE

89

ATTACHMENT NO.

II.B.3.b

DRAWN BY: TMR



TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

A. STRUCTURE MAPPING:	SEE ATTACHMENT II.B.5
B. RATIONALE FOR STRUCTURE TYPE:	MAINTAINS THE EXISTING STRUCTURES VERTICAL CONFIGURATION 2-POLE STRUCTURE CHOSEN TO REDUCE FOUNDATION SIZE
C. LENGTH OF R/W (STRUCTURE QTY):	1.29 MILES (1) - SEE NOTE 1
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR STRUCTURE MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE ADJACENT EXISTING WEATHERING STEEL STRUCTURES IN THE ROW
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	14'
G. AVERAGE WIDTH AT BASE:	57' POLE SPACING, 10' DIAMETER FOUNDATIONS - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	142'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	142'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	142'
I. AVERAGE SPAN LENGTH:	979' (887' - 1061') - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:

1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY-OWNED PROPERTY
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL IS SUBJECT TO FINAL DESIGN
3. FINAL FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL DESIGN
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE FOUNDATION REVEAL
5. SPAN LENGTHS ARE INCLUSIVE OF THE ROW LENGTH LISTED IN LINE (C)

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



Dominion Energy
10900 Nuckols Road
Glen Allen, VA 23060

LINES 211 & 228

TYPICAL DC ENGINEERED 2-POLE
DOUBLE DEADEND STRUCTURE

90

ATTACHMENT NO.

II.B.3.c

DRAWN BY: TMR

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

See the table below for the existing and proposed heights of permanent structures related to the Rebuild Project. The proposed approximate structure heights are from the conceptual design created to estimate the cost of the Rebuild Project and are subject to change based on final engineering design. The approximate structure heights are above ground level (“AGL”) (i.e., they are inclusive of foundation reveal).

Structure Number	Existing Structure Height (FT)	Proposed Structure Height (FT)	Attachment II.B.3 Structure Type
211/1B*	80	80	Existing
211/1A (208/98)*	105	105	Existing
211/1 (205/1C)*	104	104	Existing
228/1A*	80	80	Existing
228/1	100	102	**
211/2 (228/2)*	120	120	Existing
211/3 (228/3)*	120	120	Existing
211/4 (228/4)	115	108	**
211/5 (228/5)	97	102	**
211/6 (228/6)	108	117	**
211/7 (228/7)	118	127	**
211/8 (228/8)	118	122	**
211/9 (228/9)	108	117	**
211/10 (228/10)	132	132	**
211/11 (228/11)	125	122	**
211/12 (228/12)	128	132	II.B.3.a
211/13 (228/13)	118	127	II.B.3.a
211/14 (228/14)	132	137	II.B.3.a
211/15 (228/15)	132	132	II.B.3.b
211/16 (228/16)	132	142	II.B.3.a
211/16A (228/16A)*	115	115	Existing
211/17 (228/17)	132	132	**
211/18 (228/18)	117	137	II.B.3.a

Structure Number	Existing Structure Height (FT)	Proposed Structure Height (FT)	Attachment II.B.3 Structure Type
211/19 (228/19)	151	142	II.B.3.c
Minimum***	97	102	
Maximum***	151	142	
Average***	121	125	

* Existing structure included as part of the Rebuild Project, but not to be replaced.

** Proposed structures are located on Company-Owned property and therefore are not included in Attachments II.A.5 and II.B.3.

*** Exclusive of structures not being replaced.



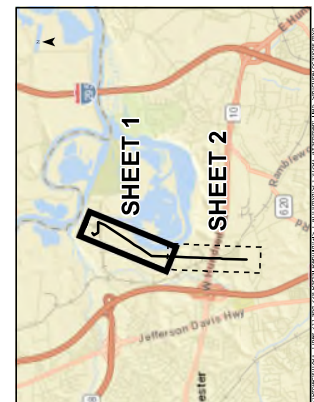
TABLE II.B.5

Structure Number	211/1B*	211/1A, 208/98*	211/1, 205/1C*	228/1A*	228/1	211/2, 228/2*	211/3, 228/3*	211/4, 228/4	211/5, 228/5
Existing Structure Height (Feet)	80	105	104	80	100	120	120	115	97
Proposed Structure Height (Feet)	80	105	104	80	102	120	120	108	102

Structure Number	211/6, 228/6	211/7, 228/7	211/8, 228/8	211/9, 228/9	211/10, 228/10	211/11, 228/11	211/12, 228/12
Existing Structure Height (Feet)	108	118	118	108	132	125	128
Proposed Structure Height (Feet)	117	127	122	117	132	122	132

*Existing structure not to be replaced

- Notes: 1. Structure locations and heights provided by Dominion Energy Virginia.
2. Existing structures are to be replaced in the same approximate location with proposed locations subject to final engineering. The proposed approximate structure heights are from the conceptual design created to estimate the cost of the Rebuild Project and are subject to change based on final engineering design. The proposed structure heights are above ground level.
3. Basemap from ESRI Topographic and World Street Map.



- SITE DATA**
- - Existing Lines #211 and #228 Project Centerline
 - ▣ Existing Structure
 - ▴ Existing Substation



ATTACHMENT II.B.5
STRUCTURE LOCATION MAP
Chesterfield-Hopewell Lines #211 and #228
Partial Rebuild Project
Chesterfield County, Virginia
Owner/ Applicant:
Dominion Energy Virginia
C2 Env Project: 0293
Prepared By: TMP
Date: 03/24/23
SHEET 1 OF 2

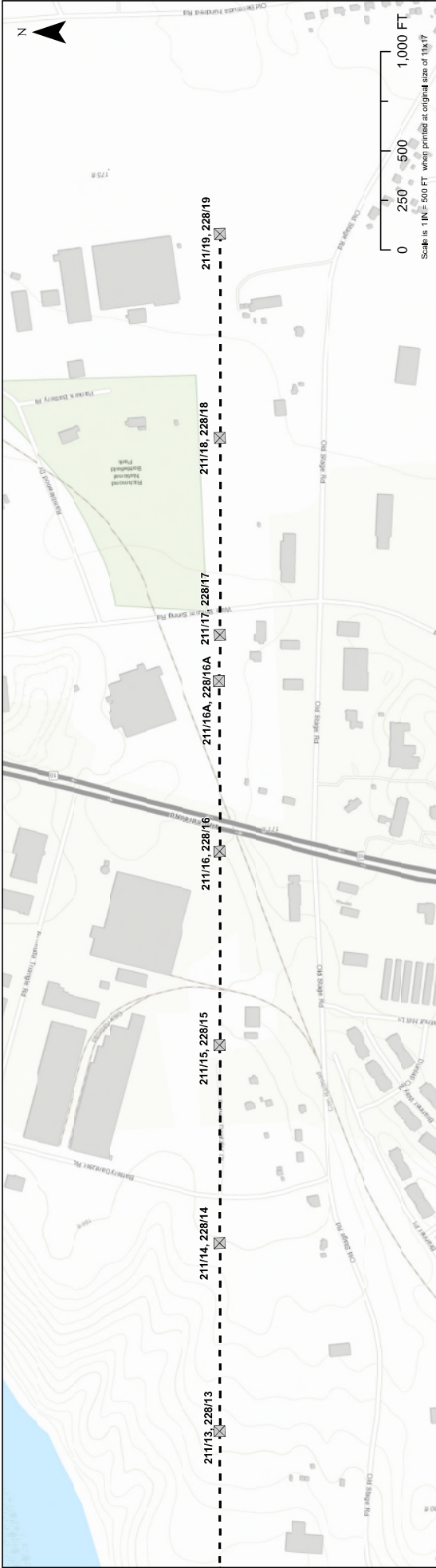
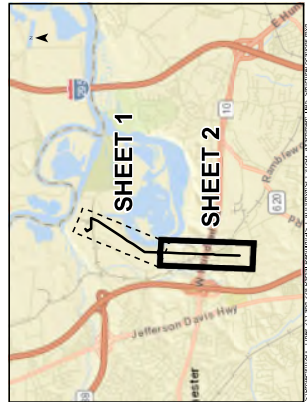


TABLE II.B.5

Structure Number	211/13, 228/13	211/14, 228/14	211/15, 228/15	211/16, 228/16	211/16A, 228/16A*	211/17, 228/17	211/18, 228/18	211/19, 228/19
Existing Structure Height (Feet)	118	132	132	132	115	132	117	151
Proposed Structure Height (Feet)	127	137	132	142	115	132	137	142

*Existing structure not to be replaced

- Notes: 1. Structure locations and heights provided by Dominion Energy Virginia.
 2. Existing structures are to be replaced in the same approximate location with proposed locations subject to final engineering. The proposed approximate structure heights are from the conceptual design created to estimate the cost of the Rebuild Project and are subject to change based on final engineering design. The proposed structure heights are above ground level.
 3. Basemap from ESRI Topographic and World Street Map.



SITE DATA

- - Existing Lines #211 and #228 Project Centerline
- ⊗ Existing Structure
- ▲ Existing Substation



ATTACHMENT II.B.5
 STRUCTURE LOCATION MAP

Chesterfield-Hopewell Lines #211 and #228
 Partial Rebuild Project

Chesterfield County, Virginia

Owner/ Applicant:

Dominion Energy Virginia

C2 Env Project: 0293

Prepared By: TMP

Date: 03/24/23

SHEET 2 OF 2

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: (a) *Photographs for typical existing facilities to be removed.*

See Attachments II.B.6.a.i-ii for representative photographs of typical existing structures.

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

See Attachments II.B.6.b.i-iii, for representative photographs of the proposed structures for the Project.

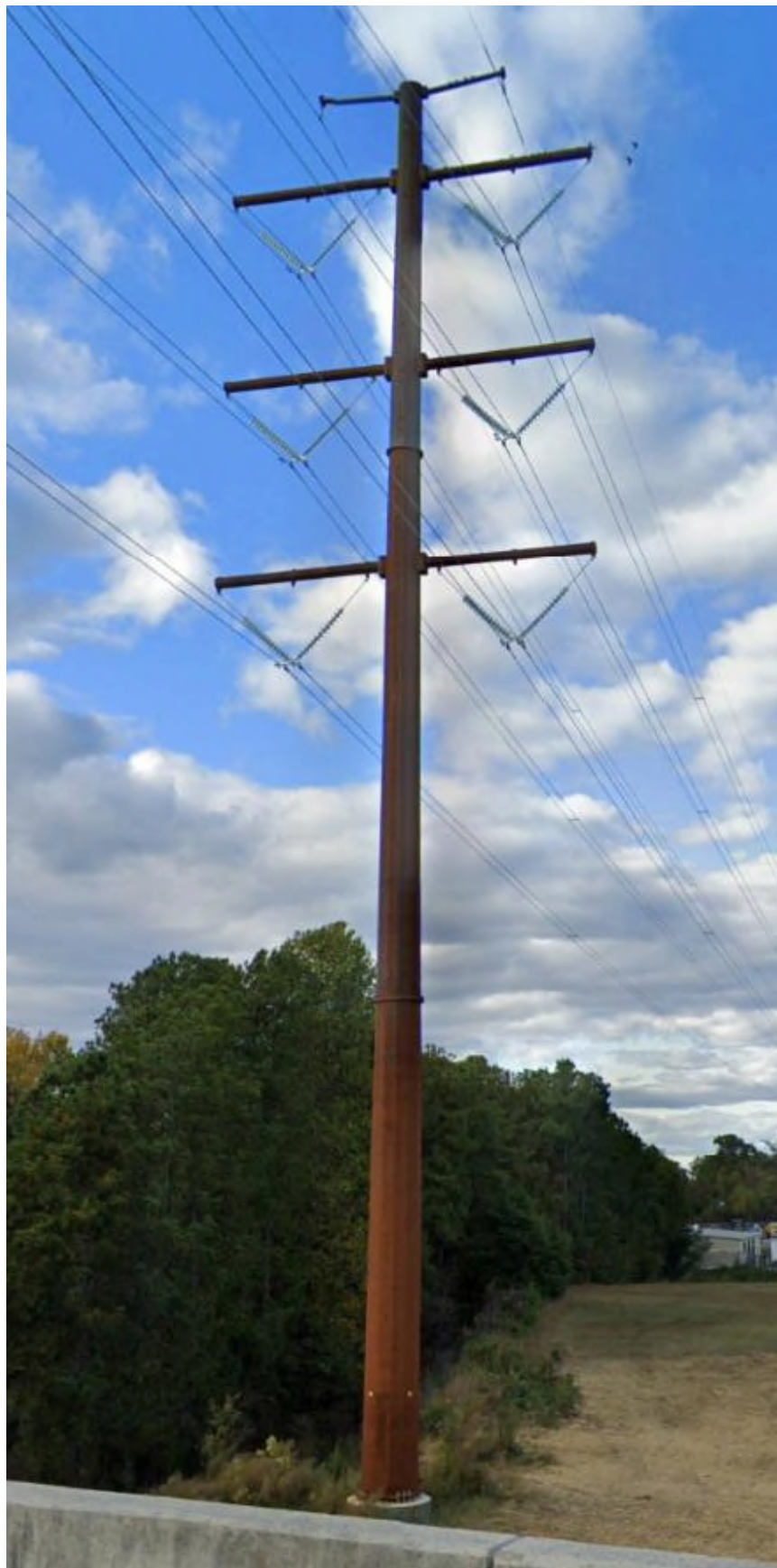
(c) *Visual simulations showing the appearance of all planned transmission structures at identified historic locations within one mile of the proposed centerline and in key locations.*

The overall average structure height will increase only minimally, from 121-feet to 125-feet or an approximately 3% increase, which does not meet the threshold of a “substantial increase” as outlined by the VDHR in *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (January 2008). Therefore, no photo simulations were prepared from historic properties. Four key locations where the line is visible to the public were identified for visual simulations. The key locations are listed in the table below and the visual simulations therefrom are included as Attachment III.B.3.

Key Location #	Location
1	Battery Dantzler Court
2	Old Stage Road
3	Richmond National Battlefield Par/Ware Bottom Church Road
4	W Hundred Road/Route 10











II. DESCRIPTION OF THE PROPOSED PROJECT

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

Response: There are no new substations, switching stations, or other ground facilities associated with the proposed Rebuild Project, nor are any of the impacted substations being expanded. The Rebuild Project will require the following substation work:

At Chesterfield Substation, the Company will upgrade Lines #211 and #228 risers, wave traps, bus work, switches, and circuit breakers to 4000A.

At Hopewell Substation, the Company will upgrade Lines #211 and #228 risers, wave traps, bus work, switches, and circuit breakers to 4000A.

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

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

Response: **Land Use**

The proposed Project is located in Chesterfield County. The area is largely characterized as industrial, light residential, and business/commercial land use.

Farmlands/Forests

According to the Natural Resources Conservation Service Data (“NRCS”), within the right-of-way there are approximately 33.3 acres of prime farmland and no areas of farmland of statewide importance. The right-of-way has been in use since 1969 and no portion of the existing right-of-way is currently in agricultural use, or is forested. The transmission line right-of-way is regularly maintained to keep vegetation at the scrub-shrub level for the safe operation of the existing facilities. Therefore, it is not expected that the Rebuild Project will permanently impact farmland or forests. Prime farmlands within the Rebuild Project right-of-way are depicted in Attachment III.A.1. Section 2.L of the DEQ Supplement discusses in detail the anticipated impacts of the Rebuild Project on recreational, agricultural, and forest resources.

Wetlands

The proposed Rebuild Project is located within the Lower James watershed, Hydrologic Unit Code 02080206. According to the U.S. Geological Survey (“USGS”) topographic quadrangles (Drewrys Bluff [2022] and Chester [2022], Virginia), the existing transmission line corridor does not cross named waterways but crosses drainages to the James River – Old Channel.

A wetland delineation was previously completed for this existing transmission line right-of-way by Stantec Consulting Services, Inc., in accordance with the methods outlined in the 1987 Corps of Engineers Wetland Delineation Manual and methods described in the *2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain (Version 2.0)*. A Preliminary Jurisdictional Determination was issued by the U.S. Army Corps of Engineers on April 16, 2019 (NAO-2018-01978). The results of the delineation are included as Attachment 2.D.1 to the DEQ Supplement. Section 2.D of the DEQ Supplement discusses in detail the anticipated impacts of the Rebuild Project on tidal and non-tidal wetlands.

It is anticipated that the Preliminary Jurisdictional Determination will no longer be valid at the time of construction. As such, it is expected that a new wetland delineation will need to be conducted and submitted to the U.S. Army Corps of Engineers for confirmation. The Company will also obtain any necessary permits to impact jurisdictional resources.

Historic Features

In accordance with the *Guidelines for Assessing Impacts of Proposed Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (2008)*, a Stage I Pre-Application Analysis (“Stage 1 Analysis”) was conducted by Dutton. This report was submitted to the VDHR on in March 2023 and is included as Attachment 2.I.2 to the DEQ Supplement. Section 2.I of the DEQ Supplement discusses in detail the anticipated impacts of the Rebuild Project on archeological, historic, scenic, cultural, and architectural resources.

Threatened and Endangered Species

Online database searches for threatened and endangered species in the vicinity of the Rebuild Project, including the U.S. Fish and Wildlife (“USFWS”) Information, Planning, and Conservation (“IPaC”) system, the Virginia Department of Wildlife Resources (“DWR”) Virginia Fish and Wildlife Information Service (“VAFWIS”), Virginia Department of Conservation and Recreation (“DCR”), Natural Heritage Data Explorer (“NHDE”), and the Center for Conservation Biology (“CCB”) Bald Eagle Nest Locator, were conducted, which identified federal- and state-listed species that have the potential to occur within the vicinity of the Rebuild Project right-of-way. These results are identified in the report included as Attachment 2.G.1 to the DEQ Supplement. The Company intends to reasonably minimize any impact on these resources and coordinate with pertinent agencies, as appropriate.

Dwellings

According to a review of the most recent aerial imagery available in Google Earth, there is one dwelling within 500 feet of the centerline of the Rebuild Project, no dwellings within 250 feet of the centerline, and no dwellings within 100 feet of the centerline. No dwellings are located within the existing right-of-way.

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

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

Response: In February 2023, the Company informed Chesterfield County and the City of Hopewell of the proposed Rebuild Project.⁷

In January 2023 the Company launched an internet website dedicated to the proposed Rebuild Project: <https://www.DominionEnergy.com/chesterfieldhopewell>. The website includes a description of the proposed Rebuild Project and its benefits, an explanation of need, an overview map, photo simulations, an interactive tool to view individual structure height changes, a recording of the virtual community meeting presentation, and information on the Commission review process.

In February 2023, the Company sent postcards to approximately 237 property owners within 1,000 feet of proposed Rebuild Project. The postcard provided a brief overview of the proposed Rebuild Project and invited residents to attend a virtual community meeting to learn details relating to the proposed Rebuild Project and to answer any questions. A copy of the postcard is included as Attachment III.B.1.

One virtual community meeting was held on March 7, 2023. At the virtual community meeting, the Company made details available about the project need, project timing, and the Commission approval process. A copy of the presentation that was given during the virtual community meeting is attached as Attachment III.B.2. Community meeting materials have been posted on the website for the proposed Rebuild Project, including simulations from key locations. The key location simulations are included as Attachment III.B.3.

A newspaper advertisement for the virtual community meeting, included as was placed in the Richmond Times Dispatch. In addition, digital advertisements for the virtual community meeting targeted residents in the 23836 zip code in Chesterfield County, which is the zip code most closely associated with the Rebuild Project. A copy of the digital and print ads is included as Attachment III.B.4.

⁷ As discussed in the Executive Summary, the Company considers the portion of the Rebuild Project in the City of Hopewell to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission.

An overview of the digital campaign results as of March 2023 is as follows.

- Pre-Event campaign results:
 - 360,316 Impressions Delivered
 - 1,275 Link Clicks
 - 0.68% Clickthrough Rate
 - 10,912 Video Completions
 - 24,652 Ad Engagements
- Post-Event campaign results:
 - 110,875 Impressions Delivered
 - 653 Link Clicks
 - 0.94% Clickthrough Rate
 - 6,277 Video Completions
 - 11,788 Ad Engagements

As part of preparing for this Rebuild Project, the Company researched the demographics of the surrounding communities using 2021 U.S. Census data. This information revealed that there are 11 Census Block Groups within the Rebuild Project area that fall within one mile of the existing transmission line corridor. A review of ethnicity, income, age, and education census data identified populations within the study area that meet the Virginia Environmental Justice Act threshold to be defined as Environmental Justice Communities (“EJ Communities”). Communities of color have been identified in 10 of 11 Census Block Groups within the one-mile search area. Four of 11 Census Block Groups within the one-mile search area appear to be low-income.

Pursuant to Va. Code §§ 56-46.1 C and 56-259 C, as well as in Attachment 1 of these Guidelines, there is a strong preference for the use of existing utility right-of-way whenever feasible. The Rebuild Project is within the existing right-of-way or on Company-owned property and will not require any of the following: additional permanent or temporary right-of-way, the construction of a temporary line, or an increase in operating voltage. The structural height average will increase by four feet from 121 feet to 125 feet. Height differences will vary per structural location. Based on the analysis of the Rebuild Project, the Company does not anticipate disproportionately high or adverse impacts to the surrounding community and the EJ Communities located within the study area, consistent with the Rebuild Project design to reasonably minimize impacts.

In addition to its evaluation of impacts, the Company has and will continue to engage the EJ Communities and others affected by the Rebuild Project in a manner that allows them to meaningfully participate in the project development and approval process so that their views and input can be taken into consideration. See Attachment III.B.5 for a copy of the Company’s Environmental Justice Policy.



Dominion Energy image. Not project specific.

Electric Transmission
P.O. Box 26666
Richmond, VA 23267



**Dominion
Energy®**

Actions Speak Louder

**Local Power Line Project
Information Enclosed**

IMPORTANT

Local Power Line Project Information

Chesterfield-Hopewell 230 kV Partial Rebuild Electric Transmission Project

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



AT DOMINION ENERGY, we are dedicated to maintaining reliable and secure electric service in the communities we serve. You are receiving this postcard to notify you about an upcoming transmission project in your area. This project proposes to rebuild and reconductor 2.9 miles of existing 230 kilovolts (kV) transmission lines that run from our Chesterfield Substation on Coxendale Road to just south of our Tyler Substation, approximately 0.5 miles south of Route 10 (W. Hundred Road) in Chesterfield County. To maintain reliable service for our customers, we need to replace the current 230 kV wires, a process known as reconductoring. This will increase the ampacity, or maximum current carried, on the line. While the new wire voltage will remain 230 kV, it is a heavier wire which requires us to also replace the structures which carry it. The line will be rebuilt within the existing right of way; therefore, no new right of way is required.

Additionally, we will need to reconductor 0.09 miles of existing 230 kV transmission lines that run outside our Hopewell Substation on Heraules Road in the City of Hopewell. The existing structures are adequate to carry this new wire and do not need to be rebuilt. Therefore, there will be no visual impacts in structure changes.

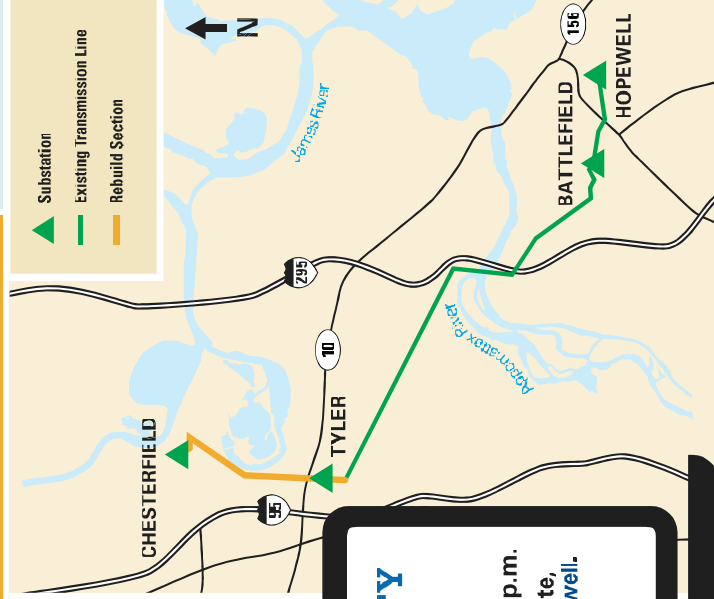
You may notice our crews

performing initial surveys in our right of way corridor to prepare for the project. We will be hosting a virtual community meeting on March 7, 2023. During the meeting, you can learn details about the project, timeline, and ask questions to our subject matter experts. Details about how to join the meeting will be posted on DominionEnergy.com/chesterfieldhopewell.

This project will ensure continued safety and reliability of the electric grid. Thank you for your patience as we work to maintain reliable service in your community.

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

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



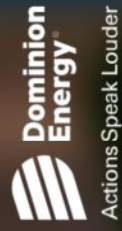
VIRTUAL COMMUNITY MEETING

Live Via Webex Events
Tuesday, March 7, 2023 • 6:30 – 7:30 p.m.
Join the meeting by visiting our website,
DominionEnergy.com/chesterfieldhopewell.
A recording will be available
on the project website after the meeting.

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

Welcome!

The virtual community meeting
will begin shortly!



Welcome



Chesterfield-Hopewell 230 kV Partial Rebuild Electric Transmission Project

*A 2.9-mile transmission rebuild in Chesterfield County
and 0.09-mile of reconductoring in the City of Hopewell*

Welcome



Agenda

- Meet the Team
- Public Engagement
- Project Scope
- SCC Application
- Timeline
- Q&A



About Webex Events

- Your microphone will remain muted and video off throughout the presentation.
- This meeting will be recorded and posted on our website for those who are unable to attend.
- If you are having audio issues, please be sure you have selected "Use Computer Audio".

Submitting Questions



- Submit questions through the Q&A at any time, select 'All Panelists'.
- Questions will be answered during the Q&A session at the end of the presentation.
- If you have a specific question and would like us to follow up with you after the meeting, include your name, address, and preferred method of contact.

113

Thank you for your patience as we try to make this virtual meeting as engaging as possible!

A screenshot of a web-based Q&A submission form. The form has a white background with a thin grey border. At the top left, there is a close button 'x'. Below it, a dropdown menu is set to 'Q&A', which is circled in red. To the right of this dropdown is a text input field with the placeholder 'All (0)'. Below the input field is a 'Send' button. On the right side of the form, there is a section titled 'Ask:' with a dropdown menu set to 'All Panelists'. Below this dropdown is a text input field with the placeholder 'Select a panelist in the Ask menu first and then type your question'. A red arrow points to this dropdown menu.

Project Team - Tonight's Panelists



Chris
Project Manager



Trey
Engineering



Mark
Planning



Blair
Permitting



Heather
Environmental



Tim
Right of Way

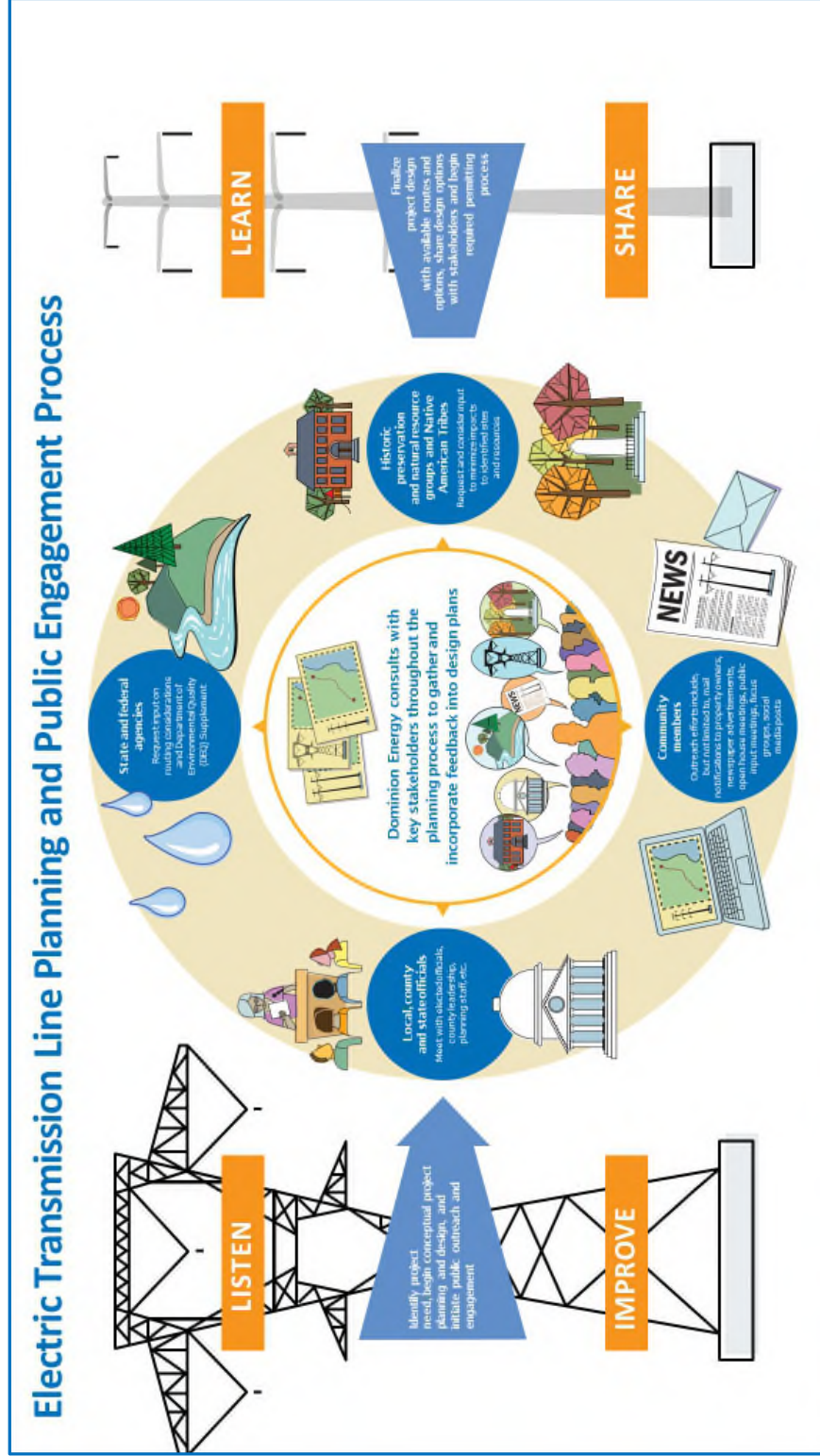


Antoaneta
Substation
Engineering



Roxana
Host/Communications

Public Engagement Process



Electric Transmission Lines 101



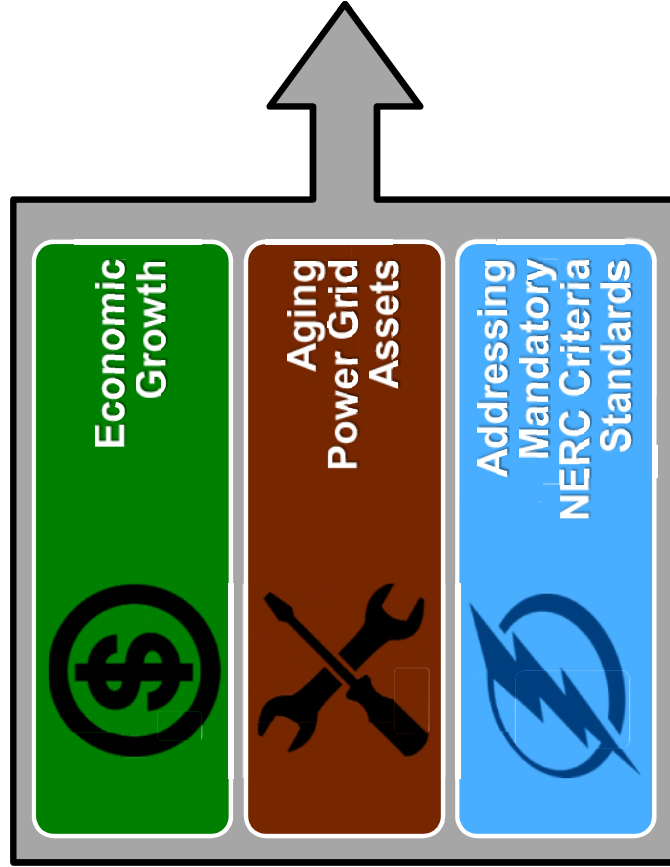
Electric transmission and electric distribution lines both carry electricity, but they look different and serve different functions.

Electric transmission lines are high voltage lines that carry electricity from our power stations to substations.

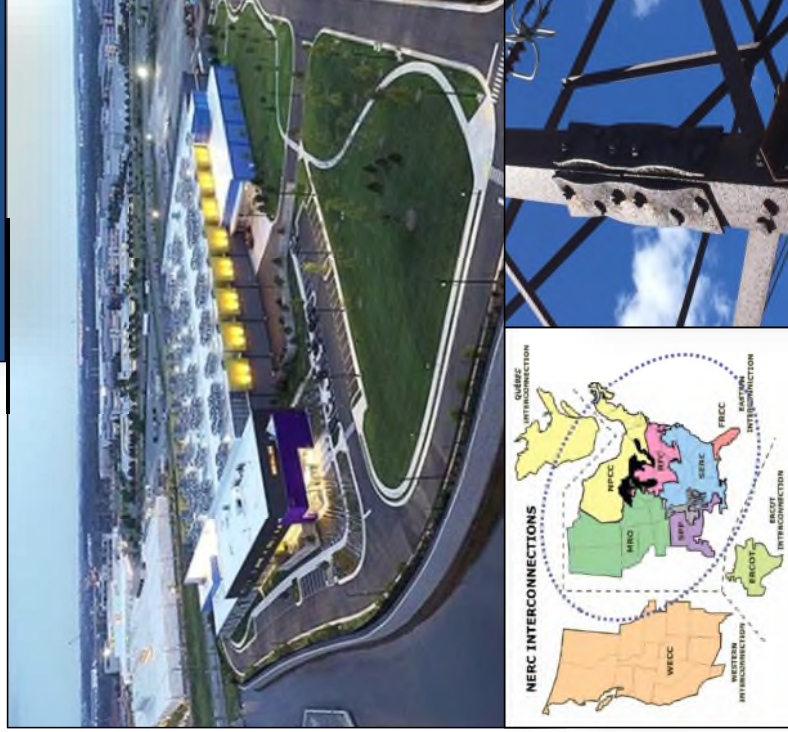
Once the transmission line reaches a substation, the voltage is lowered and delivered to your home or business via electric distribution lines.



Forces Driving Infrastructure Need



NERC
NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION



Project Scope



- This project will evaluate how we can increase the energy flow along an existing 2.9-mile 230 kilovolt (kV) transmission line from our Chesterfield Substation to just outside our Tyler Substation in Chesterfield County
- We will replace the conductor, or wire, with new material, which requires us to rebuild the structures which carry it. No new right of way is needed, and structures will be in the same general location as existing; voltage will remain 230 kV
- Proposed structures will be double-circuit weathering steel monopoles, and, on average, around four feet taller than the existing structures



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

Project Scope



- We will reconductor 0.09 miles of existing 230 kV transmission line that run into our Hopewell substation in the City of Hopewell
- Existing structures do not need to be rebuilt; no visual structure changes – no new right of way is needed; voltage will remain 230 kV
- Substation work inside Chesterfield and Hopewell substations
- Required to maintain area reliability and strengthen the existing infrastructure

119



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

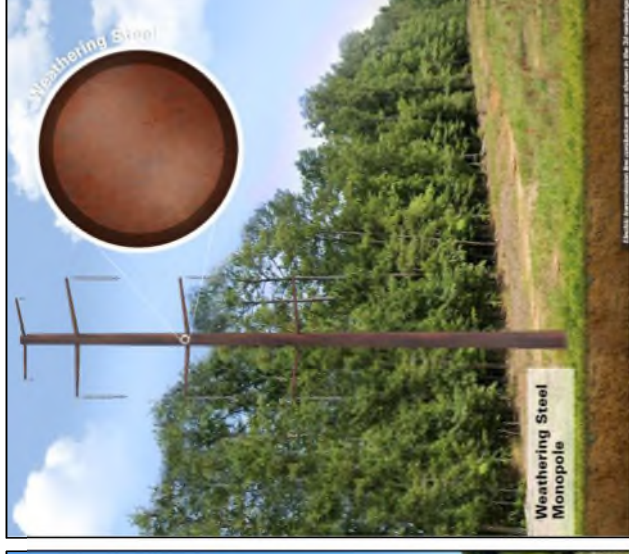
Proposed Structure Type



- Existing Structures –
- Primarily galvanized steel (gray) lattice structures
 - Average structure height: ~121’

120

- Proposed Structures –
- Primarily double-circuit weathering steel (brown) monopole structures
 - Average structure height: ~125’
 - Will be in the same general location as the existing structures



*Examples of electric transmission double-circuit monopole structures.
Not project specific.*

Photo Simulations – Viewpoint Map



**CHESTERFIELD
TO HOPEWELL**
PARTIAL REBUILD PROJECT

PHOTO VIEWPOINT MAP

- PHOTO VIEWPOINT LOCATION
- TRANSMISSION LINE
- ▲ EXISTING SUBSTATION

Photo Simulations



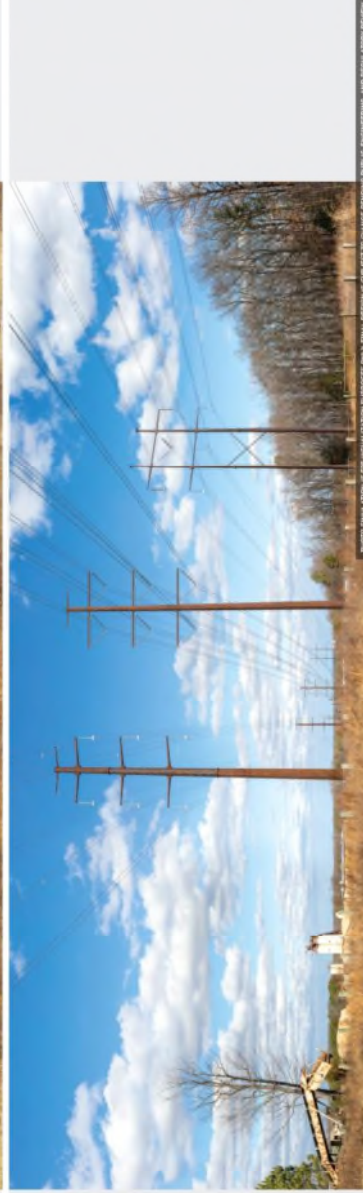
CHESTERFIELD TO HOPEWELL PARTIAL REBUILD PROJECT

VIEWPOINT 1

DATE: 1/21/2023 TIME: 11:12 AM DIRECTION: NORTH
 PHOTO VIEWPOINT LOCATION TRANSMISSION LINE



EXISTING CONDITIONS



PROPOSED CONDITIONS

PHOTO SIMULATION IS FOR VISUALIZATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGING ENGINEERING AND REGULATORY REVIEW.

Photo Simulations



CHESTERFIELD TO HOPEWELL PARTIAL REBUILD PROJECT

VIEWPOINT 2

DATE: 1/26/2023 TIME: 3:13 PM DIRECTION: SOUTHEAST
PHOTO VIEWPOINT LOCATION — TRANSMISSION LINE
EXISTING SUBSTATION ▲



EXISTING CONDITIONS



PROPOSED CONDITIONS

PHOTO SIMULATION IS FOR VISUALIZATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE PENDING PUBLIC, ENGINEERING, AND REGULATION REVIEW.

Photo Simulations



CHESTERFIELD TO HOPEWELL PARTIAL REBUILD PROJECT

VIEWPOINT 3

DATE: 1/21/2013 TIME: 8:57 AM DIRECTION: SOUTH
 PHOTO VIEWPOINT LOCATION
 TRANSMISSION LINE
 EXISTING SUBSTATION



Photo Simulations



CHESTERFIELD TO HOPEWELL PARTIAL REBUILD PROJECT

VIEWPOINT 4

DATE: 1/7/2023 TIME: 10:03 AM DIRECTION: WEST

PHOTO VIEWPOINT LOCATION TRANSMISSION LINE

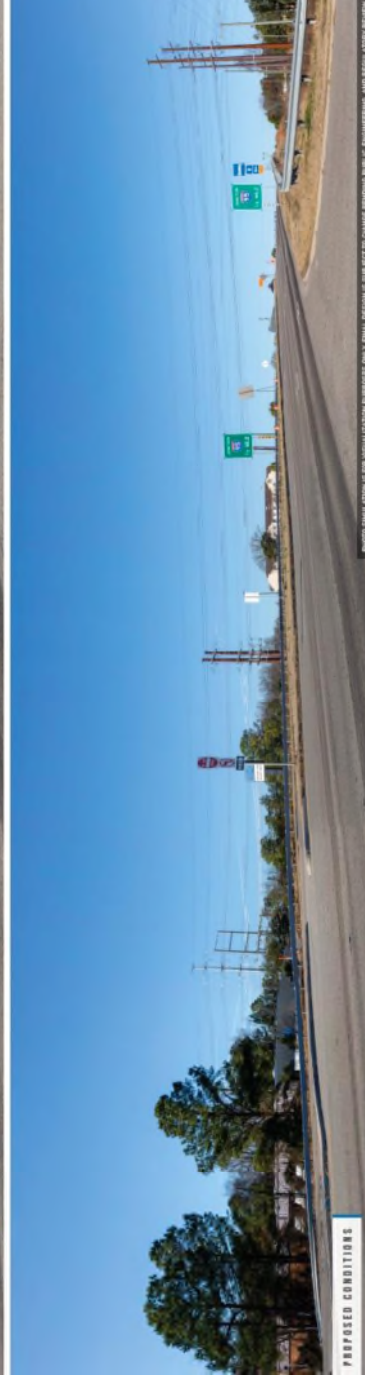


PHOTO SIMULATION IS FOR VISUALIZATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGING PROJECT PUBLIC ENGINEERING AND REGULATORY REQUIREMENTS.

Backyard Application



- Structure height comparison tool
- Address search to see structure locations in your area
- View details about individual structures by clicking on a structure location marker
- Includes photo simulations
- Use the legend to understand structure changes, and the “Height Reference Diagram” for more detailed information about typical structure heights

Found on the project website:
DominionEnergy.com/chesterfieldhopewell

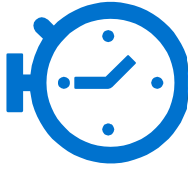


- **Virginia State Corporation Commission (SCC):** Certificate of Public Convenience and Necessity
- **U.S. Army Corps of Engineers**
- **Other Agency Review**
 - Department of Environmental Quality (DEQ)
 - Federal Aviation Administration (FAA)
 - National Park Service (NPS)
 - Virginia Department of Historic Resources (VDHR)
 - Virginia Department of Transportation (VDOT)
- **Local Permitting Requirements**
 - Railroad Permitting (CSX Utility Permits)

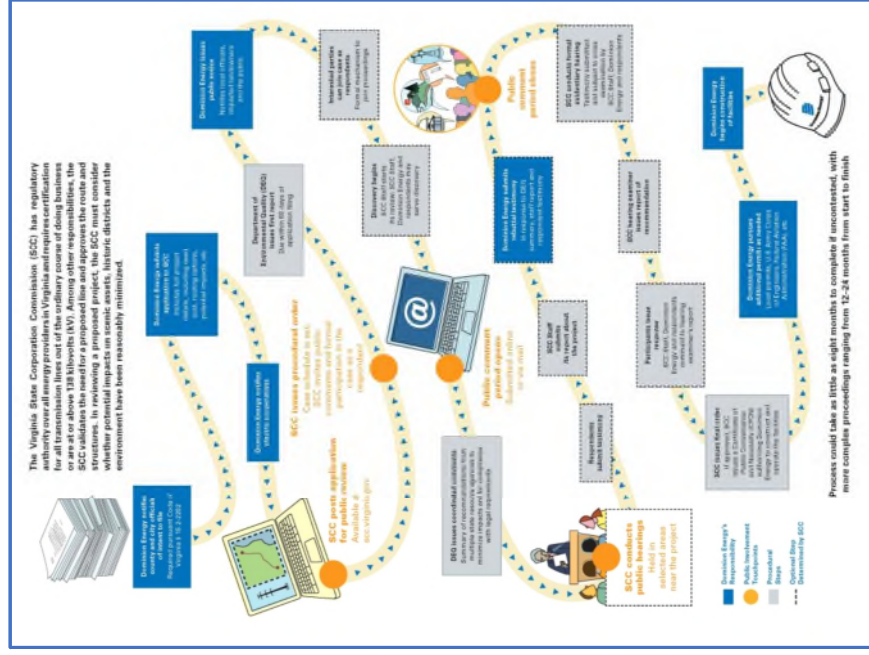
Electric Transmission Line SCC Application Review Process



Opportunities for public involvement throughout the process, including public hearings



Process could take as little as eight months to complete if uncontested, with more complex proceedings ranging from 12–24 months from start to finish



Timeline



February 2023 – Initial Public Outreach



March 2023 – Virtual Community Meeting



Spring 2023 – Submit SCC Application



Early 2024 – Anticipated SCC Decision



Late 2024 – Estimated Construction Start



Summer 2025 – Target Project Completion Date

This schedule is subject to change based on permits, weather, etc.

Q&A



- Submit questions through the Q&A at any time, select 'All Panelists'.
- If you have a specific question and would like us to follow up with you after the meeting, include your name and preferred method of contact.

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Thank you for your engagement during this virtual community meeting

A screenshot of a web-based Q&A interface. At the top left, there is a dropdown menu labeled "Q&A" which is circled in red. Below it, a blue line indicates "All (0)". On the right side, there is a section titled "Ask" with a dropdown menu currently set to "All Panelists". A red arrow points to this dropdown menu, with a text box next to it that says "Select a panelist in the Ask menu first and then type your question". Below the dropdown is a text input field. At the bottom right, there is a "Send" button. The entire interface is enclosed in a light gray border with a close button (X) in the top right corner.

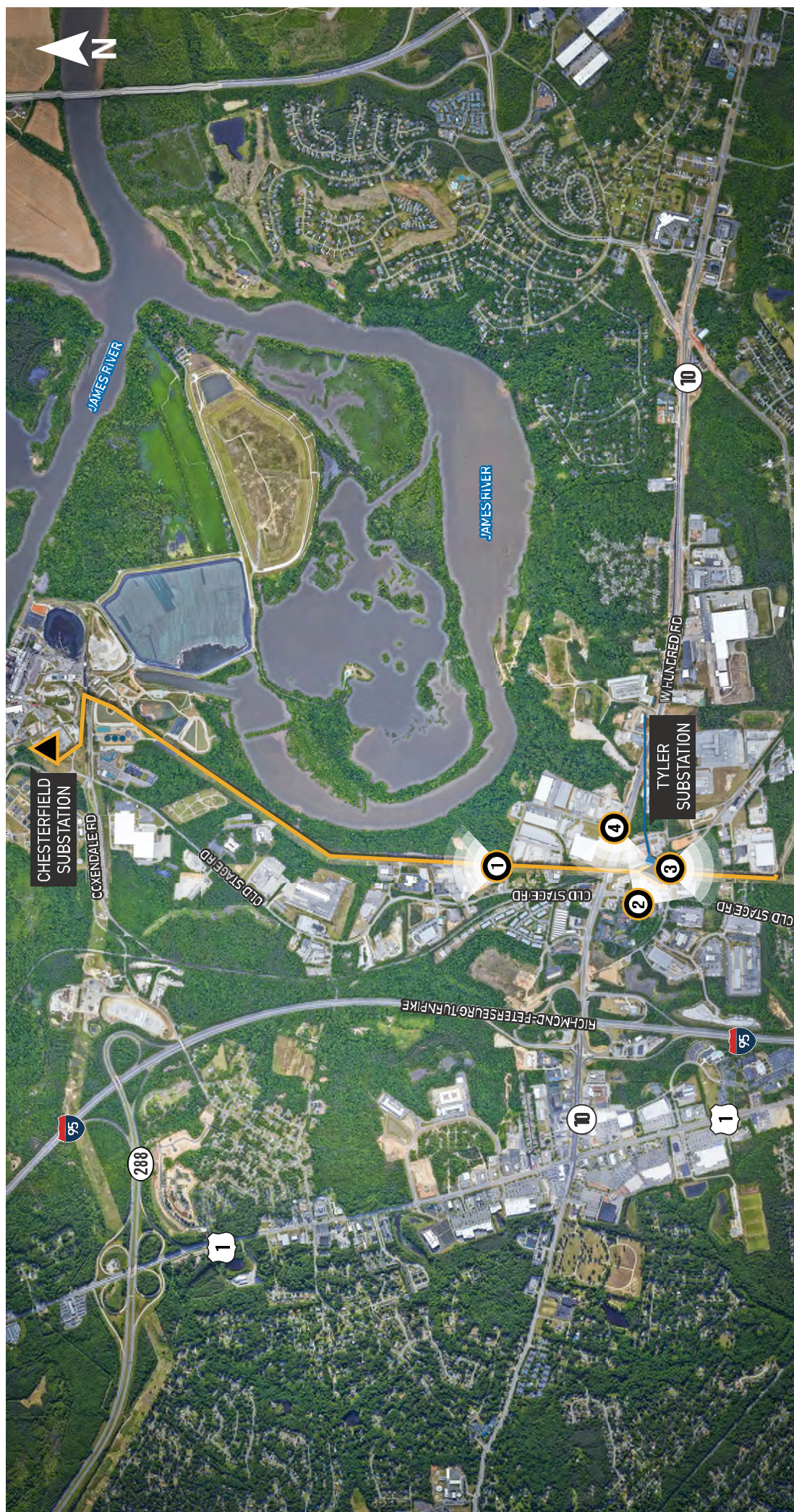
Thank You



- We will continue to keep you informed on project updates
- For questions throughout the project, send an email to powerline@dominionenergy.com or call **888-291-0190**
- This meeting will be recorded and posted on our website for those who were unable to attend
- For more information, please visit: DominionEnergy.com/chesterfieldhopewell



Thank you for joining!



CHESTERFIELD TO HOPEWELL

PARTIAL REBUILD PROJECT

PHOTO VIEWPOINT MAP

- ① PHOTO VIEWPOINT LOCATION
- TRANSMISSION LINE
- ▲ EXISTING SUBSTATION



CHESTERFIELD TO HOPEWELL

PARTIAL REBUILD PROJECT

VIEWPOINT 1

DATE: 1/21/2023 TIME: 11:12 AM DIRECTION: NORTH

 PHOTO VIEWPOINT LOCATION  TRANSMISSION LINE



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EXISTING CONDITIONS



PROPOSED CONDITIONS



PHOTO SIMULATION IS FOR VISUALIZATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE. PENDING PUBLIC, ENGINEERING, AND REGULATORY REVIEW.

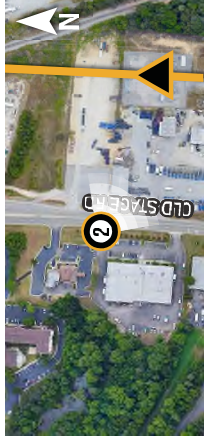
CHESTERFIELD TO HOPEWELL

PARTIAL REBUILD PROJECT

VIEWPOINT 2

DATE: 1/20/2023 TIME: 3:13 PM DIRECTION: SOUTHEAST

PHOTO VIEWPOINT LOCATION TRANSMISSION LINE
EXISTING SUBSTATION



EXISTING CONDITIONS



PROPOSED CONDITIONS

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CHESTERFIELD TO HOPEWELL

PARTIAL REBUILD PROJECT

VIEWPOINT 3

DATE: 1/21/2023 TIME: 8:57 AM DIRECTION: SOUTH

③ PHOTO VIEWPOINT LOCATION — TRANSMISSION LINE
▲ EXISTING SUBSTATION



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EXISTING CONDITIONS



PROPOSED CONDITIONS

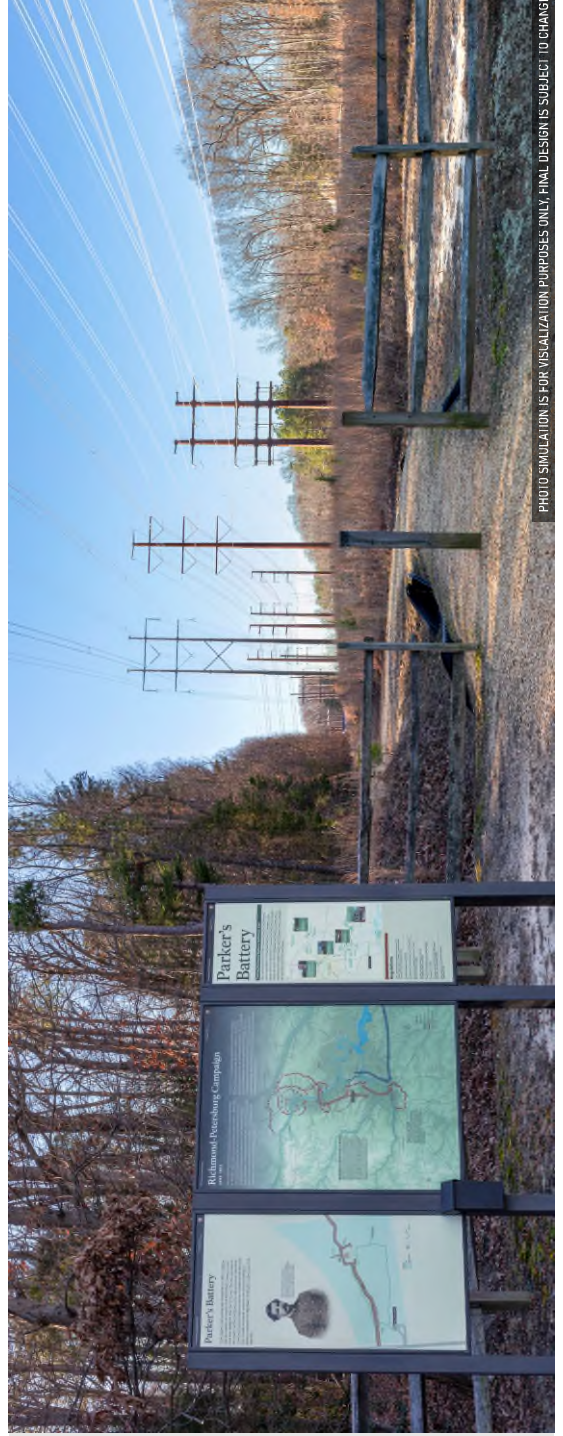


PHOTO SIMULATION IS FOR VISUALIZATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE PENDING PUBLIC, ENGINEERING, AND REGULATORY REVIEW.

CHESTERFIELD TO HOPEWELL

PARTIAL REBUILD PROJECT

VIEWPOINT 4

DATE: 1/21/2023 TIME: 10:03 AM DIRECTION: WEST

④ PHOTO VIEWPOINT LOCATION — TRANSMISSION LINE

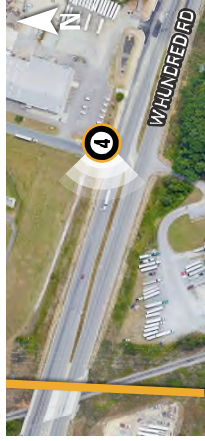
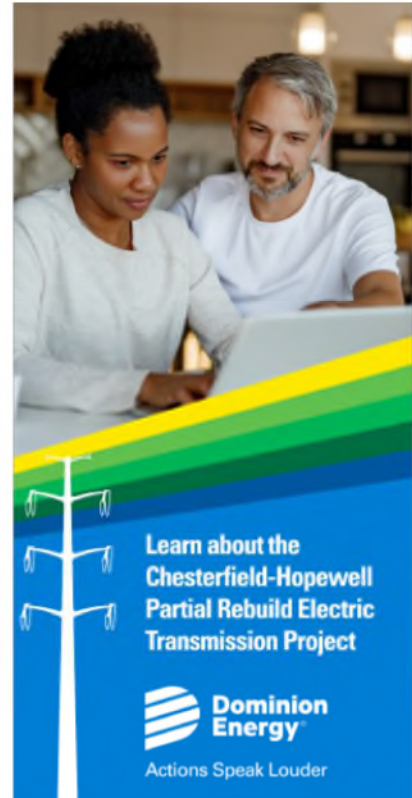
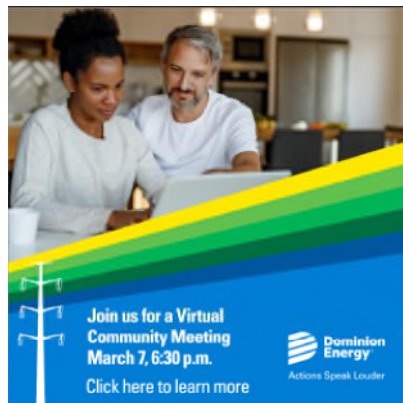


PHOTO SIMULATION IS FOR VISUALIZATION PURPOSES ONLY. FINAL DESIGN IS SUBJECT TO CHANGE. PENDING PUBLIC, ENGINEERING, AND REGULATORY REVIEW.

**Dominion Energy
Electric Transmission**

Chesterfield-Hopewell

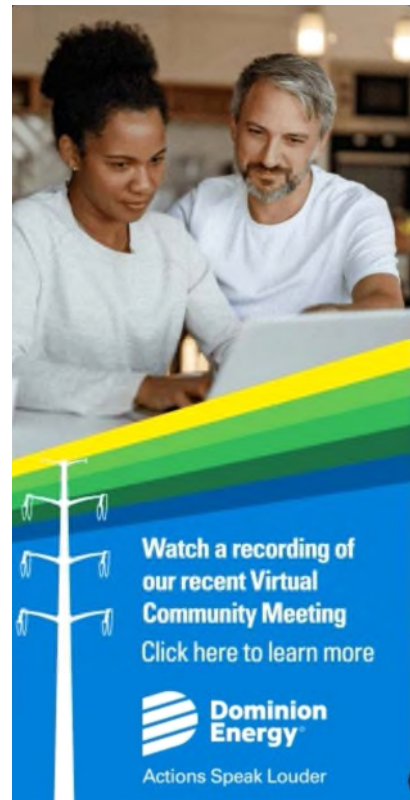
3/7
Pre-event Display



Dominion Energy Electric Transmission

Chesterfield-Hopewell

3/16
Post-event Display



**Dominion Energy
Electric Transmission**

Chesterfield-Hopewell

Pre- and post-event
Nextdoor Imagery

3/7 Pre-event Image



3/16 Post-event Image

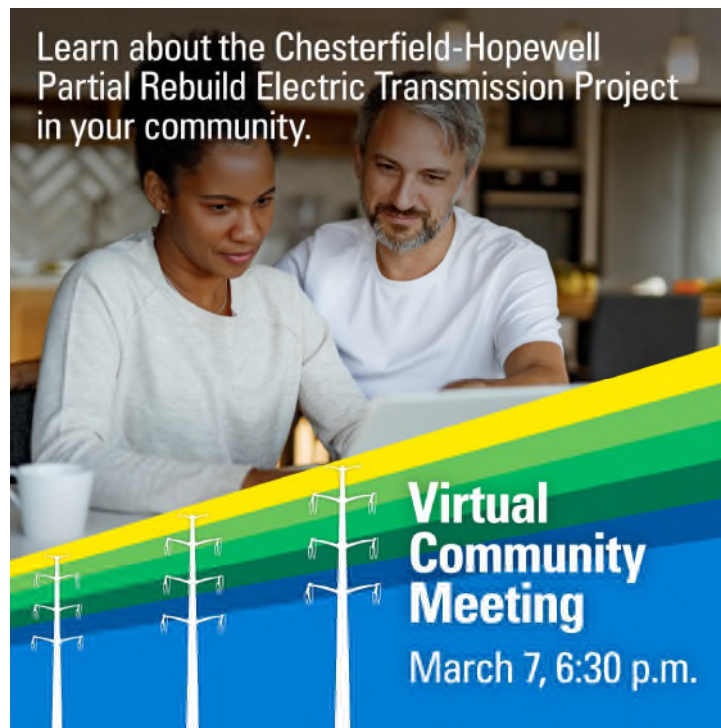


**Dominion Energy
Electric Transmission**

Chesterfield-Hopewell

Pre- and post-event
Social Videos

[3/7 Pre-event Video \(Click video to play\)](#)



[3/16 Post-event Video \(Click video to play\)](#)



**Dominion Energy
Electric Transmission**

Chesterfield-Hopewell
Pre Event Newspaper



**Connecting families
to reliable energy**

**You are invited to a
Virtual Community
Meeting**

Learn about the Chesterfield-Hopewell
Partial Rebuild Electric Transmission
Project taking place in Chesterfield
County and the City of Hopewell.

**Join us live on
Tuesday, March 7 at 6:30 p.m.**
You can find event details and
view a project map at
**[DominionEnergy.com/
chesterfieldhopewell](https://www.dominionenergy.com/chesterfieldhopewell)**



Use your phone's camera
or QR reader app to visit the
project page directly.

 **Dominion
Energy®**

Actions Speak Louder



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 has reviewed the existing transmission corridor and is not aware of any residences encroaching on the existing corridor that would require demolition or removal in connection with the Rebuild 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: Construction of Lines #211 and #228 was completed in 1969, and these lines have been in continuous use since that time. The Rebuild Project parallels existing transmission lines for the length of the existing right-of-way.

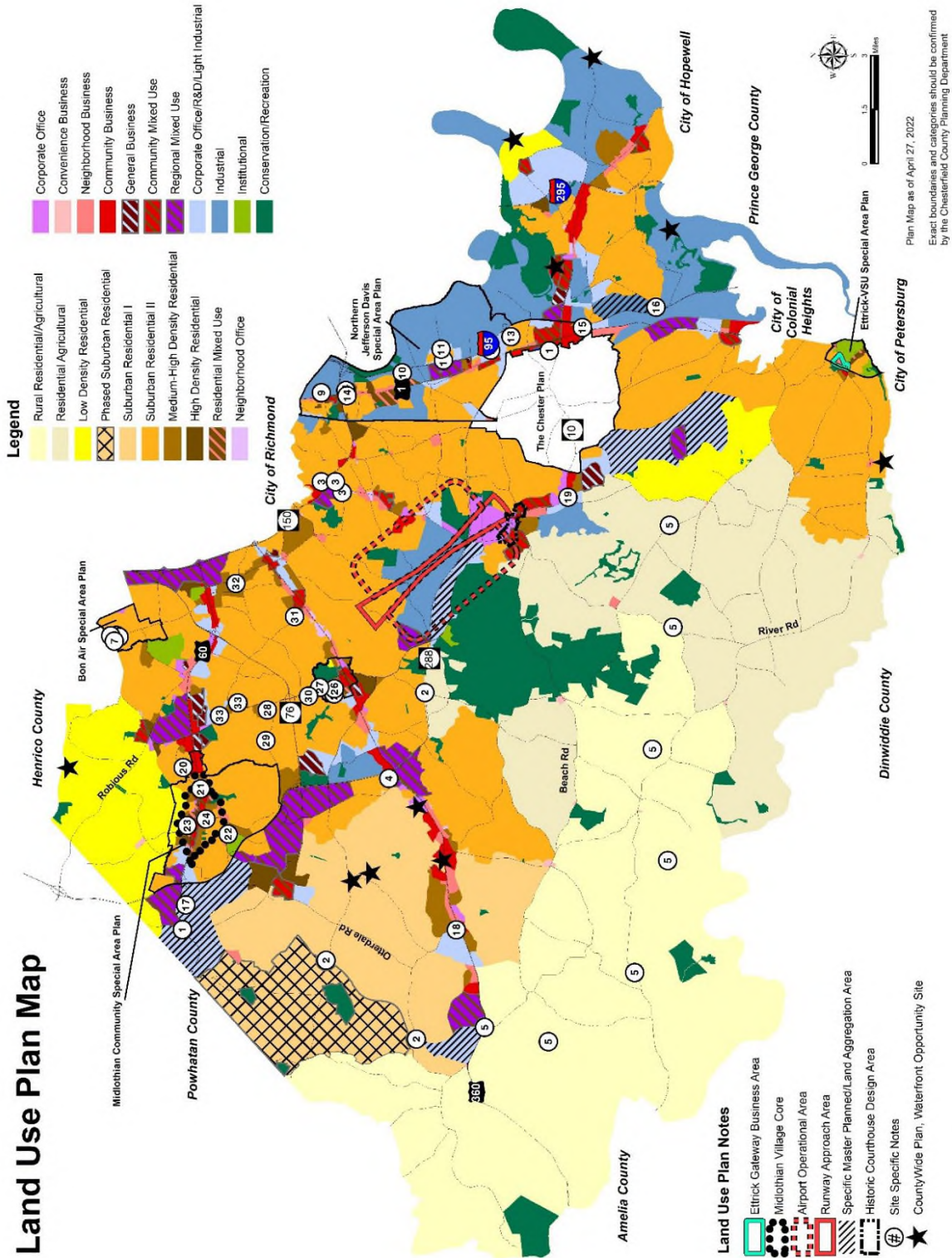
III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL, AND HISTORIC FEATURES

- 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 Company reviewed the *Chesterfield County Land Use Plan* to evaluate the potential effect the Rebuild Project could have on future development. The placement and construction of electric transmission lines is not addressed within this plan. Rather, the Comprehensive Plan addresses the organized development of the County, and the preservation of the defining characteristics of individual communities and important features. The Rebuild Project is located entirely within the existing right-of-way or on Company-owned property and is not expected to affect land use. The Rebuild Project is not expected to impact the character of the community as the transmission corridor has been in use for over 50 years.

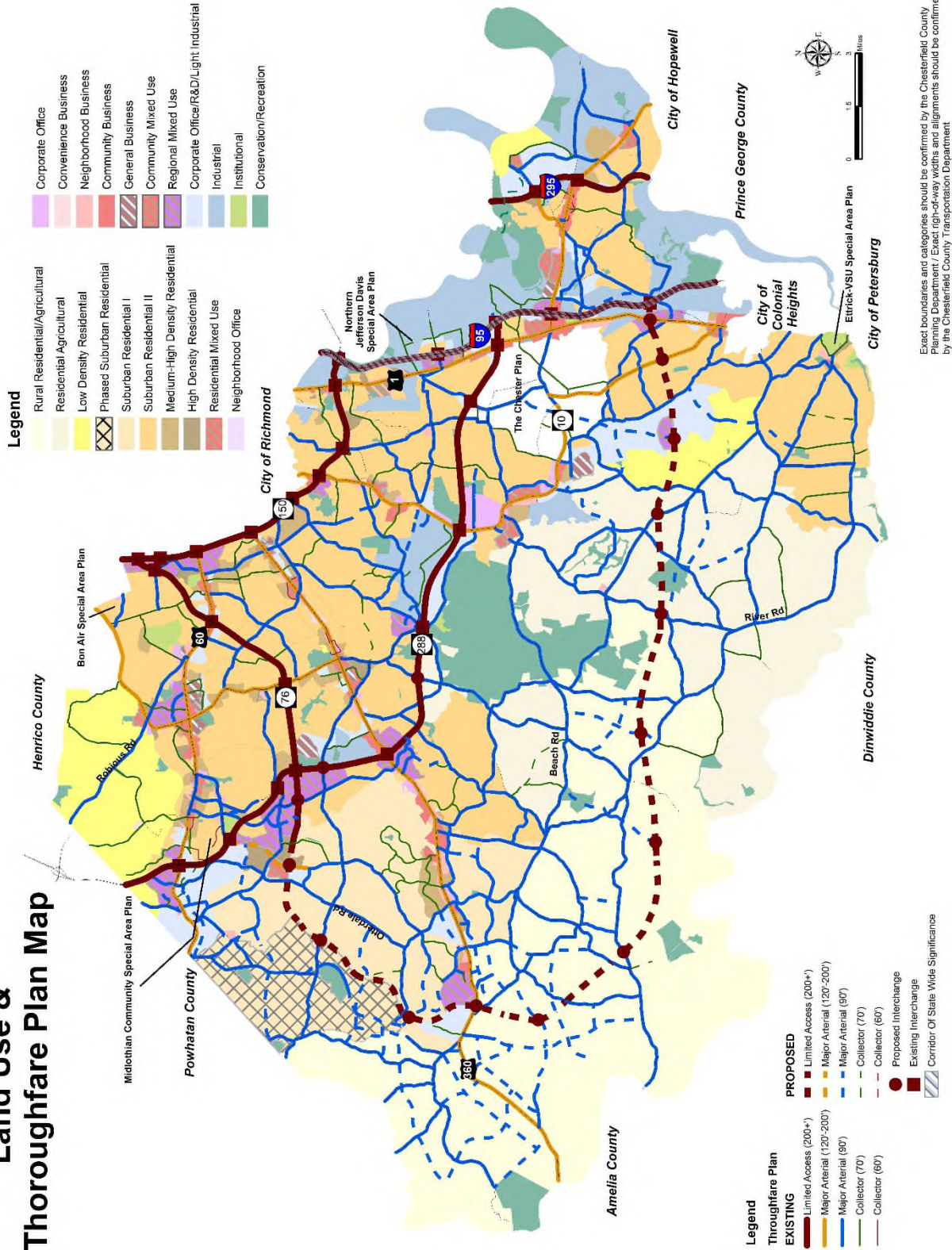
See Attachment III.E.1 for the County's Land Use Map.

CHAPTER 10: THE LAND USE PLAN



[Interactive Map Link](#)

Land Use & Thoroughfare Plan Map



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. Chesterfield County has not designated important farmland within its jurisdiction.
 2. Not applicable.

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

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

- 1. Any district, site, building, structure, or other object included in the National Register of Historic Places maintained by the U.S. Secretary of the Interior;**
- 2. Any historic architectural, archeological, and cultural resources, such as historic landmarks, battlefields, sites, buildings, structures, districts or objects listed or determined eligible by the Virginia Department of Historic Resources (“DHR”);**
- 3. Any historic district designated by the governing body of any city or county;**
- 4. Any state archaeological site or zone designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body;**
- 5. Any underwater historic assets designated by the DHR, or predecessor agency or board;**
- 6. Any National Natural Landmark designated by the U.S. Secretary of the Interior;**
- 7. Any area or feature included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation (“DCR”);**
- 8. Any area accepted by the Director of the DCR for the Virginia Natural Area Preserves System;**
- 9. Any conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code (or a comparable prior or subsequent provision of the Code);**
- 10. Any state scenic river;**
- 11. Any lands owned by a municipality or school district; and**
- 12. Any federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facility. Features, sites, and the like listed in 1 through 11 above need not be identified again.**

- Response:
1. NRHP-listed resources that are within and adjacent to the Rebuild Project are provided in Table 4 of the DEQ Supplement. Section 2.I of the DEQ Supplement provides additional discussion.
 2. Resources that are eligible or potentially eligible for listing in the NRHP that are within and adjacent to the Rebuild Project are provided in Table 4 of the DEQ Supplement. Section 2.I of the DEQ Supplement provides additional discussion.
 3. None.
 4. None.
 5. None.
 6. None.
 7. None.
 8. None.
 9. A VDHR Easement, Battery Dantzler Tract (020-5319-0002) and an easement co-held between Chesterfield County and the Capital Region Land Conservancy, are crossed by the existing right-of-way. Both are depicted on Attachment II.A.9. Richmond National Battlefield Park, which is located adjacent to the existing right-of-way, is owned and managed by the National Park Service. Section 2.L of the DEQ Supplement provides additional information regarding recreation, agricultural, and forest resources potentially crossed by the Rebuild Project.
 10. None.
 11. The existing right-of-way crosses two parcels owned by Chesterfield County. They are associated with Battery Dantzler Park and Ware Bottom Church Battlefield Park. Both parcels are depicted on Attachment II.A.9.
 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 federally-defined airspace of the facilities. Advise of contacts, and results of contacts, made with appropriate officials regarding the effect on the facilities' operations.**

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

The Company has reviewed the FAA’s website⁸ to identify airports within 10.0 nautical miles of the proposed Rebuild Project. The following airports were identified:

- Defense Supply Center Richmond, 5.4 nautical miles northwest of the Rebuild Project start.
- Fort Lee AHP 3 (Qrtmst Cen), 6.31 nautical miles southeast of the Rebuild Project start.
- Fort Lee NR 1/HQS, 6.67 nautical miles southeast of the Rebuild Project start.
- Richmond Executive/Chesterfield County Airport, 7.2 nautical miles northwest of the Rebuild Project start.
- Richmond International Airport, 8.09 nautical miles northeast of the Chesterfield Substation.

In an email dated March 6, 2023, the Virginia Department of Aviation (“DOAv”) stated that it appears as though the Rebuild Project is greater than 20,000 linear feet from any public use airport, and no additional coordination with DOAv is necessary as long as no structure exceeds 200 feet above ground level. If any structures exceed 200 feet above ground level, Form 7460 will need to be submitted to the FAA to initiate an aeronautical study to ensure that the proposed Rebuild Project will not constitute a hazard to air navigation. See also Section 2.O of the DEQ Supplement.

⁸ See <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>

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

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

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

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

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

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

- A Wetland and Waters Review has been completed and sent to DEQ's Office of Wetlands and Stream Protection to initiate the wetlands impact consultation. See Attachment 2.D.1 of the DEQ Supplement.
- A Stage I Pre-Application Analysis has been prepared and submitted to VDHR. See Attachment 2.I.2 of the DEQ Supplement.
- Correspondence was submitted to the agencies listed in Section V.C on March 6, 2023, describing the Rebuild Project and requesting comment. This correspondence is included as Attachment 2 of the DEQ Supplement.
- On February 2, 2023, the Company solicited comments via letter from several federally recognized Native American tribes, including:

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

A copy of the letter is included as Attachment III.J.1. The Catawba Indian Nation responded on March 6, 2023, and had no immediate concerns about the Rebuild Project. A copy of their response is included as Attachment III.J.2. See also Sections III.B, III.K and V.D of this Appendix, and the DEQ Supplement.

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



February 2, 2023

Chesterfield-Hopewell 230 kV Partial Rebuild 230 kV Electric Transmission Line Rebuild Project

Dear Chief Red Hawk,

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

We are reaching out to you now as we have an upcoming project in Chesterfield County and the City of Hopewell, and you may have an interest in this area. We are planning to rebuild and reconductor 2.9 miles of existing 230 kilovolts (kV) transmission lines that run from our Chesterfield Substation on Coxendale Road to just south of our Tyler Substation, approximately 0.5 miles south of Route 10 (W. Hundred Road) in Chesterfield County. To maintain reliable service for our customers, we need to replace the current 230 kV wires, a process known as reconductoring. This will increase the ampacity, or maximum current carried, on the line. While the new conductor voltage will remain 230 kV, it is a heavier wire which requires us to also replace the structures which carry it. The line will be rebuilt within the existing right of way; therefore, no new right of way is required. The lines were built primarily with galvanized steel lattice structures. We are proposing to rebuild these with mostly brown, weathering steel monopole structures, which match the adjacent structures within the same right of way corridor. The new structures will remain double-circuit and will be, on average, approximately four feet taller than the existing lattice structures.

Additionally, we will need to reconductor 0.09 miles of existing 230 kV transmission lines that run outside our Hopewell Substation on Hercules Road in the City of Hopewell. The existing structures are adequate to carry this new wire and do not need to be rebuilt. Therefore, there will be no visual impacts in structure changes. This project will ensure continued safety and of the electric grid.

Enclosed is a project overview map for your reference. This project does require review by the Virginia State Corporation Commission. Providing your input now allows us to consider any concerns you may have as we work to meet the project's needs. Please feel free to notify other relevant organizations that may have an interest in the project area. For reference, other recipients of this letter include county and state historic, cultural, and scenic organizations, as well as Tribal Nations.

We will host a virtual community meeting on **March 7, 2023, at 6:30 p.m.**, prior to submitting the SCC application. Please visit the project webpage at DominionEnergy.com/chesterfieldhopewell for details regarding the virtual community meeting, project updates, and more project information.

If you have questions or would like to set up a meeting to discuss the project, contact me by calling 804-317-1669 or sending an email to Roxana.D.Demeter@dominionenergy.com. You may also contact Tribal Relations Manager Ken Custalow by sending an email to Ken.Custalow@dominionenergy.com.

Sincerely,

A handwritten signature in black ink that reads "Roxana Demeter".

Roxana Demeter
The Electric Transmission Project Team

[Enclosure: Project Overview Map]

Chesterfield-Hopewell 230 kV Partial Rebuild Electric Transmission Project

A transmission rebuild from the Chesterfield Substation to just south of the Tyler Substation in Chesterfield County, and nearly a tenth of a mile of reconductoring into the Hopewell Substation in the City of Hopewell

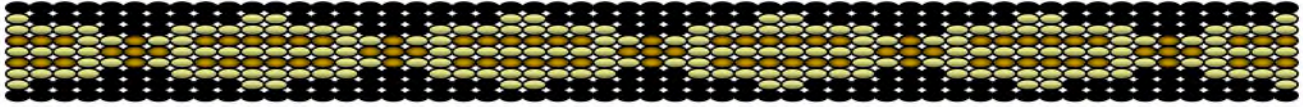


This map is intended to serve as a representation of the project area and is not intended for detailed engineering purposes.

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



Office 803-328-2427



March 6, 2023

Attention: Roxana Demeter
Dominion Energy Virginia
P.O. Box 26666
Richmond, VA 23261

Re. THPO #	TCNS #	Project Description
2023-1108-9		Chesterfield-Hopewell 230 kV Partial Rebuild 230 kV Electric Transmission Line Rebuild Project

Dear Ms. Demeter,

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

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

Sincerely,

Wenonah G. Haire
Tribal Historic Preservation Officer

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

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

Response: The Company solicited comments via letter from the nongovernmental organizations and private citizen groups identified below. A copy of the letter template and overview map is included as Attachment III.K.1. The Capital Region Land Conservancy responded on April 3, 2023, and had no immediate concerns about the Rebuild Project. A copy of their response is included as Attachment III.K.2.

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

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



February 2, 2023

Chesterfield-Hopewell 230 kV Partial Rebuild 230 kV Electric Transmission Rebuild 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 unique perspective, you can help us meet these objectives as we plan necessary electric transmission infrastructure projects. We are reaching out to you as we have an upcoming project in Chesterfield County and the City of Hopewell, and you may have an interest in this area.

We are planning to rebuild and reconnector 2.9 miles of existing 230 kilovolts (kV) transmission lines that run from our Chesterfield Substation on Coxendale Road to just south of our Tyler Substation, approximately 0.5 miles south of Route 10 (W. Hundred Road) in Chesterfield County. To maintain reliable service for our customers, we need to replace the current 230 kV wires, a process known as reconnectoring. This will increase the ampacity, or maximum current carried, on the line. While the new conductor voltage will remain 230 kV, it is a heavier wire which requires us to also replace the structures which carry it. The line will be rebuilt within the existing right of way; therefore, no new right of way is required. The lines were built primarily with galvanized steel lattice structures. We are proposing to rebuild these with mostly brown, weathering steel monopole structures, which match the adjacent structures within the same right of way corridor. The new structures will remain double-circuit and will be, on average, approximately four feet taller than the existing lattice structures.

Additionally, we will need to reconnector 0.09 miles of existing 230 kV transmission lines that run outside our Hopewell Substation on Hercules Road in the City of Hopewell. The existing structures are adequate to carry this new wire and do not need to be rebuilt. Therefore, there will be no visual impacts in structure changes. This project will ensure continued safety and of the electric grid.

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

We will host a virtual community meeting on **March 7, 2023, at 6:30 p.m.**, prior to submitting the SCC application. Please visit the project webpage at DominionEnergy.com/chesterfieldhopewell for details regarding the virtual community meeting, project updates, and more project information.

If you have questions or would like to set up a meeting to discuss the project, contact me by calling 804-317-1669 or sending an email to Roxana.D.Demeter@dominionenergy.com.

Sincerely,

A handwritten signature in black ink that reads "Roxana Demeter".

Roxana Demeter
The Electric Transmission Project Team

[Enclosure: Project Overview Map]

Chesterfield-Hopewell 230 kV Partial Rebuild Electric Transmission Project

A transmission rebuild from the Chesterfield Substation to just south of the Tyler Substation in Chesterfield County, and nearly a tenth of a mile of reconductoring into the Hopewell Substation in the City of Hopewell



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

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



From: Roxana D Demeter (DEV Trans Distribution - 1)
Sent: Monday, April 3, 2023 3:38 PM
To: Parker Agelasto <parker@capitalregionland.org>
Cc: Jane Myers <jane@capitalregionland.org>; Ashley Moulton <ashley@capitalregionland.org>; Llewellyn, Janit <LlewellynJa@chesterfield.gov>; Connock, Stuart <ConnockS@chesterfield.gov>
Subject: RE: Chesterfield-Hopewell 230kV Partial Rebuild Electric Transmission Project Inquiry

Good Afternoon Mr. Agelasto,

Thank you for your email and allowing me to clarify. You are correct, yes, in that the letter you received dated March 28, 2023, is in reference to the future work on the line (and not regarding the recent upgrades that are already completed). Yes, we will be sure to include CRLC on future notices for any planned work on the property. Please let me know if you have any questions.

Sincerely,

Roxana Demeter
Electric Transmission Communications
Dominion Energy
804-317-1669 (c)



From: Parker Agelasto <parker@capitalregionland.org>
Sent: Monday, April 3, 2023 10:37 AM
To: Roxana D Demeter (DEV Trans Distribution - 1) <roxana.d.demeter@dominionenergy.com>
Cc: Jane Myers <jane@capitalregionland.org>; Ashley Moulton <ashley@capitalregionland.org>; Llewellyn, Janit <LlewellynJa@chesterfield.gov>; Connock, Stuart <ConnockS@chesterfield.gov>
Subject: [EXTERNAL] Chesterfield-Hopewell 230kV Partial Rebuild Electric Transmission Project Inquiry

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Dear Ms. Demeter,

Capital Region Land Conservancy is in receipt of your letter dated March 28, 2023. We appreciate being informed of the upcoming work that Dominion is planning for its existing 230 kV transmission lines. I believe that these lines cross onto Chesterfield County property located at 1800 Old Bermuda Hundred Road (GPIN 804-650-3355). The purpose of my

email is to confirm that your letter is in reference to future work on the line and not the recent upgrades to the poles and other infrastructure that were completed on this property.

I also noted that there was a community meeting held on March 7, 2023. I do not believe that Capital Region Land Conservancy received a notice about this meeting. Because CRLC holds a conservation easement on the property where the Dominion utility easement crosses, we appreciate future notices to planned work on the property. I've attached a copy of the recorded deed from May 2022 for your reference. Of course Dominion's interest in its easement supersedes the CRLC conservation easement. However, the area outside of the Dominion corridor is permanently protected and should be noted for the work on any contractors performing services to the transmission line.

Thank you again for your letter. Should you have any questions of Capital Region Land Conservancy, you may reach out to me. I've also copied Jane Myers, CRLC Director of Land Conservation and Ashley Moulton, CRLC' Land Stewardship Manager as well as Stuart Connock and Janit Llewellyn from Chesterfield County Parks and Recreation, which owns the property.

All the best,
Parker C. Agelasto
Executive Director
[Capital Region Land Conservancy](https://capitalregionland.org)
P. O. Box 17306
Richmond, VA 23226
parker@capitalregionland.org
202-302-0153



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

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

Response: See the table below for potential permits anticipated for the proposed Rebuild Project.

Potential Permits

Activity	Permit	Agency
Impacts to wetlands and waters of the U.S.	Nationwide Permit 57	U.S. Army Corps of Engineers
Impacts to wetlands and waters of the U.S.	Virginia Water Protection Permit	Virginia Department of Environmental Quality
Work within, over or under state subaqueous bottom and tidal waters	Subaqueous Bottom Permit	Virginia Marine Resources Commission
Work within tidal wetlands	Local Wetlands Board Permit	Local Wetlands Board
Discharges of Stormwater from Construction Activities	Construction General Permit	Virginia Department of Environmental Quality
Work within VDOT right-of-way	Land Use Permit	Virginia Department of Transportation
Work within railroad corridor	Right-of-Entry Permit	CSX Transportation
Airspace obstruction evaluation	FAA 7460-1	Federal Aviation Administration

IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS (“EMF”)

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

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

This section describes the levels of EMF associated with the existing and proposed transmission line. EMF levels are provided for both historical (2022) and future (2026) annual average and maximum (peak) loading conditions.

Existing lines – Historical Average Loading in 2022

EMF levels were calculated for the existing line at the **historical average** load condition **290 amps** for Line #211 and **322 amps** for Line #228) at an operating voltage of 241.5 kV when supported on the existing structures – see Attachment II.A.5.a, c, and e.

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

EMF levels at the edge of the right-of-way for the proposed Rebuild Project at the historical average loading:

Existing Lines - Historic Average Loading (2022)

Attachment	Left Edge ROW Per II.A.5 Drawing View		Right Edge ROW Per II.A.5 Drawing View	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
II.A.5.a	2.239	12.259	0.790	8.248
II.A.5.c	2.329	12.182	3.646	4.983
II.A.5.e	2.584	14.564	0.546	9.866

Existing lines – Historical Peak Loading in 2022

EMF levels were calculated for the existing line at the **historical peak** load condition of **616 amps** for Line #211 and **287 amps** for Line #228 and at an

operating voltage of 241.5 kV when supported on the existing structures – see Attachment II.A.5.a, c, and e.

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

EMF levels at the edge of the right-of-way for the proposed Rebuild Project at the historical peak loading:

Existing Lines - Historic Average Loading (2022)

Attachment	Left Edge ROW Per II.A.5 Drawing View		Right Edge ROW Per II.A.5 Drawing View	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
II.A.5.a	2.245	30.879	0.783	34.322
II.A.5.c	2.332	30.763	3.664	30.497
II.A.5.e	2.588	35.247	0.541	36.925

Proposed Project – Projected Average Loading in 2026

EMF levels were calculated for the proposed Project at the **projected average** load condition of **289 amps** for Line #211 and **290 amps** for Line #228 and at an operating voltage of 241.5 kV when supported on the proposed Rebuild Project structures – see Attachments II.A.5.b, d, and f.

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

EMF levels at the edge of the right-of-way for the proposed Rebuild Project at the projected average loading:

Proposed Project - Projected Average Loading (2026)

Attachment	Left Edge ROW Per II.A.5 Drawing View		Right Edge ROW Per II.A.5 Drawing View	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
II.A.5.b	2.279	9.234	0.767	10.221
II.A.5.d	2.374	8.893	3.616	7.676
II.A.5.f	2.611	9.732	0.534	9.818

Proposed Project – Projected Peak Loading in 2026

EMF levels were calculated for the proposed Project at the **projected peak** load condition of **482 amps** for Line #211 and **483 amps** for Line #228 and at an operating voltage of 241.5 kV when supported on the proposed Rebuild Project structures – see Attachments II.A.5.b, d, and f.

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

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

Proposed Project - Projected Peak Loading (2026)

Attachment	Left Edge ROW Per II.A.5 Drawing View		Right Edge ROW Per II.A.5 Drawing View	
	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
II.A.5.b	2.280	15.354	0.766	16.997
II.A.5.d	2.373	14.776	3.618	12.755
II.A.5.f	2.612	16.175	0.532	16.327

IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS (“EMF”)

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

Response: The conclusions of multidisciplinary scientific review panels assembled by national and international scientific agencies during the past two decades are the foundation of the Company’s opinion that no adverse health effects will result from the operation of the proposed Rebuild Project. Each of these panels has evaluated the scientific research related to health and power-frequency EMF and provided conclusions that form the basis of guidance to governments and industries. The Company regularly monitors the recommendations of these expert panels to guide their approach to EMF.

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

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

The most recent reviews on this topic include the 2015 report by SCENIHR and annual reviews published by SSM (e.g., for the years 2015 through 2021). These reports, similar to previous reviews, found that the scientific evidence does not

confirm the existence of any adverse health effects caused by environmental or community exposure to EMF.

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

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

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Swedish Radiation Safety Authority (SSM). Research 2015:19. Recent Research on EMF and Health Risk - Tenth report from SSM's Scientific Council on Electromagnetic Fields. Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2015.

Swedish Radiation Safety Authority (SSM). Research 2016:15. Recent Research on EMF and Health Risk - Eleventh report from SSM's Scientific Council on

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

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

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

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

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

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.”⁹

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

- The WHO, which published one of the most comprehensive and detailed reviews of the relevant scientific peer-reviewed literature in 2007.
- SCENIHR, a committee of the European Commission, that published its assessments in 2009 and 2015;
- The SSM, which has published annual reviews of the relevant peer-reviewed scientific literature since 2003, with its most recent review published in 2021; and,
- EFHRAN, that published its reviews in 2010 and 2012.

The above reviews provide detailed analyses and summaries of relevant recent peer-reviewed scientific publications. The conclusions of these reviews that the evidence overall does not confirm the existence of any adverse health effects due

⁹ See <http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/highfinal.pdf>.

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

While research is continuing on multiple aspects of EMF exposure and health, many of the recent publications have focused on an epidemiologic assessment of the relationship between EMF exposure and childhood leukemia and neurodegenerative diseases. Of these, the following recent publications, published following the inclusion date (June 2014) for the SCENIHR (2015) report through May 2021, provided additional evidence and contributed to clarification of previous findings. Overall, new research studies have not provided evidence to alter the previous conclusions of scientific and health organizations, including the WHO and SCENIHR.

Recent epidemiologic studies of EMF and childhood leukemia include:

- Bunch et al. (2015) assessed the potential association between residential proximity to high-voltage underground cables and development of childhood cancer in the United Kingdom largely using the same epidemiologic data as in a previously published study on overhead transmission lines (Bunch et al., 2014). No statistically significant associations or trends were reported with either distance to underground cables or calculated magnetic fields from underground cables for any type of childhood cancers.
- Pedersen et al. (2015) published a case-control study that investigated the potential association between residential proximity to power lines and childhood cancer in Denmark. The study included all cases of leukemia (n=1,536), central nervous system tumor, and malignant lymphoma (n=417) diagnosed before the age of 15 between 1968 and 2003 in Denmark, along with 9,129 healthy control children matched on sex and year of birth. Considering the entire study period, no statistically significant increases were reported for any of the childhood cancer types.
- Salvan et al. (2015) compared measured magnetic-field levels in the bedroom for 412 cases of childhood leukemia under the age of 10 and 587 healthy control children in Italy. Although the statistical power of the study was limited because of the small number of highly exposed subjects, no consistent statistical associations or trends were reported between measured magnetic-field levels and the occurrence of leukemia among children in the study.
- Bunch et al. (2016) and Swanson and Bunch (2018) published additional analyses using data from an earlier study (Bunch et al., 2014). Bunch et al. (2016) reported that the association with distance to power lines observed in

earlier years was linked to calendar year of birth or year of cancer diagnosis, rather than the age of the power lines. Swanson and Bunch (2018) re-analyzed data using finer exposure categories (e.g., cut-points of every 50-meter distance) and broader groupings of diagnosis date (e.g., 1960-1979, 1980-1999, and 2000-on) and reported no overall associations between exposure categories and childhood leukemia for the later time periods (1980 and on), and consistent pattern for time periods prior to 1980.

- Crespi et al. (2016) conducted a case-control epidemiologic study of childhood cancers and residential proximity to high-voltage power lines (60 kilovolts [“kV”] to 500 kV) in California. Childhood cancer cases, including 5,788 cases of leukemia and 3,308 cases of brain tumor, diagnosed under the age of 16 between 1986 and 2008, were identified from the California Cancer Registry. Controls, matched on age and sex, were selected from the California Birth Registry. Overall, no consistent statistically significant associations for leukemia or brain tumor and residential distance to power lines were reported.
- Kheifets et al. (2017) assessed the relationship between calculated magnetic-field levels from power lines and development of childhood leukemia within the same study population evaluated in Crespi et al. (2016). In the main analyses, which included 4,824 cases of leukemia and 4,782 controls matched on age and sex, the authors reported no consistent patterns, or statistically significant associations between calculated magnetic-field levels and childhood leukemia development. Similar results were reported in subgroup and sensitivity analyses. In two subsequent studies (Amoon et al., 2018a, 2019), the potential impact of residential mobility (i.e., moving residences between birth and diagnosis) on the associations reported in Crespi et al. (2016) and Kheifets et al. (2017) were examined. Amoon et al. (2019) concluded that while uncontrolled confounding by residential mobility had some impact on the association between EMF exposure and childhood leukemia, it was unlikely to be the primary driving force behind the previously reported associations.
- Amoon et al. (2018b) conducted a pooled analysis of 29,049 cases and 68,231 controls from 11 epidemiologic studies of childhood leukemia and residential distance from high-voltage power lines. The authors reported no statistically-significant association between childhood leukemia and proximity to transmission lines of any voltage. Among subgroup analyses, the reported associations were slightly stronger for leukemia cases diagnosed before 5 years of age and in study periods prior to 1980. Adjustment for various potential confounders (e.g., socioeconomic status, dwelling type, residential mobility) had little effect on the estimated associations.
- Kyriakopoulou et al. (2018) assessed the association between childhood acute leukemia and parental occupational exposure to social contacts, chemicals, and electromagnetic fields. The study was conducted at a major pediatric hospital in Greece and included 108 cases and 108 controls matched for age, gender, and ethnicity. Statistically non-significant associations were observed between

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

- Auger et al. (2019) examined the relationship between exposure to EMF during pregnancy and risk of childhood cancer in a cohort of 784,000 children born in Québec. Exposure was defined using residential distance to the nearest high-voltage transmission line or transformer station. The authors reported statistically non-significant associations between proximity to transformer stations and any cancer, hematopoietic cancer, or solid tumors. No associations were reported with distance to transmission lines.
- Crespi et al. (2019) investigated the relationship between childhood leukemia and distance from high-voltage lines and calculated magnetic-field exposure, separately and combined, within the California study population previously analyzed in Crespi et al. (2016) and Kheifets et al. (2017). The authors reported that neither close proximity to high-voltage lines nor exposure to calculated magnetic fields alone were associated with childhood leukemia; an association was observed only for those participants who were both close to high-voltage lines (< 50 meters) and had high calculated magnetic fields (≥ 0.4 microtesla [i.e., 4 milligauss]). No associations were observed with low-voltage power lines (< 200 kV). In a subsequent study, Amoon et al. (2020) examined the potential impact of dwelling type on the associations reported in Crespi et al. (2019). Amoon et al. (2020) concluded that while the type of dwelling at which a child resides (e.g., single-family home, apartment, duplex, mobile home) was associated with socioeconomic status and race or ethnicity, it was not associated with childhood leukemia and did not appear to be a potential confounder in the relationship between childhood leukemia and magnetic-field exposure in this study population.
- Swanson et al. (2019) conducted a meta-analysis of 41 epidemiologic studies of childhood leukemia and magnetic-field exposure published between 1979 and 2017 to examine trends in childhood leukemia development over time. The authors reported that while the estimated risk of childhood leukemia initially increased during the earlier period, a statistically non-significant decline in estimated risk has been observed from the mid-1990s until the present (i.e., 2019).
- Talibov et al. (2019) conducted a pooled analysis of 9,723 cases and 17,099 controls from 11 epidemiologic studies to examine the relationship between parental occupational exposure to magnetic fields and childhood leukemia. No statistically significant association was found between either paternal or maternal exposure and leukemia (overall or by subtype). No associations were observed in the meta-analyses.

- Nunez-Enriquez et al. (2020) assessed the relationship between residential magnetic-field exposure and B-lineage acute lymphoblastic leukemia (“BALL”) in children under 16 years of age in Mexico. The study included 290 cases and 407 controls matched on age, gender, and health institution; magnetic-field exposure was assessed through the collection of 24-hour measurements in the participants’ bedrooms. While the authors reported some statistically significant associations between elevated magnetic-field levels and development of B-ALL, the results were dependent on the chosen cut-points.
- Seomun et al. (2021) performed a meta-analysis based on 33 previously published epidemiologic studies investigating the potential relationship between magnetic-field exposure and childhood cancers, including leukemia and brain cancer. For childhood leukemia, the authors reported statistically significant associations with some, but not all, of the chosen cut-points for magnetic-field exposure. The associations between magnetic-field exposure and childhood brain cancer were statistically non-significant. The study provided limited new insight as most of the studies included in the current meta-analysis, were included in previously conducted meta- and pooled analyses.

Recent epidemiologic studies of EMF and neurodegenerative diseases include:

- Seelen et al. (2014) conducted a population-based case-control study in the Netherlands and included 1,139 cases diagnosed with amyotrophic lateral sclerosis (“ALS”) between 2006 and 2013 and 2,864 frequency-matched controls. The shortest distance from the case and control residences to the nearest high-voltage power line (50 kV to 380 kV) was determined by geocoding. No statistically significant associations between residential proximity to power lines with voltages of either 50 to 150 kV or 220 to 380 kV and ALS were reported.
- Sorahan and Mohammed (2014) analyzed mortality from neurodegenerative diseases in a cohort of approximately 73,000 electricity supply workers in the United Kingdom. Cumulative occupational exposure to magnetic-fields was calculated for each worker in the cohort based on their job titles and job locations. Death certificates were used to identify deaths from neurodegenerative diseases. No associations or trends for any of the included neurodegenerative diseases (Alzheimer’s disease, Parkinson’s disease, and ALS) were observed with various measures of calculated magnetic fields.
- Koeman et al. (2015, 2017) analyzed data from the Netherlands Cohort Study of approximately 120,000 men and women who were enrolled in the cohort in 1986 and followed up until 2003. Lifetime occupational history, obtained through questionnaires, and job-exposure matrices on ELF magnetic fields and other occupational exposures were used to assign exposure to study subjects. Based on 1,552 deaths from vascular dementia, the researchers reported a statistically not significant association of vascular dementia with estimated

exposure to metals, chlorinated solvents, and ELF magnetic fields. However, because no exposure-response relationship for cumulative exposure was observed and because magnetic fields and solvent exposures were highly correlated with exposure to metals, the authors attributed the association with ELF magnetic fields and solvents to confounding by exposure to metals (Koeman et al., 2015). Based on a total of 136 deaths from ALS among the cohort members, the authors reported a statistically significant, approximately two-fold association with ELF magnetic fields in the highest exposure category. This association, however, was no longer statistically significant when adjusted for exposure to insecticides (Koeman et al., 2017).

- Fischer et al. (2015) conducted a population-based case-control study that included 4,709 cases of ALS diagnosed between 1990 and 2010 in Sweden and 23,335 controls matched to cases on year of birth and sex. The study subjects' occupational exposures to ELF magnetic fields and electric shocks were classified based on their occupations, as recorded in the censuses and corresponding job-exposure matrices. Overall, neither magnetic fields nor electric shocks were related to ALS.
- Vergara et al. (2015) conducted a mortality case-control study of occupational exposure to electric shock and magnetic fields and ALS. They analyzed data on 5,886 deaths due to ALS and over 58,000 deaths from other causes in the United States between 1991 and 1999. Information on occupation was obtained from death certificates and job-exposure matrices were used to categorize exposure to electric shocks and magnetic fields. Occupations classified as "electric occupations" were moderately associated with ALS. The authors reported no consistent associations for ALS, however, with either electric shocks or magnetic fields, and they concluded that their findings did not support the hypothesis that exposure to either electric shocks or magnetic fields explained the observed association of ALS with "electric occupations."
- Pedersen et al. (2017) investigated the occurrence of central nervous system diseases among approximately 32,000 male Danish electric power company workers. Cases were identified through the national patient registry between 1982 and 2010. Exposure to ELF magnetic fields was determined for each worker based on their job titles and area of work. A statistically significant increase was reported for dementia in the high exposure category when compared to the general population, but no exposure-response pattern was identified, and no similar increase was reported in the internal comparisons among the workers. No other statistically significant increases among workers were reported for the incidence of Alzheimer's disease, Parkinson's disease, motor neuron disease, multiple sclerosis, or epilepsy, when compared to the general population, or when incidence among workers was analyzed across estimated exposure levels.
- Vinceti et al. (2017) examined the association between ALS and calculated magnetic-field levels from high-voltage power lines in Italy. The authors

included 703 ALS cases and 2,737 controls; exposure was assessed based on residential proximity to high-voltage power lines. No statistically significant associations were reported and no exposure-response trend was observed. Similar results were reported in subgroup analyses by age, calendar period of disease diagnosis, and study area.

- Checkoway et al. (2018) investigated the association between Parkinsonism¹⁰ and occupational exposure to magnetic fields and several other agents (endotoxins, solvents, shift work) among 800 female textile workers in Shanghai. Exposure to magnetic fields was assessed based on the participants' work histories. The authors reported no statistically significant associations between Parkinsonism and occupational exposure to any of the agents under study, including magnetic fields.
- Gunnarsson and Bodin (2018) conducted a meta-analysis of occupational risk factors for ALS. The authors reported a statistically significant association between occupational exposures to EMF, estimated using a job-exposure matrix, and ALS among the 11 studies included. Statistically significant associations were also reported between ALS and jobs that involve working with electricity, heavy physical work, exposure to metals (including lead) and chemicals (including pesticides), and working as a nurse or physician. The authors reported some evidence for publication bias. In a subsequent publication, Gunnarsson and Bodin (2019) updated their previous meta-analysis to also include Parkinson's disease and Alzheimer's disease. A slight, statistically significant association was reported between occupational exposure to EMF and Alzheimer's disease; no association was observed for Parkinson's disease.
- Huss et al. (2018) conducted a meta-analysis of 20 epidemiologic studies of ALS and occupational exposure to magnetic fields. The authors reported a weak overall association; a slightly stronger association was observed in a subset analysis of six studies with full occupational histories available. The authors noted substantial heterogeneity among studies, evidence for publication bias, and a lack of a clear exposure-response relationship between exposure and ALS.
- Jalilian et al. (2018) conducted a meta-analysis of 20 epidemiologic studies of occupational exposure to magnetic fields and Alzheimer's disease. The authors reported a moderate, statistically significant overall association; however, they noted substantial heterogeneity among studies and evidence for publication bias.
- Rösli and Jalilian (2018) performed a meta-analysis using data from five

¹⁰ 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).

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 nonsignificant decrease in ALS development.
- Huang et al. (2020) conducted a meta-analysis of 43 epidemiologic studies examining potential occupational risk factors for dementia or mild cognitive impairment. The authors included five cohort studies and seven case-control studies related to magnetic-field exposure. For both study types, the authors reported positive associations between dementia and work-related magnetic field exposures. The paper, however, provided no information on the occupations held by the study participants, their magnetic-field exposure levels, or how magnetic-field levels were assessed; therefore, the results are difficult to interpret. The authors also reported a high level of heterogeneity among

studies. Thus, this analysis adds little, if any, to the overall weight of evidence on a potential association between dementia and magnetic fields.

- Jalilian et al. (2020) conducted a meta-analysis of ALS and occupational exposure to both magnetic fields and electric shocks within 27 studies from Europe, the United States, and New Zealand. A weak, statistically significant association was reported between magnetic-field exposure and ALS; however, the authors noted evidence of study heterogeneity and publication bias. No association was observed between ALS and electric shocks.
- Chen et al. (2021) conducted a case-control study to examine the association between occupational exposure to electric shocks, magnetic fields, and motor neuron disease (“MND”) in New Zealand. The study included 319 cases with a MND diagnosis (including ALS) and 604 controls, matched on age and gender; exposure was assessed using the participants’ occupational history questionnaire responses and previously developed job-exposure matrices for electric shocks and magnetic fields. The authors reported no associations between MND and exposure to magnetic fields; positive associations were reported between MND and working at a job with the potential for electric shock exposure.

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V. NOTICE

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

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

The proposed route for the Rebuild Project is located within an existing approximately 2.9-mile right-of-way corridor currently occupied by existing 230 kV transmission Lines #211 and #228. The existing transmission right-of-way for the proposed route originates at the Chesterfield Substation and heads east for approximately 0.4 miles before reaching Structure #211/4 (#228/4), then continues southwest for approximately one mile before turning south and continuing for approximately 1.5 miles to reach Structure #211/19 (#228/19). The Rebuild Project crosses one major road, W. Hundred Road (Route 10). The entire Rebuild Project is located within Chesterfield County, Virginia.

For the proposed Rebuild Project, the minimum structure height is approximately 102 feet, the maximum structure height is approximately 142 feet and the average structure height is approximately 125 feet, based on preliminary conceptual design, inclusive of a foundation reveal, and subject to change based on final engineering design.

ATTACHMENT V.A PROJECT NOTICE MAP

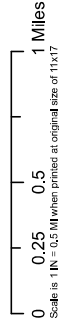
Chesterfield-Hopewell Lines #211 and #228
Partial Rebuild Project

Chesterfield County, Virginia
Owner/ Applicant:

Dominion Energy Virginia

C2 Env Project: Prepared By: Date:

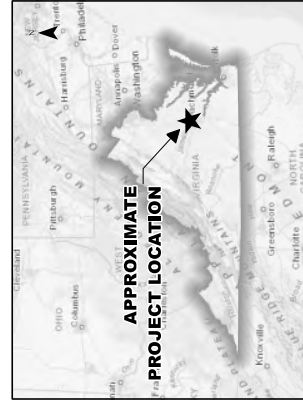
0293 TMP 12/02/22



LEGEND

- Existing Lines #211 and #228 Project Centerline
- ▣ Existing Structure
- ▣ Existing Substation
- ▣ Limited Access Highway
- ▣ US or VA Primary Highway
- ▣ Local or Main Road
- ▣ Railroad
- ▣ County Boundary
- ▣ NHD Stream/River
- ▣ NHD Waterbody

Notes:
1. Basemap from ESRI Topographic Map
2. Project boundaries from Dominion Energy
3. Roads and railroads from VGIN
4. Streams, rivers and waterbodies from USGS National Hydrography Data



SHEET 1 OF 1

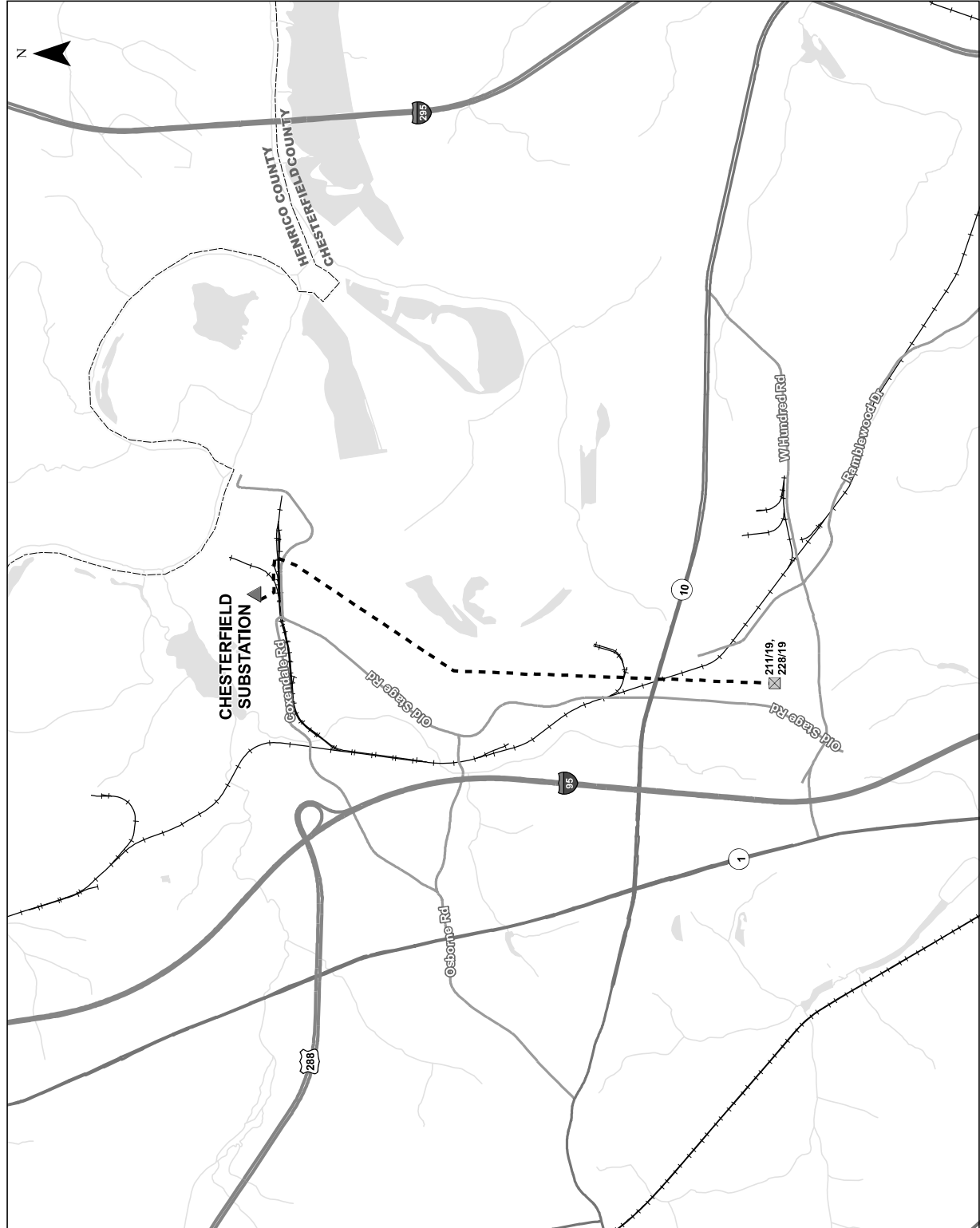


FIG 01-2-2-01 12/02/22

V. NOTICE

- B. List Applicant offices where members of the public may inspect the application. If applicable, provide a link to website(s) where the application may be found.**

Response: The application will be made available electronically for public inspection at the following website: <https://www.dominionenergy.com/chesterfieldhopewell>.

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 : The following agency representatives may reasonably be expected to have an interest in the proposed Rebuild Project. Instead of furnishing a copy of the Application to these parties, the Company has sent a letter noting the availability of the Application for the proposed Rebuild Project on the Company's website.

Ms. Bettina Rayfield
Manager, Environmental Impact Review and Long Range Priorities
Office of Environmental Impact Review
Department of Environmental Quality, Central Office
PO Box 1105
Richmond, Virginia 23218

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

Ms. Robbie Rhur
Environmental Specialist, Planning & Recreation
Department of Conservation and Recreation
600 East Main Street, 24th Floor
Richmond, Virginia 23219

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

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

Ms. Amy Martin
Environmental Services Biologist Manager
Virginia Department of Wildlife Resources
P.O. Box 90778
Henrico, Virginia 23228

Mr. Keith Tignor
Endangered Plant and Insect Species Program
Virginia Department of Agriculture and Consumer Affairs
102 Governor Street
Richmond, Virginia 23219

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

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

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

Ms. Lauren Chartrand
Habitat Management Division
Virginia Marine Resources Commission
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Fort Monroe, Virginia 23651

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

Mr. Keith Goodwin
U.S. Army Corps of Engineers
Norfolk District, Southern Section
9100 Arboretum Parkway, Suite 235
Richmond, VA 23236

Ms. Martha Little
Virginia Outdoors Foundation
P.O. Box 85073, PMB 38979
Richmond, Virginia 23285-5073

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

Mr. Mike Helvey
Obstruction Evaluation Group Manager
Federal Aviation Administration
800 Independence Ave, SW
Room 400 East
Washington, D.C. 20591

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

Mr. Dale R. Totten, P.E
Richmond District Engineer
Virginia Department of Transportation
2430 Pine Forest Drive
South Chesterfield, Virginia 23834

Dr. Joseph P. Casey
Chesterfield County, County Administrator
P.O. Box 40
Chesterfield, VA 23832

V. NOTICE

- D. If the application is for a transmission line with a voltage of 138 kV or greater, provide a statement and any associated correspondence indicating that prior to the filing of the application with the SCC the Applicant has notified the chief administrative officer of every locality in which it plans to undertake construction of the proposed line of its intention to file such an application, and that the Applicant gave the locality a reasonable opportunity for consultation about the proposed line (similar to the requirements of § 15.2-2202 of the Code for electric transmission lines of 150 kV or more).**

Response: In accordance with Va. Code § 15.2-2202 E, a letter dated March 6, 2023, was sent to Dr. Joseph P. Casey, Chesterfield County Administrator, advising of the Company's intention to file this Application and inviting the County to consult with the Company about the proposed Rebuild Project. The letter is included as Attachment V.D.1.

Dr. Joseph Casey
Chesterfield County Administrator
P.O. Box 40
Chesterfield, Virginia 23832

March 6, 2023

Dear Dr. Casey,

Dominion Energy Virginia (the "Company") is proposing to rebuild approximately 2.9 miles of 230 kV Lines #211 and #228 on double-circuit weathering steel structures between Chesterfield Substation and Hopewell Substation in Chesterfield County, Virginia (the "Project"). The proposed Project will increase the summer emergency line ratings to improve reliability throughout this transmission corridor, thereby continuing to enable the Company to maintain safe and reliable electric transmission service to its customers. The Project is entirely within existing transmission line right-of-way or on Company-owned property and no additional right-of-way is necessary.

The Company is preparing to file an application for a Certificate of Public Convenience and Necessity ("CPCN") with the Virginia State Corporation Commission ("SCC"). Pursuant to Va. Code § 15.2-2202, the Company is writing to notify you of the proposed Project in advance of this SCC filing. We respectfully request 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 application will be available for review on the Company's website at <https://www.dominionenergy.com/chesterfieldhopewell>.

Enclosed is a Project Location Map depicting the alignment of the rebuild activity. If you would like to receive a GIS shapefile of the rebuild route to assist in your project review or if you have any questions, please do not hesitate to contact me directly at 804-658-7316 or blair.parks@dominionenergy.com. We appreciate your assistance with this project review and look forward to any additional information you may have to offer.

Regards,

Blair Parks

Blair Parks
Siting and Permitting Specialist

PROJECT LOCATION MAP

Chesterfield - Hopewell 230 kV Lines #211 and #228 Partial Rebuild Project

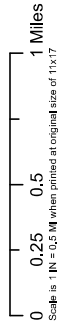
Chesterfield County, Virginia

Owner/Applicant:

Dominion Energy Virginia

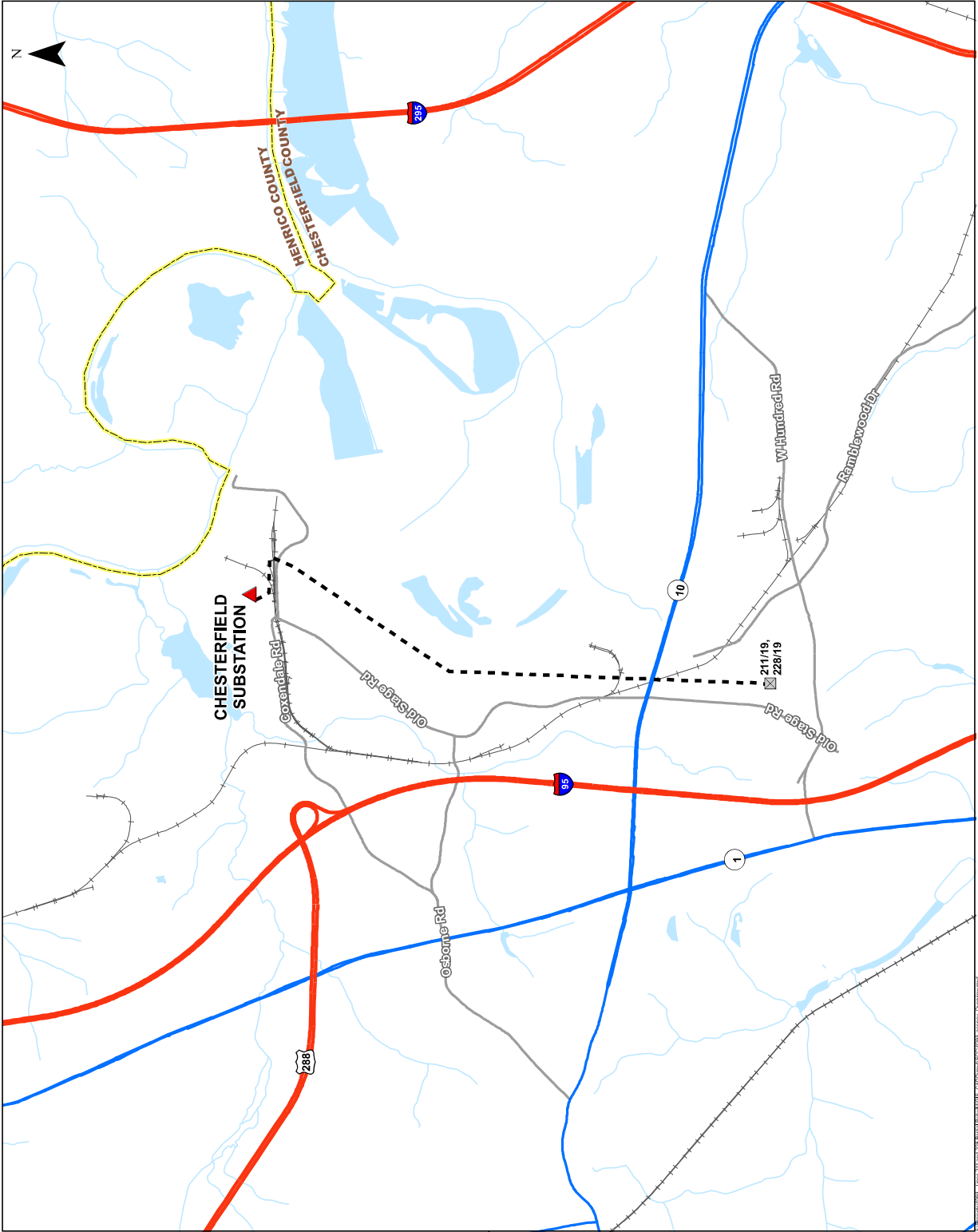
C2 Env Project: Prepared By: Date:

0293 TMP 02/20/23

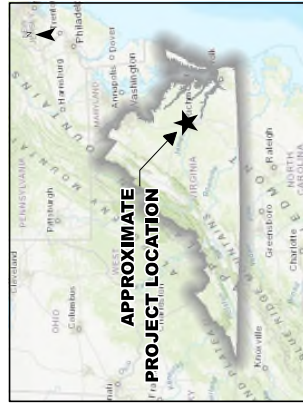


LEGEND

- Existing Lines #211 and #228 Project Centerline
- ▣ Existing Structure
- ▣ Existing Substation
- ▲ Limited Access Highway
- US or VA Primary Highway
- Local or Main Road
- Railroad
- County Boundary
- NHD Stream/River
- NHD Waterbody



- Notes:
1. Basemap from ESRI Topographic Map
 2. Road and railroad data from Dominion Energy
 3. Roads and railroads from VGIN
 4. Streams, rivers and waterbodies from USGS National Hydrography Data



SHEET 1 OF 1

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER	)	Case No. PUR-2023-00054
COMPANY	)	
	)	
For approval and certification of electric	)	
transmission facilities: Chesterfield –	)	
Hopewell Lines # 211 and #228 Partial	)	
Rebuild Project	)	

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

Mark R. Gill

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

Trey M. Rydel

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

Antoaneta Yanev

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

Blair Parks

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Mark R. Gill

Title: Consulting Engineer – Electric Transmission Planning

Summary:

Company Witness Mark R. Gill sponsors those sections of the Appendix describing the Company's electric transmission system and the need for, and benefits of, the proposed Rebuild Project, as follows:

- Section I.B: This section details the engineering justifications for the proposed Rebuild Project.
- Section I.C: This section describes the present system and details how the proposed Rebuild Project will effectively satisfy present and projected future load demand requirements.
- Section I.D: This section describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E: This section explains feasible project alternatives.
- Section I.G: This section provides a system map for the affected area.
- Section I.H: This section provides the desired in-service date of the proposed Rebuild Project and the estimated construction time.
- Section I.J: This section provides information about the project if approved by the RTO.
- Section I.K: Although not applicable to the proposed Rebuild Project, this section provides outage history and maintenance history for existing transmission lines if the proposed project is a rebuild and is due in part to reliability issues.
- Section I.M: Although not applicable to the proposed Rebuild Project, this section contains information for transmission lines interconnecting a non-utility generator.
- Section I.N: Although not applicable to the proposed Rebuild Project, this section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.
- Section II.A.10: This section provides details of the construction plans for the proposed Rebuild Project, including requested and approved line outage schedules.

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

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

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

**DIRECT TESTIMONY
OF
MARK R. GILL
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00054**

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

3 A. My name is Mark R. Gill, and I am a Consulting Engineer in the Electric Transmission
4 Planning Department of the Company. My business address is 5000 Dominion Boulevard,
5 Glen Allen, Virginia 23060. A statement of my qualifications and background is provided
6 as Appendix A.

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

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

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

11 A. In order to resolve potential criteria violations of mandatory North American Electric
12 Reliability Corporation ("NERC") Reliability Standards by increasing transmission
13 capacity and consistent with sound engineering judgment, the Company proposes in
14 Chesterfield County, Virginia, the following: (i) rebuild, entirely within existing right-of-
15 way or on Company-owned property, approximately 2.9 miles of 230 kV Lines #211 and
16 #228 on double-circuit weathering steel structures between Chesterfield Substation and
17 Hopewell Substation; (ii) reconductor approximately 0.09 miles of Line #228 outside of

1 Hopewell Substation; and (iii) complete work at Chesterfield and Hopewell Substations to
2 support the new line rating (collectively, the “Rebuild Project”).¹

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

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

9 **A.** Yes, it does.

¹ As discussed in the Application and Appendix, the Company considers the work associated with Line #228 outside of Hopewell Substation, which includes the reconductoring of approximately 0.09 miles of conductor, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to Va. Code § 56-265.2 A 1. This reconductoring work, and the work to support the new line rating at the Hopewell Substation, will be performed in the City of Hopewell.

**BACKGROUND AND QUALIFICATIONS
OF
MARK R. GILL**

Mark R. Gill received a Bachelor of Science degree in Electrical Engineering from the University of Virginia in 1989. He has been licensed as a Professional Engineer in the Commonwealth of Virginia since 1994. He has been employed by the Company for 32 years. Mr. Gill's experience with the Company includes Customer Service (1988-1992), Circuit Calculations/System Protection (1992-1999), Distribution Planning (1999-2007) and Transmission Planning (2007-Present).

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Trey M. Rydel

Title: Electric Transmission Engineer

Summary:

Company Witness Trey M. Rydel will sponsor those portions of the Appendix providing an overview of the design characteristics of the transmission facilities for the proposed Rebuild Project, and discussing electric and magnetic field levels, as follows:

- Section I.L: Although not applicable to the proposed Rebuild Project, this section provides photographs illustrating the deterioration of structures and associated equipment as applicable.
- Section II.A.5: This section provides drawings of the right-of-way cross section showing typical transmission lines structure placements.
- Section II.B.1 to II.B.3: These sections provide the line design and operational features of the proposed Rebuild Project.
- Section IV: This section provides analysis on the health aspects of electric and magnetic field levels.

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

- Section I.A (co-sponsored with Company Witness Mark R. Gill): This section details the primary justifications for the proposed Rebuild Project.
- Section I.F (co-sponsored with Company Witness Mark R. Gill): This section describes any lines or facilities that will be removed, replaced or taken out of service upon completion of the proposed Rebuild Project and normal and emergency ratings of the facilities.
- Section I.I (co-sponsored with Company Witness Antoaneta Yanev): This section provides the estimated total cost of the proposed Rebuild Project.
- Section II.B.5 (co-sponsored with Company Witness Blair Parks): This section provides the mapping and structure heights for the existing and proposed overhead structures.

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

**DIRECT TESTIMONY
OF
TREY M. RYDEL
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00054**

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

3 A. My name is Trey M. Rydel, and I am an Electric Transmission Engineer in the Electric
4 Transmission Line Engineering Department of the Company. My business address is 5000
5 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and
6 background is provided as Appendix A.

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

8 A. I am responsible for the estimating, conceptual and final design of high voltage
9 transmission line projects from voltages of 69 kilovolts (“kV”) to 500 kV.
10 Additionally, I am responsible for providing engineering support to field personnel
11 throughout the construction process.

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

13 A. In order to resolve potential criteria violations of mandatory North American Electric
14 Reliability Corporation ("NERC") Reliability Standards by increasing transmission
15 capacity and consistent with sound engineering judgment, the Company proposes in
16 Chesterfield County, Virginia, the following: (i) rebuild, entirely within existing right-of-
17 way or on Company-owned property, approximately 2.9 miles of 230 kV Lines #211 and
18 #228 on double-circuit weathering steel structures between Chesterfield Substation and
19 Hopewell Substation; (ii) reconductor approximately 0.09 miles of Line #228 outside of

1 Hopewell Substation; and (iii) complete work at Chesterfield and Hopewell Substations to
2 support the new line rating (collectively, the “Rebuild Project”).¹

3 The purpose of my testimony is to describe the design characteristics of the transmission
4 facilities for the proposed Project, and also to discuss electric and magnetic field ("EMF")
5 levels. I sponsor Sections I.L, II.A.5, II.B.1 to II.B.3, and IV of the Appendix. I also co-
6 sponsor Section I.A and Section I.F of the Appendix with Company Witness Mark R. Gill;
7 Section I.I of the Appendix with Company Witness Antoaneta Yanev; and Section II.B.5
8 with Company Witness Blair Parks.

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

10 **A.** Yes, it does.

¹ As discussed in the Application and Appendix, the Company considers the work associated with Line #228 outside of Hopewell Substation, which includes the reconductoring of approximately 0.09 miles of conductor, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to Va. Code § 56-265.2 A 1. This reconductoring work, and the work to support the new line rating at the Hopewell Substation, will be performed in the City of Hopewell.

**BACKGROUND AND QUALIFICATIONS
OF
TREY M. RYDEL**

Trey Rydel received a Bachelor of Science degree in Civil Engineering from Virginia Polytechnic Institute and State University in 2016. He is licensed as a Professional Engineer in the Commonwealth of Virginia. He has been employed by the Company since 2020. Mr. Rydel's experience with the Company includes transmission line engineering (three years). Prior to working for the Company, Mr. Rydel worked as a civil engineer for four years in the transportation sector.

Mr. Rydel has previously submitted pre-filed testimony to the Commission.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Antoaneta Yanev

Title: Engineering Technical Specialist III

Summary:

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

- Section I.I (co-sponsored with Company Witness Trey M. Rydel): This section provides the estimated total cost of the proposed Rebuild Project.
- Section II.C: This section describes and furnishes a one-line diagram of the substation(s) associated with the proposed Rebuild Project, if needed.

A statement of Ms. Yanev's background and qualifications is attached to her testimony as Appendix A.

**DIRECT TESTIMONY
OF
ANTOANETA YANEV
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
VIRGINIA STATE CORPORATION COMMISSION
CASE NO. PUR-2023-00054**

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

3 A. My name is Antoaneta Yanev, and I am an Engineering Technical Specialist III. My
4 business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement
5 of my qualifications and background is provided as Appendix A.

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

7 A. I am responsible for the evaluation of substation project requirements, feasibility
8 studies, conceptual physical design, scope development, preliminary engineering and
9 cost estimating for high voltage transmission and distribution substations.

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

11 A. In order to resolve potential criteria violations of mandatory North American Electric
12 Reliability Corporation ("NERC") Reliability Standards by increasing transmission
13 capacity and consistent with sound engineering judgment, the Company proposes in
14 Chesterfield County, Virginia, the following: (i) rebuild, entirely within existing right-of-
15 way or on Company-owned property, approximately 2.9 miles of 230 kV Lines #211 and
16 #228 on double-circuit weathering steel structures between Chesterfield Substation and
17 Hopewell Substation; (ii) reconductor approximately 0.09 miles of Line #228 outside of

1 Hopewell Substation; and (iii) complete work at Chesterfield and Hopewell Substations to
2 support the new line rating (collectively, the “Rebuild Project”).¹

3 The purpose of my testimony is to describe the work to be performed at the Chesterfield
4 and Hopewell Substations as a part of the proposed Project. I sponsor Section II.C of the
5 Appendix. Additionally, I co-sponsor Section I.I of the Appendix with Company Witness
6 Trey M. Rydel, specifically as it pertains to substation work.

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

8 **A.** Yes, it does.

¹ As discussed in the Application and Appendix, the Company considers the work associated with Line #228 outside of Hopewell Substation, which includes the reconductoring of approximately 0.09 miles of conductor, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to Va. Code § 56-265.2 A 1. This reconductoring work, and the work to support the new line rating at the Hopewell Substation, will be performed in the City of Hopewell.

**BACKGROUND AND QUALIFICATIONS
OF
ANTOANETA YANEV**

Antoaneta Yanev received her Bachelor of Science degree in electrical engineering from the Technical University of Sofia, Bulgaria, in 1991, with a major in Electric Power, Stations, Networks and Systems. Ms. Yanev joined the Company in 2008. Her previous responsibilities at the Company included developing detailed physical construction drawings, bill of material, grounding studies, electrical schematics, and wiring diagrams.

Ms. Yanev has previously testified before the Virginia State Corporation Commission.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Blair Parks

Title: Siting and Permitting Specialist

Summary:

Company Witness Blair Parks will sponsor those portions of the Appendix providing an overview of the design of the route for the proposed Rebuild Project, and related permitting, as follows:

- Section II.A.1: This section provides the length of the proposed corridor and viable alternatives to the proposed Rebuild Project.
- Section II.A.2: This section provides a map showing the route of the proposed Rebuild Project in relation to notable points close to the proposed Rebuild Project.
- Section II.A.4: This section explains why the existing right-of-way is not adequate to serve the need, to the extent applicable.
- Sections II.A.6 to II.A.8: These sections provide detail regarding the right-of-way for the proposed Rebuild Project.
- Section II.A.9: This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11: This section details how the construction of the proposed Rebuild Project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.A.12: This section identifies the counties and localities through which the proposed Rebuild Project will pass and provides General Highway Maps for these localities.
- Section II.B.6: This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III: This section details the impact of the proposed Rebuild Project on scenic, environmental, and historic features.
- Section V: This section provides information related to public notice of the proposed Rebuild Project.

Additionally, Ms. Parks co-sponsors the following portions of the Appendix:

Section II.A.3 (co-sponsored with Company Witness Mark R. Gill): This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed Rebuild Project.

- Section II.B.5 (co-sponsored with Company Witness Trey M. Rydel): This section provides the mapping and structure heights for the existing and proposed overhead structures.

Finally, Ms. Parks sponsors the DEQ Supplement filed with the Application. A statement of Ms. Parks' background and qualifications is attached to her testimony as Appendix A.

**DIRECT TESTIMONY
OF
BLAIR PARKS
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2023-00054**

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

A. My name is Blair Parks, and I am a Siting and Permitting Specialist for Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) supporting Electric Transmission. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for identifying appropriate routes for transmission lines and obtaining necessary federal, state, and local approvals and permits for those facilities. In this position, I work closely with government officials, permitting agencies, property owners, and other interested parties, as well as with other Company personnel, to develop and maintain facilities needed by the public so as to reasonably minimize environmental and other impacts on the public in a reliable, cost-effective manner.

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

A. In order to resolve potential criteria violations of mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards by increasing transmission capacity and consistent with sound engineering judgment, the Company proposes in Chesterfield County, Virginia, the following: (i) rebuild, entirely within existing right-of-way or on Company-owned property, approximately 2.9 miles of 230 kV Lines #211 and

#228 on double-circuit weathering steel structures between Chesterfield Substation and Hopewell Substation; (ii) reconductor approximately 0.09 miles of Line #228 outside of Hopewell Substation; and (iii) complete work at Chesterfield and Hopewell Substations to support the new line rating (collectively, the “Rebuild Project”).¹

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

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

A. In accordance with Va. Code § 15.2-2202 E, a letter dated March 6, 2023, was sent Dr. Joseph P. Casey, Chesterfield County Administrator, advising of the Company’s intention to file this Application and inviting the County to consult with the Company about the Rebuild Project. A copy of this letter is included as Appendix Attachment V.D.1.

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

A. Yes, it does.

¹ As discussed in the Application and Appendix, the Company considers the work associated with Line #228 outside of Hopewell Substation, which includes the reconductoring of approximately 0.09 miles of conductor, to qualify as “ordinary extensions or improvements in the usual course of business” pursuant to Va. Code § 56-265.2 A 1. This reconductoring work, and the work to support the new line rating at the Hopewell Substation, will be performed in the City of Hopewell.

**BACKGROUND AND QUALIFICATIONS
OF
BLAIR PARKS**

Blair Parks graduated from Virginia Commonwealth University in 2017 with a Bachelor of Science in Environmental Studies. She was previously a Regulatory Specialist for Stantec Consulting Services, Inc., where she was responsible for permitting electric distribution and transportation projects. Ms. Parks joined Dominion Energy Virginia's Siting and Permitting Group in 2022 where she currently works as a Siting and Permitting Specialist.