McGuireWoods

McGuireWoods LLP
Gateway Plaza
800 East Canal Street
Richmond, VA 23219-3916
Phone: 804.775.1000
Fax: 804.775.1061
www.mcguirewoods.com

Vishwa B. Link
Direct: 804.775.4330
vlink@mcguirewoods.com

March 27, 2024

BY ELECTRONIC FILING

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

Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 230 kV Apollo-Twin Creek Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Case No. PUR-2024-00044

Dear Mr. Logan:

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

As indicated in Section II.A.12.b of the Appendix, an electronic copy of the map of the Virginia Department of Transportation "General Highway Map" for Loudoun County, as well as the digital geographic information system ("GIS") map required by § 56-46.1 of the Code of Virginia, which is Attachment II.A.2 to the Appendix, were provided via an e-room to the Commission's Division of Public Utility Regulation on March 26, 2024.

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

Highest regards,

Vishwa B. Link

Enclosures

cc: William H. Chambliss, Esq.
William H. Harrison, IV, Esq.

Andrew F. Major, Esq.
Mr. David Essah (without enclosures)
Mr. Neil Joshipura (without enclosures)
Mr. Michael A. Cizenski (without enclosures)
David J. DePippo, Esq.
Charlotte P. McAfee, Esq.
Annie C. Larson, Esq.
Jennifer D. Valaika, Esq.
Anne Hampton Haynes, Esq.

Dominion Energy®

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

Before the State Corporation Commission of Virginia

230 kV Apollo-Twin Creeks Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations

Application No. 334

Case No. PUR-2024-00044

Filed: March 27, 2024

Volume 1 of 3

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Apollo-Twin Creek Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations

Application No. 334

Case No. PUR-2024-00044

Filed: March 27, 2024

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2024-00044
	)	
For approval and certification of electric transmission facilities: 230 kV Apollo-Twin Creeks Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations	)	

APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY FOR APPROVAL AND CERTIFICATION OF ELECTRIC TRANSMISSION FACILITIES: 230 KV APOLLO-TWIN CREEKS LINES AND TWIN CREEKS, SYCOLIN CREEK, STARLIGHT, LUNAR, AND APOLLO SUBSTATIONS

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

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

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

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

(1) Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on entirely new right-of-way[1] by cutting the Company's existing 230 kV Edwards Ferry-Pleasant

[1] On March 7, 2024, the Company filed an application for Commission approval of new single circuit 500 kV and 230 kV electric transmission lines located in a new right-of-way varying between 100 and 150 feet in width and extending for approximately 9.4 miles (the "future Aspen-Golden Lines") between a new future 500-230 kV Aspen Substation and a new future 500-230 kV Golden Substation, a new approximately 0.2-mile 500 kV line extending between the new Aspen Substation and the existing 500 kV Goose Creek Substation (the "future Aspen-Goose Creek Line"), and a new transmission line loop of the existing Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150 into and out of the new future Golden Substation (the "future Lines #2081/#2150 Loop"), all located in Loudoun County, Virginia (collectively, the "Aspen-Golden Project"). *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 500-230 kV Aspen Substation, 500 kV Aspen-Goose Creek Line #5002, 500 kV and 230 kV Aspen-Golden Lines #5001 and #2333, 500-230 kV Golden Substation, and Lines #2081/#2150 Loop*, Case No. PUR-2024-00032 (filed March 7, 2024) (referred to herein as the "Aspen-Golden Application"). For approximately 0.9 mile of the 9.4-mile proposed route of the future Aspen-Golden Lines, the Company noted as part of the Aspen-Golden Application that it would need additional right-of-way with varying widths between 100 and 140 feet to accommodate construction of two new 230 kV double circuit lines—namely, the Apollo-Twin Creeks Lines (as defined herein but referred to in the Aspen-Golden Application as the "future Twin Creeks Lines"). As noted in the Aspen-Golden Application, the Company understood that it could not condemn for more than what was needed for the Aspen-Golden Project until such time as the Company sought approval of this instant Project, as defined herein, consistent with the Commission's approach in recent proceedings. *See* the Aspen-Golden Application, Appendix at n. 6. The Company is now seeking such approval in this Application and is filing contemporaneous with the filing of this Application a motion to consolidate the procedural and hearing schedules for these two cases for purposes of judicial economy. A map depicting the total right-of-way where the Apollo-Twin Creeks Lines are proposed for collocation with the future Aspen-Golden Lines, which ranges from a total of 200 to 260 feet, is provided in Attachment II.A.6 of the Appendix. As clarification, the Company notes that the use of "collocation" in this context indicates where the rights-of-way are adjacent to and/or overlap one another as depicted in Attachment II.A.2 of the Appendix.

View Line #203 at Structure #203/2[2] (collectively, the "Apollo-Twin Creeks Lines").[3] From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way,[4] interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin Creeks Lines will be supported primarily by double circuit dulled galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA;[5] and

(2) Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

---

[2] No structures will be removed on Line #203. However, to accommodate the cut in on Line #203, one set of arms on Structure #203/2 will be removed and a new monopole will be installed next to the existing monopole, resulting in a two-pole structure at Structure #203/2. The new monopole will not be more than 20% taller than the existing Structure #203/2 monopole. While this is a component of the proposed Project as defined herein, the Company considers the removal of one set of arms on the existing Structure #203/2 monopole and installation of a new monopole resulting in a two-pole structure at that location on Line #203 to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity ("CPCN") from the Commission. This is consistent with the Commission Staff's July 6, 2017 guidance (available at https://scc.virginia.gov/getdoc/7f6ec0f6-7d14-4ca9-bd8a-9bd2511c5cdb/StaffGuidanceOrdvsNonOrd.pdf), as only one set of arms is being removed from existing Structure #203/2 and one structure is being installed that will not be more than 20% taller than the existing structure. As a component of the proposed Project, the costs associated with this work on Line #203 have been included in the total transmission-related conceptual costs. Should the Commission determine that a CPCN is required for the work associated with Line #203 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

[3] The Apollo-Twin Creeks Lines cut in at Structure #203/2, proceed 0.3 mile to the proposed Twin Creeks Substation, and then continue 1.7 miles to the proposed Apollo Substation, for a total of approximately 1.9 miles. Given the proximity of the proposed Twin Creeks Substation to the cut-in location (0.3 mile), the new lines are referred to as the Apollo-Twin Creeks Lines for ease of reference but are inclusive of the entire 1.9-mile length starting at Structure #203/2.

[4] Notably, there are two segments of the proposed Apollo-Twin Creeks Lines where the right-of-way is 140 feet in width. The first is an approximately 0.2-mile segment where the proposed Apollo-Twin Creeks Lines expand to a 140-foot-wide right-of-way in order to feasibly cross under the future Aspen-Golden Lines and enter the proposed Sycolin Creek Substation. The second is an approximately 0.1-mile segment where the proposed Apollo-Twin Creeks Lines leave the proposed Starlight Substation and cross under the future Aspen-Golden Lines, which requires the structure configuration to switch from double circuit monopoles (vertical) to two-pole structures (delta) and then back to double circuit monopoles (vertical) for the remainder of the route. *See* Attachment II.A.6 of the Appendix.

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

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the "Project."

4. The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike ("State Route 7" or "Rt. 7"), to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and State Route 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C") have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C (collectively, the "Campuses"). To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 MW), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek Substation (2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

5. The Company identified an approximately 1.9-mile overhead proposed route for the Apollo-Twin Creeks Lines ("Proposed Route"). No viable alternative routes were identified that maximize collocation opportunities and feasibly interconnect the proposed substations located

on the Customers' Campuses and, as such, the Company is proposing this Proposed Route for Commission consideration and notice. Discussion of the Proposed Route, as well as other routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and discussed in more detail in the Environmental Routing Study included with the Application.

6. The Proposed Route collocates with, or is parallel to, the Company's future Aspen-Golden Lines and existing or planned utilities for approximately 79% of its total length—specifically, with the future Aspen-Golden Lines for approximately 0.9 mile (48% of its length), and with other existing and proposed water and sewer lines for 0.2 and 0.4 mile, respectively (a total of 31% of its length). Additionally, of the 14 parcels crossed by the Proposed Route, nine (64%) are owned by Customers A, B, and C, which accounts for at least 77% of the total length of the Proposed Route. Further, through the Company's coordination with affected landowners and stakeholders, the Proposed Route is consistent with Guideline #1,[6] as the route maximizes use of existing and proposed transmission and utility rights-of-way, minimizes conflict between current and planned land use, where practicable, and eliminates the need for a second, non-collocated crossing of the Goose Creek Scenic River. For all these reasons, the Company supports the Proposed Route for the Apollo-Twin Creeks Lines as it reasonably minimizes adverse impacts to the greatest extent reasonably practicable on the scenic assets, historic resources, and environment of the area concerned, as well as on cultural resources and planned developments in the Project area.

7. The proposed Twin Creeks Substation will be constructed with four 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a six circuit breaker configuration. The

[6] For Guideline #1, *see* Attachment 1 to the *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*, which can be found at https://scc.virginia.gov/getdoc/21fba95f-5871-47fe-9a4d-d73a69fe4e15/trans-(1).pdf.

substation will be connected to existing Edwards Ferry-Pleasant View Line #203, which will be split at the cut-in location creating new Pleasant View-Twin Creeks Line #2320 and new Edwards Ferry-Twin Creeks Line #203, thus providing the substation a double circuit 230 kV connection. The proposed Twin Creeks Substation will be designed to accommodate future growth in the area with an ultimate build-out of five 112 MVA 230-34.5 kV transformers. The total area of the Twin Creeks Substation is approximately 4.7 acres.

8. The proposed Sycolin Creek Substation will be constructed with two 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a four circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Twin Creeks Substation. The proposed Sycolin Creek Substation will be designed to accommodate future growth in the area with an ultimate build-out of five 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a six circuit breaker configuration. The total area of the Sycolin Creek Substation is approximately 4.7 acres.

9. The proposed Starlight Substation initially will be constructed with two 84 MVA 230-34.5 kV transformers and a six 230 kV ring bus with a six circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Sycolin Creek Substation. The proposed Starlight Substation will be designed to accommodate future growth in the area with an ultimate build-out of two 84 MVA, two 112 MVA transformers, and a nine 230 kV breaker-and-a-half scheme. The total area of the Starlight Substation is approximately 4.5 acres.

10. The proposed Lunar Substation initially will be constructed with two 112 MVA 230-34.5 kV transformers and a 230 kV gas-insulated substation ("GIS") ring bus with a six circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines

extending from the proposed Starlight Substation. The proposed Lunar Substation will be designed to accommodate future growth in the area with an ultimate build-out of four 112 MVA transformers and a 230 kV GIS ring bus with a six circuit breaker configuration. The total area of the Lunar Substation is approximately 4.0 acres.

11. The proposed Apollo Substation initially will be constructed with two 84 MVA 230-34.5 kV transformers and a 230 kV ring bus with a five circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Lunar Substation. The proposed Apollo Substation will be designed to accommodate future growth in the area with an ultimate build-out of two 112 MVA transformers, two 84 MVA transformers, and a 230 kV ring bus with a six circuit breaker configuration. The total area of the Apollo Substation is approximately 5.0 acres.

12. The desired in-service target date for the proposed Project is September 30, 2028. The Company estimates it will take approximately 47 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 October 28, 2024. Should the Commission issue a final order by October 28, 2024, to accommodate long-lead materials procurement, the Company estimates that construction should begin around March 2025, and be completed by September 30, 2028. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays

due to labor shortages or materials/supply issues. This schedule is also contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to purchase land for substation use without the need for additional litigation. In addition, the Company is actively monitoring regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how they could potentially impact construction timing associated with time of year restrictions. The U.S. Fish and Wildlife Service ("USFWS") has indicated that it plans to issue final NLEB guidance to replace the interim guidance, which expires on March 31, 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS. The Company is also monitoring potential regulatory changes associated with the potential up-listing of the Tricolored bat ("TCB"). On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the Endangered Species Act. USFWS recently extended its Final Rule issuance target from September 2023 to September 2024. The Company is actively tracking this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

13. Any adjustments to this Project schedule resulting from these or similar challenges could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target date (i.e., September 30, 2028) and a CPCN sunset date (i.e., September 30, 2029) for energization of the Project.

14. The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $280.7 million, which includes approximately $31.1 million for transmission-related work and approximately $249.6 million for substation-related work (2023 dollars).[7]

15. 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.

16. 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.

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

18. In addition to the information provided in the Appendix, the DEQ Supplement, and the Environmental Routing Study, this Application is supported by the pre-filed direct testimony of Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, George C. Brimmer, Craig R. Hurd, and Roya P. Smith filed with this Application. Additionally, the

[7] These total Project costs are inclusive of projected real estate costs that the Company anticipates will be required to acquire the property and/or easements for the Proposed Route and substations. Additionally, the total Project costs include costs associated with work on Line #203 (*see supra* n. 2) and excess facilities charges that will be collected from Customers B and C (*see* Section I.C and Section II.C of the Appendix). The total Project costs exclude costs associated with minor substation-related work described in Section II.C of the Appendix, and the costs to cut future Aspen-Golden Line #2333 into the proposed Starlight Substation. Finally, note that the 2023 dollars provided herein are exclusive of all 2024 data. The Company will update the Project costs in 2024 dollars when all 2024 data is available.

Company is filing contemporaneous with the filing of this Application a motion to consolidate the procedural and hearing schedules for this Application and the Aspen-Golden Application for purposes of judicial economy.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission:

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

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

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

VIRGINIA ELECTRIC AND POWER COMPANY

By: *__/s/ Vishwa B. Link__*
Counsel for Applicant

David J. DePippo
Charlotte P. McAfee
Annie C. Larson
Dominion Energy Services, Inc.
120 Tredegar Street
Richmond, Virginia 23219
(804) 819-2411 (DJD)
(804) 771-3708 (CPM)
(804) 819-2806 (ACL)
david.j.depippo@dominionenergy.com
charlotte.p.mcafee@dominionenergy.com
annie.c.larson@dominionenergy.com

Vishwa B. Link
Jennifer D. Valaika
Anne Hampton Haynes
McGuireWoods LLP
Gateway Plaza
800 E. Canal Street
Richmond, Virginia 23219
(804) 775-4330 (VBL)
(804) 775-1051 (JDV)
(804) 775-4395 (AHH)
vlink@mcguirewooods.com
jvalaika@mcguirewoods.com
ahaynes@mcguirewoods.com

Counsel for Applicant Virginia Electric and Power Company

March 27, 2024

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

230 kV Apollo-Twin Creeks Lines
and
Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations

Application No. 334

Appendix

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

Case No. PUR-2024-00044

Filed: March 27, 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY

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

(1) Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on entirely new right-of-way[1] by cutting the Company's existing 230 kV Edwards Ferry-Pleasant

[1] On March 7, 2024, the Company filed an application for State Corporation Commission ("Commission") approval of new single circuit 500 kV and 230 kV electric transmission lines located in a new right-of-way varying between 100 and 150 feet in width and extending for approximately 9.4 miles (the "future Aspen-Golden Lines") between a new future 500-230 kV Aspen Substation and a new future 500-230 kV Golden Substation, a new approximately 0.2-mile 500 kV line extending between the new Aspen Substation and the existing 500 kV Goose Creek Substation (the "future Aspen-Goose Creek Line"), and a new transmission line loop of the existing Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150 into and out of the new future Golden Substation (the "future Lines #2081/#2150 Loop"), all located in Loudoun County, Virginia (collectively, the "Aspen-Golden Project"). *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 500-230 kV Aspen Substation, 500 kV Aspen-Goose Creek Line #5002, 500 kV and 230 kV Aspen-Golden Lines #5001 and #2333, 500-230 kV Golden Substation, and Lines #2081/#2150 Loop*, Case No. PUR-2024-00032 (filed March 7, 2024) (referred to herein as the "Aspen-Golden Application"). For approximately 0.9 mile of the 9.4-mile proposed route of the future Aspen-Golden Lines, the Company noted as part of the Aspen-Golden Application that it would need additional right-of-way with varying widths between 100 and 140 feet to accommodate construction of two new 230 kV double circuit lines—namely, the Apollo-Twin Creeks Lines (as defined herein but referred to in the Aspen-Golden Application as the "future Twin Creeks Lines"). As noted in the Aspen-Golden Application, the Company understood that it could not condemn for more than what was needed for the Aspen-Golden Project until such time as the Company sought approval of this instant Project, as defined herein, consistent with the Commission's approach in recent proceedings. *See* the Aspen-Golden Application, Appendix at n. 6. The Company is now seeking such approval in this Application and is filing contemporaneous with the filing of this Application a motion to consolidate the procedural and hearing schedules for these two cases for purposes of judicial economy. A map depicting the total right-of-way where the Apollo-Twin Creeks Lines are proposed for collocation with the future Aspen-Golden Lines, which ranges from a total of 200 to 260 feet, is provided in Attachment II.A.6. As clarification, the Company notes that the use of "collocation" in this context indicates where the rights-of-way are adjacent to and/or overlap one another as depicted in Attachment II.A.2.

View Line #203 at Structure #203/2[2] (collectively, the "Apollo-Twin Creeks Lines").[3] From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way,[4] interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin Creeks Lines will be supported primarily by double circuit dulled galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA;[5] and

(2) Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-

[2] No structures will be removed on Line #203. However, to accommodate the cut in on Line #203, one set of arms on Structure #203/2 will be removed and a new monopole will be installed next to the existing monopole, resulting in a two-pole structure at Structure #203/2. The new monopole will not be more than 20% taller than the existing Structure #203/2 monopole. While this is a component of the proposed Project as defined herein, the Company considers the removal of one set of arms on the existing Structure #203/2 monopole and installation of a new monopole resulting in a two-pole structure at that location on Line #203 to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to § 56-265.2 A 1 of the Code of Virginia ("Va. Code") and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a certificate of public convenience and necessity ("CPCN") from the Commission. This is consistent with the Commission Staff's July 6, 2017 guidance (available at https://scc.virginia.gov/getdoc/7f6ec0f6-7d14-4ca9-bd8a-9bd2511c5cdb/StaffGuidanceOrdvsNonOrd.pdf), as only one set of arms is being removed from existing Structure #203/2 and one structure is being installed that will not be more than 20% taller than the existing structure. As a component of the proposed Project, the costs associated with this work on Line #203 have been included in the total transmission-related conceptual costs. Should the Commission determine that a CPCN is required for the work associated with Line #203 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

[3] The Apollo-Twin Creeks Lines cut in at Structure #203/2, proceed 0.3 mile to the proposed Twin Creeks Substation, and then continue 1.7 miles to the proposed Apollo Substation, for a total of approximately 1.9 miles. Given the proximity of the proposed Twin Creeks Substation to the cut-in location (0.3 mile), the new lines are referred to as the Apollo-Twin Creeks Lines for ease of reference but are inclusive of the entire 1.9-mile length starting at Structure #203/2.

[4] Notably, there are two segments of the proposed Apollo-Twin Creeks Lines where the right-of-way is 140 feet in width. The first is an approximately 0.2-mile segment where the proposed Apollo-Twin Creeks Lines expand to a 140-foot-wide right-of-way in order to feasibly cross under the future Aspen-Golden Lines and enter the proposed Sycolin Creek Substation. The second is an approximately 0.1-mile segment where the proposed Apollo-Twin Creeks Lines leave the proposed Starlight Substation and cross under the future Aspen-Golden Lines, which requires the structure configuration to switch from double circuit monopoles (vertical) to two-pole structures (delta) and then back to double circuit monopoles (vertical) for the remainder of the route. *See* Attachment II.A.6.

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

Twin Creeks 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike ("State Route 7" or "Rt. 7"), to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and State Route 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C")[6] have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C (collectively, the "Campuses"). To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 MW), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A,[7] the Sycolin Creek Substation (2026) and the Starlight Substation (2028) to serve Campus B,[8] and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

The Company identified an approximately 1.9-mile overhead proposed route for the Apollo-Twin Creeks Lines ("Proposed Route").[9] No viable alternative routes were identified that maximize collocation opportunities and feasibly interconnect the proposed substations located on the Customers' Campuses and, as such, the Company is proposing this Proposed Route for Commission consideration and notice. Discussion of the Proposed Route, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and discussed in more detail in the Environmental Routing Study (or "Routing Study") included with the Application.

The proposed Twin Creeks Substation will be constructed with four 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a six circuit breaker configuration. The substation will be connected to existing Edwards Ferry-Pleasant View Line #203, which will be split at the cut-in location creating new Pleasant View-Twin Creeks Line #2320 and new Edwards Ferry-Twin Creeks Line #203, thus providing the substation a double circuit 230 kV connection. The proposed Twin Creeks Substation will be designed to accommodate future growth in the area with an ultimate build-out of five 112 MVA 230-34.5 kV transformers. The total area of the Twin Creeks Substation is approximately 4.7 acres.

---

[6] Pursuant to the Company's privacy policy and/or a specific customer non-disclosure agreement, the Company is obligated to maintain the confidentiality of customer information and obtain customer consent for public disclosure. Customers A and B have provided consent for identification in this filing. *See infra*, n. 7 and n. 8.

[7] Campus A is the Cochran Mill TC 2, LLC Data Center, which is being developed by Twin Creeks Development, LLC (Customer A).

[8] Campus B is the Belmont Innovation Campus, which is being developed by Loudoun GC, LLC (the local affiliate of Sentinel Data Centers (or "SDC")) (Customer B).

[9] Note the Proposed Route of the Apollo-Twin Creeks Lines is also sometimes referred to as "Route 1" in the Environmental Routing Study and accompanying maps and figures.

The proposed Sycolin Creek Substation will be constructed with two 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a four circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Twin Creeks Substation. The proposed Sycolin Creek Substation will be designed to accommodate future growth in the area with an ultimate build-out of five 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a six circuit breaker configuration. The total area of the Sycolin Creek Substation is approximately 4.7 acres.

The proposed Starlight Substation initially will be constructed with two 84 MVA 230-34.5 kV transformers and a six 230 kV ring bus with a six circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Sycolin Creek Substation. The proposed Starlight Substation will be designed to accommodate future growth in the area with an ultimate build-out of two 84 MVA, two 112 MVA transformers, and a nine 230 kV breaker-and-a-half scheme. The total area of the Starlight Substation is approximately 4.5 acres.

The proposed Lunar Substation initially will be constructed with two 112 MVA 230-34.5 kV transformers and a 230 kV gas-insulated substation ("GIS") ring bus with a six circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Starlight Substation. The proposed Lunar Substation will be designed to accommodate future growth in the area with an ultimate build-out of four 112 MVA transformers and a 230 kV GIS ring bus with a six circuit breaker configuration. The total area of the Lunar Substation is approximately 4.0 acres.

The proposed Apollo Substation initially will be constructed with two 84 MVA 230-34.5 kV transformers and a 230 kV ring bus with a five circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Lunar Substation. The proposed Apollo Substation will be designed to accommodate future growth in the area with an ultimate build-out of two 112 MVA transformers, two 84 MVA transformers, and a 230 kV ring bus with a six circuit breaker configuration. The total area of the Apollo Substation is approximately 5.0 acres.

The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $280.7 million, which includes approximately $31.1 million for transmission-related work and approximately $249.6 million for substation-related work (2023 dollars).[10]

The desired in-service target date for the proposed Project is September 30, 2028. The Company estimates it will take approximately 47 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

[10] These total Project costs are inclusive of projected real estate costs that the Company anticipates will be required to acquire the property and/or easements for the Proposed Route and substations. Additionally, the total Project costs include costs associated with work on Line #203 (*see supra* n. 2) and excess facilities charges that will be collected from Customers B and C (*see infra,* Section I.C and Section II.C (n. 33)). The total Project costs exclude costs associated with minor substation-related work described in Section II.C, and the costs to cut future Aspen-Golden Line #2333 into the proposed Starlight Substation (*see supra*, n. 15). Finally, note that the 2023 dollars provided herein are exclusive of all 2024 data. The Company will update the Project costs in 2024 dollars when all 2024 data is available.

requests a final order by October 28, 2024. Should the Commission issue a final order by October 28, 2024, to accommodate long-lead materials procurement, the Company estimates that construction should begin around March 2025, and be completed by September 30, 2028. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due to labor shortages or materials/supply issues. This schedule is also contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to purchase land for substation use without the need for additional litigation. In addition, the Company is actively monitoring regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how they could potentially impact construction timing associated with time of year restrictions ("TOYRs"). The U.S. Fish and Wildlife Service ("USFWS") has indicated that it plans to issue final NLEB guidance to replace the interim guidance, which expires on March 31, 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS. The Company is also monitoring potential regulatory changes associated with the potential up-listing of the Tricolored bat ("TCB"). On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the Endangered Species Act ("ESA"). USFWS recently extended its Final Rule issuance target from September 2023 to September 2024. The Company is actively tracking this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

Any adjustments to this Project schedule resulting from these or similar challenges could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target date (*i.e.*, September 30, 2028) and a CPCN sunset date (*i.e.*, September 30, 2029) for energization of the Project.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project is necessary to provide service requested by the Customers to serve three new data center campuses in eastern Loudoun County, Virginia, to maintain reliable service for the overall load growth in the Project area, and to comply with mandatory NERC Reliability Standards. See Attachment I.A.1.a for an overview map of the proposed Project along the Proposed Route. See Attachment I.A.1.b for an overview map of the proposed Project in the Leesburg Load Area.

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

Dominion Energy Virginia is part of the PJM Interconnection, LLC ("PJM") regional transmission organization ("RTO"), which provides service to a large portion of the eastern United States. PJM is currently responsible for ensuring the reliability and coordinating the movement of electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. This service area has a population of approximately 65 million and, on August 2, 2006, set a record high of 165,563 MW for summer peak demand, of which Dominion Energy Virginia's load portion was approximately 19,256 MW. On July 28, 2023, the Company set a record high of 21,993 MW for summer peak demand. On December 24, 2022, the Company set a winter and all-time record demand of 22,189 MW. Based on the 2024 PJM Load Forecast, the DOM Zone is expected to grow with average growth rates of 5.6% summer and 5.1% winter over the next 10 years compared to the PJM average of 1.7% and 2.0% over the same period for the summer and winter, respectively.[11]

Dominion Energy Virginia is also part of the Eastern Interconnection transmission

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

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

NERC has been designated by the Federal Energy Regulatory Commission ("FERC") as the electric reliability organization for the United States. Accordingly, NERC requires that the planning authority and transmission planner develop planning criteria to ensure compliance with NERC Reliability Standards. Mandatory NERC Reliability Standards require that a transmission owner ("TO") develop facility interconnection requirements that identify load and generation interconnection minimum requirements for a TO's transmission system, as well as the TO's reliability criteria.[12]

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

PJM's Regional Transmission Expansion Plan ("RTEP") is the culmination of a FERC-approved annual transmission planning process that includes extensive analysis of the electric transmission system to determine any needed improvements.[13] 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.[14] Projects identified through the RTEP process are developed by the TO in coordination with PJM, and are presented at the Transmission Expansion Advisory Committee ("TEAC") meetings prior to inclusion in the RTEP, which is then presented for approval to the PJM Board of Managers (the "PJM Board").

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

[12] *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?la=en&rev=38f51ffb04b1489f921b32a41d9887c8.

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

[14] *See* PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria. *See supra*, n. 13.

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

As discussed in more detail below, the Project is needed to provide service requested by three data center Customers in the Leesburg Load Area, as well as serve emerging load in the area. The Northern Virginia data center market is spread across Loudoun, Fairfax, and Prince William Counties. The combination of competitive collocation/cloud environment, fiber connectivity, strategic geographic location, low risk of business disruptions, affordable and reliable power, and the business climate in Virginia has created the largest market for data center capacity in the United States.

The data center market continues to rapidly expand in Virginia. Between 2022 and 2023, the Company's Distribution Planning group submitted to the Transmission Planning group delivery point ("DP") requests for five new substations in the Project area, as described below.

NEED FOR THE PROJECT

To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 MW), the Company is proposing to construct five substations with the targeted sequencing as follows:

Campus	Substation	DP Requested Load (as of 10 years)*	DP Requested ISD *Ramp Start Year*	Target Sequencing of Substation In-Service	Bridging Power
A	Twin Creeks	300 MW	Dec. 2024 *2025*	June 2026	Yes—starting late 2024 • Pleasant View Substation (30 MVA)
B	Sycolin Creek	300 MW	Oct. 2023 *2026*	Sept. 2026	No—Customer B is aware that no bridging power will be available
	Starlight	255 MW	June 2028 *2028*	June 2028	
C	Lunar	278 MW	Aug. 2026 *2026*	Feb. 2028	Yes—starting late 2024 • Edwards Ferry Substation (30 MVA)
	Apollo	239 MW	Jan. 2027 *2027*	Mar. 2028	

* DP Requested Load (as of 10 years) is based upon total load requested by the Customer at 10 years, as well as emerging load in the area.

The following is additional discussion of the need for the proposed substations by campus.

Campus A

The Distribution Planning group submitted an updated DP request dated February 20, 2023, to the Transmission Planning group to construct the Twin Creeks Substation to serve Customer A's data center campus, Campus A, as well as emerging load in eastern Loudoun County, Virginia. The DP request projected a summer peak of 84 MW in 2025, growing to approximately 300 MW in 2035, with a requested in-service date of December 2024.

Specifically, Customer A's new Campus A will be served by the proposed Twin Creeks Substation. The data center campus will be located on Customer A's property in eastern Loudoun County, Virginia, and the data center buildings will be constructed and owned by Customer A.

In order to meet Customer A's ramp up schedule for Campus A beginning in late 2024, the Company determined that bridging power would be required to serve Campus A from the Company's existing Pleasant View Substation (30 MVA) until such time as the Project is energized, at which time the full load will be transferred to the proposed Twin Creeks Substation.

See Section I.C for Customer A's projected load (excluding emerging load in the area).

Campus B

The Distribution Planning group submitted two DP requests to the Transmission Planning group to serve Customer B's data center campus, Campus B, as well as emerging load in eastern Loudoun County, Virginia.

The first DP request, which was updated on October 11, 2023, requested construction of the Sycolin Creek Substation. The DP request projected a summer peak of 6 MW in 2026, growing to approximately 300 MW in 2036, with a requested in-service date of October 2023.

The second DP request, which was updated on November 7, 2022, requested construction of the Starlight Substation. The DP request projected a summer peak of 18 MW in 2028 growing to approximately 255 MW in 2038, with a requested in-service date of June 2028.

Specifically, Customer B's new Campus B will be served by the proposed Sycolin Creek and Starlight Substations. The data center campus will be located west of Belmont Ridge Road in eastern Loudoun County, Virginia, and the data center buildings will be constructed and owned by Customer

B. See Attachment I.A.2 for a copy of a letter expressing support for the proposed Project and reaffirming the need for the proposed Sycolin Creek and Starlight Substations for Campus B.

Customer B is aware that no bridging power will be provided to Campus B as there is no available capacity in the Project area. See Section I.C for Customer A's projected load (excluding emerging load in the area).

Campus C

The Distribution Planning group submitted two DP requests to the Transmission Planning group to serve Customer C's data center, Campus C, as well as emerging load in eastern Loudoun County, Virginia.

The first DP request, dated August 11, 2022, requested construction of the Lunar Substation. The DP request projected a summer peak of 12 MW in 2026, growing to approximately 278 MW in 2036, with a requested in-service date of August 2026.

The second DP request, dated April 6, 2023, requested construction of the Apollo Substation. The DP request projected a summer peak of 27 MW in 2027 growing to approximately 239 MW in 2037, with a requested in-service date of January 2027.

Specifically, Customer C's new Campus C will be served by the proposed Lunar and Apollo Substations. The data center campus will be located south of Rt. 7 in eastern Loudoun County, Virginia, and the data center buildings will be constructed and owned by Customer C.

In order to meet Customer C's ramp schedule for Campus C beginning in late 2024, the Company determined that bridging power would be required to serve Campus C from the Company's existing Edwards Ferry Substation (30 MVA) until such time as the Project is energized, at which time the full load will be transferred to the proposed Lunar and Apollo Substations.

See Section I.C. for Customer A's projected load (excluding emerging load in the area).

Attachment I.A.3 provides the existing one-line diagram of the area transmission system in the Leesburg Load Area, and Attachment I.A.4 provides a one-line diagram of the transmission system in the Leesburg Load Area after the proposed Project is energized on September 30, 2028, which includes all baseline and supplemental projects in the Project area that have been submitted to PJM as of December 2023.

THE PROPOSED PROJECT

Apollo-Twin Creeks Lines

To construct the new 230 kV Apollo-Twin Creeks Lines, the Company proposes to cut its existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 and extend a new double circuit overhead 230 kV transmission line approximately 1.9 miles to the proposed Apollo Substation. The cut in and construction of the Project will result in the following lines:

Origin Station	Termination Station	Line Name and Number
Pleasant View	Twin Creeks	Pleasant View-Twin Creeks Line #2320
Edwards Ferry	Twin Creeks	Edwards Ferry-Twin Creeks Line #203
Twin Creeks	Sycolin Creek	Sycolin Creek-Twin Creeks Line #2316
Twin Creeks	Sycolin Creek	Sycolin Creek-Twin Creeks Line #2317
Sycolin Creek	Starlight	Starlight-Sycolin Creek Line #2334
Sycolin Creek	Starlight	Starlight-Sycolin Creek Line #2335
Starlight	Lunar	Lunar-Starlight Line #2340
Starlight	Lunar	Lunar-Starlight Line #2341
Lunar	Apollo	Apollo-Lunar Line #2342
Lunar	Apollo	Apollo-Lunar Line #2343

From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way. Notably, there are two segments of the proposed Apollo-Twin Creeks Lines where the right-of-way is 140 feet in width. The first is an approximately 0.2-mile segment where the proposed Apollo-Twin Creeks Lines expand to a 140-foot-wide right-of-way in order to feasibly cross under the future Aspen-Golden Lines and enter the proposed Sycolin Creek Substation. The second is an approximately 0.1-mile segment where the proposed Apollo-Twin Creeks Lines leave the proposed Starlight Substation and cross under the future Aspen-Golden Lines, which requires the structure configuration to switch from double circuit monopoles (vertical) to two-pole structures (delta) and then back to double circuit monopoles (vertical) for the remainder of the route. See Attachment II.A.6.

The proposed Apollo-Twin Creeks Lines—which will interconnect the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations, terminating at the proposed Apollo Substation—will be supported primarily by double circuit dulled galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA. The proposed Apollo-Twin Creeks Lines will be constructed to source the five new substations, as there is no existing transmission infrastructure source that can feed the proposed substations.

The Company identified an approximately 1.9-mile overhead Proposed Route for the Apollo-Twin Creeks Lines. No viable alternative routes were identified that maximize collocation opportunities and feasibly interconnect the proposed substations located on the Customers' Campuses and, as such, the Company is

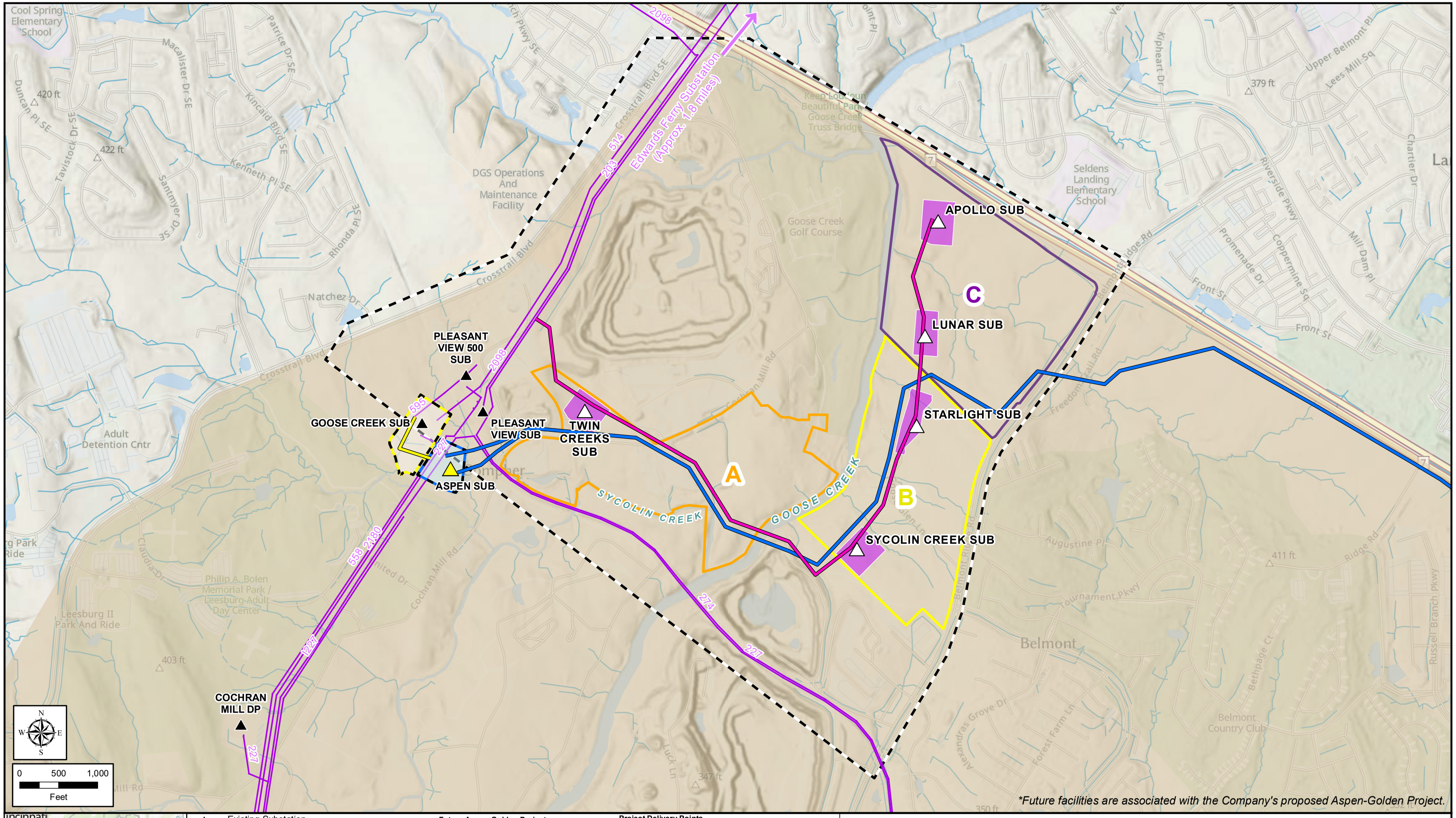
proposing this Proposed Route for Commission consideration and notice. Discussion of the Proposed Route, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and discussed in more detail in the Routing Study included with the Application.

Substations

As part of the Project, the Company proposes to construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company. These substations include the Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation. See Section II.C for a description of the substations, as well as one-line diagrams and general arrangements.

***

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



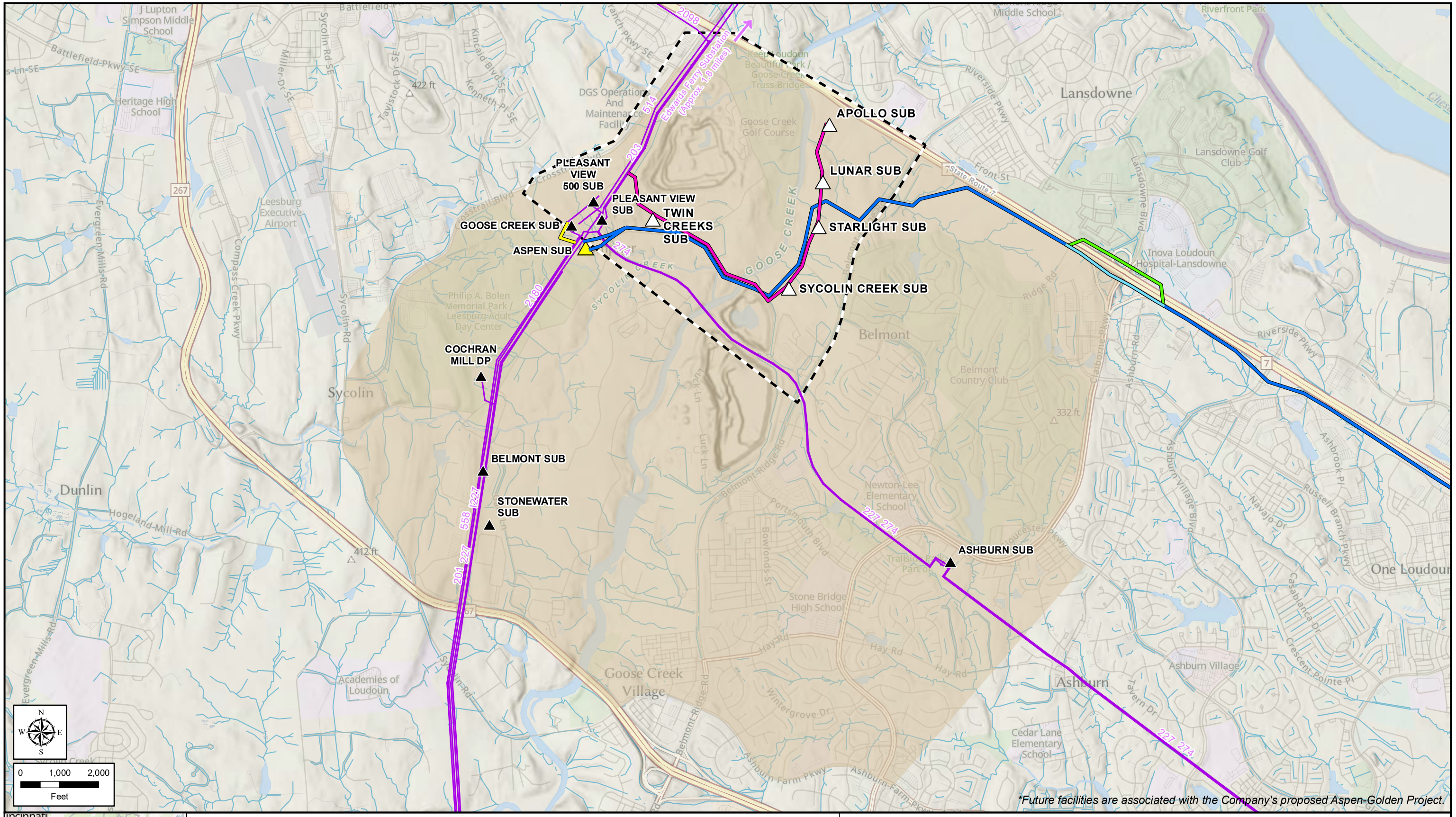
*Future facilities are associated with the Company's proposed Aspen-Golden Project.

Attachment I.A.1.a
Project Overview
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

Attachment I.A.1.a



*Future facilities are associated with the Company's proposed Aspen-Golden Project.

Attachment I.A.1.b
Leesburg Load Area
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

Attachment I.A.1.b

March 20, 2024

Stephen Hudson
Electric T&D Projects Manager
John Mulligan
Transmission Strategic Projects Advisor
5000 Dominion Boulevard
Glen Allen, VA 23060

RE: Support for Dominion Energy Virginia's Applications for the Aspen to Golden 500/230 kV and Twin Creeks to Apollo 230 kV Transmission Line Projects

Dear Mr. Hudson and Mr. Mulligan:

On behalf of SDC Capital Partners LLC ("SDC"), I write in support of Dominion's application to the Virginia State Corporation Commission for approval of the above referenced projects (together "Projects"; separately, "Aspen Project" and "Twin Project").

The Projects are important for the continued economic growth in Loudoun County in connection with the data center industry. This growth supports state and local revenue needs, as well as providing substantial construction and operational employment in the region. Specifically, the Twin Project will support our and other data center developers' delivery point requests to serve planned data centers located south of Route 7 and west of Belmont Ridge Road in Loudoun.

SDC's delivery point request is documented in Load Letters submitted to Dominion on October 3, 2023. The requested load and ramp schedule remain unchanged as SDC plans to develop its 111-acre, by-right campus with power-dense facilities capable of supporting AI compute workloads.

SDC is pleased with Dominion's efforts to develop the Projects cooperatively with the many stakeholders in the project area. Specifically, SDC appreciates Dominion's regular outreach and coordination with it, the other data center developers to be served by this Twin Project, the County, and other stakeholders to develop a route that minimizes impacts to important resources in the area, and efficiently provides necessary service to it and others. Through these discussions, SDC also learned about the Aspen Project, and the need to route a portion of that project through the same areas that the Twins Project will traverse. SDC understands that the Aspen Project will support needed reliability and capacity to the larger Loudoun County data center cluster.

Of particular note, Dominion worked with SDC to coordinate with Goose Creek advocates such as the Goose Creek Association and Goose Creek Scenic River Advisory Committee to limit visual and physical impacts to the Creek and its buffers by the Projects. Dominion also worked with SDC to coordinate with the Belmont Community Association, which is a significant

817 Broadway, 10th Floor
New York, NY 10003

neighborhood near SDC's campus. Ultimately, the preferred route through SDC's property for the Projects gained broad consensus from the stakeholders and SDC.

Dominion has shared with SDC its review of potential impacts and the routing alternatives Dominion has evaluated for the Projects. With respect to the Twin Project, SDC agrees with Dominion that its proposed Route is the best solution when all facts and circumstances are considered, including the portions of the route that cross SDC's property. SDC also agrees with Dominion that the portion of its proposed Route for the Aspen Project in the area of the Twin Project is the best solution when all facts and circumstances are considered, including the portions of the Aspen Project that cross its property.

SDC supports Dominion's proposed routings for the Projects and, if approved by the State Corporation Commission, will work cooperatively with Dominion to permit those Projects to be located on its land as needed.

SDC looks forward to continuing to work with Dominion and its neighbors to ensure these Projects are permitted and timely completed.

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

Sincerely,

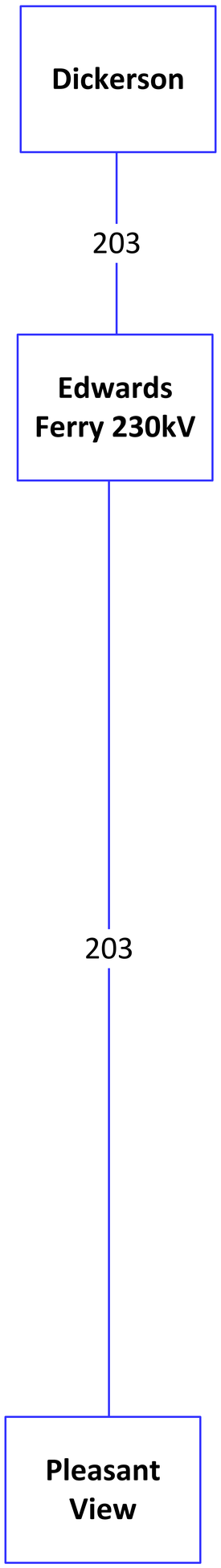
SDC Capital Partners, LLC

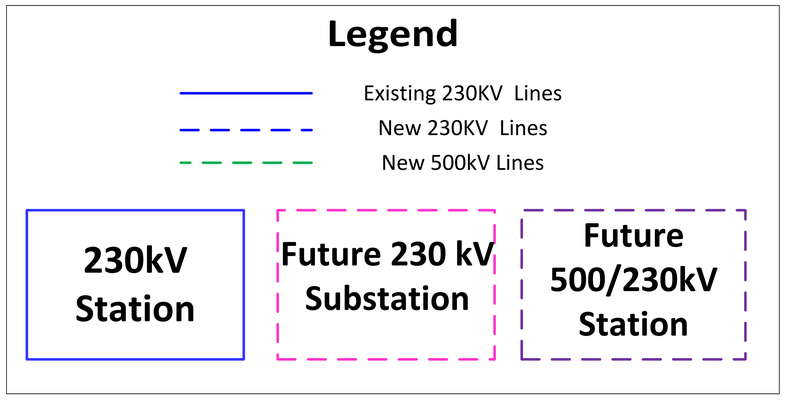
Todd Aaron

_____

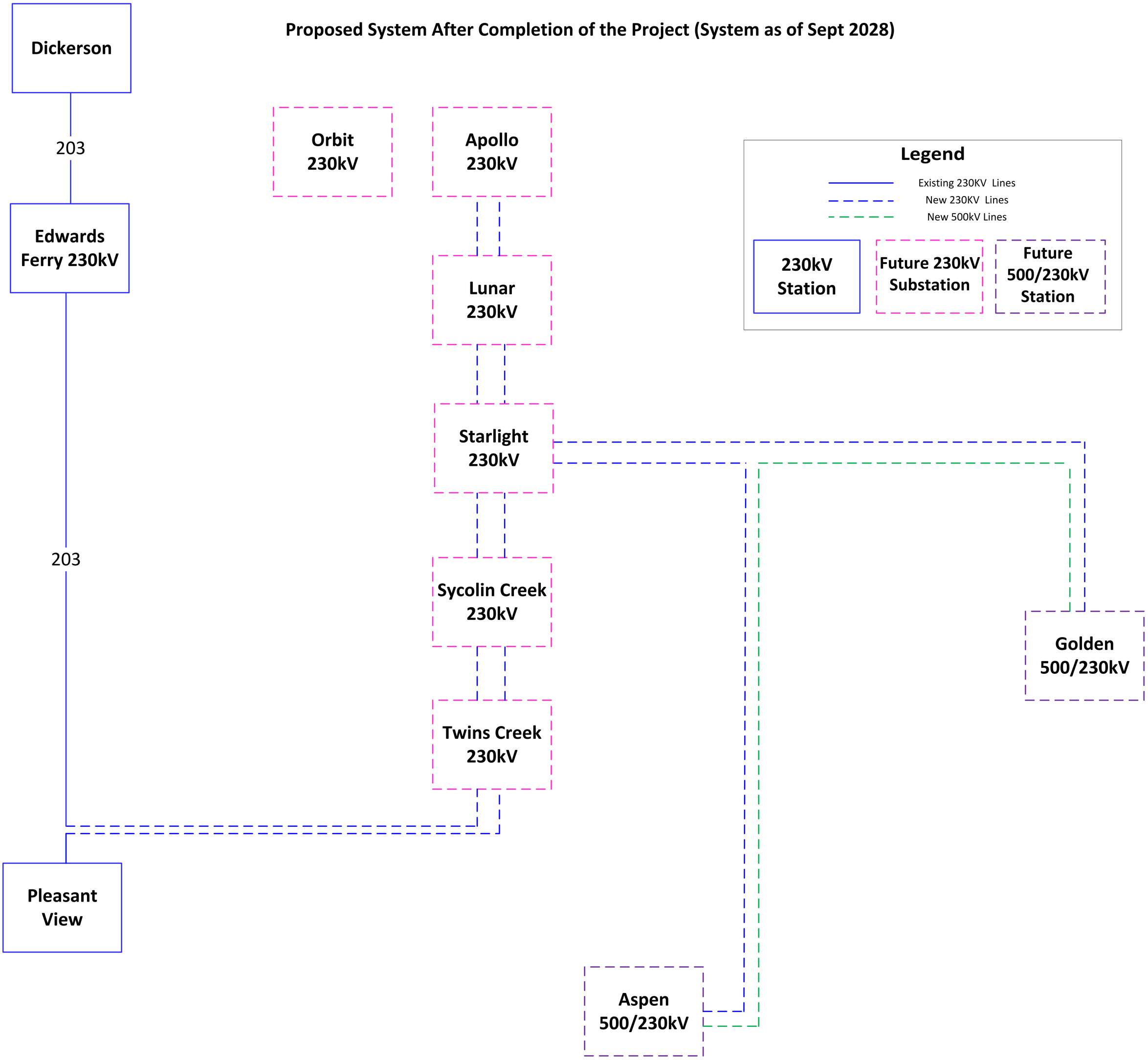
Name: Todd Aaron
Title: Managing Partner

Existing System (System as of March 2024)





Proposed System After Completion of the Project (System as of Sept 2028)



I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: **Engineering Justification for Project**

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

See Section I.A of the Appendix.

Known Future Projects

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

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

Based on the DP requests for the proposed Twin Creeks, Sycolin Creek, Starlight, Apollo, and Lunar Substations discussed in Section I.A, the Company anticipates that the total load of the five substations will exceed 300 MW in the future and hence will require a third source to connect the substations in order to mitigate a potential PJM 300 MW N-1-1 violation. When that need arises in the future, the Company plans to cut the future 230 kV Aspen-Golden Line #2333 into and out of the proposed Starlight Substation in order to support connection of all five substations with a third 230 kV source. This potential future work requires the completion of the proposed Project.[15]

[15] As depicted on Attachment I.A.4, the future 230 kV Aspen-Golden Line #2333 would be cut into and out of the proposed Starlight Substation. After the proposed Starlight Substation is constructed and at such time as needed, the Company will install one three-pole structure approximately 0.03 mile from the proposed Starlight Substation to connect the future 230 kV Aspen-Golden Line #2333 to one backbone structure in the proposed Starlight Substation,

The Company received another DP request in the vicinity of the proposed Project for one new substation, currently named Orbit Substation. The future Orbit Substation is generally located within the same load area as the proposed Project; however, it has its own unique load growth driver and, initially, will not require the proposed Project. See Attachment I.A.4. That said, the Company anticipates that there will be a need to connect the Orbit Substation to the Apollo Substation in the future. A slide identifying the need for the future Orbit Substation was submitted to PJM in December 2023. The solution slide has not yet been presented to PJM.

Planning Studies

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

For this Project, the Company's Distribution Planning group first analyzed Customer A's, Customer B's, and Customer C's contract load information for the three data center developments. Based on this total combined contract load, the Distribution Planning group determined that it was not feasible to serve this amount of load from any of the Company's primary sources of distribution power in the load area—namely, the Edwards Ferry, Ashburn, and Pleasant View Substations. Specifically, the Company determined that connecting the Customers' total combined contract load to the existing Edwards Ferry Substation, Ashburn Substation, or Pleasant View Substation would result in transformer overloads and violations of the NERC 300 MW reliability criteria, as discussed in Section I.C.

See also Section I.C for discussion of the interconnection requirements for transmission facilities, and Section I.A as to load at full build out (including emerging load) at the various substations and bridging power offered, as available.

Facilities List

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

See Attachment I.A.4 for transmission infrastructure planned for the Leesburg Load Area, which includes all baseline and supplemental projects in the Project area that

utilizing three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA. The new three-pole structure will be constructed entirely within the future Aspen-Golden Lines right-of-way, assuming Commission approval of the future Aspen-Golden Lines as proposed in the Aspen-Golden Application. The Company anticipates that this future work will be needed to resolve a 300 MW load loss violation in the event of an N-1-1 scenario related to the loss of both of the proposed Apollo-Twin Creeks Lines. The Company's work associated with connecting the future 230 kV Aspen-Golden Line #2333 to the proposed Starlight Substation is not a component of this Project and the Company considers this work described herein to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. As this work is not a component of the proposed Project, the costs associated with this work are not included in the total Project costs.

have been submitted to PJM as of December 2023. See Attachment I.G.1 for existing and future transmission facilities.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Leesburg Load Area where the three new data center campuses are located is in the eastern Leesburg area in Loudoun County, Virginia. For purposes of this Application, the Leesburg Load Area is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and State Route 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway). See Attachment I.A.1.a for a map of the general locations of the data center projects that comprise the need for the Project, Attachment I.A.1.b for a map depicting the approximate boundary of the Leesburg Load Area, and Attachment I.G.1 for the portion of the Company's transmission facilities in the area of the proposed Project.

The Company's existing Edwards Ferry, Ashburn, and Pleasant View Substations are the primary sources of distribution power in the Leesburg Load Area. The total load at the Customers' new data center campuses is projected to be approximately 1,256 MVA[16] in 10 years. Adding the load from the Customers' planned data centers to those existing substations would result in overload conditions and NERC transmission system reliability criteria violations, as discussed below. As a result, the proposed Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are needed to provide the primary sources of distribution power for the Customers' new data center developments.

Campus A

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

- Attachment I.C.1.a shows historical and projected loading at Pleasant View Substation with existing project loads and without any of the Customers' projected load.

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

- Attachment I.C.1.b shows historical and projected loading at Pleasant View and Ashburn Substations with existing project loads, with Customer A's projected load, and without Twin Creeks Substation.

- Attachment I.C.1.c shows historical and projected loading at Pleasant View and Ashburn Substations with existing project loads, and with Customer A's projected load until the energization of Twin Creeks Substation (2026).

- Attachment I.C.1.d shows historical and projected loading at Pleasant View and Ashburn Substations with existing project loads, and with Customer A's projected bridging power until the energization of Twin Creeks Substation (2026).

Campus B

Attachment I.C.2 shows loading (MVA), as follows:

- Attachment I.C.2.a shows projected loading at Twin Creeks Substation upon energization (2026), with Customer A's projected full load.

- Attachment I.C.2.b shows projected loading at Twin Creeks Substation upon energization (2026), with Customer A's projected load and with Customer B's projected load, and without Sycolin Creek or Starlight Substations.

- Attachment I.C.2.c shows projected loading at Twin Creeks Substation upon energization (2026), with Customer A's projected load and with Customer B's projected load until the energization of Sycolin Creek Substation (2026) and Starlight Substation (2028).

Campus C

Attachment I.C.3 shows loading (MVA), as follows:

- Attachment I.C.3.a shows historical and projected loading at Edwards Ferry Substation with existing project loads and Customer C's projected bridging power, and without Lunar or Apollo Substations.

- Attachment I.C.3.b shows historical and projected loading at Edwards Ferry Substation with existing project loads and Customer C's projected load, and without Lunar or Apollo Substations.

- Attachment I.C.3.c shows historical and projected loading at Edwards Ferry Substation with existing project loads and Customer C's projected load until the energization of Lunar Substation (2028) and Apollo Substation (2028).

- Attachment I.C.3.d shows historical and projected loading at Edwards Ferry Substation with existing project loads, and with Customer C's projected

bridging power and projected load until the energization of Lunar Substation (2028) and Apollo Substation (2028).

Note that all of the Section I.C attachments include only normal feed circuits; they do not include any alternate feed loads. To be clear, that means there are no alternate feed loads from the three Customers or from other customers that have existing alternate feed contracts in any of the Section I.C attachments. Also note that the load tables in the Section I.C attachments show actual and projected peak loading in MVA based on the Customers' contracted load, exclusive of emerging load in the Leesburg Load Area.

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

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

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

In order to maintain reliable service to the Company's customers and to comply with mandatory NERC Reliability Standards, specifically Facility Connection ("FAC") standard FAC-001,[17] the Company's Facilities Interconnection

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

Requirement ("FIR")[18] document addresses the interconnection requirements of generation, transmission, and electricity end-user facilities. The purpose of the NERC FAC standards is to avoid adverse impacts on reliability by requiring that each TO establish facility connection and performance requirements in accordance with FAC-001, and the TO's and end-users meet and adhere to the established facility connection and performance requirements in accordance with FAC-002.[19]

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

The Company's FIR document (Section C.2.8) requires that the total load in any distribution substation not exceed 300 MW to ensure system reliability and to remain in compliance with NERC mandated reliability criteria. If the projected load inside a given substation will exceed 300 MW, the Company must create a project that eliminates the overload, such as constructing new substations as proposed herein.

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

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

2) The amount of direct-connected load at any substation is limited to 300 MW (Company's Transmission Planning Criteria Exhibit A, Section C.2.8);

3) N-1-1 contingencies load loss is limited to 300 MW (PJM Manual 14B Section 2.3.8, Attachment D, Attachment D-1, Attachment F); and

4) The minimum load levels within a 10-year planning horizon for the direct interconnection to existing transmission lines is 30 MW for a 230 kV delivery (Company's FAC-001 Section 6, Load Criteria – End User).[20]

Twin Creeks Substation (Campus A)

As shown in Attachment I.C.1.b and Attachment I.C.1.c, the Company's existing

[18] The Company's FIR document (effective April 1, 2023) is available at: https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-connection-requirements.pdf?la=en&rev=f280781e90cf47f69ea526c944c9c347&hash=82DD2567D0B033C47536134B8C4D5.

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

[20] *See* the Company's Electric Transmission Planning Criteria, available at: https://www.pjm.com/-/media/planning/planning-criteria/dominion-planning-criteria.ashx.

Pleasant View and Ashburn Substations are projected to have transformer overloads by 2024, as well as violate NERC 300 MW criteria by 2024 with the addition of Campus A's projected load.

These overloads and violation will be avoided by limiting bridging capacity available to Customer A to 30 MVA from Pleasant View Substation until the proposed Twin Creeks Substation is energized in 2026 to feed the full Campus A load.

Based on these stated projected overloads and the criteria violation identified above, the Company needs to construct the Twin Creeks Substation to serve Campus A. To address these issues until the Twin Creeks Substation comes online in 2026, the Company's Distribution Planning group has arranged to provide bridging power to the Customer, as discussed above and in Section I.A.

Sycolin Creek and Starlight Substations (Campus B)

As shown in Attachment I.C.2.b, Twin Creeks Substation is projected to have transformer overloads by 2026, as well as violate NERC 300 MW criteria by 2026 if the Campus B full load were to be served by Twin Creeks Substation without the Sycolin Creek and Starlight Substations.

As shown in Attachment I.C.2.c, Twin Creeks Substation is projected to violate NERC 300 MW criteria by 2026 if the Campus B full load were to be served by Twin Creeks Substation until the energization of the Sycolin Creek Substation (2026) and Starlight Substation (2028).

As there is no available capacity in the Project area, and in order to avoid these stated projected overloads and the criteria violation at Twin Creeks Substation described above, all services provided to Campus B will be from Sycolin Creek Substation when it comes online in 2026 and Starlight Substation when it comes online in 2028. Accordingly, the Company needs to construct the Sycolin Creek and Starlight Substations to serve Campus C.

Lunar and Apollo Substations (Campus C)

As shown in Attachment I.C.3.b and Attachment I.C.3.c, the Company's existing Edwards Ferry Substation is projected to have transformer overloads by 2026, as well as violate NERC 300 MW criteria by 2028 with the addition of Campus C's projected load.

These overloads and violation will be avoided by limiting bridging capacity available to Customer C to 30 MVA from Edwards Ferry Substation until the proposed Lunar and Apollo Substations are energized in 2028 to feed the full Campus C load.

Based on these stated projected overloads and the criteria violation identified above, the Company needs to construct the Lunar and Apollo Substations to serve

Campus C. To address these issues until the Lunar and Apollo Substations come online in 2028, the Company's Distribution Planning group has arranged to provide bridging power to the Customer, as discussed above and in Section I.A.

Table I.C.1.a																	
Pleasant View Load Area			(Load and Ratings in MVA)														
Pleasant View Substation (Loads contain existing project loads loads only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			145	176	147	126	168	193.96	211.5	235.5	207.5	212.5	216.5	220.5	225.5	230.2	230.2
Substation Total Calculation for 300MW NERC Limit			137.8	167.2	139.7	119.7	159.6	184.3	200.9	223.7	197.1	201.9	205.7	209.5	214.2	218.7	218.7
Transformer	Nameplate	NOL															
TX #4	75	80	41	42	42	45	46	49	51	54	57	59	62	65	69	72.7	72.7
TX #1	84	90	48	76	47	45	71	77.96	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
TX #2	75	80	56	58	58	36	51	46	47	48	49	50	51	52	53	54	54
TX #5	84	90	0	0	0	0	0	21	34	54	22	24	24	24	24	24	24
Ashburn Load Area			(Load and Ratings in MVA)														
Ashburn Substation (Loads contain existing project loads loads only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			102	104	103	100	112	97.1	98.7	99.2	100.8	102.3	103.9	105.4	107	108.6	110
Substation Total Calculation for 300MW NERC Limit			96.9	98.8	97.9	95	106.4	92.2	93.8	94.2	95.8	97.2	98.7	100.1	101.7	103.2	104.5
Transformer	Nameplate	NOL															
TX #1	75	80	45	47	47	45	48	43	44	44	45	46	47	48	49	50	51
TX #2	75	80	57	57	56	55	64	54.1	54.7	55.2	55.8	56.3	56.9	57.4	58	58.6	59

Table I.C.1.b																	
Pleasant View Load Area			(Load and Ratings in MVA)														
Pleasant View Substation (Loads contain existing project loads loads and new Customer A load, no Twin Creeks)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			145	176	147	126	168	419.96	468.3	500.3	499.1	504.1	508.1	512.1	517.1	521.8	521.8
Substation Total Calculation for 300MW NERC Limit			137.8	167.2	139.7	119.7	159.6	399	444.9	475.3	474.1	478.9	482.7	486.5	491.2	495.7	495.7
Transformer	Nameplate	NOL															
TX #4	75	80	41	42	42	45	46	113	115.8	118.8	121.8	123.8	126.8	129.8	133.8	137.5	137.5
TX #1	84	90	48	76	47	45	71	77.96	109.5	117.5	144.3	144.3	144.3	144.3	144.3	144.3	144.3
TX #2	75	80	56	58	58	36	51	127	111	112.8	113.8	114.8	115.8	116.8	117.8	118.8	118.8
TX #5	84	90	0	0	0	0	0	102	132	151.2	119.2	121.2	121.2	121.2	121.2	121.2	121.2
Ashburn Load Area			(Load and Ratings in MVA)														
Ashburn Substation (Loads contain existing project loads loads and new Customer A load, no Twin Creeks)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			102	104	103	100	112	274.9	350.5	358.4	392.4	393.9	395.5	397	398.6	400.2	401.2
Substation Total Calculation for 300MW NERC Limit			96.9	98.8	97.9	95	106.4	261.2	333	340.5	372.8	374.2	375.7	377.2	378.7	380.2	381.1
Transformer	Nameplate	NOL															
TX #1	75	80	45	47	47	45	48	107.8	138.8	141.2	174.6	175.6	176.6	177.6	178.6	179.6	180.6
TX #2	75	80	57	57	56	55	64	167.1	211.7	217.2	217.8	218.3	218.9	219.4	220	220.6	220.6

Table I.C.1.c																	
Pleasant View Load Area			(Load and Ratings in MVA)														
Pleasant View Substation (Loads contain existing project loads loads and new Customer A load, until Twin Creeks energized)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			145	176	147	126	168	419.96	435.9	423.5	207.5	212.5	216.5	220.5	225.5	230.2	230.2
Substation Total Calculation for 300MW NERC Limit			137.8	167.2	139.7	119.7	159.6	399	414.1	402.3	197.1	201.9	205.7	209.5	214.2	218.7	218.7
Transformer	Nameplate	NOL															
TX #4	75	80	41	42	42	45	46	113	83.4	86.4	57	59	62	65	69	72.7	72.7
TX #1	84	90	48	76	47	45	71	77.96	109.5	105.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
TX #2	75	80	56	58	58	36	51	127	111	80.4	49	50	51	52	53	54	54
TX #5	84	90	0	0	0	0	0	102	132	151.2	22	24	24	24	24	24	24
Ashburn Load Area			(Load and Ratings in MVA)														
Ashburn Substation (Loads contain existing project loads loads and new Customer A load, until Twin Creeks energized)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			102	104	103	100	112	274.9	350.5	226.4	100.8	102.3	103.9	105.4	107	108.6	108.6
Substation Total Calculation for 300MW NERC Limit			96.9	98.8	97.9	95	106.4	261.2	333	215.1	95.8	97.2	98.7	100.1	101.7	103.2	103.2
Transformer	Nameplate	NOL															
TX #1	75	80	45	47	47	45	48	107.8	138.8	106.4	45	46	47	48	49	50	50
TX #2	75	80	57	57	56	55	64	167.1	211.7	120	55.8	56.3	56.9	57.4	58	58.6	58.6
Twin Creeks Substation (Loads contain new Customer Load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	291.2	291.6	291.6	291.6	291.6	291.6	291.6	291.6
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	276.6	277	277	277	277	277	277	277
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	64.8	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #2	112	120	0	0	0	0	0	0	0	64.4	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #3	112	120	0	0	0	0	0	0	0	64.8	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #4	112	120	0	0	0	0	0	0	0	97.2	97.2	97.2	97.2	97.2	97.2	97.2	97.2

Table I.C.1.d																	
Pleasant View Load Area			(Load and Ratings in MVA)														
Pleasant View Substation (Loads contain existing project loads loads and Customer A bridging load, until Twin Creeks energized)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			145	176	147	126	168	193.96	211.5	235.5	207.5	212.5	216.5	220.5	225.5	230.2	231.2
Substation Total Calculation for 300MW NERC Limit			137.8	167.2	139.7	119.7	159.6	184.3	200.9	223.7	197.1	201.9	205.7	209.5	214.2	218.7	219.6
Transformer	Nameplate	NOL															
TX #4	75	80	41	42	42	45	46	49	51	54	57	59	62	65	69	72.7	72.7
TX #1	84	90	48	76	47	45	71	77.96	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
TX #2	75	80	56	58	58	36	51	46	47	48	49	50	51	52	53	54	55
TX #5	84	90	0	0	0	0	0	21	34	54	22	24	24	24	24	24	24
Ashburn Load Area			(Load and Ratings in MVA)														
Ashburn Substation (Loads contain existing project loads loads and Customer A bridging load, until Twin Creeks energized)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			102	104	103	100	112	97.1	98.7	99.2	100.8	102.3	103.9	105.4	107	108.6	109.6
Substation Total Calculation for 300MW NERC Limit			96.9	98.8	97.9	95	106.4	92.2	93.8	94.2	95.8	97.2	98.7	100.1	101.7	103.2	104.1
Transformer	Nameplate	NOL															
TX #1	75	80	45	47	47	45	48	43	44	44	45	46	47	48	49	50	51
TX #2	75	80	57	57	56	55	64	54.1	54.7	55.2	55.8	56.3	56.9	57.4	58	58.6	58.6
Twin Creeks Substation (Loads contain new Customer Load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	291.2	291.6	291.6	291.6	291.6	291.6	291.6	291.6
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	276.6	277	277	277	277	277	277	277
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	64.8	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #2	112	120	0	0	0	0	0	0	0	64.4	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #3	112	120	0	0	0	0	0	0	0	64.8	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #4	112	120	0	0	0	0	0	0	0	97.2	97.2	97.2	97.2	97.2	97.2	97.2	97.2

Table I.C.2.a																	
Twin Creeks Load Area			(Load and Ratings in MVA)														
Twin Creeks Substation (Loads contains Customer A Load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	291.2	291.6	291.6	291.6	291.6	291.6	291.6	291.6
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	276.6	277	277	277	277	277	277	277
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	64.8	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #2	112	120	0	0	0	0	0	0	0	64.4	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #3	112	120	0	0	0	0	0	0	0	64.8	64.8	64.8	64.8	64.8	64.8	64.8	64.8
TX #4	112	120	0	0	0	0	0	0	0	97.2	97.2	97.2	97.2	97.2	97.2	97.2	97.2

Table I.C.2.b																	
Twin Creeks Load Area			(Load and Ratings in MVA)														
Twin Creeks Substation (Loads contains Customer A Load and Customer B load, no Sycolin Creek and Starlight)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	381.52	502.52	655.052	774.584	864.584	923.318	923.318	923.318
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	362.4	477.4	622.3	735.9	821.4	877.2	877.2	877.2
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	103.96	121.96	153.804	177.804	193.804	203.593	203.593	203.593
TX #2	112	120	0	0	0	0	0	0	0	78.40	158.40	222.09	261.93	289.93	309.51	309.51	309.51
TX #3	112	120	0	0	0	0	0	0	0	66.80	78.80	116.80	156.64	190.64	210.22	210.22	210.22
TX #4	112	120	0	0	0	0	0	0	0	132.36	143.36	162.36	178.20	190.20	199.99	199.99	199.99

Table I.C.2.c																
Twin Creeks Load Area			(Load and Ratings in MVA)													
Twin Creeks Substation (Loads contains Customer A Load and Customer B load, until Sycolin Creek and Starlight energized)																
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	318.2	291.2	349.41	291.6	291.6	291.6	291.6	291.6
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	302.3	276.6	331.9	277	277	277	277	277
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	71.8	64.8	109.01	64.8	64.8	64.8	64.8	64.8
TX #2	112	120	0	0	0	0	0	0	0	78.4	64.40	71.40	64.80	64.8	64.8	64.8	64.8
TX #3	112	120	0	0	0	0	0	0	0	67.8	64.80	71.80	64.80	64.8	64.8	64.8	64.8
TX #4	112	120	0	0	0	0	0	0	0	100.2	97.20	97.20	97.20	97.2	97.2	97.2	97.2
Sycolin Creek Load Area			(Load and Ratings in MVA)														
Sycolin Creek Substation (Loads contain Customer B load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	26	121	227.532	272.064	287.064	287.064	287.064	287.064
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	24.7	115	216.2	258.5	272.7	272.7	272.7	272.7
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	7	28	50.844	62.844	65.844	65.844	65.844	65.844
TX #2	112	120	0	0	0	0	0	0	0	6	26	50.844	62.844	65.844	65.844	65.844	65.844
TX #3	112	120	0	0	0	0	0	0	0	8.00	34.00	56.84	59.69	59.69	59.69	59.69	59.69
TX #4	112	120	0	0	0	0	0	0	0	2.00	18.00	42.00	56.84	65.84	65.84	65.84	65.84
TX #5	112	120	0	0	0	0	0	0	0	3.00	15.00	27.00	29.84	29.84	29.84	29.84	29.84
Starlight Creek Load Area			(Load and Ratings in MVA)														
Starlight Creek Substation (Loads contain Customer B load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	0	0	42	114	186	238.734	238.734	238.734
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	0	0	39.9	108.3	176.7	226.8	226.8	226.8
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	0	0	7	19	31	39.789	39.789	39.789
TX #2	84	90	0	0	0	0	0	0	0	0	0	14	38	62	79.578	79.578	79.578
TX #3	84	90	0	0	0	0	0	0	0	0	0	14	38.00	62.00	79.58	79.58	79.58
TX #4	112	120	0	0	0	0	0	0	0	0	0	7	19.00	31.00	39.79	39.79	39.79

Table I.C.3.a																	
Edwards Ferry Load Area			(Load and Ratings in MVA)														
Edwards Ferry Substation (Contains existing load and Customer C bridging only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			38	40	40	49	47	80	83	56	59	63	64.8	66.9	70.9	75.2	76
Substation Total Calculation for 300MW NERC Limit			36.1	38	38	46.6	44.7	76	78.9	53.2	56.1	59.9	61.6	63.6	67.4	71.4	72.2
Transformer	Nameplate	NOL															
TX #1	84	90	38	40	40	49	47	80	83	56	59	63	64.8	66.9	70.9	75.2	76

Table I.C.3.b																	
Edwards Ferry Load Area			(Load and Ratings in MVA)														
Edwards Ferry Substation (Loads contains Customer C Load only, no Lunar and Apollo)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			38	40	40	49	47	80	83	93.4	225.4	358.4	464.3	495.2	551.294	555.594	555.594
Substation Total Calculation for 300MW NERC Limit			36.1	38	38	46.6	44.7	76	78.9	88.7	214.1	340.5	441.1	470.4	523.7	527.8	527.8
Transformer	Nameplate	NOL															
TX #1	84	90	38	40	40	49	47	80	83	93.4	225.4	358.4	464.3	495.2	551.294	555.594	555.594

Table I.C.3.c																	
Edwards Ferry Load Area			(Load and Ratings in MVA)														
Edwards Ferry Substation (Loads contains Customer C Load until Lunar and Apollo energized)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			38	40	40	49	47	80	83	91	59	63	64.8	66.9	70.9	75.2	75.2
Substation Total Calculation for 300MW NERC Limit			36.1	38	38	46.6	44.7	76	78.9	86.5	56.1	59.9	61.6	63.6	67.4	71.4	71.4
Transformer	Nameplate	NOL															
TX #1	84	90	38	40	40	49	47	80	83	91	225.4	63	64.8	66.9	70.9	75.2	75.2
Lunar Load Area			(Load and Ratings in MVA)														
Lunar Substation (Loads contain Customer C load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	0	0	40.4	88.4	172.4	222	226.8	226.8
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	0	0	38.4	84	163.8	210.9	215.5	215.5
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	0	0	35.4	59.4	83.4	97.2	97.2	97.2
TX #2	112	120	0	0	0	0	0	0	0	0	0	5	23	47	62.4	64.8	64.8
TX #3	112	120	0	0	0	0	0	0	0	0	0	0.00	6.00	42.00	62.4	64.8	64.8
TX #4 (Alternate Feeds Only)	112	120	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Apollo Load Area			(Load and Ratings in MVA)														
Apollo Substation (Loads contain Customer C load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	0	0	27	114	177.6	201.6	215.694	215.697
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	0	0	25.7	108.3	168.7	191.5	204.9	204.9
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	0	0	12	24	32.4	32.4	32.4	32.4
TX #2	84	90	0	0	0	0	0	0	0	0	0	15	39	59.4	71.4	75.447	75.447
TX #3	84	90	0	0	0	0	0	0	0	0	0	9	30.00	53.40	65.40	75.45	75.45
TX #4	112	120	0	0	0	0	0	0	0	0	0	9	21.00	32.40	32.40	32.40	32.40

Table I.C.3.d																	
Edwards Ferry Load Area			(Load and Ratings in MVA)														
Edwards Ferry Substation (Loads contains Customer C bridging load until Lunar and Apollo energized)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			38	40	40	49	47	80	83	83	59	63	64.8	66.9	70.9	75.2	75.2
Substation Total Calculation for 300MW NERC Limit			36.1	38	38	46.6	44.7	76	78.9	78.9	56.1	59.9	61.6	63.6	67.4	71.4	71.4
Transformer	Nameplate	NOL															
TX #1	84	90	38	40	40	49	47	80	83	83	59	63	64.8	66.9	70.9	75.2	75.2
Lunar Load Area			(Load and Ratings in MVA)														
Lunar Substation (Loads contain Customer C load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	0	0	40.4	88.4	172.4	222	226.8	226.8
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	0	0	38.4	84	163.8	210.9	215.5	215.5
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	0	0	35.4	59.4	83.4	97.2	97.2	97.2
TX #2	112	120	0	0	0	0	0	0	0	0	0	5	23	47	62.4	64.8	64.8
TX #3	112	120	0	0	0	0	0	0	0	0	0	0.00	6.00	42.00	62.4	64.8	64.8
TX #4 (Alternate Feeds Only)	112	120	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Apollo Load Area			(Load and Ratings in MVA)														
Apollo Substation (Loads contain Customer C load only)																	
			2019 Actual Peak Loading (MVA)	2020 Actual Peak Loading (MVA)	2021 Actual Peak Loading (MVA)	2022 Actual Peak Loading (MVA)	2023 Actual Peak Loading (MVA)	2024 Projected Peak Loading (MVA)	2025 Projected Peak Loading (MVA)	2026 Projected Peak Loading (MVA)	2027 Projected Peak Loading (MVA)	2028 Projected Peak Loading (MVA)	2029 Projected Peak Loading (MVA)	2030 Projected Peak Loading (MVA)	2031 Projected Peak Loading (MVA)	2032 Projected Peak Loading (MVA)	2033 Projected Peak Loading (MVA)
Substation Total			0	0	0	0	0	0	0	0	0	27	114	177.6	201.6	215.694	215.697
Substation Total Calculation for 300MW NERC Limit			0	0	0	0	0	0	0	0	0	25.7	108.3	168.7	191.5	204.9	204.9
Transformer	Nameplate	NOL															
TX #1	112	120	0	0	0	0	0	0	0	0	0	12	24	32.4	32.4	32.4	32.4
TX #2	84	90	0	0	0	0	0	0	0	0	0	15	39	59.4	71.4	75.447	75.447
TX #3	84	90	0	0	0	0	0	0	0	0	0	9	30.00	53.40	65.40	75.45	75.45
TX #4	112	120	0	0	0	0	0	0	0	0	0	9	21.00	32.40	32.40	32.40	32.40

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Due to the projected overloads and 300 MW load drop violations described in Section I.A and I.C, no transmission or distribution electrical alternatives were considered.

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, the Company is required to provide analysis of demand-side resources ("DSM") incorporated into the Company's planning studies. DSM is the broad term that includes both energy efficiency ("EE") and demand response ("DR"). In this case, the Company has identified a need for the Project in order to provide requested service and comply with mandatory NERC Reliability Standards, thereby enabling the Company to maintain the overall long-term reliability of its transmission system.[21] Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs because PJM only dispatches DR when the system is under stress (*i.e.*, a system emergency). Accordingly, while existing DSM is considered to the extent the load forecast accounts for it, DR that has been bid previously into PJM's capacity market is not a factor in this particular Application because of the identified need for the Project. Based on these considerations, the evaluation of the Project demonstrated that despite accounting for DSM consistent with PJM's methods, the Project is necessary.

Incremental DSM also will not eliminate the need for the Project. As discussed in Section I.C, the need is based on the Company's obligation to interconnect the new Customers' Campuses consistent with the FIR document and mandatory NERC Reliability Standards. As reflected in Sections I.A and I.C, the Customers' projected load fully built out combined with emerging load in the Project area is approximately 1,372 MW. By way of comparison, statewide, the Company achieved demand savings of 264.8 MW (net) / 404.8 MW (gross) from its DSM Programs in 2022.

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

I. NECESSITY FOR THE PROPOSED PROJECT

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

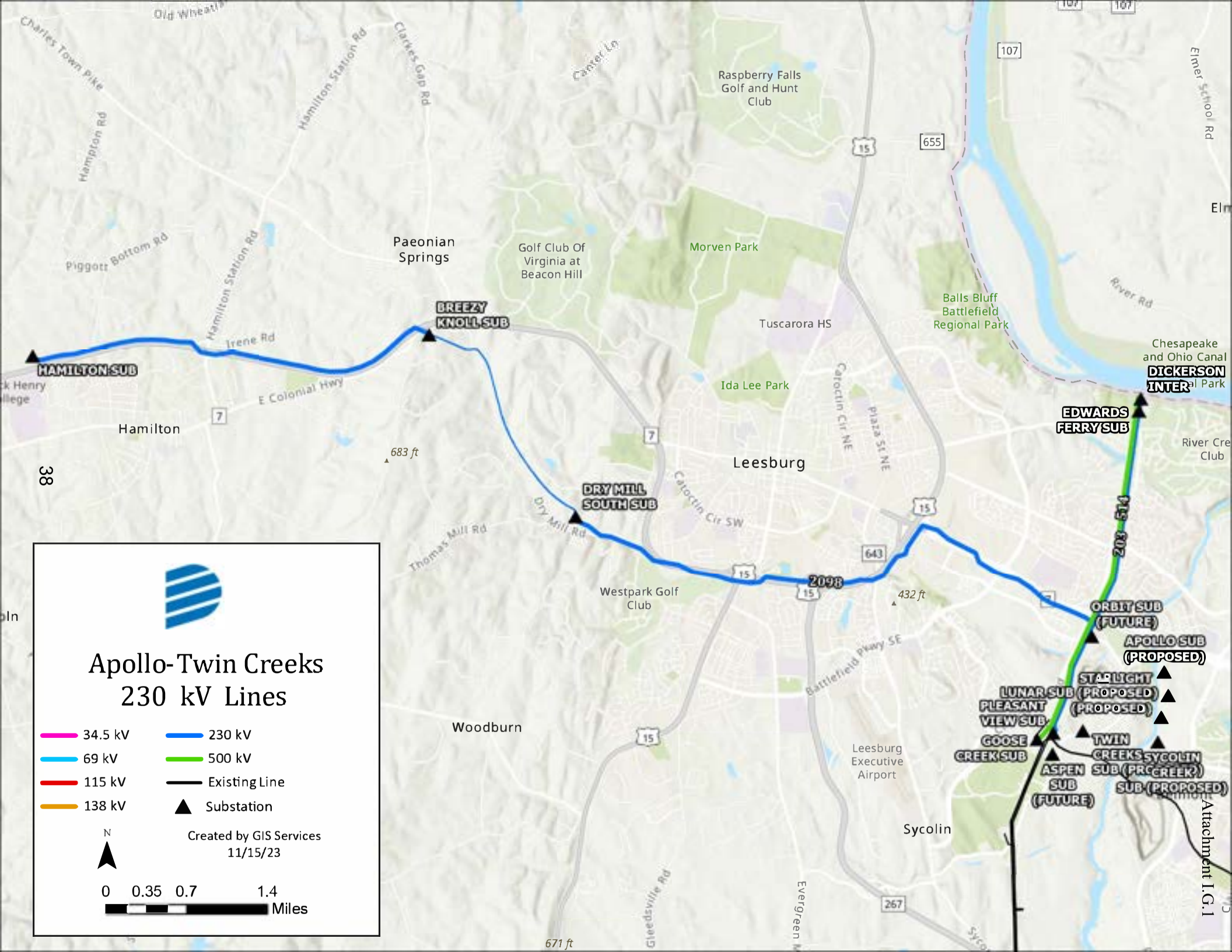
Response: Not applicable.[22]

[22] *But see, supra,* n. 2.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: See Attachment I.G.1.



38

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 target date for the proposed Project is September 30, 2028.

The Company estimates it will take approximately 47 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 October 28, 2024. Should the Commission issue a final order by October 28, 2024, the Company estimates that construction should begin around March 2025, and be completed by September 30, 2028. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which may be particularly challenging due to the amount of new load growth, rebuilds, and new builds scheduled to occur in this load area. Dates may need to be adjusted based on permitting delays or design modifications to comply with additional agency requirements identified during the permitting application process, as well as the ability to schedule outages, and unpredictable delays due to labor shortages or materials/supply issues. This schedule is also contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to purchase land for substation use without the need for additional litigation.

In addition, the Company is actively monitoring regulatory changes and requirements associated with the NLEB and how they could potentially impact construction timing associated with TOYRs. The USFWS has indicated that it plans to issue final NLEB guidance to replace the interim guidance, which expires on March 31, 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS.

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

Any adjustments to this Project schedule resulting from these or similar challenges could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target

date (*i.e.*, September 30, 2028) and a CPCN sunset date (*i.e.*, September 30, 2029) for energization of the Project.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The total estimated conceptual cost of the Project utilizing the Proposed Route is approximately $280.7 million, which includes approximately $31.1 million for transmission-related work and approximately $249.6 million for substation-related work (2023 dollars).[23]

The substation-related costs are broken out by substation in the table below.

Substation-Related Costs by Substation
(Millions (approximate))

Substation	Estimated Conceptual Costs ($M)
Twin Creeks	$57. 3
Sycolin Creek	$32.2
Starlight	$39.1
Lunar	$72.0
Apollo	$49.1

See Section II.C for costs associated with minor substation work at the Company's existing Edwards Ferry and Pleasant View Substations, which are not included in the total Project costs but are provided for informational purposes.

[23] *Supra*, n. 10.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project is classified as a supplemental project initiated by the TO in order to interconnect new customer load, as follows:

Twin Creeks Substation (DOM-2022-0043): The Company presented the need slides at the June 7, 2022 TEAC Meeting (see Attachment I.J.1), and presented the solution slides at the June 6, 2023 TEAC Meeting (see Attachment I.J.4). The Twin Creeks Substation has been assigned Supplemental Project ID s3049 and was included in the 2028 RTEP.

Sycolin Creek Substation (DOM-2022-0042): The Company presented the need slides at the June 7, 2022 TEAC Meeting (see Attachment I.J.1), and presented the solution slides at the June 6, 2023 TEAC Meeting (see Attachment I.J.4). The Sycolin Creek Substation has been assigned Supplemental Project ID s3048 and was included in the 2028 RTEP.

Starlight Substation (DOM-2023-0001): The Company presented the need slides at the February 7, 2023 TEAC Meeting (see Attachment I.J.3), and presented the solution slides at the July 11, 2023 TEAC Meeting (see Attachment I.J.5). While the Starlight Substation has not been assigned a Supplemental ID as of this filing, the substation was originally submitted to PJM as indicated herein and was included in the 2029 RTEP.

Lunar Substation (DOM-2022-0054): The Company presented the need slides at the November 1, 2022 TEAC Meeting (see Attachment I.J.2), and presented the solution slides at the July 11, 2023 TEAC Meeting (see Attachment I.J.5). While the Lunar Substation has not been assigned a Supplemental ID as of this filing, the substation was originally submitted to PJM as indicated herein and was included in the 2029 RTEP.

Apollo Substation (DOM-2022-0055): The Company presented the need slides at the November 1, 2022 TEAC Meeting (see Attachment I.J.2), and presented the solution slides at the July 11, 2023 TEAC Meeting (see Attachment I.J.5). While the Apollo Substation has not been assigned a Supplemental ID as of this filing, the substation was originally submitted to PJM as indicated herein and was included in the 2029 RTEP.

The Project will be 100% cost allocated to DOM Zone.[24]

[24] Note, the Customers will be responsible for any applicable excess facilities charges.

Dominion Supplemental Projects

Transmission Expansion Advisory Committee
June 7, 2022

Needs

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

44

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0042

Process Stage: Need Meeting 06/07/2022

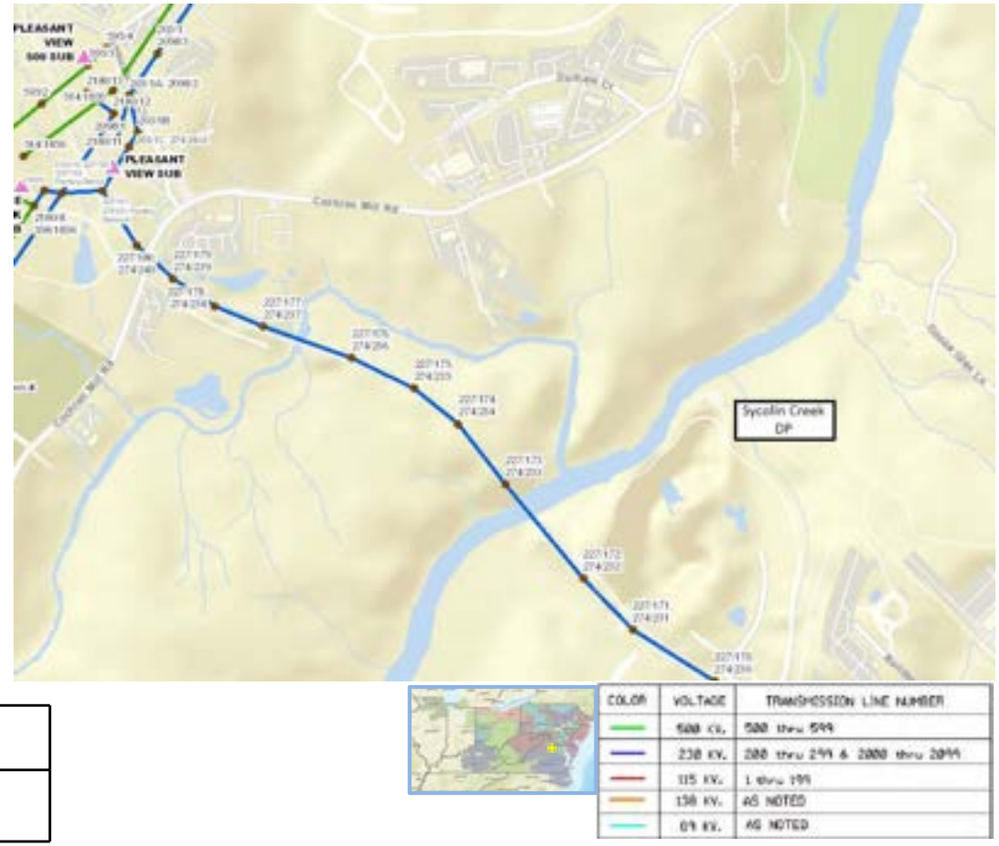
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP Request for a new substation (Sycolin Creek) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 10/31/2023.



Initial In-Service Load	Projected 2027 Load
Summer: 12.0 MW	Summer: 76.0 MW

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0043

Process Stage: Need Meeting 06/07/2022

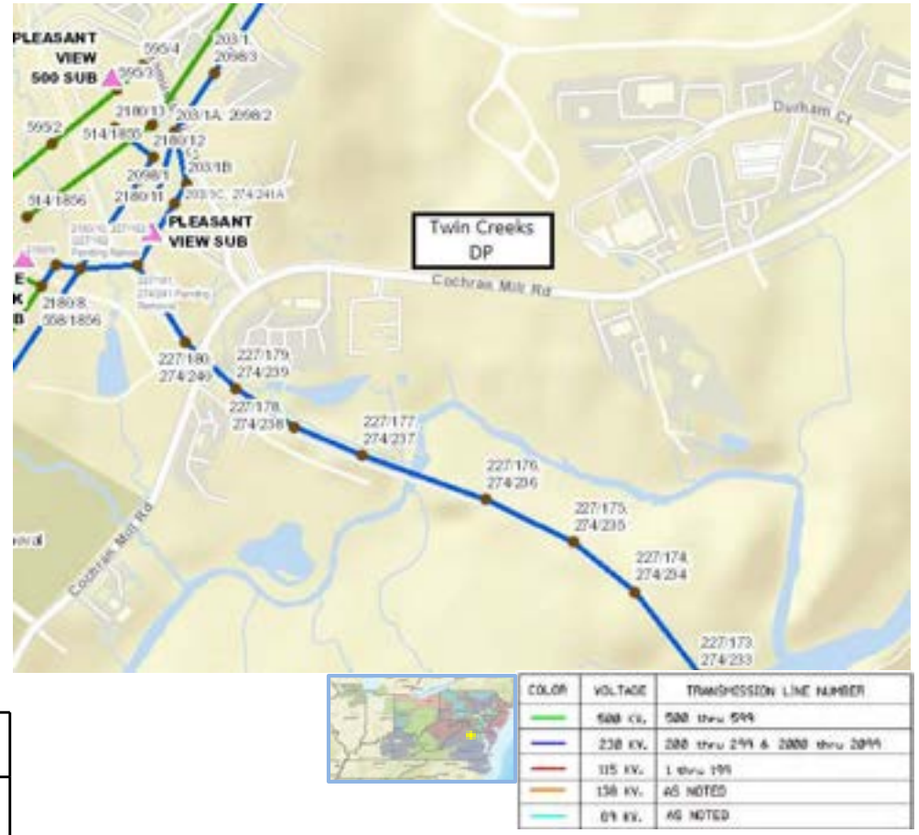
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP Request for a new substation (Twin Creeks) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 12/31/2024.



Initial In-Service Load	Projected 2027 Load
Summer: 84.0 MW	Summer: 202.0 MW

Dominion Supplemental Projects

Transmission Expansion Advisory Committee
November 1, 2022

Needs

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

48

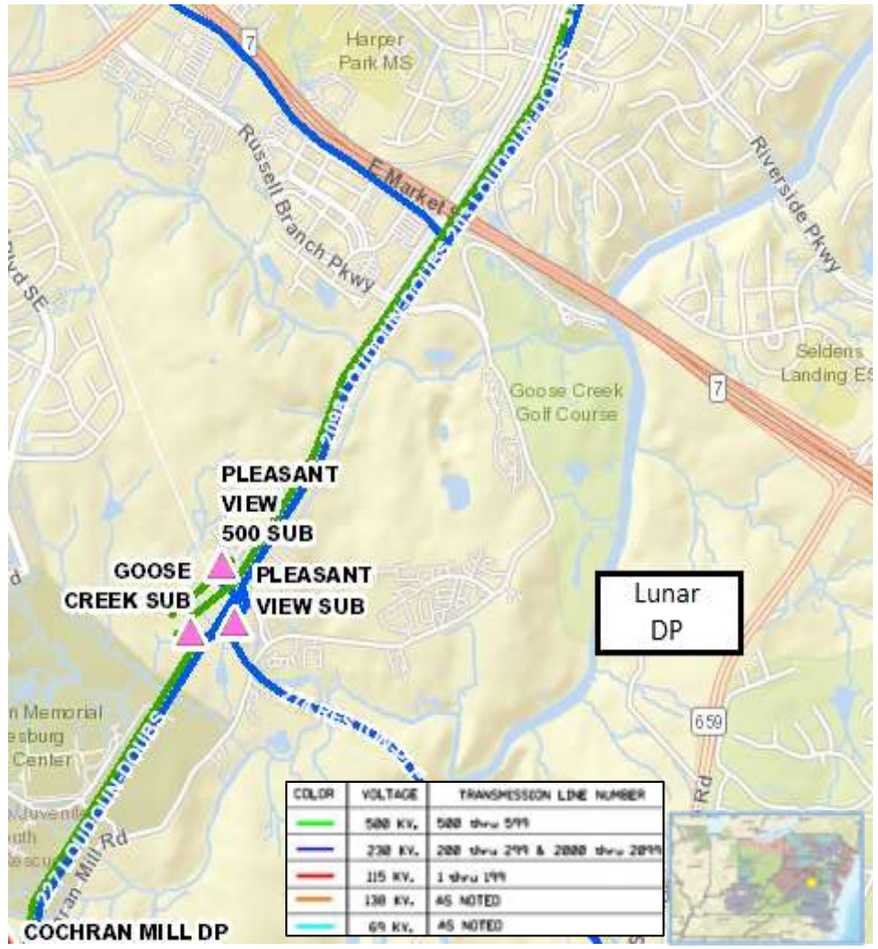
Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0054
Process Stage: Need Meeting 11/01/2022
Project Driver: Customer Service

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

Problem Statement:
DEV has submitted a DP Request for a new substation (Lunar) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 3/01/2024.

Initial In-Service Load	Projected 2027 Load
Summer: 12.0 MW	Summer: 211.0 MW

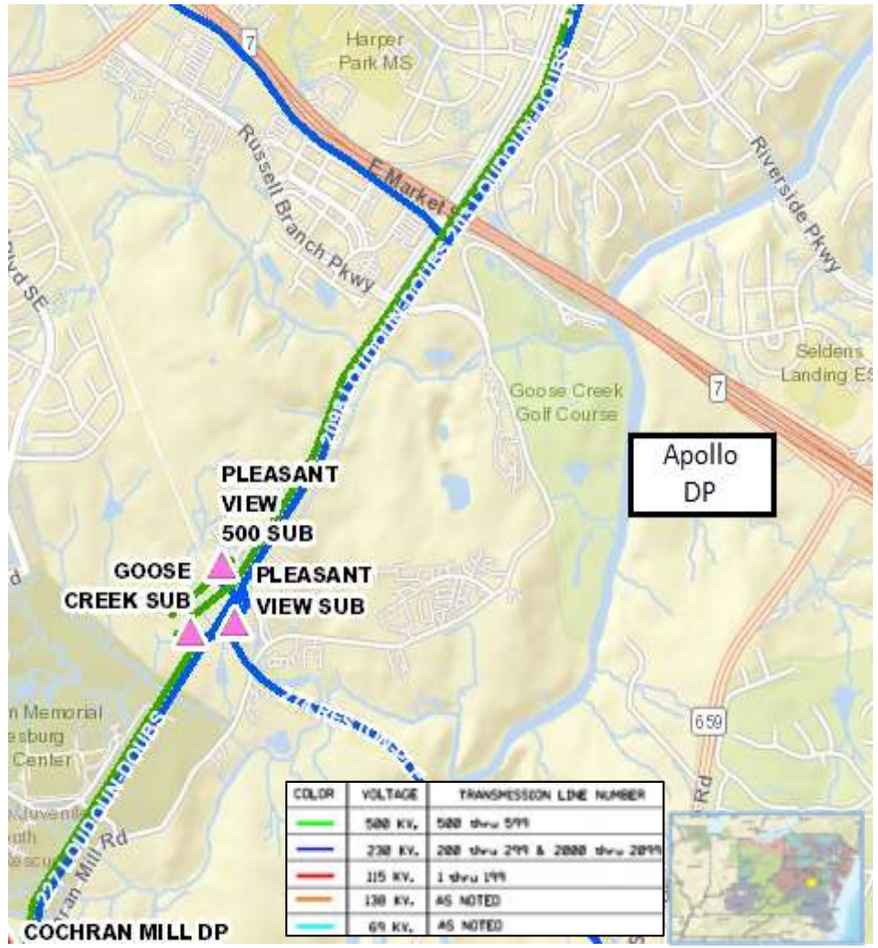


Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0055
Process Stage: Need Meeting 11/01/2022
Project Driver: Customer Service

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

Problem Statement:
DEV has submitted a DP Request for a new substation (Apollo) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 1/1/2025.



Initial In-Service Load	Projected 2027 Load
Summer: 27.0 MW	Summer: 176.0 MW

Dominion Supplemental Projects

Transmission Expansion Advisory Committee
February 7, 2023

Needs

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

52

Dominion Transmission Zone: Supplemental Customer Load Request

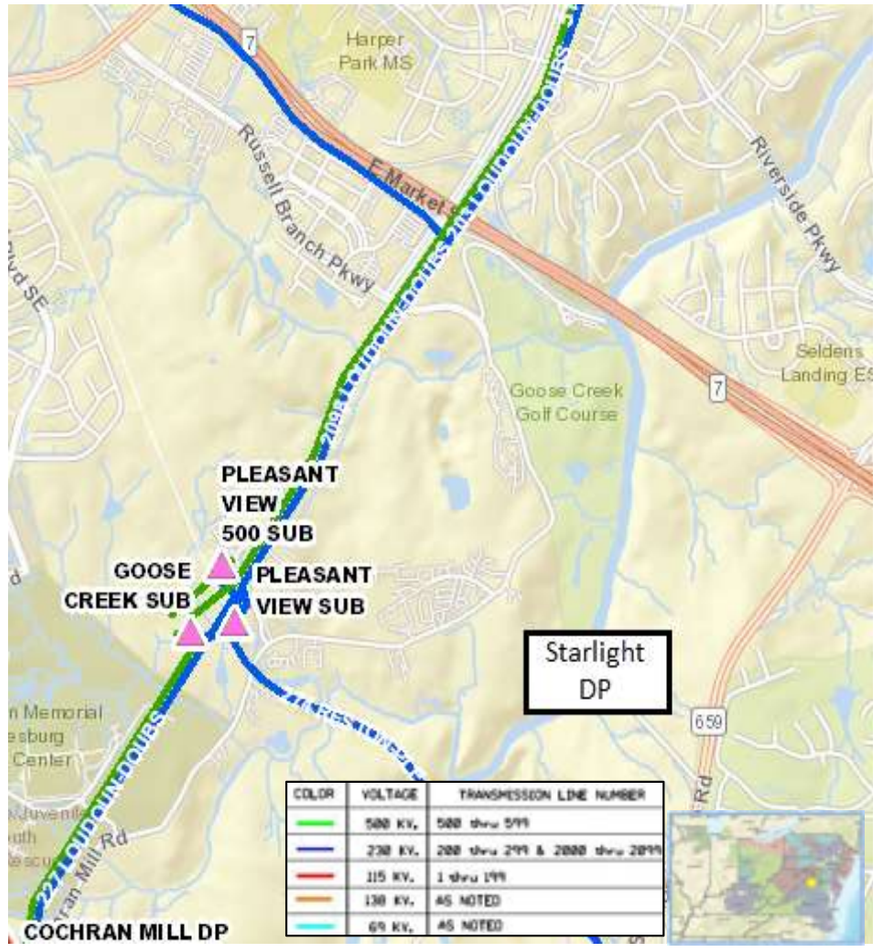
Need Number: DOM-2023-0001
Process Stage: Need Meeting 02/07/2023
Project Driver: Customer Service

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

Problem Statement:
DEV has submitted a DP Request for a new substation (Starlight) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 6/01/2028.

53

Initial In-Service Load	Projected 2028 Load
Summer: 10.0 MW	Summer: 10.0 MW



Dominion Supplemental Projects

Transmission Expansion Advisory Committee
June 6, 2023

Solutions

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

55

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0043

Process Stage: Solutions Meeting 06/06/2023

Previously Presented: Need Meeting 06/07/2022

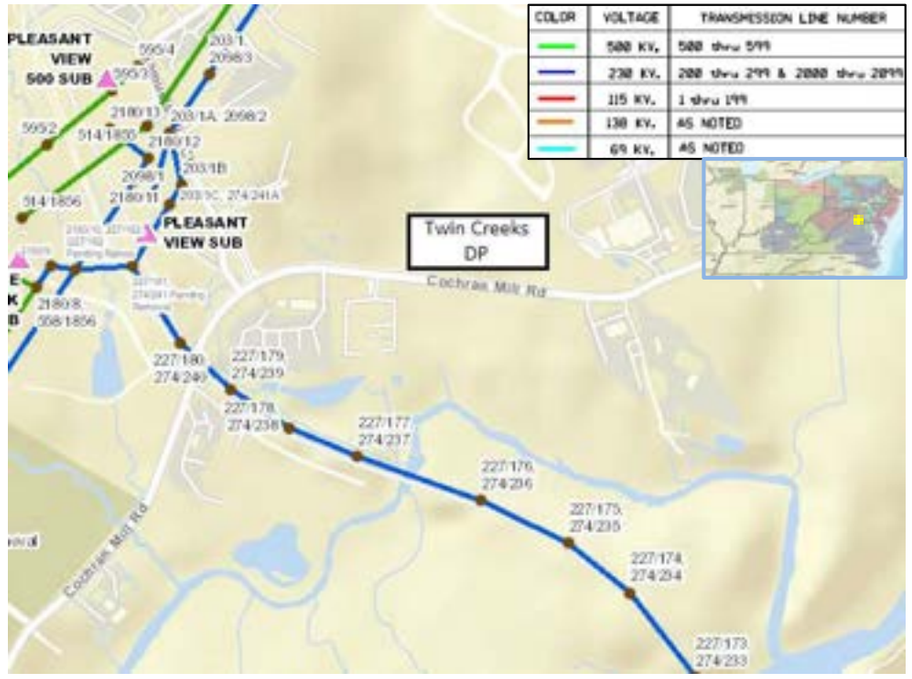
Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

DEV has submitted a DP Request for a new substation (Twin Creeks) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 12/31/2024.



Initial In-Service Load	Projected 2028 Load
Summer: 84.0 MW Winter: 36.0 MW	Summer: 209.2 MW Winter: 183.0 MW

Dominion Transmission Zone: Supplemental Twin Creeks 230kV Delivery - DEV

Need Number: DOM-2022-0043

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by cutting and extending Line #203 (Pleasant View – Edwards Ferry) to the proposed Twin Creeks Substation. Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $20.0 M

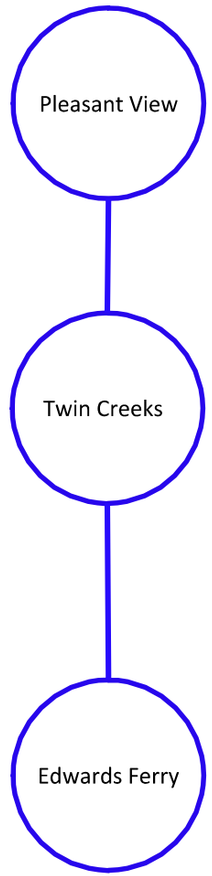
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 12/31/2024

Project Status: Engineering

Model: 2027 RTEP



57

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0042

Process Stage: Solutions Meeting 06/06/2023

Previously Presented: Need Meeting 06/07/2022

Project Driver: Customer Service

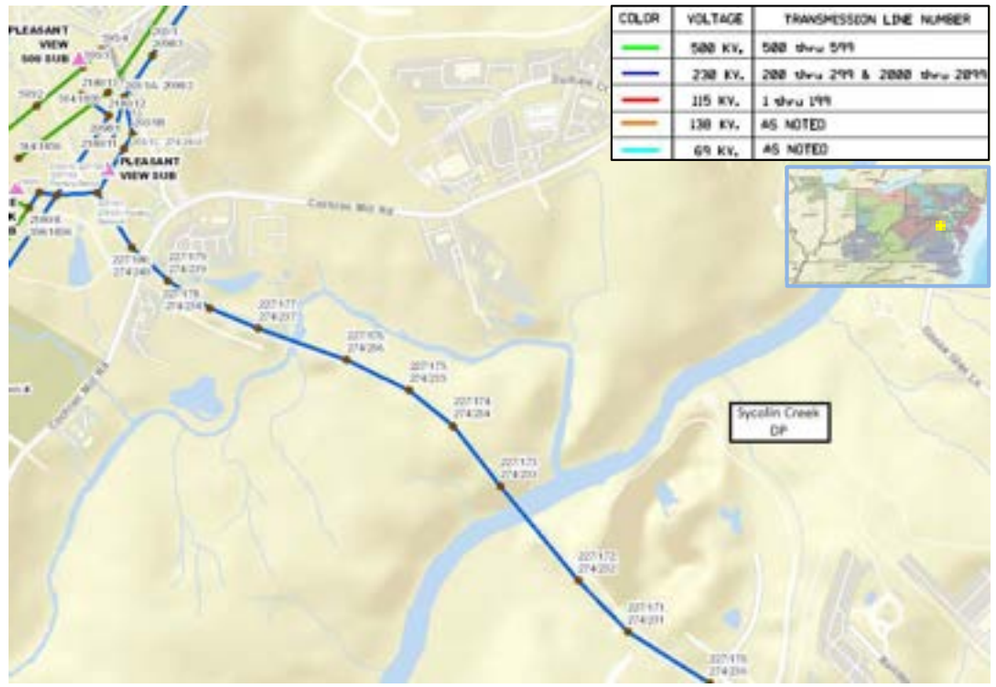
Specific Assumption References:

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

58

Problem Statement:

DEV has submitted a DP Request for a new substation (Sycolin Creek) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 06/15/2026.



Initial In-Service Load	Projected 2028 Load
Summer: 12.0 MW Winter: 0.0 MW	Summer: 136.0 MW Winter: 100.0 MW

Dominion Transmission Zone: Supplemental
Sycolin Creek 230kV Delivery - DEV

Need Number: DOM-2022-0042

Process Stage: Solutions Meeting 06/06/2023

Proposed Solution:

Interconnect the new substation by constructing two 230kV lines approximately 1.0 mile from Twin Creeks Substation to proposed Sycolin Creek Substation.

Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $28.0 M

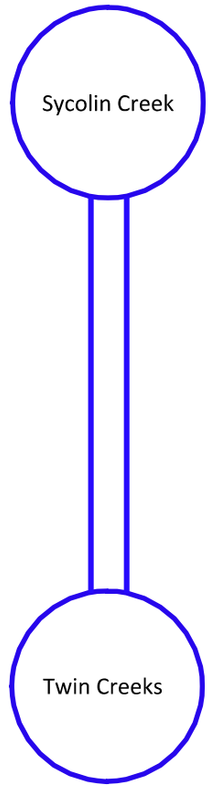
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 06/15/2026

Project Status: Engineering

Model: 2027 RTEP



Dominion Supplemental Projects

60

Transmission Expansion Advisory Committee
July 11, 2023

Solutions

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

61

Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0054

Process Stage: Solutions Meeting 07/11/2023

Previously Presented: Need Meeting 10/04/2022

Project Driver: Customer Service

Specific Assumption References:

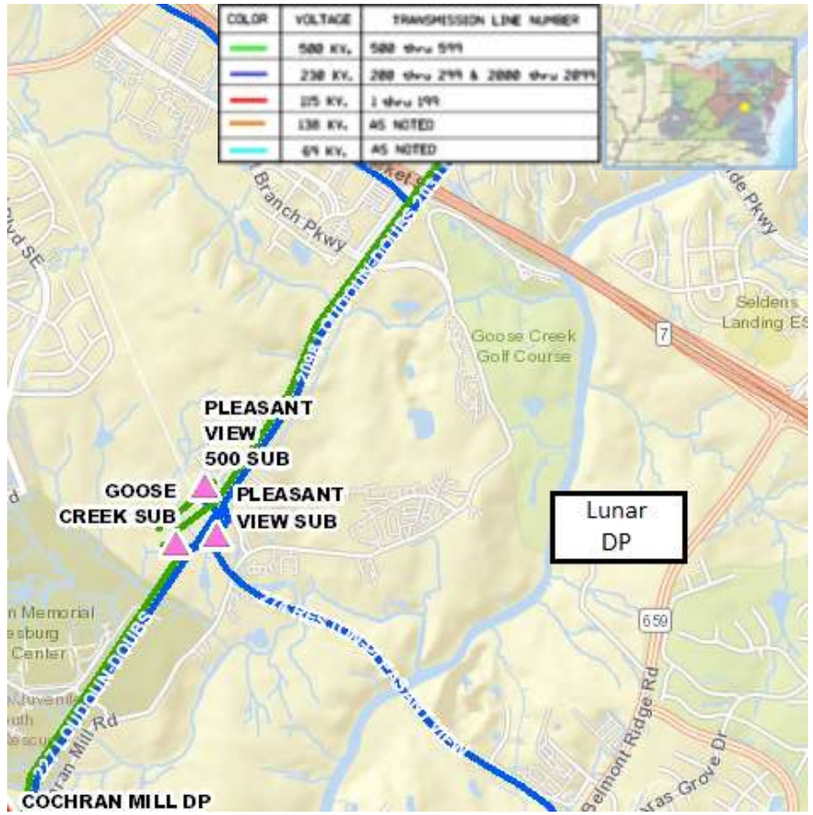
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

62

Problem Statement:

DEV has submitted a DP Request for a new substation (Lunar) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 08/01/2026.

Initial In-Service Load	Projected 2028 Load
Summer: 12.0 MW Winter: 0.0 MW	Summer: 188.0 MW Winter: 140.0 MW



Dominion Transmission Zone: Supplemental
Lunar 230kV Delivery - DEV

Need Number: DOM-2022-0054

Process Stage: Solutions Meeting 07/11/2023

Proposed Solution:

Interconnect the new substation by constructing two 230kV lines from Sycolin Creek Substation to proposed Lunar Substation. Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $28.0 M

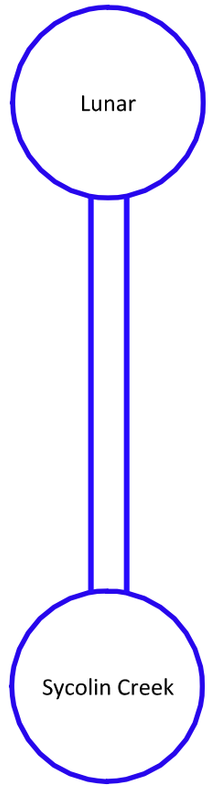
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 08/01/2026

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2023-0001

Process Stage: Solutions Meeting 07/11/2023

Previously Presented: Need Meeting 01/10/2023

Project Driver: Customer Service

Specific Assumption References:

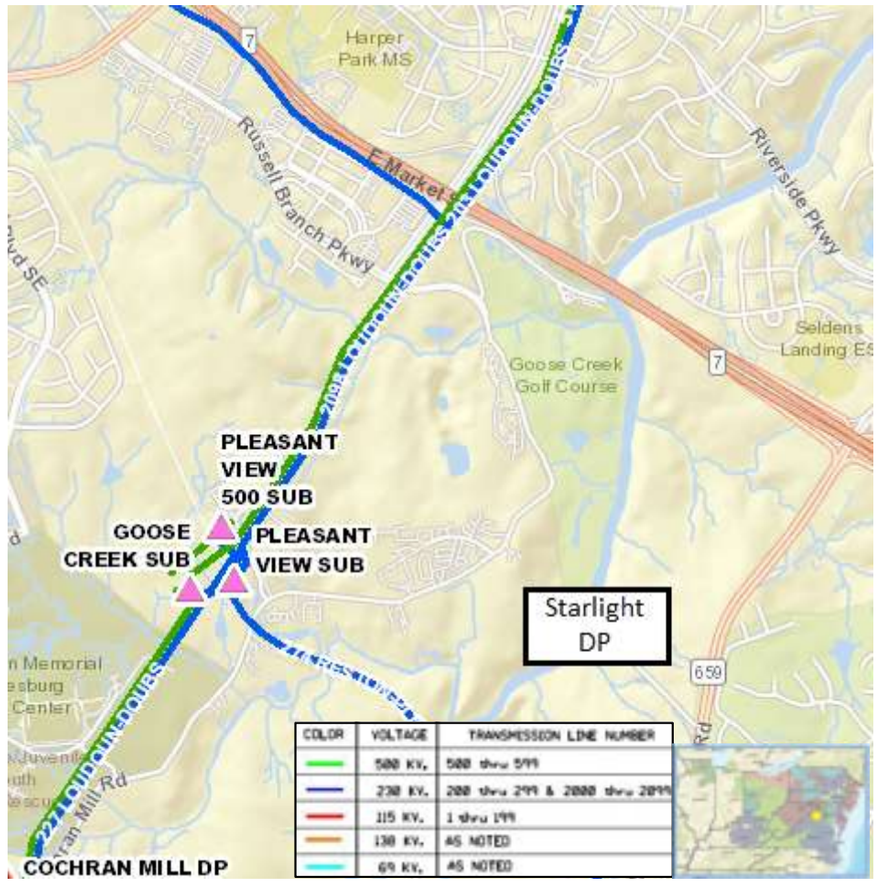
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

64

Problem Statement:

DEV has submitted a DP Request for a new substation (Starlight) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 06/01/2028.

Initial In-Service Load	Projected 2038 Load
Summer: 10.0 MW Winter: 0.0 MW	Summer: 158.0 MW Winter: 158.0 MW



Dominion Transmission Zone: Supplemental Starlight 230kV Delivery - DEV

Need Number: DOM-2023-0001

Process Stage: Solutions Meeting 07/11/2023

Proposed Solution:

Interconnect the new substation by cutting two 230kV lines from Sycolin Creek Substation to Lunar Substation into proposed Starlight Substation. Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $28.0 M

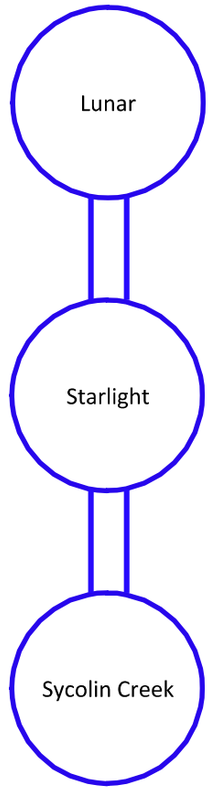
Alternatives Considered:

No feasible alternatives

Projected In-service Date: 06/01/2028

Project Status: Engineering

Model: 2027 RTEP



Dominion Transmission Zone: Supplemental Customer Load Request

Need Number: DOM-2022-0055

Process Stage: Solutions Meeting 07/11/2023

Previously Presented: Need Meeting 11/01/2022

Project Driver: Customer Service

Specific Assumption References:

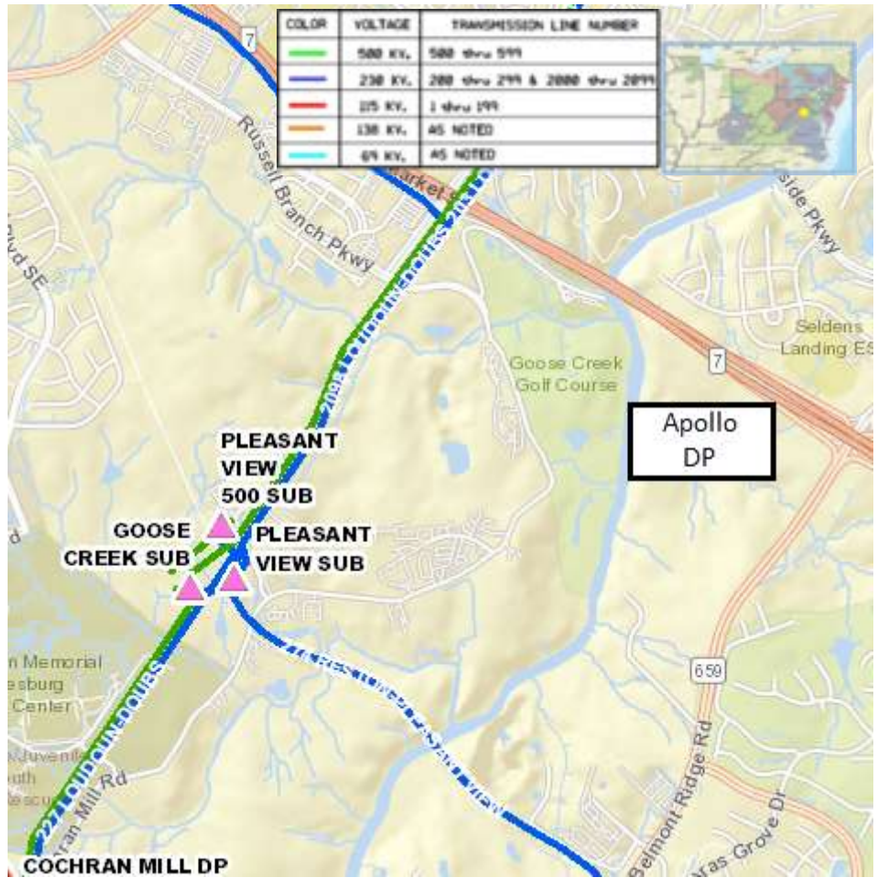
Customer load request will be evaluated per Dominion's Facility Interconnection Requirements Document and Dominion's Transmission Planning Criteria.

99

Problem Statement:

DEV has submitted a DP Request for a new substation (Apollo) in Loudoun County with a total load in excess of 100MW. Requested in-service date is 1/1/2027.

Initial In-Service Load	Projected 2028 Load
Summer: 27.0 MW Winter: 0.0 MW	Summer: 111.0 MW Winter: 69.0 MW



Dominion Transmission Zone: Supplemental
Apollo 230kV Delivery - DEV

Need Number: DOM-2022-0055

Process Stage: Solutions Meeting 07/11/2023

Proposed Solution:

Interconnect the new substation by constructing two 230kV lines from Lunar Substation to proposed Apollo Substation. Lines to terminate in a 230kV six-breaker ring arrangement.

Estimated Project Cost: $28.0 M

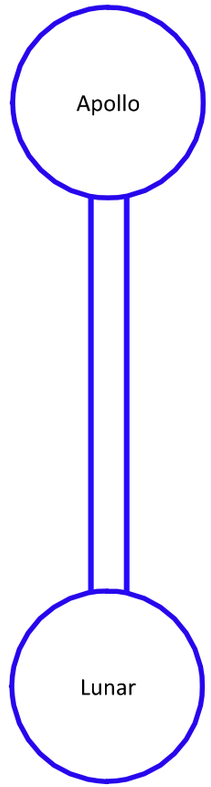
Alternatives Considered:

No feasible alternatives – Extending from closest source

Projected In-service Date: 01/01/2027

Project Status: Engineering

Model: 2027 RTEP



67

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable. See Section I.A.

I. NECESSITY FOR THE PROPOSED PROJECT

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

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

I. NECESSITY FOR THE PROPOSED PROJECT

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

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

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

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

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

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

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

Response: Not applicable.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The proposed Project will serve the Leesburg Load Area as described in Section I.C and generally depicted in Attachment I.A.1.b. The Project will also be used to support future load in the area.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

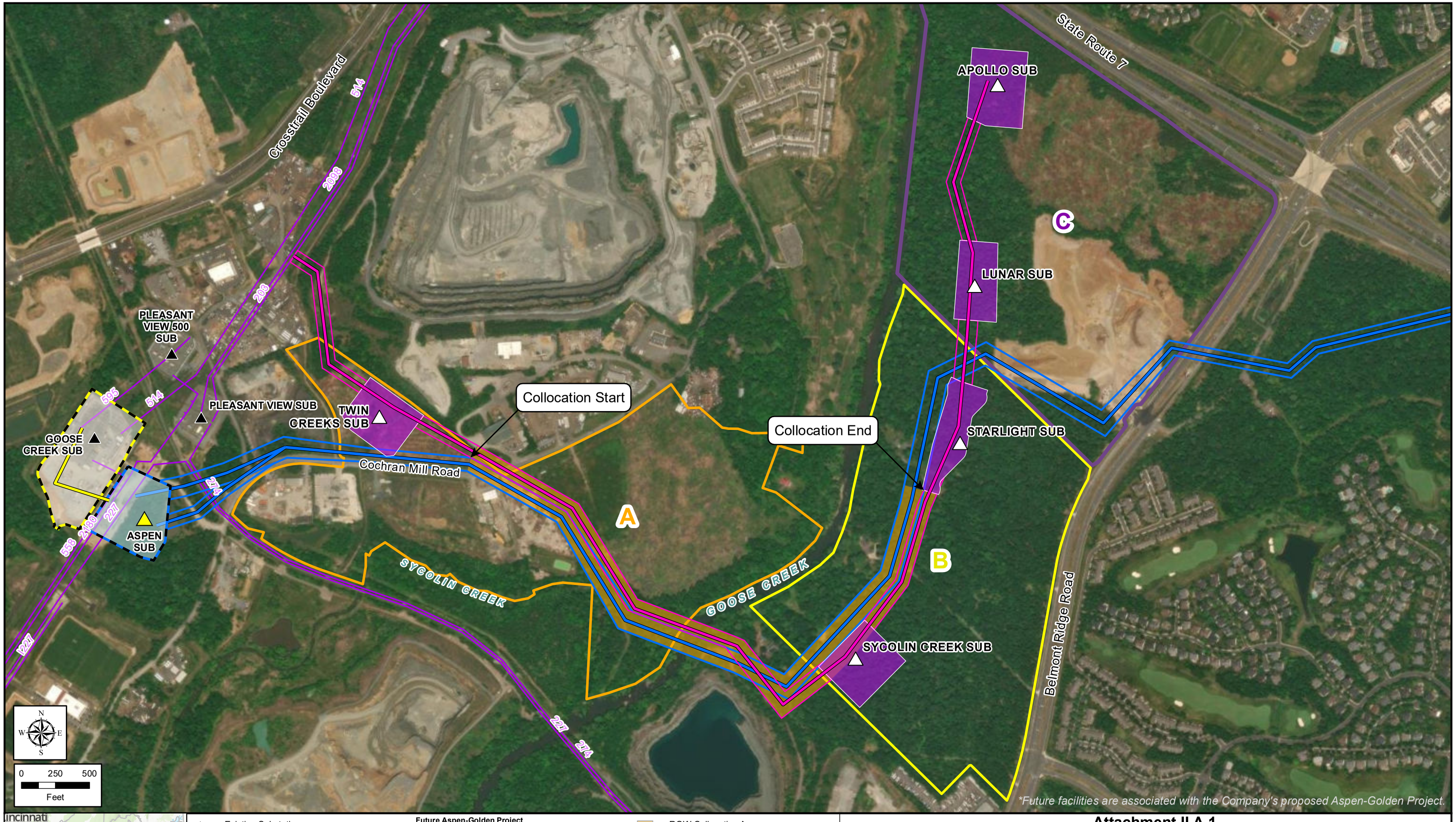
1. Provide the length of the proposed corridor and viable alternatives.

Response: The approximate length of the Proposed Route for the Apollo-Twin Creeks Lines is approximately 1.9 miles.

No viable alternatives were identified for the Apollo-Twin Creeks Lines given the opportunity to collocate with the Company's future Aspen-Golden Lines,[25] which traverse the same study area for approximately 0.9 mile of the 1.9-mile Apollo-Twin Creeks Lines Proposed Route. As discussed in Section II.A.4, other preliminary routes were studied to collocate the Apollo-Twin Creeks Lines with linear corridors, including, but not limited to, existing Edwards Ferry-Pleasant View Line #203, Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274, and public roadways, including Belmont Ridge Road, but various engineering and environmental impacts deemed them infeasible as alternatives to be studied for the Project. See Section 5.3 of the Routing Study. At least 77% of the total length of the Proposed Route is located on the proposed data center properties of Customers A, B, and C. The Proposed Route also considers input from affected landowners to determine a feasible and constructible collocated line route on private properties.

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

[25] *See supra*, n. 1. *See also* the Company's Aspen-Golden Application (Case No. PUR-2024-00032).



- Existing Substation
- Proposed Substation
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Existing Dominion Transmission Lines

Future Aspen-Golden Project

- Future Aspen Substation*
- Future Aspen–Golden Lines*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*

- ROW Collocation Area
- Customer A Properties
- Customer B Properties
- Customer C Properties

Attachment II.A.1
Proposed Route Collocation Overview
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

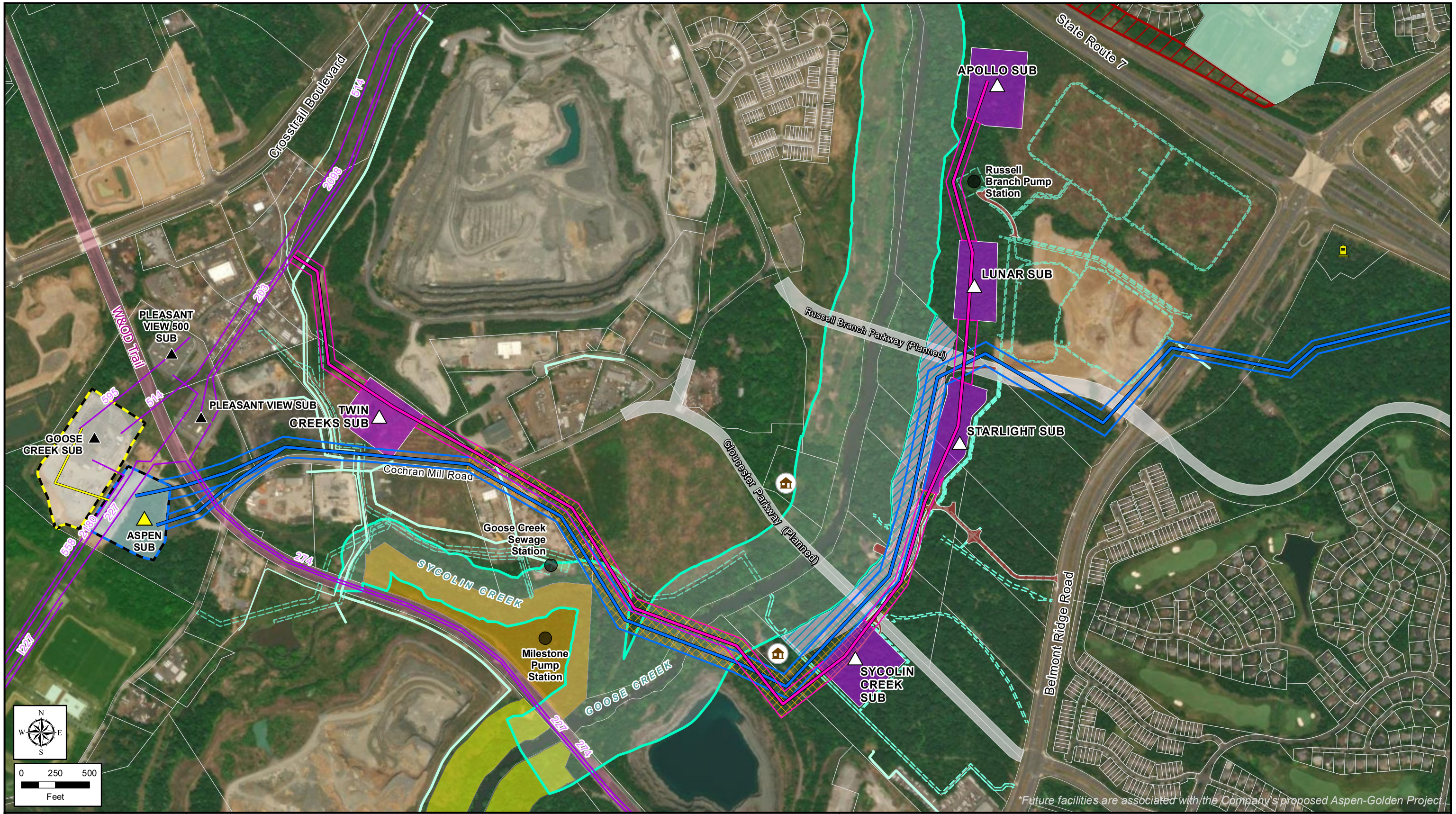
A. Right-of-way ("ROW")

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

Response: See Attachment II.A.2.[26] No portion of the right-of-way is proposed to be quitclaimed or relinquished.

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

[26] As proposed in the Aspen-Golden Application and herein, the Apollo-Twin Creeks Lines will be collocated with the Aspen-Golden Lines for approximately 0.9 mile, as depicted in Attachment II.A.6. *See supra*, n. 1.



- Existing Substation
- Proposed Substation
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Future Aspen Substation*
- Future Aspen–Golden Lines*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*
- Existing Dominion Transmission Line
- ROW Collocation Area

Scenic, Recreational, and Historic Resources

- Virginia Scenic River
- Scenic Creek Valley Buffers (Loudoun County)
- 200-ft Proposed Open Space Buffer
- Loudoun County Park
- Washington & Old Dominion Trail
- Lansdowne Scenic Easement
- Virginia Outdoors Foundation
- Burial Grounds and Cemeteries

Existing and Planned Development

- Planned Development
- Planned Road Extension (Loudoun County DTCI)
- Future Public Road Dedication
- Existing Loudoun Water Lines
- Proposed Loudoun Water Lines

Public and Private Lands

- Loudoun Water Property
- Loudoun County School Board
- Parcels
- Residence within Study Area

Attachment II.A.2
Project Overview and Constraints Map
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: There is no existing Company-owned right-of-way that connects the proposed Twin Creeks, Sycolin Creek, Starlight, Lunar, or Apollo Substations that is adequate to accommodate the Project as proposed.[27]

South and west of the Project area, the Company has existing 230 kV and 500 kV transmission line corridors that extend from the Pleasant View Substation and the Goose Creek Substation. South of Pleasant View Substation, Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274 continue along the Washington & Old Dominion Railroad Regional Park ("W&OD Trail") to the crossing location at Route 659 (Belmont Ridge Road). North of the existing Pleasant View Substation, Edwards Ferry-Pleasant View Line #203, Hamilton-Pleasant View Line #2098, and Doubs-Goose Creek Line #514 continue to the intersection of State Route 7 and Crosstrail Boulevard. During the routing process, the Company considered the possibility of constructing new transmission lines along these existing right-of-way corridors; however, there is inadequate space available for the Apollo-Twin Creeks Lines right-of-way due to the presence of constraints. Further, none of these routes are located where the substations are proposed to be situated to serve the Customers.

[27] However, *see supra*, n. 1 as to the collocation opportunity with the Aspen-Golden Lines.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

a. ROW width for each cross section drawing;

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

c. Existing utility facilities on the ROW; and

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

Response: See Attachments II.A.5.a-b.[28]

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

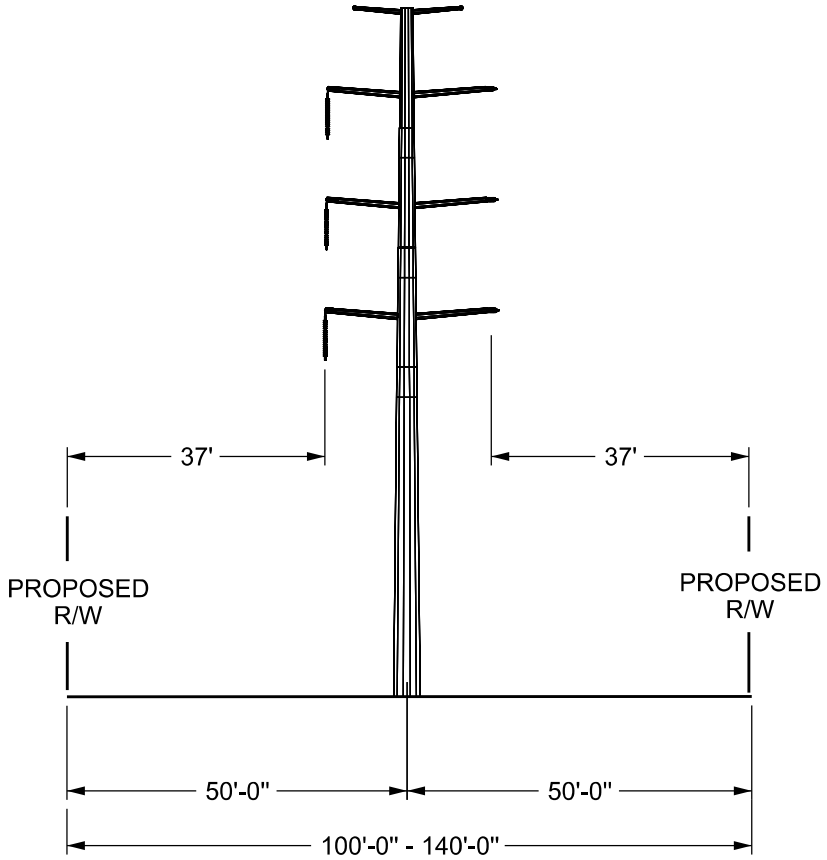
[28] Note that the right-of-way cross section drawing showing typical transmission line structure placements where the proposed Apollo-Twin Creeks Lines and the future Aspen-Golden Lines are collocated is provided in Attachment II.A.5.b. The total right-of-way in this section of the collocated lines varies from 200 feet to 260 feet, for an average of 225 feet, as noted on Attachment II.A.5.b. *See* Attachment II.A.6 for a map depicting the right-of-way widths where the lines are collocated. The double circuit three-pole structure shown in Attachment II.A.5.b for the Aspen-Golden Lines is the typical structure supporting the future Aspen-Golden Lines in the section collocated with the proposed Apollo-Twin Creeks Lines (Apollo-Twin Creeks Lines Structures #2316/2 / #2317/2 – #2334/3 / #2335/3). Additionally, the double circuit three-pole structure depicted in Attachment II.A.5.b has the greatest loading and largest footprint of the structures and conductors to the edge of the right-of-way, making it the most conservative right-of-way cross section drawing along this collocated section to analyze for electromagnetic field calculations. *See* Section IV.A. *See also* Section II.B.3 for the specific structure type proposed for the proposed Apollo-Twin Creeks Lines within the collocated section. Finally, note that between the proposed Apollo-Twin Creeks Lines Structures #2316/5 / #2317/5 – #2316/6 / #2317/6, the future Aspen-Golden Lines cross over the proposed Apollo-Twin Creeks Lines, at which point the remaining Aspen-Golden Lines and Apollo-Twin Creeks Lines structures in the collocated section are on the opposite side of the right-of-way (*i.e.*, a mirror image of the structures as shown in Attachment II.A.5.b). *See* Attachment II.B.3.d for structure locations for the Apollo-Twin Creeks Lines.

$SYTIME$
$DATE$

PRELIMINARY PROPOSED
APOLLO - TWIN CREEKS

STRUCTURES #203/2, 2320/5 - #203/1A, 2320/2
STRUCTURE #2340/2, 2341/2
STRUCTURE #2342/2, 2343/2

PROPOSED
230KV CIRCUIT



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD APOLLO

NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 112' FOR THE 230 KV STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE.

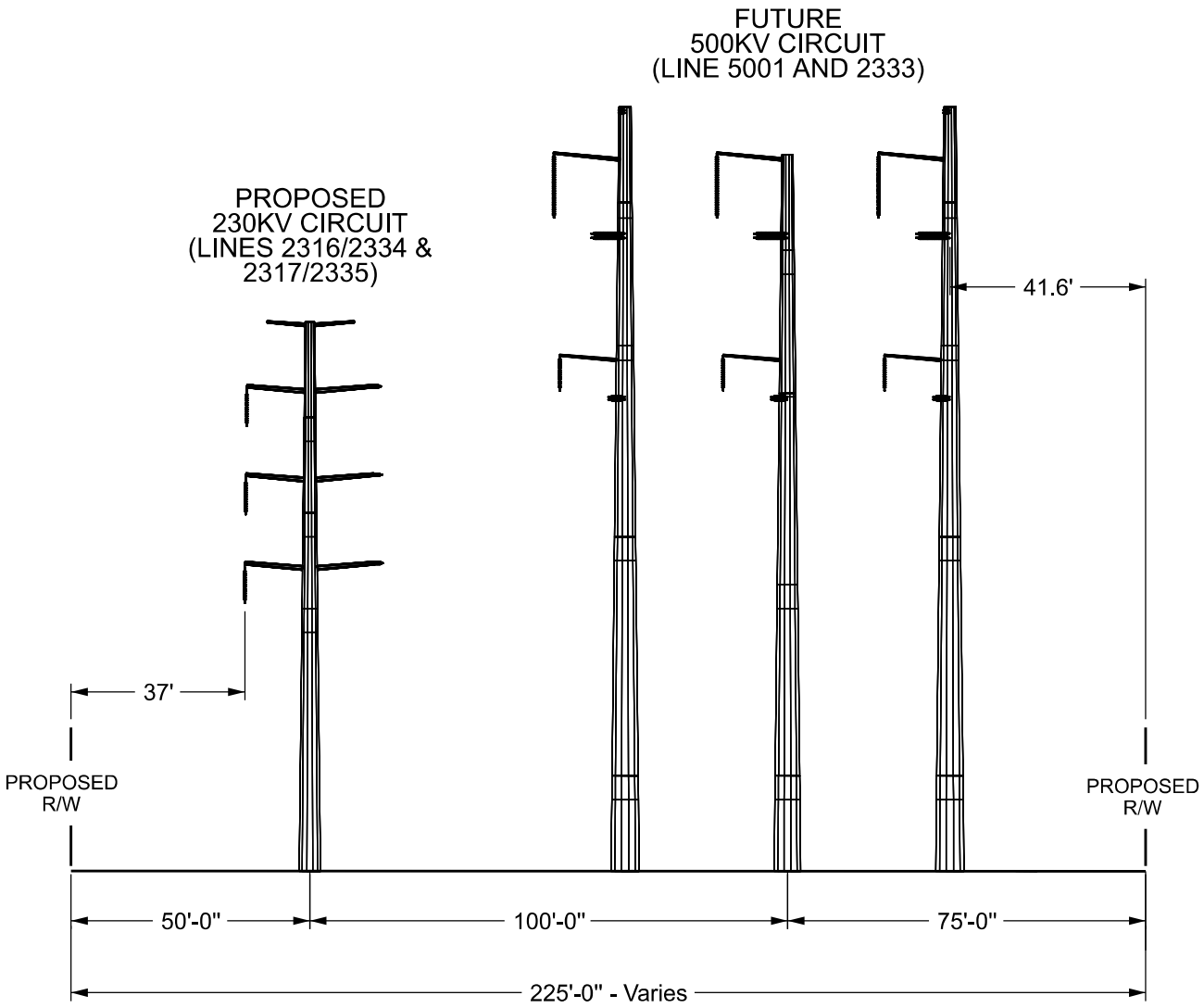
3. INFORMATION CONTAINED ON DRAWING IS TO BE CONSIDERED PRELIMINARY IN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN.

TDBDIAG $DGNSPEC$

$SYTIME$
$DATE$
TDBDIAG $DGNSPEC$

PRELIMINARY PROPOSED
APOLLO - TWIN CREEKS

STRUCTURES #2316/2, 2317/2 - #2334/3, 2335/3



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD APOLLO

NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 158' FOR THE 5-2 STRUCTURES AND 113' FOR THE 230 KV STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURECENTERLINE.

3. INFORMATION CONTAINED ON DRAWING IS TO BE CONSIDERED PRELIMINARYIN NATURE AND SUBJECT TO CHANGE BASED ON FINAL DESIGN.

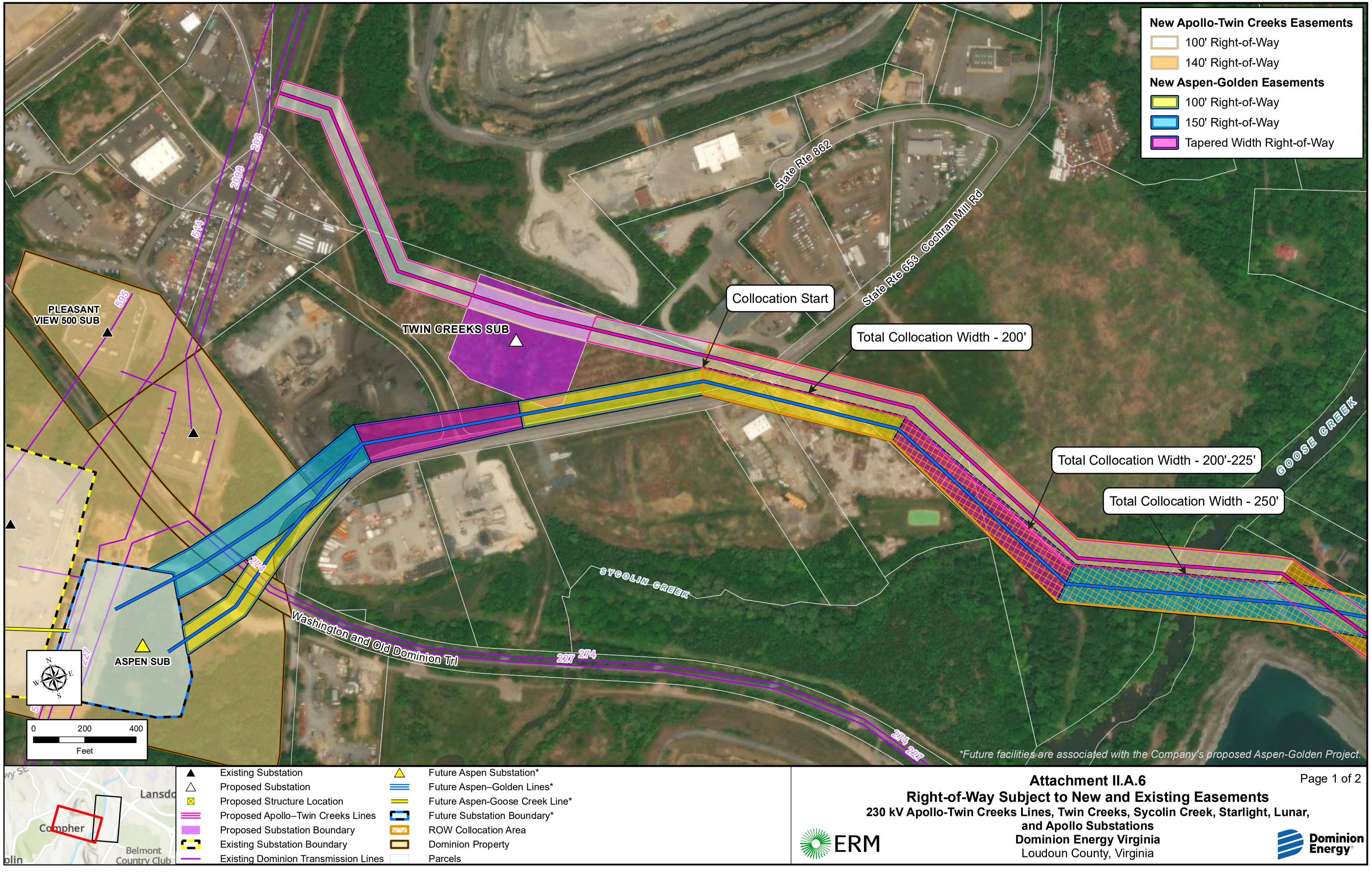
II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: As discussed in Section II.A.4, there is no existing Company-owned right-of-way that connects the Project's five proposed substations that is adequate to accommodate the Project as proposed. See Attachment II.A.6.

Accordingly, the entire right-of-way of the Proposed Route for the Apollo-Twin Creeks Lines will require easements for a new-build transmission line.

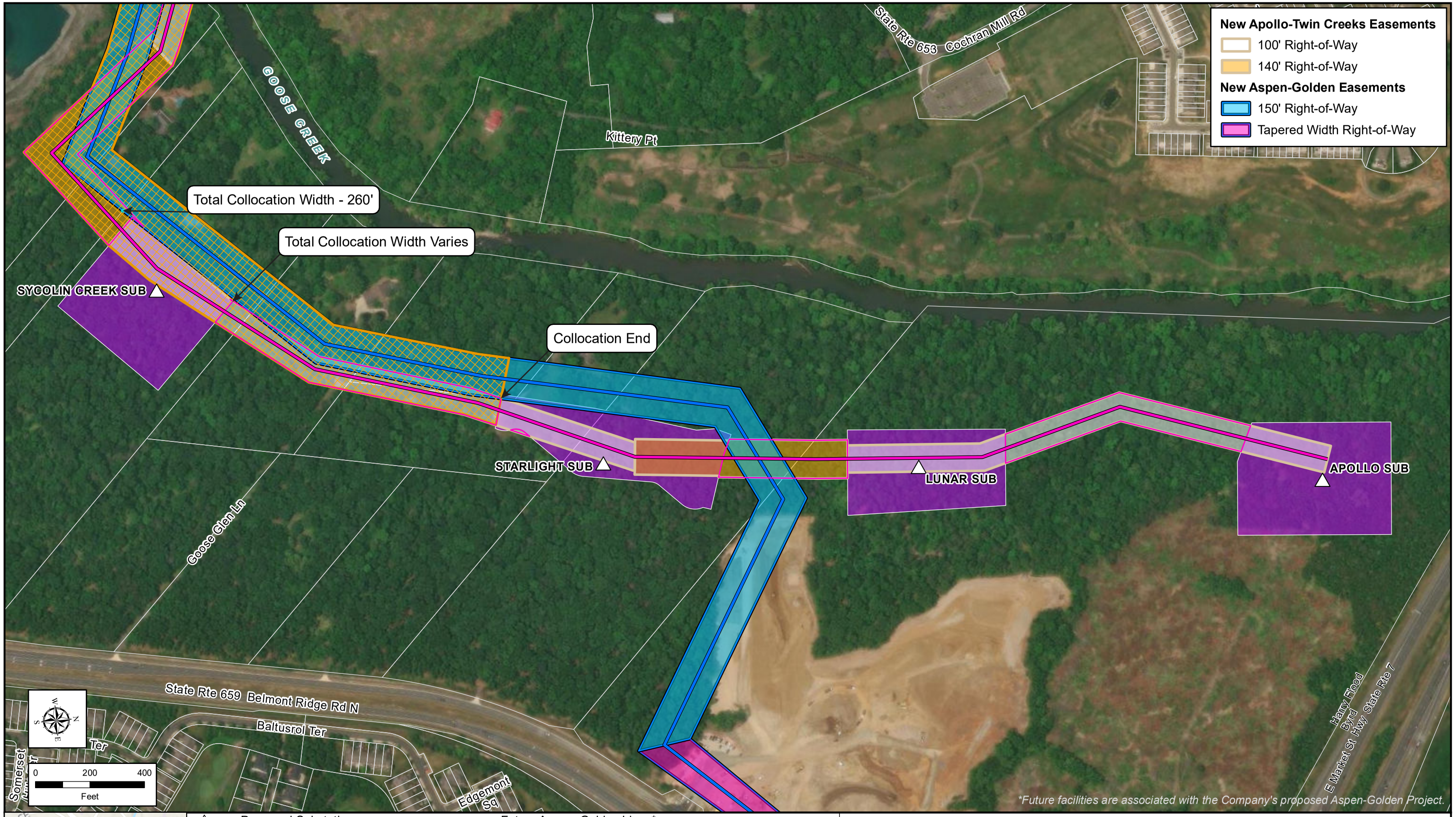


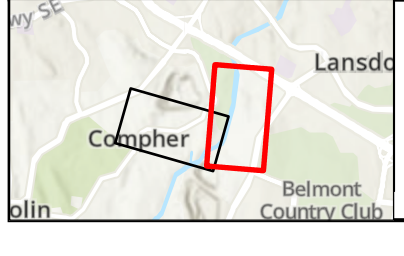
- Existing Substation
- Proposed Substation
- Proposed Structure Location
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Existing Dominion Transmission Lines
- Future Aspen Substation*
- Future Aspen–Golden Lines*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*
- ROW Collocation Area
- Dominion Property
- Parcels

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy





- Proposed Substation
- Proposed Structure Location
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Existing Dominion Transmission Lines
- Future Aspen–Golden Lines*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*
- ROW Collocation Area
- Dominion Property
- Parcels

Attachment II.A.6

Right-of-Way Subject to New and Existing Easements

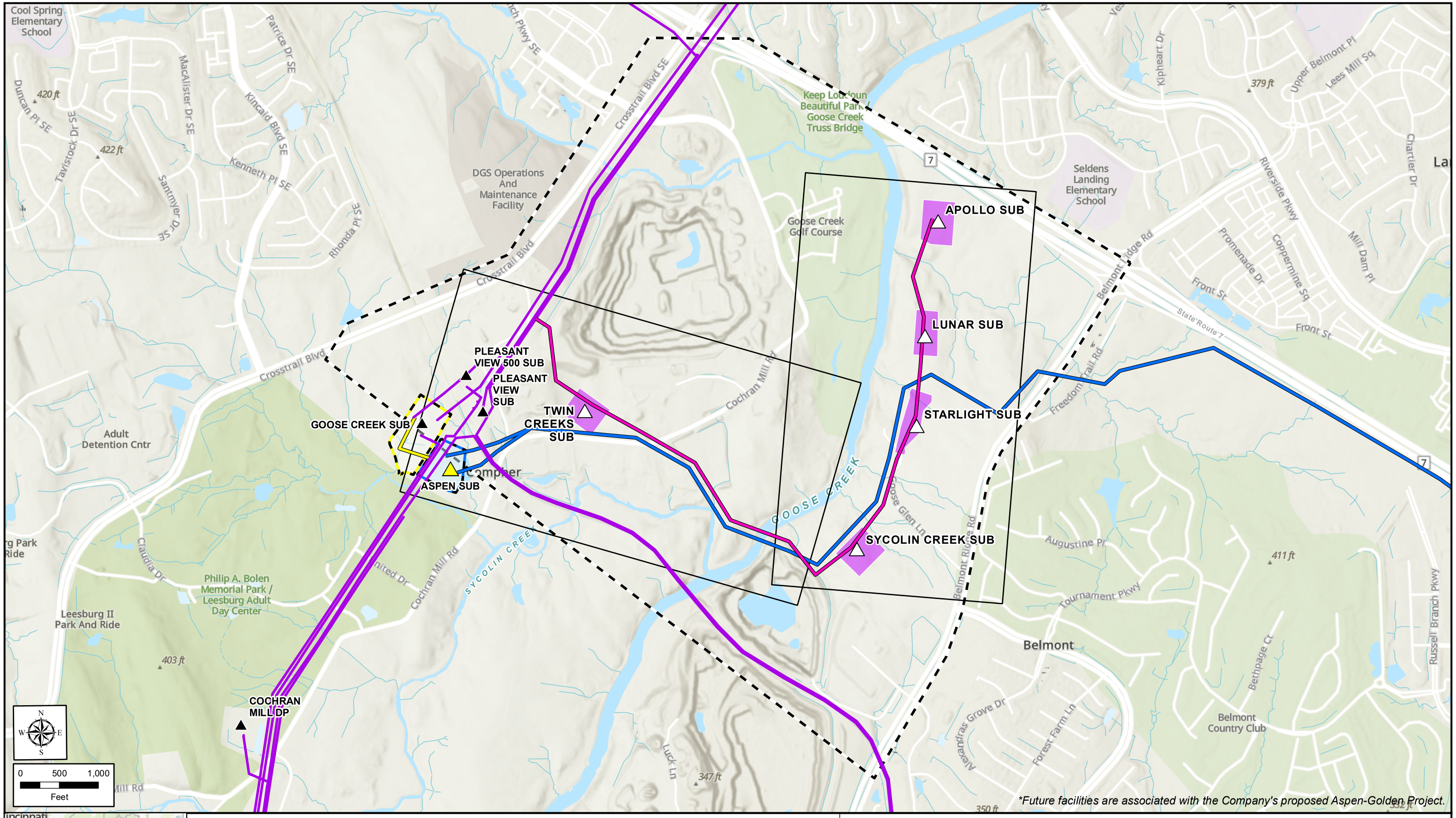
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations

Dominion Energy Virginia

Loudoun County, Virginia

ERM

Dominion Energy



Project Location

- Existing Substation
- Proposed Substation
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Existing Dominion Transmission Line
- Study Area
- Future Aspen Substation*
- Future Aspen–Golden Lines Proposed Route*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*
- Viewframe

Attachment II.A.6 Index
Right-of-Way Subject to New and Existing Easements
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The right-of-way width for the Proposed Route predominantly will be 100 feet wide.[29] Based on anticipated conditions, tree clearing would be required along a portion of the Proposed Route.

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

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

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

[29] *See supra*, n. 4.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

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

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

For the Project, the Company retained the services of Environmental Resources Management ("ERM") to help collect information within the study area, identify potential routes, perform a routing analysis, and document the routing efforts in an Routing Study. After review of the new build options, the Company identified one electrical option for the Project, which is located entirely within Loudoun County, Virginia.

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

- State Route 7 (Leesburg Pike) to the north;
- Belmont Ridge Road to the east;
- The Company's existing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274 and the W&OD Trail to the south; and
- The Company's existing Edwards Ferry-Pleasant View Line #203, Hamilton-Pleasant View Line #2098, and Doubs-Goose Creek Line #514 to the west.

The Company considered the facilities required to construct and operate the new

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

ERM identified and assessed a single route option for the proposed Apollo-Twin Creeks Lines (*i.e.*, the Proposed Route), which collocates with the Company's future Aspen-Golden Lines[30] across Goose Creek, avoids conflicts with existing and planned uses (including Loudoun Water utilities), and maximizes crossings of compatible land uses, such as industrial and mining-zoned land and the planned data center properties owned by Customers A, B, and C.

As discussed in more detail below and in the Routing Study, three potential overhead route variations and a conceptual all-underground solution were identified. These routes were rejected due to environmental and constructability constraints, space and future operational constraints, and engineering constraints, including conflicts with existing and planned land uses, and the need to limit new rights-of-way crossing the Goose Creek Scenic River and maximize crossings of compatible industrial development. See Section 5.3 of the Routing Study.

Apollo-Twin Creeks Lines

The Company proposes to construct the Apollo-Twin Creeks Lines along the Proposed Route by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 and extending a new double circuit overhead 230 kV transmission line approximately 1.9 miles to the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations, terminating at the proposed Apollo Substation south of Rt. 7 and west of Belmont Ridge Road. The Proposed Route is located entirely within Loudoun County, Virginia, and maximizes collocation with the future Aspen-Golden Lines and other utility rights-of-way, and crossings of the Customers' properties to the extent feasible.

The Proposed Route is approximately 1.9 miles in length. From the cut-in location, the Proposed Route initially heads south for about 0.2 mile generally following the property line of an existing Luck Stone quarry and existing Loudoun Water utility lines to connect with the first substation, the proposed Twin Creeks Substation associated with Campus A. The substation site is within a parcel on the north side of Cochran Mill Road and south of a Luck Stone quarry. The Proposed Route then continues southeast for about 0.2 mile along a property boundary to a point just north of Cochran Mill Road, where the route intersects and begins to parallel and collocate with the Company's future Aspen-Golden Lines. From here, the Proposed Route crosses Cochran Mill Road and continues southeast across Customer A's property for about 0.4 mile. The route (still collocated with the future Aspen-Golden Lines) crosses Goose Creek at a spot just north of a former quarry (now a reservoir), about 0.2 mile northeast of the Company's existing Lines #227 and #274. Still collocated with the future Aspen-Golden Lines, the Proposed Route continues south across the Milestone Reservoir property for 0.1 mile, then turns

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

northeast. The Proposed Route then connects to the proposed Sycolin Creek Substation and continues northeast across Customer B's property for about 0.3 mile to the south side of the proposed Starlight Substation. From there, the Proposed Route of the Apollo-Twin Creeks Lines separates from the future Aspen-Golden Lines and continues for 0.2 mile before entering the proposed Starlight Substation, while the Aspen-Golden Lines turn east along the north side of the substation. The Proposed Route then heads north for about 0.4 mile across Customer C's property, connecting to the proposed Lunar Substation and terminating at the proposed Apollo Substation south of Rt. 7 and east of Goose Creek.

The Proposed Route is approximately 1.9 miles long, affecting 41.6 acres of right-of-way, which includes the proposed Twin Creeks, Sycolin Creek, Starlight, Lunar and Apollo Substations and the 0.9-mile collocation with the Aspen-Golden Lines.

All 14 parcels crossed by the Proposed Route are privately owned. Of these 14 parcels, nine (64%) are owned by Customers A, B, and C. Land use along the Proposed Route right-of-way (inclusive of the five proposed substations) currently consists of 36.8 acres of forested land, 2.3 acres of open space, 1.6 acres of developed land, and 0.3 acre of open water.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of the Proposed Route, inclusive of the five proposed substations, will encompass approximately 2.4% (1.0 acre) of land with a medium/high or higher probability of containing wetlands and waterbodies. Of this approximately 1.0 acre, the majority (0.6 acre) consists of riverine wetlands. The Proposed Route has seven waterbody crossings, including perennial Goose Creek and two unnamed, intermittent tributaries to Goose Creek. There are four unnamed waterbodies, including two open water features that appear to be stormwater detention ponds, and two unnamed, unclassified streams identified within the right-of-way using recent (2023) aerial imagery. Lastly, the Proposed Route, inclusive of the proposed substations, will impact about 36.8 acres of forested land. Of these 36.8 acres of forested land, 35.4 acres are within areas intended for planned developments and likely would be cleared prior to the construction of the Project.

Based on this analysis, the Company selected the Proposed Route for the Apollo-Twin Creeks Lines. The Proposed Route collocates with, or is parallel to, the Company's future Aspen-Golden Lines and existing or planned utilities for approximately 79% of its total length—specifically, with the future Aspen-Golden Lines for approximately 0.9 mile (48% of its length), and with other existing and proposed water and sewer lines for 0.2 and 0.4 mile, respectively (a total of 31% of its length). Additionally, of the 14 parcels crossed by the Proposed Route, nine (64%) are owned by Customers A, B, and C, which accounts for at least 77% of the total length of the Proposed Route. Further, through the Company's coordination with affected landowners and stakeholders, the Proposed Route is consistent with Guideline #1, as the route maximizes use of existing and proposed transmission and utility rights-of-way, minimizes conflict between current and planned land use, where practicable, and eliminates the need for a second, non-collocated crossing of the Goose Creek Scenic River. For all these reasons, ERM and the Company

support the Proposed Route for the Apollo-Twin Creeks Lines as it reasonably minimizes adverse impacts to the greatest extent reasonably practicable on the scenic assets, historic resources, and environment of the area concerned, as well as on cultural resources and planned developments in the Project area.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The Company plans to construct the Project in a manner that minimizes outage times on the Edwards Ferry-Pleasant View Line #203. Assuming the Commission issues a final order by October 28, 2024, and construction commences around March 2025, the cut in of Line #203 should start in early 2026, which will require an outage. As noted in Section I.H of the Appendix, the Company estimates that construction of the Project will be completed by September 30, 2028.

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

The Company utilized Guideline #1 by minimizing conflict between the rights-of-way and present and prospective uses of the land on which the proposed Project is to be located (To the extent permitted by the property interest involved, rights-of-way should be selected with the purpose of minimizing conflict between the rights-of-way and present and prospective uses of the land on which they are to be located. To this end, existing rights-of-way should be given priority as the locations for additions to existing transmission facilities, and the joint use of existing rights-of-way by different kinds of utility services should be considered.). As discussed in Section I.E, collocation opportunities along existing transmission facilities were evaluated but rejected from further consideration. However, the Proposed Route has the greatest amount of collocation with other linear rights-of-way including the Company's future Aspen-Golden Lines (Case No. PUR-2024-00032) and planned water and sewer lines, as discussed in Section 6 of the Routing Study.

The proposed Project will have no impact to any site listed on the National Register of Historic Places ("NRHP"). Thus, it is consistent with Guideline #2 (where practical, rights of-way should avoid sites listed on the NRHP). A Stage I Pre-Application Analysis prepared by ERM on behalf of the Company is included with the Routing Study as Appendix G and was submitted to the Virginia Department of Historic Resources ("VDHR") on March 26, 2024.

The Company communicated with local, state, and federal agencies and relevant private organizations prior to filing this Application consistent with Guideline #4 (where government land is involved the applicant should contact the agencies early in the planning process). In particular, the Company consulted with Loudoun County and Loudoun Water. See Sections II.A.9, III.B, III.J, and V.D of this Appendix.

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

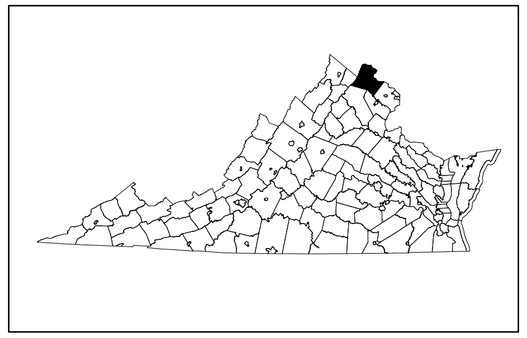
A. Right-of-way ("ROW")

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

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

Response: a. The proposed Project crosses Loudoun County for a total of approximately 1.9 miles and is located entirely within Dominion Energy Virginia's service territory.

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



MAP DATE: 2/7/2024

Loudoun County Road Map

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

West Virginia

Maryland

Clarke County

Fauquier County

Prince William County

Fairfax County

Maryland

HAMILTON SUB

BREEZY KNOLL SUB

DRY MILL SOUTH SUB

GOOSE CREEK SUB

ALTAIR SWITCHING STATION

PLEASANT VIEW SUB

BELMONT SUB

STONEWATER SUB

ASHBURN SUB

MIDDLEBURG SUB

BEAUMEADE SUB

DTC SUB

WAXPOOL SUB

FARMWELL SUB

BECO SUB

CUMULUS SUB

NIMBUS SUB

ENTERPRISE SUB

SHELLHORN ROAD SUB

BUTTERFLY SUB

LOCKRIDGE SUB

PACIFIC SUB

GLOBAL PLAZA SUB

STERLING PARK SUB

DAVIS DRIVE SUB

BRAMBLETON SUB

WISHING STAR SUB

NEW ROAD SUB

CABIN RUN SUB

EVERGREEN MILLS SUB

YARDLEY RIDGE SUB

MARS SUB

WASHINGTON-DULLES INT'L AIRPORT

LOUDOUN SUB

MOSBY SUB

ROLAND ROAD SUB

AVIATOR SUB

GOOSE CREEK SUB

PLEASANT VIEW SUB

ASPEN SUB

TWIN CREEKS SUB

APOLLO SUB

LUNAR SUB

STARLIGHT SUB

SYCOLIN CREEK SUB

Legend

- Proposed Project
- 500kV Under Consideration by SCC
- 230kV Under Consideration by SCC
- 1/1 Number of Lines of Structures/Number of Circuits
- △ Proposed Substation
- ▲ Existing Substation
- 115 kV
- 230 kV
- 500 kV

Provider Service Territory

- NOVEC
- VEPCO

2 1 0 2 4 6 Miles

*VDOT and other road data obtained from Navteq and County data, current as of June 2016.

Loudoun

Attachment II.A.12.b

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

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

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

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

e. the foundation material;

f. the average width at cross arms;

g. the average width at the base;

h. the maximum, minimum and average structure heights;

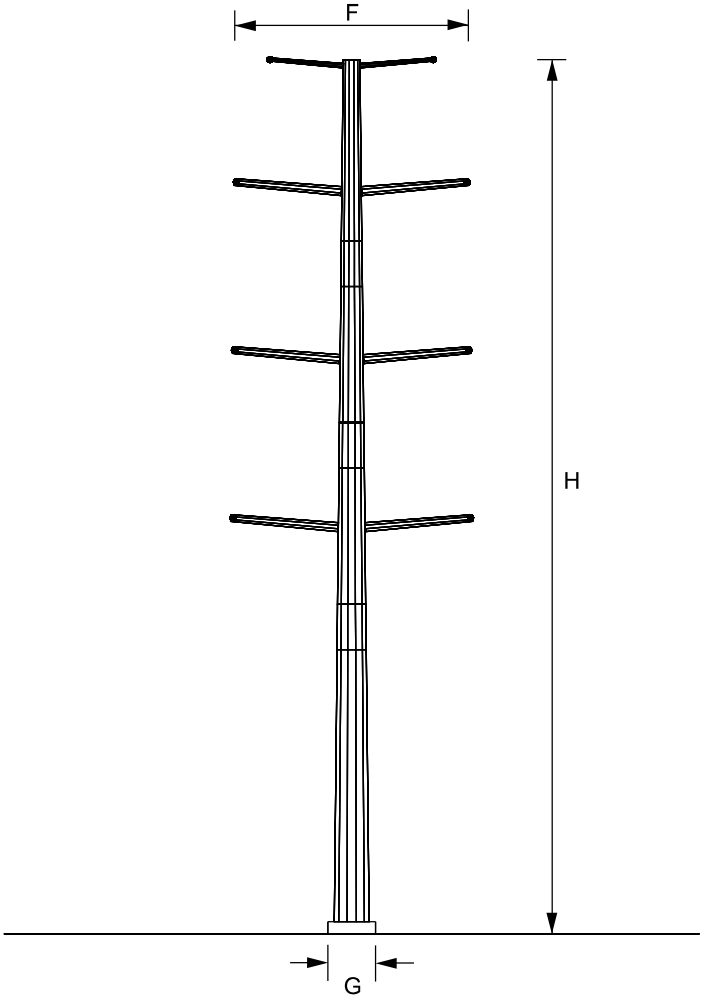
i. the average span length; and

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

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

For subpart (a), see Attachment II.B.3.d for approximate mapping of the proposed structures along the Proposed Route, which is subject to change during final engineering.[31]

[31] Note that Attachment II.B.3.d provides approximate heights for structures that are located within the footprints of the proposed Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations. In determining the minimum, maximum, and average structure heights of the proposed Apollo-Twin Creeks Lines for purposes of Section V.A, note that structure heights within substation footprints are not included, as is standard practice.



TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

A. STRUCTURE MAPPING	SEE ATTACHMENT II.B.3.d
B. RATIONALE FOR STRUCTURE TYPE:	MORE COMPACT STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (9)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 1
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	9' DIAMETER FOUNDATION - SEE NOTE 2
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	110' 135' 121'
I. AVERAGE SPAN LENGTH:	*630' - SEE NOTE 3*
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL IS SUBJECT TO FINAL DESIGN
2. FINAL FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL DESIGN
3. SPAN LENGTHS ARE INCLUSIVE OF THE ROW LENGTH LISTED IN LINE (C)
4. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING

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

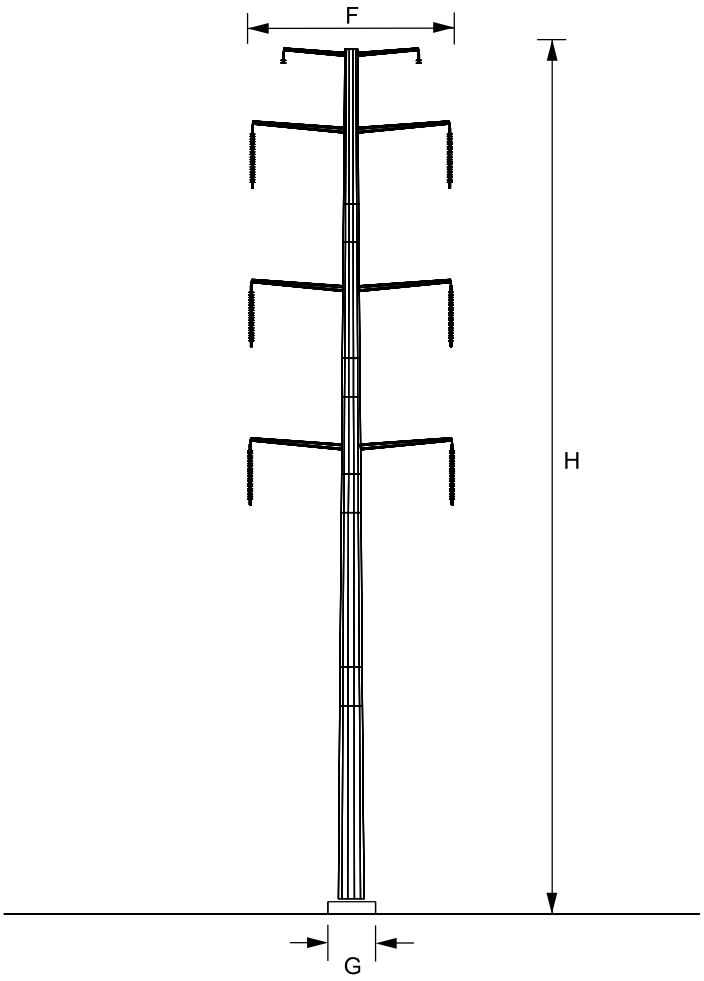
STRUCTURE: 203/2 (2320/5), 203/1C (2320/4), 203/1A (2320/2), 2316/2 (2317/2), 2316/3 (2317/3), 2316/4 (2317/4), 2334/2 (2335/2), 2334/3 (2335/3), 2342/2 (2343/2)

TYPICAL DC ENGINEERED MONOPOLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.a

DRAWN BY: SLS



TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE

A. STRUCTURE MAPPING	SEE ATTACHMENT II.B.3.d
B. RATIONALE FOR STRUCTURE TYPE:	MORE COMPACT STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (1)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 1
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	6' DIAMETER FOUNDATION - SEE NOTE 2
H. MINIMUM STRUCTURE HEIGHT : MAXIMUM STRUCTURE HEIGHT : AVERAGE STRUCTURE HEIGHT :	110' 110' 110'
I. AVERAGE SPAN LENGTH:	*630' - SEE NOTE 3*
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL IS SUBJECT TO FINAL DESIGN
2. FINAL FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL DESIGN
3. SPAN LENGTHS ARE INCLUSIVE OF THE ROW LENGTH LISTED IN LINE (C)
4. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING

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

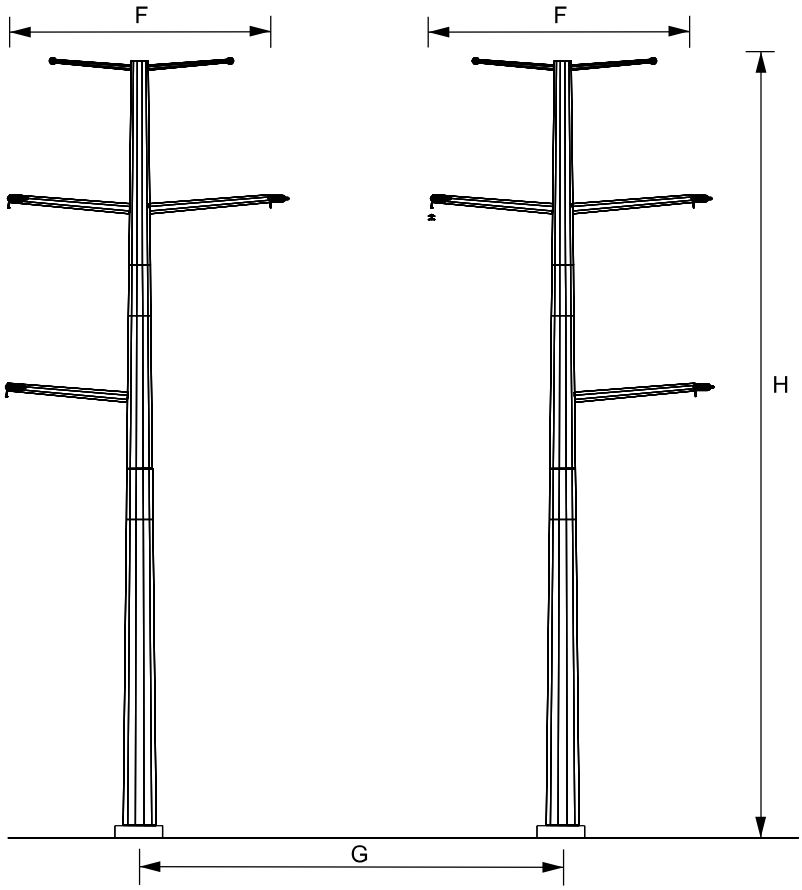
STRUCTURE: 203/1B (2320/3)

TYPICAL DC ENGINEERED MONOPOLE SUSPENSION STRUCTURE

ATTACHMENT NO.

II.B.3.b

DRAWN BY: SLS



TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

A. STRUCTURE MAPPING	SEE ATTACHMENT II.B.3.d
B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION NEEDED FOR CROSSING UNDER TRANSMISSION LINE.
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (3)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 1
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	41.5' POLE SPACING, 7' DIAMETER FOUNDATION - SEE NOTE 2
H. MINIMUM STRUCTURE HEIGHT : MAXIMUM STRUCTURE HEIGHT : AVERAGE STRUCTURE HEIGHT :	85' 90' 88'
I. AVERAGE SPAN LENGTH:	*630' - SEE NOTE 3*
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL IS SUBJECT TO FINAL DESIGN
2. FINAL FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL DESIGN
3. SPAN LENGTHS ARE INCLUSIVE OF THE ROW LENGTH LISTED IN LINE (C)
4. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING

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

STRUCTURE: 2316/5 (2317/5), 2316/6 (2317/6), 2340/2 (2341/2)

TYPICAL DC ENGINEERED 2-POLE DOUBLE DEADEND STRUCTURE

ATTACHMENT NO.

II.B.3.c

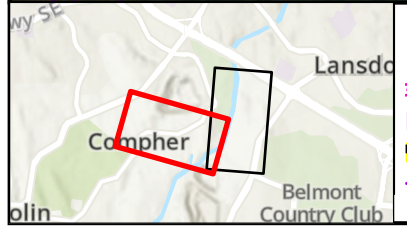
DRAWN BY: SLS

THE PROPOSED APPROXIMATE STRUCTURE HEIGHTS ARE FROM THE CONCEPTUAL DESIGN CREATED TO ESTIMATE THE COST OF THE PROPOSED FACILITIES ALONG THIS SECTION AND ARE SUBJECT TO CHANGE BASED ON FINAL ENGINEERING DESIGN.

Proposed Route Structure Location	
Structure Number	**Height (ft)**
230/2 2320/5	120
203/1C 2320/4	110
203/1B 2320/3	110
203/1A 2320/2	120
203/1 2316/1	75
2317/1 2320/1	75
2316/2 2317/2	135
2316/3 2317/3	120
2316/4 2317/4	120
2316/5 2317/5	85

230/2 2320/5
203/1C 2320/4
203/1B 2320/3
203/1A 2320/2
203/1 2316/1
2317/1 2320/1
2316/2 2317/2
2316/3 2317/3
2316/4 2317/4
2316/5 2317/5
State Rte 862
State Rte 653 Cochran Mill Rd
PLEASANT VIEW 500 SUB
PLEASANT VIEW SUB
TWIN CREEKS SUB
GOOSE CREEK SUB
ASPEN SUB
SYCOLIN CREEK
GOOSE CREEK
Washington and Old Dominion Trl
203
2093
514
595
274
559
227
2130

*Future facilities are associated with the Company's proposed Aspen-Golden Project.



- Existing Substation
- Proposed Substation
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Existing Dominion Transmission Lines
- Future Aspen Substation*
- Future Aspen–Golden Lines*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*
- Proposed Structure Location
- Parcels

0 200 400
Feet

N E S W

Attachment II.B.3.d
Structure Locations Along the Proposed Route
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

Attachment II.B.3.d

THE PROPOSED APPROXIMATE STRUCTURE HEIGHTS ARE FROM THE CONCEPTUAL DESIGN CREATED TO ESTIMATE THE COST OF THE PROPOSED FACILITIES ALONG THIS SECTION AND ARE SUBJECT TO CHANGE BASED ON FINAL ENGINEERING DESIGN.

GOOSE CREEK

Kittery Pt

State Rte 653 Cochran Mill Rd

2316/5
2317/5

2316/6
2317/6

2316/7
2334/1

2317/7
2335/1

SYCOLIN CREEK SUB

2334/2
2335/2

2334/3
2335/3

2334/4
2340/1

STARLIGHT SUB

2335/4
2341/1

2340/2
2341/2

2340/3
2342/1

LUNAR SUB

2341/3
2343/1

2342/2
2343/2

2342/3

2343/3

APOLLO SUB

State Rte 659 Belmont Ridge Rd N

Baltusrol Ter

Somerset Hl

Edgemont Sq

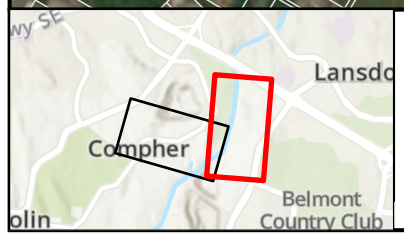
Harry Flood Byrd E Market St Hwy State Rte 7

Future facilities are associated with the Company's proposed Aspen-Golden Project.

Proposed Route Structure Location

Structure Number	Height (ft)
2316/5 2317/5	85
2316/6 2317/6	90
2316/7 2334/1	75
2317/7 2335/1	75
2334/2 2335/2	120
2334/3 2335/3	120
2334/4 2340/1	75
2335/4 2341/1	75
2340/2 2341/2	90
2340/3 2342/1	75

Structure Number	Height (ft)
2341/3 2343/1	75
2342/2 2343/2	120
2342/3	75
2343/3	75



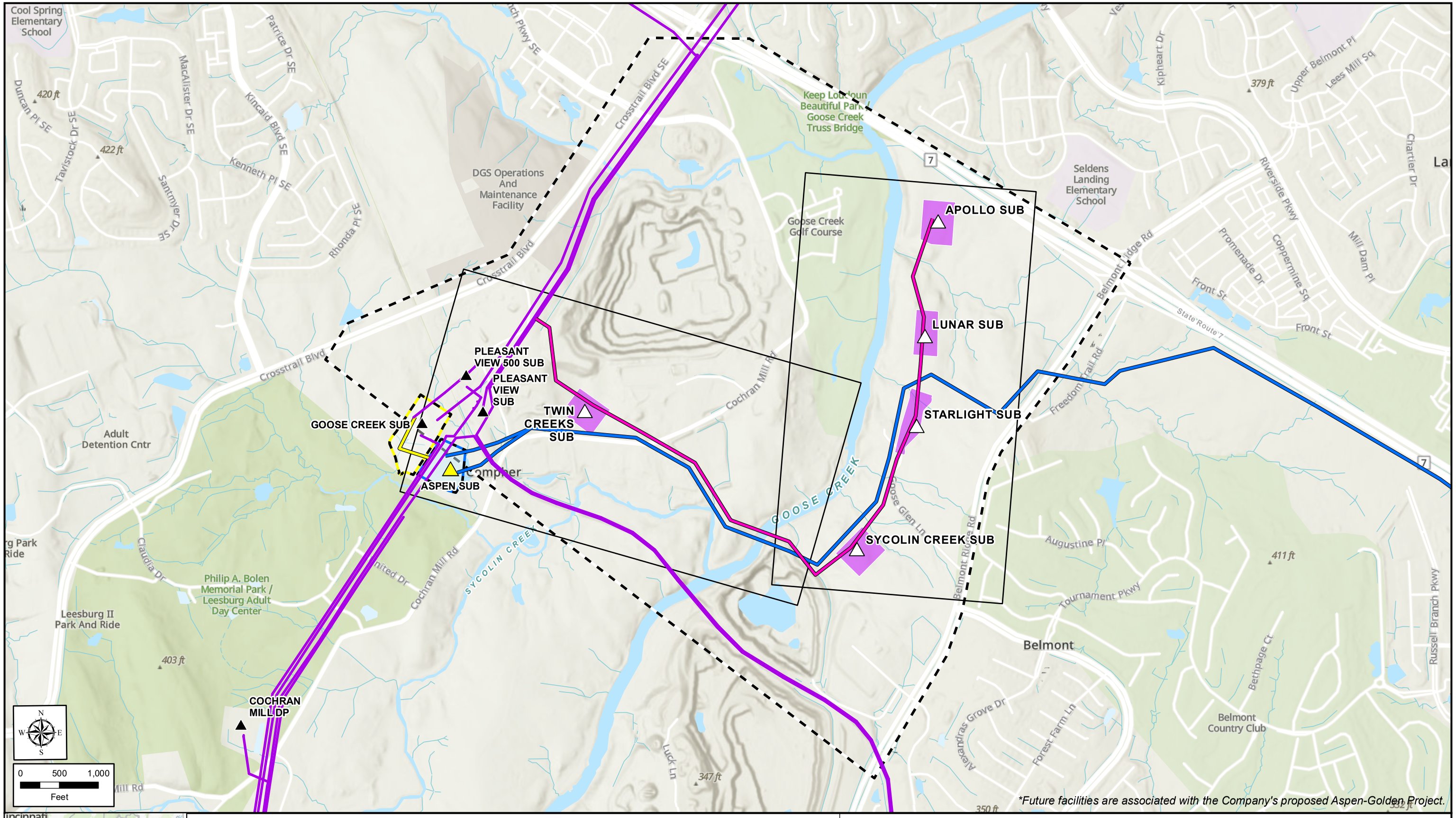
△ Proposed Substation
Proposed Apollo–Twin Creeks Lines
Proposed Substation Boundary
Future Aspen–Golden Lines*
Proposed Structure Location
Parcels

0 200 400
Feet

Attachment II.B.3.d
Structure Locations Along the Proposed Route
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy



- Existing Substation
- Proposed Substation
- Proposed Apollo–Twin Creeks Lines
- Proposed Substation Boundary
- Existing Substation Boundary
- Existing Dominion Transmission Line
- Study Area
- Future Aspen Substation*
- Future Aspen–Golden Lines Proposed Route*
- Future Aspen-Goose Creek Line*
- Future Substation Boundary*
- Viewframe

Attachment II.B.3.d Index
Structure Locations Along the Proposed Route
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: Not applicable. See Sections II.A.1 and II.A.9.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: [a] Not applicable.

[b] See Attachment II.B.6.b.i-iii for representative photographs of the proposed structures. Note that the Company has proposed dulled galvanized steel as the structure material for the Apollo-Twin Creeks Lines. See Attachments II.B.3.a-c.

[c] Visual simulations showing the appearance of the proposed transmission structures at identified historic locations within 1.0 mile of the proposed centerline of the Proposed Route are provided. See Attachment II.B.6.c for a map of the simulation locations, the existing views at the historic locations, and simulated proposed views.[32] These simulations were created using Geographic Information Systems modeling to depict whether the proposed structures will be visible from the identified historic location. The historic locations evaluated are described below. See also the Stage I Pre-Application Analysis Report contained in Appendix G of the Routing Study.

Historic Property	Viewpoint	Comments
Ball's Bluff Battlefield & National Cemetery Historic District Boundary Increase (VDHR ID# 253-5182)	12	The Proposed Route will have no impact on 253-5182.
Belmont Manor (VDHR ID# 053-0106	3	The Proposed Route will have no impact on 053-0106.
Ball's Bluff Battlefield (VDHR ID# 053-5058)	10	The Proposed Route will have no impact on 053-5058.
Washington & Old Dominion Railroad Historic District (VDHR ID# 053-0276)	5, 7	The Proposed Route will have no more than a minimal impact on 053-0276.
Cooke's Mill (VDHR ID# 053-0336)	27, 28, 29, 30	The Proposed Route will have no more than a minimal impact on 053-0336.
African American Burial Ground for the Enslaved at Belmont (VDHR ID# 053-6238)	37, 41, 308	The Proposed Route will have no more than a minimal impact on 053-6238.

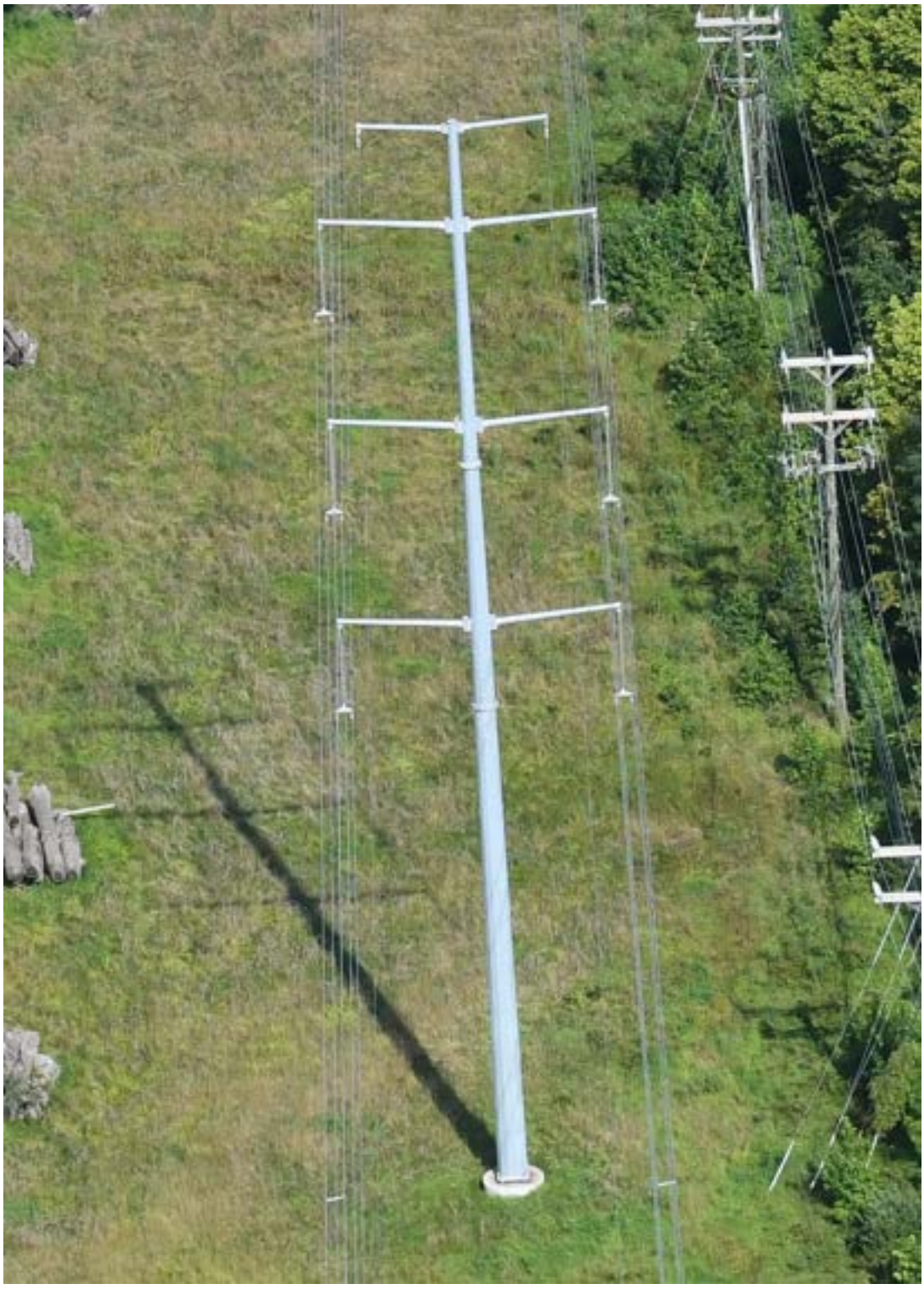
See Attachment III.B.2 for visual simulations and renderings of key locations evaluated.

[32] Note that the maps and some of the simulations provided in Attachment II.B.6.c include the Aspen-Golden Project, as noted therein.

Note: Proposed structures will use dulled galvanized steel.

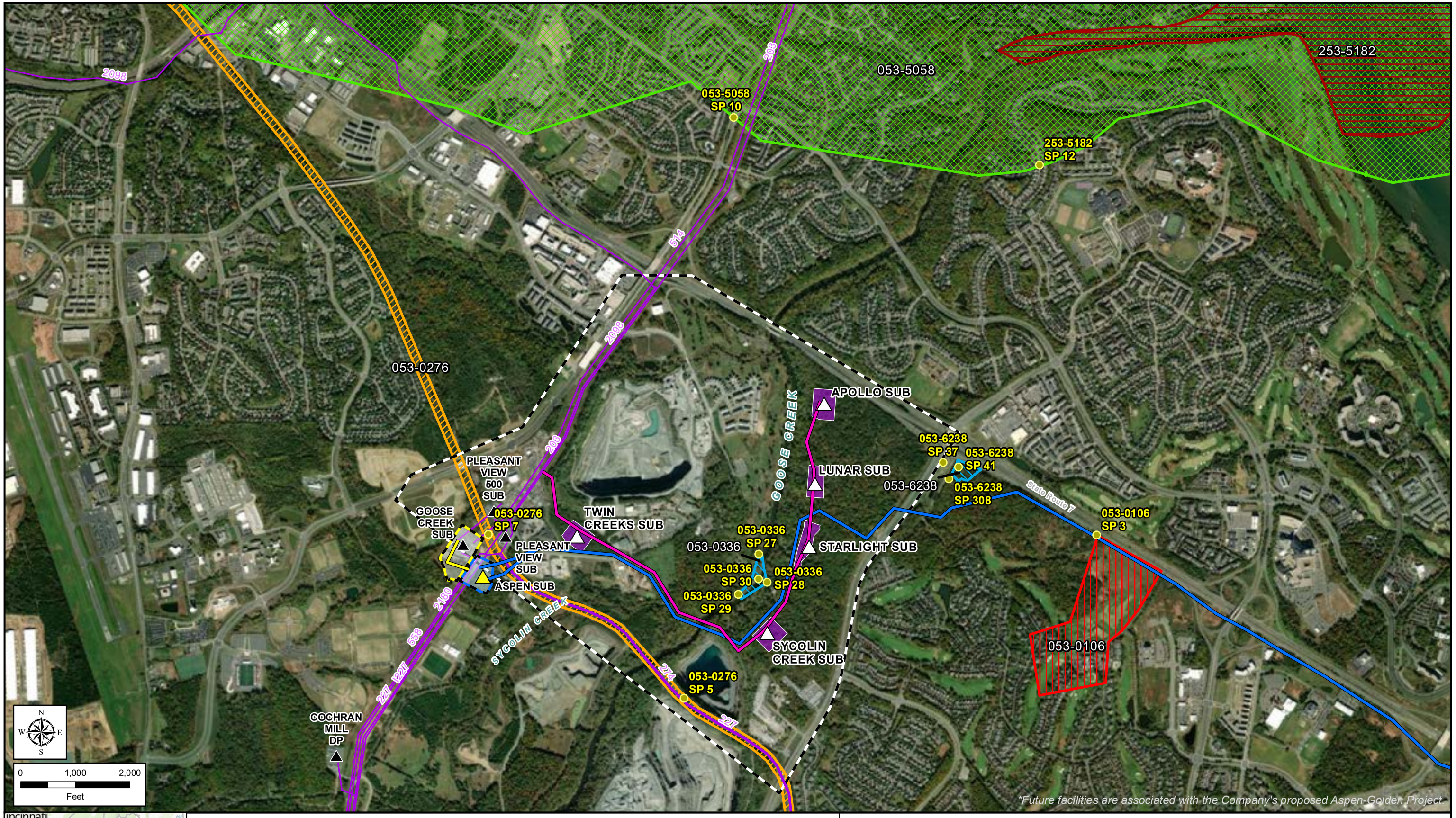
Dominion Energy

Proposed Structure Type:
230 kV DC Engineered Monopole -
DDE Attachment II.B.6.b.i



Note: Proposed structures will use dulled galvanized steel.

Note: Proposed structures will have a different phasing configuration



Attachment II.B.6.c
Overview Map of Routes Showing Visual Simulation Locations and Associated Aboveground Historic Resources
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

Figure 1. Aerial photograph depicting land use and photo view for 053-0106.

Existing View

Proposed view showing Route 1's hidden transmission line structures (highlighted in yellow) and Aspen-Golden

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284552E 4328128N
View Direction:	269 degrees
Viewpoint Elevation:	244 feet
Distance to Development:	5259 feet
Horizontal Field of View:	90 degrees

Date of Photography:	22nd March 2023 15:05
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 2
Viewpoint SP 03
Leesburg Pike NW of Ridge Rd
053-0106

Pre-Application Analysis
Apollo to Twin Creeks

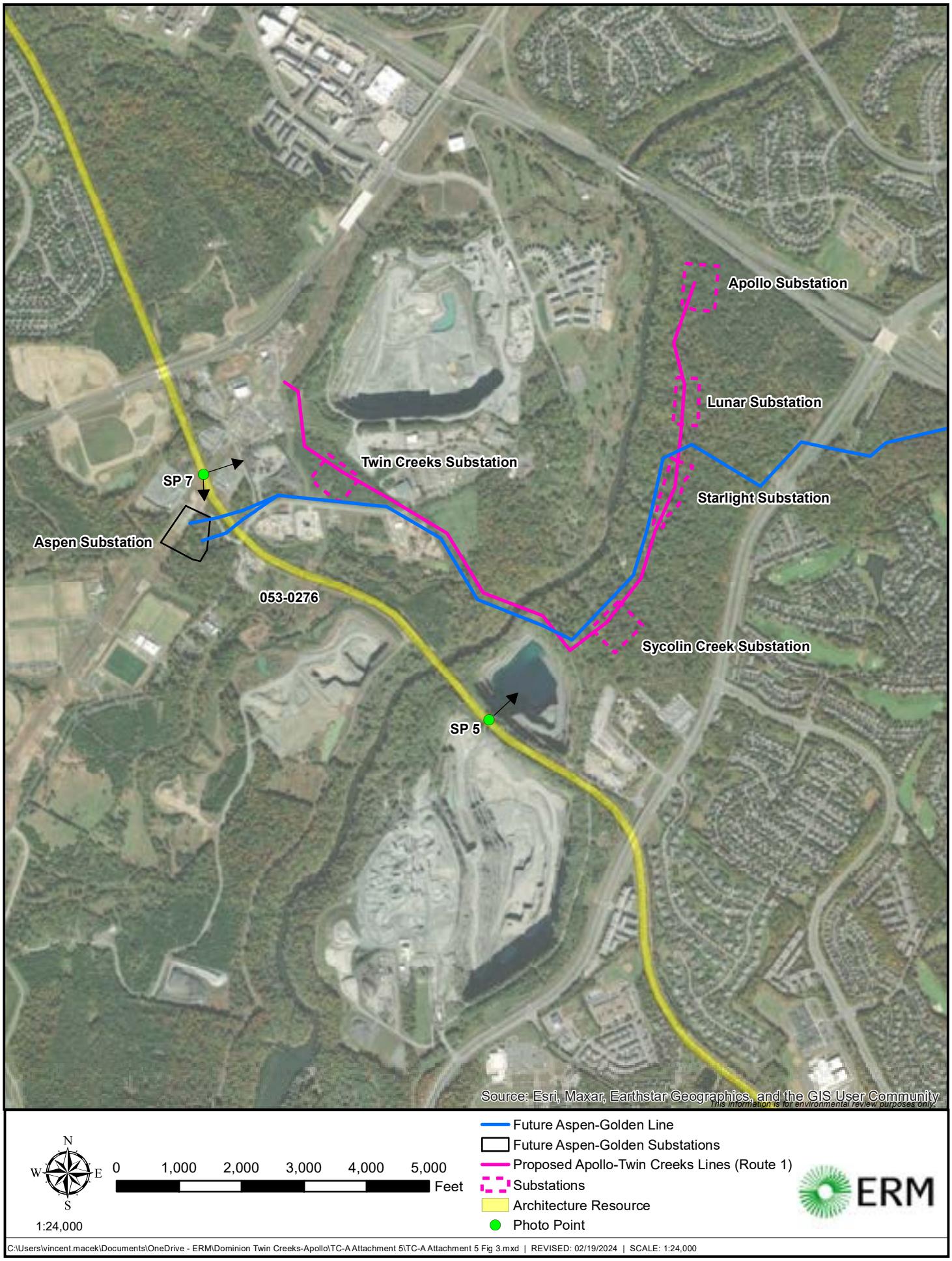


Figure 3. Aerial photograph depicting land use and photo view for 053-0276.

Existing View

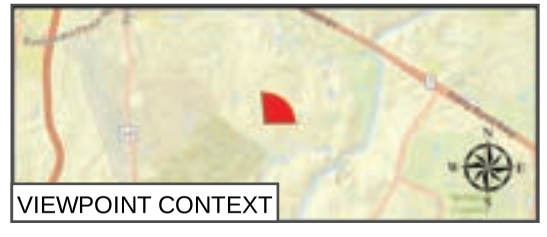
Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	281156E 4328250N
View Direction:	70 degrees
Viewpoint Elevation:	185 feet
Distance to Development:	1292 feet
Horizontal Field of View:	92 degrees

Date of Photography:	22nd March 2023 12:04
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches



VIEWPOINT CONTEXT

Figure 4
Viewpoint SP 07 East
Trail NW of Cochran Mill Rd
053-0276

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282204E 4327293N
View Direction:	45 degrees
Viewpoint Elevation:	185 feet
Distance to Development:	1340 feet
Horizontal Field of View:	91 degrees

Date of Photography:	22nd March 2023 13:26
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 5
Viewpoint SP 05
Trail NW of Belmont Ridge Rd
053-0276

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing location of transmission line structures associated with Aspen-Golden (no view to Apollo-Twin Creeks Route 1

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	281156E 4328250N
View Direction:	179 degrees
Viewpoint Elevation:	185 feet
Distance to Development:	728 feet
Horizontal Field of View:	84 degrees

Date of Photography:	22nd March 2023 12:04
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches

VIEWPOINT CONTEXT

Figure 6
Viewpoint SP 07
Trail NW of Cochran Mill Rd & Samuels Mill Ct
053-0276

Pre-Application Analysis
Apollo to Twin Creeks

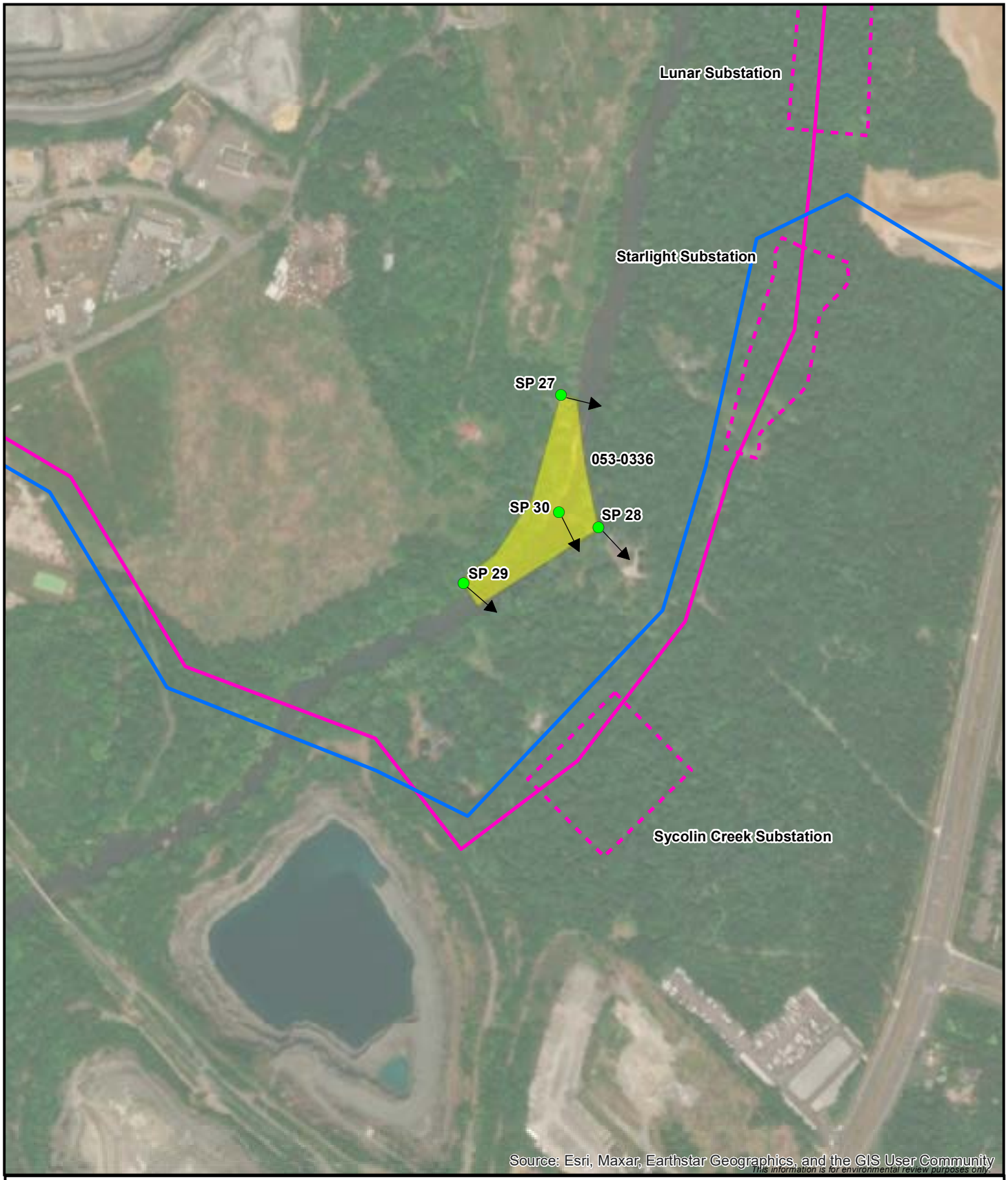


Figure 7. Aerial photograph depicting land use and photo view for 053-0336.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282661E 4328083N
View Direction:	100 degrees
Viewpoint Elevation:	120 feet
Distance to Development:	715 feet
Horizontal Field of View:	90 degrees

Date of Photography:	29th August 2023 12:05
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches

VIEWPOINT CONTEXT

Figure 8
Viewpoint SP 27
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282530E 4327865N
View Direction:	126 degrees
Viewpoint Elevation:	215 feet
Distance to Development:	648 feet
Horizontal Field of View:	90 degrees

Date of Photography:	29th August 2023 13:29
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches

VIEWPOINT CONTEXT

Figure 9
Viewpoint SP 29
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing location of transmission line structures for Route 1 (highlighted in purple) and Aspen-Golden (highlighted in pink)

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282686E 4327920N
View Direction:	133 degrees
Viewpoint Elevation:	210 feet
Distance to Development:	5432 feet
Horizontal Field of View:	90 degrees

Date of Photography:	29th August 2023 14:51
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	61 inches

VIEWPOINT CONTEXT

Figure 10
Viewpoint SP 28
E Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing location of transmission line structures for Route 1 (highlighted in purple) and Aspen-Golden (highlighted in pink)

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282646E 4327956N
View Direction:	153 degrees
Viewpoint Elevation:	202 feet
Distance to Development:	524 feet
Horizontal Field of View:	94 degrees

Date of Photography:	29th August 2023 12:58
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	58 inches

VIEWPOINT CONTEXT

Figure 11
Viewpoint SP 30
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Apollo to Twin Creeks

Figure 12. Aerial photograph depicting land use and photo view for 053-5058.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282611E 4330524N
View Direction:	191 degrees
Viewpoint Elevation:	209 feet
Distance to Development:	5433 feet
Horizontal Field of View:	90 degrees

Date of Photography:	22nd March 2023 11:20
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

Figure 13
Viewpoint SP 10
River Creek Pkwy S of Riverside Pkwy
053-5058

Pre-Application Analysis
Apollo to Twin Creeks

23

Figure 14. Aerial photograph depicting land use and photo view for 053-6238.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283793E 4328527N
View Direction:	272 degrees
Viewpoint Elevation:	216 feet
Distance to Development:	2808 feet
Horizontal Field of View:	83 degrees

Date of Photography:	30th August 2023 09:59
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 15
Viewpoint SP 41
Cemetery Trail E of Freedom Trail Rd.
053-6238

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283701E 4328556N
View Direction:	293 degrees
Viewpoint Elevation:	199 feet
Distance to Development:	2350 feet
Horizontal Field of View:	85 degrees

Date of Photography:	28th August 2023 14:42
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	59 inches

VIEWPOINT CONTEXT

Figure 16
Viewpoint SP 37
Belmont Ridge Rd at Leesburg Pike
053-6238

Pre-Application Analysis
Apollo to Twin Creeks

Existing View

Proposed view showing location of Route 1 transmission line structures (highlighted in purple) and Aspen-Golden (highlighted in pink)

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283730E 4328468N
View Direction:	257 degrees
Viewpoint Elevation:	281 feet
Distance to Development:	2456 feet
Horizontal Field of View:	91 degrees

Date of Photography:	7th December 2023 12:04
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	65 inches

VIEWPOINT CONTEXT

Figure 17
Viewpoint SP 308
Freedom Trail Rd SW of Leesburg Pike
053-6238

Pre-Application Analysis
Apollo to Twin Creeks

Figure 18. Aerial photograph depicting land use and photo view for 253-5182.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284305E 4330199N
View Direction:	217 degrees
Viewpoint Elevation:	216 feet
Distance to Development:	5908 feet
Horizontal Field of View:	90 degrees

Date of Photography:	22nd March 2023 10:46
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 19
Viewpoint SP 12
Calphams Mill Ct at Riverpoint Dr
053-5058

Pre-Application Analysis
Apollo to Twin Creeks

II. DESCRIPTION OF THE PROPOSED PROJECT

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

Response: The proposed Project requires construction of five new substations in Loudoun County, Virginia, as follows.

Twin Creeks Substation

The proposed Twin Creeks Substation will be constructed with four 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a six circuit breaker configuration. The substation will be connected to existing Edwards Ferry-Pleasant View Line #203, which will be split at the cut-in location creating new Pleasant View-Twin Creeks Line #2320 and new Edwards Ferry-Twin Creeks Line #203, thus providing the substation a double circuit 230 kV connection. The proposed Twin Creeks Substation will be designed to accommodate future growth in the area with an ultimate build-out of five 112 MVA 230-34.5 kV transformers. The total area of the Twin Creeks Substation is approximately 4.7 acres.

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

Sycolin Creek Substation

The proposed Sycolin Creek Substation will be constructed with two 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a four circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Twin Creeks Substation. The proposed Sycolin Creek Substation will be designed to accommodate future growth in the area with an ultimate build-out of five 112 MVA 230-34.5 kV transformers and a 230 kV ring bus with a six circuit breaker configuration. The total area of the Sycolin Creek Substation is approximately 4.7 acres.

The one-line diagram and general arrangement for the proposed Sycolin Creek Substation are provided as Attachment II.C.3 and Attachment II.C.4, respectively.

Starlight Substation

The proposed Starlight Substation initially will be constructed with two 84 MVA 230-34.5 kV transformers and a six 230 kV ring bus with a six circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Sycolin Creek Substation. The proposed Starlight Substation will be designed to accommodate future growth in the area with an ultimate build-out of two 84 MVA, two 112 MVA transformers, and a nine 230 kV breaker-and-a-half scheme. The total area of the Starlight Substation is

approximately 4.5 acres.

The one-line diagram and general arrangement for the proposed Starlight Substation are provided as Attachment II.C.5 and Attachment II.C.6, respectively.

Lunar Substation

The proposed Lunar Substation initially will be constructed with two 112 MVA 230-34.5 kV transformers and a 230 kV GIS[33] ring bus with a six circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Starlight Substation. The proposed Lunar Substation will be designed to accommodate future growth in the area with an ultimate build-out of four 112 MVA transformers and a 230 kV GIS ring bus with a six circuit breaker configuration. The total area of the Lunar Substation is approximately 4.0 acres.

The one-line diagram and general arrangement for the proposed Lunar Substation are provided as Attachment II.C.7 and Attachment II.C.8, respectively.

Apollo Substation

The proposed Apollo Substation initially will be constructed with two 84 MVA 230-34.5 kV transformers and a 230 kV ring bus with a five circuit breaker configuration. The substation will be connected by the Apollo-Twin Creeks Lines extending from the proposed Lunar Substation. The proposed Apollo Substation will be designed to accommodate future growth in the area with an ultimate build-out of two 112 MVA transformers, two 84 MVA transformers, and a 230 kV ring bus with a six circuit breaker configuration. The Apollo Substation will be constructed on approximately 5.0 acres.

The one-line diagram and general arrangement for the proposed Apollo Substation are provided as Attachment II.C.9 and Attachment II.C.10, respectively.

Other Minor Substation-Related Work

In addition to the substation-related work described above, the Company will perform line terminal and protection updates within the substation and control enclosures at the Company's existing Edwards Ferry and Pleasant View Substations.

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

[33] Due to the parcel size provided by Customer C for the Lunar Substation, the Company designed the substation using GIS equipment. Customer C will be responsible for excess facilities charges associated with the GIS equipment.

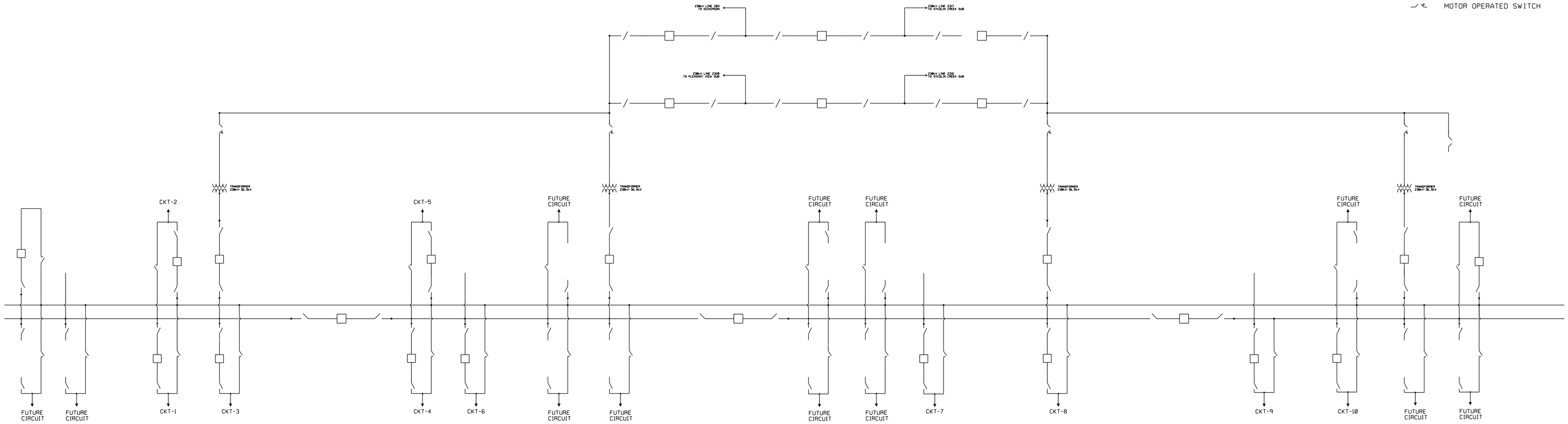
Other Minor Substation-Related Costs
(Millions (approximate))

Substation	Total
Edwards Ferry	$0.03
Pleasant View	$0.1

Attachment II.C.1

LEGEND:

- DOUBLE END BREAK SWITCH
- CIRCUIT BREAKER
- DISCONNECT SWITCH
- VERTICAL AIR BREAK SWITCH
- CENTER BREAK SWITCH
- POWER TRANSFORMER
- MOTOR OPERATED SWITCH



PRELIMINARY NOT FOR CONSTRUCTION

Dominion Energy

CONSTRUCTION ONE LINE DIAGRAM

Drawn By:	Date	Substation TWIN CREEKS SUBSTATION
Approval	Date	Drawing No.

Revisions

USER: tnickles

133

Attachment II.C.1

Dominion Energy

GENERAL ARRANGEMENT
TWIN CREEKS SUBSTATION

	Name	Date
Designed by:		
Approvals		
Approvals		

Project No.

Scale

B/M No.

Sheet No. OF

Revisions

Drawing No.

Cad File Name

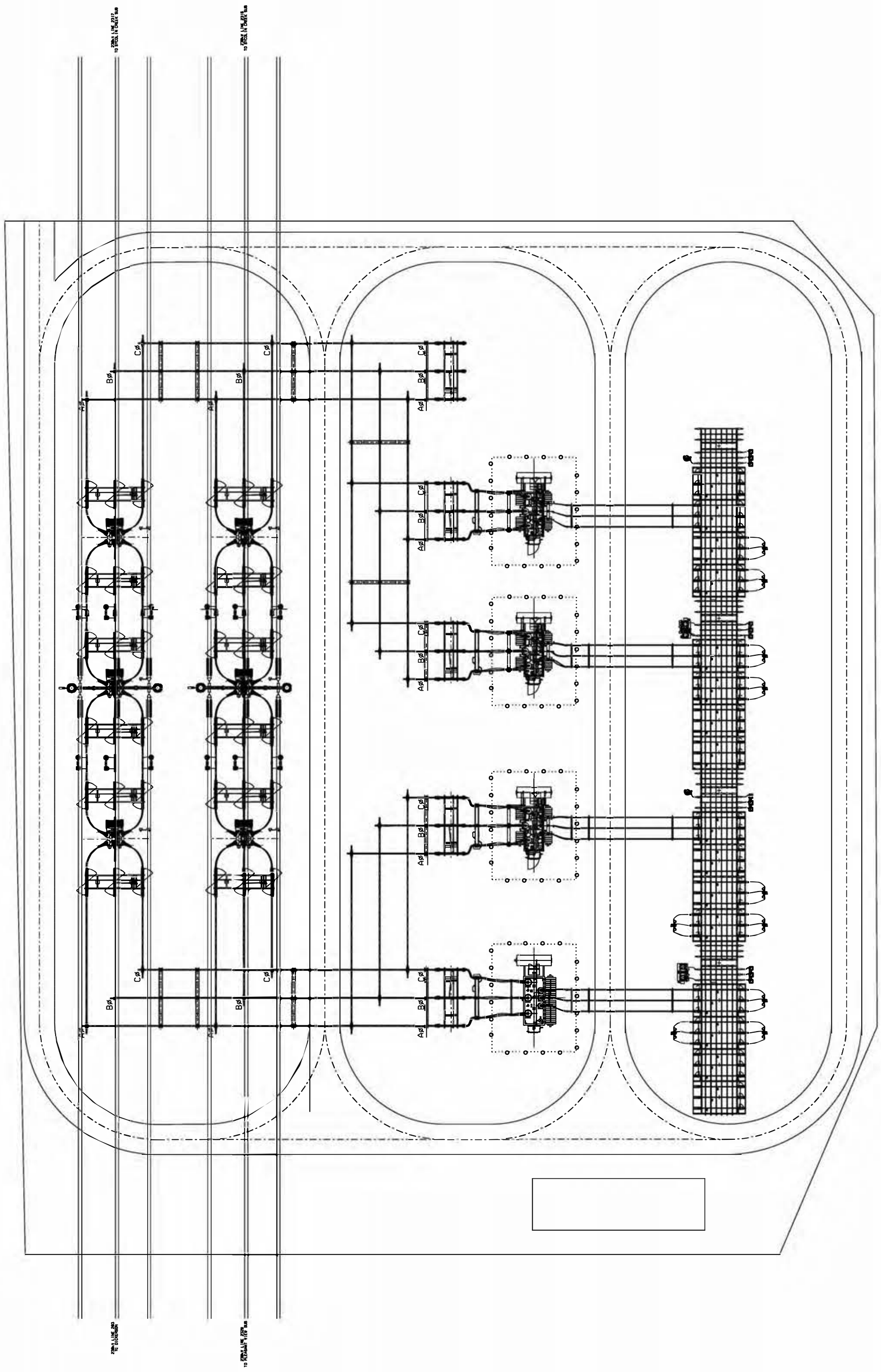
PLOTTED: 3/14/2024

$FILENAME$

PLOTTED: 3/14/2024

USER: tnickles

PRELIMINARY NOT FOR CONSTRUCTION



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

Typical Drawing Information

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

Revisions

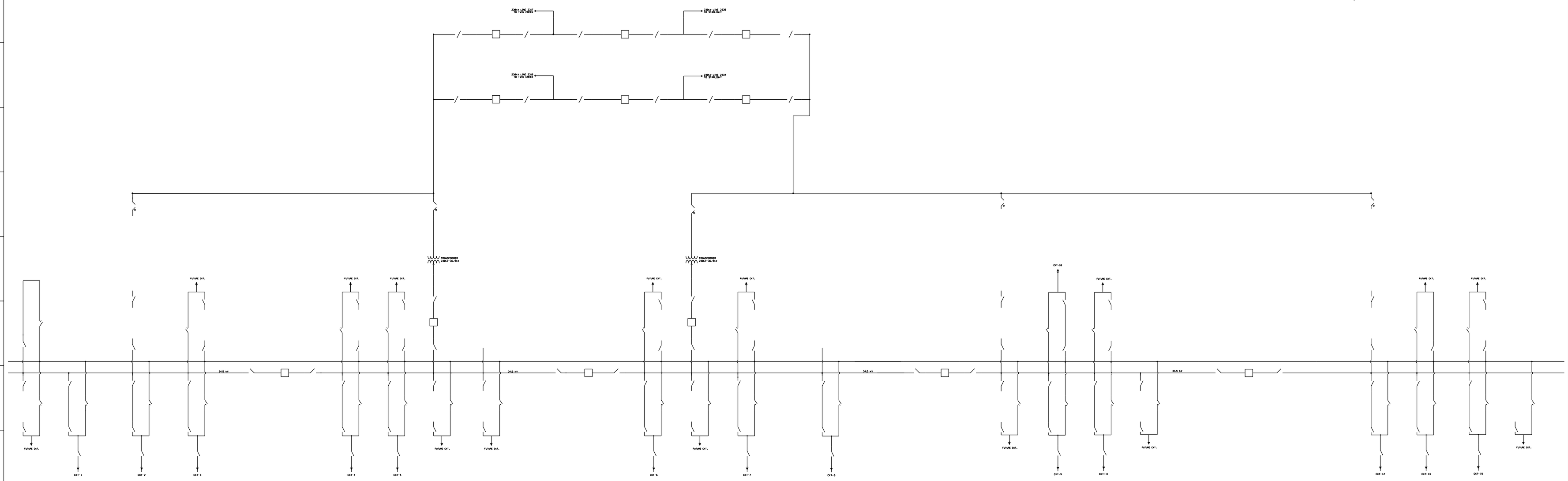
USER: tnickles

Attachment II.C.2

ATTACHMENT II.C.3

LEGEND:

- DOUBLE END BREAK SWITCH
- DISCONNECT SWITCH
- CIRCUIT BREAKER
- MOTOR OPERATED SWITCH
- VERTICAL AIR BREAK SWITCH
- POWER TRANSFORMER



PRELIMINARY NOT FOR CONSTRUCTION

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

USER: tnickles

Dominion Energy

CONSTRUCTION ONE LINE DIAGRAM

Drawn By:	Date	Substation	SYCOLIN CREEK SUBSTATION
Approval	Date	Drawing No.	

2282/1/73

Dominion Energy®

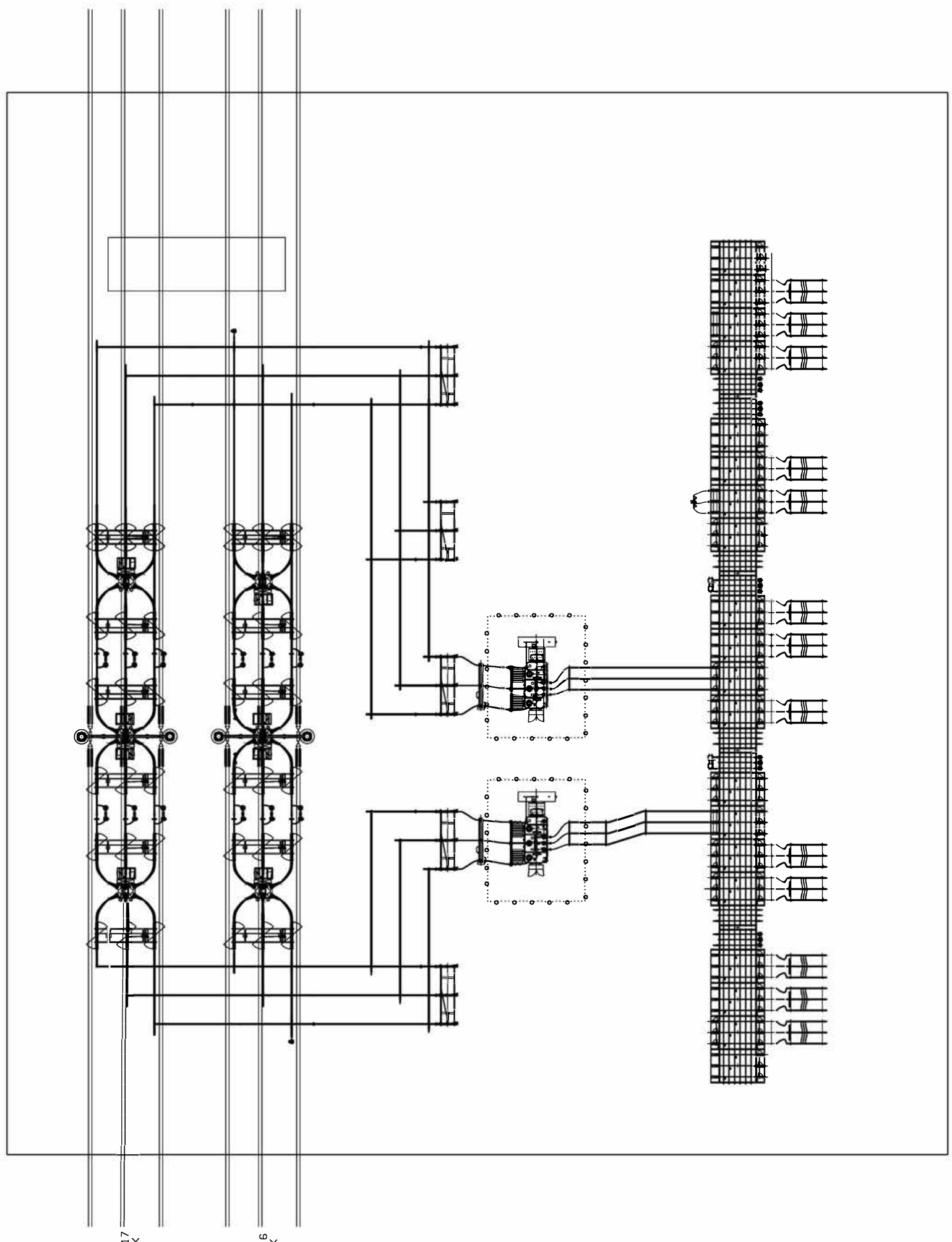
GENERAL ARRANGMENT
SYCOLIN CREEK SUBSTATION
LOUDOUN COUNTY, VIRGINIA

	Name	Date
Designed by:		
Approvals		
Approvals		

Project No.
Scale
B/M No.
Revisions
Sheet No. 0F
Drawing No.
Cad File Name
PLOTTED: 3/13/2024

$FILENAME$
PLOTTED: 3/13/2024
USER: erutledge

PRELIMINARY NOT FOR CONSTRUCTION



ATTACHMENT II.C.4

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

Revisions

Typical Drawing Information

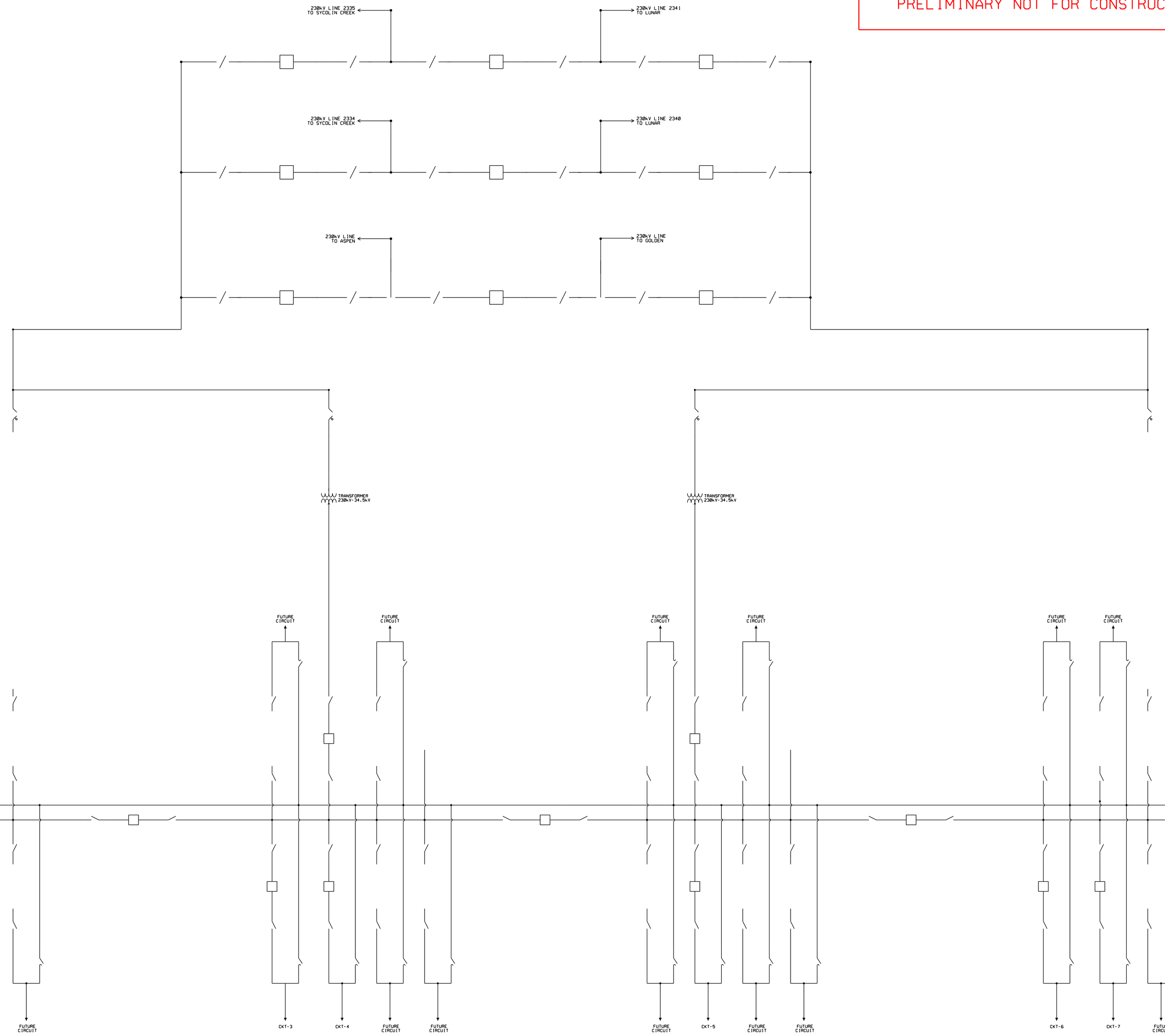
Library Location | Cell Name

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

USER: erutledge

ATTACHMENT II.C.5

PRELIMINARY NOT FOR CONSTRUCTION



LEGEND:

- DOUBLE END BREAK SWITCH
- CIRCUIT BREAKER
- DISCONNECT SWITCH
- VERTICAL AIR BREAK SWITCH
- POWER TRANSFORMER
- MOTOR OPERATED SWITCH

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

Revisions

USER: tnickles

Dominion Energy

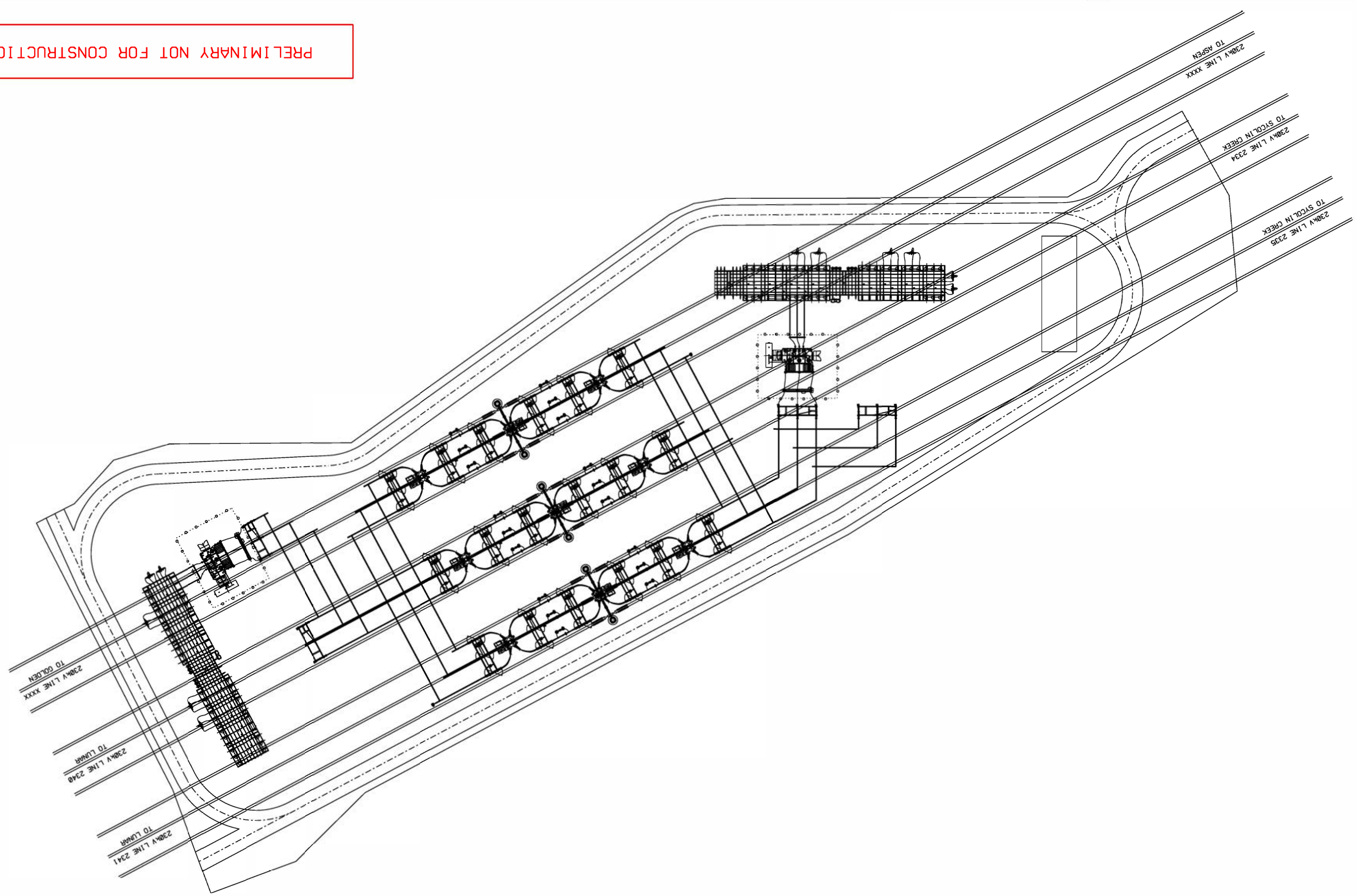
ONE LINE DIAGRAM

Drawn By:	Date	Substation STARLIGHT
Approval ---	Date	Drawing No.

X282/1/13

Attachment II.C.6

PRELIMINARY NOT FOR CONSTRUCTION



ATTACHMENT II.C.6

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

Revisions

No.	Date	By	Description	Checked/Appr.

Project Number
B/M

138

	Name	Date	Project No.	Sheet No.
Designed by:				1 of 1
Approved:			Scale	
Approved:				
Approved:			B/M No.	Revisions

Dominion Energy

GENERAL ARRANGEMENT
STARLIGHT SUBSTATION
LOUDOUN COUNTY, VIRGINIA

Cad File Name	PLOTTED: 3/14/2024
	Drawing No.

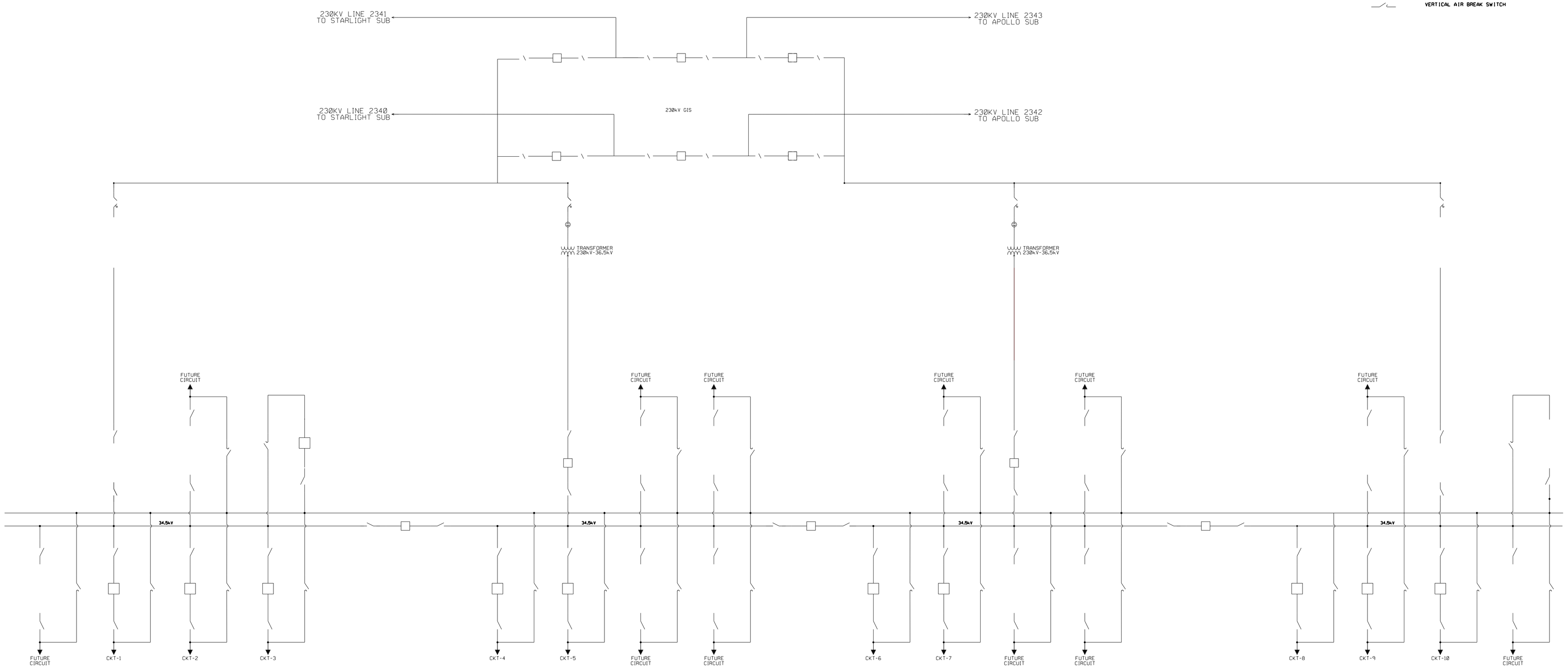
#FILENAME
PLOTTED: 3/14/2024
USER: tnichles

0 1 2 3 4 5 6 7 8 9 10 11 12

ATTACHMENT II.C.7

LEGEND

- CIRCUIT BREAKER
- POWER TREANSFOREMR
- DISCONNECT SWITCH
- DISCONNECT SWITCH WITH MOTOR OPERATOR
- CIRCUIT SWITCHER
- DISCONNECT SWITCH
- VERTICAL AIR BREAK SWITCH



PRELIMINARY
NOT FOR CONSTRUCTION

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

88	S	DEMARCATION INDICATOR - SEE SUB. OL.	
98	T	DEMARCATION INDICATOR - SEE TLIN. OL.	
98	D	DEMARCATION INDICATOR - SEE DIST. OL.	
97	C	DEMARCATION INDICATOR - SEE CUST. DOC.	

Dominion Energy

ONE LINE DIAGRAM

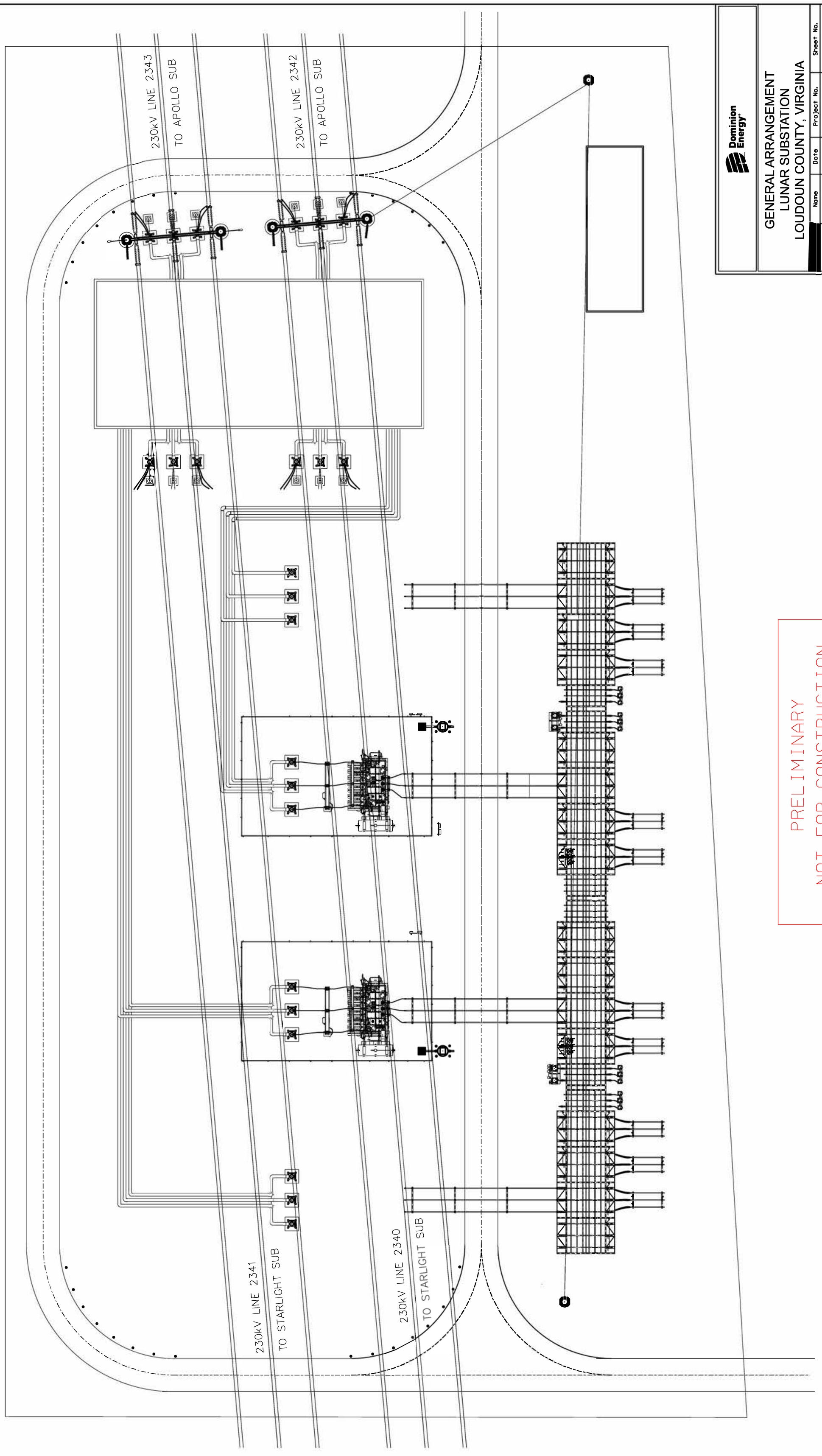
Drawn By: GCB	Date 11/06/23	Substation	LUNAR SUB
Approval	Date	Drawing No.	

$USERNAME$

SM1.LSSSSSSSSSSSS

139

Attachment II.C.7



Dominion Energy

GENERAL ARRANGEMENT
LUNAR SUBSTATION
LOUDOUN COUNTY, VIRGINIA

Designed by: GCB | Name | Date 12/13/23 | Project No. | Sheet No. 0F
Approvals | Scale
Approvals | B/M No. | Revisions
Cad File Name | Drawing No.
PLOTTED: ssssssssssSYTIME

$FILENAME$
PLOTTED: ssssssssssSYTIME
$USERNAME$

PRELIMINARY
NOT FOR CONSTRUCTION

ATTACHMENT II.C.8

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

Revisions
No. | Date | By | Description | Checked/Appr. | Project Number | B/M
$USERNAME$

LEGEND

CIRCUIT BREAKER

POWER TREANSFOREMR

DISCONNECT SWITCH

DISCONNECT SWITCH WITH MOTOR OPERATOR

CIRCUIT SWITCHER

DISCONNECT SWITCH

VERTICAL AIR BREAK SWITCH

230KV LINE TO ORBIT SUB

230KV LINE 2343 TO LUNAR SUB

230KV LINE 2342 TO LUNAR SUB

FUTURE

TRANSFORMER 230KV-36.5KV

34.5kV

CKT-8

CKT-7

CKT-6

CKT-5

CKT-4

CKT-3

CKT-2

CKT-1

FUTURE CIRCUIT

PRELIMINARY
NOT FOR CONSTRUCTION

ATTACHMENT II.C.9

Dominion Energy

ONE LINE DIAGRAM

Substation APOLLO SUB

Drawing No.

Drawn By: GCB

Date 11/06/23

Approval

Date

DEMARCATION INDICATOR - SEE SUB. OL.

DEMARCATION INDICATOR - SEE DIST. OL.

DEMARCATION INDICATOR - SEE TLIN. OL.

DEMARCATION INDICATOR - SEE CUST. DOC.

Revisions

By: Approval

Date:

Project No.

Network No.

BM No.

Description

$USERNAME$

Attachment II.C.10

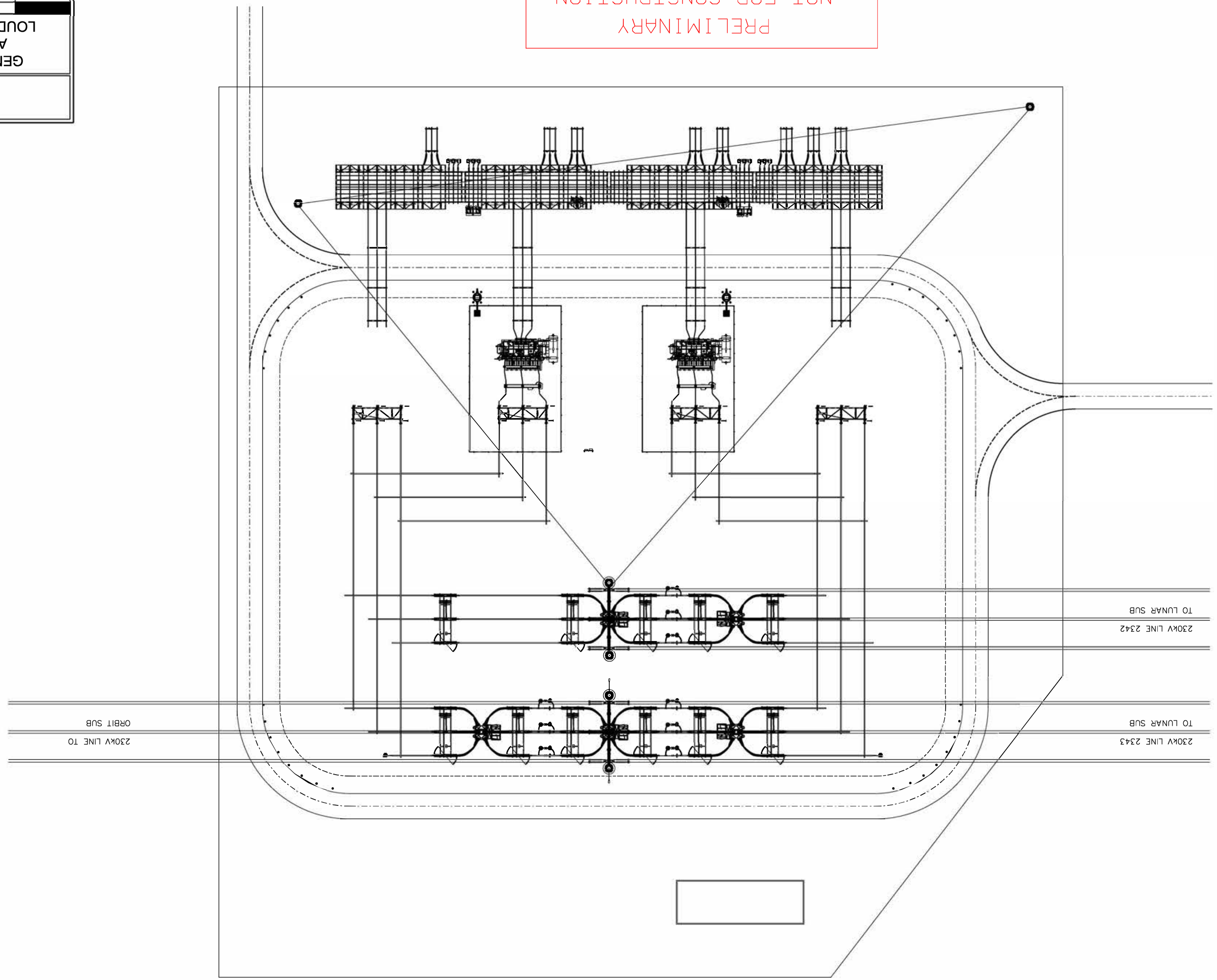
PRELIMINARY
NOT FOR CONSTRUCTION

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

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

Revisions

142



ATTACHMENT II.C.10

Designed by:	GCB	12/13/23	
Approvals			Scale
Approvals			
Approvals			

GENERAL ARRANGEMENT
APOLLO SUBSTATION
LOUDOUN COUNTY, VIRGINIA

Dominion Energy

Name | Date | Project No. | Sheet No.

B/M No. | Revisions

Cad File Name

Drawing No.

PLOTTED: ssssssssssSYTIME

#FILENAME#
PLOTTED: ssssssssssSYTIME
#USERNAME#

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

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

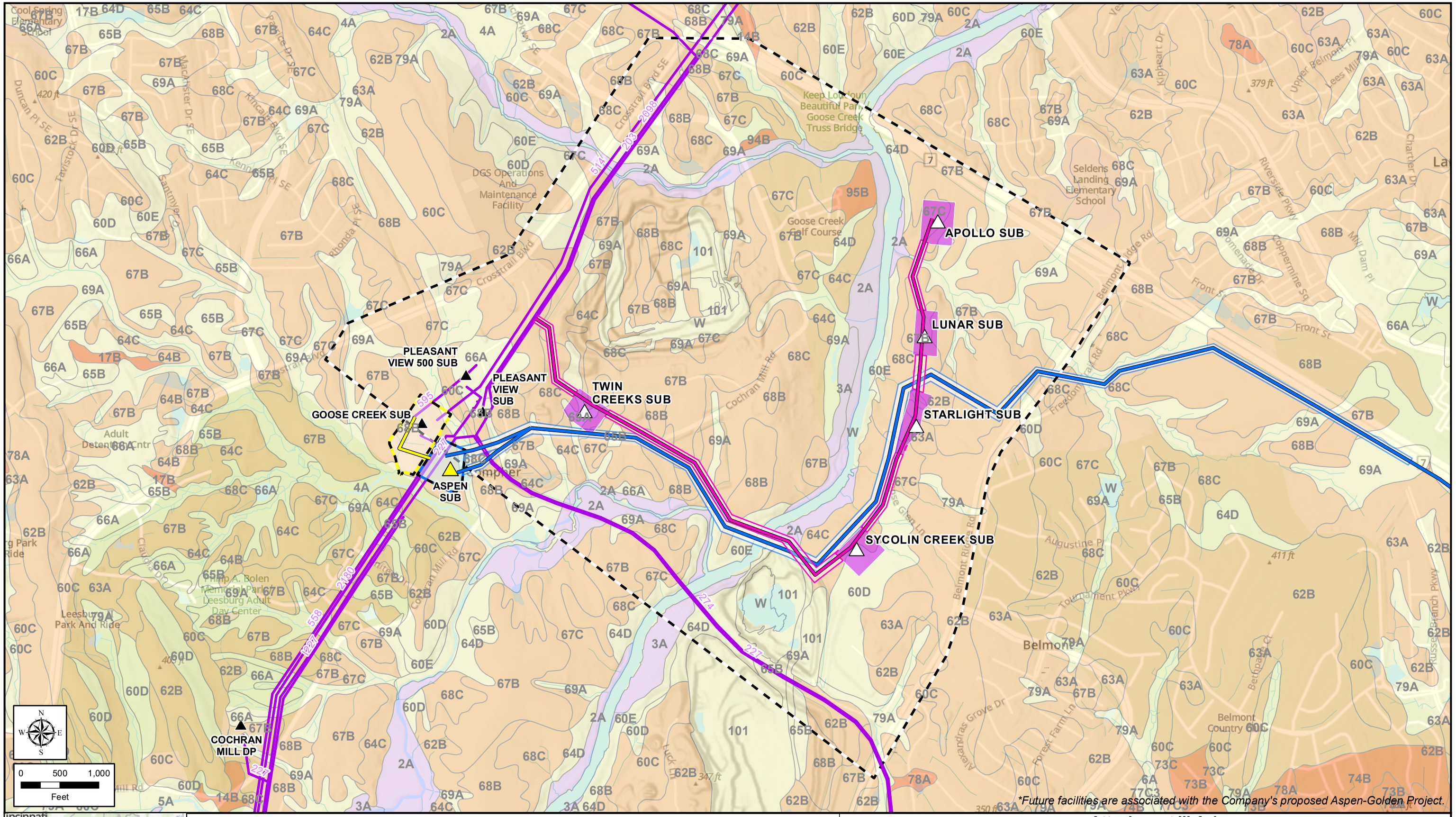
Response: **Proposed Route**

The Proposed Route is approximately 1.9 miles in length and is located entirely within Loudoun County, Virginia, extending southeast from the cut-in location on Line #203 to the proposed Twin Creeks Substation, across Cochran Mill Road and Goose Creek to the proposed Sycolin Creek Substation, then heading northeast to the proposed Starlight, Lunar, and Apollo Substations. The Proposed Route crosses undeveloped forested land, industrial land associated with mineral extraction, the forested Goose Creek Scenic Creek Valley Buffer, and forested land that was previously rural-residential but is now owned by industrial and data center developers. At least 77% of the total length of the Proposed Route is located on properties associated with Campuses A, B, and C, which likely would be cleared by the industrial developers prior to transmission line construction.

According to County parcel data, zoning data, and aerial photo analysis, there is one dwelling located within 500 feet of the proposed centerline, one dwelling located within 250 feet of the proposed centerline, and no dwellings located within 100 feet of the proposed centerline or within the right-of-way of the Proposed Route. There are three existing dwellings and one non-residential building (*e.g.,* light industrial to warehouse, residential garage/shed) within 100 feet of the proposed centerline and within the proposed right-of-way that will be demolished by the landowners prior to transmission line construction. See Section III.C. In addition, there are twelve planned data center or warehouse buildings that would be located within 500 feet of the proposed centerline.

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

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



*Future facilities are associated with the Company's proposed Aspen-Golden Project.

Attachment III.A.1
Prime Farmland and Farmland of Statewide Importance
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

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

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

Response: Stakeholder Engagement

At Dominion Energy Virginia, the Company believes stakeholder engagement is critical to the success of this Project. The data center industry has grown substantially in northern Virginia in recent years, and the Company has made significant investments in new infrastructure to meet the growing demand for electricity in a concentrated area. This Project is critical to the success of this industry in northern Virginia. Routing and siting this Project, in an accelerated timeline, would not have been possible without important partnerships and substantial community involvement, including environmental organizations, elected officials, governmental bodies, community leaders and community members. Outreach about the Project to County leaders, the data center industry, and the creation of the Loudoun Reliability Engagement Group (or "LREG") consisting of individuals with a variety of expertise and knowledge of the area, began in June 2022. Many of these stakeholders remain engaged and continue to represent their specialty as they participate in future electric transmission projects.

Feedback is critical as the Company considers all potential benefits and impacts of the Project, including connecting five new substations in a densely populated area in Loudoun County via the proposed Apollo-Twin Creeks 230 kV Electric Transmission Project.

Dominion Energy Virginia has and will continue to engage with a broad range of stakeholders that have interests across the Project components.

Stakeholder engagement includes both a statewide and regional approach in the following segments: cultural and historic resource stewardship organizations; the business community and workforce organizations; the environmental community; and organizations that represent the needs of underrepresented communities. These organizations agreed to combine into the LREG. Since July 2022, the LREG of more than 20 volunteers have met at least every other month to hear updates on electric transmission infrastructure projects impacting Loudoun County. The LREG has received updates on the Project beginning in November 2022 and provided input and feedback from their collective organizations related to routing, siting, environmental concerns as well as concerns about visual impacts to private property owners. Copies of presentations the Company made to the LREG since first engaging on the Project are available on www.dominionenergy.com/NOVA. The Company remains committed to maintaining communications with this engagement group for other projects proposed in Loudoun County.

The Company has also met with members of specific neighborhoods, including Belmont, Lansdowne and One Loudoun. Each neighborhood homeowners association represented several thousand homeowners. The Company also met with individual property owners and community members.

In August 2022, the Company launched an internet website dedicated to several projects in the area: www.dominionenergy.com/NOVA. Specific details about the Apollo-Twin Creeks 230 kV Electric Transmission Project were added to the website beginning in March 2023. The website includes a description of the proposed Project, an explanation of the need, routing options, GeoVoice (an interactive mapping tool), photo renderings and simulations, recordings of the in-person community meeting presentations, and information on the Commission review process. Additionally, the website includes presentations made at various public meetings described above. The Company also made the website available to the public in English, Spanish and Vietnamese.

Beginning in March 2023, the Company commenced coordinated community and stakeholder engagement with Loudoun County regarding the proposed transmission lines.[34]

- On May 22, 2023, a Project announcement postcard was mailed to nearly 40,000 residences and businesses in the vicinity of the Project area. The postcard included Project information and details regarding the virtual and in-person community meetings. A second mailing on June 5, 2023, included study area maps and details of the June 22, 2023 virtual and June 29, 2023 in-person community meetings. Copies of the postcards and Project announcement letters, as well as Project and community meeting information has been available on www.dominionenergy.com/NOVA since prior to the June 2023 community meetings. The digital advertising campaign promoting these community meetings ran from June 12, 2023, through June 29, 2023. Three print advertisements promoting the virtual and in-person community meetings ran in Loudoun County publications, including Loudoun Now and Loudoun Local Living on June 14, 2023, and in Loudoun Times on June 15, 2023.

- On June 22, 2023, the Project team hosted a virtual community meeting via Webex to inform stakeholders about the proposed Project. There were 120 attendees who asked 32 questions. Note that the Aspen-Golden Project team also attended this virtual community meeting to share information and simulations in regard to that project with the public.

- On June 29, 2023, the Company hosted an in-person community meeting on the need for new electric transmission lines to support large utility

[34] Note that while the Company hosted one virtual and two in-person meetings to discuss the Project with the public, the Company also discussed the proposed Project throughout its outreach on the Aspen-Golden Project, which is summarized in Section III.B of the Appendix to the Aspen-Golden Application. *See also* www.dominionenergy.com/NOVA.

customers. There were 108 attendees. Note that the Aspen-Golden Project team also attended this in-person community meeting to share information and simulations in regard to that project with the public.

- On November 9, 2023, another Project postcard was mailed to approximately 550 residents and businesses in the vicinity of the Project area. The postcard included Project information and details including the November 28, 2023 date for a second in-person community meeting.

- On November 28, 2023, the Company hosted a second in-person community meeting on the Project. There were 28 attendees. The community meeting was conducted in an exhibition format, and the layout included several Project-specific stations, such as renderings of the proposed electric transmission line routes, dismissed routes, study areas, and photo simulations, as well as related informational boards. A sign-in table with paper sign-in sheets was placed at the main entrance. The comment table included paper comment forms and a display board with a QR code linking to GeoVoice. The registration and comment form information was translated from English to Spanish.

- Environmental justice research related to the Project area showed a significant number of Spanish and Vietnamese speakers in the Project area. To accommodate the Spanish and Vietnamese speakers at the community meetings (on June 22, 2023; June 29, 2023; and November 28, 2023), the Project team provided sign-in information and translation services in Spanish and Vietnamese to offer accessible options in those languages. To accommodate the Spanish speakers at the community meeting on November 28, 2023, the Project team provided translation services in Spanish to offer accessible options in that language.

The Company conducted a thorough digital advertising campaign designed to communicate all aspects of the Apollo-Twin Creeks 230 kV Electric Transmission Project. There were two phases to the campaign: Phase 1 – May 25, 2023, to July 20, 2023, and Phase 2 – November 15, 2023, to November 28, 2023. Through social media platforms, display advertisements, videos and newspaper ads, the Company's goal was to provide information about the alternatives for meaningful involvement among impacted communities.

See Attachment III.B.1, which includes the Project's newspaper advertisements, the digital advertisements, and the digital campaign results.

The Company deployed an online tool called GeoVoice on September 1, 2022 (embedded at https://geovoice.powereng.com/dominion/LoudounCounty/ within the Project website), which allows users to review the potential transmission routing options and to provide location-based comments to share insights. GeoVoice was first populated with routing options for the Project on May 10, 2023, and was subsequently updated with typical proposed structure drawings and photo simulations and renderings, which are included as Attachment III.B.2. Users do

not need to register before viewing the routing details. This allowed stakeholders to provide their comments (after registering prior to routes being released) to help inform the routing process. Activity on GeoVoice includes 231 total users and 24 location-based comments from users.

Environmental Justice

As set forth in Section 6.7 of the Routing Study, the Company researched the demographics of the surrounding communities using data from the U.S. Census Bureau's American Community Survey 5-Year Estimates (2018-2022). This review revealed that 16 Census Block Groups ("CBGs") are located within one mile of the Proposed Route, inclusive of the five proposed substations. A review of census data for several demographic characteristics identified populations within the Project study area that meet the Virginia Environmental Justice Act ("VEJA") thresholds for Environmental Justice Communities ("EJ Communities") (Va. Code §§ 2.2-234, 2.2-235).

Of the 16 CBGs within the Project study area, two CBGs are crossed by the Project's Proposed Route. Both of the CBGs crossed appear to contain populations of color, but do not meet low-income or other sensitive population thresholds.

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

In addition to its evaluation of impacts, the Company has and will continue to engage the EJ Communities in a manner that allows them to meaningfully participate in the Project development and approval process so that the Company can take their views and input into consideration. See Attachment III.B.1 for information regarding outreach. See Attachment III.B.3 for a copy of the Company's Environmental Justice Policy.

DE Transmission

Twin Creeks

Report Date: November 15, 2023 – November 28, 2023

DET | Twin Creeks + NOVA Phases 1-3 | 5/25/23-11/28/23 | Overall

The NOVA and Twin Creeks campaigns ran on Facebook, Twitter, Google and Nextdoor through 11/28/23. These campaigns were targeted at customers over the age of 25 who reside near the project areas.

5,832,219 impressions
of ads were delivered to target audiences.

50,686 clicks
have taken audiences to the landing pages.

600,269 video views with an average 30.05% VCR

0.87% CTR
Most CTRs near or above benchmarks.

271,316 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The English Google Display DET Twin Creeks 300x600 ad had the highest CTR at 27.02%, which is 5,304% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 2.20%.
- Nextdoor performed 107% over benchmark.
- Google Video performed well with 143,991 views and a VCR of 23.16%.
- Ads are engaging with adults 25-54 and men.

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

DET | NOVA Phase 1 – Reliability | 5/25/23-6/11/23 | English

The NOVA campaigns ran on Facebook, Twitter, Google and Nextdoor through 6/11/23. These campaigns were targeted at customers over the age of 25 who reside near the project area in Loudoun County.

1,635,896 impressions
of ads were delivered to target audiences.

10,962 clicks
have taken audiences to the landing pages.

122,414 video views with an average 7.53% VCR

0.67% CTR
Most CTRs near or above benchmarks.

46,758 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET NOVA ad had the highest CTR at 1.82%, which is 102% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 1.82%.
- Nextdoor performed 93% over benchmark.
- Google Video performed well with 14,005 views and a VCR of 24.41%.
- Ads are engaging with adults 25-54 and men.

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

DET | NOVA Phase 1 – Reliability | 5/25/23-6/11/23 | English

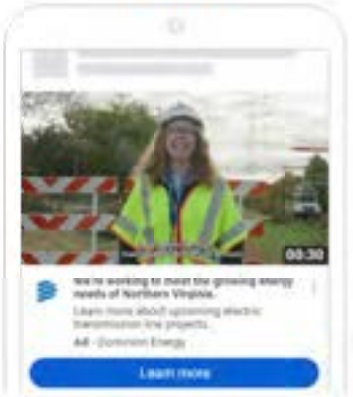
Social

- **689,257** Impressions
- **6,215** Clicks
- **0.90%** CTR

Display

- **595,909** Impressions
- **2,976** Clicks
- **0.50%** CTR

Video



- **350,730** Impressions
- **14,005** Views
- **3,419** Completions
- **24.41%** VCR

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

DET | NOVA Phase 1 – Reliability | 5/25/23-6/11/23 | Spanish

The NOVA campaigns ran on Facebook, Twitter, Google and Nextdoor through 6/11/23. These campaigns were targeted at customers over the age of 25 who speak Spanish and reside near the project area in Loudoun County.

436,375 impressions
of ads were delivered to target audiences.

3,396 clicks
have taken audiences to the landing pages.

28,667 video views with an average 10.64% VCR

0.78% CTR
Most CTRs near or above benchmarks.

14,972 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The Spanish DET NOVA ad had the highest CTR at 1.93%, which is 114% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 1.93%.
- Google Video performed well with 5,066 views and a VCR of 37.84%.
- Ads are engaging with adults 25-44 and men.

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

DET | NOVA Phase 1 – Reliability | 5/25/23-6/11/23 | Spanish

Social

- **135,203** Impressions
- **1,627** Clicks
- **1.20%** CTR

Display

- **181,728** Impressions
- **994** Clicks
- **0.55%** CTR

Video

- **119,444** Impressions
- **5,066** Views
- **1,917** Completions
- **37.84%** VCR

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

DET | NOVA Phase 2 – June Pre-Event | 6/12/23-6/29/23 | English

The NOVA campaigns ran on Facebook, Twitter, Google and Nextdoor through 6/29/23. These campaigns were targeted at customers over the age of 25 who reside near the project area in Loudoun County.

863,884 impressions
of ads were delivered to target audiences.

5,455 clicks
have taken audiences to the landing pages.

86,834 video views with an average 31.14% VCR

0.63% CTR
Most CTRs near or above benchmarks.

25,945 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The DET NOVA Old Meeting Both ad had the highest CTR at 2.31%, which is 157% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 1.67%.
- Nextdoor performed 87% over benchmark.
- Google Video performed well with 25,636 views and a VCR of 26.06%.
- Ads are engaging with adults 35-44 and men.

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

DET | NOVA Phase 2 – June Pre-Event | 6/12/23-6/29/23 | English

Social

- **446,321** Impressions
- **3,195** Clicks
- **0.72%** CTR

Display

- **214,059** Impressions
- **1,226** Clicks
- **0.57%** CTR

Video

- **203,504** Impressions
- **25,636** Views
- **6,680** Completions
- **26.06%** VCR

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

Newspaper

Half-page, full-color ads were purchased in Loudoun Times, Loudoun Now, and Loudoun Local Living.

Publication Dates:
Loudoun Times – June 15
Loudoun Now – June 14
Loudoun Local Living – June 14

DET | NOVA Phase 2 – June Pre-Event | 6/12/23-6/29/23 | Spanish

The NOVA campaigns ran on Facebook, Twitter, Google and Nextdoor through 6/29/23. These campaigns were targeted at customers over the age of 25 who speak Spanish and reside near the project area in Loudoun County.

236,516 impressions

of ads were delivered to target audiences.

2,013 clicks

have taken audiences to the landing pages.

23,323 video views with an average 38.62% VCR

0.85% CTR

Most CTRs near or above benchmarks.

10,342 ad engagements

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

Notable Creative

The Spanish DET NOVA Old Meeting Both ad had the highest CTR at 2.39%, which is 166% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 1.97%.
- Google Video performed well with 8,968 views and a VCR of 30.91%.
- Ads are engaging with adults 35-44 and men.

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

DET | NOVA Phase 2 – June Pre-Event | 6/12/23-6/29/23 | Spanish

Social

- **76,493** Impressions
- **969** Clicks
- **1.27%** CTR

Display

- **87,539** Impressions
- **569** Clicks
- **0.65%** CTR

Video

- **72,484** Impressions
- **8,968** Views
- **1,959** Completions
- **30.91%** VCR

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

DET | NOVA Phase 3 – June Post-Event | 7/7/23-7/20/23 | English

The NOVA campaigns ran on Facebook, Twitter, Google and Nextdoor through 7/20/23. These campaigns were targeted at customers over the age of 25 who reside near the project area in Loudoun County.

1,397,407 impressions
of ads were delivered to target audiences.

7,907 clicks
have taken audiences to the landing pages.

121,637 video views with an average 31.09% VCR

0.57% CTR
Most CTRs near or above benchmarks.

43,621 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The Facebook DET NOVA Phase 3 VOH ad had the highest CTR at 1.99%, which is 121% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 1.63%.
- Nextdoor performed 113% over benchmark.
- Google Video performed well with 28,824 views and a VCR of 14.36%.
- Ads are engaging with adults 25-44 and men.

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

DET | NOVA Phase 3 – June Post-Event | 7/7/23-7/20/23 | English

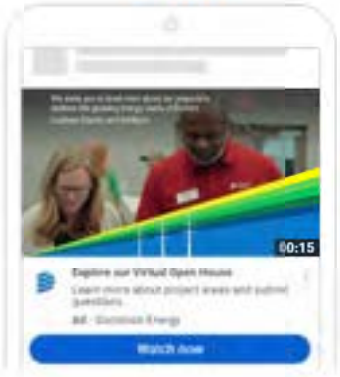
Social

- **583,119** Impressions
- **4,363** Clicks
- **0.75%** CTR

Display

- **552,722** Impressions
- **2,325** Clicks
- **0.42%** CTR

Video



- **261,566** Impressions
- **28,824** Views
- **4,138** Completions
- **14.36%** VCR

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

DET | NOVA Phase 3 – June Post-Event | 7/7/23-7/20/23 | Spanish

The NOVA campaigns ran on Facebook, Twitter, Google and Nextdoor through 7/20/23. These campaigns were targeted at customers over the age of 25 who speak Spanish and reside near the project area in Loudoun County.

405,283 impressions
of ads were delivered to target audiences.

2,578 clicks
have taken audiences to the landing pages.

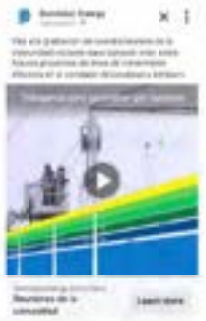
24,031 video views with an average 40.64% VCR

0.64% CTR
Most CTRs near or above benchmarks.

14,117 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The Facebook Spanish DET NOVA Phase 3 Virtual Meeting ad had the highest CTR at 2.20%, which is 144% higher than the platform benchmark.



Notable Insights

- Facebook ads performed above benchmark with an overall CTR of 1.63%.
- Google Video performed well with 3,815 views and a VCR of 22.62%.
- Ads are engaging with adults 25-44 and men.

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

DET | NOVA Phase 3 – June Post-Event | 7/7/23-7/20/23 | Spanish

Social

- **106,260** Impressions
- **1,154** Clicks
- **1.09%** CTR

Display

- **263,798** Impressions
- **1,213** Clicks
- **0.46%** CTR

Video

- **35,225** Impressions
- **3,815** Views
- **863** Completions
- **22.62%** VCR

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

DET | Twin Creeks | 11/15/23-11/28/23 | Overall Combined Metrics

The Twin Creeks campaigns ran on Facebook, Twitter, Google and Nextdoor through 11/28/23. These campaigns were targeted at customers over the age of 25 who reside or travel within a short distance of the project area.

848,133 impressions
of ads were delivered to target audiences.

18,348 clicks
have taken audiences to the landing pages.

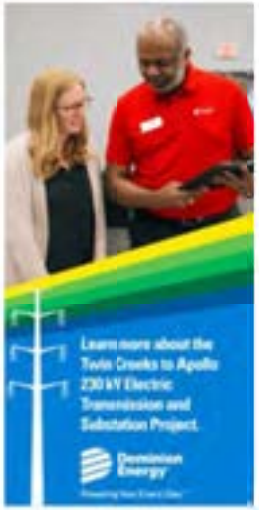
192,779 video views with an average 43.74% VCR

2.16% CTR
Most CTRs near or above benchmarks.

115,561 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The English Google Display DET Twin Creeks 300x600 ad had the highest CTR at 27.02%, which is 5,304% higher than the platform benchmark.



Notable Insights

- Facebook ads performed above benchmark by 308%.
- Nextdoor performed 140% over benchmark.
- Google Display performed well and had a CTR 514% over benchmark.
- Google Video had over 13,000 video completions for a 23.51% VCR.

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

charles ryan associates | Dominion Energy

DET | Twin Creeks | 11/15/23-11/28/23 | English Overall Metrics

The Twin Creeks campaigns ran on Facebook, Twitter, Google and Nextdoor through 11/28/23. These campaigns were targeted at customers over the age of 25 who reside or travel within a short distance of the project area.

487,616 impressions
of ads were delivered to target audiences.

11,089 clicks
have taken audiences to the landing pages.

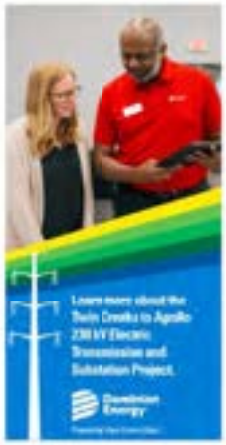
130,644 video views with an average 41.07% VCR

2.27% CTR
Most CTRs near or above benchmarks.

71,829 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The Google Display DET Twin Creeks 300x600 ad had the highest CTR at 27.02%, which is 5,304% higher than the platform benchmark.



Notable Insights

- Facebook ads performed above benchmark by 334%.
- Nextdoor performed 140% over benchmark.
- Google Display performed well and had a CTR 2,848% over benchmark.
- Ads are engaging with adults 55-65+ and women.

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

DET | Twin Creeks | 11/15/23-11/28/23 | English Overall

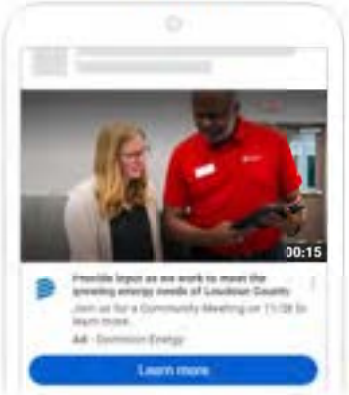
Social

- **189,144** Impressions
- **5,708** Clicks
- **3.02%** CTR

Display

- **24,382** Impressions
- **3,595** Clicks
- **14.74%** CTR

Video



- **189,260** Impressions
- **44,277** Views
- **10,730** Completions
- **24.23%** VCR

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

Newspaper

Half-page, full-color ads were purchased in Loudoun Now, Loudoun Times-Mirror, and Loudoun Local Living.

Publication Dates:

- Loudoun Now – November 23, 2023
- Loudoun Times-Mirror – November 24, 2023
- Washington Post, Loudoun Local Living – November 23, 2023

Dominion Energy

DET | Twin Creeks | 11/15/23-11/28/23 | Spanish Overall Metrics

The Twin Creeks campaigns ran on Facebook, Twitter, Google and Nextdoor through 11/28/23. These campaigns were targeted at customers over the age of 25 who reside or travel within a short distance of the project area.

360,517 impressions
of ads were delivered to target audiences.

7,259 clicks
have taken audiences to the landing pages.

62,135 video views with an average 49.35% VCR

2.01% CTR
Most CTRs near or above benchmarks.

43,732 ad engagements
such as reactions, likes, comments, shares and saves have been made on the ads.

Notable Creative

The Spanish Facebook DET Twin Creeks v2 video ad had the highest CTR at 3.50%, which is 289% higher than the platform benchmark.

Notable Insights

- Facebook ads performed above benchmark by 263%.
- Google Display performed well and had a CTR 198% over benchmark.
- Google Video had 2,693 video completions for a 21.01% VCR.
- Ads are engaging with adults 25-44 and men.

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

charles ryan associates | Dominion Energy

DET | Twin Creeks | 11/15/23-11/28/23 | Spanish Overall

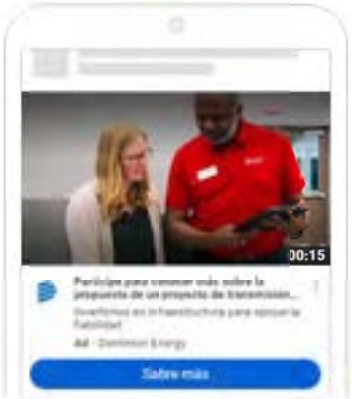
Social

- **105,928** Impressions
- **2,643** Clicks
- **2.50%** CTR

Display

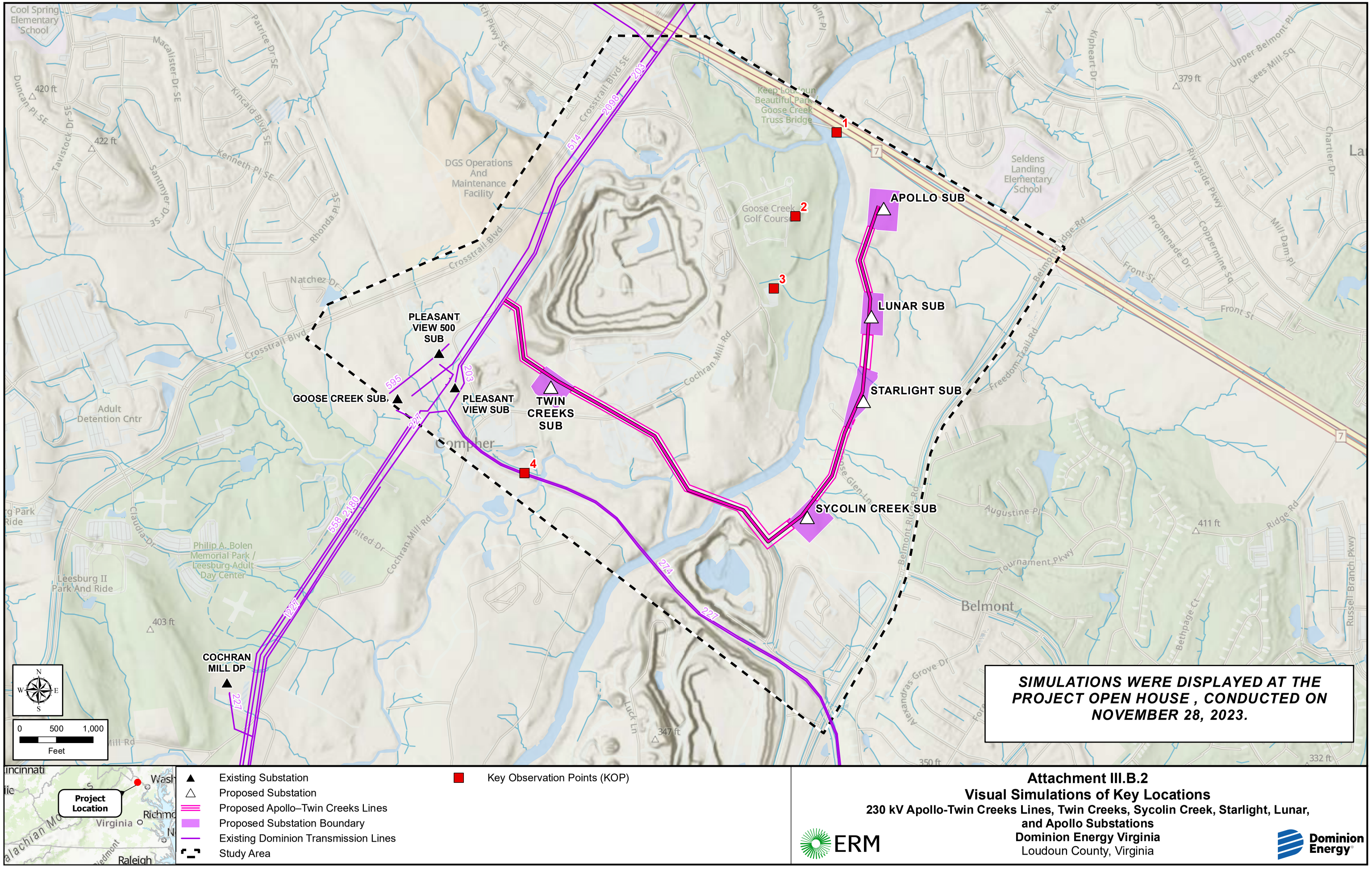
- **180,936** Impressions
- **2,701** Clicks
- **1.49%** CTR

Video



- **73,653** Impressions
- **12,816** Views
- **2,693** Completions
- **21.01%** VCR

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



SIMULATIONS WERE DISPLAYED AT THE PROJECT OPEN HOUSE , CONDUCTED ON NOVEMBER 28, 2023.

Attachment III.B.2
Visual Simulations of Key Locations
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

Apollo-Twin Creeks

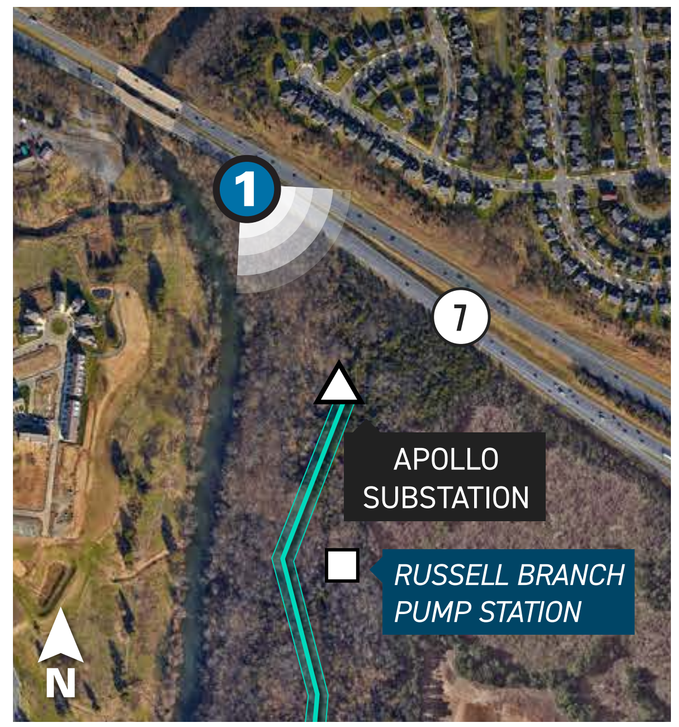
230 kV Electric Transmission Project

RENDERING 1 AERIAL

Date: 6/21/2023

Time: 5:30 pm

Viewing Direction: Southeast



- 1 Viewpoint Location
- Conceptual Twin Creeks to Apollo Route
- Conceptual Twin Creeks to Apollo Right-of-Way
- Conceptual Substation
- Pump Station

Visualization is for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Apollo-Twin Creeks

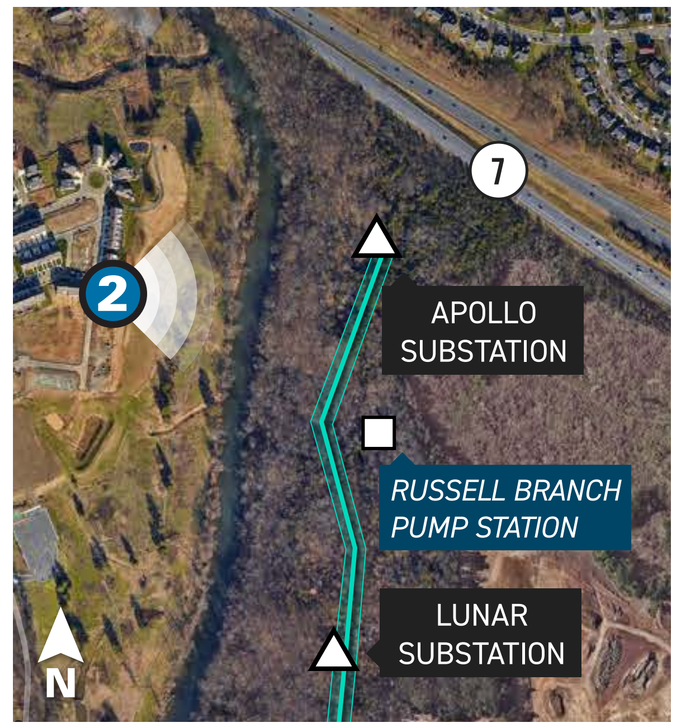
230 kV Electric Transmission Project

RENDERING 2 GROUND

Date: 6/21/2023

Time: 5:30 pm

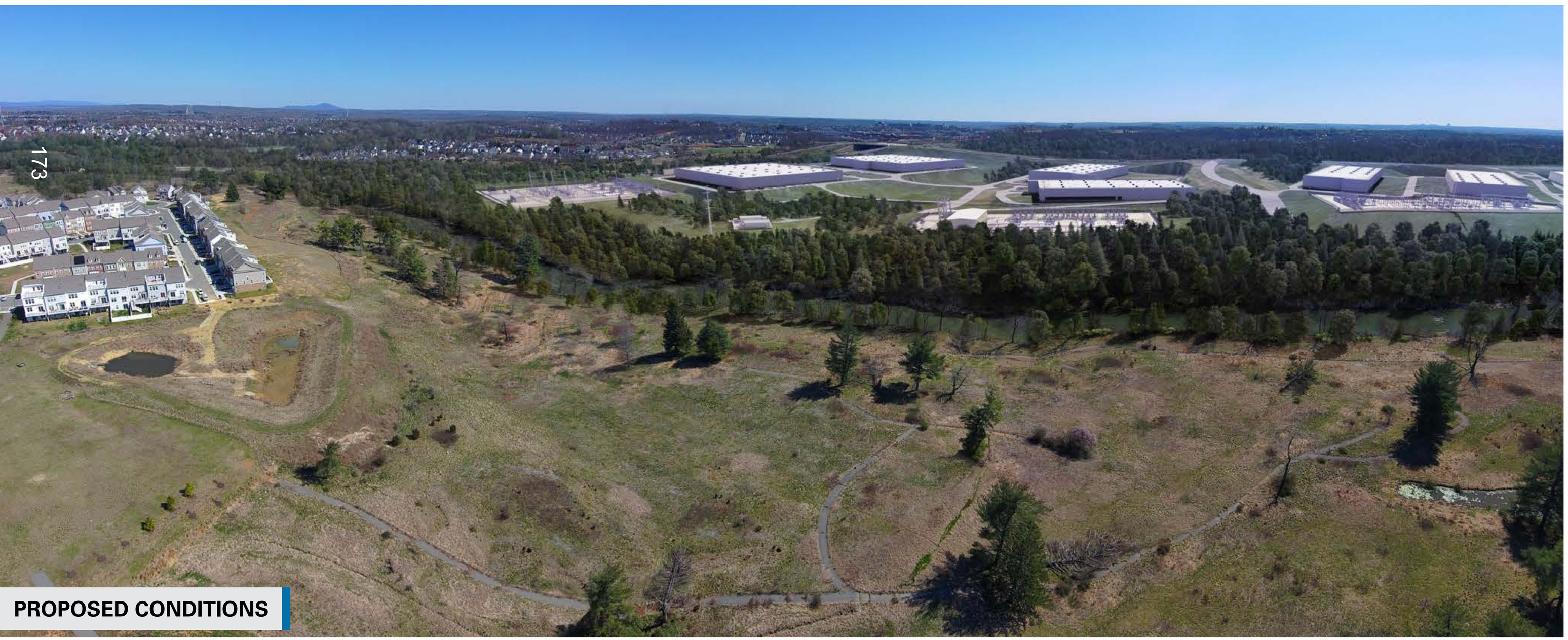
Viewing Direction: East



- 2 Viewpoint Location
- Conceptual Twin Creeks to Apollo Route
- Conceptual Twin Creeks to Apollo Right-of-Way
- Conceptual Substations
- Pump Station

Visualization is for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®



Apollo-Twin Creeks

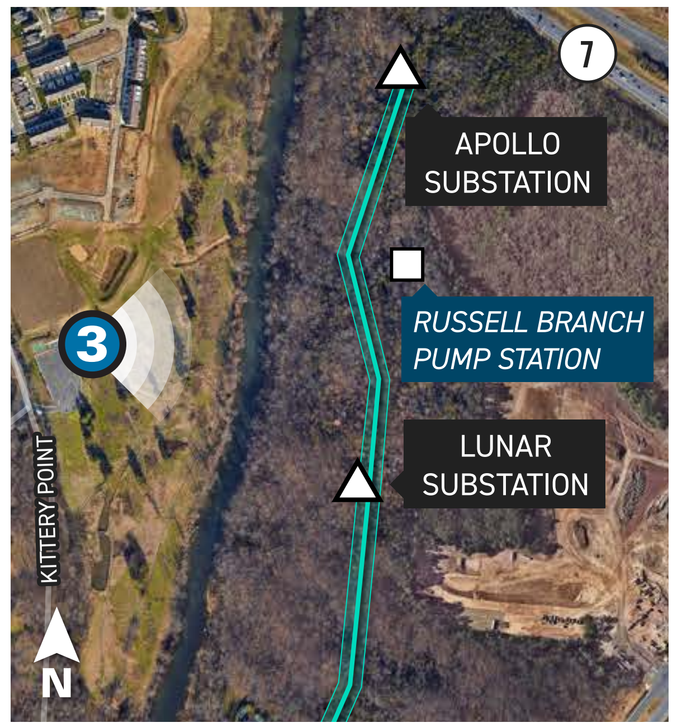
230 kV Electric Transmission Project

RENDERING 3 BIRDS EYE PHOTO SIMULATION

Date: 3/30/2023

Time: 3:47 pm

Viewing Direction: East



- 3 Viewpoint Location
- Conceptual Twin Creeks to Apollo Route
- Conceptual Twin Creeks to Apollo Right-of-Way
- Conceptual Substations
- Pump Station

Visualization is for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Apollo-Twin Creeks

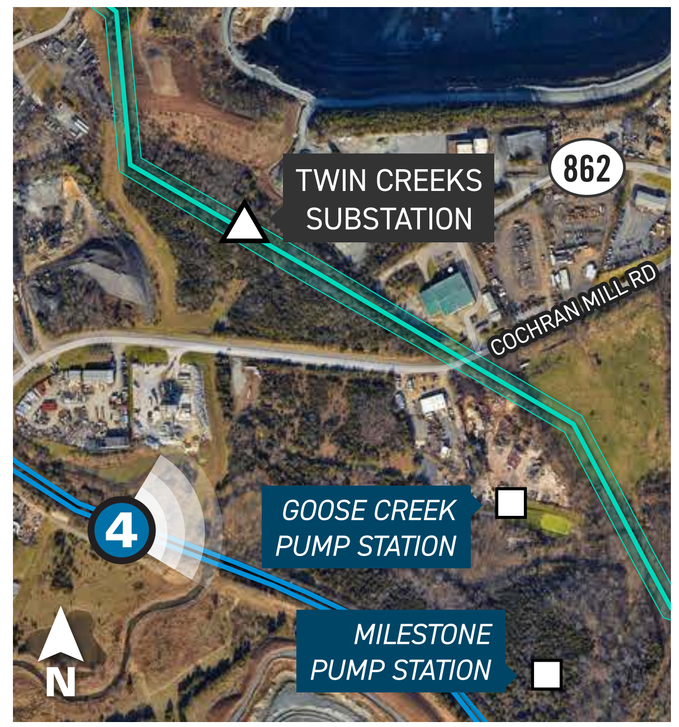
230 kV Electric Transmission Project

RENDERING 4 GROUND

Date: 6/21/2023

Time: 5:30 pm

Viewing Direction: Northeast



- 4 Viewpoint Location
- Conceptual Twin Creeks to Apollo Route
- Conceptual Twin Creeks to Apollo Right-of-Way
- Existing Transmission Line
- Conceptual Substation
- Pump Stations

Visualization is for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Environmental Justice: Ongoing Commitment to Our Communities

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

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

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

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

November 2018

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

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

Response: The Company did not identify any buildings that would have to be demolished or relocated to construct the proposed Project along the Proposed Route. It is the Company's understanding that there are several buildings on Customer A's and Customer B's properties that the Customers will address prior to construction of the Project.

Additionally, there is a 31-foot by 19-foot steel picnic structure on a Luck Stone property that will have to be either demolished or relocated to construct the Apollo-Twin Creeks Lines along the Proposed Route. The Company is conducting ongoing conversations with Luck Stone pertaining to the steel picnic structure.

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

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

Response: Approximately 79% of the Proposed Route for the Apollo-Twin Creeks Lines collocates, or is parallel to, the Company's future Aspen-Golden Lines and existing or planned utilities, as identified in the table below. Due to the presence of constraints, the Proposed Route does not parallel existing transmission lines. See Section II.A.4.

Existing Facility Feature	**Proposed Route Apollo-Twin Creeks Lines (Mi)[a]**
Cochran Mill Road	0.0
Belmont Ridge Road	0.0
Sewer and Water Lines	0.2
Total Existing Collocation Length	**0.2**
Planned Facility Feature	
Future Aspen-Golden Lines	0.9
Sewer and Water Lines [b]	0.4
Total Planned Collocation Length	**1.3**

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

[b] The locations of planned sewer and water lines are based on information provided by Loudoun Water and the Customers as it pertains to their planned developments. Therefore, these locations are subject to change.

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 Loudoun County 2019 General Plan[35] ("General Plan"), the Loudoun County 2019 CTP,[36] and the Linear Parks and Trails System Plan (2021)[37] were reviewed to evaluate the potential effect the proposed Apollo-Twin Creeks Lines could have on future development.

The General Plan and 2019 CTP do not address electric transmission lines within their land use policies and strategies explicitly; however, the General Plan identifies data center development as a historic strength and future driver of economic growth to Loudoun County. The General Plan recognizes that the area in proximity to the Proposed Route around the Cochran Mill Road and Belmont Ridge Road corridors is expected to continue to be a key location for industrial/mineral extraction uses, suburban mixed use, suburban neighborhoods, and data center development. The Project is located within several of the Leesburg Joint Land Management Areas, including Employment and Industrial/Mineral Extraction, where light and general industry uses, and large manufacturing and warehousing uses are encouraged. The General Plan acknowledges that electrical demand in Loudoun County has grown dramatically in recent years with the development of data centers in eastern Loudoun County. Demand is expected to continue to grow with new data center construction and other land development near the Proposed Route.

No conflicting land uses were identified by Loudoun County Planning and Zoning and Natural Resources Staffs; however, County Staff stated their land use planning objective is to limit development within the Scenic Creek Valley Buffer, which includes floodplain and riparian areas off of Goose Creek. The Company also consulted with the Goose Creek Scenic River Advisory Committee ("GCSRAC") regarding impacts to Goose Creek and the Scenic Creek Valley Buffer and attended multiple reoccurring GCSRAC meetings. On February 20, 2024, the Company met with the GCSRAC to discuss the Proposed Route alignment across Goose Creek, a state-designated scenic river, as it collocates with the future Aspen-Golden Lines. During this meeting, the GCSRAC members concurred that a common crossing of Goose Creek is preferred and that the proposed river crossing location minimizes impacts to the resource. Further, the GCSRAC members agreed that collocating the proposed Apollo-Twin Creeks Lines with the future Aspen-Golden Lines across Goose Creek would minimize impacts to the Scenic Creek Valley Buffer.

Additionally, in developing the Proposed Route alignment, the Company

[35] *See* https://www.loudoun.gov/DocumentCenter/View/152285/General-Plan---Combined-with-small-maps-bookmarked.
[36] *See* https://www.loudoun.gov/DocumentCenter/View/152287/CTP---Combined-with-small-maps-bookmarked.
[37] *See* loudoun.gov/DocumentCenter/View/167395/LPAT-Plan_211029_Full-Appendices-4.

considered input from affected landowners and other stakeholders, particularly the data center developers, to determine a feasible path for the transmission lines to cross Goose Creek and through the planned developments adjacent to the proposed Apollo-Twin Creeks Lines and the future Aspen-Golden Lines. Coordination with affected landowners and other stakeholders included the following.

Customer A: Customer A plans to construct a data center complex (Campus A) on its properties west of Goose Creek and south of Cochran Mill Road. Based on the latest Campus A preliminary site design, the Proposed Route, which was developed in coordination with Customer A, minimizes impacts to the planned building footprints by spanning parking areas, utility areas, and private roads within a right-of-way collocated with the future Aspen-Golden Lines. Additionally, the Company coordinated with Customer A regarding the variable collocated right-of-way widths (200- to 250-feet-wide) for the proposed Apollo-Twin Creeks Lines and future Aspen-Golden Lines across Campus A.

Customer B: Customer B plans to construct a data center complex (Campus B) on its properties east of Goose Creek and along Belmont Ridge Road. Based on the latest Campus B preliminary site design, the Proposed Route, which was developed in coordination with Customer B, will not impact planned building footprints and will instead cross an open space proffer and preservation areas within and along the Goose Creek riparian corridor (including Loudoun County's 300-foot Scenic Creek Valley Buffer and Customer B's proffered 200-foot Transitional Open Space Buffer[38]). The Proposed Route crosses Customer B's proffered Transitional Open Space Buffer (impacting approximately 0.8 acre) adjacent to the future Aspen-Golden Lines to minimize impact to the overall Scenic Creek Valley Buffer. Where the Proposed Route collocates with the Aspen-Golden Lines, the Company and Customer B are coordinating to have compatible native plantings for the transmission line easements within these buffer areas. See Attachment I.A.2 for a letter of support in regard to Campus B.

Customer C: Customer C plans to construct a data center complex (Campus C) on its properties east of Goose Creek, west of Belmont Ridge Road, and south of Rt. 7. The Company solicited feedback on the approximately 0.4-mile-long segment of the Proposed Route that crosses Customer C's property to connect the proposed Lunar and Apollo Substations. Given the location of Goose Creek, the Scenic Creek Valley Buffer, and the proposed Loudoun Water Russell Branch Sewage Pumping Station, the Company and Customer C determined that the Proposed Route alignment minimizes impacts to the extent practicable and avoids buildings associated with Campus C.

Loudoun Water: The Company coordinated with Loudoun Water to solicit feedback on its planned facility construction and expansion plans in the Project area, as depicted in Attachment II.A.2. Loudoun Water has plans to convert its existing wastewater treatment plant to a sewage pump station (the planned "Goose

[38] Reference LEGI-2023-0048 on Loudoun County's online land management system (LandMARC) at loudouncountyvaeg.tylerhost.net/prod/selfservice#/home.

Creek Sewage Station") on the property associated with Campus A. West and adjacent to Campus A, Loudoun Water purchased property from NOVA Parks to construct the Milestone Reservoir Pump Station site. The Company coordinated with Loudoun Water on its proposed pump station facility on the Campus C property (the planned "Russell Branch Sewage Pumping Station"). The Proposed Route deviates west of the proposed Russell Branch Sewage Pumping Station facility to avoid impacts, as depicted in Attachment II.A.2. Based on the latest Loudoun Water preliminary site designs, the Proposed Route will not impact the planned building footprints or identified future expansion areas as provided by Loudoun Water. The Proposed Route avoids crossing Loudoun Water-owned property and accommodates the setback specifications provided by Loudoun Water (see Appendix E to the Routing Study), to the extent practicable, to minimize impacts to its existing and proposed facilities.

Loudoun County: Loudoun County's 2019 Countywide Transportation Plan ("CTP") currently has dedicated reservations to extend the road rights-of-way for Gloucester Parkway and Russell Branch Parkway from Belmont Ridge Road to the west and across Goose Creek. Preliminary site designs include these planned road reservations. Within a collocated right-of-way with the future Aspen-Golden Lines, the Proposed Route crosses each planned road extension once.

Luck Stone Corporation: Luck Stone Corporation ("Luck Stone") operates the Goose Creek Plant off Cochran Mill Road and owns a previously mined quarry on the east side of Goose Creek, which is undergoing a conversion into a water reservoir to serve Loudoun Water's planned Milestone Reservoir Pump Station site. The Company consulted with Luck Stone to identify routes that minimize impacts to its existing and planned operations. North of the proposed Twin Creeks Substation and on the Goose Creek Plant property, the Proposed Route follows the western boundary to the extent possible to minimize impacts to an existing berm used to mitigate impacts resulting from quarry operations. On the Milestone Reservoir site, the Proposed Route crosses Goose Creek in a right-of-way adjacent to the future Aspen-Golden Lines to the east of an existing dike, in place to mitigate potential subsurface constraints in the area.

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) Loudoun County designates important farmland based on soil type. The Company coordinated with Loudoun County Staff who concluded that the Project will not impact important farmlands.

(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) Two architectural resources (253-5182 and 053-0106) are listed in the NRHP. Ball's Bluff Battlefield and National Cemetery Historic District (253-5182) is listed in the NRHP and is a National Historic Landmark within 1.5 miles of the Proposed Route. Belmont Manor (053-0106) is listed in the NRHP and located within 1.0 mile of the Proposed Route.

(2) One architectural resource (053-0276), Washington and Old Dominion Railroad Historic District, is eligible for listing in the NRHP and is within 0.5 mile of the Proposed Route. One potentially eligible battlefield (053-5058), Ball's Bluff Battlefield, is located within 1.0 mile of the Proposed Route. See Section 2.I of the DEQ Supplement.

(3) None.

(4) None.

(5) None.

(6) None.

(7) None.

(8) None.

(9) None.

(10) Goose Creek, a state-designated scenic river, is crossed by the Proposed Route. See Section 2.L of the DEQ Supplement.

(11) None.

(12) Two locally significant architectural resources (053-0336 and 053-6238) are located within 0.5 mile of the Proposed Route. See Section 2.I of the DEQ Supplement.

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

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

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

The Company has reviewed the FAA's website[39] to identify airports within 10.0 nautical miles of the proposed Project. Based on this review, the following FAA-restricted airports are located within 10.0 nautical miles of the Project:

Airport Name	Approximate Distance and Direction from Proposed Project (nautical miles (approx.))	Use
Leesburg Executive Airport	○ 1.4 miles southwest of Twin Creeks Substation	Public
Inova Loudoun Hospital Heliport	○ 1.4 miles east of Apollo Substation	Private
Longview Heliport	○ 5.3 miles north of Apollo Substation	Private
Goose Hunt Farm Airport	○ 5.5 miles southwest of Twin Creeks Substation	Private
Washington Dulles International Airport	○ 7.6 miles southeast of Sycolin Creek Substation	Public
Stone Springs Heliport	○ 8.0 miles of Sycolin Creek Substation	Private
Egypt Farms Heliport	○ 8.8 miles southwest of Twin Creeks Substation	Private
Crippen's Heliport	○ 9.1 miles southwest of Sycolin Creek Substation	Private
Reston Hospital Center Heliport	○ 9.5 miles southwest of Sycolin Creek Substation	Private

The Company reviewed height limitations associated with FAA-defined civil airport imaginary surfaces for all runways associated with the Leesburg Executive Airport and all other public or private registered airfields listed in the above table

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

to determine whether any of the conceptual structures would penetrate the imaginary surfaces for any of the runways. The Company engaged ERM to conduct the review. ERM reviewed the height limitations associated with FAA-defined imaginary surfaces for all runways associated with the Leesburg Executive Airport and Washington Dulles International Airport, as the FAA only regulates potential obstructions for public use airports/heliports. Standard Geographic Information Systems tools, including ESRI's ArcMap 3D and Spatial Extension software, were used to create and geo-reference the imaginary surfaces in space, and in relation to the locations and proposed heights of the transmission structures. Ground surface data for the study area was derived by using a U.S. Geological Survey 10-Meter Digital Elevation Model.

Of the two public use airports listed above, it was determined the Leesburg Executive Airport is the only public use airport or helipad close enough to the Proposed Route or substations for a structure to potentially impact navigable airspace. At its most critical point, the Proposed Route would be located 1.4 miles (8,500 feet) east and perpendicular of Runway 17/35, the airport's only runway. In this location the Project is located outside of the runway's associated approach surface. The only surface the Project has the potential to penetrate is the airport's horizontal surface, which is located 150 feet above the established airport elevation of 389.5 feet above mean sea level ("AMSL"). Ground elevations in the vicinity of the Project range from 330 feet AMSL near the tap location, to a low of 210 feet AMSL, where the Project crosses Sycolin Creek. Given the ground elevation in the Project area is 60 feet lower than at the airport, and the proposed structure heights range from 75 to 135 feet,[40] there would be no penetration of the airport's horizontal surface. Based on these findings, there would be no potential for impacts on any of the imaginary surfaces or terminal instrument procedures imaginary surfaces associated with the Leesburg Executive Airport.

Based on FAA Form 7460-1, Notice of Proposed Construction or Alteration, notice will likely need to be filed for the Project due to the proximity to the Leesburg Executive Airport.

[40] For purposes of this section, the range of the structure heights is inclusive of the structures within the footprints of the proposed Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations.

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

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

Response: No scenic byways are in close proximity to the study area for the proposed Project, and no scenic byways would be crossed by the Apollo-Twin Creeks Lines.[41] Perpendicular road crossings, which are preferred by VDOT and Loudoun County, will be utilized at other road crossings to mitigate impacts.

[41] VDOT 2021 Virginia's Scenic Roads Map. Accessed: January 2024. Retrieved from: https://www.vdot.virginia.gov/media/vdotvirginiagov/travel-and-traffic/maps/16054_ScenicMap_front.pdf.

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

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

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

- Coordination with the U.S. Army Corps of Engineers, DEQ, and VDOT will take place as appropriate to obtain necessary approvals for the Project.
- A letter dated February 15, 2024, was submitted to Loudoun County to describe the Project and request comments. See Section V.D.
- Letters were submitted to the agencies listed in Section V.C on February 15, 2024, describing the Project and requesting comment. See Attachment 2 to the DEQ Supplement.
- A Stage I Pre-Application Analysis has been prepared and was submitted to VDHR on March 26, 2024. See Attachment 2.I.1 to the DEQ Supplement.
- On November 14, 2023, the Company solicited comments via letter from several federally recognized Native American tribes, including:

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

Assistant Chief	Rappahannock Tribe
Chief W. Frank Adams	Upper Mattaponi Indian Tribe
Leigh Mitchell	Upper Mattaponi Indian Tribe
Carissa Speck	Delaware Nation of Oklahoma
Caitlin Rogers	Catawba Indian Nation
Chief Paul Barton	Eastern Shawnee Tribe of Oklahoma
Chief Glenna Wallace	Eastern Shawnee Tribe of Oklahoma

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

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

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

November 14, 2023

Twin Creeks to Apollo 230 kV Electric Transmission and Substation Project

Dear _____,

Dominion Energy is dedicated to maintaining safe, reliable, and affordable electric service in the communities we serve. You are receiving this project announcement letter as part of our efforts to proactively communicate early with Tribal Nations who may have an interest in Loudoun County. 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.

To help meet the area's growing energy demands, we are planning to build the Twin Creeks to Apollo 230 kV Electric Transmission and Substation Project. This project involves constructing a new double-circuit 230 kV transmission line approximately two miles long and connecting it to five new substations. To limit potential impacts, this project will collocate with another project, Aspen to Golden.

This project does require review by the Virginia State Corporation Commission (SCC). Prior to submitting an application to the SCC, we will host an in-person community meeting. Consider joining us to learn more on Tuesday, November 28, at **Belmont Middle School, 19045 Upper Belmont Place, Leesburg, VA 20176**. You will be able to speak to the project team and ask them questions about the project. **There will not be a formal presentation**, so please feel free to stop by at your convenience between 5:30 p.m. and 7:30 p.m.

Enclosed is a project overview map for your reference. Your continued involvement, participation, and input are important in developing these projects.

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. For meeting updates and more project information, please visit the project webpage at DominionEnergy.com/Nova.

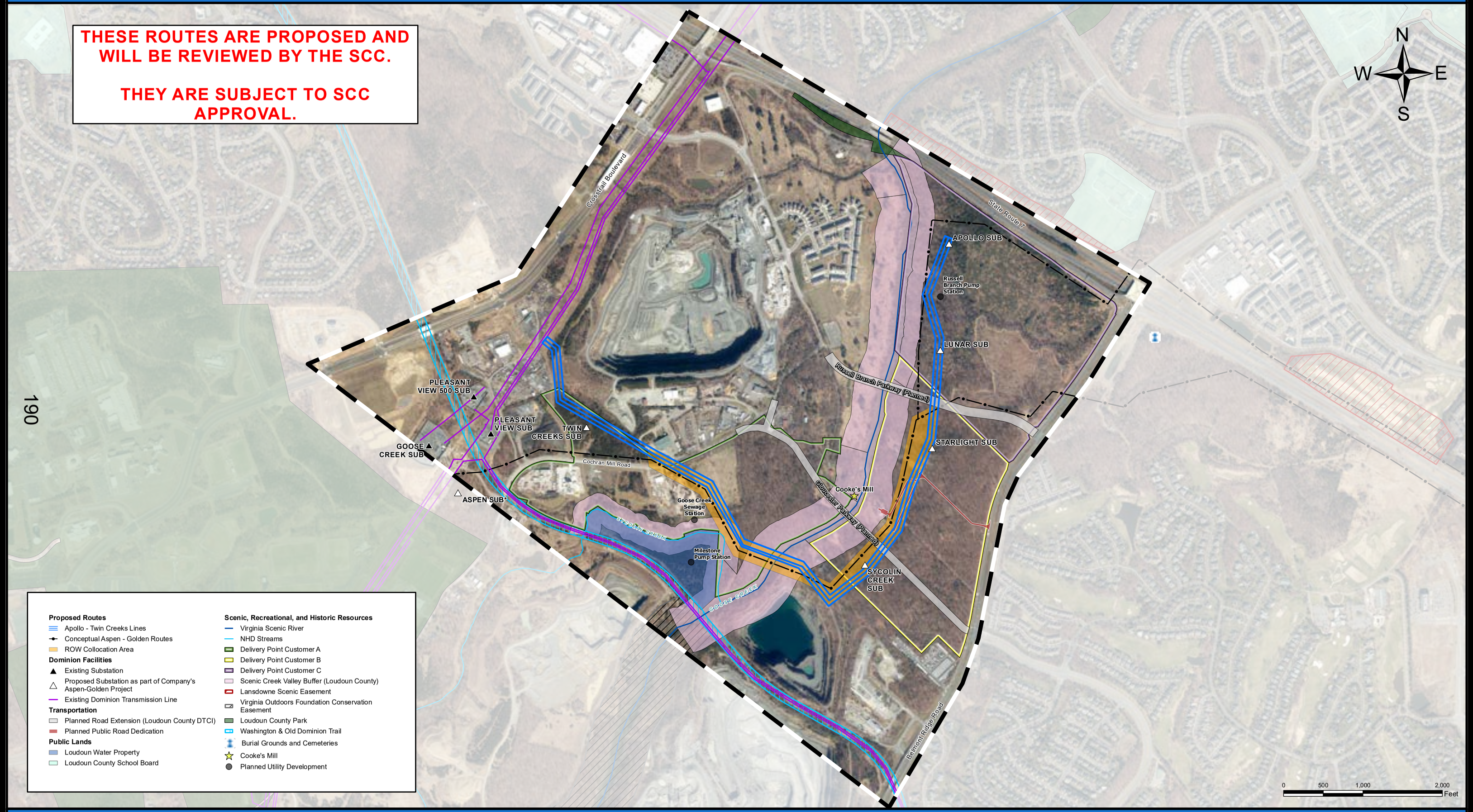
If you have questions or would like to set up a meeting to discuss the project, contact me by calling 804-248-1698 or sending an email to Robert.E.Richardson@dominionenergy.com. You may also contact Tribal Relations Manager Ken Custalow by sending an email to Ken.Custalow@dominionenergy.com.

Sincerely,

Robert Richardson
Communications Consultant
The Electric Transmission Project Team

THESE ROUTES ARE PROPOSED AND WILL BE REVIEWED BY THE SCC.

THEY ARE SUBJECT TO SCC APPROVAL.



Proposed Routes
- Apollo - Twin Creeks Lines
- Conceptual Aspen - Golden Routes
- ROW Collocation Area

Dominion Facilities
- Existing Substation
- Proposed Substation as part of Company's Aspen-Golden Project
- Existing Dominion Transmission Line

Transportation
- Planned Road Extension (Loudoun County DTCI)
- Planned Public Road Dedication

Public Lands
- Loudoun Water Property
- Loudoun County School Board

Scenic, Recreational, and Historic Resources
- Virginia Scenic River
- NHD Streams
- Delivery Point Customer A
- Delivery Point Customer B
- Delivery Point Customer C
- Scenic Creek Valley Buffer (Loudoun County)
- Lansdowne Scenic Easement
- Virginia Outdoors Foundation Conservation Easement
- Loudoun County Park
- Washington & Old Dominion Trail
- Burial Grounds and Cemeteries
- Cooke's Mill
- Planned Utility Development

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

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

Response: On November 13, 2023, the Company solicited comments via letter from the community leaders, environmental groups, and business groups identified below. A copy of the letter template and map is included as Attachment III.K.1.

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

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

November 13, 2023

Twin Creeks to Apollo 230 kV Electric Transmission and Substation Project

Dear _____,

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

To help meet the area's growing energy demands, we are planning to build the Twin Creeks to Apollo 230 kV Electric Transmission and Substation Project. This project involves constructing a new double-circuit 230 kV transmission line approximately two miles long and connecting it to five new substations. To limit potential impacts, this project will collocate with another project, Aspen to Golden.

This project does require review by the Virginia State Corporation Commission (SCC). Prior to submitting an application to the SCC, we will host an in-person community meeting. Consider joining us to learn more on Tuesday, November 28, at **Belmont Middle School, 19045 Upper Belmont Place, Leesburg, VA 20176**. You will be able to speak to the project team and ask them questions about the project. **There will not be a formal presentation**, so please feel free to stop by at your convenience between 5:30 p.m. and 7:30 p.m.

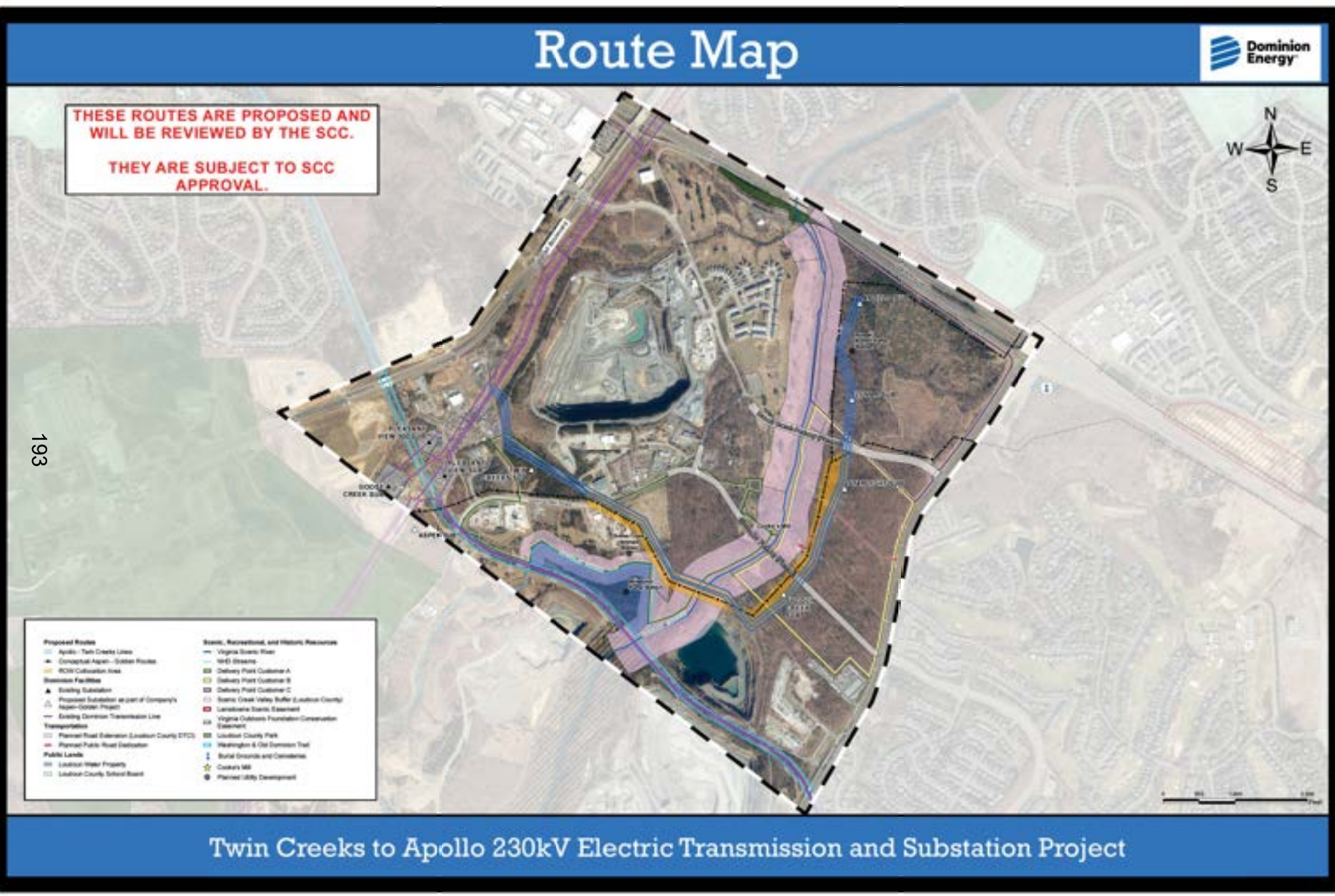
Enclosed is a project overview map for your reference. Your continued involvement, participation, and input are important in developing these projects. Providing your input now allows us to consider any concerns you may have as we work to meet the project's needs. Please feel free to notify other relevant 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. For meeting updates and more project information, please visit the project webpage at DominionEnergy.com/Nova.

If you have questions or would like to set up a meeting to discuss the project, contact me by calling 804-248-1698 or sending an email to Robert.E.Richardson@dominionenergy.com.

Sincerely,

Robert Richardson
Communications Consultant
The Electric Transmission Project Team

Route Map



Twin Creeks to Apollo 230kV Electric Transmission and Substation Project

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

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

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

Potential Permits

Activity	Potential Permit	Agency/Organization
Impacts to wetlands and other waters of the U.S.	Nationwide Permit 57	U.S. Army Corps of Engineers
Impacts to wetlands and other waters of the U.S.	Virginia Water Protection Permit	Virginia Department of Environmental Quality
Discharge of stormwater from construction	Construction General Permit	Virginia Department of Environmental Quality
Encroachment over State-owned Subaqueous Bottoms	Virginia Marine Resources Commission Permit	Virginia Marine Resources Commission
Work within VDOT rights-of-way	Land Use Permit	Virginia Department of Transportation
Airspace obstruction evaluation	FAA 7460-1	Leesburg Executive Airport

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

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

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

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

Proposed Project – Projected Average Loading in 2028

EMF levels were calculated for the proposed Project at the ***projected average*** load condition as shown in the table below and at a maximum operating voltage of 242 kV when supported on the proposed Project structures. See Attachments II.A.5.a and II.A.5.b.

Line No.	Projected Average Loading (Amps)
203	815
2320	762
2316	363
2317	363
2334	510
2335	510
2340	301
2341	301
2342	112
2343	112
2333	1464
5001	1574

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

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

Proposed Project – Projected Average Loading (2028)				
	Left Edge Looking Toward Apollo		Right Edge Looking Toward Apollo	
Attachment	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	0.685	35.630	0.685	31.450
II.A.5.b	0.453	31.270	1.545	42.592

Proposed Project – Projected Peak Loading in 2028

EMF levels were calculated for the proposed Project at the ***projected peak*** load condition as shown in the table below and at a maximum operating voltage of 241.5 kV when supported on the proposed Project structures. See Attachments II.A.5.a and II.A.5.b.

Line No.	Projected Peak Loading (Amps)
203	1358
2320	1270
2316	605
2317	605
2334	850
2335	850
2340	502
2341	502
2342	187
2343	187
2333	2440
5001	2623

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

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

Proposed Project – Projected Peak Loading (2028)				
	Left Edge Looking Toward Apollo		Right Edge Looking Toward Apollo	
Attachment	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
II.A.5.a	0.681	59.877	0.681	52.844
II.A.5.b	0.447	52.313	1.562	71.921

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

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

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

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

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

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

community exposure to EMF.

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

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

References

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

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

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

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

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

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

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

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

evidence changed over time? Stockholm, Sweden: Swedish Radiation Safety Authority (SSM), 2016.

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

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

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

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

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

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

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

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

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

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

3. Have been subjected to peer review.

Response: The Virginia Department of Health ("VDH") conducted its most recent review and issued its report on the scientific evidence on potential health effects of extremely low frequency ("ELF") EMF in 2000: "[T]he Virginia Department of Health is of the opinion that there is no conclusive and convincing evidence that exposure to extremely low frequency EMF emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans."[42]

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

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

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

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

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

While research is continuing on multiple aspects of EMF exposure and health, many of the recent publications have focused on an epidemiologic assessment of the relationship between EMF exposure and childhood leukemia and EMF exposure and neurodegenerative diseases. Of these, the following recent publications, published following the inclusion date (June 2014) for the SCENIHR (2015) report through May 2023, provided additional evidence and contributed to clarification of previous findings. Overall, new research studies have not provided evidence to alter the previous conclusions of scientific and health organizations, including the WHO and SCENIHR.

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

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

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

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

- Bunch et al. (2016) and Swanson and Bunch (2018) published additional analyses using data from an earlier study (Bunch et al., 2014). Bunch et al. (2016) reported that the association with distance to power lines observed in earlier years was linked to calendar year of birth or year of cancer diagnosis, rather than the age of the power lines. Swanson and Bunch (2018) re-analyzed

data using finer exposure categories (e.g., cut-points of every 50-meter distance) and broader groupings of diagnosis date (e.g., 1960-1979, 1980-1999, and 2000-on) and reported no overall associations between exposure categories and childhood leukemia for the later periods (1980 and on), and consistent pattern for the periods prior to 1980.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Koeman et al. (2015, 2017) analyzed data from the Netherlands Cohort Study of approximately 120,000 men and women who were enrolled in the cohort in

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

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

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

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

general population, or when incidence among workers was analyzed across estimated exposure levels.

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

- Checkoway et al. (2018) investigated the association between Parkinsonism[43] 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

[43] 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).

noted substantial heterogeneity among studies and evidence for publication bias.

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

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

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

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

- Huang et al. (2020) conducted a meta-analysis of 43 epidemiologic studies examining potential occupational risk factors for dementia or mild cognitive impairment. The authors included five cohort studies and seven case-control studies related to magnetic-field exposure. For both study types, the authors reported positive associations between dementia and work-related magnetic-

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

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

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

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

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

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

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

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

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

References

Amoon AT, Oksuzyan S, Crespi CM, Arah OA, Cockburn M, Vergara X, Kheifets L. Residential mobility and childhood leukemia. Environ Res 164: 459-466, 2018a.

Amoon AT, Crespi CM, Ahlbom A, Bhatnagar M, Bray I, Bunch KJ, Clavel J, Feychting M, Hemon D, Johansen C, Kreis C, Malagoli C, Marquant F, Pedersen C, Raaschou-Nielsen O, Röösli M, Spycher BD, Sudan M, Swanson J, Tittarelli A, Tuck DM, Tynes T, Vergara X, Vinceti M, Wunsch-Filho V, Kheifets L. Proximity to overhead power lines and childhood leukaemia: an international pooled analysis. Br J Cancer 119: 364-373, 2018b.

Amoon AT, Arah OA, Kheifets L. The sensitivity of reported effects of EMF on childhood leukemia to uncontrolled confounding by residential mobility: a hybrid simulation study and an empirical analysis using CAPS data. Cancer Causes Control 30: 901-908, 2019.

Amoon AT, Crespi CM, Nguyen A, Zhao X, Vergara X, Arah OA, and Kheifets L. The role of dwelling type when estimating the effect of magnetic fields on childhood leukemia in the California Power Line Study (CAPS). Cancer Causes Control 31:559-567, 2020.

Amoon AT, Swanson J, Magnani C, Johansen C, Kheifets L. Pooled analysis of recent studies of magnetic fields and childhood leukemia. Environ Res 204(Pt A):111993, 2022.

Auger N, Bilodeau-Bertrand M, Marcoux S, Kosatsky T. Residential exposure to electromagnetic fields during pregnancy and risk of child cancer: A longitudinal cohort study. Environ Res 176: 108524, 2019.

Brabant C, Geerinck A, Beaudart C, Tirelli E, Geuzaine C, Bruyère O. Exposure to magnetic fields and childhood leukemia: a systematic review and meta-analysis of case-control and cohort studies. Rev Environ Health, 2022.

Bunch KJ, Keegan TJ, Swanson J, Vincent TJ, Murphy MF. Residential distance at birth from overhead high voltage powerlines: childhood cancer risk in Britain 1962-2008. Br J Cancer 110: 1402-1408, 2014.

Bunch KJ, Swanson J, Vincent TJ, Murphy MF. Magnetic fields and childhood cancer: an epidemiological investigation of the effects of high voltage underground cables. J Radiol Prot 35: 695-705, 2015.

Bunch KJ, Swanson J, Vincent TJ, Murphy MF. Epidemiological study of power lines and childhood cancer in the UK: further analyses. J Radiol Prot 36: 437-455, 2016.

Checkoway H, Ilango S, Li W, Ray RM, Tanner CM, Hu SC, Wang X, Nielsen S, Gao DL, Thomas DB. Occupational exposures and parkinsonism among Shanghai women textile workers. Am J Ind Med 61: 886-892, 2018.

Chen GX, Mannetje A, Douwes J, Berg LH, Pearce N, Kromhout H, Glass B, Brewer N, McLean DJ. Occupational exposure to electric shocks and extremely low-frequency magnetic fields and motor neurone disease. Am J Epidemiol 190(3):393-402, 2021.

Crespi CM, Vergara XP, Hooper C, Oksuzyan S, Wu S, Cockburn M, Kheifets L. Childhood leukaemia and distance from power lines in California: a population-based case-control study. Br J Cancer 115: 122-128, 2016.

Crespi CM, Swanson J, Vergara XP, Kheifets L. Childhood leukemia risk in the

California Power Line Study: Magnetic fields versus distance from power lines. Environ Res 171: 530-535, 2019.

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.

Filippini T, Tesauro M, Fiore M, Malagoli C, Consonni M, Violi F, Iacuzio L, Arcolin E, Oliveri Conti G, Cristaldi A, Zuccarello P, Zucchi E, Mazzini L, Pisano F, Gagliardi I, Patti F, Mandrioli J, Ferrante M, Vinceti M. Environmental and occupational risk factors of amyotrophic lateral sclerosis: A population-based case-control study. Int J Environ Res Public Health 17(8):2882, 2020.

Filippini T, Hatch EE, Vinceti M. Residential exposure to electromagnetic fields and risk of amyotrophic lateral sclerosis: a dose-response meta-analysis. Sci Rep 11(1):11939, 2021.

Fischer H, Kheifets L, Huss A, Peters TL, Vermeulen R, Ye W, Fang F, Wiebert P, Vergara XP, Feychting M. Occupational Exposure to Electric Shocks and Magnetic Fields and Amyotrophic Lateral Sclerosis in Sweden. Epidemiology 26: 824-830, 2015.

Gervasi F, Murtas R, Decarli A, Giampiero Russo A. Residential distance from high voltage overhead power lines and risk of Alzheimer's dementia and Parkinson's disease: a population-based case-control study in a metropolitan area of Northern Italy. Int J Epidemiol, 2019.

Grebeneva OV, Rybalkina DH, Ibrayeva LK, Shadetova AZ, Drobchenko EA, Aleshina NY. Evaluating occupational morbidity among energy enterprise employees in industrial region of Kazakhstan. Russian Open Medical Journal: ROMJ 10(3):e0319, 2021.

Gunnarsson LG and Bodin L. Amyotrophic lateral sclerosis and occupational exposures: A systematic literature review and meta-analyses. Int J Environ Res Public Health 15(11):2371, 2018.

Gunnarsson LG and Bodin L. Occupational exposures and neurodegenerative diseases: A systematic literature review and meta-analyses. Int J Environ Res Public Health 16(3):337, 2019.

Huang LY, Hu HY, Wang ZT, Ma YH, Dong Q, Tan L, Yu JT. Association of occupational factors and dementia or cognitive impairment: A systematic review and meta-analysis. J Alzheimers Dis 78(1):217-227, 2020.

Huss A, Peters S, Vermeulen R. Occupational exposure to extremely low-frequency magnetic fields and the risk of ALS: A systematic review and meta-analysis. Bioelectromagnetics 39: 156-163, 2018.

Jalilian H, Teshnizi SH, Röösli M, Neghab M. Occupational exposure to extremely low frequency magnetic fields and risk of Alzheimer disease: A systematic review and meta-analysis. Neurotoxicology 69: 242-252, 2018.

Jalilian H, Najafi K, Khosravi Y, and Röösli M. Amyotrophic lateral sclerosis, occupational exposure to extremely low frequency magnetic fields and electric shocks: A systematic review and meta-analysis. Rev Environ Health 36(1):129-142, 2021.

Kheifets L, Crespi CM, Hooper C, Cockburn M, Amoon AT, Vergara XP. Residential magnetic fields exposure and childhood leukemia: a population-based case-control study in California. Cancer Causes Control 28: 1117-1123, 2017.

Koeman T, Schouten LJ, van den Brandt PA, Slottje P, Huss A, Peters S, Kromhout H, Vermeulen R. Occupational exposures and risk of dementia-related mortality in the prospective Netherlands Cohort Study. Am J Ind Med 58: 625-635, 2015.

Koeman T, Slottje P, Schouten LJ, Peters S, Huss A, Veldink JH, Kromhout H, van den Brandt PA, Vermeulen R. Occupational exposure and amyotrophic lateral sclerosis in a prospective cohort. Occup Environ Med 74: 578-585, 2017.

Kyriakopoulou A, Meimeti E, Moisoglou I, Psarrou A, Provatopoulou X, Dounias G. Parental Occupational Exposures and Risk of Childhood Acute Leukemia. Mater Sociomed 30: 209-214, 2018.

Nguyen A, Crespi CM, Vergara X, Kheifets L. Commercial outdoor plant nurseries as a confounder for electromagnetic fields and childhood leukemia risk. Environ Res 212(Pt C):113446, 2022.

Núñez-Enríquez JC, Correa-Correa V, Flores-Lujano J, Pérez-Saldivar ML, Jiménez-Hernández E, Martín-Trejo JA, Espinoza-Hernández LE, Medina-Sanson A, Cárdenas-Cardos R, Flores-Villegas LV, Peñaloza-González JG, Torres-Nava JR, Espinosa-Elizondo RM, Amador-Sánchez R, Rivera-Luna R, Dosta-Herrera JJ, Mondragón-García JA, González-Ulibarri JE, Martínez-Silva SI, Espinoza-Anrubio G, Duarte-Rodríguez DA, García-Cortés LR, Gil-Hernández AE, Mejía-Aranguré JM. Extremely low-frequency magnetic fields and the risk of childhood B-lineage acute lymphoblastic leukemia in a city with high incidence of leukemia and elevated exposure to ELF magnetic fields. Bioelectromagnetics 41(8):581-597, 2020.

Pedersen C, Johansen C, Schüz J, Olsen JH, Raaschou-Nielsen O. Residential exposure to extremely low-frequency magnetic fields and risk of childhood leukaemia, CNS tumour and lymphoma in Denmark. Br J Cancer 113: 1370-1374, 2015.

Pedersen C, Poulsen AH, Rod NH, Frei P, Hansen J, Grell K, Raaschou-Nielsen O, Schüz J, Johansen C. Occupational exposure to extremely low-frequency magnetic fields and risk for central nervous system disease: an update of a Danish cohort study among utility workers. Int Arch Occup Environ Health 90: 619-628, 2017.

Peters S, Visser AE, D'Ovidio F, Beghi E, Chio A, Logroscino G, Hardiman O, Kromhout H, Huss A, Veldink J, Vermeulen R, van den Berg LH. Associations of Electric Shock and Extremely Low-Frequency Magnetic Field Exposure With the Risk of Amyotrophic Lateral Sclerosis. Am J Epidemiol 188: 796-805, 2019.

Renew DC, Cook RF, Ball MC. A method for assessing occupational exposure to power-frequency magnetic fields for electricity generation and transmission workers. J Radiol Prot 23(3):279-303, 2003.

Röösli M and Jalilian H. A meta-analysis on residential exposure to magnetic fields and the risk of amyotrophic lateral sclerosis. Rev Environ Health 33: 295-299, 2018.

Salvan A, Ranucci A, Lagorio S, Magnani C. Childhood leukemia and 50 Hz magnetic fields: findings from the Italian SETIL case-control study. Int J Environ Res Public Health 12: 2184-2204, 2015.

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

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

Seelen M, Vermeulen RC, van Dillen LS, van der Kooi AJ, Huss A, de Visser M, van den Berg LH, Veldink JH. Residential exposure to extremely low frequency electromagnetic fields and the risk of ALS. Neurology 83: 1767-1769, 2014.

Seomun G, Lee J, Park J. Exposure to extremely low-frequency magnetic fields and childhood cancer: A systematic review and meta-analysis. PLoS One 16:e0251628, 2021.

Sorahan T and Mohammed N. Neurodegenerative disease and magnetic field exposure in UK electricity supply workers. Occup Med (Lond) 64: 454-460, 2014.

Sorahan T and Nichols L. Motor neuron disease risk and magnetic field exposures. Occup Med (Lond) 72(3):184-190, 2022.

Swanson J and Bunch KJ. Reanalysis of risks of childhood leukaemia with distance from overhead power lines in the UK. J Radiol Prot 38: N30-N35, 2018.

Swanson J, Kheifets L, and Vergara X. Changes over time in the reported risk for childhood leukaemia and magnetic fields. J Radiol Prot 39:470-488, 2019.

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.

Talibov M, Olsson A, Bailey H, Erdmann F, Metayer C, Magnani C, Petridou E, Auvinen A, Spector L, Clavel J, Roman E, Dockerty J, Nikkila A, Lohi O, Kang A, Psaltopoulou T, Miligi L, Vila J, Cardis E, Schüz J. Parental occupational exposure to low-frequency magnetic fields and risk of leukaemia in the offspring: findings from the Childhood Leukaemia International Consortium (CLIC). Occup Environ Med 76:746-753, 2019.

Vasta R, Callegaro S, Grassano M, Canosa A, Cabras S, Di Pede F, Matteoni E, De Mattei F, Casale F, Salamone P, Mazzini L, De Marchi F, Moglia C, Calvo A, Chiò A, Manera U. Exposure to electromagnetic fields does not modify neither the age of onset nor the disease progression in ALS patients. Amyotroph Lateral Scler Frontotemporal Degener 24(3-4):343-346, 2023.

Vergara X, Mezei G, Kheifets L. Case-control study of occupational exposure to electric shocks and magnetic fields and mortality from amyotrophic lateral sclerosis in the US, 1991-1999. J Expo Sci Environ Epidemiol 25: 65-71, 2015.

Vinceti M, Malagoli C, Fabbi S, Kheifets L, Violi F, Poli M, Caldara S, Sesti D, Violanti S, Zanichelli P, Notari B, Fava R, Arena A, Calzolari R, Filippini T, Iacuzio L, Arcolin E, Mandrioli J, Fini N, Odone A, Signorelli C, Patti F, Zappia M, Pietrini V, Oleari P, Teggi S, Ghermandi G, Dimartino A, Ledda C, Mauceri C, Sciacca S, Fiore M, Ferrante M. Magnetic fields exposure from high voltage power lines and risk of amyotrophic lateral sclerosis in two Italian populations. Amyotroph Lateral Scler Frontotemporal Degener 18: 583-589, 2017.

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

Zagar T, Valic B, Kotnik T, Korat S, Tomsic S, Zadnik V, Gajsek P. Estimating exposure to extremely low frequency magnetic fields near high voltage power lines and assessment of possible increased cancer risk among Slovenian children and adolescents. Radiol Oncol 57(1):59-69, 2023.

V. NOTICE

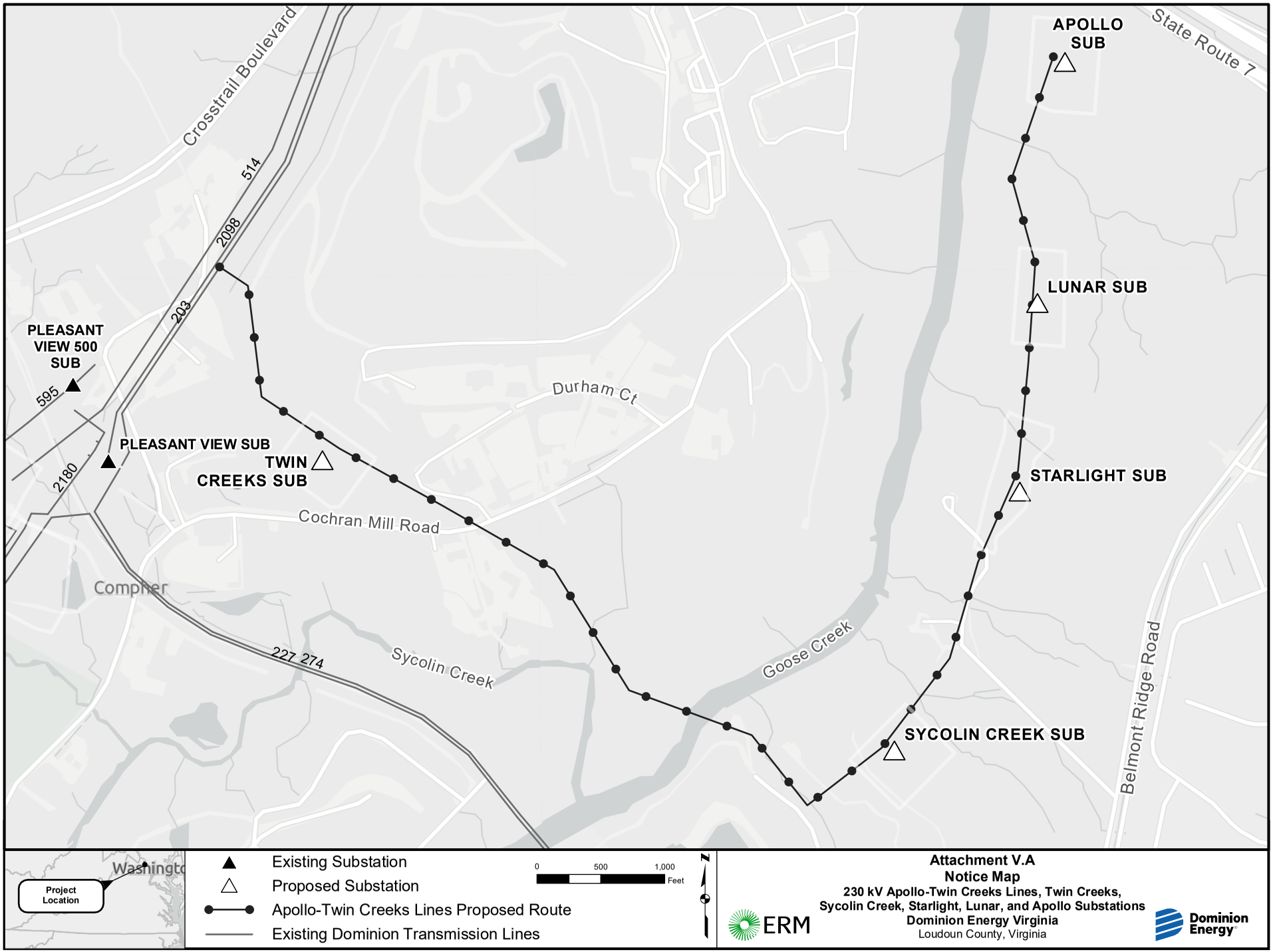
A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposed to be noticed, provide minimum, maximum and average structure heights.

Response: A map showing the overhead Proposed Route for the proposed Apollo-Twin Creeks Lines and the location of the proposed Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations is provided in Attachment V.A. A written description of the Proposed Route is as follows:

Proposed Route

The Proposed Route of the Apollo-Twin Creeks Lines is approximately 1.9 miles in length. Beginning at the cut-in location at Structure #203/2 located east of Crosstrail Boulevard, the route travels approximately 0.4 mile southeast and crosses Cochran Mill Road. At this point, the proposed Apollo-Twin Creeks Lines begin collocating with the Company's future Aspen-Golden Lines, which were filed by the Company for State Corporation Commission approval on March 7, 2024, in Case No. PUR-2024-00032. The route then continues southeast for 0.5 mile, crosses Goose Creek, and turns northeast for 0.1 mile. The route continues northeast for 0.3 mile on the east side of Goose Creek, where collocation with the Aspen-Golden Lines ends south of the proposed Starlight Substation. The route then continues northeast for 0.6 mile, terminating at the proposed Apollo Substation, located south of Route 7 and west of Belmont Ridge Road.

The Proposed Route of the Apollo-Twin Creeks Lines will be constructed on new right-of-way primarily supported by double circuit dulled galvanized steel monopoles. For the Proposed Route, the minimum structure height is 85 feet, the maximum structure height is 135 feet, and the average structure height is 112 feet, based on preliminary conceptual design, not including foundation reveal, and subject to change based on final engineering design.


APOLLO SUB
State Route 7
Crosstrail Boulevard
514
2098
203
LUNAR SUB
PLEASANT VIEW 500 SUB
595
Durham Ct
PLEASANT VIEW SUB
TWIN CREEKS SUB
2180
STARLIGHT SUB
Cochran Mill Road
Compher
227 274
Sycolin Creek
Goose Creek
Belmont Ridge Road
SYCOLIN CREEK SUB
Project Location
Existing Substation
Proposed Substation
Apollo-Twin Creeks Lines Proposed Route
Existing Dominion Transmission Lines
0
500
1,000
Feet
N
ERM
Attachment V.A
Notice Map
230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations
Dominion Energy Virginia
Loudoun County, Virginia
Dominion Energy

V. NOTICE

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

Response: Shortly after filing, the Application will be made available electronically for public inspection at: www.dominionenergy.com/NOVA.

V. NOTICE

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

Response:

Ms. Bettina Rayfield
Office of Environmental Impact Review
Department of Environmental Quality
P.O. Box 1105
Richmond, Virginia 23218

Ms. 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. S. Rene Hypes
Department of Conservation and Recreation
Environmental Review Coordinator, Natural Heritage Program
600 East Main Street, Suite 1400
Richmond, Virginia 23219

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

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

Ms. Claire Gorman
Virginia Marine Resources Commission
Habitat Management Division
Building 96, 380 Fenwick Road
Ft. Monroe, Virginia 23651

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

Mr. Keith Goodwin
US Army Corps of Engineers
Norfolk District
803 Front Street
Norfolk, Virginia 23510

Mr. Phil Skorupa
Virginia Department of Mine, Minerals, and Energy
1100 Bank Street
Washington Building, 8th Floor
Richmond, Virginia 23219

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

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

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

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

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

Mr. Kevin Gregg
Chief of Maintenance and Operations for Central Office
Virginia Department of Transportation
1401 E. Broad Street
Richmond, Virginia 23219

Mr. Daniel Galindo
Loudoun County Director of Planning
P.O. Box 7000
Leesburg, Virginia 20177-7000

Mr. Tim Hemstreet
Loudoun County Administrator
P.O. Box 7000
Leesburg, Virginia 20177-7000

Mr. Michael R. Turner
Loudoun County Board of Supervisors (Ashburn District)
P.O. Box 7000
Leesburg, Virginia 20177-7000

Ms. Kristen C. Umstattd
Loudoun County Board of Supervisors (Leesburg District)
P.O. Box 7000
Leesburg, Virginia 20177-7000

V. NOTICE

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

Response: In accordance with Va. Code § 15.2-2202 E, a letter dated February 15, 2024, was delivered to Mr. Tim Hemstreet, Administrator of Loudoun County, where the Project is located. The letter stated the Company's intention to file this Application and invited the County to consult with the Company about the Project. This letter is included as Attachment V.D.1.

Dominion Energy Services, Inc.
120 Tredegar Street
Richmond, VA 23219
DominionEnergy.com

February 15, 2024

BY EMAIL & CERTIFIED MAIL

Mr. Tim Hemstreet
Loudoun County Administrator
P.O. Box 7000
Leesburg, Virginia 20177-7000

RE: Dominion Energy Virginia's Proposed 230 kV Apollo-Twin Creeks Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar and Apollo Substations in Loudoun County, Virginia. Notice Pursuant to Va. Code § 15.2-2202

Dear Mr. Hemstreet,

Dominion Energy Virginia (the "Company") is proposing to construct a new double circuit 230 kilovolt ("kV") transmission line entirely in new right-of-way (the "Apollo-Twin Creeks Lines"), and to construct five new 230-34.5 kV substations on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation") in Loudoun County, Virginia (collectively, the "Apollo-Twin Creeks Project" or the "Project").

The Project is necessary to ensure that Dominion Energy Virginia can provide electric service requested by three customers (the "Customers") in Loudoun County, Virginia, and to maintain reliable electric service consistent with North American Electric Reliability Corporation Reliability Standards for the overall growth in the load area.

The Company is in the process of preparing an application for a certificate of public convenience and necessity ("CPCN") from the State Corporation Commission of Virginia (the "Commission"). Pursuant to Va. Code § 15.2-2202, the Company is writing to notify Loudoun County of the proposed Project in advance of filing the application for a CPCN. The Company respectfully requests that you submit any comments or additional information that would have bearing on the proposed Project within 30 days of the date of this letter.

Enclosed is a Project Overview Map depicting the proposed route for the Apollo-Twin Creeks Lines, the location of the proposed Twin Creeks, Sycolin Creek, Starlight, Lunar and Apollo Substations, and the general Project location of the Apollo-Twin Creeks Project. Note that the Project Overview Map also depicts the location of future transmission facilities associated with the Aspen-Golden Project. The Company solicited comments from all relevant state and local agencies regarding the Aspen-Golden Project on February 6, 2024. To the extent the Apollo-Twin Creeks Project and the Aspen-Golden Project are located within the same project area and are in some instances collocated within proposed new right-of-way, the Company included those Aspen-Golden Project facilities on the Project Overview Map for reference. However, to be clear, the Aspen-Golden Project facilities identified on the Project Overview Map are not being proposed for filing as part of Apollo-Twin Creeks CPCN application.

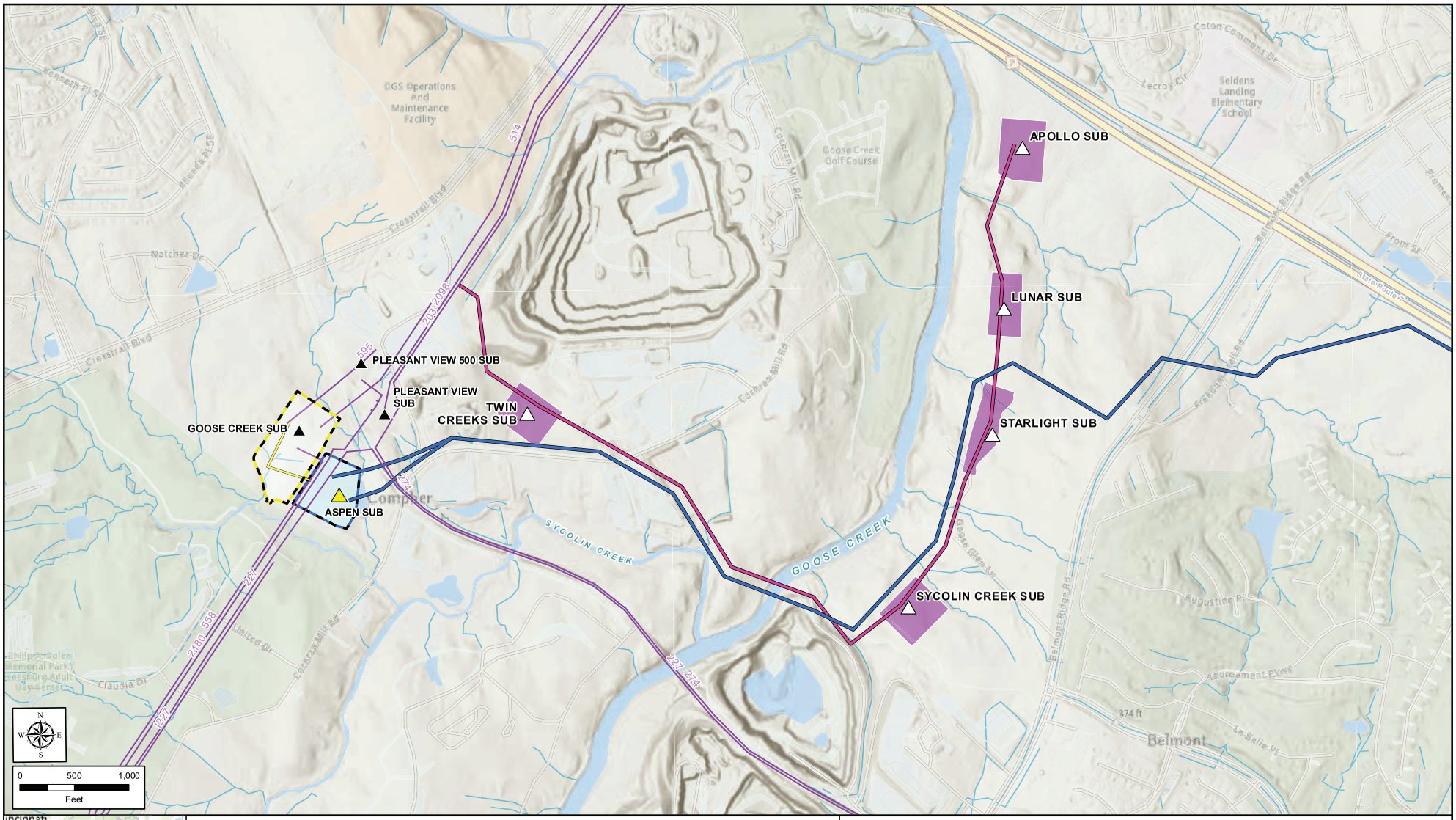
If you would like to receive a GIS shapefile of the transmission line route to assist in the project review or if there are any questions, please do not hesitate to contact Craig Hurd at 804-201-5020 or craig.r.hurd@dominionenergy.com. We appreciate your assistance with this project review and look forward to any additional information you may have to offer.

Sincerely,

Craig Hurd

Craig R. Hurd
Siting and Permitting
Dominion Energy Virginia

Attachment: Project Overview Map



Project Overview Map

230 kV Apollo-Twin Creeks Lines, Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations

Dominion Energy Virginia

Loudoun County, Virginia

ERM

Dominion Energy

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2024-00044
	)	
For approval and certification of electric transmission facilities: 230 kV Apollo-Twin Creek Lines and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations	)	

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

Kunal S. Amare

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

Brittany S. Rieckmann

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

Shannon L. Snare

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

George C. Brimmer

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

Craig R. Hurd

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

Roya P. Smith

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Kunal S. Amare

Title: Consulting Engineer – Electric Transmission Planning

Summary:

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

- Section I.G: This section provides a system map for the affected area.
- Section I.J: This section provides information about the project if approved by the RTO.
- Section I.K: This section, when applicable, provides outage history and maintenance history for existing transmission lines if the proposed project is a rebuild and is due in part to reliability issues.
- Section I.M: This section, when applicable, contains information for transmission lines interconnecting a non-utility generator.
- Section II.A.3: This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.
- Section II.A.10: This section provides details of the construction plans for the proposed project, including requested line outage schedules.

Additionally, Company Witness Amare co-sponsors the following sections of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Brittany S. Rieckmann, Shannon L. Snare, George C. Brimmer, Craig R. Hurd, and Roya P. Smith): This section details the primary justifications for the proposed project.
- Section I.B (co-sponsored with Company Witness Brittany S. Rieckmann): This section details the engineering justifications for the proposed project.
- Section I.C (co-sponsored with Company Witness Brittany S. Rieckmann): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.
- Section I.D (co-sponsored with Company Witness Brittany S. Rieckmann): This section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E (co-sponsored with Company Witness Brittany S. Rieckmann): This section explains feasible project alternatives, when applicable.
- Section I.H (co-sponsored with Company Witnesses Brittany S. Rieckmann and Craig R. Hurd): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section I.L (co-sponsored with Company Witness Shannon L. Snare): This section, when applicable, provides details on the deterioration of structures and associated equipment.
- Section I.N (co-sponsored with Company Witness Brittany S. Rieckmann): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

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

DIRECT TESTIMONY
OF
KUNAL S. AMARE
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00044

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

A. My name is Kunal S. Amare, and I am a Consulting Engineer in the Electric Transmission Planning Department for the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for planning the Company's electric transmission system for voltages of 69 kilovolt ("kV") through 500 kV.

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

A. In order to provide service requested by three data center customers (collectively, the "Customers"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company proposes in Loudoun County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on entirely new right-of-way by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, the "Apollo-Twin Creeks Lines"). From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way, interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin

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

- Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C") have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C. To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 megawatts), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek

Substation (2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

The purpose of my testimony is to describe the Company's electric transmission system and the need for, and benefits of, the proposed Project. I sponsor Sections I.G, I.J, I.K, I.M, II.A.3, and II.A.10 of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Brittany S. Rieckmann, Shannon L. Snare, George C. Brimmer, Craig R. Hurd, and Roya P. Smith; Sections I.B, I.C, I.D, I.E, and I.N with Company Witness Brittany S. Rieckmann; Section I.H with Company Witnesses Brittany S. Rieckmann and Craig R. Hurd; and Section I.L with Company Witness Shannon L. Snare.

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

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
KUNAL S. AMARE

Kunal S. Amare received a Master of Science degree in Electrical Engineering from Virginia Polytechnic Institute and State University in 2016. He received a Bachelor of Technology degree in Electrical Engineering from the University of Mumbai in 2014. He has been licensed as a Professional Engineer in the State of Texas since 2019. He has been employed with the Company in the Transmission Planning team since June 2020. Prior to working with Dominion, Mr. Amare worked with Entergy Services LLC in the Transmission Planning Department from 2017-2020. Mr. Amare is skilled in Transmission Planning, Transient Stability Analysis, Renewable Energy Systems, and Electromagnetic Transient Analysis.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Brittany S. Rieckmann

Title: Engineer III – Distribution Planning Team

Summary:

Company Witness Brittany S. Rieckmann co-sponsors those sections of the Appendix describing the Company's electric distribution system and the need for, and benefits of, the proposed Project, as follows:

- Section I.A (co-sponsored with Company Witnesses Kunal S. Amare, Shannon L. Snare, George C. Brimmer, Craig R. Hurd, and Roya P. Smith): This section details the primary justifications for the proposed project.

- Section I.B (co-sponsored with Company Witness Kunal S. Amare): This section details the engineering justifications for the proposed project.

- Section I.C (co-sponsored with Company Witness Kunal S. Amare): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.

- Section I.D (co-sponsored with Company Witness Kunal S. Amare): Although not applicable to the proposed project, this section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.

- Section I.E (co-sponsored with Company Witness Kunal S. Amare): This section explains feasible project alternatives, when applicable.

- Section I.H (co-sponsored with Company Witnesses Kunal S. Amare and Craig R. Hurd): This section provides the desired in-service date of the proposed project and the estimated construction time.

- Section I.N (co-sponsored with Company Kunal S. Amare): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

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

DIRECT TESTIMONY
OF
BRITTANY S. RIECKMANN
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00044

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 Brittany S. Rieckmann, and I am an Engineer III – Distribution Planning for the Company. My business address is 600 East Canal Street, Richmond, Virginia 23219. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for planning the Company's electric distribution system that serves data centers, primarily in the Company's Northern Virginia offices, for voltage under 69 kilovolt ("kV").

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

A. In order to provide service requested by three data center customers (collectively, the "Customers"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company proposes in Loudoun County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on entirely new right-of-way by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, the "Apollo-Twin Creeks Lines"). From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way, interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin

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

- Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C") have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus. To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 megawatts), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek Substation

(2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

The purpose of my testimony is to describe the Company's electric distribution system and the need for, and benefits of, the proposed Project. I co-sponsor the Executive Summary and Section I.A with Company Witnesses Kunal S. Amare, Shannon L. Snare, George C Brimmer, Craig R. Hurd, and Roya P. Smith. Additionally, I co-sponsor Sections I.B, I.C, I.D, I.E, and I.N of the Appendix with Company Witness Kunal S. Amare; and Section I.H with Company Witnesses Kunal S. Amare and Craig R. Hurd.

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

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
BRITTANY S. RIECKMANN

Brittany S. Rieckmann is a 2018 graduate from James Madison University with a Bachelor of Science in Engineering and a 2022 graduate from George Mason University with a Master of Business Administration. She has been employed full time by the Company since 2018. Her experience with the Company includes gas transmission system planning and design (1 year), data center distribution design engineer (3 years), and most recently distribution planning. Prior to working full time for the Company, Ms. Rieckmann worked as an intern for the Company for two years.

Ms. Rieckmann has previously submitted pre-filed testimony to the State Corporation Commission of Virginia.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Shannon L. Snare

Title: Engineer III – Electric Transmission Line Engineering

Summary:

Company Witness Shannon L. Snare sponsors those sections of the Appendix providing an overview of the design characteristics of the transmission facilities for the proposed Project, and discussing electric and magnetic field levels, as follows:

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

Additionally, Company Witness Snare co-sponsors the following sections of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, George C. Brimmer, Craig R. Hurd, and Roya P. Smith): This section details the primary justifications for the proposed project.
- Section I.I. (co-sponsored with Company Witness George C. Brimmer): This section provides the estimated total cost of the proposed project.
- Section I.L (co-sponsored with Company Witness Kunal S. Amare): This section, when applicable, provides details on the deterioration of structures and associated equipment.
- Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Craig R. Hurd): These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- Section II.B.6 (co-sponsored with Company Witnesses Craig R. Hurd and Roya P. Smith): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section V.A (co-sponsored with Company Witnesses Craig R. Hurd and Roya P. Smith): This section provides the proposed route description and structure heights for notice purposes.

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

DIRECT TESTIMONY
OF
SHANNON L. SNARE
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00044

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 Shannon L. Snare, and I am an Engineer III in the Electric Transmission Line Engineering Department of the Company. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for the estimating and conceptual design of high voltage transmission line projects from 69 kilovolt ("kV") to 500 kV.

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

A. In order to provide service requested by three data center customers (collectively, the "Customers"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company proposes in Loudoun County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on entirely new right-of-way by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, the "Apollo-Twin Creeks Lines"). From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way, interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin

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

- Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C") have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C. To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 megawatts), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek

Substation (2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

The purpose of my testimony is to describe the design characteristics of the transmission facilities for the proposed Project and to discuss electric and magnetic field levels. I sponsor Sections I.F, II.A.5, II.B.1, II.B.2, and IV of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, George C. Brimmer, Craig R. Hurd, and Roya P. Smith; Section I.I with Company Witness George C. Brimmer; Section I.L with Company Witness Kunal S. Amare; Sections II.B.3 to II.B.5 with Company Witness Craig R. Hurd; and Sections II.B.6 and V.A with Company Witnesses Craig R. Hurd and Roya P Smith.

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

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
SHANNON L. SNARE

Shannon L. Snare graduated from Virginia Polytechnic Institute and State University in 2016. She joined the Company in 2016 as an electric transmission engineer in the Electric Transmission Engineering department. Ms. Snare is a licensed engineer in the Commonwealth of Virginia.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: George C. Brimmer

Title: Engineer III—Substation Engineering

Summary:

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

- Section I.A (co-sponsored with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, Craig R. Hurd, and Roya P. Smith): This section details the primary justifications for the proposed project.

- Section I.I (co-sponsored with Company Witness Shannon L. Snare): This section provides the estimated total cost of the proposed project.

- Section II.C: This section describes and furnishes a one-line diagram of the substation associated with the proposed project.

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

DIRECT TESTIMONY
OF
GEORGE C. BRIMMER
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00044

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 George C. Brimmer, and I am a Engineer III in the Substation Engineering section of the Electric Transmission group of the Company. My business address is 2400 Grayland Avenue, Richmond, Virginia 23220. A statement of my qualifications and background is provided as Appendix A.

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

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

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

A. In order to provide service requested by three data center customers (collectively, the "Customers"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company proposes in Loudoun County, Virginia, to:

- Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on entirely new right-of-way by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, the "Apollo-Twin Creeks Lines"). From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way, interconnecting the

proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin Creeks Lines will be supported primarily by double circuit dulled galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA; and

- Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the "Project."

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C") have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C. To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 megawatts), the Company

is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek Substation (2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

The purpose of my testimony is to describe the work to be performed as part of the Project. As it pertains to station work, I sponsor Section II.C of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, Craig R. Hurd, and Roya P. Smith; and Section I.I of the Appendix with Company Witness Shannon L. Snare.

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

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
GEORGE C. BRIMMER

George C. Brimmer received a Bachelor of Science degree in Electrical Engineering from Virginia Commonwealth University in 2014. Mr. Brimmer also received a Bachelor of Science degree in Psychology in 2008. Prior to joining the Company, he worked as Cable Technician for American Systems Corporation from 2010 to 2011. Mr. Brimmer has been employed by the Company since 2013. He has joined the Dominion Energy Substation Engineering department in November 2016 as an Engineer II. He was promoted to Engineer III in July 2021. Mr. Brimmer's responsibilities included the evaluation of the substation project requirements, development of project scope documents, estimates, development of detailed physical drawings, bill of materials, electrical schematics, and wiring diagrams. His areas of expertise are substation and grounding design.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Craig. R. Hurd

Title: Siting and Permitting Specialist – Siting and Permitting Group

Summary:

Company Witness Craig R. Hurd sponsors those portions of the Appendix providing an overview of the design of the route for the proposed Project, and related permitting, as follows:

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

Additionally, Craig R. Hurd co-sponsors the following portion of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, Craig R. Hurd, and Roya P. Smith): This section details the primary justifications for the proposed project.
- Section I.H (co-sponsored with Company Witnesses Kunal S. Amare and Brittany S. Rieckmann): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section II.A.1 (co-sponsored with Company Witness Roya P. Smith): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Roya P. Smith): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Roya P. Smith): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Roya P. Smith): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Roya P. Smith): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Roya P. Smith): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Sections II.B.3 to II.B.5 (co-sponsored with Company Witness Shannon L. Snare): These sections, when applicable, provide supporting structure details along the proposed and alternative routes.
- Section II.B.6 (co-sponsored with Company Witnesses Shannon L. Snare and Roya P. Smith): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Roya P. Smith): This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V.A (co-sponsored with Company Witnesses Shannon L. Snare and Roya P. Smith): This section provides the proposed route description and structure heights for notice purposes.

Finally, Mr. Hurd sponsors the DEQ Supplement filed with the Application.

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

DIRECT TESTIMONY
OF
CRAIG R. HURD
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00044

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

A. My name is Craig R. Hurd, and I serve as a Siting and Permitting Specialist in the Siting and Permitting Group for the Company. My business address is 5000 Dominion Boulevard, 3rd Floor, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

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

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

A. In order to provide service requested by three data center customers (collectively, the "Customers"), to maintain reliable service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, the Company proposes in Loudoun County, Virginia, to:

- Construct a new double circuit overhead 230 kilovolt ("kV") transmission line on entirely new right-of-way by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, the "Apollo-Twin Creeks Lines"). From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way, interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin Creeks Lines will be supported primarily by double circuit dulled galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA; and

- Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the Project.

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A," "Customer B," and "Customer C") have requested that Dominion Energy Virginia serve

three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C. To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 megawatts), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek Substation (2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

The purpose of my testimony is to provide an overview of the route and permitting for the proposed Project. I sponsor Sections II.A.12 and V.B to V.D of the Appendix. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, George C. Brimmer, and Roya P. Smith; Section I.H with Company Witnesses Kunal S. Amare and Brittany S. Rieckmann; Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.9, II.A.11, and III with Company Witness Roya P. Smith; Sections II.B.3 to II.B.5 with Company Shannon L. Snare; and Sections II.B.6 and V.A with Company Witnesses Shannon L. Snare and Roya P. Smith. Finally, I co-sponsor the DEQ Supplement with Company Witness Roya P. Smith.

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

A. Yes. In accordance with Va. Code § 15.2-2202 E, a letter dated February 15, 2024, was sent to Mr. Tim Hemstreet, Administrator of Loudoun County, where the Project is located. The letter stated the Company's intention to file this Application and invited the County to consult with the Company about the Project. A copy of the letter is included as Appendix Attachment V.D.1.

Q. Does this conclude your pre-filed direct testimony

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS
OF
CRAIG R. HURD

Craig R. Hurd received a Bachelor of Science degree in Business Administration and an Associate of Science degree in Civil Engineering Technology from Fairmont State University in 2005. He has been employed by the Company since 2014. Mr. Hurd's experience with the Company includes Survey Contractor (2014-2016), Survey Tech I – II (2016-2019), and Siting and Permitting Specialist (2019-Present).

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Roya P. Smith

Title: Managing Consultant, Environmental Resource Management

Summary:

Company Witness Roya P. Smith sponsors the Environmental Routing Study provided as part of the Company's Application.

Additionally, Ms. Smith co-sponsors the following portion of the Appendix:

- Section I.A (co-sponsored with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, George C. Brimmer, and Craig R. Hurd): This section details the primary justifications for the proposed project.
- Section II.A.1 (co-sponsored with Company Witness Craig R. Hurd): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Craig R. Hurd): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Craig R. Hurd): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Craig R. Hurd): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Craig R. Hurd): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Craig R. Hurd): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.B.6 (co-sponsored with Company Witnesses Shannon L. Snare and Craig R. Hurd): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Craig R. Hurd): This section details the impact of the proposed project on scenic, environmental, and historic features.
- Section V.A (co-sponsored with Company Witnesses Shannon L. Snare and Craig R. Hurd): This section provides the proposed route description and structure heights for notice purposes.

Finally, Ms. Smith co-sponsors the DEQ Supplement filed with this Application with Company Witness Craig R. Hurd.

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

DIRECT TESTIMONY
OF
ROYA P. SMITH
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2024-00044

Q. Please state your name, position and place of employment and business address.

A. My name is Roya P. Smith. I am employed as a Managing Consultant with Environmental Resources Management ("ERM"). My business address is 919 E. Main Street, Suite 1701, Richmond, Virginia. A statement of my qualifications and background is provided as Appendix A.

Q. What professional experience does ERM have with the routing of linear energy transportation facilities?

A. ERM has extensive experience in the routing, feasibility assessments, and permitting of energy infrastructure projects. It has assisted its clients in the identification, evaluation and development of linear energy facilities for the past 30 years. During this time, it has developed a consistent approach for linear facility routing and route selection based on the identification, mapping and comparative evaluation of routing constraints and opportunities within defined study areas. ERM uses data-intensive Geographic Information System spatial and dimensional analysis and the most current and refined data layers and aerial photography resources available for the identification, evaluation and selection of transmission line routes.

In addition to Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), its clients include some of the largest energy companies in the United

States, Canada, and the world, including ExxonMobil, TC Energy, Shell, NextEra Energy, Phillips 66, Kinder Morgan, British Petroleum, Enbridge Energy, and others. ERM also routinely assists the staff of the Federal Energy Regulatory Commission, United States Army Corps of Engineers, and the U.S. Forest Service in the identification and/or evaluation of linear energy routes to support federal National Environmental Policy Act evaluations. ERM works on both small and large energy projects and has assisted in or conducted the routing and route evaluation of some of the largest electric transmission line and pipeline facilities in North America.

In Virginia, ERM served as routing consultant to Dominion Energy Virginia for many projects over the last 15 years, including:

- Cannon Branch-Cloverhill 230 kilovolt ("kV") transmission line project in the City of Manassas and Prince William County (Case No. PUE-2011-00011);
- Dahlgren 230 kV double circuit transmission line project in King George County (Case No. PUE-2011-00113);
- Surry-Skiffes Creek-Whealton 500 and 230 kV transmission lines (Case No. PUE-2012-00029);
- Remington CT-Warrenton 230 kV double circuit transmission line (Case No. PUE-2014-00025);
- Haymarket 230 kV Line and Substation Project (Case No. PUE-2015-00107);
- Remington-Gordonsville Electric Transmission Project (Case No. PUE-2015-00117);
- Norris Bridge (Case No. PUE-2016-00021);
- Idylwood-Tysons 230 kV single circuit underground transmission line, Tysons Substation rebuild, and related transmission facilities (Case No. PUR-2017-00143);
- Lockridge 230 kV Line Loop and Substation (Case No. PUR-2019-00215);
- Coastal Virginia Offshore Wind Commercial Project (Case No. PUR-2021-00142);
- DTC 230 kV Line Loop and DTC Substation (Case No. PUR-2021-00280);

- Aviator 230 kV Line Loop and Substation (Case. No. PUR-2022-00012);
- Nimbus Substation and 230 Farmwell-Nimbus Transmission Line (Case No. PUR-2022-00027);
- 500-230 kV Wishing Star Substation, 500 kV and 230 kV Mars-Wishing Star Lines, 500-230 kV Mars Substation, and Mars 230 kV Loop (Case No. PUR-2022-00183);
- 500-230 kV Unity Switching Station, 230 kV Tunstall-Unity Lines #2259 and #2262, 230-36.5 kV Tunstall, Evans Creek, Raines Substations, and 230 kV Substation Interconnect Lines (Case No. PUR-2022-00167);
- Butler Farm to Clover 230 kV Line and Butler Farm to Finneywood 230 kV Line (Case No. PUR-2022-00175);
- 230 kV Altair Loop and Altair Switching Station (Case No. PUR-2022-00197); and
- 230 kV Finneywood-Jeffress Lines and Jeffress Switching Station Conversion (Case No. PUR-2023-00088).

Most recently, ERM served as the routing consultant for the Company's 230 kV White Oak Lines and White Oak Substation Expansion, in Case No. PUR-2023-00110; 230 kV Germanna Lines and Germanna Substation, in Case No. PUR-2023-00206; Daves Store 230 kV Line Extension, in Case No. PUR 2024-00021; and the Aspen-Golden 500-230 kV Electric Transmission Project, in Case No. PUR-2024-00032.

ERM's role as routing consultant for each of these transmission line projects included preparation of an Environmental Routing Study for the project and submission of testimony sponsoring it.

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

A. In order to provide service requested by three data center customers (collectively, the "Customers"), to maintain reliable electric service for the overall load growth in the area, and to comply with mandatory North American Electric Reliability Corporation

("NERC") Reliability Standards, the Company proposes in Loudoun County, Virginia, to:

- Construct a new double circuit overhead 230 kV transmission line on entirely new right-of-way by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 at Structure #203/2 (collectively, the "Apollo-Twin Creeks Lines"). From the cut-in location within the existing right-of-way, the Apollo-Twin Creeks Lines will extend approximately 1.9 miles within a predominantly 100-foot-wide right-of-way, interconnecting the proposed Twin Creeks, Sycolin Creek, Starlight, and Lunar Substations and terminating at the proposed Apollo Substation, as defined herein. The proposed Apollo-Twin Creeks Lines will be supported primarily by double circuit dulled galvanized steel monopoles and will utilize three-phase twin-bundled 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA; and

- Construct five new 230-34.5 kV substations in Loudoun County, Virginia, on property to be obtained by the Company (the "Twin Creeks Substation," "Sycolin Creek Substation," "Starlight Substation," "Lunar Substation," and "Apollo Substation").

The Apollo-Twin Creeks Lines, Twin Creeks Substation, Sycolin Creek Substation, Starlight Substation, Lunar Substation, and Apollo Substation are collectively referred to as the "Apollo-Twin Creeks 230 kV Electric Transmission Project" or the Project.

The Project is necessary to ensure that Dominion Energy Virginia can provide service requested by the Customers in Loudoun County, Virginia, and maintain reliable electric service consistent with NERC Reliability Standards for the overall growth in the load area surrounding the eastern Leesburg area in Loudoun County, Virginia ("Leesburg Load Area"), which, for purposes of this Application, is defined generally as the area bounded to the north by Leesburg Pike, to the west by Crosstrail Boulevard, to the south by portions of State Route 267 (Dulles Greenway) and 625 (Ashburn Farm Parkway), and to the east by the community of Ashburn and State Route 901 (Claiborne Parkway) in Loudoun County, Virginia. Specifically, three Customers (individually, "Customer A,"

"Customer B," and "Customer C") have requested that Dominion Energy Virginia serve three new data center campuses in the eastern area of Loudoun County, Virginia: Campus A, Campus B, and Campus C. To serve the Customers' projected load combined with emerging load in the area (approximately 1,372 megawatts), the Company is proposing to construct the proposed substations with the targeted sequencing as follows: the Twin Creeks Substation (2026) to serve Campus A, the Sycolin Creek Substation (2026) and the Starlight Substation (2028) to serve Campus B, and the Lunar Substation (2028) and the Apollo Substation (2028) to serve Campus C.

ERM was engaged on behalf of the Company to assist it in the identification and evaluation of route alternatives to resolve the identified electrical need that would meet the applicable criteria of Virginia law and the Company's operating needs.

The purpose of my testimony is to introduce and sponsor the Environmental Routing Study, which is included as part of the Application filed by the Company in this proceeding. Additionally, I co-sponsor the Executive Summary and Section I.A with Company Witnesses Kunal S. Amare, Brittany S. Rieckmann, Shannon L. Snare, George C. Brimmer, and Craig R. Hurd; Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.9, II.A.11, and III with Company Witness Craig R. Hurd; and Sections II.B.6 and V.A with Company Witnesses Shannon L. Snare and Craig R. Hurd. Lastly, I co-sponsor the DEQ Supplement with Company Witness Craig R. Hurd.

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

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF ROYA P. SMITH

Roya P. Smith earned a Bachelor of Science degree from Virginia Tech and a Master of Business Administration degree from Virginia Commonwealth University. She has approximately nine years of experience supporting land use permitting, zoning, and the siting and regulatory permitting of large scale energy facilities, including electric transmission lines, throughout the eastern United States. During this time, she was employed by local government, POWER Engineers, Inc. and most recently, two years with Environmental Resources Management (ERM), a privately-owned consulting company specializing in the siting, licensing and environmental construction compliance of large, multi-state energy transportation facilities.

Ms. Smith's professional experience related to electric transmission line projects includes the direct management of impact assessments and agency consultations associated with the routing and siting of multiple transmission line projects as well as the management of the routing of these facilities. Her work on these projects included conducting studies to identify and delineate routing constraints and opportunities; identification and evaluation of route alternatives; public and stakeholder engagement; and analysis of route alternatives. Within the last several years, she has managed and supported the siting and evaluation of over 100 miles of 138 and 230 kV transmission line route alternatives in the Commonwealth for Virginia Electric and Power Company and American Electric Power.

Ms. Smith has provided expert witness testimony before the State Corporation Commission of Virginia.