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 28, 2025

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: 500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects
Case No. PUR-2025-00056

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 Environmental 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, 2025.

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

Highest regards,

Vishwa B. Link

Enclosures

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

Mr. Neil Joshipura (without enclosures)
Mr. Michael A. Cizenski (without enclosures)
David J. DePippo, Esq.
Charlotte P. McAfee, Esq.
Annie C. Larson, Esq.
Jennifer D. Valaika, Esq.
Anne Hampton Andrews, Esq.
Sarah B. Nielsen, Esq.

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

Before the State Corporation Commission of Virginia

500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects

Application No. 350

Case No. PUR-2025-00056

Filed: March 28, 2025

Volume 1 of 5

Application of Virginia Electric and Power Company
for approval and certification of electric transmission facilities:
500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects
Case No. PUR-2025-00056

Table of Contents

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects

Application No. 350

Case No. PUR-2025-00056

Filed: March 28, 2025

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2025-00056
	)	
For approval and certification of electric transmission facilities: 500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects	)	

APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY FOR APPROVAL AND CERTIFICATION OF ELECTRIC TRANSMISSION FACILITIES: 500 kV AND 230 kV GOLDEN-MARS LINES, LOCKRIDGE 230 kV LOOP, SOJOURNER 230 kV LOOP, AND RELATED PROJECTS

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 relieve identified violations of mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards beginning in the summer 2028 timeframe brought on by significant increases in electrical demand as well as expected demand growth projected for the future, to interconnect future load, and to maintain the structural integrity and reliability of its transmission system, Dominion Energy Virginia proposes in Loudoun County, Virginia, to:

(i) **Golden-Mars Lines**: Construct a new overhead 500 kilovolt ("kV") single circuit transmission line and a new overhead 230 kV single circuit transmission line originating at the 500 kV and 230 kV buses of the 500-230 kV Golden Substation[1] and continuing approximately 8.3 miles to the 500-230 kV Mars Substation[2] (the "Golden-Mars Lines").[3] In order to allow sufficient right-of-way for the Golden-

[1] The 500-230 kV Golden Substation was a component of the Company's request for approval and a certificate of public convenience and necessity ("CPCN") from the State Corporation Commission (the "Commission") in an application filed on March 7, 2024. *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 Mar. 7, 2024) (the "Aspen-Golden Project"). As noted in that proceeding, the target in-service date for the Aspen-Golden Project is June 1, 2028 with a CPCN sunset date of June 1, 2029. The Commission entered a final order approving the Aspen-Golden Project on February 6, 2025.

[2] The 500-230 kV Mars Substation was a component of the Company's request for approval and a CPCN from the Commission in an application filed on October 27, 2022. While technically a switching station as it does not contain distribution equipment, this filing refers to this station as the Mars Substation for ease of reference and consistent with other recent Company filings. *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 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 (filed Oct. 27, 2022) (the "Mars-Wishing Star Project"). As noted in that proceeding, the target in-service date for the Mars-Wishing Star Project is December 31, 2025. The Commission entered a final order approving the Mars-Wishing Star Project on April 5, 2023.

[3] As proposed, construction of the Golden-Mars Lines ultimately will result in the following line numbers due to looping of the 230 kV Golden-Mars Line into and out of Lockridge Substation (*i.e.*, the Lockridge 230 kV Loop, as defined herein): 500 kV Golden-Mars Line #5003, 230 kV Golden-Lockridge Line #2412, and 230 kV Lockridge-Mars Line #2413. For purposes of discussing routes and impacts in this Application filing, the Golden-Mars Lines will be discussed and evaluated separately from the Lockridge 230 kV Loop (as defined herein) and the Sojourner 230 kV Loop (as defined herein). *See infra* n. 10, and n. 12.

Mars Lines to enter the Mars Substation, the Company proposes to remove Mars-Shellhorn Line #2095 and Mars-Sojourner Line #2292 from the existing transmission line corridor that spans between the Sojourner and Mars Substations, and to reconnect the Sojourner and Mars Substations along an alternate route that also will allow the Company to interconnect future load (see the proposed Sojourner 230 kV Loop, as defined herein).[4] The proposed Golden-Mars Lines will be constructed on almost entirely new right-of-way primarily varying between 100 feet[5] and 150 feet in width in order to accommodate a 5/2 configuration[6] on a

[4] The Golden-Mars Lines will intersect with an existing transmission line corridor containing Mars-Shellhorn Line #2095, Mars-Sojourner Line #2292, Celestial-Mars Line #2161, and Cabin Run-Mars Line #2287, just east of the intersection of Old Ox Road and Carters School Road (the "Old Ox/Carters School Road Intersection"). Existing Lines #2095/#2292 are single circuit 230 kV transmission lines collocated on the same double circuit monopole structures, and existing Lines #2261/#2287 are single circuit 230 kV transmission lines collocated on the same double circuit structures. *See* Attachment II.A.5.a of the Appendix, which represents the existing Lines #2095/#2292 / Lines #2261/#2287 transmission line corridor along the Carters School Road Segment, as defined herein. Due to spatial and Federal Aviation Administration ("FAA") constraints along the existing Lines #2095/#2292 and #2161/#2287 transmission corridor that would otherwise prevent installation of the Golden-Mars Lines along any of the alternative routes, the Company proposes to entirely remove (from an electrical perspective) Lines #2095 and #2292 from the existing corridor between the Sojourner and Mars Substations. Specifically, from Sojourner Substation south to the Old Ox/Carters School Road Intersection, which runs parallel to Old Ox Road (the "Old Ox Road Segment"), the Company proposes to remove the three double circuit monopole structures supporting Lines #2095/#2292, as well as approximately 0.7 mile of the Line #2095/#2292 conductors from the existing transmission line corridor. Additionally, one existing single circuit monopole structure outside of Sojourner Substation will be replaced with one single circuit monopole structure in order to terminate Line #2095 into Sojourner Substation.

From the Old Ox/Carters School Road Intersection south to Mars Substation, which corridor runs parallel to Carters School Road (the "Carters School Road Segment"), the existing corridor contains a combination of double circuit monopole structures and double circuit two-pole structures. Within the Carters School Road Segment, the Company will remove one set of arms from the three double circuit monopoles structures and remove one-half of three of the double circuit two-pole structures that currently support Line #2292, as well as 0.6 mile of Line #2292 conductor, which will allow for the construction of Golden-Mars Line #5003 within the existing corridor. The resulting single circuit structures will remain in the corridor, as well as the 0.6 mile of conductor from Line #2095, which will be repurposed and renamed Lockridge-Mars Line #2413. Lines #2161/#2287, which were approved by the Commission as part of the "Mars 230 kV Loop" in the Mars-Wishing Star Project will remain within the existing transmission corridor. *See* Attachment II.A.5.b of the Appendix, which represents the portion of the proposed Carters School Road Segment that currently contains the double circuit monopole structures supporting Line #2292.

To the extent not repurposed, the above-described transmission facilities removed from Lines #2095/#2292 will be placed into surplus storage for use on other ongoing projects or maintenance. *See* Section I.F.

[5] There may be an opportunity to reduce one section of the 100-foot-wide right-of-way to 70 feet for the Golden-Mars Lines. The Company recently identified a new 30-foot-wide Columbia Gas of Virginia ("Columbia Gas") easement for a future gas pipeline to be collocated on the western side of the existing 100-foot-wide Lines #2095 and #2218 right-of-way corridor. As a result, the Company's new 100-foot-wide right-of-way along this segment of Golden-Mars Routes 2 and 3 (for approximately 0.9 mile) and Golden-Mars Route 4 (for approximately 1.3 miles) will be located on the western side of the new Columbia Gas easement (Golden-Mars Routes 2, 3, and 4, as defined herein). The Company is coordinating actively with Columbia Gas to determine whether the Golden-Mars Lines right-of-way can overlap with the Columbia Gas easement, whereby the Company's new 100-foot-wide right-of-way would be reduced to a new 70-foot-wide easement where it overlaps with the 30-foot-wide Columbia Gas easement. *See* Attachment II.A.6 and Section II.A.9 of the Appendix.

[6] A "5/2 configuration" means that the supporting structures will be aligned such that one position of the structure will have a 500 kV circuit and one position will have a 230 kV circuit. *See, e.g.,* Attachments II.B.3.vi and II.B.3.xi of the Appendix.

combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way).[7] The new 500 kV line will utilize three-phase triple-bundled 1351.5 Aluminum Conductor Steel Reinforced ("ACSR") conductors with a summer transfer capability of 4,357 MVA.[8] The new 230 kV line will utilize three-phase twin-bundled Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

(ii) **Lockridge 230 kV Loop**: Construct a new approximately 0.6-mile overhead double circuit 230 kV transmission line by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation[9] (the "Lockridge 230 kV Loop" or "Lockridge Loop").[10] The Lockridge Loop will be constructed on new 100-foot-wide right-of-way supported primarily by dulled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

(iii) **Sojourner 230 kV Loop**: Construct a new approximately 1.9-mile overhead double circuit 230 kV transmission line from Mars Substation to Sojourner

---

[7] See Attachment II.A.6 of the Appendix for the locations of the varying right-of-way widths, including two segments where the Golden-Mars Lines' right-of-way will vary from the proposed 100- and 150-foot width, as follows.

First, where the Golden-Mars Lines (all route alternatives) cross the Washington and Old Dominion Trail ("W&OD Trail"), the proposed Golden-Mars Lines will collocate with an existing 100-foot-wide transmission line corridor containing existing Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150 for approximately 650 feet. Due to collocation with the existing transmission line corridor, the proposed Golden-Mars Lines will require additional right-of-way varying from approximately 90 feet to 150 feet, for a total right-of-way width of 190-250 feet.

Second, the Golden-Mars Lines (all route alternatives) will collocate with an existing 160-foot-wide transmission line corridor along the Carters School Road Segment for approximately 0.4 mile. *See supra*, n. 4. Due to collocation with the existing transmission line corridor, the proposed Golden-Mars Lines will require an additional approximately 65 feet of right-of-way, for a total right-of-way width of 225 feet.

See also, supra n. 5, as to potential varying right-of-way width.

[8] Apparent power, measured in megavolt amperes ("MVA"), is made up of real power (megawatt or "MW") and reactive power (megavolt ampere reactive or "MVAR").

[9] The existing 230-34.5 kV Lockridge Substation was a component of the Company's request for approval and a CPCN from the Commission in a prior proceeding. *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: Lockridge 230 kV Line Loop and Lockridge Substation,* Case No. PUR-2019-00215 (filed December 17, 2019) (the "Lockridge Substation Project"). The Commission entered a final order approving the Lockridge Substation Project on October 1, 2020. The Lockridge Substation has been in service since October 2022.

[10] Looping the 230 kV Golden-Mars Line into and out of the Lockridge Substation (*i.e.*, the Lockridge 230 kV Loop) will result in 230 kV Golden-Lockridge Line #2412 and 230 kV Lockridge-Mars Line #2413. For purposes of discussing routes and impacts in this Application filing, the Lockridge Loop will be discussed and evaluated separately from the Golden-Mars Lines and the Sojourner Loop (as defined herein). *See supra*, n. 3, and *infra* n. 12.

Substation[11] (the "Sojourner 230 kV Loop" or "Sojourner Loop").[12] The proposed Sojourner Loop will be constructed on entirely new 100-foot-wide right-of-way[13] supported primarily by dulled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

[11] The Sojourner Substation has been in service since November 2022.

[12] After the existing Mars-Shellhorn Line #2095 and Mars-Sojourner Line #2292 are removed from the existing transmission corridor (*see supra*, n. 4), the proposed Sojourner Loop will install two new 230 kV single circuit lines on shared double circuit structures with terminal points at the Mars Substation and the Sojourner Substation, resulting in Mars-Sojourner Line #2292 and Mars-Sojourner Line #2427. Because Line #2292 will have the same terminal points before and after the Project is completed, the Company is able to re-use that number for purposes of that line. As both Lines #2292 and #2427 are terminating at the Mars and Sojourner Substations, this proposed Project component is not technically a "loop;" however, this filing refers to it as the "Sojourner 230 kV Loop" or "Sojourner Loop" for ease of reference. For purposes of discussing routes and impacts in this Application filing, the Sojourner Loop will be discussed and evaluated separately from the Golden-Mars Lines and the Lockridge Loop. *See supra*, n. 3, and n. 10.

[13] As noted herein, the Sojourner Loop requires 100-foot-wide new right-of-way for the approximately 1.9-mile route. The Company proposes, however, to seek to acquire an additional 35 feet or 60 feet of new right-of-way along segments of the route. The additional new 35 feet or 60 feet of right-of-way width will accommodate installation of anticipated future 230 kV lines supported by an additional single circuit monopole within the right-of-way (an additional 35 feet for a total of 135-foot-wide right-of-way to accommodate a total of three 230 kV lines) or by an additional double circuit monopole within the right-of-way (an additional 60 feet for a total of 160-foot-wide right-of-way to accommodate a total of four 230 kV lines) situated side-by-side with the proposed Sojourner Loop's double circuit monopole, as proposed. Based on recent delivery point ("DP") requests, the Company anticipates that one or more substations will need to be constructed along the proposed Sojourner Loop to serve data center load growth in the future. *See* Section I.B. For the segment of the Sojourner Loop extending from Mars Substation north to a future substation (currently named Perseverance Substation), the Company anticipates that an additional double circuit 230 kV line will be required within the expanded 160-foot-wide right-of-way in order to connect the future substation and also relieve a future thermal violation. *See* Attachment II.A.5.g of the Appendix; *see also* Attachment I.A.5 and Section I.B of the Appendix. For the segment of the Sojourner Loop extending north from the future Perseverance Substation to another future substation (currently named Phoenix Substation), the Company anticipates that an additional single circuit 230 kV line will be required within the expanded 135-foot-wide right-of-way in order to connect Phoenix Substation. *See* Attachment II.A.5.h of the Appendix; *see also* Attachment I.A.5 and Section I.B of the Appendix. To be clear, only the 100-foot-wide right-of-way will be cleared and utilized by the Company for purposes of the Sojourner Loop as proposed. Dominion Energy Virginia asks that the Commission not prohibit the Company from voluntarily obtaining the full right-of-way—at 135 feet and 160 feet as described above—with the understanding that the Company would not condemn for permanent right-of-way greater than the proposed 100-foot width needed for the proposed Sojourner Loop. This approach is consistent with the approach approved by the Commission recent proceedings. *See Application of Virginia Electric and Power Company for approval and certification of electric facilities: 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, Final Order at 11 (June 14, 2023)*; Application of Virginia Electric and Power Company for approval and certification of electric facilities: 230 kV Altair Loop and Altair Switching Station*, Case No. PUR-2022-00197, Final Order at 10-11 (June 7, 2023)*; Application of Virginia Electric and Power Company for approval and certification of electric facilities: DTC 230 kV Line Loop and DTC Substation*, Case No. PUR-2021-00280, Final Order at 13 (July 7, 2022). To the extent that the Company's Sojourner Loop is approved as proposed, the Company believes that it is reasonable and prudent to construct that proposed double circuit line off-center within the right-of-way in a manner that will allow for the future construction of the additional lines as described above. To the extent needed, the Company will seek Commission approval to construct the anticipated future 230 kV transmission lines when the need arises.

(iv) **Substation-Related Work**: Perform work at the Company's Golden, Mars, Lockridge, Sojourner, and Shellhorn Substations.

The Golden-Mars Lines, the Lockridge 230 kV Loop, the Sojourner 230 kV Loop, and the substation-related work are collectively referred to as the "Golden-Mars 500-230 kV Electric Transmission Project" or the "Project."

4. The Project is necessary to relieve identified violations of NERC Reliability Standards in order to maintain and improve reliable electric service to customers in the load area extending generally from the Fairfax/Loudoun County line to the east, Potomac River to the north, the Company's existing 500 kV Brambleton-Goose Creek Line #558 to the west, and State Route 50 to the south, including Data Center Alley (or "DCA") and Washington Dulles International Airport in Loudoun County, Virginia (the "Eastern Loudoun Load Area"). Additionally, the Project is needed to resolve a 300 MW N-1-1 load drop violation identified by PJM Interconnection, L.L.C. by looping the Mars-Golden Lines into and out of the Lockridge Substation (*i.e.*, the Lockridge Loop), and to address spatial and FAA constraints along the Carters School Road Segment of the Golden-Mars Lines by removing existing Lines #2095/#2292 from an existing transmission corridor and reconnecting the Mars and Sojourner Substations along a route that will allow the Company to interconnect future load (*i.e.*, the Sojourner Loop Proposed Route, as described herein). Importantly, the proposed Project, along with the Mars-Wishing Star Project and the Aspen-Golden Project, will complete the 500 kV transmission loop in the Northern Virginia area surrounding DCA, bringing needed capacity to the Eastern Loudoun Load Area, while also mitigating identified NERC reliability violations and maintaining reliable service for overall load growth in the Project area and the Commonwealth.

5. Golden-Mars Lines Route: For the Golden-Mars Lines, the Company identified five route alternatives: an approximately 9.4-mile overhead alternative route ("Golden-Mars

Alternative Route 1" or "Golden-Mars Route 1"), an approximately 9.3-mile overhead alternative route ("Golden-Mars Alternative Route 2" or "Golden-Mars Route 2"), an approximately 8.3-mile overhead alternative route ("Golden-Mars Alternative Route 3" or "Golden-Mars Route 3"), an approximately 8.3-mile overhead alternative route ("Golden-Mars Alternative Route 4" or "Golden-Mars Route 4"), and an approximately 9.8-mile overhead alternative route ("Golden-Mars Alternative Route 5" or "Golden-Mars Route 5"). As discussed further below, the Company is proposing Golden-Mars Route 3 as the "Golden-Mars Proposed Route" dependent upon timely receipt of all necessary approvals.

6. Importantly, Golden-Mars Routes 1, 2, 3, 4 cannot be constructed without Loudoun County Board of Supervisors ("County" or "BOS") and/or Loudoun County School Board ("LCSB") approval. While Golden-Mars Route 5 is the most impactful of all of the noticed Golden-Mars routes, it is the only currently viable Golden-Mars route because it does not cross public lands and easements except for a <0.1-acre portion of BOS-owned property that the County indicated verbally was acceptable to cross. Golden-Mars Route 4 is the least impactful route and is the County's preferred route; however, Golden-Mars Route 3 is the second least impactful route and is the County's secondary route preference. While LCSB voted against all overhead routes (8-1) that impact LCSB property on March 25, 2025, Golden-Mars Route 3 remains the second least impactful route overall, the County's secondary route preference, and the route that the Company believes to be least impactful to LCSB property. Accordingly, the Company supports Route 3 as the Golden-Mars Proposed Route and remains committed to continuing to work with the LCSB to obtain timely consent for Route 3. No less than two weeks prior to the deadline for Respondent testimony established by the Commission in the Order for Notice and Hearing entered in this proceeding, the Company will file a notification in the docket indicating whether the

Company has received LCSB consent for the Golden-Mars Route 3's crossings of LCSB property; if not, the Company's notification will change the Golden-Mars Proposed Route to Route 5 as the only viable route.[14]

7. Lockridge Loop Route: For the Lockridge Loop, the Company identified an approximately 0.6-mile overhead proposed route ("Lockridge Loop Proposed Route").

8. The Lockridge Loop Proposed Route is the shortest, most direct, least impactful loop route between the cut-in along the 230 kV Mars-Golden Line and Lockridge Substation. Additionally, the alignment of the Lockridge Loop Proposed Route is supported by the landowner and developer on which the majority of the route is located. Accordingly, the Company developed no alternative routes because all other alignments would result in conflicts with proposed land uses and greater impacts to environmental resources.

9. Sojourner Loop Route: For the Sojourner Loop, the Company identified an approximately 1.9-mile overhead proposed route ("Sojourner Loop Proposed Route").

10. The Sojourner Loop Proposed Route is the most direct route between Sojourner Substation and Mars Substation that accounts for multiple future substation delivery points along the route. Additionally, the alignment of the Sojourner Loop Proposed Route is supported by the landowner and developer on which the entirety of the route is located. Accordingly, the Company did not develop alternative routes because all other alignments would result in conflicts with proposed land uses could not interconnect the future substations without additional new rights-of-way.

[14] For additional information regarding the Golden-Mars route alternatives, *see* Section II.A.9 of the Appendix and the Golden-Mars Lines Key Features Table presented therein. *See* Attachment II.A.9.b of the Appendix regarding the County's routing preferences. Note that LCSB property only is impacted by overhead Golden-Mars Routes 2, 3, and 4; accordingly, LCSB consent is not needed for Golden-Mars Routes 1 or 5. Information related to the March 25, 2025 LCSB meeting and a video recording of the meeting is available at https://go.boarddocs.com/vsba/loudoun/Board.nsf/Public.

11. The Company is proposing all of these Proposed and Alternative Routes for Commission consideration and notices. Discussion of these Proposed and Alternative Routes, as well as other overhead, and overhead/underground hybrid routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and more detail is provided in the Environmental Routing Study (or "Routing Study") included with the Application.

12. The proposed Project will require work at the Golden and Mars Substations to accommodate the Golden-Mars Lines, work at the Company's existing Lockridge and Sojourner Substations to accommodate the Lockridge 230 kV Loop and the Sojourner 230 kV Line Loop, and relay resets of the protective relaying equipment at the Company's existing Shellhorn Substation.

13. The estimated conceptual cost of the Project as proposed is approximately $402.3 million, which includes approximately $351.9 million for transmission-related work and approximately $50.4 million for substation-related work (2024 dollars).[15]

14. The desired in-service target date for the proposed Project is June 1, 2028. The Company estimates it will take approximately 30 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 December 1, 2025. Should the Commission issue a final order by December 1, 2025, to accommodate long-lead materials procurement, the Company estimates that construction should begin around January 2027, and be completed by June 1, 2028. This schedule is contingent upon obtaining the necessary permits and outages, the latter of which

[15] These total Project costs include the projected real estate costs that the Company anticipates will be required to acquire property rights for the Golden-Mars Lines, the Lockridge Loop, and the Sojourner Loop, as proposed; and the transmission-related work described in Section I.F of the Appendix. Note that all Project costs are as to jurisdictional aspects only.

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 routes without the need for additional litigation.

15. In addition, the Company is monitoring actively regulatory changes and requirements associated with the Northern long-eared bat and how they could potentially impact construction timing associated with time of year restrictions. The U.S. Fish and Wildlife Service ("USFWS") issued final guidance, replacing the interim guidance, on October 23, 2024 and the final guidance was fully implemented on November 30, 2024. The Company is reviewing the final guidance to the extent it applies to the Company's projects and will coordinate with USFWS during the permitting stage.

16. 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 extended its Final Rule issuance target from September 2023 to September 2024, but as of the date of this filing, the TCB listing decision has not been issued. The Company is tracking actively this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

17. 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.*, June 1, 2028) and an authorization sunset date (*i.e.*, June 1, 2029) for energization of the Project.[16]

18. 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.

19. 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.

20. 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.

---

[16] The Company notes that this request is consistent with the Commission's findings in other recent proceedings. *See Application of Virginia Electric and Power Company for approval of electric transmission facilities: 230 kV Rebuild, Reconductoring, and New Line Projects to Network Takeoff Substation*, Case No. PUR-2024-00131, Final Order (Mar. 19, 2025), approving an in-service date of August 1, 2027, and a CPCN sunset date of August 1, 2028, for energization of that project in Ordering Paragraph (8); *Application of Virginia Electric and Power Company for approval of electric transmission facilities: Fentress-Yadkin 500 kV Line #588 Rebuild and New 500 kV Fentress-Yadkin Line #5005*, Case No. PUR-2024-00105, Final Order (Feb. 28, 2025), approving an in-service date of January 1, 2027, and a CPCN sunset date of January 1, 2028, for energization of that project in Ordering Paragraph (8); *Application of Virginia Electric and Power Company for approval 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, Final Order (Feb. 6, 2025), approving an in-service date of June 1, 2028, and a CPCN sunset date of June 1, 2029, for energization of that project in Ordering Paragraph (8); and *Application of Virginia Electric and Power Company for approval of electric transmission facilities: 230 kV Apollo-Twin Creeks Lines, and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations*, Case No. PUR-2024-00044, Final Order (Feb. 5, 2025), approving an in service date of September 30, 2028, and a CPCN sunset date of September 30, 2029, for energization of that project in Ordering Paragraph (8).

21. 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 Bradley S. Lowe, Trey M. Rydel, Kamlesh A. Joshi, Greg R. Baka, and Jacob M. Rosenberg filed with this Application.

22. Finally, Dominion Energy Virginia requests that, to the extent the Commission modifies the deadline for responses to interrogatories and requests for production of documents in 5 VAC 5-20-260, the Commission grant the parties seven calendar days in order to afford the Company adequate time to provide comprehensive responses to discovery.

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.
600 East Canal 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 Andrews
Sarah B. Nielsen (subject to *Pro Hac Vice Admission*)
McGuireWoods LLP
Gateway Plaza
800 E. Canal Street
Richmond, Virginia 23219
(804) 775-4330 (VBL)
(804) 775-1051 (JDV)
(804) 775-4395 (AHA)
(803) 251-2306 (SBN)
vlink@mcguirewooods.com
jvalaika@mcguirewoods.com
ahaynes@mcguirewoods.com
snielsen@mcguirewoods.com

Counsel for Applicant Virginia Electric and Power Company

March 28, 2025

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop, and Related Projects

Application No. 350

Appendix

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

Case No. PUR-2025-00056

Filed: March 28, 2025

TABLE OF CONTENTS

EXECUTIVE SUMMARY

In order to relieve identified violations of mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards beginning in the summer 2028 timeframe brought on by significant increases in electrical demand as well as expected demand growth projected for the future, to interconnect future load, and to maintain the structural integrity and reliability of its transmission system, Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company") proposes in Loudoun County, Virginia, to:

(1) **Golden-Mars Lines**: Construct a new overhead 500 kilovolt ("kV") single circuit transmission line and a new overhead 230 kV single circuit transmission line originating at the 500 kV and 230 kV buses of the 500-230 kV Golden Substation[1] and continuing approximately 8.3 miles to the 500-230 kV Mars Substation[2] (the "Golden-Mars Lines").[3] In order to allow sufficient right-of-way for the Golden-Mars Lines to enter the Mars Substation, the Company proposes to remove Mars-Shellhorn Line #2095 and Mars-Sojourner Line #2292 from the existing transmission line corridor that spans between the Sojourner and Mars Substations, and to reconnect the Sojourner and Mars Substations along an alternate route that also will allow the Company to interconnect future load (see the proposed Sojourner 230 kV Loop, as defined herein).[4] The proposed Golden-Mars

[1] The 500-230 kV Golden Substation was a component of the Company's request for approval and a certificate of public convenience and necessity ("CPCN") from the State Corporation Commission (the "Commission") in an application filed on March 7, 2024. *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 Mar. 7, 2024) (the "Aspen-Golden Project"). As noted in that proceeding, the target in-service date for the Aspen-Golden Project is June 1, 2028 with a CPCN sunset date of June 1, 2029. The Commission entered a final order approving the Aspen-Golden Project on February 6, 2025.

[2] The 500-230 kV Mars Substation was a component of the Company's request for approval and a CPCN from the Commission in an application filed on October 27, 2022. While technically a switching station as it does not contain distribution equipment, this filing refers to this station as the Mars Substation for ease of reference and consistent with other recent Company filings. *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 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 (filed Oct. 27, 2022) (the "Mars-Wishing Star Project"). As noted in that proceeding, the target in-service date for the Mars-Wishing Star Project is December 31, 2025. The Commission entered a final order approving the Mars-Wishing Star Project on April 5, 2023.

[3] As proposed, construction of the Golden-Mars Lines ultimately will result in the following line numbers due to looping of the 230 kV Golden-Mars Line into and out of Lockridge Substation (*i.e.*, the Lockridge 230 kV Loop, as defined herein): 500 kV Golden-Mars Line #5003, 230 kV Golden-Lockridge Line #2412, and 230 kV Lockridge-Mars Line #2413. For purposes of discussing routes and impacts in this Application filing, the Golden-Mars Lines will be discussed and evaluated separately from the Lockridge 230 kV Loop (as defined herein) and the Sojourner 230 kV Loop (as defined herein). *See infra* n. 10, and n. 12.

[4] The Golden-Mars Lines will intersect with an existing transmission line corridor containing Mars-Shellhorn Line #2095, Mars-Sojourner Line #2292, Celestial-Mars Line #2161, and Cabin Run-Mars Line #2287, just east of the intersection of Old Ox Road and Carters School Road (the "Old Ox/Carters School Road Intersection"). Existing Lines #2095/#2292 are single circuit 230 kV transmission lines collocated on the same double circuit monopole structures, and existing Lines #2261/#2287 are single circuit 230 kV transmission lines collocated on the same double circuit structures. *See* Attachment II.A.5.a, which represents the existing Lines #2095/#2292 / Lines #2261/#2287 transmission line corridor along the Carters School Road Segment, as defined herein. Due to spatial and Federal Aviation Administration ("FAA") constraints along the existing Lines #2095/#2292 and #2161/#2287 transmission

Lines will be constructed on almost entirely new right-of-way primarily varying between 100 feet[5] and 150 feet in width in order to accommodate a 5/2 configuration[6] on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way).[7] The new 500 kV line will utilize three-phase triple-bundled 1351.5 Aluminum

---

corridor that would otherwise prevent installation of the Golden-Mars Lines along any of the alternative routes, the Company proposes to entirely remove (from an electrical perspective) Lines #2095 and #2292 from the existing corridor between the Sojourner and Mars Substations. Specifically, from Sojourner Substation south to the Old Ox/Carters School Road Intersection, which runs parallel to Old Ox Road (the "Old Ox Road Segment"), the Company proposes to remove the three double circuit monopole structures supporting Lines #2095/#2292, as well as approximately 0.7 mile of the Line #2095/#2292 conductors from the existing transmission line corridor. Additionally, one existing single circuit monopole structure outside of Sojourner Substation will be replaced with one single circuit monopole structure in order to terminate Line #2095 into Sojourner Substation.

From the Old Ox/Carters School Road Intersection south to Mars Substation, which corridor runs parallel to Carters School Road (the "Carters School Road Segment"), the existing corridor contains a combination of double circuit monopole structures and double circuit two-pole structures. Within the Carters School Road Segment, the Company will remove one set of arms from the three double circuit monopoles structures and remove one-half of three of the double circuit two-pole structures that currently support Line #2292, as well as 0.6 mile of Line #2292 conductor, which will allow for the construction of Golden-Mars Line #5003 within the existing corridor. The resulting single circuit structures will remain in the corridor, as well as the 0.6 mile of conductor from Line #2095, which will be repurposed and renamed Lockridge-Mars Line #2413. Lines #2161/#2287, which were approved by the Commission as part of the "Mars 230 kV Loop" in the Mars-Wishing Star Project will remain within the existing transmission corridor. *See* Attachment II.A.5.b, which represents the portion of the proposed Carters School Road Segment that currently contains the double circuit monopole structures supporting Line #2292.

To the extent not repurposed, the above-described transmission facilities removed from Lines #2095/#2292 will be placed into surplus storage for use on other ongoing projects or maintenance. *See* Section I.F.

[5] There may be an opportunity to reduce one section of the 100-foot-wide right-of-way to 70 feet for the Golden-Mars Lines. The Company recently identified a new 30-foot-wide Columbia Gas of Virginia ("Columbia Gas") easement for a future gas pipeline to be collocated on the western side of the existing 100-foot-wide Lines #2095 and #2218 right-of-way corridor. As a result, the Company's new 100-foot-wide right-of-way along this segment of Golden-Mars Routes 2 and 3 (for approximately 0.9 mile) and Golden-Mars Route 4 (for approximately 1.3 miles) will be located on the western side of the new Columbia Gas easement (Golden-Mars Routes 2, 3, and 4, as defined herein). The Company is coordinating actively with Columbia Gas to determine whether the Golden-Mars Lines right-of-way can overlap with the Columbia Gas easement, whereby the Company's new 100-foot-wide right-of-way would be reduced to a new 70-foot-wide easement where it overlaps with the 30-foot-wide Columbia Gas easement. *See* Attachment II.A.6 and Section II.A.9.

[6] A "5/2 configuration" means that the supporting structures will be aligned such that one position of the structure will have a 500 kV circuit and one position will have a 230 kV circuit. *See, e.g.,* Attachments II.B.3.vi and II.B.3.xi.

[7] See Attachment II.A.6 for the locations of the varying right-of-way widths, including two segments where the Golden-Mars Lines' right-of-way will vary from the proposed 100- and 150-foot width, as follows.

First, where the Golden-Mars Lines (all route alternatives) cross the Washington and Old Dominion Trail ("W&OD Trail"), the proposed Golden-Mars Lines will collocate with an existing 100-foot-wide transmission line corridor containing existing Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150 for approximately 650 feet. Due to collocation with the existing transmission line corridor, the proposed Golden-Mars Lines will require additional right-of-way varying from approximately 90 feet to 150 feet, for a total right-of-way width of 190-250 feet.

Second, the Golden-Mars Lines (all route alternatives) will collocate with an existing 160-foot-wide transmission line corridor along the Carters School Road Segment for approximately 0.4 mile. *See supra*, n. 4. Due to collocation with

Conductor Steel Reinforced ("ACSR") conductors with a summer transfer capability of 4,357 MVA.[8] The new 230 kV line will utilize three-phase twin-bundled Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

(2) **Lockridge 230 kV Loop**: Construct a new approximately 0.6-mile overhead double circuit 230 kV transmission line by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation[9] (the "Lockridge 230 kV Loop" or "Lockridge Loop").[10] The Lockridge Loop will be constructed on new 100-foot-wide right-of-way supported primarily by dulled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

(3) **Sojourner 230 kV Loop**: Construct a new approximately 1.9-mile overhead double circuit 230 kV transmission line from Mars Substation to Sojourner Substation[11] (the "Sojourner 230 kV Loop" or "Sojourner Loop").[12] The proposed Sojourner Loop will be constructed on entirely new 100-foot-wide right-of-way[13] supported primarily by dulled galvanized

---

the existing transmission line corridor, the proposed Golden-Mars Lines will require an additional approximately 65 feet of right-of-way, for a total right-of-way width of 225 feet.

See also, supra n. 5, as to potential varying right-of-way width.

[8] Apparent power, measured in megavolt amperes ("MVA"), is made up of real power (megawatt or "MW") and reactive power (megavolt ampere reactive or "MVAR").

[9] The existing 230-34.5 kV Lockridge Substation was a component of the Company's request for approval and a CPCN from the Commission in a prior proceeding. *See Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: Lockridge 230 kV Line Loop and Lockridge Substation,* Case No. PUR-2019-00215 (filed December 17, 2019) (the "Lockridge Substation Project"). The Commission entered a final order approving the Lockridge Substation Project on October 1, 2020. The Lockridge Substation has been in service since October 2022.

[10] Looping the 230 kV Golden-Mars Line into and out of the Lockridge Substation (*i.e.*, the Lockridge 230 kV Loop) will result in 230 kV Golden-Lockridge Line #2412 and 230 kV Lockridge-Mars Line #2413. For purposes of discussing routes and impacts in this Application filing, the Lockridge Loop will be discussed and evaluated separately from the Golden-Mars Lines and the Sojourner Loop (as defined herein). *See supra*, n. 3, and *infra* n. 12.

[11] The Sojourner Substation has been in service since November 2022.

[12] After the existing Mars-Shellhorn Line #2095 and Mars-Sojourner Line #2292 are removed from the existing transmission corridor (*see supra*, n. 4), the proposed Sojourner Loop will install two new 230 kV single circuit lines on shared double circuit structures with terminal points at the Mars Substation and the Sojourner Substation, resulting in Mars-Sojourner Line #2292 and Mars-Sojourner Line #2427. Because Line #2292 will have the same terminal points before and after the Project is completed, the Company is able to re-use that number for purposes of that line. As both Lines #2292 and #2427 are terminating at the Mars and Sojourner Substations, this proposed Project component is not technically a "loop;" however, this filing refers to it as the "Sojourner 230 kV Loop" or "Sojourner Loop" for ease of reference. For purposes of discussing routes and impacts in this Application filing, the Sojourner Loop will be discussed and evaluated separately from the Golden-Mars Lines and the Lockridge Loop. *See supra*, n. 3, and n. 10.

[13] As noted herein, the Sojourner Loop requires 100-foot-wide new right-of-way for the approximately 1.9-mile route. The Company proposes, however, to seek to acquire an additional 35 feet or 60 feet of new right-of-way along segments of the route. The additional new 35 feet or 60 feet of right-of-way width will accommodate installation of anticipated future 230 kV lines supported by an additional single circuit monopole within the right-of-way (an

steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

(4) **Substation-Related Work**: Perform work at the Company's Golden, Mars, Lockridge, Sojourner, and Shellhorn Substations to accommodate the proposed Project.

The Golden-Mars Lines, the Lockridge 230 kV Loop, the Sojourner 230 kV Loop, and the associated substation-related work are collectively referred to as the "Golden-Mars 500-230 kV Electric Transmission Project" or the "Project."

The Project is necessary to relieve identified violations of NERC Reliability Standards in order to maintain and improve reliable electric service to customers in the load area, which, for purposes of this Application, extends generally from the Fairfax/Loudoun County line to the east, Potomac River to the north, the Company's existing 500 kV Brambleton-Goose Creek Line #558 to the west, and State Route 50 to the south, including Data Center Alley (or "DCA") and Washington Dulles International Airport ("Dulles Airport") in Loudoun County, Virginia (the "Eastern Loudoun Load Area"). Additionally, the Project is needed to resolve a 300 MW N-1-1 load drop violation identified by PJM Interconnection, L.L.C. ("PJM") by looping the Golden-Mars Lines into and out of the Lockridge Substation (*i.e.*, the Lockridge Loop), and to address spatial and FAA constraints along the Carters School Road Segment of the Golden-Mars Lines by removing existing Lines #2095/#2292 from an existing transmission corridor and reconnecting the Mars and Sojourner Substations along a route that will allow the Company to interconnect future load (*i.e.*,

---

additional 35 feet for a total of 135-foot-wide right-of-way to accommodate a total of three 230 kV lines) or by an additional double circuit monopole within the right-of-way (an additional 60 feet for a total of 160-foot-wide right-of-way to accommodate a total of four 230 kV lines) situated side-by-side with the proposed Sojourner Loop's double circuit monopole, as proposed. Based on recent delivery point ("DP") requests, the Company anticipates that one or more substations will need to be constructed along the proposed Sojourner Loop to serve data center load growth in the future. *See* Section I.B. For the segment of the Sojourner Loop extending from Mars Substation north to a future substation (currently named Perseverance Substation), the Company anticipates that an additional double circuit 230 kV line will be required within the expanded 160-foot-wide right-of-way in order to connect the future substation and also relieve a future thermal violation. *See* Attachment II.A.5.g; *see also* Attachment I.A.5 and Section I.B. For the segment of the Sojourner Loop extending north from the future Perseverance Substation to another future substation (currently named Phoenix Substation), the Company anticipates that an additional single circuit 230 kV line will be required within the expanded 135-foot-wide right-of-way in order to connect Phoenix Substation. *See* Attachment II.A.5.h; *see also* Attachment I.A.5 and Section I.B. To be clear, only the 100-foot-wide right-of-way will be cleared and utilized by the Company for purposes of the Sojourner Loop as proposed. Dominion Energy Virginia asks that the Commission not prohibit the Company from voluntarily obtaining the full right-of-way—at 135 feet and 160 feet as described above—with the understanding that the Company would not condemn for permanent right-of-way greater than the proposed 100-foot width needed for the proposed Sojourner Loop. This approach is consistent with the approach approved by the Commission recent proceedings. *See Application of Virginia Electric and Power Company for approval and certification of electric facilities: 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, Final Order at 11 (June 14, 2023)*; Application of Virginia Electric and Power Company for approval and certification of electric facilities: 230 kV Altair Loop and Altair Switching Station*, Case No. PUR-2022-00197, Final Order at 10-11 (June 7, 2023)*; Application of Virginia Electric and Power Company for approval and certification of electric facilities: DTC 230 kV Line Loop and DTC Substation*, Case No. PUR-2021-00280, Final Order at 13 (July 7, 2022). To the extent that the Company's Sojourner Loop is approved as proposed, the Company believes that it is reasonable and prudent to construct that proposed double circuit line off-center within the right-of-way in a manner that will allow for the future construction of the additional lines as described above. To the extent needed, the Company will seek Commission approval to construct the anticipated future 230 kV transmission lines when the need arises.

the Sojourner Loop Proposed Route, as described herein). Importantly, the proposed Project, along with the Mars-Wishing Star Project and the Aspen-Golden Project, will complete the 500 kV transmission loop in the Northern Virginia area surrounding DCA, bringing needed capacity to the Eastern Loudoun Load Area, while also mitigating identified NERC reliability violations and maintaining reliable service for overall load growth in the Project area and the Commonwealth.

Golden-Mars Lines Route: For the Golden-Mars Lines, the Company identified five route alternatives: an approximately 9.4-mile overhead alternative route ("Golden-Mars Alternative Route 1" or "Golden-Mars Route 1"), an approximately 9.3-mile overhead alternative route ("Golden-Mars Alternative Route 2" or "Golden-Mars Route 2"), an approximately 8.3-mile overhead alternative route ("Golden-Mars Alternative Route 3" or "Golden-Mars Route 3"), an approximately 8.3-mile overhead alternative route ("Golden-Mars Alternative Route 4" or "Golden-Mars Route 4"), and an approximately 9.8-mile overhead alternative route ("Golden-Mars Alternative Route 5" or "Golden-Mars Route 5"). As discussed further below, the Company is proposing Golden-Mars Route 3 as the "Golden-Mars Proposed Route" dependent upon timely receipt of all necessary approvals.

Importantly, Golden-Mars Routes 1, 2, 3, 4 cannot be constructed without Loudoun County Board of Supervisors ("County" or "BOS") and/or Loudoun County School Board ("LCSB") approval. While Golden-Mars Route 5 is the most impactful of all of the noticed Golden-Mars routes, it is the only currently viable Golden-Mars route because it does not cross public lands and easements except for a <0.1-acre portion of BOS-owned property that the County indicated verbally was acceptable to cross. Golden-Mars Route 4 is the least impactful route and is the County's preferred route; however, Golden-Mars Route 3 is the second least impactful route and is the County's secondary route preference. While LCSB voted against all overhead routes (8-1) that impact LCSB property on March 25, 2025, Golden-Mars Route 3 remains the second least impactful route overall, the County's secondary route preference, and the route that the Company believes to be least impactful to LCSB property. Accordingly, the Company supports Route 3 as the Golden-Mars Proposed Route and remains committed to continuing to work with the LCSB to obtain timely consent for Route 3. No less than two weeks prior to the deadline for Respondent testimony established by the Commission in the Order for Notice and Hearing entered in this proceeding, the Company will file a notification in the docket indicating whether the Company has received LCSB consent for the Golden-Mars Route 3's crossings of LCSB property; if not, the Company's notification will change the Golden-Mars Proposed Route to Route 5 as the only viable route.[14]

Lockridge Loop Route: For the Lockridge Loop, the Company identified an approximately 0.6-mile overhead proposed route ("Lockridge Loop Proposed Route").

Sojourner Loop Route: For the Sojourner Loop, the Company identified an approximately 1.9-mile overhead proposed route ("Sojourner Loop Proposed Route").

[14] For additional information regarding the Golden-Mars route alternatives, *see* Section II.A.9 and the Golden-Mars Lines Key Features Table presented therein. *See* Attachment II.A.9.b regarding the County's routing preferences. Note that LCSB property only is impacted by overhead Golden-Mars Routes 2, 3, and 4; accordingly, LCSB consent is not needed for Golden-Mars Routes 1 or 5. Information related to the March 25, 2025 LCSB meeting and a video recording of the meeting is available at https://go.boarddocs.com/vsba/loudoun/Board.nsf/Public.

The Company is proposing all of these Proposed and Alternative Routes for Commission consideration and notice. Discussion of these Proposed and Alternative Routes, as well as other overhead, and overhead/underground hybrid routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and more detail is provided in the Environmental Routing Study (or "Routing Study") included with the Application.

The proposed Project will require work at the Golden and Mars Substations to accommodate the Golden-Mars Lines, work at the Company's existing Lockridge and Sojourner Substations to accommodate the Lockridge 230 kV Loop and the Sojourner 230 kV Line Loop, and relay resets of the protective relaying equipment at the Company's existing Shellhorn Substation.

The estimated conceptual cost of the Project as proposed is approximately $402.3 million, which includes approximately $351.9 million for transmission-related work and approximately $50.4 million for substation-related work (2024 dollars).[15]

The desired in-service target date for the proposed Project is June 1, 2028. The Company estimates it will take approximately 30 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 December 1, 2025. Should the Commission issue a final order by December 1, 2025, to accommodate long-lead materials procurement, the Company estimates that construction should begin around January 2027, and be completed by June 1, 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 routes without the need for additional litigation.

In addition, the Company is monitoring actively 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") issued the final guidance, replacing the interim guidance, on October 23, 2024 and the final guidance was fully implemented on November 30, 2024. The Company is reviewing the final guidance to the extent it applies to the Company's projects and will coordinate with USFWS during the permitting stage.

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 extended its Final Rule issuance target from September 2023 to September 2024, but as

[15] These total Project costs include the projected real estate costs that the Company anticipates will be required to acquire property rights for the Golden-Mars Lines, the Lockridge Loop, and the Sojourner Loop, as proposed. Additionally, the total Project costs include costs associated with the transmission-related work described in Section I.F. Note that all Project costs are as to jurisdictional aspects only.

of the date of this filing, the TCB listing decision has not been issued. The Company is tracking actively 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.*, June 1, 2028) and an authorization sunset date (*i.e.*, June 1, 2029) for energization of the Project.[16]

[16] The Company notes that this request is consistent with the Commission's findings in other recent proceedings. *See Application of Virginia Electric and Power Company for approval of electric transmission facilities: 230 kV Rebuild, Reconductoring, and New Line Projects to Network Takeoff Substation*, Case No. PUR-2024-00131, Final Order (Mar. 19, 2025), approving an in-service date of August 1, 2027, and a CPCN sunset date of August 1, 2028, for energization of that project in Ordering Paragraph (8); *Application of Virginia Electric and Power Company for approval of electric transmission facilities: Fentress-Yadkin 500 kV Line #588 Rebuild and New 500 kV Fentress-Yadkin Line #5005*, Case No. PUR-2024-00105, Final Order (Feb. 28, 2025), approving an in-service date of January 1, 2027, and a CPCN sunset date of January 1, 2028, for energization of that project in Ordering Paragraph (8); *Application of Virginia Electric and Power Company for approval 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, Final Order (Feb. 6, 2025), approving an in-service date of June 1, 2028, and a CPCN sunset date of June 1, 2029, for energization of that project in Ordering Paragraph (8); and *Application of Virginia Electric and Power Company for approval of electric transmission facilities: 230 kV Apollo-Twin Creeks Lines, and Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations*, Case No. PUR-2024-00044, Final Order (Feb. 5, 2025), approving an in service date of September 30, 2028, and a CPCN sunset date of September 30, 2029, for energization of that project in Ordering Paragraph (8).

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 relieve identified violations of NERC Reliability Standards, to reconnect the Mars and Sojourner Substations along a route that will allow the Company to interconnect future load, and to maintain the structural integrity and reliability of its transmission system. Importantly, the proposed Project, along with the Mars-Wishing Star Project and the Aspen-Golden Project, will complete the 500 kV transmission loop in the Northern Virginia area surrounding DCA, bringing needed capacity to Eastern Loudoun Load Area, while also mitigating identified NERC reliability violations and maintaining reliable service for overall load growth in the Project area and the Commonwealth. See Attachment I.A.1 for an overview map of the proposed Project, general boundary of the Eastern Loudoun Load Area, and the three projects, including the proposed Project.

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

Dominion Energy Virginia is part of the PJM 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 16, 2024, the DOM Zone set a record high of 23,127 MW for summer peak demand. On January 23, 2025, the DOM Zone set a preliminary winter and all-time record demand of 24,678 MW. Based on PJM's 2025 Load Forecast, the DOM Zone is expected to grow with average growth rates of 6.3% summer and 6.0% winter over the next 10 years compared to the PJM average of 3.1% and 3.8% over the same period for the

summer and winter, respectively.[17]

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

NERC has been designated by the Federal Energy Regulatory Commission ("FERC") as the electric reliability organization for the United States. Accordingly, NERC requires that the planning authority and transmission planner develop planning criteria to ensure compliance with NERC Reliability Standards. Mandatory NERC Reliability Standards require that a transmission owner ("TO") develop facility interconnection requirements that identify load and generation interconnection minimum requirements for a TO's transmission system, as well as the TO's reliability criteria.[18]

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.[19] 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.[20] Projects identified through the RTEP process are developed by 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").

---

[17] A copy of the 2025 PJM Load Forecast is available at the following: https://www.pjm.com/-/media/DotCom/library/reports-notices/load-forecast/2025-load-report.ashx. *See, in particular,* page 9 (PJM) and 34 (DOM Zone).

[18] *See* Facility Connection ("FAC") Standard FAC-001-4 (effective January 1, 2024), which can be found at https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-001-4.pdf.

[19] PJM Manual 14B (effective June 27, 2024) focuses on the RTEP process and can be found at https://www.pjm.com/-/media/documents/manuals/m14b.ashx.

[20] *See* PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria. *See supra*, n. 19 for a link to PJM Manual 14B.

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

As supported by Section I.J and discussed below, the Project is needed to maintain and improve electric service to customers, including in the Eastern Loudoun Load Area—which extends generally from the Fairfax/Loudoun County line to the east, Potomac River to the north, the Company's existing 500 kV Brambleton-Goose Creek Line #558 to the west, and State Route 50 to the south, including DCA and Dulles Airport—to address significant load growth in the Eastern Loudoun Load Area, and to resolve identified NERC reliability violations. The Northern Virginia data center market is spread across Loudoun, Fairfax, and Prince William Counties, with the world's largest concentration of data centers located in Loudoun County's DCA (in the area of Ashburn and Sterling) that is contained within the Eastern Loudoun Load Area. The combination of competitive colocation/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.

As of this filing, the Eastern Loudoun Load Area includes approximately 27 locations (Aspen-Golden) where load is being served.[21] If not relieved by this proposed Project combined with others proposed or planned in the near term, the identified reliability violations will severely impact the transmission system's ability to provide reliable service to Dominion Energy Virginia's customers, including in the Eastern Loudoun Load Area.

[21] As of this filing, there are a total of 27 locations where load is served in the Eastern Loudoun Load Area. The locations are served by a combination of switching stations, substations, and delivery points ("DPs") owned by Dominion Energy Virginia, unless otherwise noted. For ease of reference, this Appendix refers to them collectively as "27 substations." See Attachment I.A.4 for locations where the load will be served in the Eastern Loudoun Load Area once the Project is energized, including all substations presented to PJM in the Eastern Loudoun Load Area at the time of this Application filing.

NEED FOR THE PROJECT

PJM Open Window

In response to FERC Order No. 1000,[22] PJM expanded its regional planning process to provide greater opportunity for non-incumbent transmission developers to submit solution proposals. Accordingly, beginning in 2013, PJM initiated proposal windows allowing for competitive solicitation while balancing the need for projects to be selected, sited, and constructed in time to solve identified reliability violations.

In 2023, PJM designated this Project as "baseline" to address several NERC reliability thermal violations (under N-1, and Generation Deliverability studies) expected to occur by summer 2028. See Section I.D. These violations were included in PJM's Competitive Planning Process and listed in the 2022 Open Window #3, which opened on March 24, 2023, and closed on May 31, 2023. This Competitive Planning Process afforded non-incumbent transmission developers an opportunity to participate in the regional planning and expansion of the PJM bulk electric system.

On May 31, 2023, the Company submitted its proposal to address the identified violations. Of the three proposals received, PJM recommended the Company's proposal, which includes the scope of the Project as proposed herein. In addition to solving the identified violations, the Project also will accommodate future load growth in the Eastern Loudoun Load Area, thereby enabling the Company to maintain the overall long-term reliability of the regional transmission system.

As a part of PJM's Regional Transmission Expansion Planning Process ("RTEPP") including the Company's own Transmission Planning Criteria and analysis, the Project was recommended for inclusion in the 2023 RTEP at PJM's October 31, 2023 TEAC meeting. This RTEP was approved by PJM at its board meeting in December 2023. See Section I.J.

The projected load violations identified for Open Window #3, if not relieved, will impact service reliability to the citizens of the Commonwealth of Virginia. Indeed, the failure to address the identified projected violations for this area could lead to service interruptions and potentially damage the Company's electrical facilities in this area, negatively impacting electric service to the region. The Supreme Court of Virginia has affirmed the Commission's determination of need for new transmission facilities based on violations of NERC Reliability Standards identified through the PJM RTEPP.[23]

As supported by the attachments and discussion in Section I.J, the Company,

[22] FERC Order No. 1000 is a Final Rule that modified FERC's electric transmission planning and cost allocation requirements for public utility transmission providers, including by requiring transmission planning at the regional level to consider and evaluate possible transmission alternatives and produce a regional transmission plan.

[23] *See*, *e.g.*, *Piedmont Env'tl. Council v. Virginia Elec. and Power Co.*, 278 Va. 553, 569-70, 684 S.E. 2d 805, 814-15 (2009).

working with PJM and its member TOs through the RTEP process, has identified both regional and local NERC reliability violations that will directly impact the Eastern Loudoun Load Area beginning in the summer 2028 timeframe. Under the RTEP, PJM's load flow studies were validated by independent load flow studies performed by Dominion Energy Virginia. These studies have confirmed that by summer 2028, projected load growth will produce multiple contingency conditions that would cause thermal overloads in several parts of the system. See Section I.D. As part of the RTEP, PJM and Dominion Energy Virginia have determined that the proposed Project, including the 500 kV and 230 kV facilities described herein, will provide the most comprehensive, robust solution for resolving the projected NERC reliability violations by summer 2028, as well as provide for future load growth in the Eastern Loudoun Load Area and the regional transmission system as a whole. At the October 31, 2023 TEAC meeting, PJM presented the solution to the identified violations for the first time, which was the Company's Project. See Attachment I.J.1. The need for the Company's Project was reaffirmed in PJM's 2024 Load Forecast, as well as in PJM's 2025 Load Forecast.[24]

The identified projected NERC violations, which take all existing and a subset of planned projects into account that have been communicated to PJM through the M-3 process, if not corrected with the construction of the proposed Project, will severely impact Dominion Energy Virginia's ability to provide reliable service to its customers in the Eastern Loudoun Load Area. Construction of the Project, including the new 500 kV and 230 kV facilities proposed herein, will relieve the forecasted NERC reliability violations detailed in Section I.D.

PJM highlighted the below benefits of the Project:

- Offers robust transmission solution in the area that adds one new 500 kV circuit along the existing 500 kV corridor and encompasses the load center.
- Introduces one additional 500 kV source substation at the heart of the load center.
- Does not bottleneck the existing 500 kV infrastructure in the area due to higher overhead line ratings.
- Offers direct accessibility to the transmission infrastructure.
- Offers a parallel 500 kV path to the current 500 kV circuit between Brambleton/Loudoun and Goose Creek area.

[24] *See* page 3 (PJM) and 28, 35, 39 (DOM Zone) of the 2024 PJM Load Forecast, which is available at the following: https://www.pjm.com/-/media/library/reports-notices/load-forecast/2024-load-report.ashx. *See* page 9 (PJM) and 34 (DOM Zone) of the 2025 PJM Load Forecast, which is available at the following: https://www.pjm.com/-/media/DotCom/library/reports-notices/load-forecast/2025-load-report.ashx.

Infrastructure Serving the Eastern Loudoun Load Area

The Eastern Loudoun Load Area, as described in this Appendix, includes the 230 kV infrastructure to the east of the north-south 500 kV corridor that contains two 500 kV lines and runs between Brambleton Substation and Goose Creek Substation. See Attachment I.G.1. There are three 230 kV transmission corridors that make up the Eastern Loudoun Load Area, each consisting of two 230 kV lines: the Northern Corridor, the Southern Corridor, and the Eastern Corridor. Notably, the source for Loudoun County's DCA is to the west with a significant presence of residential development in between. The routing of new infrastructure for the source to the load is limited by the number of west-to-east corridors.

The Company and PJM have taken the approach to upgrade existing infrastructure on existing rights-of-way prior to looking for any greenfield solutions. This approach has led to a significant number of 230 kV line uprates in the Eastern Loudoun Load Area that have been presented through the PJM M-3 process and are in various stages of engineering and construction, with the first two line uprates in the Eastern Loudoun Load Area—Beaumeade-Pleasant View Line #274 and Beaumeade-Belmont Line #227—completed on July 1, 2022, and June 1, 2023, respectively. This strategy benefits from a permitting and land use perspective but is complicated by the ability to take outages to uprate the lines.

As of this filing, load in the Eastern Loudoun Load Area is served at a total of 27 locations, including: the Company's existing Ashburn, Beaumeade, BECO, Buttermilk, Cumulus, Davis Drive, Dranesville, Enterprise, Farmwell, Greenway, Herndon Park, Lockridge, NIVO, Pacific, Paragon Park, Poland Road, Roundtable, Shellhorn Road, Sterling Park, Sunset Hills and Waxpool Substations; and NOVEC's Cabin Run, Cochran Mills, Evergreen Mills, Runway, Sojourner, and Yardley Ridge DPs.[25] On July 28, 2023, the DOM Zone set a system summer peak of 21,993 MW, with these 27 substations combining to serve 2,325 MW of that system peak at that time.

In addition to the 27 existing substations, the 2022 RTEP 2027 and 2028 cases include additional substations that are currently in detailed engineering or construction phases. Discussion regarding these additional substations is provided in Section I.B.

The expected load growth in the Eastern Loudoun Load Area requires not only the infrastructure identified immediately above. The Company is aware of significant additional data center development that is planned for this area on parcels that are currently owned by data center developers in zoning consistent with data center use that ultimately will be developed into large scale data center developments and will require additional infrastructure, which includes the proposed Project.

[25] *See supra*, n. 21.

300 MW N-1-1 Load Drop Violation

As part of the 2022 RTEP Open Window #3, PJM identified a 300 MW N-1-1 load drop violation (NERC Category P6 contingency) for the loss of 230 kV Lockridge-Roundtable Line #2223 and 230 kV Barrister-Prentice Drive Line #2188. This N-1-1 contingency drops load at both the Lockridge and Prentice Drive Substations. The combined load of these substations in the 2022 RTEP Open Window #3 case was 472 MW. In order to comply with NERC Reliability Criteria and solve this 300 MW N-1-1 load drop violation, the Company has proposed the Lockridge 230 kV Loop.

Need to Interconnect Future Load

The proposed Sojourner Loop is needed to address spatial and FAA constraints along the Carters School Road Segment of the Golden-Mars Lines by removing existing Lines #2095/#2292 from an existing transmission corridor and reconnecting the Mars and Sojourner Substations along a route that will allow the Company to interconnect future load (*i.e.*, the Sojourner Loop Proposed Route).[26]

The existing transmission line corridor contains Lines #2095/#2292 along the Old Ox Road Segment and contains Lines #2095/#2292 and Lines #2161/#2287 along the Carters School Road Segment. In order for the Golden-Mars Lines along any of the Proposed or Alternative Routes to terminate at Mars Substation, the proposed lines must be installed within the existing Lines #2095/#2292 / Lines #2161/#2287 corridor along the Carters School Road Segment. As the existing 160-foot-wide right-of-way is inadequate to install the Golden-Mars Lines, Lines #2095/#2292 will need to be removed entirely from the existing corridor (from an electrical perspective) between the Mars and Sojourner Substations and rerouted in order to reconnect the Mars and Sojourner Substations. Based on this need, ERM and the Company identified the Sojourner Loop Proposed Route, which is the only alignment consistent with proposed land uses, as discussed in Section II.A.9.

In addition to reconnecting the Mars and Sojourner Substations in a manner that allows for the installation of the Golden-Mars Lines, the Sojourner Loop Proposed Route also will allow the Company to interconnect future load without the need for new right-of-way along a separate new greenfield route. The Company anticipates—based on recent DP requests described more fully in Section I.B—that a minimum of two substations will need to be constructed along the Sojourner Loop Proposed Route in order to serve data center load growth in the Project area in the future.[27] The Sojourner Loop Proposed Route will allow for interconnection of those future substations without the need for a separate new greenfield route.

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

[27] As described more fully in Section II.A.9, the route identified for the Sojourner Loop is the least impactful route for this Project component and would have been selected in order to reconnect the Mars and Sojourner Substations regardless of the need to interconnect this future load. *See also*, n. 13, which describes the additional 35 or 60 feet of right-of-way width that will be required to install the electric transmission facilities necessary to serve this future load.

Accordingly, the Sojourner Loop along the Proposed Route is needed to allow for installation of the Golden-Mars Lines within an existing corridor in order to terminate at Mars Substation, will reconnect Mars and Sojourner Substations, and will allow for the interconnection of future load along a route consistent with proposed land uses without the need for new right-of-way along a separate new greenfield route.

EXISTING & PROPOSED TRANSMISSION SYSTEM

Attachment I.A.2 provides an existing one-line diagram of the transmission system in the Eastern Loudoun Load Area as of February 2025.

Attachment I.A.3 provides a one-line diagram of the 2023 RTEP 2028 configuration.

Attachment I.A.4 provides a one-line diagram of the 2023 RTEP 2028 configuration with all PJM approved baseline projects selected during the 2022 RTEP Open Window #3. This includes the proposed Project and represents the state of the transmission system in Eastern Loudoun around the Summer 2028 timeframe.

Attachment I.A.5 provides a one-line diagram of the arrangement given by Attachment I.A.4, but also showing the locations of future DPs. This diagram shows an approximate location of every DP request received by Dominion Energy Virginia in the Eastern Loudoun Load Area as of February 2025. Some of these DP requests have been presented and approved by PJM through the supplemental process, whereas others are still in a conceptual phase. The method of interconnecting these DPs with the transmission system is not illustrated. The ultimate load requested for each DP varies from 150 MW to 300 MW. This diagram is provided to inform the Commission as to the volume of load expected to materialize in this load area and reinforce the need for the proposed Project.

See Attachment II.A.2 for a map depicting the proposed Project area and constraints.

DESCRIPTION OF THE PROJECT

A description of the Project components is provided below, including route alternatives, as applicable. The Company is proposing all of these Proposed and Alternative Routes for Commission consideration and notice. Discussion of these Proposed and Alternative Routes, as well as other overhead, and overhead/underground hybrid routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and more detail is provided in the Routing Study included with the Application.

Golden-Mars Lines

As part of the Project, the Company proposes to construct the new overhead 500

kV and 230 kV single circuit Golden-Mars Lines originating at the 500 kV and 230 kV buses of the 500-230 kV Golden Substation and continuing approximately 8.3 miles to the 500-230 kV Mars Substation. In order to have sufficient right-of-way for the Golden-Mars Lines to enter the Mars Substation along any of the Proposed or Alternative Routes, the Company proposes to entirely remove (from an electrical perspective) Mars-Shellhorn Line #2095 and Mars-Sojourner Line #2292 from the existing transmission line corridor that spans between the Sojourner and Mars Substations, and to reconnect the Sojourner and Mars Substations along an alternate route (*i.e.*, the Sojourner Loop Proposed Route) that also will allow the Company to interconnect future load without the need for new right-of-way along a separate new greenfield route.

The proposed Golden-Mars Lines will be constructed on almost entirely new right-of-way primarily varying between 100 feet[28] and 150 feet in width in order to accommodate a 5/2 configuration on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way).

While the Golden-Mars Proposed Route right-of-way primarily will be 100-150 feet in width, there are two segments where the right-of-way width will vary.

First, where the Golden-Mars Lines (all route alternatives) cross the W&OD Trail, the proposed Golden-Mars Lines will collocate with an existing 100-foot-wide transmission line corridor containing existing Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150 for approximately 650 feet.[29] Due to collocation with the existing transmission line corridor, the proposed Golden-Mars Lines will require additional right-of-way varying from approximately 90 feet to 150 feet, for a total right-of-way width of 190-250 feet.

Second, the Golden-Mars Lines (all route alternatives) will collocate with an existing 160-foot-wide transmission line corridor along the Carters School Road Segment for approximately 0.4 mile. Due to collocation with the existing transmission line corridor, the proposed Golden-Mars Lines will require an additional approximately 65 feet of right-of-way, for a total right-of-way width of 225 feet.

See Attachment II.A.6 for the locations of the varying right-of-way widths.

The new 500 kV line will utilize three-phase triple-bundled 1351.5 ACSR conductors with a summer transfer capability of 4,357 MVA. The new 230 kV line will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

The Company identified an approximately 9.4-mile overhead Golden-Mars

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

[29] Note that these are the current line names and numbers. These lines will be split at Golden Substation as part of the Aspen-Golden Project, at which time the names and numbers will change.

Alternative Route 1, an approximately 9.3-mile overhead Golden-Mars Alternative Route 2, 8.3-mile overhead Golden-Mars Alternative Route 3, and an approximately 8.3-mile overhead Golden-Mars Alternative Route 4, and an approximately 9.8-mile overhead Golden-Mars Alternative Route 5. As discussed further below, the Company is proposing Golden-Mars Route 3 as the "Golden-Mars Proposed Route" depending upon timely receipt of all necessary approvals. See Section II.A.9.

Importantly, Golden-Mars Routes 1, 2, 3, 4 cannot be constructed without BOS and/or LCSB approval. While Golden-Mars Route 5 is the most impactful of all of the noticed Golden-Mars routes, it is the only currently viable Golden-Mars route because it does not cross public lands and easements except for a <0.1-acre portion of BOS-owned property that the County indicated verbally was acceptable to cross. Golden-Mars Route 4 is the least impactful route and is the County's preferred route; however, Golden-Mars Route 3 is the second least impactful route and is the County's secondary route preference. While LCSB voted against all overhead routes (8-1) that impact LCSB property on March 25, 2025, Golden-Mars Route 3 remains the second least impactful route overall, the County's secondary route preference, and the route that the Company believes to be least impactful to LCSB property. Accordingly, the Company supports Route 3 as the Golden-Mars Proposed Route and remains committed to continuing to work with the LCSB to obtain timely consent for Route 3. No less than two weeks prior to the deadline for Respondent testimony established by the Commission in the Order for Notice and Hearing entered in this proceeding, the Company will file a notification in the docket indicating whether the Company has received LCSB consent for the Golden-Mars Route 3's crossings of LCSB property; if not, the Company's notification will change the Golden-Mars Proposed Route to Route 5 as the only viable route.[30]

Lockridge 230 kV Loop

As part of the Project, the Company proposes to construct the new approximately 0.6-mile overhead double circuit Lockridge 230 kV Loop by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation. Looping the 230 kV Golden-Mars Line into and out of the Lockridge Substation (*i.e.*, the Lockridge 230 kV Loop) will result in 230 kV Golden-Lockridge Line #2412 and 230 kV Lockridge-Mars Line #2413. For purposes of discussing routes and impacts in this Application filing, the Lockridge Loop will be discussed and evaluated separately from the Golden-Mars Lines and the Sojourner Loop. The Lockridge Loop will be constructed on new 100-foot-wide right-of-way supported primarily by dulled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

The Company identified an approximately 0.6-mile overhead Lockridge Loop

[30] *See supra*, n. 14.

Proposed Route. See Section II.A.9.

Sojourner 230 kV Loop

The Golden-Mars Lines will intersect with an existing transmission corridor containing Mars-Shellhorn Line #2095, Mars-Sojourner Line #2292, Celestial-Mars Line #2161, and Cabin Run-Mars Line #2287 just east of the Old Ox/Carters School Road Intersection. Existing Lines #2095/#2292 are single circuit 230 kV transmission lines collocated on the same double circuit monopole structures, and existing Lines #2261/#2287 are single circuit 230 kV transmission lines collocated on the same double circuit structures. See Attachment II.A.5.a, which represents the existing Lines #2095/#2292 / Lines #2261/#2287 transmission line corridor along the Carters School Road Segment. Due to spatial and FAA constraints along the existing Lines #2095/#2292 and #2161/#2287 transmission corridor that would otherwise prevent installation of the Golden-Mars Lines along any of the alternative routes, the Company proposes to entirely remove (from an electrical perspective) Lines #2095 and #2292 from the existing corridor between the Sojourner and Mars Substations. Specifically, from Sojourner Substation south along the Old Ox Road Segment, the Company proposes to remove the three double circuit monopole structures supporting Lines #2095/#2292, as well as approximately 0.7 mile of the Lines #2095/#2292 conductors from the existing transmission line corridor. Additionally, one existing single circuit monopole structure outside of Sojourner Substation will be replaced with one single circuit monopole structure in order to terminate Line #2095 into Sojourner Substation.

From the Old Ox/Carters School Road Intersection south to Mars Substation, which corridor runs parallel to Carters School Road (*i.e.*, the Carters School Road Segment), the existing corridor contains a combination of double circuit monopole structures and double circuit two-pole structures. Within the Carters School Road Segment, the Company will remove one set of arms from the three double circuit monopoles structures and remove one-half of three of the double circuit two-pole structures that currently support Line #2292, as well as 0.6 mile of Line #2292 conductor, which will allow for the construction of Golden-Mars Line #5003 within the existing corridor. The resulting single circuit structures will remain in the corridor, as well as the 0.6 mile of conductor from Line #2095, which will be repurposed and renamed Lockridge-Mars Line #2413. Lines #2161/#2287, which were approved by the Commission as part of the "Mars 230 kV Loop" in the Mars-Wishing Star Project (Case No. PUR-2022-00183) will remain within the existing transmission corridor. See Attachment II.A.5.b, which represents the portion of the proposed Carters School Road Segment that currently contains the double circuit monopole structures supporting Line #2292.

Accordingly, as part of the proposed Project, the Company proposes to construct the new approximately 1.9-mile overhead double circuit Sojourner 230 kV Loop from Mars Substation to Sojourner Substation. The proposed Sojourner Loop will reconnect the Mars and Sojourner Substations, as well as allow for the interconnection of future load without the need for new right-of-way along a separate new greenfield route.

The Sojourner Loop will result in Mars-Sojourner Line #2292 and Mars-Sojourner #2427. For purposes of discussing routes and impacts in this Application filing, the Sojourner Loop will be discussed and evaluated separately from the Golden-Mars Lines and the Lockridge Loop.

The Sojourner Loop will be constructed on entirely new 100-foot-wide right-of-way[31] supported primarily by dulled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

The Company identified an approximately 1.9-mile overhead Sojourner Loop Proposed Route. See Section II.A.9.

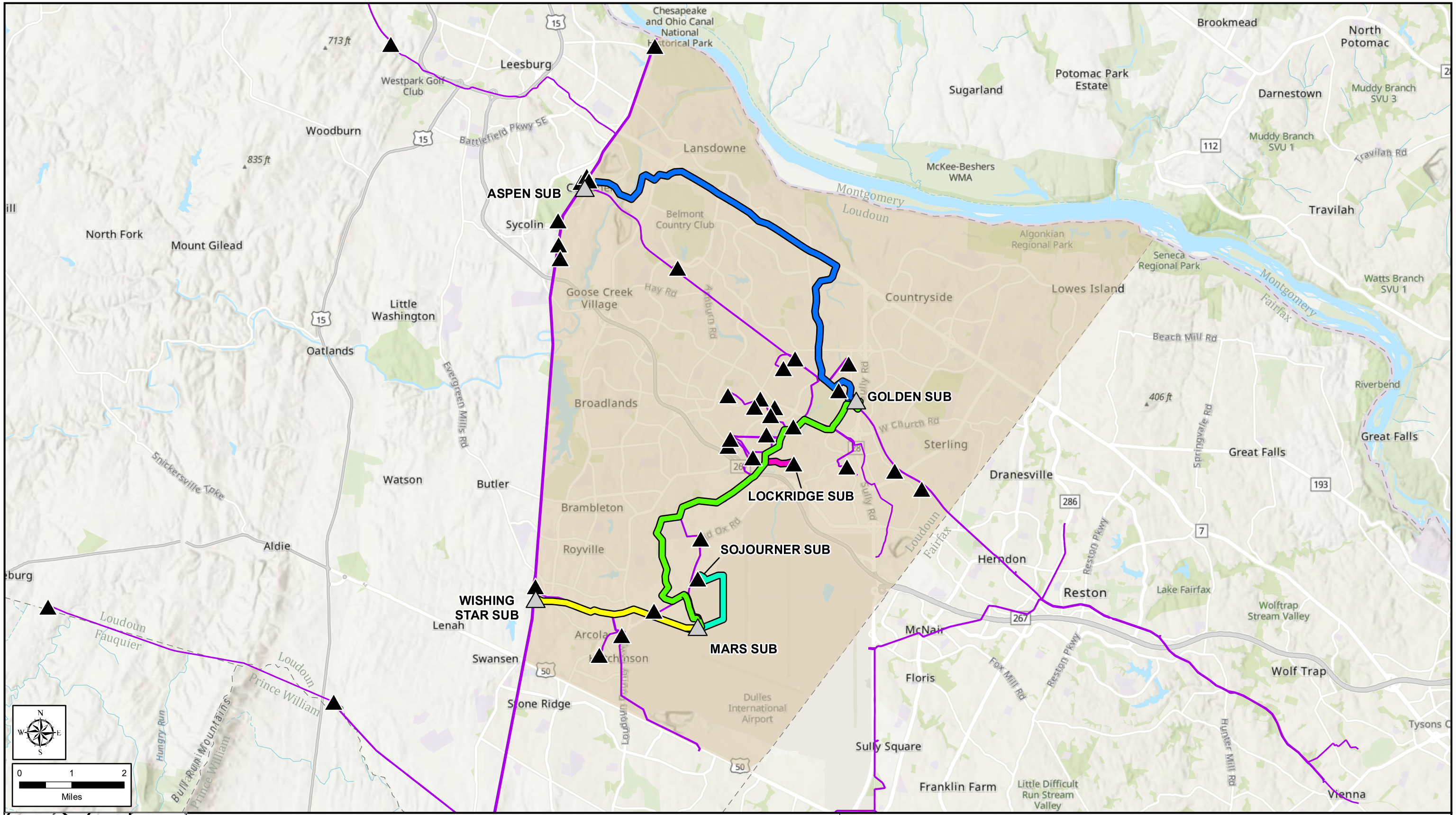
Substation-Related Work

As part of the proposed Project, the Company will perform work at the Company's Golden, Mars, Lockridge, Sojourner, and Shellhorn Substations to accommodate the proposed Project, as discussed in Section II.C.

***

In summary, as part of the RTEP process, Dominion Energy Virginia has determined that the Project will provide the most comprehensive solution for resolving identified NERC reliability violations and, importantly, along with the Mars-Wishing Star Project and the Aspen-Golden Project, will complete the 500 kV transmission loop in the Northern Virginia area surrounding DCA, bringing needed capacity to the Eastern Loudoun Load Area, while also maintaining reliable service for overall load growth in the Project area. Additionally, the Project will resolve a 300 MW N-1-1 load drop violation identified by PJM by looping the Golden-Mars Lines into and out of the Lockridge Substation (*i.e.*, the Lockridge Loop), and will address spatial and FAA constraints along the Carters School Road Segment of the Golden-Mars Lines by removing existing Lines #2095/#2292 from an existing transmission corridor and reconnecting the Mars and Sojourner Substations along a route that also will allow the Company to interconnect future load (*i.e.*, the Sojourner Loop).

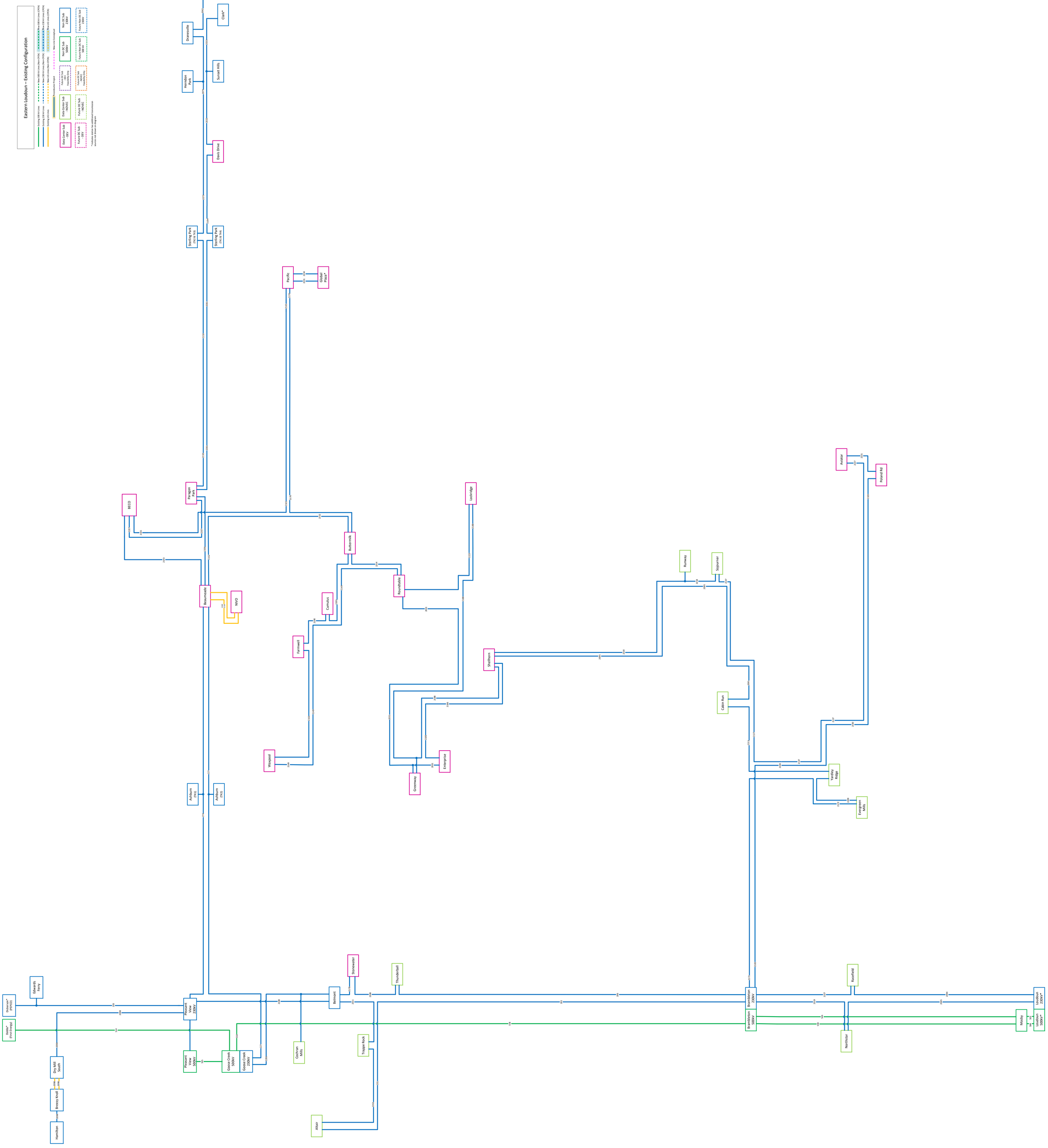
[31] *See supra*, n. 13.

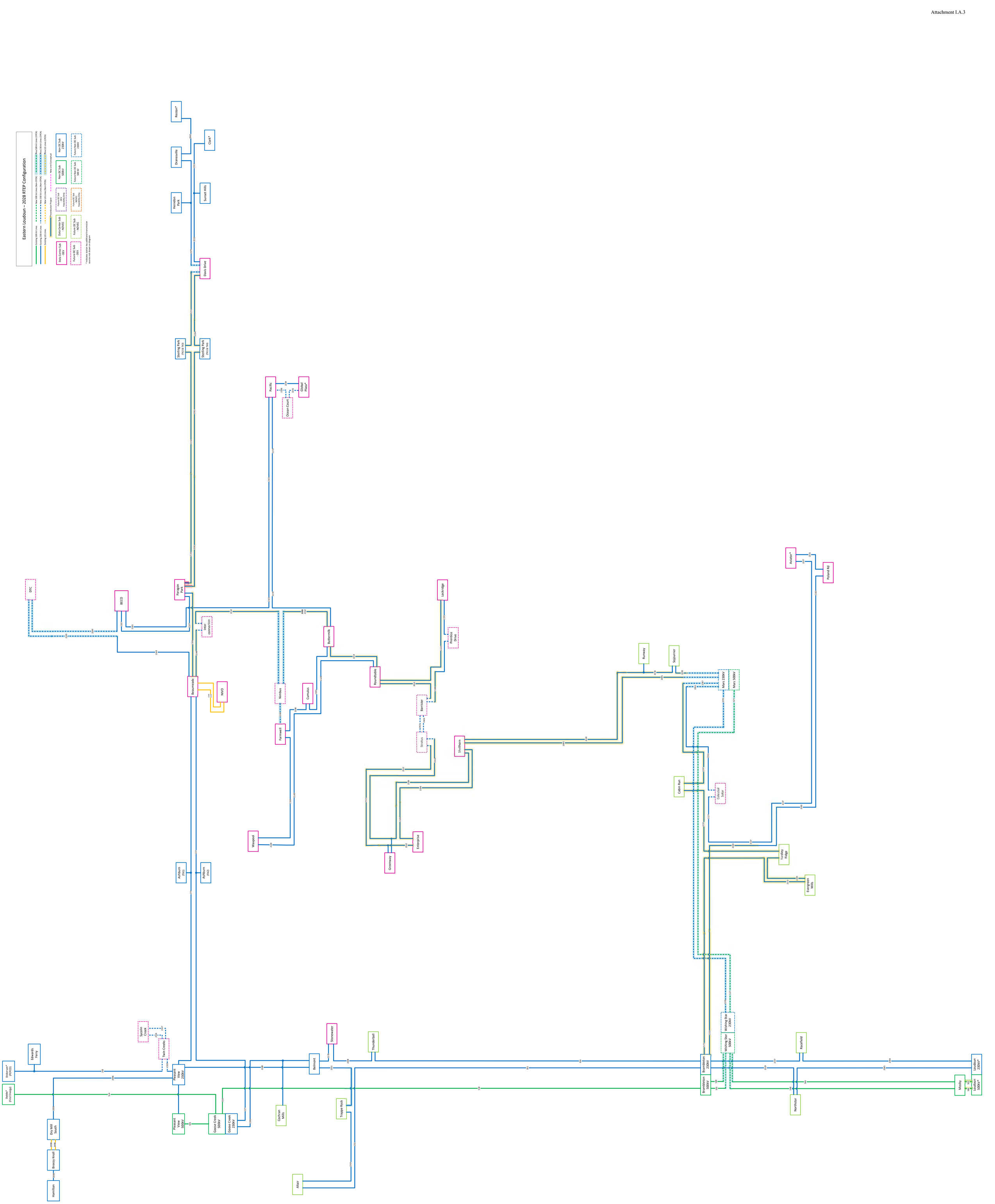


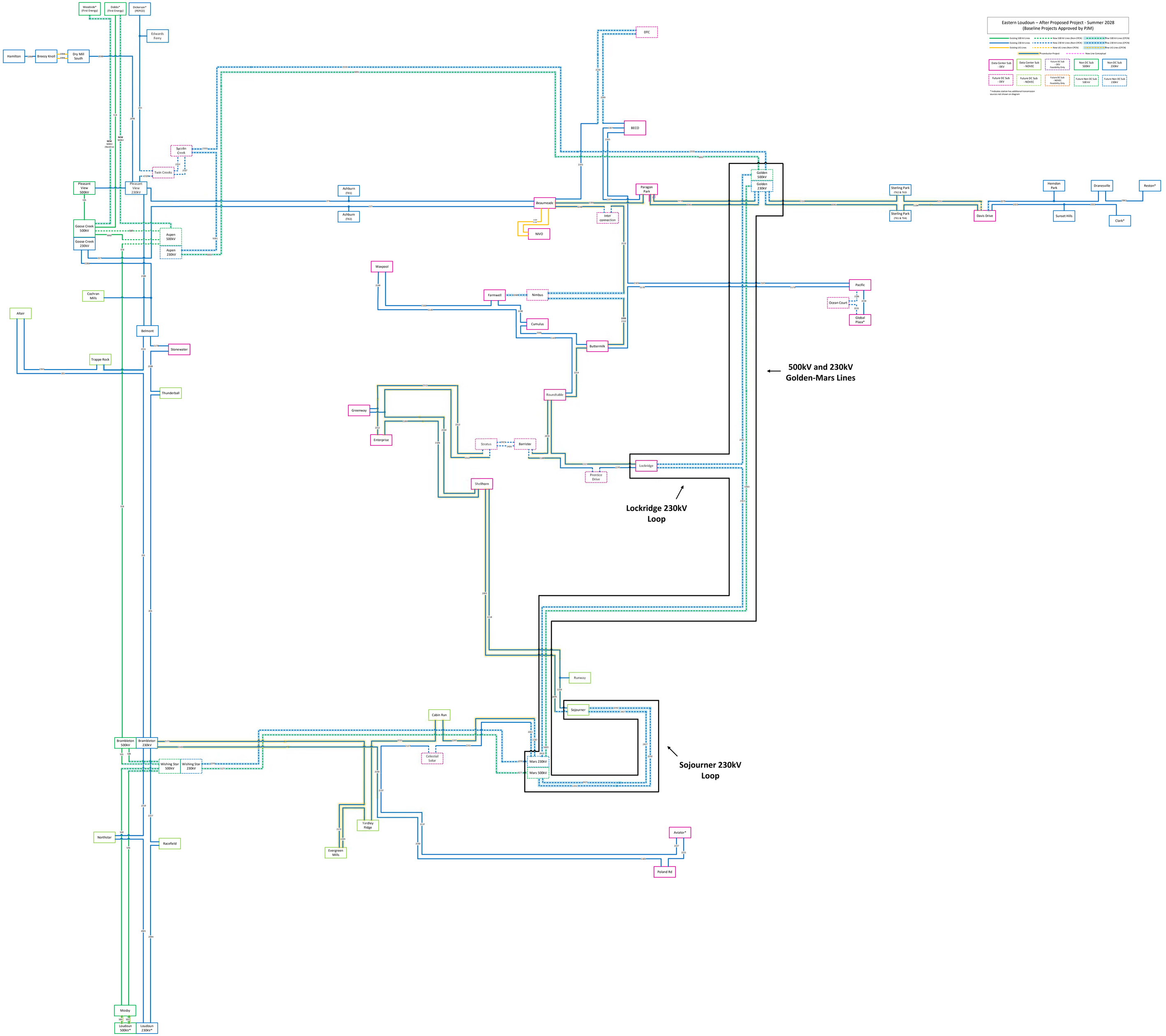
Attachment I.A.1
Project Overview
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

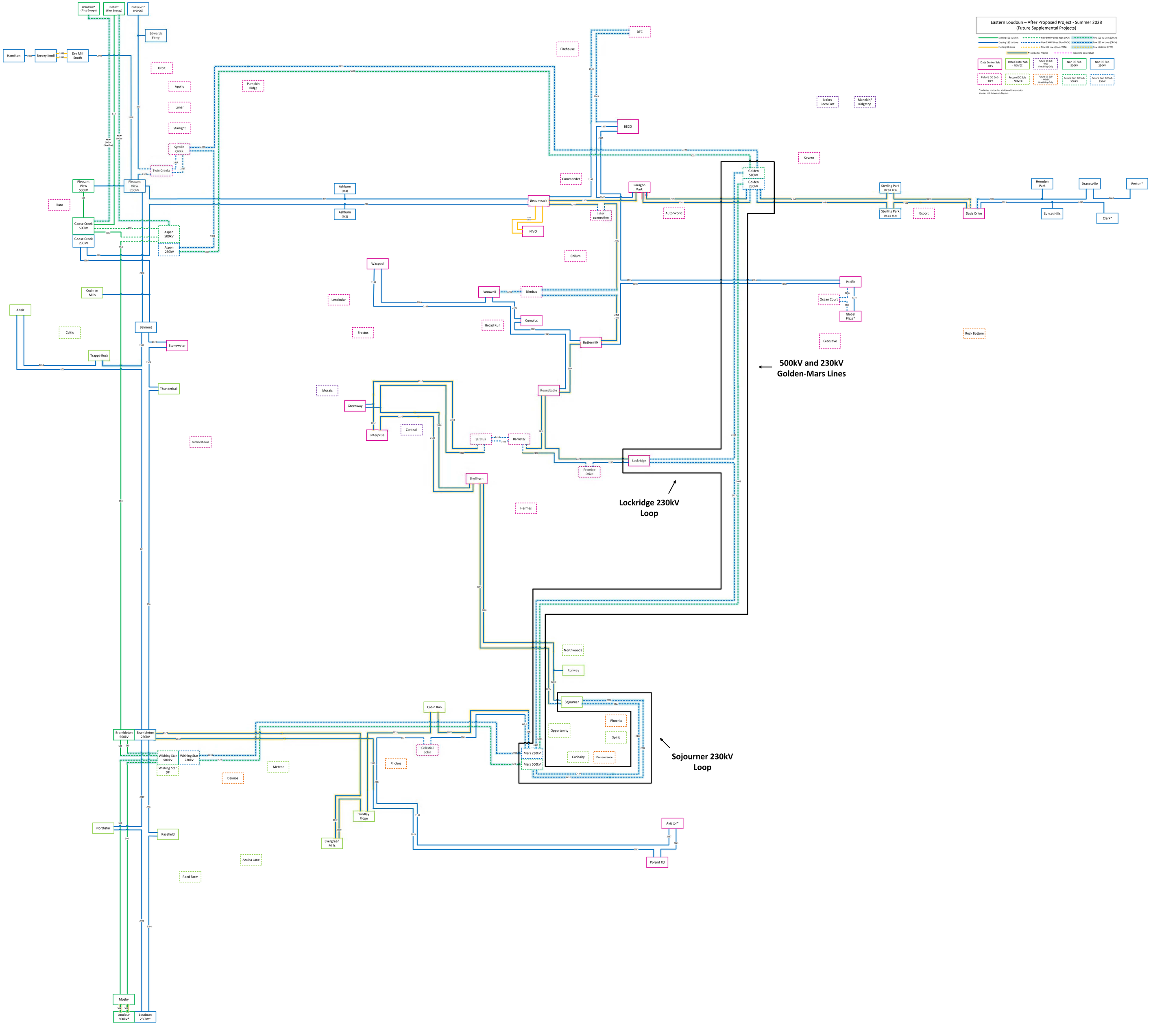
ERM

Dominion Energy


Eastern Loudoun – Existing Configuration
Existing 500 kV Lines
Existing 230 kV Lines
Existing 115 Lines
New 500 kV Lines (Non-CPCN)
New 230 kV Lines (Non-CPCN)
New 115 Lines (Non-CPCN)
Transmission Project
New 500 kV Lines (CPCN)
New 230 kV Lines (CPCN)
New 115 Lines (CPCN)
New Line Conceptual
Data Center Sub - DEV
Future DC Sub - DEV
Data Center Sub - NOVEC
Future DC Sub - NOVEC
Future DC Sub - NOVEC Feasibility Only
Future DC Sub - DEV Feasibility Only
New DC Sub 500kV
New DC Sub 230kV
Future Non-DC Sub 500 kV
Future Non-DC Sub 230kV
* Indicates station has additional transmission scorms not shown on diagram
Sterling Park (TX2 & TX3)
Sterling Park (TX1 & TX4)
Herndon Park
Dranesville
Reston*
Clark*
Sunset Hills
Davis Drive
Pacific
Global Pearl*
Paragon Park
BECO
Beaumeade
NIVO
Buttermilk
Cumulus
Farmwell
Waxpool
Roundtable
Lockridge
Greenway
Enterprise
Shellhorn
Runway
Solpurner
Cabin Run
Aviator
Poland Rd
Hartley Ridge
Evergreen Mills
Ashburn (TX1)
Ashburn (TX2)
Dickerson* (FERC)
Edwards Ferry
Dry Mill South
Breezy Knoll
Hamilton
Pleasant View 230kV
Pleasant View 500kV
Goose Creek 500kV
Goose Creek 230kV
Altair
Trappe Rock
Belmont
Stonewater
Thunderbolt
Cochran Mills
Bramleton 230kV
Bramleton 500kV
Racefield
Northstar
Moby
Loudoun 230kV*
Loudoun 500kV*
Delos* (FERC)


Eastern Loudoun – 2028 RTEP Configuration
Existing 500 kV Lines
Existing 230 kV Lines
Existing 115 Lines
New 500 kV Lines (Non-CPCN)
New 230 kV Lines (Non-CPCN)
New 115 Lines (Non-CPCN)
Transmission Project
New 500 kV Lines (CPCN)
New 230 kV Lines (CPCN)
New 115 Lines (CPCN)
New Line Conceptual
Data Center Sub - DEV
Future DC Sub - DEV
Data Center Sub - NOVEC
Future DC Sub - NOVEC
Future DC Sub - DEV Feasibility Only
Future DC Sub - NOVEC Feasibility Only
New DC Sub 500kV
New DC Sub 230kV
Future Non-DC Sub 500 kV
Future Non-DC Sub 230kV
* Indicates station has additional transmission assets not shown on diagram
Sterling Park (TC2 & TC3)
Sterling Park (TC1 & TC4)
Davis Drive
Herndon Park
Dranesville
Reston*
Clark*
Sunset Hills
Pacific
Ocean Court
Global Pearl*
DTC
BECO
Paragon Park
Inter connection
Beaumeade
NIVO
Ashburn (TX1)
Ashburn (TX2)
Waxpool
Nimbus
Farmwell
Cumulus
Buttermik
Roundtable
Lockridge
Prentice Drive
Barrister
Stratus
Greenway
Enterprise
Shellhorn
Runway
Sojourner
Mars 230kV
Mars 500kV
Cabin Run
Celestial Solar
Aviator*
Poland Rd
Yeadley Ridge
Evergreen Mills
Edwards Ferry
Dickerson* (PEPCO)
Dobbs (Pepco Energy)
Dry Mill South
Breezy Knoll
Hamilton
Sycolin Creek
Twin Creeks
Pleasant View 230kV
Pleasant View 500kV
Goose Creek 500kV
Goose Creek 230kV
Cochran Mills
Belmont
Stonewater
Thunderbolt
Trappe Rock
Altair
Brambleton 230kV
Brambleton 500kV
Wishing Star 230kV
Wishing Star 500kV
Razefield
Northstar
Loudoun 230kV
Loudoun 500kV*
Moxby


Eastern Loudoun – After Proposed Project - Summer 2028
(Baseline Projects Approved by PJM)
Existing 500 kV Lines
Existing 230 kV Lines
Existing 115 Lines
New 500 kV Lines (Non-CPCN)
New 230 kV Lines (Non-CPCN)
New 115 Lines (Non-CPCN)
Reconductor Project
New Line Conceptual
New 500 kV Lines (CPCN)
New 230 kV Lines (CPCN)
New 115 Lines (CPCN)
Data Center Sub 0KV
Data Center Sub – NOVEC
Future DC Sub – DEV Feasibility Only
Non DC Sub 500kV
Non DC Sub 230kV
Future DC Sub 0KV
Future DC Sub – NOVEC
Future DC Sub – NOVEC Feasibility Only
Future Non DC Sub 500 kV
Future Non DC Sub 230kV
*Indicates station has additional transmission sources not shown on diagram
Woodside* (First Energy)
Dobbs* (First Energy)
Dickerson* (PEPCO)
Edwards Ferry
Hamilton
Breezy Knoll
Dry Mill South
Sycolin Creek
Twin Creeks
Pleasant View 500kV
Pleasant View 230kV
Goose Creek 500kV
Goose Creek 230kV
Aspen 500kV
Aspen 230kV
Cochran Mills
Altair
Belmont
Stonewater
Trappe Rock
Thunderball
Ashburn (TX1)
Ashburn (TX2)
DTC
BECO
Beaumeade
Paragon Park
Inter connection
NVVO
Golden 500kV
Golden 230kV
Sterling Park (TX2 & TX3)
Sterling Park (TX1 & TX4)
Davis Drive
Herndon Park
Sunset Hills
Dranesville
Clark*
Reston*
Waxpool
Farmwell
Nimbus
Cumulus
Buttermilk
Pacific
Ocean Court
Global Plaza*
Greenway
Enterprise
Roundtable
Stratus
Barrister
Prentice Drive
Lockridge
Shellhorn
500kV and 230kV Golden-Mars Lines
Lockridge 230kV Loop
Runway
Sojourner
Sojourner 230kV Loop
Cabin Run
Celestial Solar
Mars 230kV
Mars 500kV
Brambleton 500kV
Brambleton 230kV
Wishing Star 500kV
Wishing Star 230kV
Yardley Ridge
Evergreen Mills
Aviator*
Poland Rd
Northstar
Racefield
Mosby
Loudoun 500kV*
Loudoun 230kV*


Eastern Loudoun – After Proposed Project - Summer 2028
(Future Supplemental Projects)
Existing 500 kV Lines
Existing 230 kV Lines
Existing 69 kV Lines
New 500 kV Lines (Non-CPCN)
New 230 kV Lines (Non-CPCN)
New 115 kV Lines (Non-CPCN)
Reconductor Project
New Line Conceptual
New 500 kV Lines (CPCN)
New 230 kV Lines (CPCN)
New 115 kV Lines (CPCN)
Data Center Sub 0KV
Data Center Sub – NOVEC
Future DC Sub – ISO Availability Only
Non DC Sub 500kV
Non DC Sub 230kV
Future DC Sub 0KV
Future DC Sub – NOVEC
Future DC Sub – NOVEC Availability Only
Future Non DC Sub 500 kV
Future Non DC Sub 230kV
*Indicates station has additional transmission sources not shown on diagram
Woodside* (First Energy)
Dobbs* (First Energy)
Dickerson* (PEPCO)
Edwards Ferry
Hamilton
Breezy Knoll
Dry Mill South
Orbit
Apollo
Lunar
Starlight
Sycolin Creek
Twin Creeks
Pumpkin Ridge
Pleasant View 500kV
Pleasant View 230kV
Pluto
Goose Creek 500kV
Goose Creek 230kV
Aspen 500kV
Aspen 230kV
Cochran Mills
Altair
Celtic
Belmont
Stonewater
Trappe Rock
Thunderball
Summerhouse
Ashburn (TX1)
Ashburn (TX2)
Beaumeade
Inter connection
NIVO
Commander
Firehouse
DTC
BECO
Paragon Park
Golden 500kV
Golden 230kV
Auto World
Nokes Beco East
Manekin/ Ridgetop
Severn
Sterling Park (TX2 & TX3)
Sterling Park (TX1 & TX4)
Export
Davis Drive
Herndon Park
Sunset Hills
Dranesville
Clark*
Reston*
Chilum
Waxpool
Lenticular
Farmwell
Nimbus
Fractus
Broad Run
Cumulus
Buttermilk
Pacific
Ocean Court
Global Plaza*
Executive
Rock Bottom
Mosaic
Greenway
Enterprise
Contrail
Roundtable
Stratus
Barrister
Prentice Drive
Lockridge
Shellhorn
Hermes
500kV and 230kV Golden-Mars Lines
Lockridge 230kV Loop
Northwoods
Runway
Sojourner
Phoenix
Spirit
Opportunity
Curiosity
Perseverance
Mars 230kV
Mars 500kV
Sojourner 230kV Loop
Cabin Run
Celestial Solar
Phobos
Deimos
Meteor
Brambleton 500kV
Brambleton 230kV
Wishing Star 500kV
Wishing Star 230kV
Wishing Star DP
Northstar
Racefield
Yardley Ridge
Evergreen Mills
Azalea Lane
Reed Farm
Aviator*
Poland Rd
Mosby
Loudoun 500kV*
Loudoun 230kV*

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 resolve violations of mandatory NERC Reliability Standards as described in Section I.A. All future transmission, distribution, and/or customer projects planned for the Eastern Loudoun Load Area will require the construction of this Project, as well as others that are planned for this area. The proposed Project is one of many future reliability upgrades and greenfield projects that the Company and PJM are working on to address the continued load growth in the Eastern Loudoun Load Area.

For example, PJM has approved (i) a 230 kV and 500 kV connection between the future Mars 500-230 kV Substation and the proposed 500-230 kV Golden Substation, and (ii) an additional 500 kV line in the existing north/south corridor between the Company's proposed Aspen Substation and Potomac Edison Company's Doubs Substation to address 500 kV loading concerns. See Attachment I.A.5 for a one-line diagram of the 2023 RTEP 2028 configuration of the transmission system in the Eastern Loudoun Load Area, which includes all PJM approved baseline projects selected during the 2022 RTEP Open Window #3 and all future DP requests received by the Company as of February 2025.

In addition to the 27 locations where load is served in the Eastern Loudoun Load

Area as of this filing, Attachment I.A.5 shows a total of 37 future DPs which are at various stages of development in the transmission planning process. Of these 37 DPs, it is important to highlight the four substations whose interconnection with the transmission system is dependent on the completion of the proposed Project—specifically, they are dependent on completion of the Sojourner 230 kV Loop. The four future substations are the Curiosity, Spirt, Perseverance, and Phoenix Substations. These substations are NOVEC DPs and are associated with a new data center development located adjacent to Mars Substation. The entire data center development is composed of six substations—Sojourner, Opportunity, Curiosity, Spirit, Perseverance, and Phoenix. Sojourner Substation was energized in November 2022. The need for Opportunity Substation was presented to PJM during the December 5, 2023 TEAC Meeting. The Company received Engineering DP requests for the Curiosity and Spirit Substations in November 2023. The Company has not received DP Requests for the Perseverance and Phoenix Substations, but they are expected in 2025.

The Company's Transmission Planning and Conceptual Engineering teams have been working closely with NOVEC to plan the ultimate transmission arrangement for this data center development. The Sojourner 230 kV Loop is the primary transmission infrastructure that will connect these substations.

The remaining 33 future DPs shown in Attachment I.A.5 will not be connected directly to the transmission infrastructure provided by the proposed Project. However, the 500-230 kV Golden-Mars Lines will increase the overall capacity of the Eastern Loudoun transmission system. This will be to the benefit of the additional DPs as the proposed Project will serve new load and increase reliability of the entire region and the Commonwealth.

As load continues to materialize and future customer projects are fully identified, the list of 500 kV and 230 kV reliability upgrade and greenfield projects will be expanded. PJM and the Company are working on data center-specific high sensitivity cases that evaluate loads in the 2037 timeframe to understand the potential scope of work that will be required in the DOM Zone based on data center load growth to meet customer expectations, while maintaining a robust reliable grid. Data center growth is migrating further south into Prince William, Fauquier, Stafford, Orange, Culpeper, Louisa, Henrico, and Mecklenburg Counties, all of which will require new infrastructure. As a transmission network is fully interconnected, load growth in one part of the region may drive transmission projects in another part of the region.

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.

PJM Open Window

As part of any RTEP cycle, PJM along with the member TOs run baseline reliability analysis to identify if any potential violations exist based on projected network topology and loading. A portion of Manual 14B Section 1.4.1.1 describes the process from a high level:

> PJM Manual 14 B – 1.4.1.1 Baseline reliability analyses
>
> The PJM Transmission System ("PJM System") provides the means for delivering the output of interconnected generators to the load centers in the PJM energy and capacity markets. Baseline reliability analyses ensure the security and adequacy of the Transmission System to serve all existing and projected long term firm transmission use including existing and projected native load growth as well as long term firm transmission service. RTEP baseline analyses include system voltage and thermal analysis, and stability, load deliverability, and generator deliverability testing. These tests variously entail single and multiple contingency testing for violations of established NERC reliability criteria regarding stability, thermal line loadings and voltage limits. [32]

Any thermal, voltage, or generation deliverability violations will require a baseline network upgrade. Typically, during the RTEP cycle, PJM is focused on a case that is five years out in time. The Open Window for this Project, which was based on the 2022 RTEP 2027 case and subsequently tested on the 2022 RTEP 2028 case, showed multiple N-1, N-1-1, and Generation Deliverability violations in the Eastern Loudoun Load Area.

300 MW N-1-1 Load Drop Violation

As discussed in Section I.A, PJM identified a 300 MW N-1-1 load drop violation (NERC Category P6 contingency) for the loss of 230 kV Lockridge-Roundtable Line #2223 and 230 kV Barrister-Prentice Drive Line #2188. The proposed Project resolves the potential NERC reliability violation by providing a network connection between Lockridge Substation and the 230 kV Golden-Mars Line.

Figure 1 below shows a computer screenshot of the N-1-1 load drop results associated with the 2022 RTEP Open Window #3 summer case. In the columns

[32] *See supra*, n. 19.

labeled "First Cont Name" and "Second Cont Name," one of the contingency names contains "LN 9294." This contingency name was a temporary name given to the Barrister-Prentice Drive circuit. The line name/number for this circuit is Barrister-Prentice Line #2188. As noted in the "TotalLoadLoss" column, the load drop for this contingency exceeds 300 MW.

Figure 1: 2022 RTEP Open Window #3 load drop results

N-1-1 Analysis Load Drop Summary (2027 -2028 Summer-Data Center)			
FG #	First Cont Name	Second Cont Name	TotalLoadLoss
N/A	P1-SAGE-230-1_SRT-A	P1-SAGE-230-2_SRT-A	731.25
N/A	P1-SAGE-230-2_SRT-A	P1-SAGE-230-1_SRT-A	731.25
N/A	DVP_P1-2: LN 9294_SRT-A	DVP_P1-2: LN 2223_SRT-A	492.26
N/A	DVP_P1-2: LN 2223_SRT-A	DVP_P1-2: LN 9294_SRT-A	492.26
N/A	DVP_P1-2: LN 2140_SRT-A	DVP_P1-2: LN 2176_SRT-A	468.72
N/A	DVP_P1-2: LN 2176_SRT-A	DVP_P1-2: LN 2140_SRT-A	468.72
N/A	DVP_P1-2: LN 203_SRT-S	DVP_P1-2: LN 9303_SRT-A	408.29
N/A	DVP_P1-2: LN 203_SRT-S	DICK TO EDFERRY_SRT-A	408.29
N/A	DICK TO EDFERRY_SRT-A	DVP_P1-2: LN 203_SRT-S	408.29
N/A	DVP_P1-2: LN 9303_SRT-A	DVP_P1-2: LN 203_SRT-S	408.29
N/A	DVP_P1-2: LN 9348_SRT-A	DVP_P1-2: LN 2172_SRT-A	329.26
N/A	DVP_P1-2: LN 2172_SRT-A	DVP_P1-2: LN 9348_SRT-A	329.26
N/A	DVP_P1-2: LN 2140_SRT-A	DVP_P1-2: LN 9285_SRT-A	301.72
N/A	DVP_P1-2: LN 9285_SRT-A	DVP_P1-2: LN 2140_SRT-A	301.72

Facilities List

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

Mars-Wishing Star Project: See Attachment I.A.3 for a one-line diagram of the 2023 RTEP 2028 configuration of the Eastern Loudoun Load Area. This diagram contains an illustration of the Mars-Wishing Star Project, which was approved by Final Order of the Commission on April 5, 2023, in Case PUR-2022-00183. The Mars-Wishing Star Project is currently being constructed and is expected to be placed in service in December 2025.

Aspen-Golden Project: See Attachment I.A.4 for a one-line diagram of the 2023 RTEP 2028 configuration of the Eastern Loudoun Load Area with all PJM approved baseline projects selected during the 2022 RTEP Open Window #3. This diagram contains an illustration of the Aspen-Golden Project, which was approved by Final Order of the Commission on February 6, 2025, in Case PUR-2024-00032. The Aspen-Golden Project is expected to be placed in service in June 2028.

There are additional substations in the Eastern Loudoun Load Area in different stages of planning. Some of these stations have been presented and approved by PJM. See Attachment I.A.5 for a one-line diagram of the transmission system in the Eastern Loudoun Load Area, which includes all baseline and future DPs submitted to the Company as of February 2025.

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.

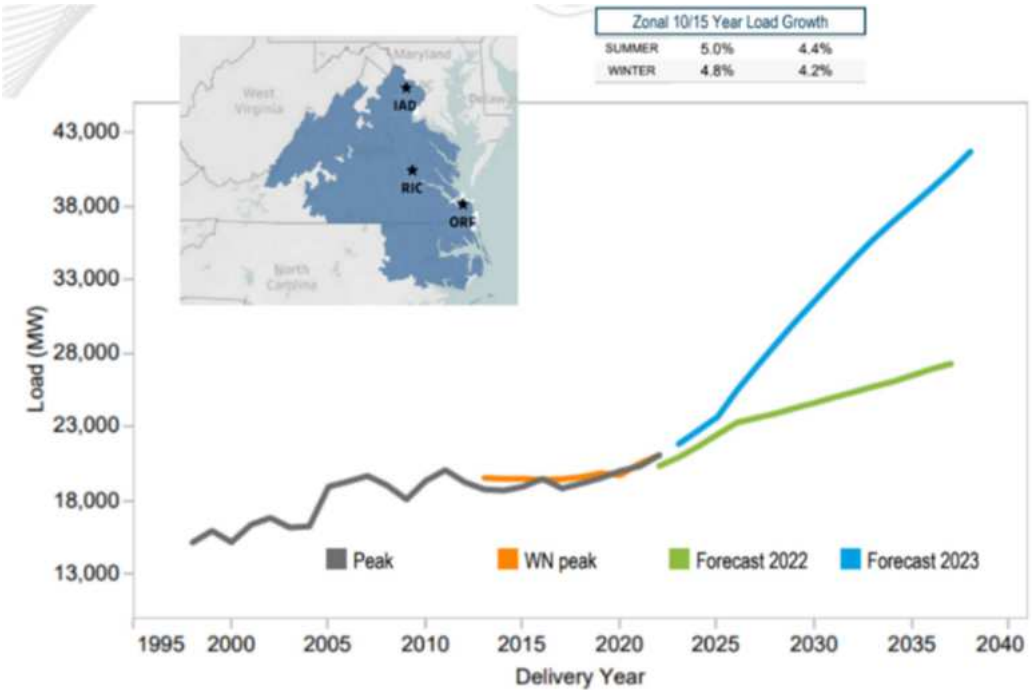
Response: The portion of the Company's transmission facilities in the Project area is shown in Attachment I.G.1. For purposes of this Application, the Eastern Loudoun Load Area extends generally from the Fairfax/Loudoun County line to the east, Potomac River to the north, the Company's existing 500 kV Brambleton-Goose Creek Line #558 to the west, and State Route 50 to the south, including DCA and Washington Dulles Airport in Loudoun County, Virginia. The discussion below provides an overview of the historical and projected load growth in the Project area based on PJM's 2023 Load Forecast, as reaffirmed by PJM's 2024 and 2025 Load Forecasts.

PJM Load Forecast

Starting in 2023, the PJM Load Forecast[33] was significantly adjusted to account for substantial ongoing growth in the data center market from the previous 2019-2022 forecasts. For example, as illustrated by the graph below, in comparison to the PJM 2022 Load Forecast, the 2023 forecast was 2,440 MW greater in 2027/2028. The PJM 2022 Load Forecast for 2022 was surpassed by the 2022 DOM Zone actual recorded summer system peak by 628 MW. As noted in Section I.A, the need for the Company's Project was reaffirmed in PJM's 2024 Load Forecast, as well as in PJM's 2025 Load Forecast.[34]

[33] *See* https://www.pjm.com/-/media/library/reports-notices/load-forecast/2023-load-report.ashx for a copy of the 2023 PJM Load Report.

[34] *See supra*, n. 24.



Load projection methodologies accounting for data center growth generally can be grouped into three perspectives: (i) RTO methodology; (ii) distribution company methodology; and (iii) data center customer methodology. The PJM Load Forecast includes input from the TOs on data center growth, but traditionally has been scaled down consistent with PJM's projection methodology. NOVEC and Dominion Energy Virginia distribution load forecasts typically involve taking customer-requested load ramps to project load growth based on historical knowledge of the customer requesting the new data center. The data center customer typically requests the maximum capacity that their data center building can support to ensure they are able to fully utilize or lease their building investment.

These three load projection methodologies are not fully aligned. The PJM Load Forecast historically has been the minimum forecast, followed by the distribution load projection, and then the customer projection. Each forecasting methodology has risks to over- or under-building the transmission network based off the actual load ramp of the energized buildings. The distribution-level forecasts over the last two years have been tracking accelerated load ramps on larger, higher density buildings utilizing a higher percentage of the ultimate building contract. In order to build and operate a reliable and robust transmission network, PJM and the Company in its transmission planning function must consider the distribution and customer forecasts as part of the planning analysis to ensure adequate facilities are constructed timely to address future growth.

The tables in Attachment I.C.1[35] provide the historic summer and winter loads from 2013 to 2022 and the anticipated summer and winter peak loads from 2023 to 2032 for this area. The projected loads in Attachment I.C.1 represent the Company's forecasted peaks based on actual load and the 2023 PJM Load Forecast and

[35] Note, the Fairfax Load Area provided in Attachment I.C.1 includes the Eastern Loudoun Load Area.

demonstrate stable load demand in the area. Over the period from 2023 to 2032, the summer peak electrical demand for this area is projected to vary between approximately 5,547 MW and 10,392 MW, and the winter peak electrical demand for this area is projected to vary between approximately 4,328 MW and 9,336 MW. The Company anticipates that the load only will continue to grow in the DOM Zone, including the Eastern Loudoun Load Area, as supported by PJM's 2024 Load Forecast and 2025 Load Forecast.

As discussed in Sections I.A and I.B, the Eastern Loudoun Load Area will continue to grow as additional data centers are energized over the upcoming years. The PJM 2023, 2024, and 2025 Load Forecasts drive the need for the proposed Project and the distribution forecast shows the need for a robust electrical solution to be implemented.

Failure to relieve the identified NERC criteria violations will severely impact the transmission system's ability to provide reliable service to Dominion Energy Virginia's customers in the Eastern Loudoun Load Area. The proposed Project, including the 500 kV and 230 kV facilities described herein, will provide the most comprehensive, robust solution for resolving the projected NERC reliability violations by summer 2028, as well as provide for future load growth in the Eastern Loudoun Load Area and the Commonwealth.

Attachment I.C.1 - Fairfax Load Zone (182)

Historical Loads (Summer and Winter)

Fairfax Load Area (Zone 182)										
SUMMER LOADS										
Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Total	3135	3102	3115	3387	3263	3595	3648	3988	4477	4972

Fairfax Load Area (Zone 182)										
WINTER LOADS										
Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Total	2549	2801	3030	2869	2925	3138	3339	3212	3421	4091

Attachment I.C.1 - Fairfax Load Zone (182)

Projected Loads (Summer and Winter)

Fairfax Load Area (Zone 182)											
SUMMER LOADS	**Projected MW***										
Year	**8/9/2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**
Total	4972	5547	5959	6362	7449	8335	9105	9391	9725	10020	10392

Fairfax Load Area (Zone 182)											
WINTER LOADS	**Projected MW***										
Year	**12/24/2022**	**23/24**	**24/25**	**25/26**	**26/27**	**27/28**	**28/29**	**29/30**	**30/31**	**31/32**	**32/33**
Total	4328	4935	5263	6033	6924	7744	8199	8429	8734	8990	9336

*Forecasted values are based on the PJM 2023 Load Forecast

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Please see the table below for a summary of projected thermal violations with worst case contingency identified in PJM's 2022 RTEP 2027 analysis. The projected violations are mitigated after the addition of the proposed Project. The detailed results are provided in Attachment I.D.1.

Monitored Facility	Worst Contingency Name	2027 RTEP Worst Loading (%)	Loading (%) after Project
313733 6NIMBUS 230 313743 6INTERCONNEC 230 1	DVP_P4-6: 2095T2	100.11	<90%
313743 6INTERCONNEC 230 314010 6BEAMEAD 230 1	DVP_P4-6: 2095T2	108.81	<90%

Contingency Name: Loss of Line #2223 and Line #2188
Contingency Type: N-1-1
Violation Season and Year: Summer 2028
NERC Criteria Violation: 472 MW load loss (Greater than 300 MW).

Monitored Facility	Areas	Scenario	Final AC %Loading	
		Cont Name	2028_SUM	No_Golden-Mars
126249 26T 345 126283 GOTHLS 345 1	102	83 GOTHLS 345 126287 GOWANUS 34	101.95	101.95
		T_GOWANUS - GOETHALSN 25 345_SF	101.95	101.95
126249 26T 345 126287 GOWANUS 345 1	102	83 GOTHLS 345 126287 GOWANUS 34	113	113
		T_GOWANUS - GOETHALSN 25 345_SF	113	113
126283 GOTHLS 345 126287 GOWANUS 345 1	102	26249 26T 345 126283 GOTHLS 345 1	118.31	118.32
		6249 26T 345 126287 GOWANUS 345	113.58	113.59
		T_GOWANUS - GOETHALSS 26 345_SF	113.76	113.76
126287 GOWANUS 345 128252 BAYONNE 345 1	102	Base Case	102.14	102.14
126645 FARRAGUT EAS 345 126412 FGT_X5 138 1	102	Base Case	97.63	97.63
128847 NWBRG 345 129310 NEWBRGE 138 1	102	47 NWBRG 345 129310 NEWBRGE 13	126.17	126.17
128847 NWBRG 345 129310 NEWBRGE 138 2	102	47 NWBRG 345 129310 NEWBRGE 13	126.17	126.17
200009 JUNI 500 208004 JUNI 230 2	229	PL_10_P42_000140_SRT-A		94.02
204511 27S.LEB 230 204518 27IRONWOOD 230 1	227	ME_P1-2_ME-230-007B_SRT-A	94.33	94.33
206305 28RAR RVR 230 206400 28NEPTUNE 230 1	228	EXT_99210 G07 NFTWR 230_SRT-S	110.17	110.17
		Base Case	95.67	95.67
210330 WSHO 69.0 208136 WSHO 230 1	229	PL_10_P45_102604_SRT-A	97.33	97.33
210330 WSHO 69.0 208136 WSHO 230 2	229	PL_10_P43_102381_SRT-A	106.44	106.44
		PL_10_P45_102605_SRT-A	97.94	97.94
213519 CONOWG01 230 231006 COLOR_PE 230 1	230/235	PECO_P1-2_220-03_SRT-A	98.31	98.31
213520 CONOWG03 230 214218 NOTTNGH2 230 1	230	220-88/* $ CHESCO $ PECO_P1-2_220	97.25	97.25
213775 MACDADE 230 213925 RIDLEY 230 1	230	PECO_CBO_ISLD235_SRT-A	98.32	98.32
		PECO_P4_ISLDRD235_SRT-SW	98.56	98.56
		PECO_P4_NAVYY1-75_SRT-SW	97.58	97.58
		PECO_P4_NAVYY75-1T_SRT-SW	97.58	97.57
		PECO_P7-1_220-75_IR_PR_SRT-SW	96.41	96.41
		PECO_P1-2_220-23_SRT-A	106.99	106.99
		PECO_P1-2_220-75_IR_SRT-SW	103.81	103.81
213790 MDDYRN06 230 213868 PCHBTM2 230 1	230	Base Case	98.97	98.98
213791 MDDYRN07 230 213866 PCHBTM 230 1	230	Base Case	98.33	98.33
214075 GRAYSFRY7T 230 999225 SCHUYLKILL 7 69.0 7	230	PECO_P4_GRAYSF295_SRT-A	95.07	95.07
220955 W.CHAPEL 230 220992 WC230CAP 230 ZC	232	Base Case	104.87	104.87
221001 WCHAPL2 115 221154 WC115CP2 115 ZC	232	Base Case	104.91	104.91
221024 W.CHAPL 115 221122 WC115CAP 115 ZC	232	Base Case	105.39	105.39
221115 M.RIVR2A 115 221135 CHES.PK2 115 1	232	BG_P1_110583_SRT-A	95.42	95.42
223950 BML69 69.0 223944 BML031 230 1	233	PEPCO_P7_20PEPCO_SRT-A	96.77	96.77
231124 GLASGOW 138 231130 CECIL138 138 1	235	PECO_P4_NOTTI895_SRT-A	94.52	94.52
232001 COOLSPRS 230 232004 MILF_230 230 1	235	DPL_P1_2_CKT 23034_SRT-A	99.73	99.73
232002 CEDAR CK 230 232013 SILVER RUN 230 1	235/231	DPL_P4-2_DP6_SRT-A	104.09	104.09
232003 CARTANZA 230 232004 MILF_230 230 1	235	DPL_P1-2_CKT 23030_SRT-A	95.59	95.59
242921 05CORNU 765 242924 05HANG R 765 1	205	AEP_P1-2_#10135_SRT-A	94.19	94.2
		AEP_P1-2_#10136_SRT-A	94.22	94.22
		AEP_P1-2_#363_1682_SRT-A	94.9	94.9
		AEP_P1-4_05BAKER_RB 765_SRT-A	94.1	94.1
242926 05MALIS 765 290237 05MALIS 1EQ 999 1	205	EP_P1-3_#7218_05VASSEL 765_1_SRT	118.09	118.09
		EP_P4_#7218_05VASSEL 765_D1_SRT	111.01	111
		AEP_P4_05VASSEL_345_H018K5_SRT-	111.01	111
		AEP_P4_05VASSEL_345_H018K8_SRT-	111.01	111
243000 05EWOOST 138 245292 05ORRIVL_CTY 138 1	205	AEP_P1-4_05EWOOST 138_SRT-A	100.83	100.83
		Base Case	98.79	98.79
243225 05KEYSTN 345 247296 05KEYAEQ 999 A	205	AEP_P1-2_#6931_6801701_SRT-A	99.29	99.29
		AEP_P1-2_#707_8315_SRT-A	99.49	99.49
		AEP_P1-2_#7441_100545_SRT-A	100.07	100.06
		AEP_P1-2_#7442_200545_SRT-A	98.56	98.55
		AEP_P1-2_#8701_1700_SRT-A	100.03	100.03
		P_P1-3_#7429_05SORENS 765_3_SRT	98.37	98.37
		P_P4_#8707_05TANNER 345_P2_SRT	94.03	94.03
		P_P4_#9388_05ROB PK 345_KM_SRT	94.05	94.05
		P12:345:DEI:CAYUGA-NUCOR 34501_	99.71	99.7
		Base Case	102.19	102.19
243225 05KEYSTN 345 247297 05KEYBEQ 999 B	205	AEP_P1-2_#6931_6801701_SRT-A	101.86	101.86
		AEP_P1-2_#707_8315_SRT-A	102.07	102.06
		AEP_P1-2_#7441_100545_SRT-A	102.65	102.64

		AEP_P1-2_#7442_200545_SRT-A	101.12	101.11
		AEP_P1-2_#8701_1700_SRT-A	102.61	102.61
		P_P1-3_#7429_05SORENS 765_3_SR	100.93	100.93
		AEP_P1-4_05MCKINLEY3 138_SRT-A	102.78	102.77
		_P4_#17204_05THOMSON 345_B1_S	96.26	96.26
		P_P4_#17219_05GUERNSEY 765_A_SR	96.19	96.18
		EP_P4_#3006_05SORENS 345_D_SRT	96.19	96.18
		AEP_P4_#3137_05FLTLCK 765_C_SRT-	95.93	95.93
		EP_P4_#707_05MARYSV 765_B1_SRT	95.94	95.94
		EP_P4_#7334_05JEFRSO 765_A2_SRT	95.13	95.12
		EP_P4_#7441_05SORENS 765_J1_SRT	96.49	96.48
		P_P4_#7446_05MARYSV 765_B2_SR	96.01	96.01
		EP_P4_#8707_05TANNER 345_P2_SRT	96.46	96.45
		EP_P4_#9363_05DESOTO 345_B1_SRT	96.33	96.32
		EP_P4_#9364_05DESOTO 345_B2_SRT	96.31	96.3
		EP_P4_#9388_05ROB PK 345_KM_SRT	96.48	96.47
		AEP_P4_#9391_05SORENS 345_F_SRT-	94.31	94.31
		AEP_P7-1_#11045___SRT-A	96.38	96.37
		AEP_P7-1_#11046___SRT-A	95.41	95.4
		AEP_P7-1_#11047___SRT-A	96.42	96.42
		P12:345:DEI:CAYUGA-NUCOR 34501_	102.28	102.28
		Base Case	104.78	104.78
243347 05TIDD 3-4 138 243779 05WHELGS 138 1	205	AEP_P1-2_#5195_760_SRT-A	100.09	100.09
		P_P4_#10048_05TIDD 3-4 138_D_SR	94.08	94.08
		P_P4_#10049_05TIDD 3-4 138_D2_SR	94.08	94.08
		AEP_P7-1_#10959___SRT-A	94.08	94.08
243347 05TIDD 3-4 138 243779 05WHELGS 138 2	205	AEP_P1-2_#5194_759_SRT-A	100.13	100.13
		P_P4_#10052_05TIDD 3-4 138_B_SR	94.12	94.12
		P_P4_#10053_05TIDD 3-4 138_B2_SR	94.12	94.12
243513 05GENOA 138 243590 05WESTAR 138 1	205	AEP_P1-2_#5832_6228_SRT-A	95.93	95.93
		EP_P1-3_#7218_05VASSEL 765_1_SRT	100.97	100.96
		EP_P4_#7218_05VASSEL 765_D1_SRT	94.91	94.91
		EP_P4_#9732_05MALIS 138_M2_SRT	106.32	106.31
		AEP_P4_#9733_05MALIS 138_M_SRT-	99.68	99.68
		AEP_P4_05VASSEL_345_H018K5_SRT-	94.91	94.91
		AEP_P4_05VASSEL_345_H018K8_SRT-	94.91	94.91
243537 05MALIS 138 243538 05MALISX 138 ZB	205	EP_P1-3_#7218_05VASSEL 765_1_SRT	121.73	121.72
		EP_P4_#7218_05VASSEL 765_D1_SRT	114.42	114.42
		AEP_P4_05VASSEL_345_H018K5_SRT-	114.42	114.42
		AEP_P4_05VASSEL_345_H018K8_SRT-	114.42	114.42
		Base Case	96.34	96.34
243537 05MALIS 138 243553 05POLARS 138 1	205	AEP_P1-2_#5832_6228_SRT-A	99.41	99.41
		P_P1-3_#11531_05GENOA 138_2_SR	96.66	96.66
		EP_P1-3_#7218_05VASSEL 765_1_SRT	104.62	104.62
		EP_P4_#7218_05VASSEL 765_D1_SRT	98.34	98.34
		EP_P4_#9732_05MALIS 138_M2_SRT	108.22	108.22
		AEP_P4_#9733_05MALIS 138_M_SRT-	101.99	101.99
		AEP_P4_05VASSEL_345_H018K5_SRT-	98.34	98.34
		AEP_P4_05VASSEL_345_H018K8_SRT-	98.34	98.34
243538 05MALISX 138 290237 05MALIS 1EQ 999 1	205	EP_P1-3_#7218_05VASSEL 765_1_SRT	117.68	117.67
		EP_P4_#7218_05VASSEL 765_D1_SRT	110.62	110.61
		AEP_P4_05VASSEL_345_H018K5_SRT-	110.62	110.61
		AEP_P4_05VASSEL_345_H018K8_SRT-	110.62	110.61
243553 05POLARS 138 243590 05WESTAR 138 1	205	EP_P4_#9732_05MALIS 138_M2_SRT	97.37	97.37
243789 05FACEBOOK1 138 244745 05BABBIT 1-2 138 Z1	205	Base Case	97.22	97.22
244745 05BABBIT 1-2 138 245492 05BABBIT 5-6 138 1	205	P_P4_#15956_05BABBIT 5-6 138_L_SR	94.01	94.01
246751 05VASSEL 765 247728 05VASSEL_XFL 345 1	205	P_P1-3_#8072_05MARYSV 765_2_SR	97.24	97.24
249509 08DUFF 345 249531 08FRNCSC 345 1	208	AB BROWN (VECTREN) [TIE] [NO SPS	95.6	95.59
		E:GIBSON-BROWN:GIBSON:AB_BROV	98.85	98.85
249510 08GIBSON 345 249531 08FRNCSC 345 1	208	E:GIBSON-BROWN:GIBSON:AB_BROV	101.89	101.88
249755 08HENCO 138 249810 08NEWCAS 138 1	208	P12:138:DEI:HENRY CO-CADIZ 13889_	95.31	95.31
251279 08BUFTN2 69.0 251543 08VILLA 69.0 1	212	DEOK_P2-3_814_SILVERGROVE_SRT-A	100.43	100.44
		DEOK_P2-3_932_BUFFINGTON_SRT-A	94.5	94.49
		DEOK_P2-3_968_EKP-WEBSTER_SRT-A	94.22	94.23
		DEOK_P2.2_BUFFINGTON1_SRT-A	95.15	95.15

		DEOK_P7.1_CIRCUIT1881&6282_SRT-	94.28	94.28
		VEBSTER-HANDS-SILVER GROVE-KENT	98.03	98.03
251357 08KENTN2 69.0 251362 08LAKEVW 69.0 1	212	DEOK_P2-4_830_WILDER_SRT-A	103.5	103.5
251360 08KNTWTR 69.0 251362 08LAKEVW 69.0 1	212	DEOK_P2-4_830_WILDER_SRT-A	103.01	103.02
251360 08KNTWTR 69.0 251552 08WLDER2 69.0 1	212	DEOK_P2-4_830_WILDER_SRT-A	102.75	102.76
251378 08M.FTGT 69.0 251469 08TP6864 69.0 1	212	DEOK_P2-3_950_EBENEZER_SRT-A	128.92	128.92
251414 08NEUMAN 69.0 251445 08RYBOLT 69.0 1	212	DEOK_P2-3_950_EBENEZER_SRT-A	144.47	144.47
251414 08NEUMAN 69.0 251469 08TP6864 69.0 1	212	DEOK_P2-3_950_EBENEZER_SRT-A	174.84	174.84
251437 08PUT4HS 69.0 251438 08GENL_MILLS 69.0 1	212	DEOK_P2-3_932_EVANDALE_SRT-A	111.26	111.26
251438 08GENL_MILLS 69.0 251522 08MOSTELR 69.0 1	212	DEOK_P2-3_932_EVANDALE_SRT-A	104.64	104.64
251531 08TRMNL1 69.0 250118 08TRMNL2 138 1	212	DEOK_P2-3_910_TERMINAL_SRT-A	122.37	122.37
		OK_P1_TERMINAL 345/138 TB12_SRT	97.67	97.67
251863 08GIB3 24.0 249510 08GIBSON 345 1	208	45:DEI:WHITESTOWN-QUALITECH 34	94.85	94.85
		EI:WHITESTWN-QUALITECH 34524-A	94.85	94.85
251864 08GIB4 24.0 249510 08GIBSON 345 1	208	45:DEI:WHITESTOWN-QUALITECH 34	94.11	94.11
		EI:WHITESTWN-QUALITECH 34524-A	95.81	95.81
251873 G06408NOBS1 13.8 249811 08NOBSVL 138 1	208	P12:345:DEI:CAYUGA-NUCOR 34501_	99.29	99.3
		3:230-345:DEI:NOBLESVILLE BK11 345	99.93	99.93
		Base Case	95.82	95.82
251874 G06408NOBS2 13.8 249811 08NOBSVL 138 1	208	P_P4_#16809_05DEQUIN 345_D_SRT	94.44	94.45
		P12:345:DEI:CAYUGA-NUCOR 34501_	101.35	101.35
		3:230-345:DEI:NOBLESVILLE BK11 345	101.97	101.97
		Base Case	97.94	97.94
253503 10J089_CULG3 22.0 253500 10CULY13 138 T3	210	Base Case	98.32	98.32
253975 15BI 345 253999 15ARSENL 345 2	215	DLC_P24_BI-1-3-345_SRT-A	101.08	101.11
254521 16FRANCS 345 250463 08FRNCK 69.0 1	216/208	1 16FRANCS 345 254524 16HANNA 34	95.5	95.5
254529 16PETE 345 254813 PETERSBURG 3 22.0 3	216	Base Case	97.27	97.27
254529 16PETE 345 254814 PETERSBURG 4 22.0 4	216	Base Case	100.41	100.41
255202 17SUGAR_CK 345 255443 17SGR_CK-STG 18.0 ST	217	Base Case	101.84	101.84
256368 18PALISDG 345 256338 18PALISD 22.0 1	218	Base Case	95.81	95.81
262002 ZEELAND 1 345 262015 ZEELAND1A C 18.0 1	218	P12:345:METC:LN:ZELND2:ROSVLT:1_	97.16	97.17
262002 ZEELAND 1 345 262016 ZEELAND1B C 18.0 2	218	P12:345:METC:LN:ZELND2:ROSVLT:1_	97.09	97.09
262003 ZEELAND 2 345 262019 ZEELAND2C C 18.0 6	218	P12:345:METC:LN:ROSVLT:ZELND1:1_	98.76	98.77
		Base Case	96.44	96.44
270716 DRESDEN ; B 345 274702 KENDALL ;BU 345 1	222	7-1_345-L11620_B-S_+_345-L11622_	95.69	95.69
270716 DRESDEN ; B 345 275179 DRESDEN ;1M 138 1	222	COMED_P1-2_345-L10805_B-S_SRT-A	107.84	107.84
		COMED_P1-2_345-L1223_TR-S_SRT-A	96.51	96.51
		COMED_P1-3_TR83_DRESD_R-S_SRT-	94.19	94.2
		COMED_P4-6_012-138-B_____SRT-A	94.72	94.72
		COMED_P4_108-45-BT7-8___SRT-A	101.25	101.26
		COMED_P4_108-45-BT8-9___SRT-A	101.45	101.45
		7-1_345-L10805_B-S_+_345-L10806_	102.14	102.14
		7-1_345-L11620_B-S_+_345-L11622_	96.71	96.72
		7-1_345-L1221__B-S_+_345-L1223_T	105.95	105.95
		7-1_345-L1223_TR-S_+_345-L14321T	106.82	106.82
270717 DRESDEN ; R 345 275180 DRESDEN ;3M 138 1	222	COMED_P1-2_138-L0903__R-S_SRT-A	100.68	100.69
		COMED_P1-2_138-L1205__B-S_SRT-A	98.57	98.57
		COMED_P1-2_345-L10806_R-S_SRT-A	100.03	100.03
		COMED_P1-2_345-L1222__R-S_SRT-A	95.56	95.57
		COMED_P1-2_345-L2311__R-S_SRT-A	96.31	96.31
		COMED_P1-3_TR81_DRESD_B-S_SRT-	98.74	98.74
		COMED_P1-3_TR81_LASCO_B-S_SRT-	97.3	97.3
		COMED_P4-6_012-138-R_____SRT-A	97.18	97.18
		COMED_P4_012-38-L0903___SRT-A	94.45	94.45
		COMED_P4_012-38-L1206___SRT-A	100.52	100.53
		COMED_P4_012-45-BT6-7___SRT-A	95.49	95.49
		COMED_P4_108-45-BT4-5___SRT-A	94.17	94.18
		COMED_P4_108-45-BT5-6___SRT-A	94.42	94.43
		7-1_138-L0903__R-S_+_138-L1206__	103.6	103.6
		7-1_138-L1205__B-S_+_345-L2310__	97.96	97.96
		7-1_138-L1205__B-S_+_345-L2311__	101.99	102
		7-1_138-L1206__R-S_+_345-L2311__	98.54	98.55
		7-1_345-L10805_B-S_+_345-L10806_	94.56	94.56
		7-1_345-L11620_B-S_+_345-L11622_	103.8	103.8
		Base Case	96.32	96.32

270729 E FRANKFO; R 345 998785 E FRANKFT 83 138 1	222	COMED_P4_020-45-BT7-11__SRT-A	96.3	96.3
		7-1_345-L2002__B-S_+_345-L2004__	96.3	96.3
270736 ELWOOD ; B 345 270770 GOODINGS ;4B 345 1	222	COMED_P1-2_345-L11622_R-S_SRT-A	97.29	97.29
		COMED_P2-2_116_GG-345R__2_SRT-	95.66	95.67
		COMED_P4-6_116-345-R_____SRT-A	96.88	96.88
		COMED_P4_116-45-L0303___SRT-A	95.63	95.63
		COMED_P4_116-45-L11614__SRT-A	96.74	96.74
		COMED_P4_116-45-TR82____SRT-A	95.66	95.67
270737 ELWOOD ; R 345 270769 GOODINGS ;2R 345 1	222	COMED_P1-2_345-L11620_B-S_SRT-A	97.42	97.43
		COMED_P2-2_116_GG-345B__4_SRT-	95.74	95.74
		COMED_P4-6_116-345-B_____SRT-A	98.2	98.21
		COMED_P4_116-45-L11613__SRT-A	97.08	97.09
		COMED_P4_116-45-TR84____SRT-A	95.74	95.74
271385 E FRANKFO; R 138 998785 E FRANKFT 83 138 1	222	COMED_P4_020-45-BT7-11__SRT-A	95.17	95.17
		7-1_345-L2002__B-S_+_345-L2004__	95.17	95.17
271405 ELMHURST ; R 138 271407 ELMHURST ;0I 138 Z2	222	COMED_P4_078-38-BT2-4___SRT-A	98.8	98.8
271407 ELMHURST ;0I 138 271491 FRANKL PK; R 138 1	222	COMED_P4_078-38-BT2-4___SRT-A	102.38	102.38
271674 HUMBOLT P; B 138 272370 ROCKWELL ; B 138 1	222	COMED_P4_050-38-BT1-2___SRT-A	109.08	109.08
		COMED_P4_067-38-BT1-2___SRT-A	102.83	102.83
		7-1_138-L6721__B-C_+_138-L6723__	102.81	102.81
271674 HUMBOLT P; B 138 272370 ROCKWELL ; B 138 2	222	COMED_P4_050-38-BT1-2___SRT-A	105.4	105.4
		7-1_138-L8221__B-C_+_138-L8223__	104.13	104.13
271675 HUMBOLT P; R 138 272371 ROCKWELL ; R 138 1	222	COMED_P4_050-38-BT3-4___SRT-A	108.61	108.61
		7-1_138-L6721__B-C_+_138-L6723__	110.02	110.02
271675 HUMBOLT P; R 138 272371 ROCKWELL ; R 138 2	222	COMED_P4_050-38-BT3-4___SRT-A	104.95	104.95
		7-1_138-L8221__B-C_+_138-L8223__	112.29	112.29
272504 STATELINE;3B 138 272506 STATELINE;2S 138 1	222	7-1_345-L17723_B-C_+_138-L17008_	98.04	98.04
272506 STATELINE;2S 138 272726 WASHINGTO; B 138 1	222	7-1_345-L17723_B-C_+_138-L17008_	95.76	95.76
275179 DRESDEN ;1M 138 271337 DRESDEN ; R 138 1	222	COMED_P1-2_345-L10805_B-S_SRT-A	105.98	105.98
		COMED_P1-2_345-L1223_TR-S_SRT-A	94.58	94.58
		COMED_P4_108-45-BT7-8___SRT-A	99.51	99.51
		COMED_P4_108-45-BT8-9___SRT-A	99.7	99.7
		7-1_345-L10805_B-S_+_345-L10806_	100.32	100.32
		7-1_345-L11620_B-S_+_345-L11622_	95.21	95.21
		7-1_345-L1221__B-S_+_345-L1223_T	103.72	103.72
		7-1_345-L1223_TR-S_+_345-L14321T	104.54	104.54
275180 DRESDEN ;3M 138 271336 DRESDEN ; B 138 1	222	COMED_P1-2_138-L0903__R-S_SRT-A	98.55	98.55
		COMED_P1-2_138-L1205__B-S_SRT-A	97.26	97.27
		COMED_P1-2_345-L10806_R-S_SRT-A	98.38	98.38
		COMED_P1-2_345-L1222__R-S_SRT-A	94.09	94.09
		COMED_P1-2_345-L2311__R-S_SRT-A	94.81	94.82
		COMED_P1-3_TR81_DRESD_B-S_SRT-	96.81	96.82
		COMED_P1-3_TR81_LASCO_B-S_SRT-	95.92	95.92
		COMED_P4-6_012-138-R_____SRT-A	95.18	95.19
		COMED_P4_012-38-L1206___SRT-A	98.25	98.25
		7-1_138-L0903__R-S_+_138-L1206__	101.13	101.13
		7-1_138-L1205__B-S_+_345-L2310__	96.6	96.6
		7-1_138-L1205__B-S_+_345-L2311__	100.55	100.55
		7-1_138-L1206__R-S_+_345-L2311__	96.8	96.8
		7-1_345-L11620_B-S_+_345-L11622_	101.93	101.93
		Base Case	94.87	94.88
313733 6NIMBUS 230 313743 6INTERCONNEC 230 1	345	DVP_P4-2: 2095T9349		95.23
		DVP_P4-6: 2095T2		100.11
		DVP_P4-6: 2137T2		100.11
		DVP_P4-6: 2137T2_SRT-A		100.11
		DVP_P4-6: 9349T1		100.11
313743 6INTERCONNEC 230 314010 6BEAMEAD 230 1	345	DVP_P4-2: 2095T9349		103.88
		DVP_P4-6: 2095T2		108.81
		DVP_P4-6: 2137T2		108.81
		DVP_P4-6: 2137T2_SRT-A		108.81
		DVP_P4-6: 9349T1		108.81
		DVP_P7-1: LN 2095-9192		101.02
		DVP_P7-1: LN 2095-9192_SRT-SW		101.02
314768 3MITCHEL 115 314815 3OAK GRE 115 1	345	DVP_P4-2: 219992	99.05	99.02
		DVP_P4-2: 2199;9016	99.05	99.02

314794 6DOOMS	230	314793 3DOOMS	115	1	345	Base Case	96.08	96.08
314912 8LEXNGTN	500	314854 6LEXNGT1	230	1	345	DVP_P4-2: XT555	94.77	94.74
						DVP_P4-2: XT555_SRT-A	94.77	94.74
314912 8LEXNGTN	500	314856 6LEXNGT2	230	1	345	DVP_P4-2: 55502	96.05	96.02
						DVP_P4-2: 55502_SRT-A	96.05	96.02
314939 8GOOSE CREEK	500	313904 6GOOSECRK	230	1	345	DVP_P7-1: LN 9354-9363_SRT-S		94.83
324021 7BLUEGRASS12	345	324044 1BLUEGRASS 1	18.0	1	363	BLUEGRASS 3 345 324103 7BUCKNER	99.66	99.66
						MIDDLETOWN 345 324114 7TRIMBLE	96.41	96.41
324021 7BLUEGRASS12	345	324045 1BLUEGRASS 2	18.0	1	363	BLUEGRASS 3 345 324103 7BUCKNER	99.16	99.16
						MIDDLETOWN 345 324114 7TRIMBLE	95.91	95.9
324022 7BLUEGRASS 3	345	324046 1BLUEGRASS 3	18.0	1	363	VIESS EHV & CEHV T1 & CEHV T2 [SPS	95.76	95.76
						S:BREC:COLEMAN EHV-DAVIESS EHV	95.8	95.8
						:DEI-LGEE:SPEED-E.ON TRIMBLE CO.	105.95	105.95
						DEI:GIBSON TO VECTREN FRANCISCO	100.89	100.89
						:VECTREN DUFF TO VECTREN FRANCIS	101.25	101.25
						T-P13:138-345:DEI:SPEED BK3 345_SR	100.73	100.73
						BLUEGRASS12 345 324103 7BUCKNER	105.95	105.95
						7BLUE LICK 345 324108 7MILL CREEK	105.04	105.04
						MIDDLETOWN 345 324114 7TRIMBLE	105.95	105.95
						EXT_P6 2370_SRT-S	103.6	103.6
						Base Case	98.17	98.17
324253 4GHENT	138	324287 4NAS TAP	138	1	363	05 7GHENT 345 324565 7NAS TAP 34	104.14	104.14
324531 2FERGUSON SO	69.0	342287 2SOMERSET KU	69.0	1	363/320	EKPC_P2-3_COOP S42-1014_SRT-A	99.7	99.69
342727 5DENNY	161	341392 2DENNY	69.0	1	320	EKPC_P2-3_MCCRY S63-1014_SRT-A	95.15	95.15
699152 COL G1	22.0	699157 COL 345	345	1	694/697	Base Case	96.57	96.57
699153 COL G2	22.0	699157 COL 345	345	1	694/697	Base Case	97.19	97.19
699389 ELM ROAD G1	25.0	699367 ELM ROAD	345	1	295	COMED_P1-1_974-U_ZIONE1-N_SRT-A	95.8	95.8
						COMED_P1-2_345-L15424TB-N_SRT-A	95.7	95.7
						COMED_P1-2_345-L97401_R-N_SRT-A	96.33	96.33
						XT-P13:138-345:ATC:ADN:T3:NLL_SRT	95.87	95.87
						Base Case	94.93	94.93
699390 ELM ROAD G2	25.0	699367 ELM ROAD	345	1	295	COMED_P1-1_974-U_ZIONE1-N_SRT-A	99.53	99.53
						COMED_P1-2_345-L97401_R-N_SRT-A	100.04	100.04
						7-1_345-L11120_R-N_+_345-L11124_	94.21	94.22
						XT-P13:138-345:ATC:ADN:T3:NLL_SRT	99.59	99.59
						Base Case	98.7	98.7

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: There are no feasible distribution or transmission electrical alternatives to the Project, and no alternatives were submitted to PJM. See Sections I.A and I.C.

Pursuant to the Commission's November 26, 2013, Order entered in Case No. PUE-2012-00029,[36] and its November 1, 2018, Final Order entered in Case No. PUR-2018-00075,[37] the Company is required to provide analysis of demand-side resources ("DSM") incorporated into the Company's planning studies. DSM is the broad term that includes both energy efficiency ("EE") and demand response ("DR"). In this case, PJM and the Company have identified a need for the proposed Project based on the need to address violations of NERC Reliability Standards, thereby enabling the Company to maintain the overall long-term reliability of the transmission system, as well as interconnecting future load.[38] 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 PJM 2023 Load Forecast was 2,440 MW greater in 2027/2028 in comparison to the PJM 2022 Load Forecast. The Company anticipates that the load will only continue to grow in the DOM Zone, including the Eastern Loudoun Load Area, as supported by PJM's 2025 Load Forecast. By way of comparison, the Company achieved demand savings of 276.5 MW (net) / 350.0 MW (gross) from its DSM Programs in 2023.

---

[36] *Application of Virginia Electric and Power Company d/b/a Dominion Virginia Power for approval and certification of electric facilities: Surry-Skiffes Creek 500 kV Transmission Line, Skiffes Creek-Whealton 230 kV Transmission Line, and Skiffes Creek 500 kV-230 kV-115 kV Switching Station*, Case No. PUE-2012-00029, Final Order (Nov. 26, 2023).

[37] *Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 et seq.*, Case No. PUR-2018-00075, Final Order (Nov. 1, 2018).

[38] 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: As part of the proposed Project, the Company plans to remove the following transmission facilities to accommodate construction of the Golden-Mars Lines.

Old Ox Road Segment

For purposes of the Project, the Company will remove 0.7 mile of conductors and three double circuit monopole structures supporting Lines #2095/#2292 entirely from the existing transmission corridor Sojourner Substation to the Old Ox/Carters School Road Intersection. Additionally, one existing single circuit monopole structure outside of Sojourner Substation will be replaced with one single circuit monopole structure in order to terminate Line #2095 into Sojourner Substation.

Prior to construction of the proposed Project, the Company anticipates that the existing conductors on Lines #2095/#2292 will be uprated to 768.2 ACSS/TW/HS conductors, which will have a summer normal and emergency ratings of 1,573 MVA.

Carters School Road Segment

While Line #2095 is being removed entirely from the Carters School Road Segment from an electrical perspective, the arms of the existing double circuit monopole structures and the existing Line #2095 conductors will be repurposed and renamed Lockridge-Mars Line #2413. Accordingly, they are not being removed.

Within the Carters School Road Segment, the existing corridor contains a combination of double circuit monopole structures and double circuit two-pole structures. For purposes of the Project, the Company will remove one set of arms from the three double circuit monopoles structures and remove one-half of three of the double circuit two-pole structures that currently support Line #2292, as well as 0.6 mile of Line #2292 conductor, which will allow for the construction of Golden-Mars Line #5003 within the existing corridor.

As noted above, prior to construction of the proposed Project, the Company anticipates that the existing conductor on Line #2095 will be uprated to 768.2 ACSS/TW/HS conductor, which will have a summer normal and emergency ratings of 1,573 MVA.

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.[39]

[39] Note that Attachment I.G.1 only includes future stations that specifically need the Sojourner Loop to connect. All the other DPs that will benefit from the Project but are not served directly from it are not included.

Attachment I.G.1

GOLDEN-MARS 500/230kV PROJECT

230 kV Transmission Line

500 kV Transmission Line

Switching Station, Substation, DP

0 0.38 0.75 1.5 2.25 3 Miles

ASPEN SUB

ASHBURN SUB

BEAUMEADE SUB

BECO SUB

PARAGON PARK SUB

GOLDEN SUB

WAXPOOL SUB

ROUNDTABLE SUB

SHELLHORN ROAD SUB

PRENTICE DRIVE SUB

LOCKRIDGE SUB

PACIFIC SUB

STERLING PARK SUB

DAVIS DRIVE SUB

RUNWAY DP

SOJOURNER SUB

PHOENIX SUB (Future)

SPIRIT SUB (Future)

OPPORTUNITY SUB (Future)

PERSEVERANCE SUB (Future)

CURIOSITY SUB (Future)

MARS SUB

CELESTIAL SUB

CABIN RUN SUB

BRAMBLETON SUB

WISHING STAR SUB

YARDLEY RIDGE SUB

EVERGREEN MILLS SUB

POLAND ROAD SUB

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 June 1, 2028.

The Company estimates it will take approximately 30 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 December 1, 2025. Should the Commission issue a final order by December 1, 2025, to accommodate long-lead materials procurement, the Company estimates that construction should begin around January 2027, and be completed by June 1, 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 routes without the need for additional litigation.

In addition, the Company is monitoring actively regulatory changes and requirements associated with the NLEB and how they could potentially impact construction timing associated with TOYRs. The USFWS issued the final guidance, replacing the interim guidance, on October 23, 2024 and the final guidance was fully implemented on November 30, 2024. The Company is reviewing the final guidance to the extent it applies to the Company's projects and will coordinate with USFWS during the permitting stage.

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 Endangered Species Act. USFWS extended its Final Rule issuance target from September 2023 to September 2024, but as of the date of this filing, the TCB listing decision has not been issued. The Company is tracking actively 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.*, June 1, 2028) and an authorization sunset date (*i.e.*, June 1, 2029) for

energization of the Project.[40]

[40] *See supra*, n. 16.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The estimated conceptual cost of the Project as proposed is approximately $402.3 million, which includes approximately $351.9 million for transmission-related work and approximately $50.4 million for substation-related work (2024 dollars).[41]

The following is a breakdown of approximate costs. Note that the substation-related costs are the same regardless of the route selected for the Golden-Mars Lines.

Transmission-Related Costs

Golden-Mars Alternative Route 1: $398.1 million
Golden-Mars Alternative Route 2: $394.2 million
Golden-Mars Alternative Route 3: $351.9 million
Golden-Mars Alternative Route 4: $358.3 million
Golden-Mars Alternative Route 5: $421.0 million

Lockridge Loop Proposed Route: $23.9 million

Sojourner Loop Proposed Route: $90.3 million

Substation-Related Costs

Golden Substation: $17.4 million
Mars Substation: $24.4 million
Lockridge Substation: $3.0 million
Sojourner Substation: $5.6 million
Shellhorn Substation: $0.02 million

[41] *See supra*, n. 15.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project was presented during the October 2023 and December 2023 PJM TEAC meetings, as discussed below. The Company notified PJM in February 2025 about a Project scope change to include the Sojourner Loop and terminate Line #2095 into Sojourner Substation. The Company anticipates that PJM will present the updated slides at the April 2025 TEAC meeting.

October 31, 2023 TEAC Meeting

PJM presented Attachment I.J.1 as First Read for the 2022 Reliability Open Window #3. This excerpted presentation explains the timeline, objective, and evaluation criteria for Open Window projects. PJM shows the selection of the Project as the preferred solution on slides 45 and 46.

PJM highlighted the below benefits of the Project (slide 69):

- Offers robust transmission solution in the area that adds one new 500 kV circuit along the existing 500 kV corridor and encompasses the load center.
- Introduces one additional 500 kV source substation at the heart of the load center.
- Does not bottleneck the existing 500 kV infrastructure in the area due to higher overhead line ratings.
- Offers direct accessibility to the transmission infrastructure.
- Offers a parallel 500 kV path to the current 500 kV circuit between Brambleton/Loudoun and Goose Creek area.
- Resolves the 300 MW load loss violation for Lockridge and Prentice Drive Substations.

December 5, 2023 TEAC Meeting

PJM presented Attachment I.J.2 detailing the justification of the Project for the Company's Northern Virginia Area Violations and detailing the drivers behind the proposed Project, including the significant increased load growth in the area.

The 2023 RTEP was approved by PJM at its board meeting in December 2023, including the Project as proposed. See table below. This Project is classified as a baseline project and is assigned the following sub identification numbers: b3800.210-212.

b3800.210	Build a new 230 kV line from Mars-Lockridge on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Mars and Lockridge.	$57.95	Dominion	Dominion (100.00%)	6/1/2027
b3800.211	Build a new 230 kV line from Lockridge-Golden on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Lockridge.	$56.93	Dominion	Dominion (100.00%)	6/1/2027

b3800.212	Build a new 500 kV line from Mars-Golden on 500/230 kV double circuit structures with substation upgrades at Golden and Mars. New conductor to have a monimum summer normal rating of 4357 MVA.	$228.04	Dominion	Load-Ratio Share Allocation: AEC (1.65%) / AEP (13.68%) / APS (5.76%) / ATSI (8.04%) / BGE (4.11%) / ComEd (13.39%) / Dayton (2.12%) / DEOK (3.25%) / DL (1.71%) / Dominion (13.32%) / DPL (2.60%) / EKPC (1.89%) / JCPL (3.86%) / ME (1.90%) / NEPTUNE (0.42%) / OVEC (0.08%) / PECO (5.40%) / PENELEC (1.78%) / PEPCO (3.67%) / PPL (4.72%) / PSEG (6.39%) / RE (0.26%) DFAX Allocation: APS (99.96%) / Dominion (0.04%)	6/1/2027

Cost Allocation

The 230 kV components of the Project are 100% cost allocated to the DOM Zone, as shown in the first table above. The cost allocation for the 500 kV component is shown in the second table above.

Reliability Analysis Update

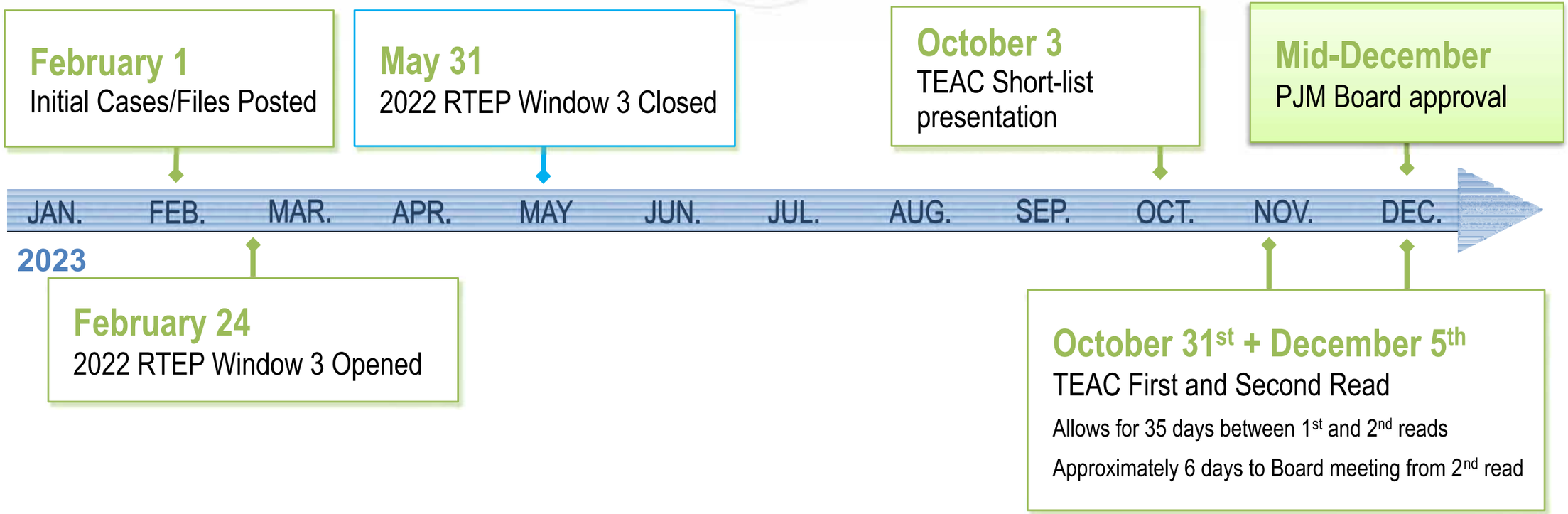
Sami Abdulsalam, Senior Manager
PJM Transmission Planning

Transmission Expansion Advisory Committee
October 31, 2023

First Read – 2022 Window 3

Baseline Reliability Projects

2022 RTEP Window 3 - Timeline



2022 RTEP Window 3 – Objective & Evaluation

- Develop robust, holistic and expandable solutions that address the 2027-28 baseline violations associated with:
  - Local constraints: resulting from directly serving data center loads in APS / Dominion
  - Regional constraints resulting from imports into load center areas (500 kV primarily):
  - Needed reactive power VAR reinforcements, both static and dynamic as necessary.
  - Address reliability impacts due to the deactivation of 11GWs of generation.
- Adhere to all applicable planning criteria, including PJM, NERC, SERC, RFC and Local Transmission Owner Criteria.
- Evaluation on both 2027 and 2028 RTEP cases
  - Generation deliverability analysis
  - Load deliverability analysis
  - N-1-1 analysis
  - Baseline contingency analysis
  - Short circuit analysis
  - Dynamic analysis
  - Critical Substation Planning Analysis-CSPA

44

- Holistic solutions are to be designed such that they are robust and expandable as the load grows within the area.

- A scalable solution ensures, at a minimum, near-term reliability needs are addressed while also enabling future expansion (beyond the 2027-28 baseline levels).

  – Consider flexibility, robustness and scalability of 2027-28-baseline solutions against the Interim 2027-28 Summer, Winter and Light Load basecases.
  – Evaluate proposals for their effectiveness towards existing reactive interfaces in the area, particularly those supporting the Dominion and APS zones.
  – Evaluate the effectiveness of the proposed solutions towards the transmission system load deliverability into the Dominion and APS zones (CETL).

Two Rounds of PJM Meetings With Proposing Entities:

- Discussions to clarify details of proposed developments, assumptions, rationale of proposed alternatives/variations
- First round was conducted in June/July 2023.
- Second round was initiated in late July and concluded mid-August:
  - Focus on outage scheduling, routing, risk and cost assumptions/considerations

Scenario Development and Analysis

To date, PJM developed and analyzed:

- >30 scenarios for the 2027 model (Combination of proposals and components from different proposals)
- >80 scenarios for the 2028 model

Scenarios Were Built Based On:

- Full combination scenarios by proposing entities (Incumbents, Nextera, LS Power and Transource)
- Optimized scenarios using components from incumbent and non-incumbent proposing entities

2022W3 – Window Evaluation Criteria

Scenarios With Their Associated Proposed Developments Will Be Evaluated Based On the Following Principles:

Performance	Scalability	Impact	Validated Cost
Meeting the system needs of 2027 and being flexible to address 2028 needs	Scenario/development longevity – system robustness and utilization	Utilization of existing ROWs where possible and efficient.	Cost evaluation using third-party benchmarking metrics

47

Risks

- Triggering additional costs:
  - Substation rebuilds due to extreme short-circuit levels
  - Avoid extended critical outages (Peach Bottom / Conastone rebuilds)
- Imposing high permitting
- Inability to meeting in-service date

Efficiencies

- Avoidance of redundant capital investment including recognizing synergies with EOL facilities and overlaps of previously approved (or imminent) supplemental/baseline upgrades.

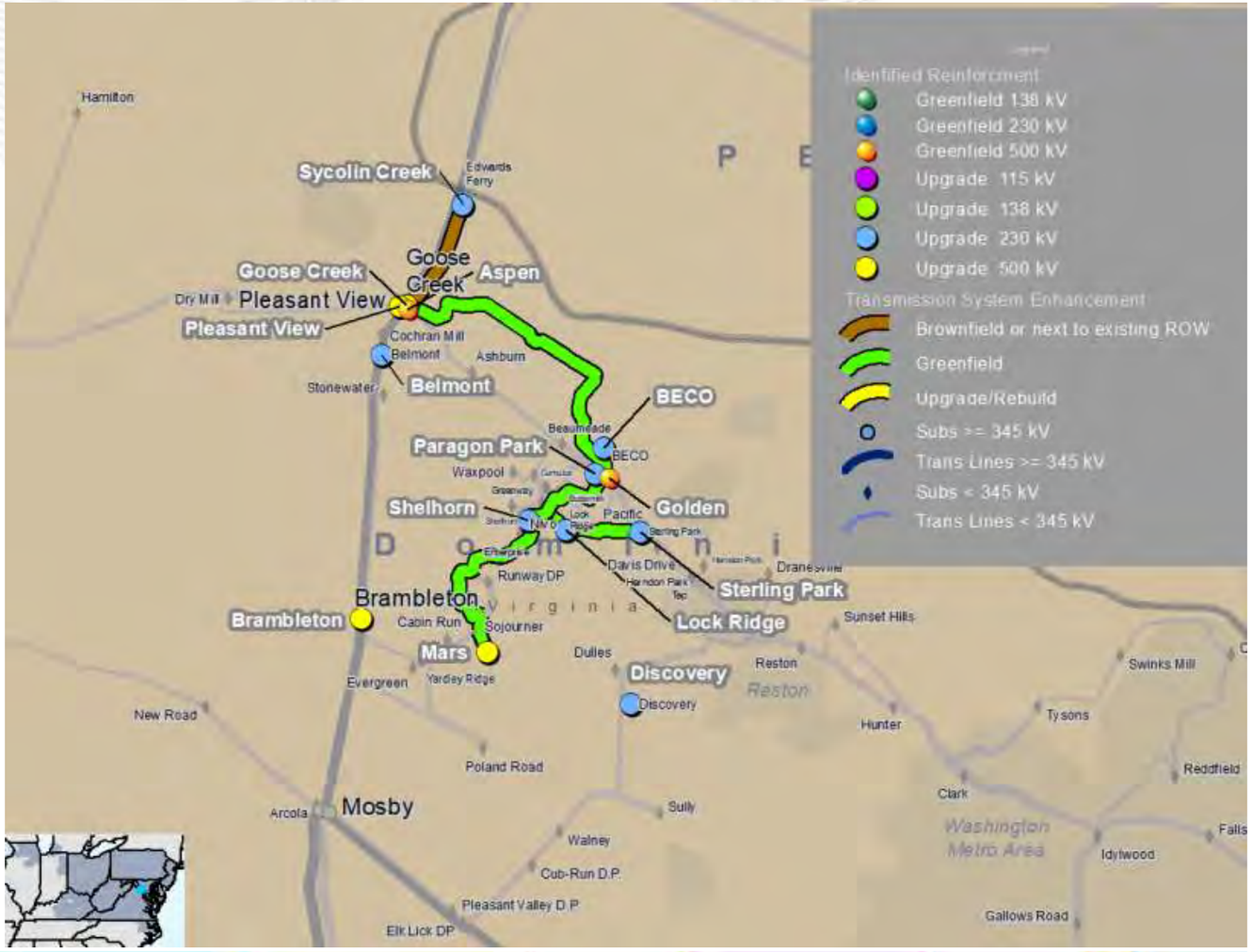
2022W3 – Preferred Solutions: Northern Virginia/Doubs Cluster

Proposed Solution: 2022-W3-692

- Construct new double-circuit 500/230 kV lines from Aspen substation to Golden substation
  - 230kV Line will connect Aspen – Sycolin Creek – Golden
- Construct new double-circuit 500/230 kV lines from Golden substation to Mars substation
  - 230kV Line will connect Golden – Lockridge – Mars
- Construct a new 500kV Line from Aspen to Goose Creek
- Install the 2nd 500-230 kV 1440 MVA transformer at Mars Substation
- Construct a new Aspen 500/230kV substation by tapping 500kV Line #558
- Construct a new Golden 500/230kV substation
- Upgrade existing double-circuit 230 kV lines from Golden substation to Paragon Park substation (Lines # 2150 & 2081)
- Upgrade existing single circuit 230 kV line from Paragon Park substation to BECO Substation (Line # 2207) to a minimum normal summer rating of 1573 MVA. Equipment at each substation will be upgraded to support the new conductor rating of 4000A
- Equipment upgrades at the following substations:
  - Paragon Park, BECO
- Golden relay setting reset
- Replace overdutied breakers at Belmont, BECO, Beaumeade, Pleasant View, Shellhorn, and Discovery.

Estimated Cost: $1058.45 M
Required IS Date: 6/1/2027
Projected IS Date: 6/1/2028

Continued on next slide…

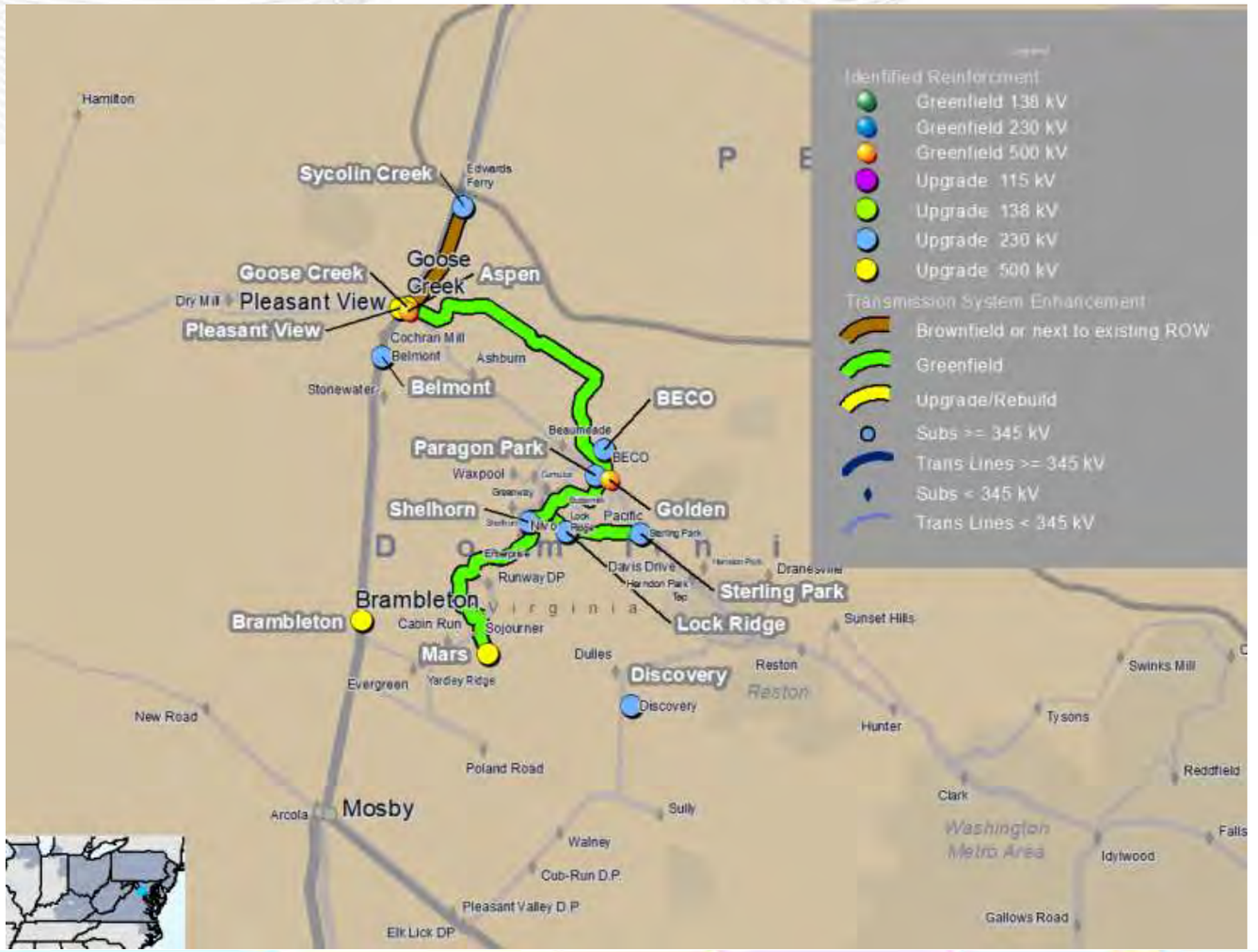


NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

2022W3 – Preferred Solutions: Northern Virginia/Doubs Cluster

Proposed Solution: Additional upgrades

- Reconductor 1.47 miles of 230kV circuits 2081 and 2150 from Sterling Park to Golden substation
- Reconductor 0.67 miles of 230kV circuits 2194 and 9231 from Davis Drive to Sterling Park substation



Estimated Cost: $13.50 M
Total Estimated Northern Virginia/Doubs Cluster Cost: $1435.07 M

Required IS Date: 6/1/2027
Projected IS Date: 6/1/2028

NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

Summary of Selected Projects and Rationale

West	853	Nextera	New Gant 500 KV substation Black Oak 500 kV Expansion New 502 Junction - Black Oak - Woodside - Gant 500 kV line	Northern Virginia load center Avoids terminating additional lines at the existing Doubs Susbtation Cost effective
Dominion Data Center Alley	692	Dominion	New Aspen and Golden 500/230 kV Substation New Mars 500/230 Transformer New Aspen - Golden 500 kV and 230 kV lines New Golden - Mars 500 kV and 230 kV lines	Offers robust transmission solution in the area that adds one new 500kV circuit along the existing 500kV corridor and encompasses the load center Introduces one additional 500kV source substation at the heart of the load center Does not bottleneck the existing 500kV infrastructure in the area due to higher overhead line ratings Offers direct accessibility to the transmission infrastructure Offers a prallel 500kV path to the current 500kV circuit between Brambleton/Loudon and Goose Creek area.

50

2022 Window 3 Recommended Solution

Project Area	Proposal ID	Key Facilities Included	Entity	Proposal Cost ($M)	Independent Cost ($M)	Proposed In-Service Date	Greenfield/ Brownfield
East	344	New Peach Bottom - North Delta - Highridge 500 kV (PECO) Rebuild 5012: Peach Bottom - North Delta - Graceton -Conastone (PECO)	PECO	60.90	67.55	12/1/2029	Brownfield routes
	b3780.3	Cancel West Cooper Substation scope from Brandon Shores Immediate Need Approved Projects	PECO	(60.00)	(60.00)	N/A	N/A
	b3737.47*	Enhanced North Delta 500/230 kV Substation (NJ SAA Project)	Transource	104.11	93.88	12/1/2027	Greenfield substation
	660	High Ridge 500 kV Expansion New Peach Bottom - North Delta - Highridge 500 kV (BGE) Rebuild 5012: Peach Bottom - North Delta - Gracetone -Conastone (BGE)	PEPCO	653.42	479.99	12/1/2030	Brownfield routes, substation expansion
	374	New Otter Creek 500 kV (tie-in to TMI - Peach Bottom 500 kV) New Otter Creek - Conastone 500/230 kV DCT (Conastone Bypass for 500 kV)	PPL	144.12	152.70	5/1/2027	Brownfield route, Greenfield substation
	637	New Conastone - Doubs 500 kV line	PSEG	447.28	492.50	6/1/2027	Greenfield route
	837	New Carroll - Hunterstown 230 kV line	FirstEnergy	137.45	202.30	6/1/2030	Brownfield routes
	b3768	Cancel Rebuild/Reconductor Germatown - Lincoln 115 kV project from 2022 RTEP Window Approved Projects	FirstEnergy	(17.36)	(17.36)	N/A	N/A
West	853	New Woodside 500 kV substation with 500 MVAR STATCOM & Capbanks (NextEra) New 502 Junction - Woodside - Aspen 500 kV line (NextEra/FE) Aspen 500 kV line Termination (Dominion)	Nextera FirstEnergy Dominion	646.69	1,038.75	6/1/2027	Mostly Greenfield parallel to existing ROW, Part Brownfield, Part Greenfield
South	837 516 660	Doubs - Goose Creek 500 kV Rebuild New Doubs - Aspen 500 kV Line	FirstEnergy Dominion PEPCO	336.20	378.51	12/1/2027	Brownfield routes
	711	New Morrisville - Vint Hill - Wishing Star 500 kV	Dominion	953.71	1,010.48	12/1/2027	Brownfield routes
	231	Morrisville, Wishing Star, Mars and Beaumeade Substation Reactive Upgrades	Dominion	103.80	103.80	12/1/2027	Substation upgrades
	74, 211, 731, 967	Proposed Dominion 230 kV Upgrades	Dominion	302.82	302.82	12/1/2027	Brownfield upgrades
	PJM Identified Upgrades	Line #256 Rebuild St. Johns - Ladysmith CT 230 kV Sterling Park – Golden 230 kV Reconductor Davis Drive – Sterling Park 230 kV Reconductor	Dominion	51.39	51.39	12/1/2027	Brownfield upgrades
Dominion Data Center Alley	692	New Aspen and Golden 500/230 kV Substation & Mars Station Upgrade New Aspen - Golden - Mars 500 kV and 230 kV lines	Dominion	1,058.45	1,098.96	12/1/2027	Greenfield routes & greenfield substation
Local	410	Cloverdale Breaker Reconfiguration	AEP	11.59	11.59	10/1/2026	Substation upgrades
* NJ SAA Project b3737.47 accelerated from 6/1/2029 ISD to 12/1/2027 ISD and scope updated to address 2022W3 needs			**TOTAL**	**4,934.56**	**5,407.86**		

Reliability Analysis Update

Sami Abdulsalam, Senior Manager

PJM Transmission Planning

Transmission Expansion Advisory Committee

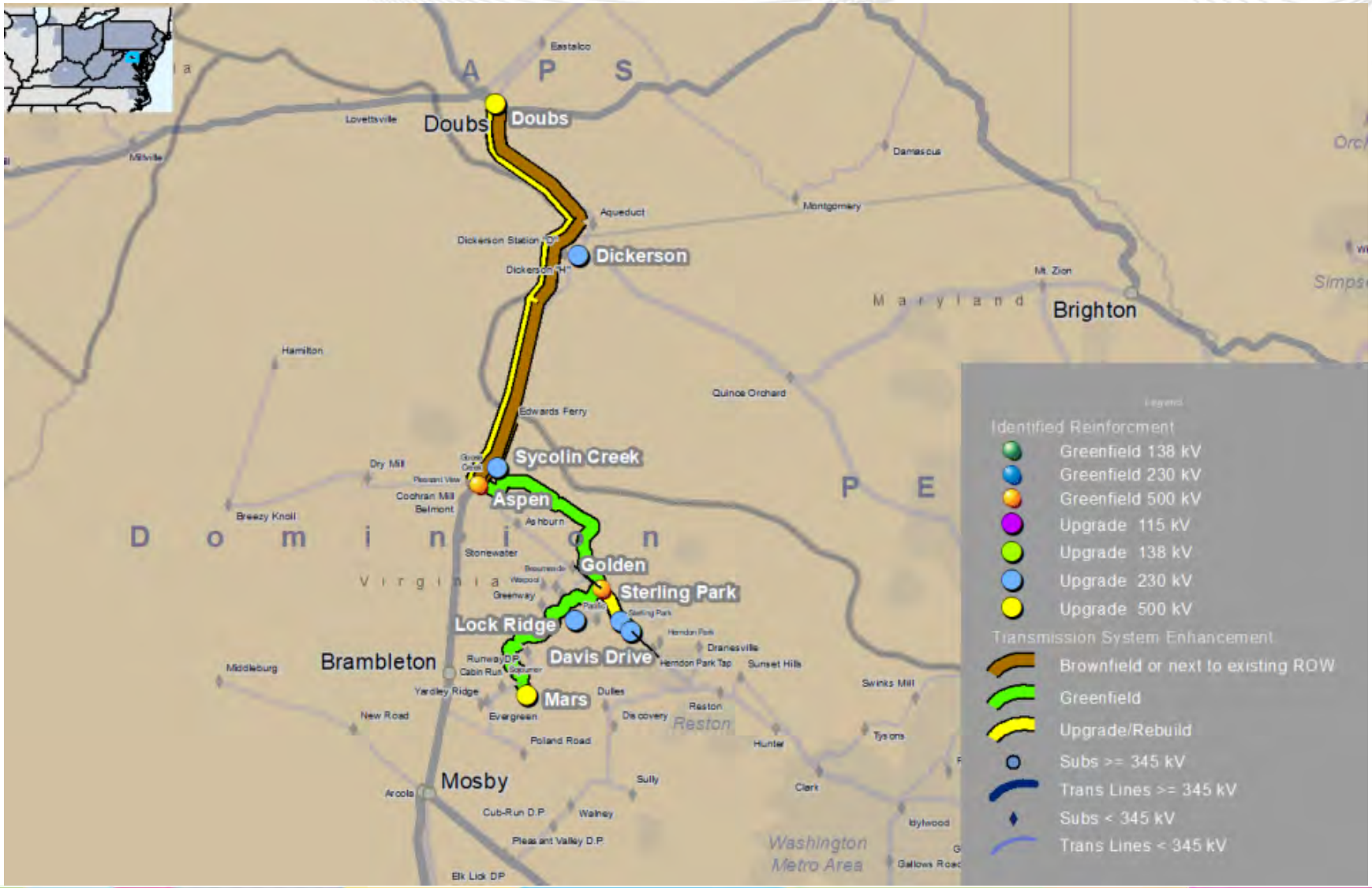
December 5, 2023

Attachment I.J.2

Northern Virginia/Doubs- Selected Proposals

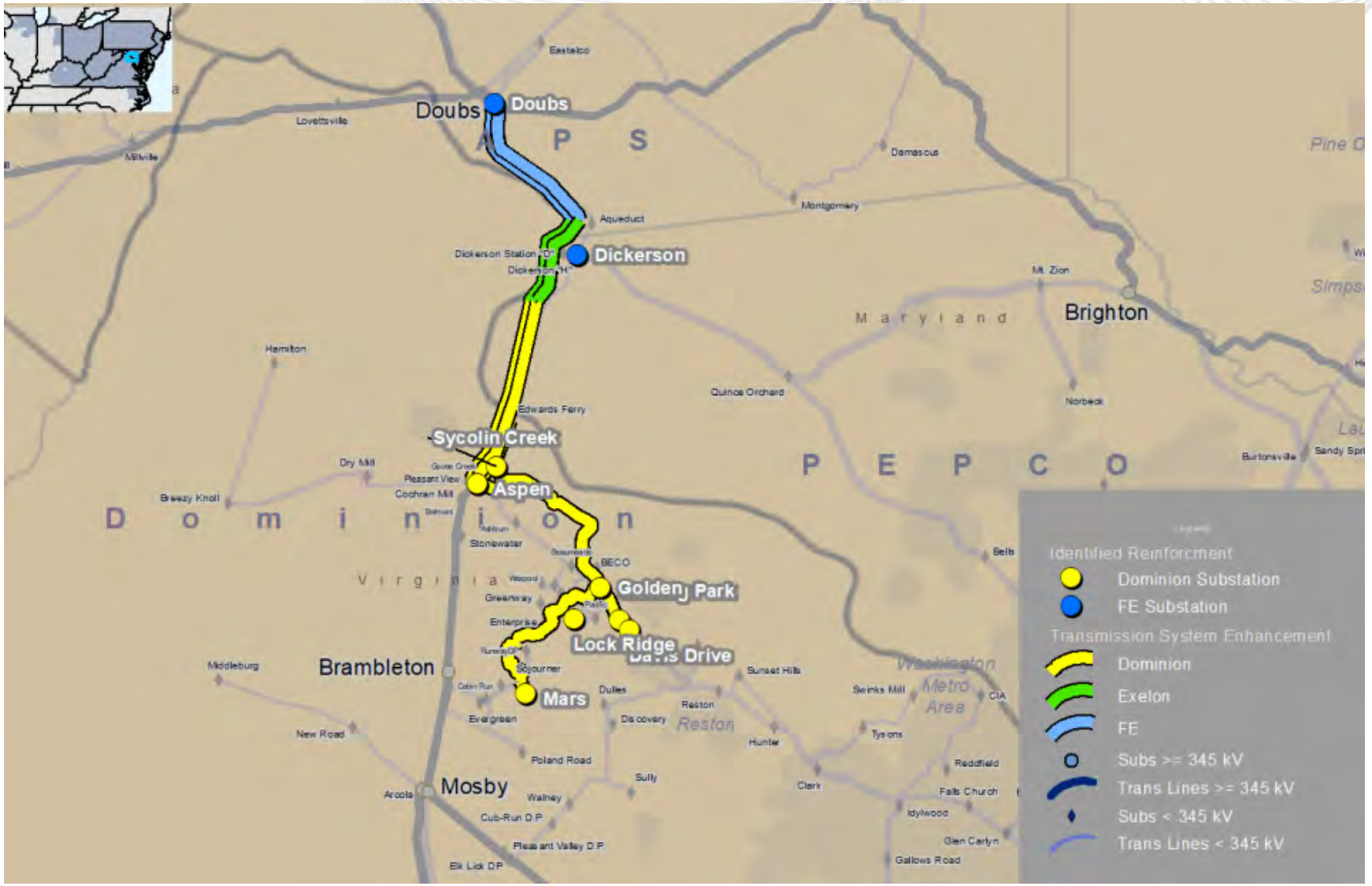
Baseline Reliability Projects

2022W3 – Recommended Solutions: North Virginia/Doubs Cluster



NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

2022W3 – Recommended Solutions: North Virginia/Doubs Cluster by Designated Entity



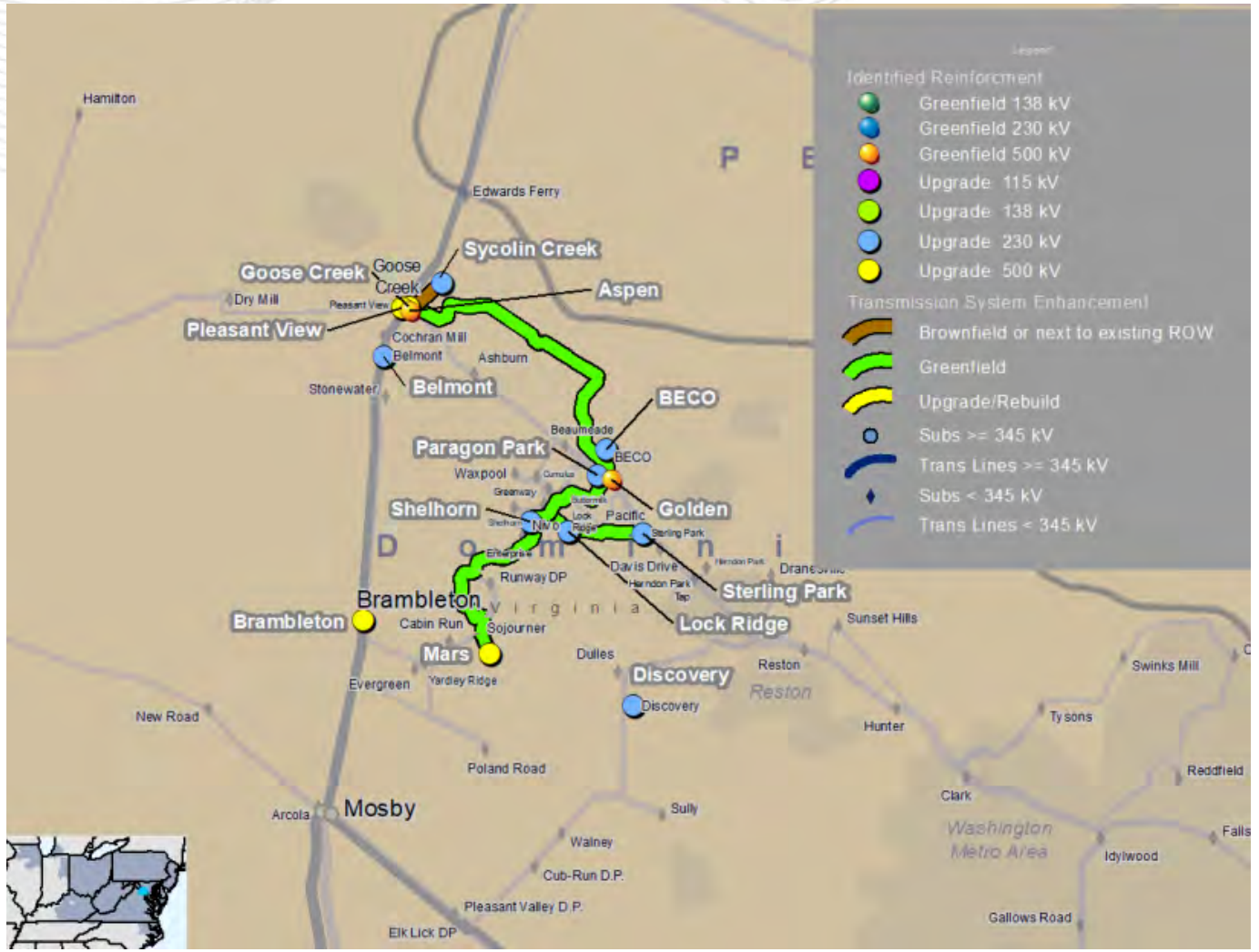
NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

2022W3 – Recommended Solutions: Northern Virginia/Doubs Cluster

Recommended Solution: 2022-W3-692

- Construct new double-circuit 500/230 kV lines from Aspen substation to Golden substation
  - 230kV Line will connect Aspen – Sycolin Creek – Golden
- Construct new double-circuit 500/230 kV lines from Golden substation to Mars substation
  - 230kV Line will connect Golden – Lockridge – Mars
- Construct a new 500kV Line from Aspen to Goose Creek
- Install the 2nd 500-230 kV 1440 MVA transformer at Mars Substation
- Construct a new Aspen 500/230kV substation by tapping 500kV Line #558
- Construct a new Golden 500/230kV substation
- Upgrade existing double-circuit 230 kV lines from Golden substation to Paragon Park substation (Lines # 2150 & 2081)
- Upgrade existing single circuit 230 kV line from Paragon Park substation to BECO Substation (Line # 2207) to a minimum normal summer rating of 1573 MVA. Equipment at each substation will be upgraded to support the new conductor rating of 4000A
- Equipment upgrades at the following substations:
  - Paragon Park, BECO
- Golden relay setting reset
- Replace overdutied breakers at Belmont, BECO, Beaumeade, Pleasant View, Shellhorn, and Discovery.

Continued on next slide…



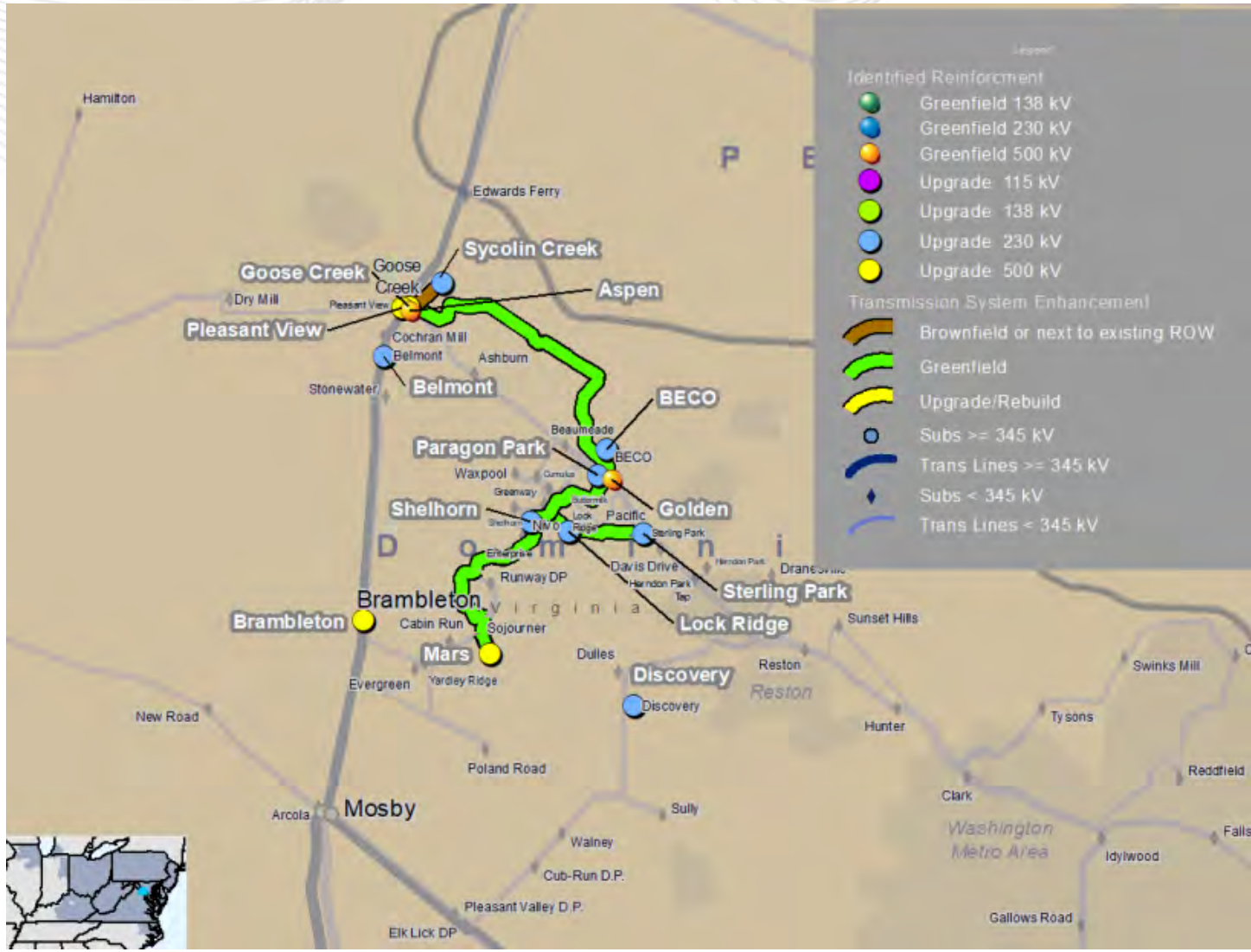
NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

2022W3 – Recommended Solutions: Northern Virginia/Doubs Cluster

Existing Facility Ratings:

Branch	SN/SE/WN/WE (MVA)
500kV Line Aspen – Goose Creek 2	NA
500kV Line Golden – Mars	NA
230kV Line Aspen – Sycolin Creek – Golden	NA
230kV Line Golden – Lockridge – Mars	NA
230kV Line #2150 Golden – Paragon Park 1	762/762/849/849
230kV Line #2081 Golden – Paragon Park 2	765/765/852/852
230kV Line #2207 Paragon Park – BECO	762/762/849/849

57



NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

Continued on next slide…

2022W3 – Recommended Solutions: Northern Virginia/Doubs Cluster

Preliminary Facility Ratings:

Branch	SN/SE/WN/WE (MVA)
500kV Line Aspen – Goose Creek	4357/4357/5155/5155
500kV Line Golden – Mars	4357/4357/5155/5155
230kV Line Aspen – Sycolin Creek – Golden	1573/1573/1648/1648
230kV Line Golden – Lockridge – Mars	1573/1573/1648/1648
230kV Line #2150 Golden – Paragon Park 1	1573/1573/1648/1648
230kV Line #2081 Golden – Paragon Park 2	1573/1573/1648/1648
230kV Line #2207 Paragon Park – BECO	1573/1573/1648/1648

58

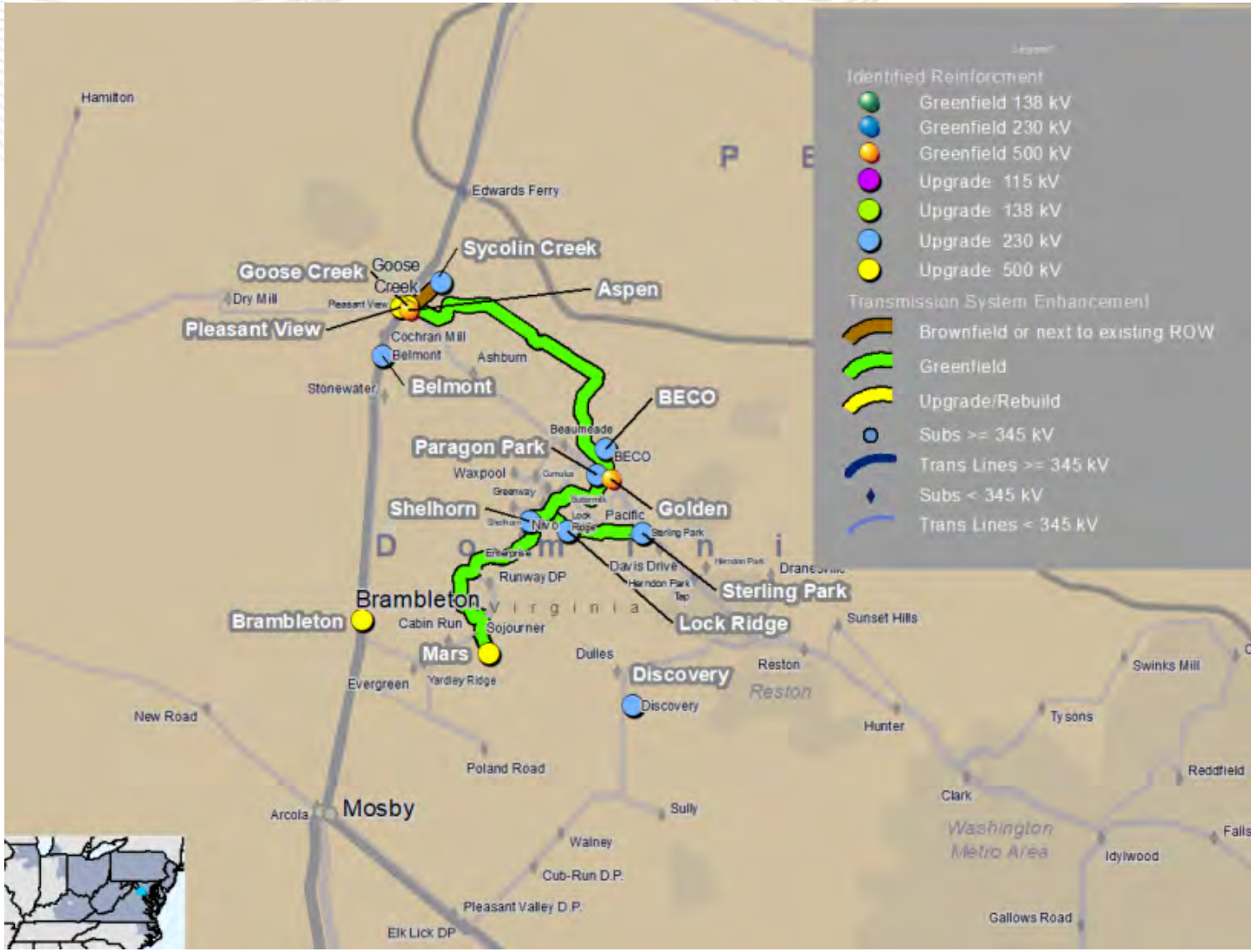
Baseline # B3800.200 – B3800.227

Estimated Cost: $1025.06 M

Required IS Date: 6/1/2027

Projected IS Date: 6/1/2028

Continued on next slide…



NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

2022W3 – Recommended Solutions: Northern Virginia/Doubs Cluster

Recommended Solution: Additional upgrades **(Dominion)**

- Reconductor 1.47 miles of 230kV circuits 2081 and 2150 from Sterling Park to Golden substation
- Reconductor 0.67 miles of 230kV circuits 2194 and 9231 from Davis Drive to Sterling Park substation

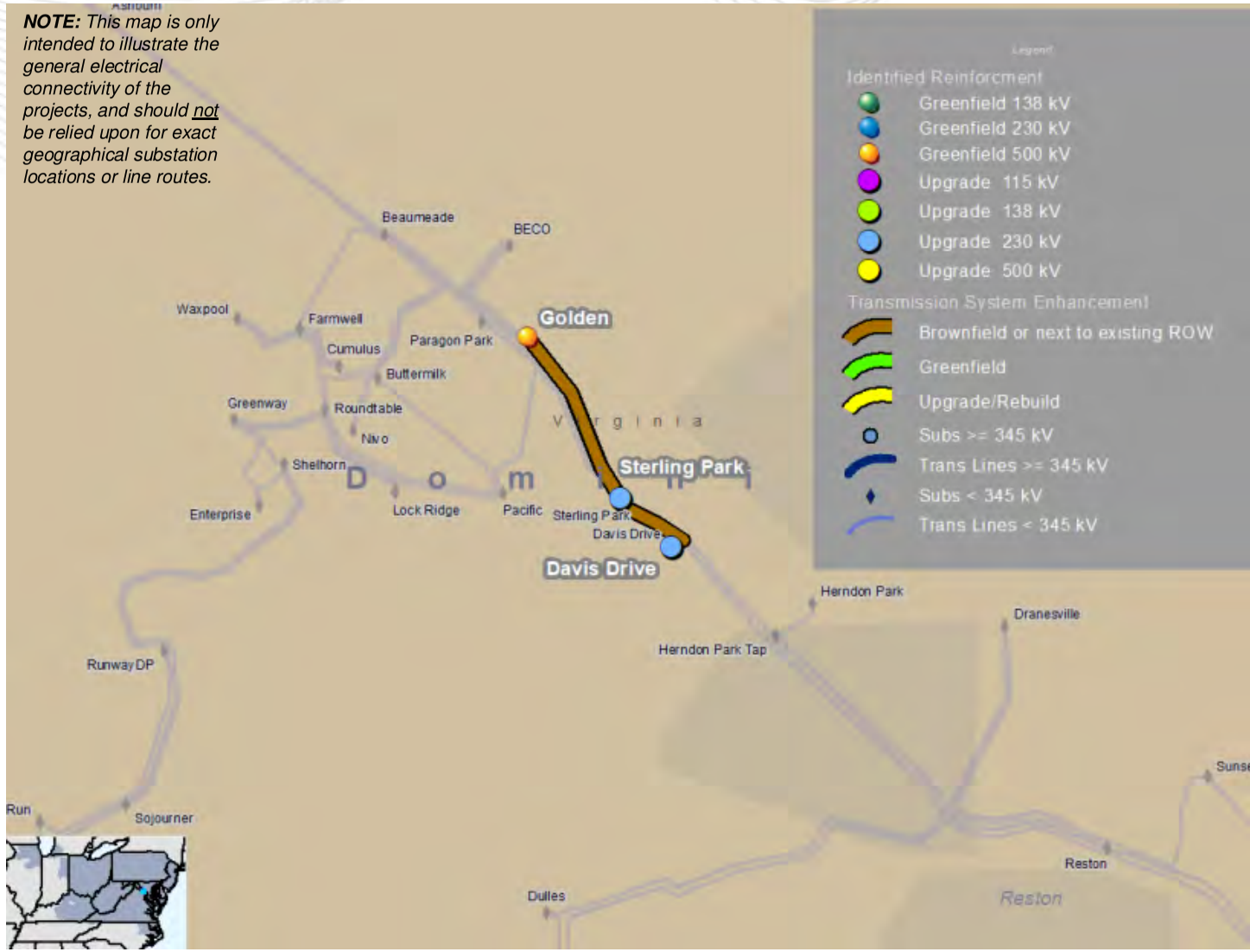
Existing Facility Ratings:

Branch	SN/SE/WN/WE (MVA)
230kV Line #2150 Golden – Sterling A	762/762/849/849
230kV Line #2081 Golden – Sterling B	765/765/852/852
230kV Line #2194 Davis Drive – Sterling A	762/762/849/849
230kV Line #9231 Davis Drive – Sterling B	629/629/721/721

Preliminary Facility Ratings:

Branch	SN/SE/WN/WE (MVA)
230kV Line #2150 Golden – Sterling A	1573/1573/1648/1648
230kV Line #2081 Golden – Sterling B	1573/1573/1648/1648
230kV Line #2194 Davis Drive – Sterling A	1573/1573/1648/1648
230kV Line #9231 Davis Drive – Sterling B	1573/1573/1648/1648

Baseline # B3800.228 – B3800.229
Estimated Cost: $13.50 M
Required IS Date: 6/1/2027
Projected IS Date: 6/1/2028



I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: Not applicable. The need for the proposed Project is not for a rebuild based on reliability issues. 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: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The approximate lengths of the Proposed and Alternative Routes for the Project are provided below. See Section II.A.9 for an explanation of the Company's route selection process, as well as the Environmental Routing Study referenced therein, and Attachment II.A.1 for an overview map of the Proposed and Alternative Routes for the Project.

Golden-Mars Lines

The approximate lengths of the Proposed and Alternative Routes for the Golden-Mars Lines are as follows:

- Golden-Mars Alternative Route 1: 9.4 miles
- Golden-Mars Alternative Route 2: 9.3 miles
- Golden-Mars Alternative Route 3: 8.3 miles
- Golden-Mars Alternative Route 4: 8.3 miles
- Golden-Mars Alternative Route 5: 9.8 miles

Lockridge 230 kV Loop

The approximate length of the Proposed Route for the Lockridge Loop is 0.6 mile.

Sojourner 230 kV Loop

The approximate length of the Proposed Route for the Sojourner Loop is 1.9 miles.

GOLDEN SUB

LOCKRIDGE SUB

SOJOURNER SUB

MARS SUB

Beaverdam Reservoir
Broadlands
Demott Dr
Ashburn Rd
Waxpool Rd
757 Golf Club
Atlantic Blvd
Claude Moore Park / Recreation And Community Center / Heritage Farm Museum
N Sterling Blvd
W Church Rd
Sterling
Sully Rd
Croson Ln
Moorefield Station ES
Moorefield
Moorefield Station
Belmont Ridge Rd
Brambleton Regional Park and Golf Course
Butler
Ryan Rd
Brambleton
Moran Rd
Glenn Dr
S Sterling Blvd
Relocation Dr
Oak Grove
Crestview Dr
Monroe St
433 ft
343 ft
423 ft
Rock Ridge H
Loudoun Valley Estates
Old Ox Rd
Creighton Rd
Royville
Weather Service Rd
Radial Rd
Herndon Centennial Golf Course
Rock Hill Rd
Alabama Dr
Instrument Rd
Antenna Rd
Autopilot Dr
Radar Rd
Bravo Rd
Charlie Rd
Delta Rd
Echo Rd
McNair
Frying Pan
Arcola
Hutchinson
Tracon Rd
Swanson
28
267

N
W
E
S
0
0.5
1
Miles

Loudoun
Fairfax
Project Location

Existing Substation
Future Substation
Golden-Mars Route 1
Golden-Mars Route 2
Golden-Mars Route 3
Golden-Mars Route 4
Golden-Mars Route 5
Lockridge 230 kV Loop
Sojourner 230 kV Loop
Existing Dominion Transmission Lines

Attachment II.A.1
Proposed and Alternative Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

Attachment II.A.1

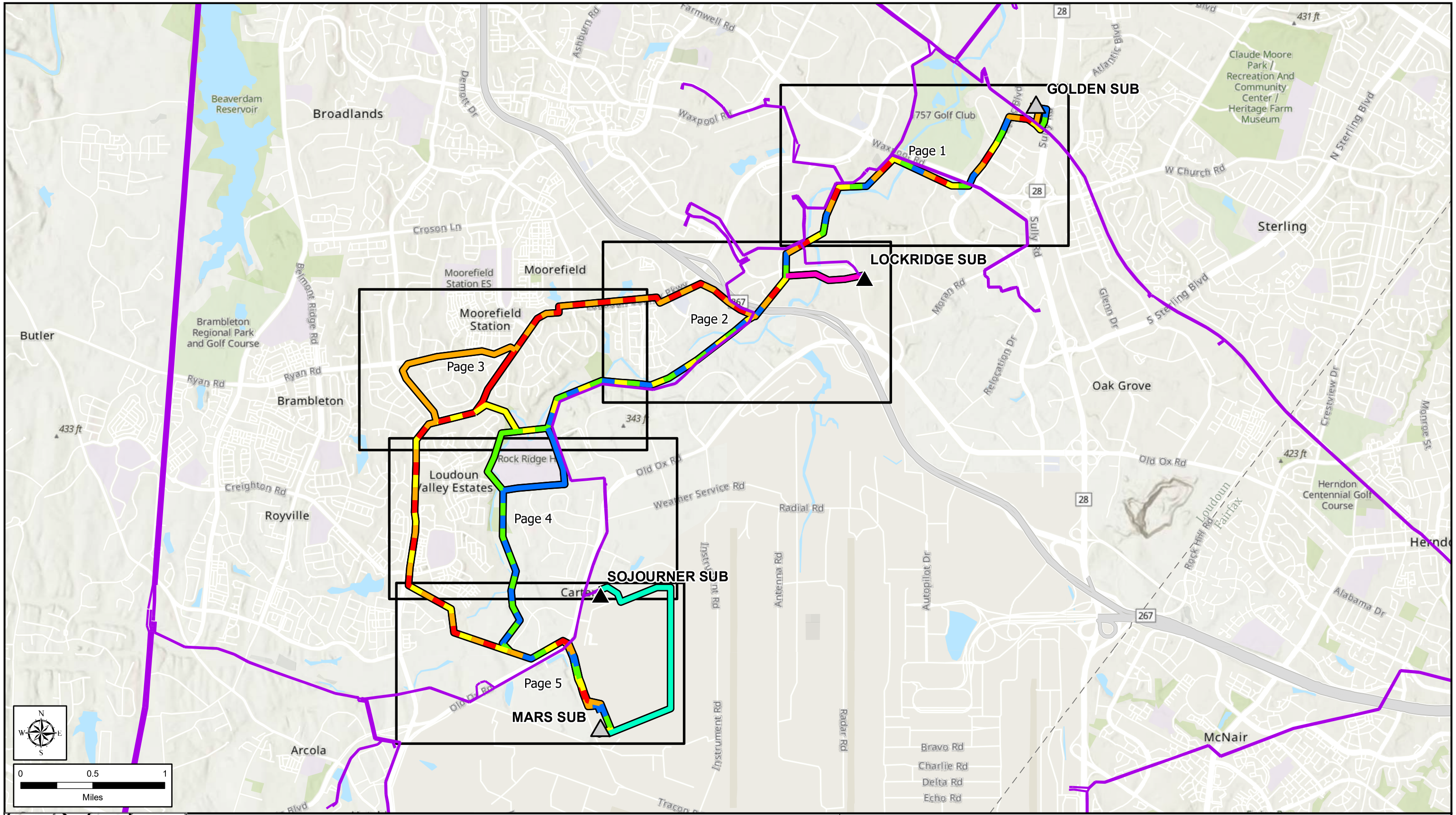
II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

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

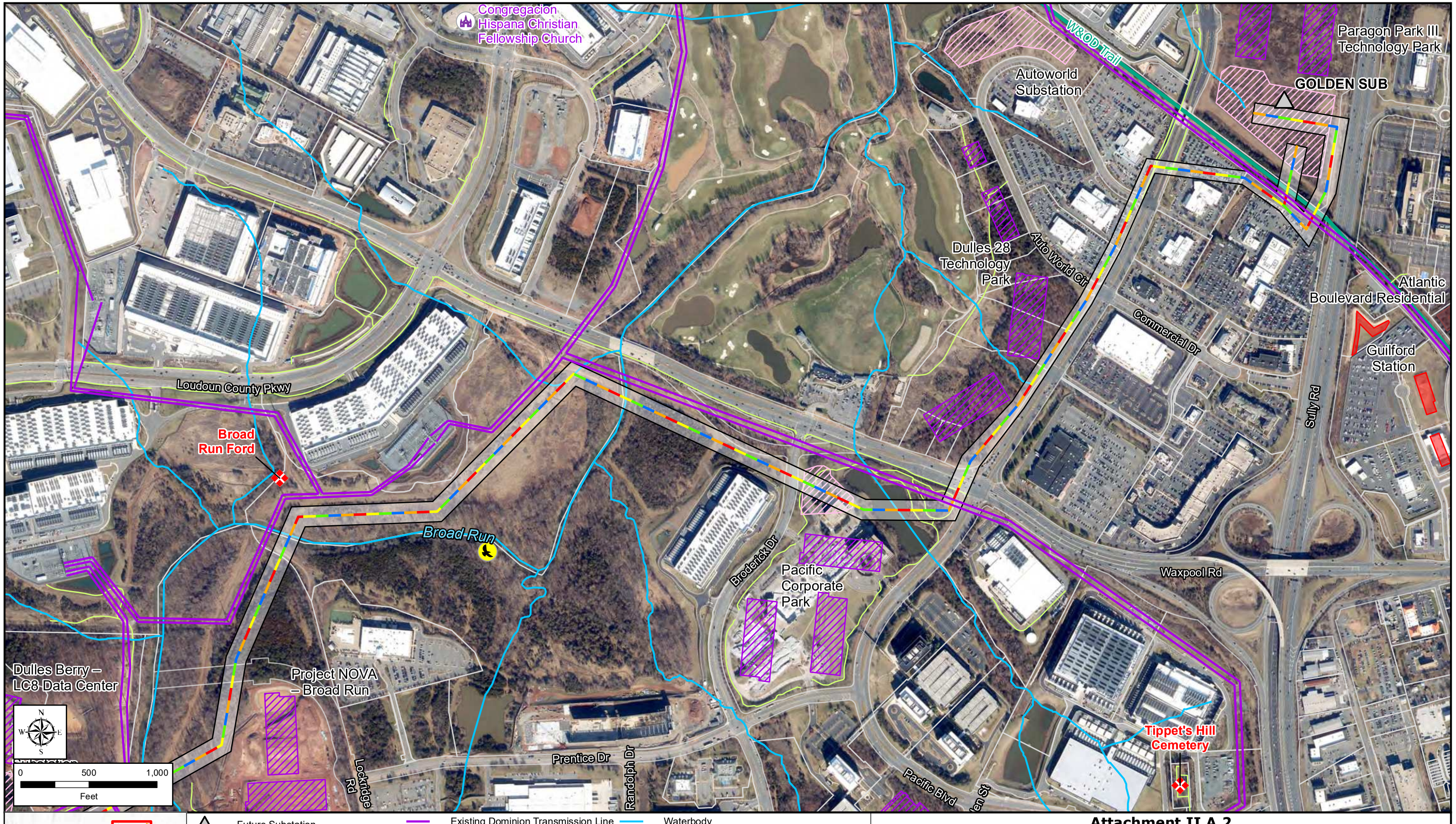


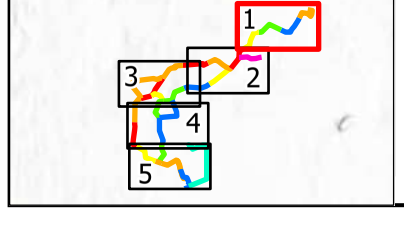
Attachment II.A.2
Project Overview and Constraints
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page Index

ERM

Dominion Energy

Attachment II.A.2



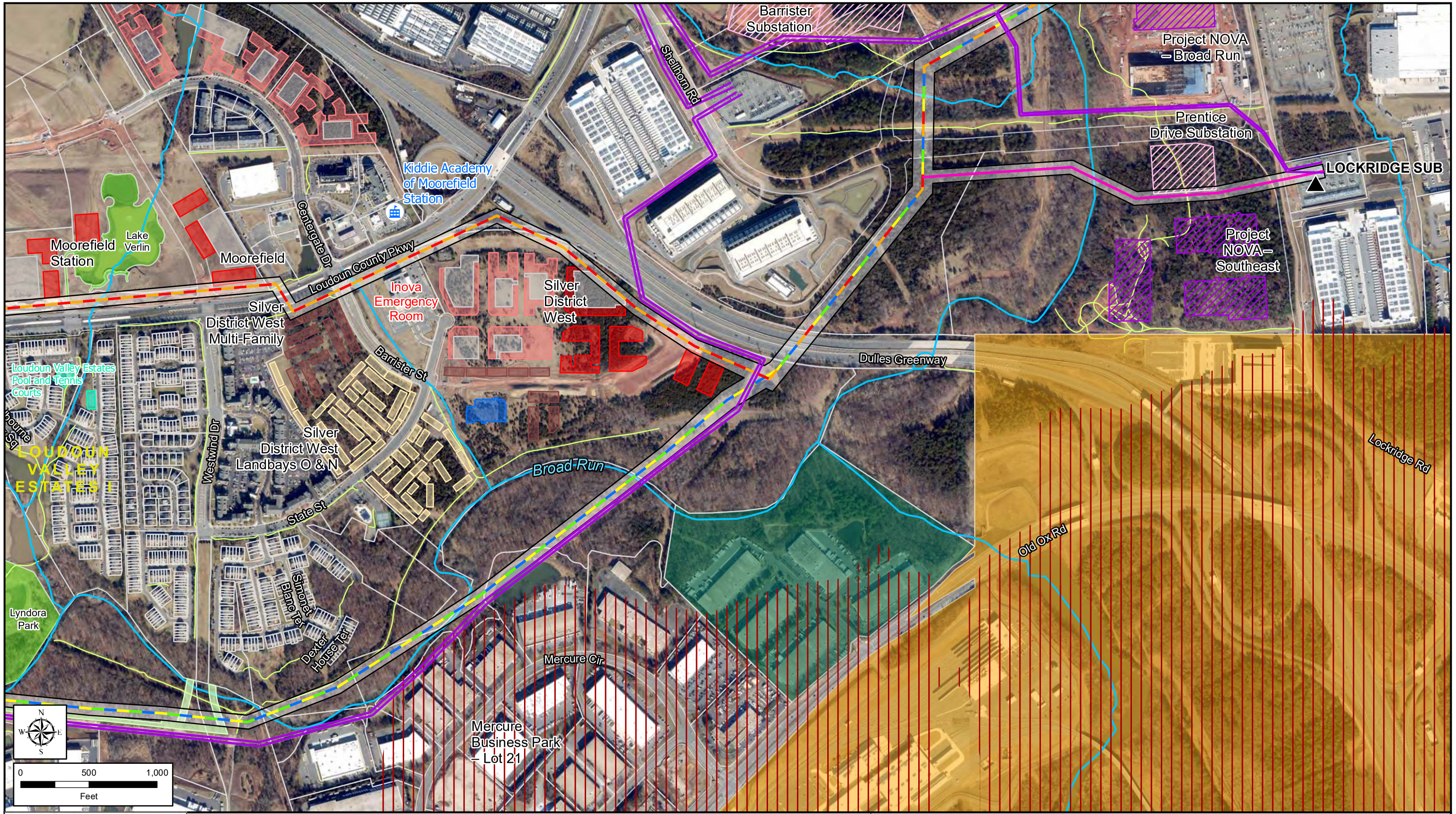


- Future Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Existing Dominion Transmission Line
- Place of Worship
- Cultural/Historic Resource
- Bald Eagle Nest
- Loudoun County Trail
- Waterbody
- W&OD Trail
- Planned Multi Family Dwelling
- Planned Commercial/Office Building
- Planned Data Center
- Planned Substation
- Parcel Boundary

Attachment II.A.2
Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

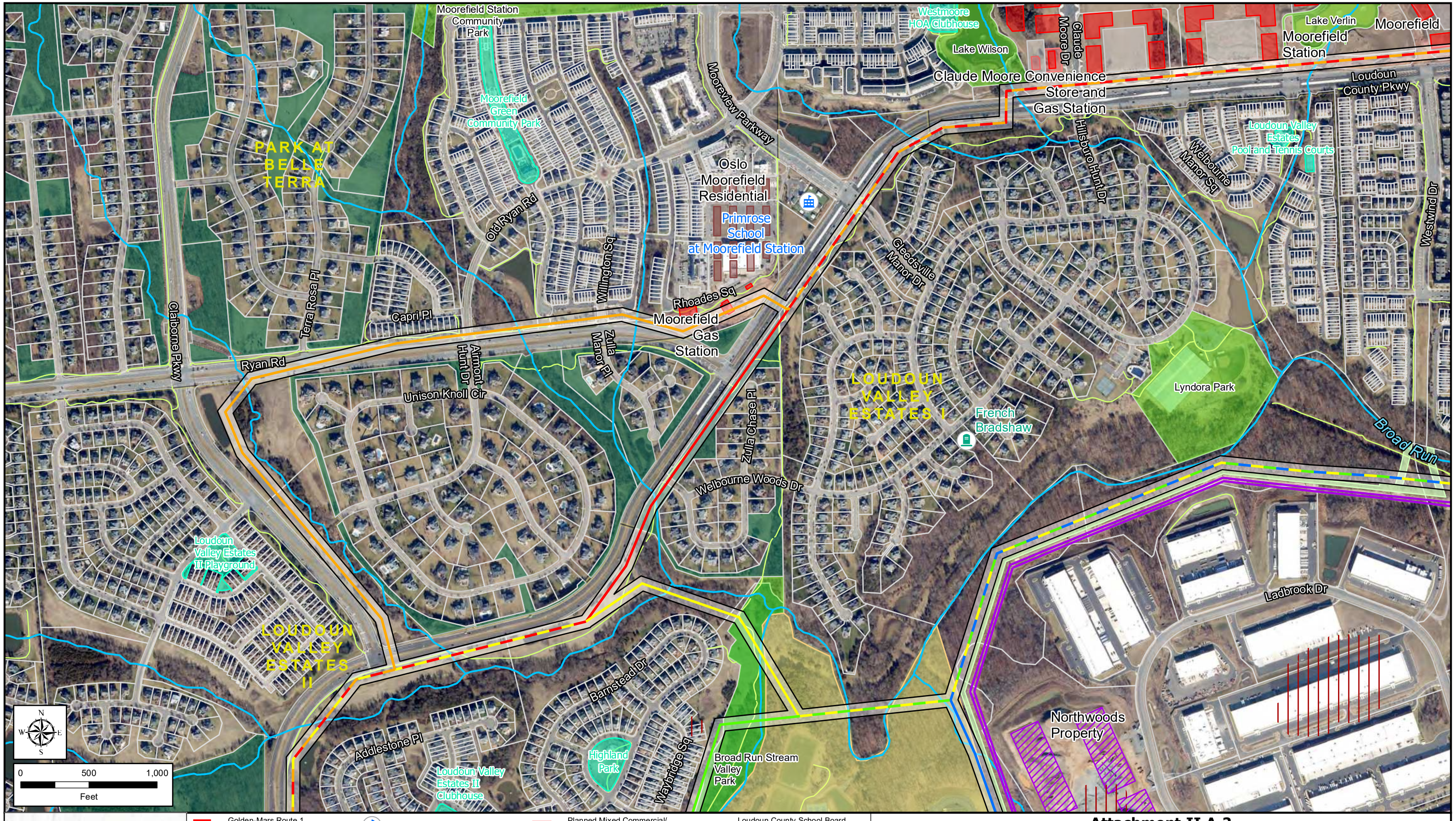
Dominion Energy

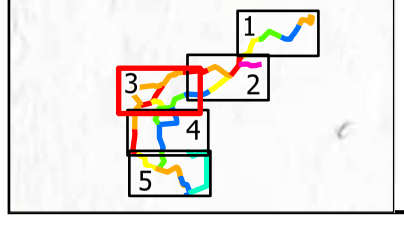


Attachment II.A.2
Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy



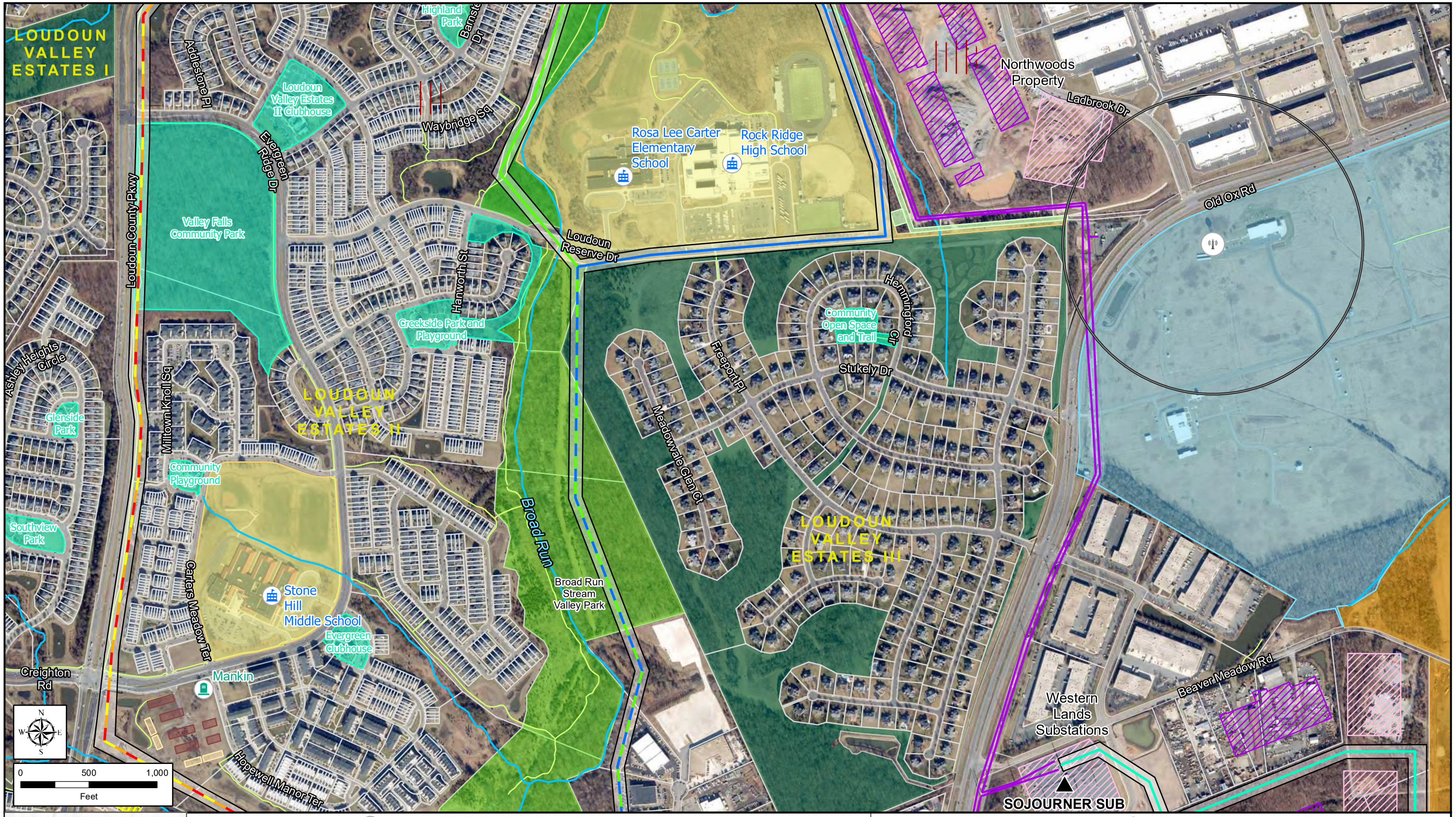


- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Existing Dominion Transmission Line
- School
- Cemetery
- Loudoun County Trail
- Waterbody
- Planned Multi Family Dwelling
- Planned Mixed Commercial/ Residential Building
- Planned Commercial/Office Building
- Planned Data Center
- Planned Parking
- Parcel Boundary
- Loudoun County School Board Property
- BOS Open Space Easement
- HOA Park
- Loudoun County Park
- FAA Max Heights < 150'
- Columbia Gas Easement

Attachment II.A.2
Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 3 of 5

ERM

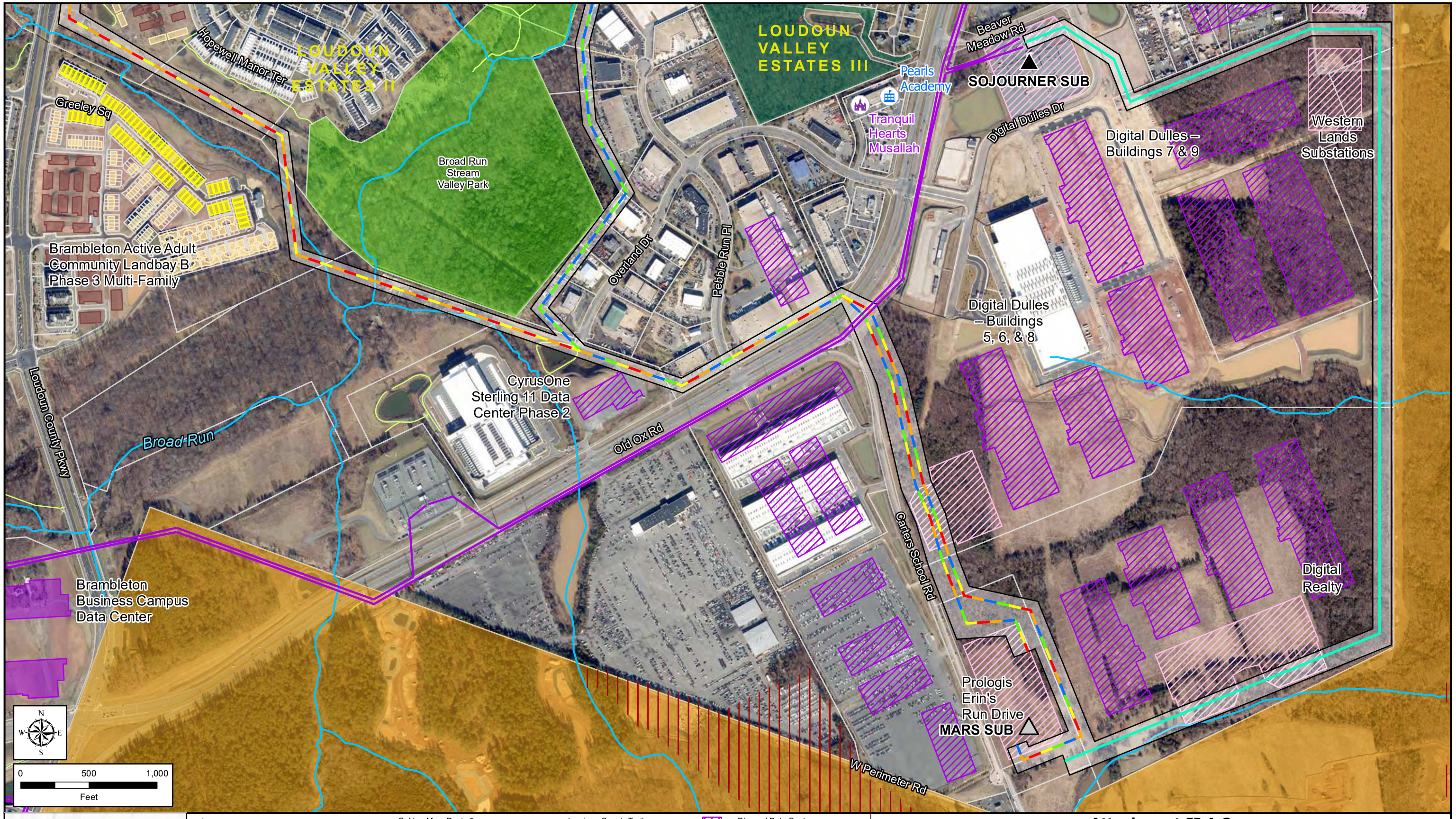
Dominion Energy

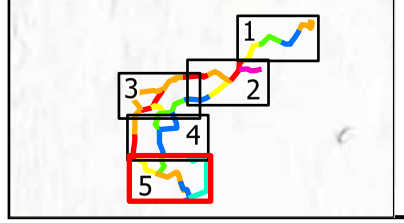


Attachment II.A.2
Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 4 of 5

ERM

Dominion Energy





- Existing Substation
- Future Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Sojourner 230 kV Loop
- Existing Dominion Transmission Line
- School
- Place of Worship
- Loudoun County Trail
- Waterbody
- Planned Single Family Dwelling
- Planned Single Family Attached Dwelling
- Planned Multi Family Dwelling
- Planned Industrial/Manufacturing
- Planned Data Center
- Planned Substation
- Parcel Boundary
- MWAA Property
- BOS Open Space Easement
- Loudoun County Park
- FAA Max Heights < 150'

Attachment II.A.2
Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 5 of 5

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 and Attachment II.B.3.xv for existing and proposed transmission line rights-of-way, respectively.

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: See below as to the ability of existing rights-of-way to adequately serve the needs required by this Project. See also Section II.A.6.

Golden-Mars Lines

Although the Golden-Mars Lines route alternatives parallel existing rights-of-way where practicable, there is no existing electric transmission right-of-way that interconnects the future Golden and Mars Substations that can adequately serve the needs of the proposed Project.

As a result, the Golden-Mars Lines require new right-of-way primarily varying between 100 and 150 feet in width.[42]

Lockridge 230 kV Loop

Although the Lockridge Loop is partially collocated with an existing Company easement for 500 feet, the easement is to be used for a future substation. Accordingly, there is no existing 100-foot-wide right-of-way that serves the proposed Lockridge Loop from the cut-in location on the proposed Golden-Mars Lines.

Sojourner 230 kV Loop

See Section I.A. The existing Lines #2095/#2292 corridor is not adequate to accommodate all of the existing and proposed lines and there is no other existing right-of-way that interconnects the future Mars and existing Sojourner Substations and also allows for the interconnection of future load and DPs, as discussed in Sections I.A and I.B. As a result, it will require new 100-foot-wide right-of-way for the entirety of the route.[43]

[42] *See also, supra* n. 5 and n. 7.

[43] *See also, supra* n. 13.

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 the following for right-of-way cross sections showing typical transmission line structure placements for the Project as proposed. For additional information on the structures, see Section II.B.3.

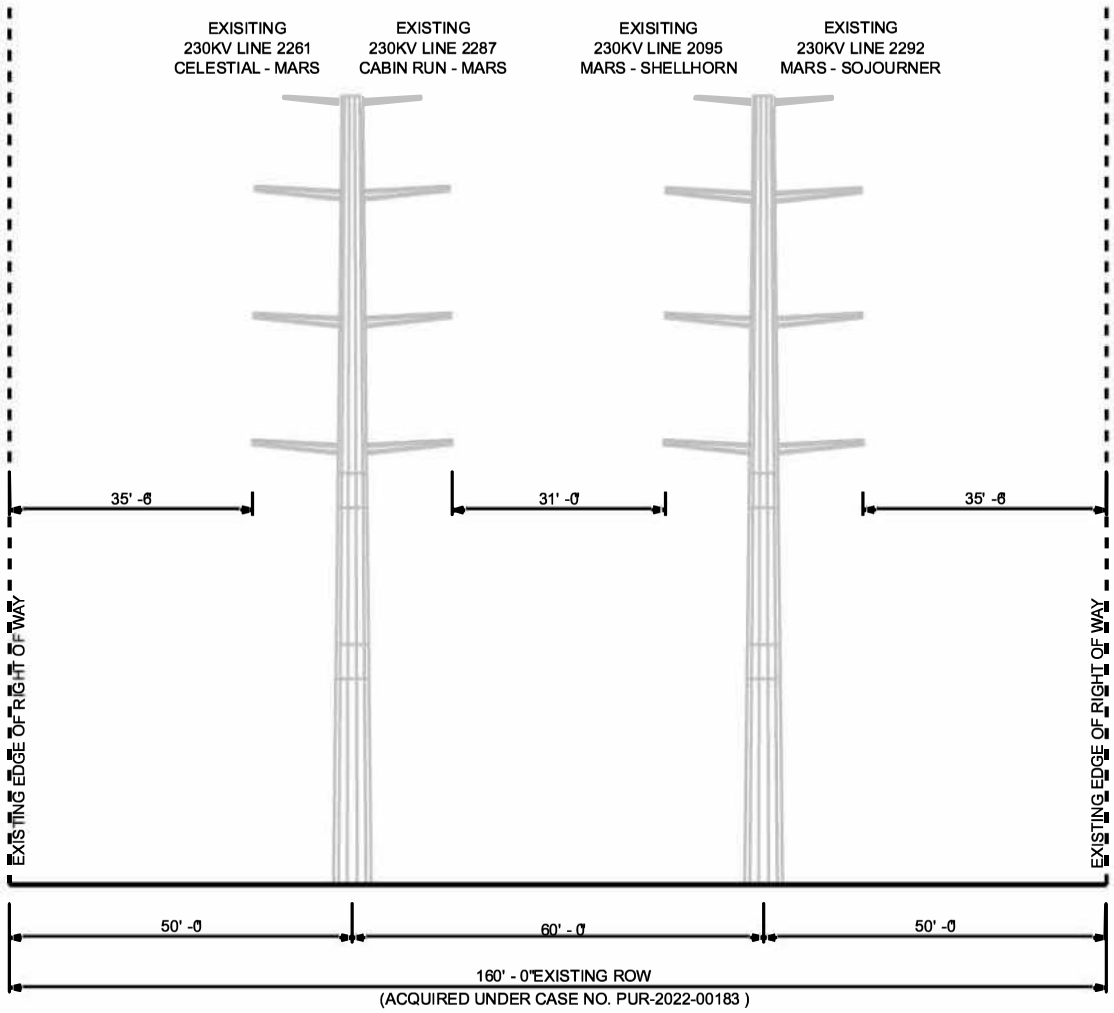
Golden-Mars Lines: See Attachments II.A.5.a-f.[44]

Sojourner 230 kV Loop: See Attachments II.A.5.g-i.[45]

Lockridge 230 kV Loop: See Attachment II.A.5.j.

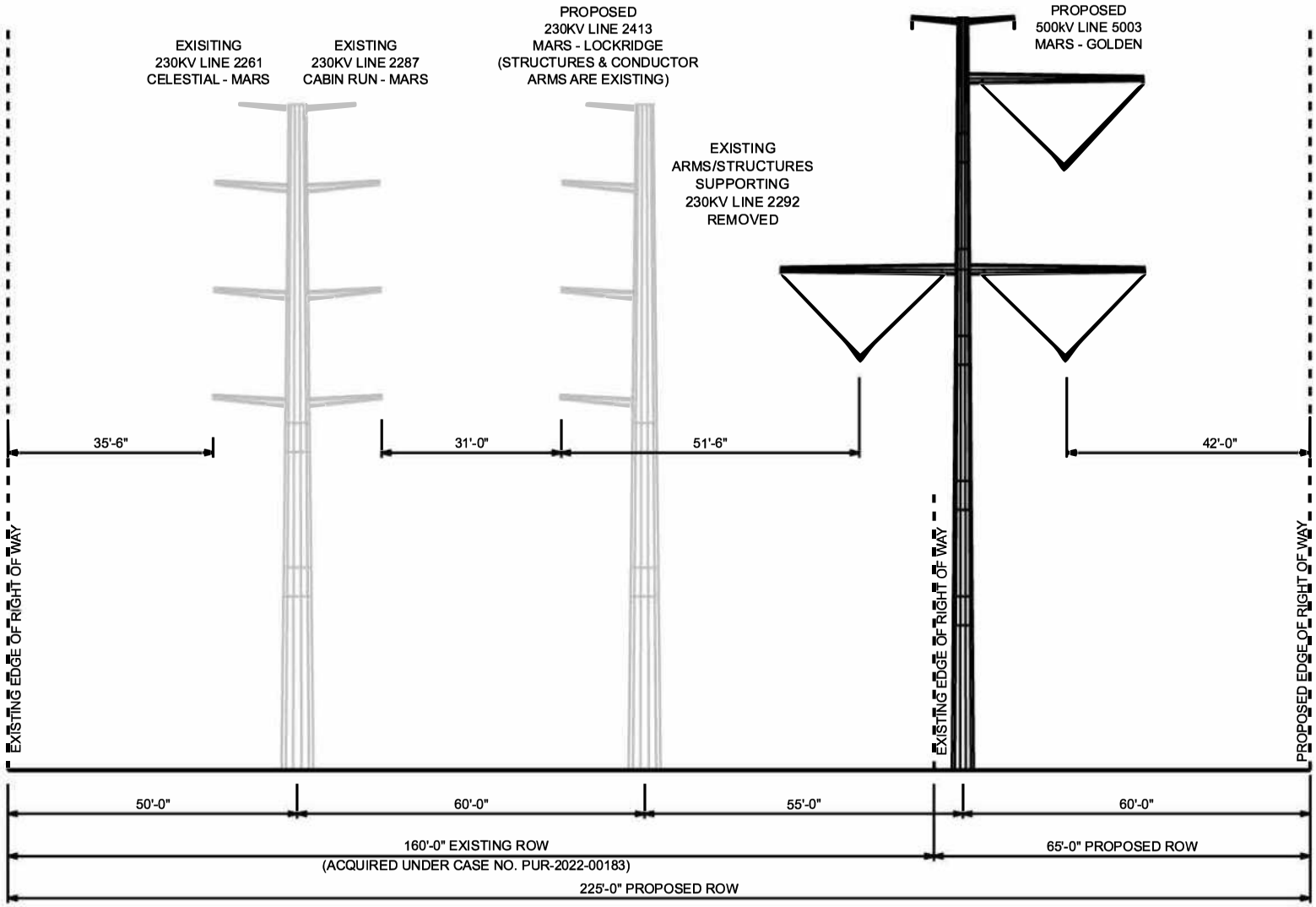
[44] Ultimately, if the Company is able to overlap the 30-foot-wide Columbia Gas easement along the eastern side of Golden-Mars Route 3, the Golden-Mars Lines right-of-way would be reduced to 70-feet-wide and the Golden-Mars Lines would directly abut the existing Lines #2095/#2218 corridor, which would impact the cross-section drawing in Attachment II.A.5.c as well as the corresponding calculations presented in Section IV.A. *See supra*, n. 5; *see also* Attachment II.A.6.

[45] Note that Attachment II.A.5.g and Attachment II.A.5.h represent the sections of the Sojourner Loop Proposed Route where the Company is seeking to voluntarily obtain an additional 60 feet and 35 feet of right-of-way, respectively. For purposes of the corresponding calculations presented in Section IV.A, the Company utilized only the proposed configuration of structures within the right-of-way.



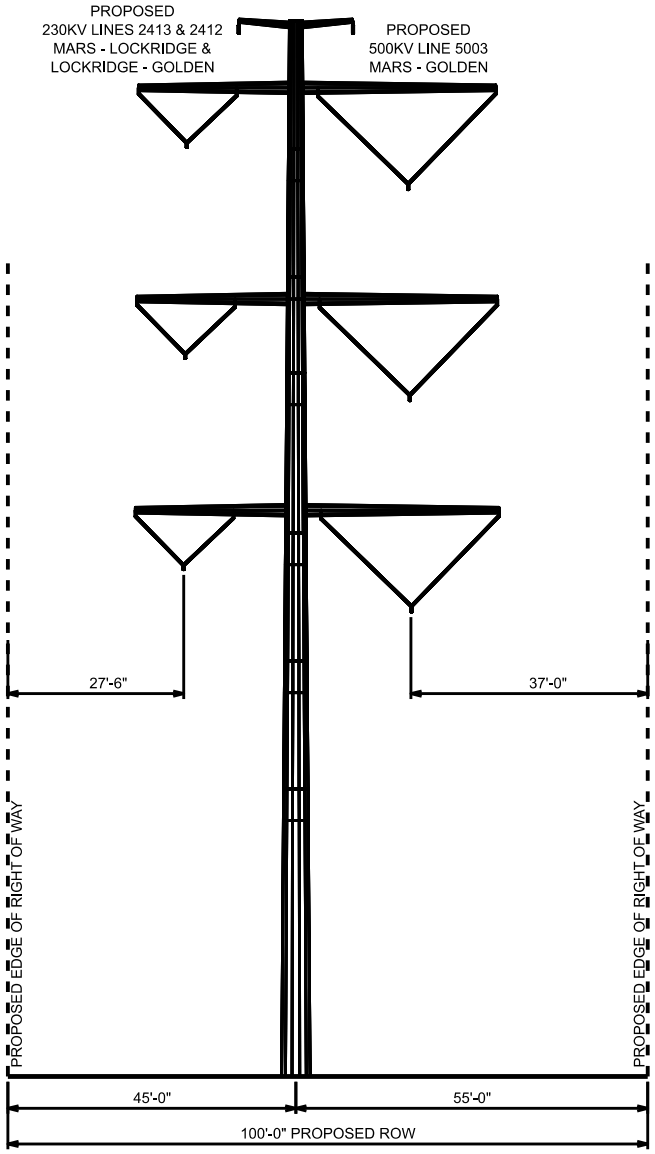
EXISTING ROW CONFIGURATION - CARTERS SCHOOL ROAD SEGMENT

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 5003/5 - 5003/10 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB	II.A.5.a DRAWN BY | TMR



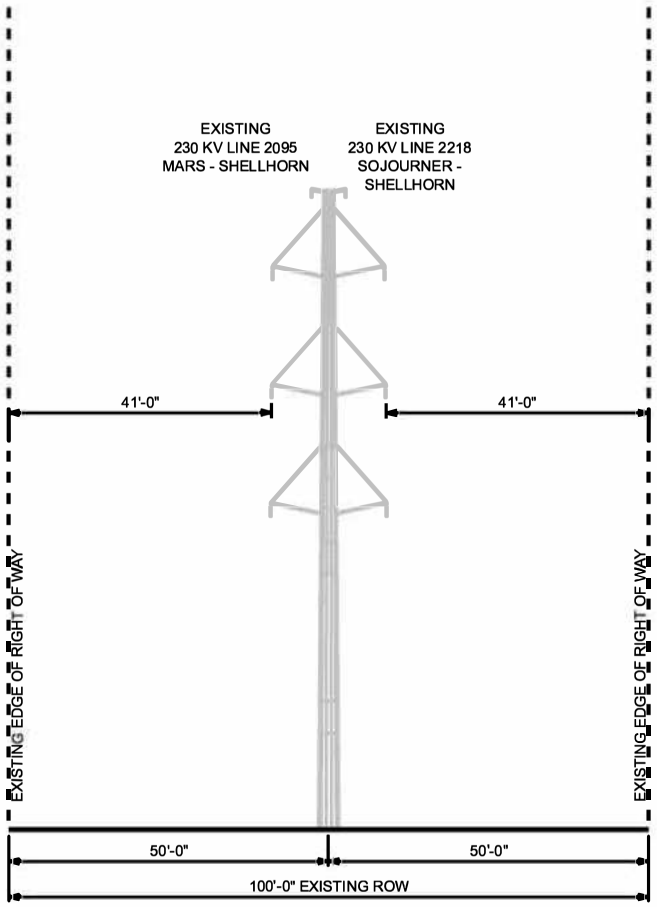
PROPOSED ROW CONFIGURATION - CARTERS SCHOOL ROAD SEGMENT

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 5003/5 - 5003/10 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB	II.A.5.b DRAWN BY: TMR



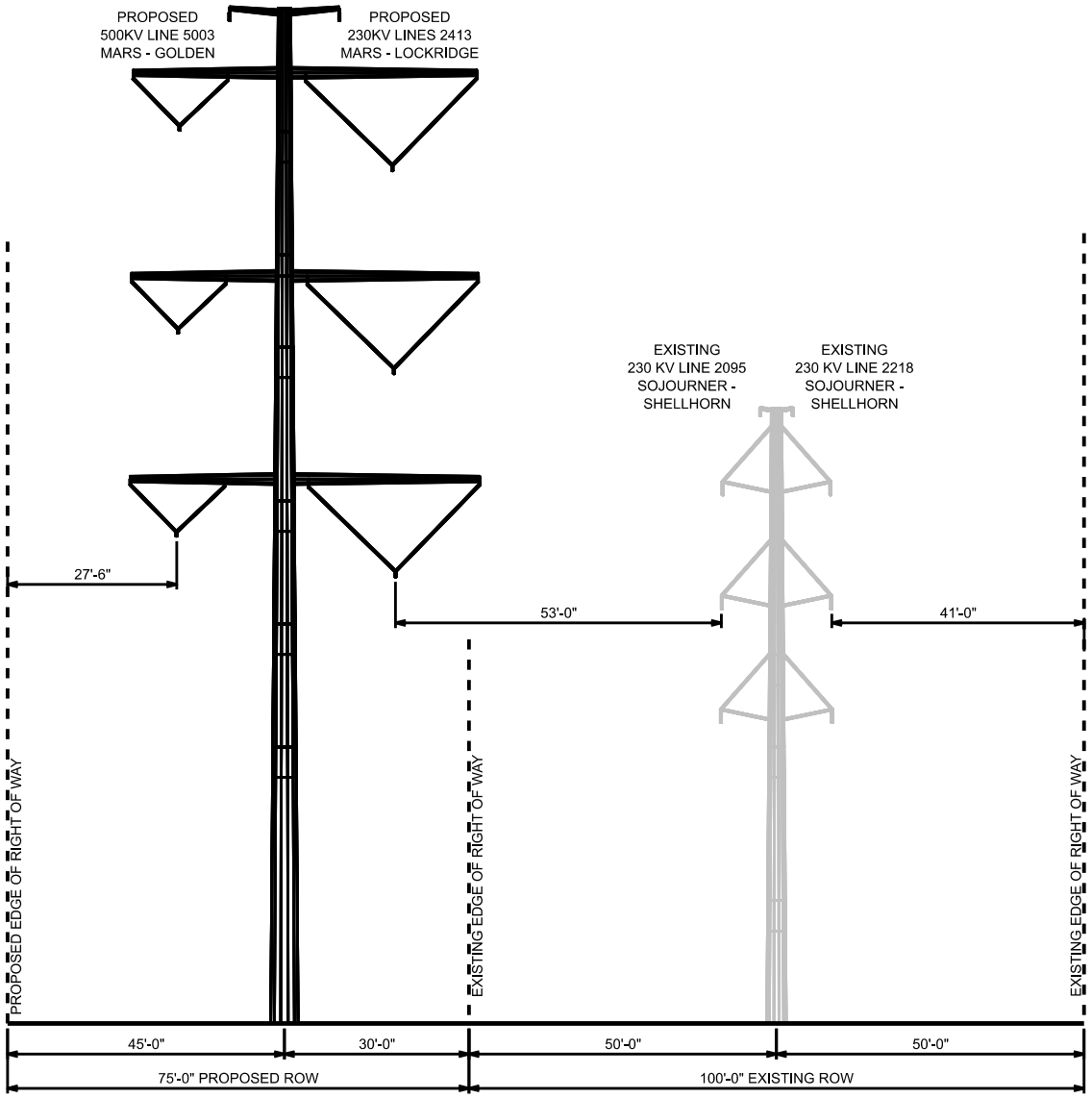
PROPOSED ROW CONFIGURATION - GOLDEN TO MARS LINES

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 5003/11 - 5003/42 AND 5003/64 - 5003/69 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB	II.A.5.c DRAWN BY: TMR



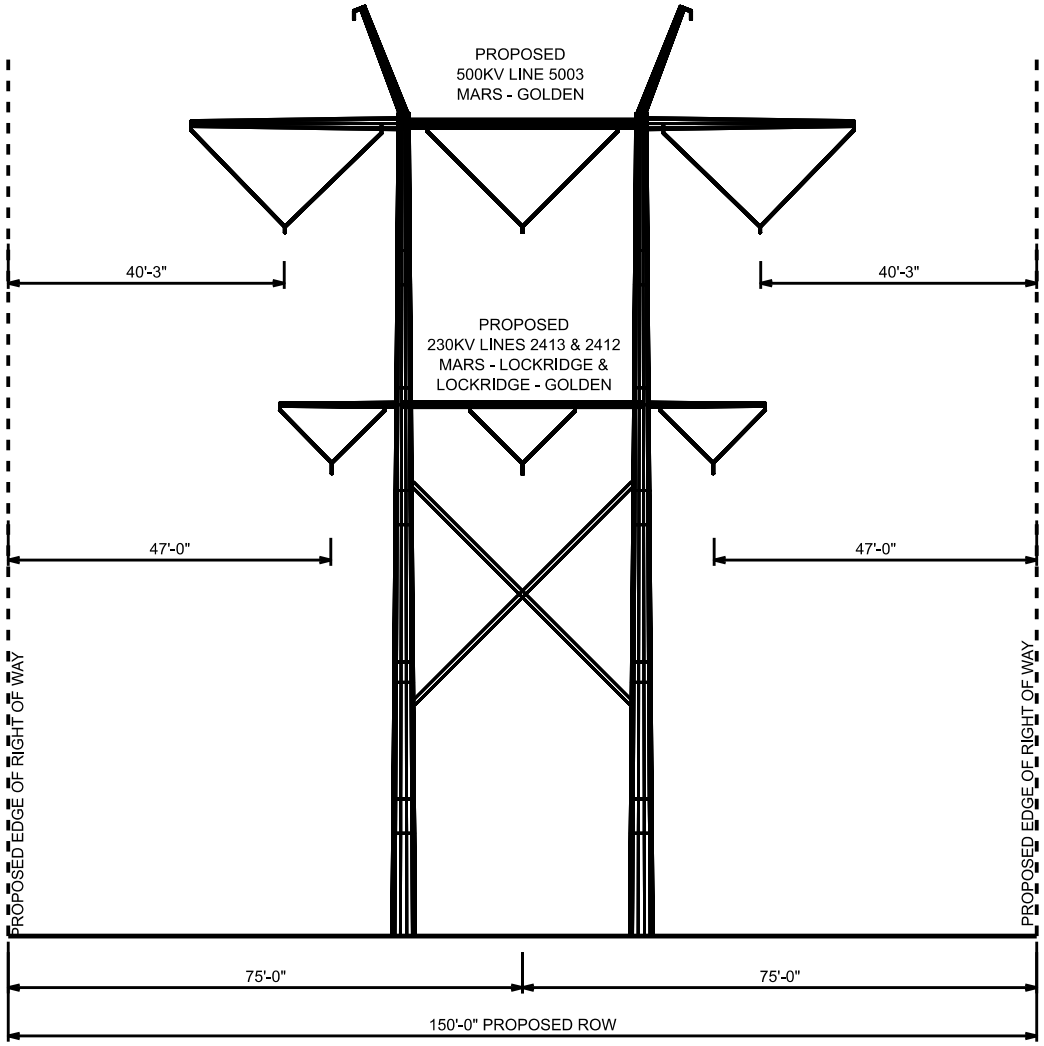
EXISTING ROW CONFIGURATION - GOLDEN TO MARS LINES

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 5003/43 - 5003/46 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB	II.A.5.d DRAWN BY: TMR



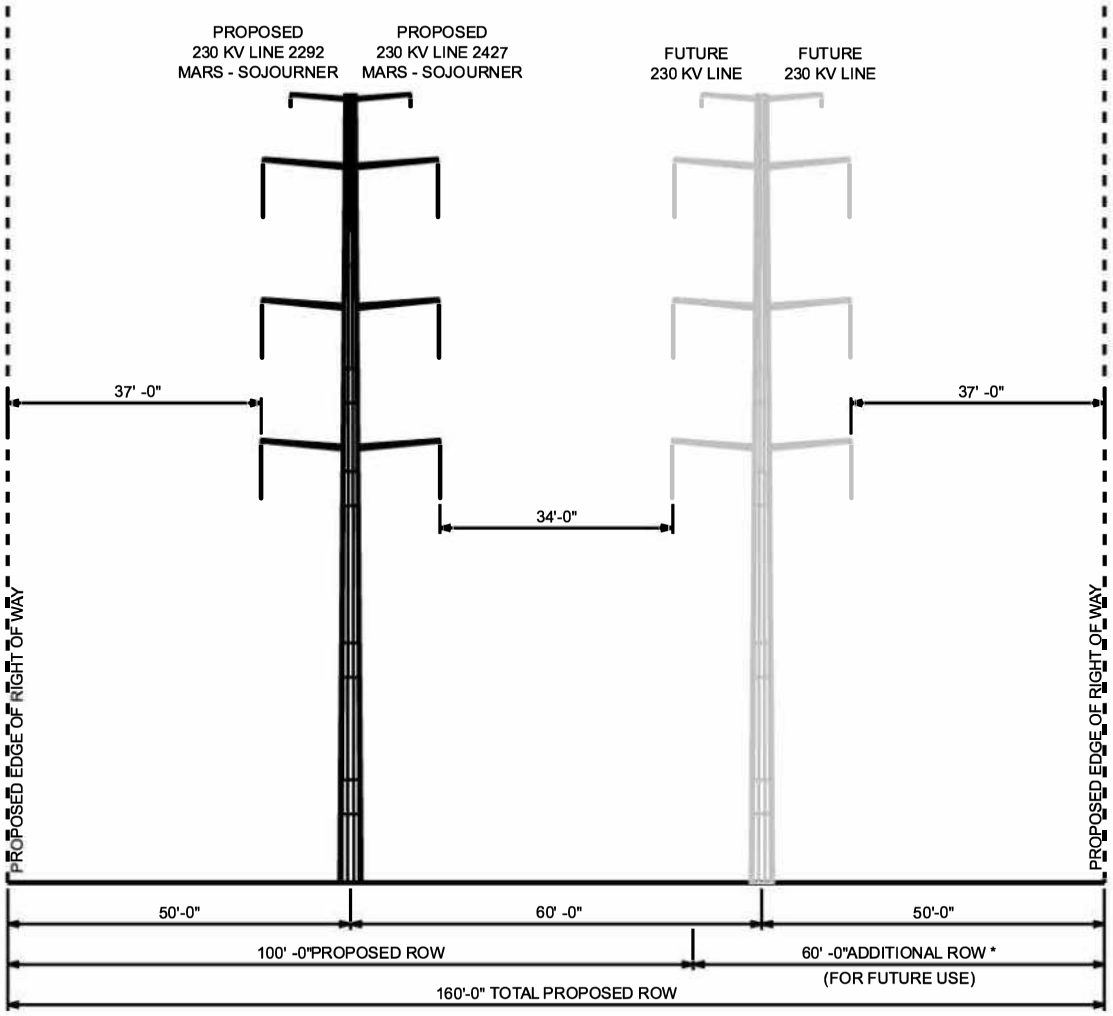
PROPOSED ROW CONFIGURATION - GOLDEN TO MARS LINES

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 5003/43 - 5003/46 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB	II.A.5.e DRAWN BY: TMR



PROPOSED ROW CONFIGURATION - GOLDEN TO MARS LINES

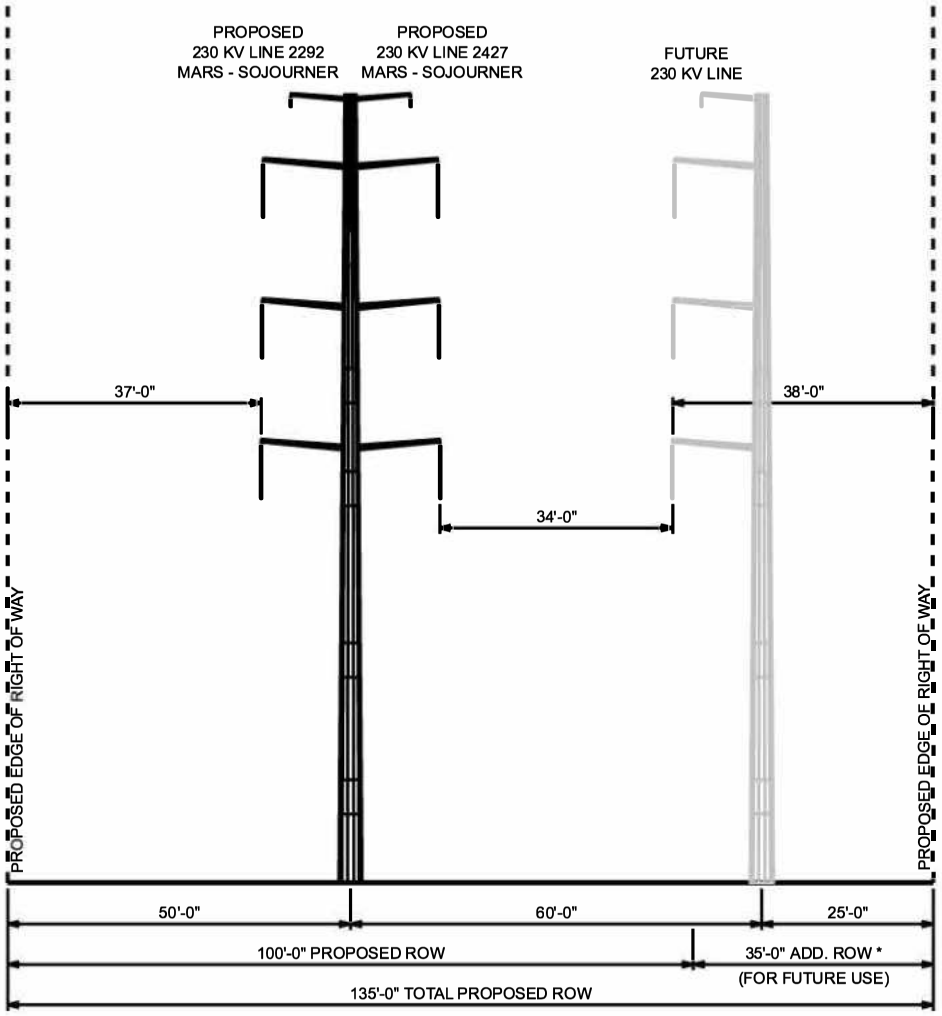
DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 5003/2 - 5003/4 AND 5003/47 - 5003/63 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB	II.A.5.f DRAWN BY: TMR



* THE COMPANY IS SEEKING TO VOLUNTARILY OBTAIN THIS ADDITIONAL WIDTH

PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP

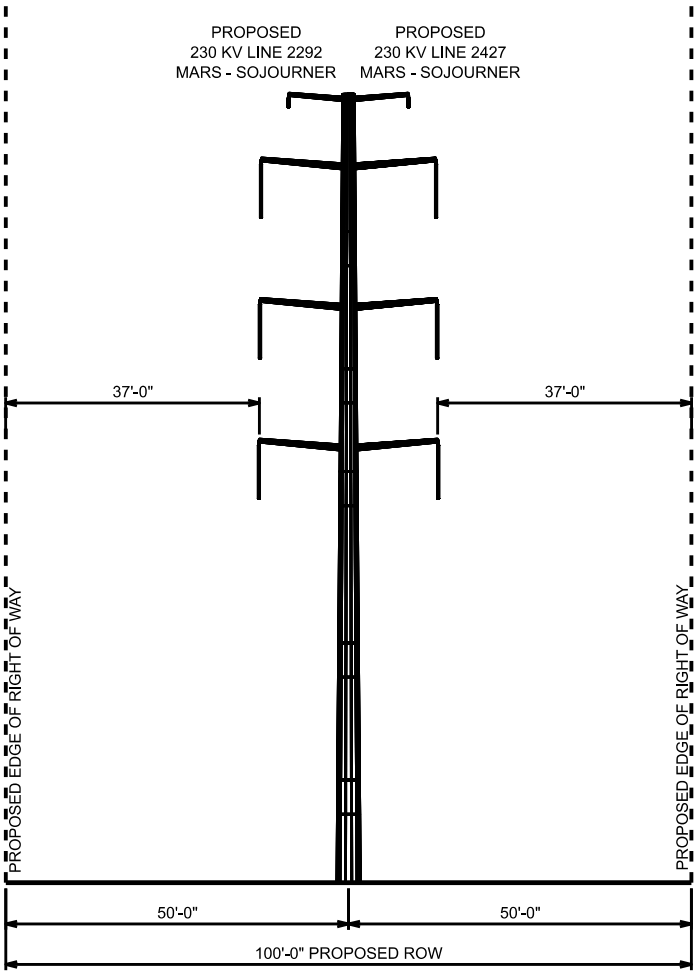
DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 2292/5 (2427/2) - 2292/10 (2427/7) TYPICAL RIGHT OF WAY LOOKING TOWARDS SOJOURNER SUB	II.A.5.g DRAWN BY: TMR



* THE COMPANY IS SEEKING TO VOLUNTARILY OBTAIN THIS ADDITIONAL WIDTH

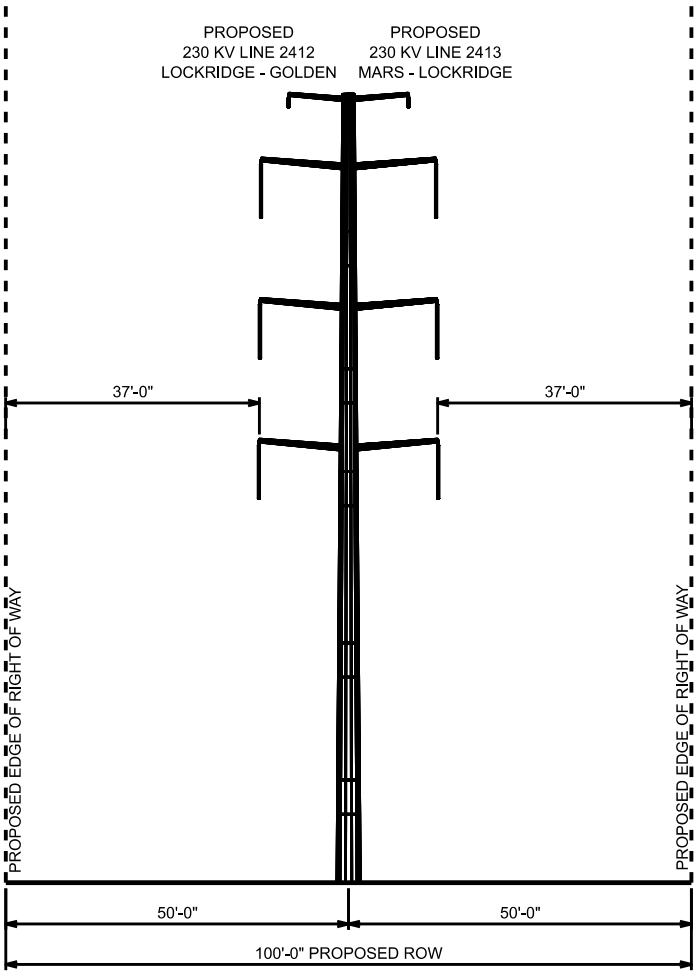
PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 2292/10 (2427/7) - 2292/17 (2427/14) TYPICAL RIGHT OF WAY LOOKING TOWARDS SOJOURNER SUB	II.A.5.h DRAWN BY: TMR



PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 2292/17 (2427/14) - 2292/22 (2427/19) TYPICAL RIGHT OF WAY LOOKING TOWARDS SOJOURNER SUB	II.A.5.i DRAWN BY: TMR



PROPOSED ROW CONFIGURATION - LOCKRIDGE 230KV LOOP

DISCLAIMER		DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060	STR. 2413/49 (2412/7) - 2413/54 (2412/2) TYPICAL RIGHT OF WAY LOOKING TOWARDS LOCKRIDGE SUB	II.A.5.j DRAWN BY: TMR

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: See Attachment II.A.6 and the discussion below.

Golden-Mars Lines

As discussed in Section II.A.4, minimal existing right-of-way exists that serves the proposed Golden-Mars Lines. The majority of the Golden-Mars Lines require new right-of-way primarily varying 100- to 150-feet-wide, with limited ability to collocate with existing transmission corridors.[46] Therefore, the vast majority of the right-of-way of the Golden-Mars Lines will require easements for a new-build transmission line, except where the route collocates with the existing Company rights-of-way.

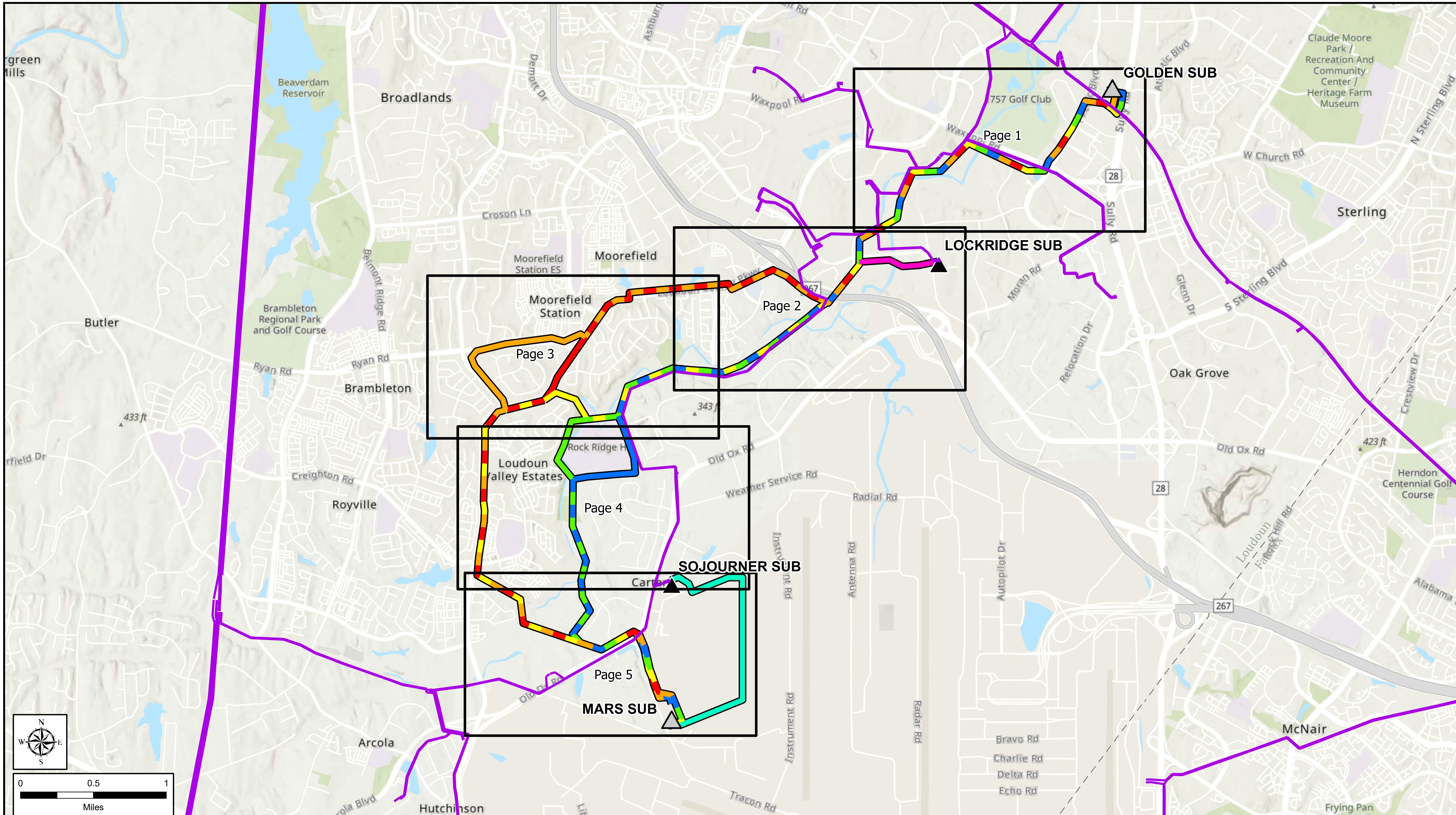
Lockridge 230 kV Loop

As discussed in Section II.A.4, there is no existing 100-foot-wide right-of-way that serves the proposed Lockridge Loop from the cut-in location at Structure #2412/8 on the proposed 230 kV Golden-Mars Line aside from a short segment that overlaps a Company-held easement to be used for a future substation. Therefore, the majority of the right-of-way of the Lockridge 230 kV Loop Proposed Route will require easements for new-build transmission lines.

Sojourner 230 kV Loop

See Section II.A.4. As there is no other existing 100-foot-wide right-of-way that interconnects the future Mars Substation and existing Sojourner Substation and allows for the interconnection of future load, the entire right-of-way of the Sojourner 230 kV Loop Proposed Route will require easements for new-build transmission lines.

[46] *See supra*, n. 5 and n. 7.

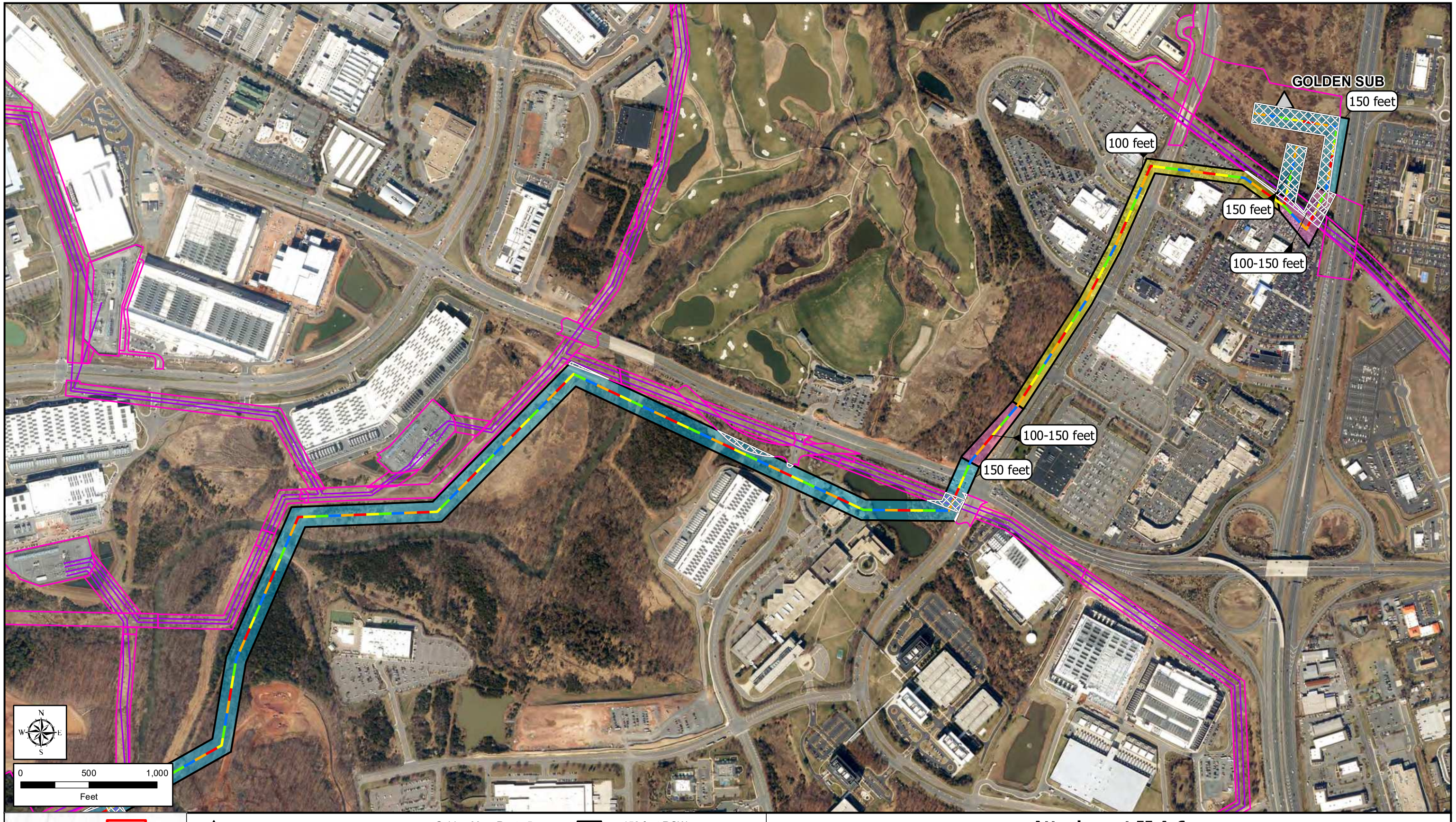

GOLDEN SUB
LOCKRIDGE SUB
SOJOURNER SUB
MARS SUB
Page 1
Page 2
Page 3
Page 4
Page 5
Broadlands
Moorefield
Moorefield Station
Moorefield Station ES
Brambleton
Brambleton Regional Park and Golf Course
Beaverdam Reservoir
Butler
Royville
Loudoun Valley Estates
Arcola
Hutchinson
Sterling
Oak Grove
McNair
Claude Moore Park / Recreation And Community Center / Heritage Farm Museum
Herndon Centennial Golf Course
Frying Pan Stream Valley
757 Golf Club
Waxpool Rd
Croson Ln
Demott Dr
Belmont Ridge Rd
Ryan Rd
Creighton Rd
Old Ox Rd
Weather Service Rd
Radial Rd
Instrument Rd
Antenna Rd
Autopilot Dr
Radar Rd
Bravo Rd
Charlie Rd
Delta Rd
Echo Rd
Tracon Rd
Moran Rd
Relocation Dr
Glenn Dr
S Sterling Blvd
N Sterling Blvd
W Church Rd
Crestview Dr
Alabama Dr
Sully Rd
Loudoun County Pkwy
Rock Ridge H
433 ft
343 ft
423 ft
28
267
0
0.5
1
Miles
N
S
E
W
Loudoun
Fairfax
Project Location

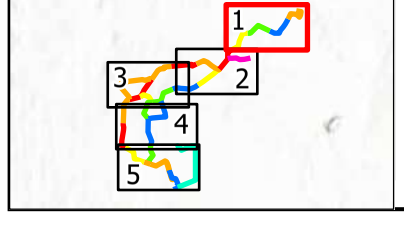
Existing Substation
Future Substation
Golden-Mars Route 1
Golden-Mars Route 2
Golden-Mars Route 3
Golden-Mars Route 4
Golden-Mars Route 5
Lockridge 230 kV Loop
Sojourner 230 kV Loop
Existing Dominion Transmission Lines
Page Index

ERM

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page Index

Dominion Energy

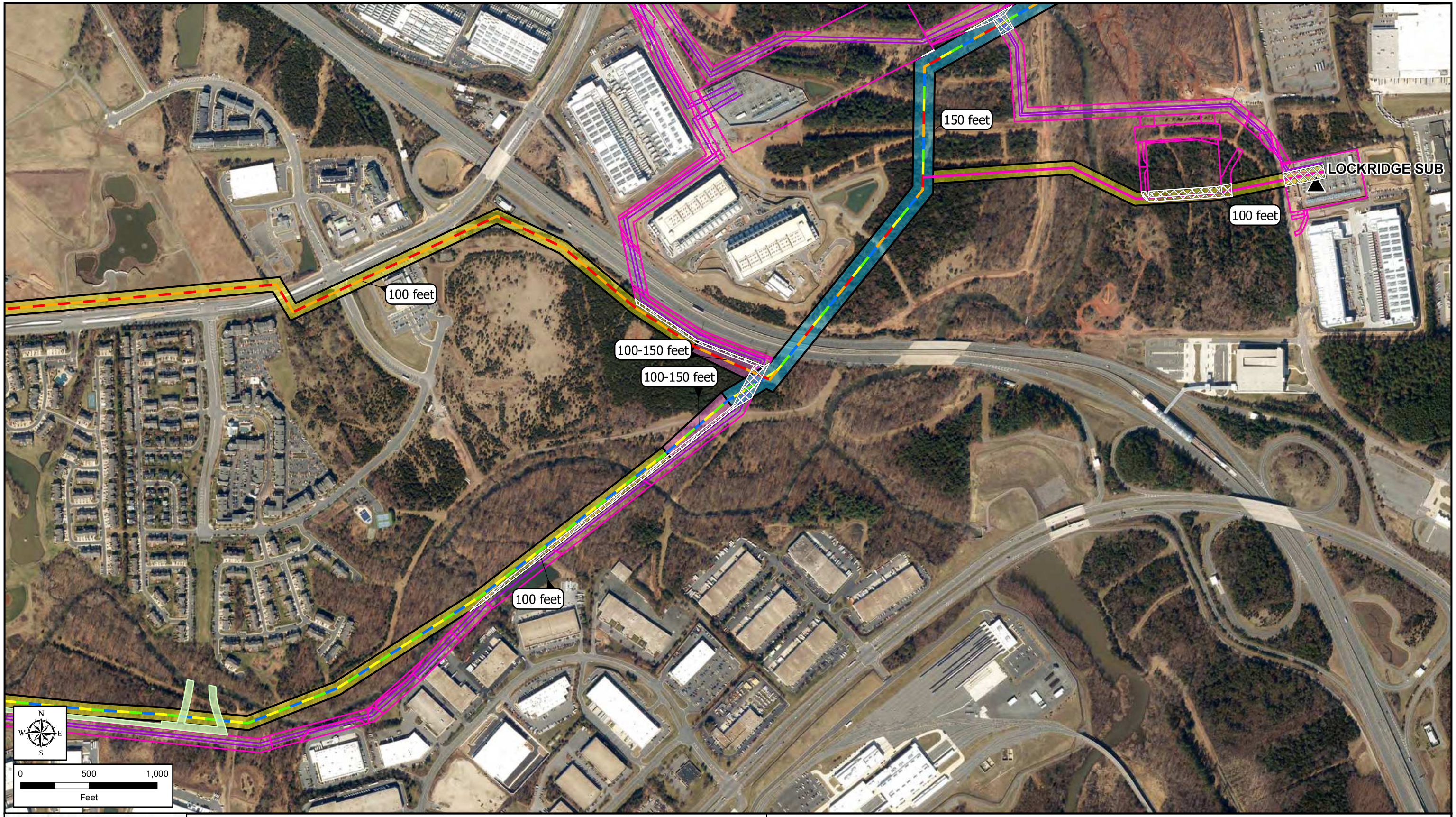


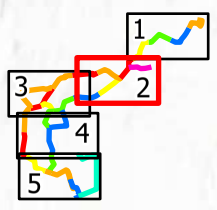


Future Substation
Golden-Mars Route 1
Golden-Mars Route 2
Golden-Mars Route 3
Golden-Mars Route 4
Golden-Mars Route 5
Existing Dominion Transmission Lines
Existing Dominion Transmission ROW
100 foot ROW
150 foot ROW
Variable Width ROW
Crossing or Collocation with Existing Company-owned Right-of-Way/Easement

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy



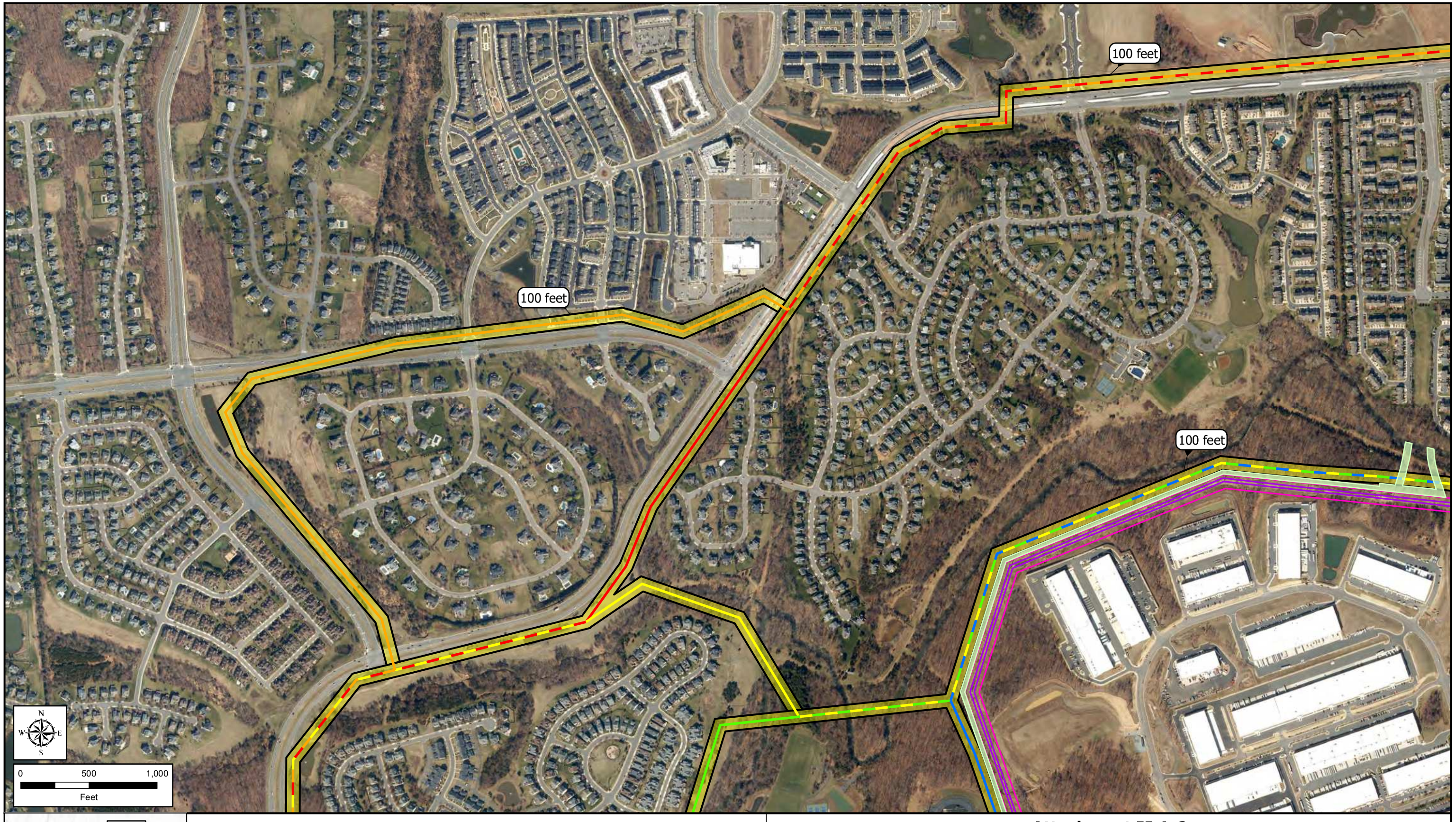


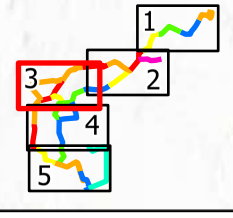
- Existing Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Lockridge 230 kV Loop
- Existing Dominion Transmission Lines
- Existing Dominion Transmission ROW
- 100 foot ROW
- 150 foot ROW
- Variable Width ROW
- Columbia Gas Easement
- Crossing or Collocation with Existing Company-owned Right-of-Way/Easement

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 2 of 5

ERM

Dominion Energy



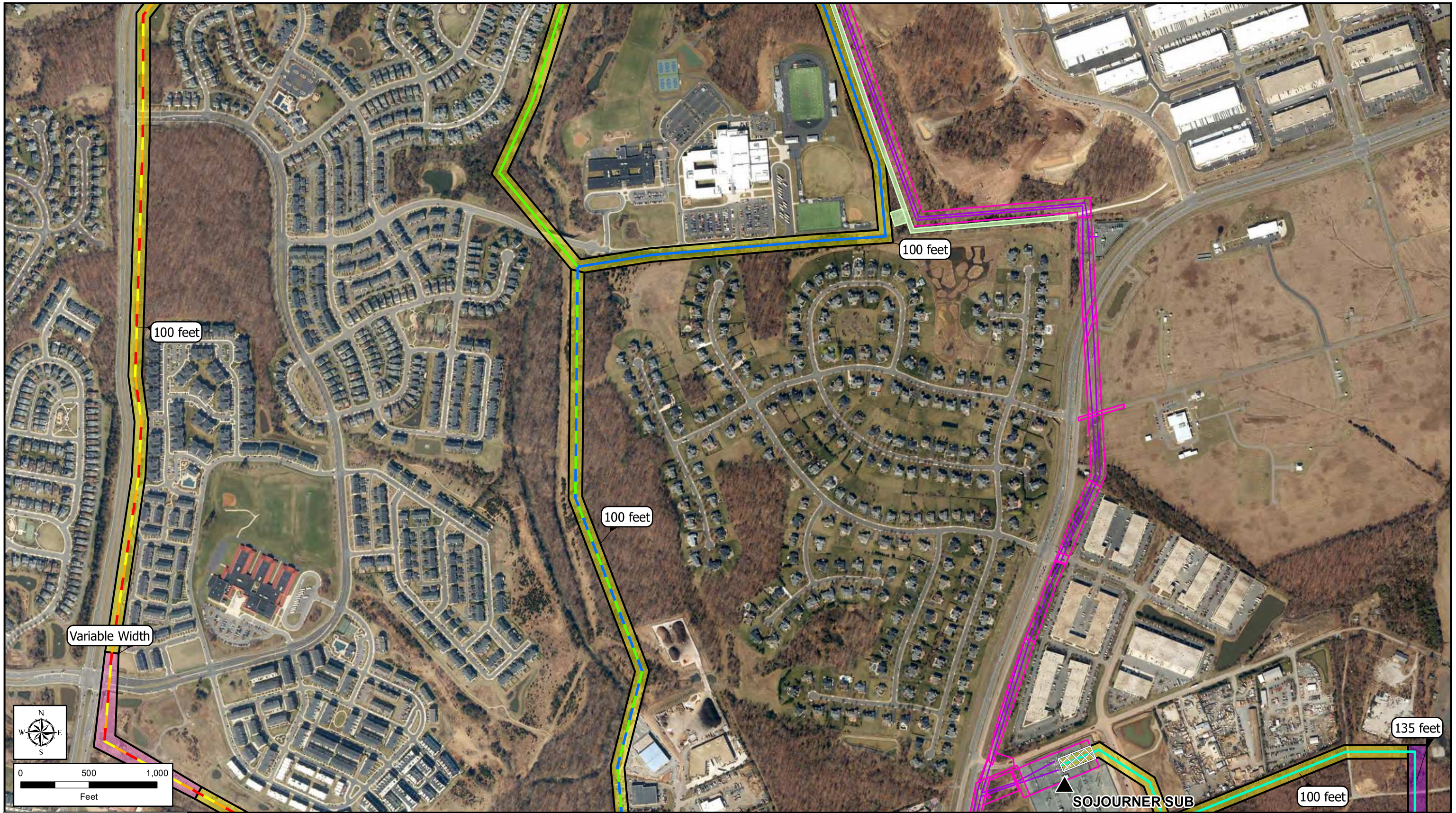


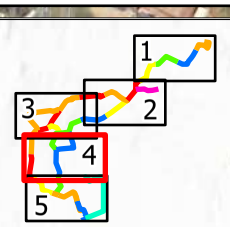
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Existing Dominion Transmission Lines
- Existing Dominion Transmission ROW
- 100 foot ROW
- Columbia Gas Easement

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy



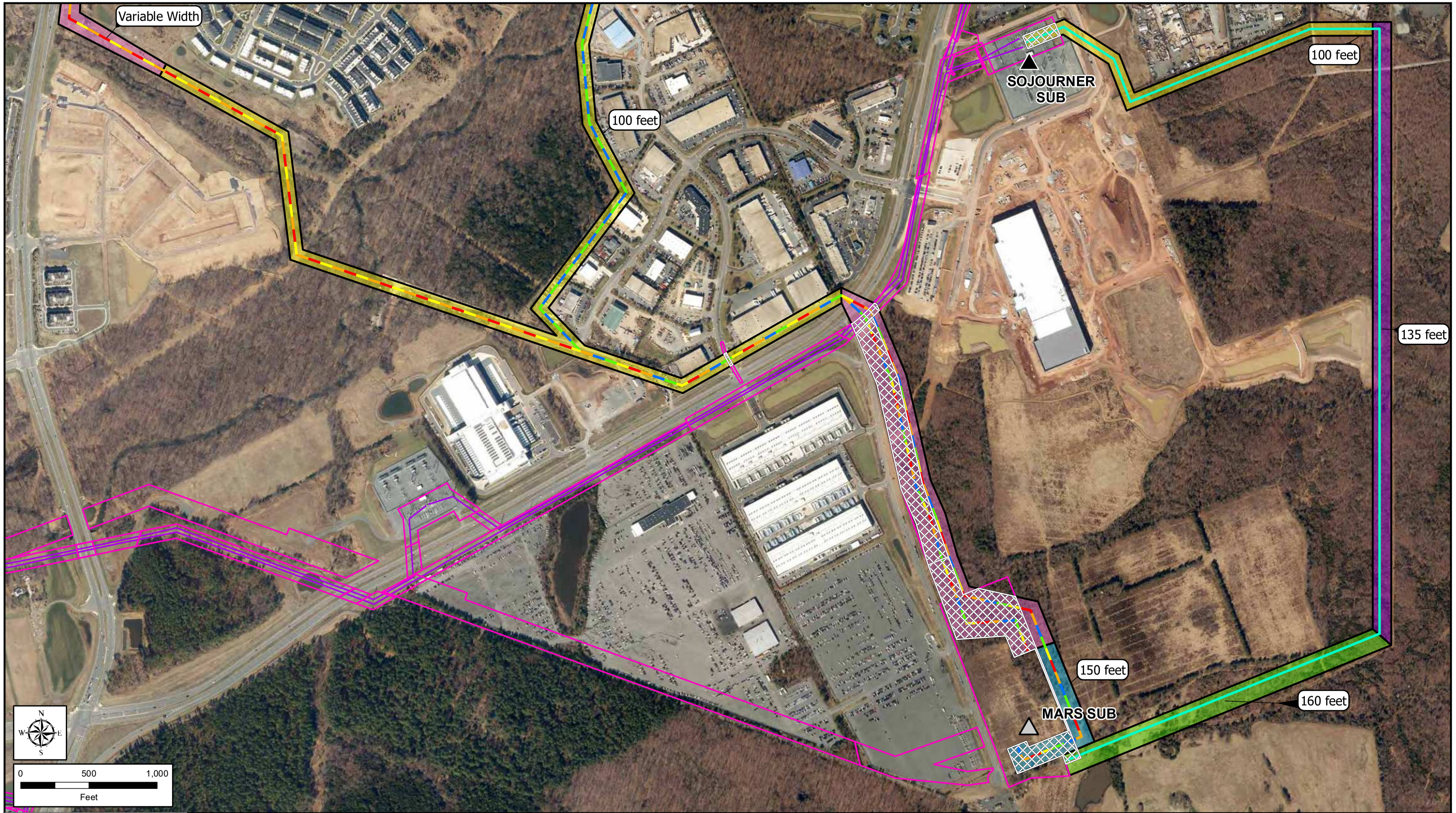


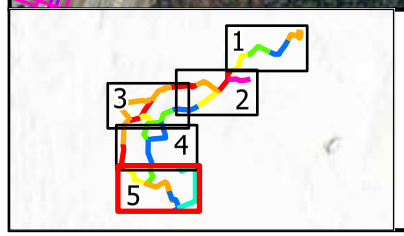
- Existing Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Sojourner 230 kV Loop
- Existing Dominion Transmission Lines
- Existing Dominion Transmission ROW
- 100 foot ROW
- 135 foot ROW
- Variable Width ROW
- Columbia Gas Easement
- Crossing or Collocation with Existing Company-owned Right-of-Way/Easement

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy





- Existing Substation
- Future Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Sojourner 230 kV Loop
- Existing Dominion Transmission Lines
- Existing Dominion Transmission ROW
- 100 foot ROW
- 135 foot ROW
- 150 foot ROW
- 160 foot ROW
- Variable Width ROW
- Crossing or Collocation with Existing Company-owned Right-of-Way/Easement

Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Golden-Mars 500-230 kV Electric Transmission Project
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 rights-of-way for all of the Project's Proposed and Alternative Routes will require clearing for the majority the routes.[47] See Attachment II.A.6 for the proposed right-of-way widths.

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

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

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

[47] Note that, for purposes of calculating the acreage of tree clearing required by the Project, all existing tree cover is considered "forest." All forest clearing required by the Project has been presented in this filing regardless of the potential clearing by a developer, with the exception of forest clearing where the Project route alternatives overlap the Mars-Wishing Star Project, as those impacts were already included in that filing.

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 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. The Company also considered the facilities required to construct and operate the new infrastructure, the length of the new right-of-way required for the Project, existing and future land uses, the potential for environmental impacts and impacts on communities, constructability, and cost.

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

The Project study area encompasses the Project origin point at the future Golden Substation, the Project termination point at the future Mars Substation, and the interconnection of the existing Lockridge Substation and Sojourner Substation, and is generally bounded by the following features:

- Gloucester Parkway to the north;
- Sully Road (SR 28) to the east;
- Dulles Airport to the south; and
- Belmont Ridge Road to the west.

As discussed in more detail below and in the Environmental Routing Study, the Company proposed five overhead routes for the proposed Golden-Mars Lines, one overhead route for the proposed Lockridge 230 kV Loop, and one overhead route for the proposed Sojourner 230 kV Loop.

ROUTING PROCESS

The study area for the Project can be divided into two distinct regions—north and south of the Dulles Greenway (or the "Greenway").

The northern region consists primarily of commercial/industrial development in the DCA, where the Golden-Mars Lines and Lockridge Loop can collocate (*i.e.*, parallel) almost entirely with existing transmission lines and data center development.

The southern region presents more challenges, as it encompasses Dulles Airport, federally and locally owned land, and residential neighborhoods. The southern region includes the Golden-Mars Lines and the Sojourner Loop. While the Sojourner Loop is located entirely within a future data center development with a County-approved site plan, potential collocation opportunities for the Golden-Mars Lines south of the Greenway are limited by FAA height restrictions, easements, and National Oceanic and Atmospheric Administration radar facilities. Consequently, while the Golden-Mars Lines route alternatives share a single, collocated alignment north of the Greenway, they diverge into five route alternatives south of the Greenway toward Mars Substation. Of these southern alternatives, all but one have proven to be fatally flawed pending consent from the County and/or LCSB.

Although Golden-Mars Route 5 is the only viable route for the Golden-Mars Lines at the time of this filing, the Company retained four other routes (Golden-Mars Routes 1, 2, 3, and 4) that cross lands and easements owned and/or managed by the BOS and LCSB. Rather than reject Golden-Mars Routes 1-4, the Company chose to retain these route alternatives as they all reduce potential impacts to residential areas and align with the following multiple routing priorities: Loudoun County's 2019 General Plan policies (as discussed further in Section III.E), general routing principles, public preference, and Company preference (particularly given these routes' better utilization of collocation opportunities).

While most electrical solutions and project areas offer two or more viable route alternatives for the Commission to consider, there is only one viable route for the Golden-Mars Lines—Golden-Mars Route 5—because it does not cross public lands and easements except for a <0.1-acre portion of BOS-owned property that the County indicated verbally was acceptable to cross. See the Golden-Mars Lines Key Features Table presented below and associated note. Multiple routing constraints in the study area, including BOS open space easements, BOS land, and LCSB land, prevent the Golden-Mars Lines from collocating along existing Lines #2095 and #2218 that follow Broad Run near Loudoun County's Broad Run Stream Valley Park ("Broad Run Park") and LCSB's Rock Ridge High School and Rosa Lee

Carter Elementary School Campus ("Rock Ridge Campus"). To avoid public lands, Golden-Mars Routes 1 and 5 must deviate from existing 230 kV lines and instead follow Loudoun County Parkway adjacent to residential areas south of the Greenway before reconnecting with Golden-Mars Routes 2, 3, and 4 north of Old Ox Road. In contrast, Golden-Mars Routes 2, 3, and 4 follow existing Lines #2095 and #2218 along Broad Run, with Golden-Mars Routes 3 and 4 largely avoiding residential areas.

At the northeast corner of the Rock Ridge Campus, Golden-Mars Routes 2, 3, and 4 diverge into three potential alignments across LCSB- and BOS-owned land. Golden-Mars Route 2 crosses LCSB land approximately 0.3 mile north of Rock Ridge High School before joining Golden-Mars Routes 1 and 5 along Loudoun County Parkway. This alignment avoids approximately 2.5 miles of routing adjacent to planned developments and existing residences along Loudoun County Parkway between the Greenway and Ryan Road.

Golden-Mars Route 3 initially follows Golden-Mars Route 2 east across LCSB land but then turns south after crossing Broad Run. Golden-Mars Route 3 follows County-owned parkland south along the west bank of Broad Run before rejoining Golden-Mars Route 4 south of Loudoun Reserve Drive. Golden-Mars Route 3 maintains approximately 450 feet of separation from Rosa Lee Carter Elementary School at its nearest point, while maximizing distance from residences in Loudoun Valley Estates to the west along Weybridge Square.

Golden-Mars Route 4 does not continue west like Golden-Mars Routes 2 and 3, but rather turns south to maximize collocation with existing 230 kV lines along the east side of the Rock Ridge Campus. Golden-Mars Route 4 then turns west, with LCSB-owned land and the Rock Ridge Campus access road to the north and the Loudoun Valley Estates I/BOS open space easement to the south, before joining Golden-Mars Route 3 south of Loudoun Reserve Drive. This alignment maintains approximately 350 feet of separation from Rock Ridge High School to the north and several homes within the subdivision to the south. As detailed in the Environmental Routing Study, Golden-Mars Route 4 affects the fewest homes and achieves the maximum possible collocation with existing transmission lines in the study area, given that collocation along Lines #2095 and #2218 is blocked further to the east and south.

Golden-Mars Routes 1, 2, 3, and 4 could become viable if the BOS and/or LCSB grant consent for their respective crossings. As all four of those Golden-Mars route alternatives are less impactful than Golden-Mars Route 5, the Company met with BOS staff, LCSB staff, and elected officials on numerous occasions to discuss the Project and routing, and, in particular, to explore routing across the Rock Ridge Campus, BOS-owned parcels, and BOS held open space easements.

The Company continues to coordinate with Loudoun County and to discuss overhead route alternatives across BOS- and LCSB-owned land to secure the necessary right-of-way for a route alternative that would avoid Loudoun County Parkway and the surrounding residential areas.

Loudoun County Board of Supervisors—Golden Mars Lines

On January 22, 2025, the BOS approved a motion to support Golden-Mars Route 4 as the County's preferred route and Golden-Mars Route 3 as the County's secondary route preference. A copy of the BOS Action Item #11 staff report is included as Attachment II.A.9.a. As part of the motion, the BOS directed staff to request LCSB support for either Golden-Mars Route 3 or Golden-Mars Route 4. The motion passed by an 8-0-1 vote and is included as Attachment II.A.9.b.

In addition to adopting a motion in support of Golden-Mars Route 4 as the County's preferred route and Golden-Mars Route 3 as the secondary route preference at the January 22, 2025 meeting (see Attachment II.A.9.b), the BOS discussed a Comprehensive Plan Amendment ("CPAM"), which was previously discussed at the evidentiary hearing on the Aspen-Golden Project.[48] This CPAM proposes updates to the land use policies in Loudoun County's 2019 General Plan to provide better guidance for developing high-voltage transmission corridors within the County. Specifically, the County plans to amend the 2019 General Plan policies to "[e]ncourage the collocation of new transmission corridors and electric infrastructure within existing transmission corridors to minimize community and environmental impacts[.]"[49] The CPAM project started in June 2024 and is expected to take about one year to complete. The County anticipates the effort will conclude with a BOS public hearing and action in summer 2025.

The Company's routing and siting standards, along with Commission Guidelines,[50] align with the County's proposed land use policies. In particular, the Company agrees with the BOS that Golden-Mars Routes 3 or 4 offer a reasonable routing solution consistent with these proposed policies and the intent of Loudoun County's 2019 General Plan. The Company remains committed to routing that minimizes adverse impacts on environmental, historic, cultural, and scenic resources to the greatest extent practicable as data center development continues to drive the need for new electric transmission infrastructure in Loudoun County.

Loudoun County School Board—Golden-Mars Lines

As of September 2024, LCSB staff was opposed to any new utility infrastructure on LCSB land, consistent with a recent LCSB prohibition on the construction of

[48] *See, e.g.*, Aspen-Golden Project (Case No. PUR-2024-00032), Tr. at 850:8-852:7 (Giglio).

[49] *See* Loudoun County Board of Supervisors December 3, 2024, Business Meeting Action Item #12a: *Transportation and Land Use Committee Report: Electrical Infrastructure Comprehensive Plan Amendment* at p.5, available at https://lfportal.loudoun.gov/LFPortalinternet/0/edoc/1946521/Item%2012a%20TLUC%20Report-Electrical%20Infrastructure%20CPAM.pdf.

[50] This is a reference to the Commission's *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*.

new cell phone towers on school grounds for the next five years.[51]

On March 11, 2025, the LCSB convened for their regularly scheduled public meeting which included an agenda item to "present[] information and potential alignment routes for the Dominion Energy Golden to Mars transmission line project" with an LCSB staff recommendation that:

> the Loudoun County School Board oppose Route 4 (Blue Line) of the Golden to Mars Transmission Line Alignment. Further that the School Board directs staff to communicate this action to the Loudoun County Board of Supervisors and representatives of Dominion Energy.[52]

At the March 11 LCSB meeting, the LCSB heard dozens of public comments on the matter and LCSB staff presented information to the LCSB on the potential impacts of the routes crossing the LCSB land as well as potential impacts to the community if the Golden-Mars Lines were to be constructed along Loudoun County Parkway.[53] Public comments were varied with many community members advocating for Golden-Mars Routes 3 or 4; others opposing the Project entirely citing safety concerns; others opposing Golden-Mars Routes 1, 2, and 5; and others advocating an underground route alternative. At that time, LCSB did not take action to oppose Golden-Mars Route 4 and, instead, directed LCSB staff to seek additional information about undergrounding the Golden-Mars Lines and the status of a proposed Columbia Gas distribution line.

On March 19, 2025, Company representatives met with LCSB staff, Loudoun County BOS staff, and representatives of Columbia Gas. The purpose of the meeting was to review minor adjustments to Golden-Mars Routes 3 and 4 needed to accommodate the proposed Columbia Gas line, discuss how those adjustments relate to the school campus, and discuss the Company's and Columbia Gas's coordination efforts to overlap the proposed Golden-Mars Lines easement with the existing Columbia Gas easement. Additionally, Company representatives presented information and findings on the feasibility of undergrounding the Golden-Mars Lines, answered questions, and provided LCSB staff with additional information to support LCSB staff's presentation at the March 25, 2025 LCSB meeting.

On March 25, 2025, LCSB convened for its regular "4th Tuesday Meeting." At the March 25 LCSB meeting, around 80 members of the public were in attendance

---

[51] Gustin, Alex. "School Board Bans Cell Towers on Campuses." *LoudounNow*, 25 September 2024, available online at: https://www.loudounnow.com/news/school-board-bans-cell-towers-on-campuses/article_717803ba-7b50-11ef-a4b7-7feca61cfb81.html.

[52] *See* March 11, 2025, Loudoun County School Board Agenda Item 13.02, available at https://go.boarddocs.com/vsba/loudoun/Board.nsf/goto?open&id=DDNLFJ565AFC.

[53] LCSB meeting agenda, video, and other information, available at: https://go.boarddocs.com/vsba/loudoun/Board.nsf/Public#.

(both virtually and in-person) to speak about the Project during the public comment portion of the meeting. The public speakers consisted mainly of residents of the surrounding neighborhoods and/or parents and students of Rosa Lee Carter Elementary School and Rock Ridge High School. Approximately half of the speakers spoke in opposition to the Project and objected to LCSB consent to any overhead route across LCSB land. Approximately 34 speakers spoke in support of LCSB consent to either Golden-Mars Route 3 or Route 4 so that a more impactful route, such as Golden-Mars Route 1 or Route 5, would not become the Company's default preferred route. Many speakers cited health and safety concerns and others urged additional study of underground alternatives.

After public comments, LCSB staff presented Action Item 12.02, which addressed LCSB questions from the March 11 meeting. Namely, LCSB staff answered questions about the status the Company's coordination with Columbia Gas and the feasibility of undergrounding the Golden-Mars Lines. Note that prior to the March 25 meeting and to assist LCSB staff, the Company had provided detailed information on coordination with Columbia Gas, a summary of the Underground Feasibility Study, and a copy of the Underground Feasibility Study (ahead of the filing on the Project website).[54]

At the March 25 meeting, Action Item 12.02 was presented with the recommended action "[t]hat the Loudoun County School Board oppose Route 4 (Blue Line) of the Golden to Mars Transmission Line Alignment. Further, that the School Board directs staff to communicate this action to the Loudoun County Board of Supervisors and representatives of Dominion Energy."[55] The LCSB discussed the matter and directed questions to LCSB staff. Questions were also directed to Company representatives in attendance, but the Company representatives were not allowed an opportunity to speak or answer any questions. The LCSB ultimately moved to oppose all overhead routes across LCSB property and recommended the continued exploration of underground route alternatives. The motion passed 8-1.

While LCSB voted against all overhead routes (8-1) crossing LCSB property at the March 25 LCSB meeting, Golden-Mars Route 3 remains the second least impactful route overall, the County's secondary route preference, and the route that the Company believes to be least impactful to LCSB property. If LCSB were to provide the necessary consents, Golden-Mars Route 3 or Golden-Mars Route 4 could become viable by allowing the Company to acquire right-of-way on LCSB property.

Undergrounding—Golden-Mars Lines

In addition to studying overhead route options for the Golden-Mars Lines, the Company studied several hybrid overhead/underground routes. As detailed in the Underground Feasibility Study attached as Appendix C to the Routing Study, none of these hybrid routes would meet the required in-service target date of June 1,

[54] *Agenda Item Details* can be found at https://go.boarddocs.com/vsba/loudoun/Board.nsf/Public#.

[55] *See supra*, n. 55 at Action Item 12.02.

2028, even if deemed viable. Each hybrid route studied had multiple insuperable flaws, including: conflicts with existing utilities and land uses, permitting risks, crossings of public land, high costs compared to overhead options, lack of suitable transition station sites, and adverse geologic conditions.

Notably, no utility in North America, including the Company, has ever undergrounded a transmission line with one 500 kV line and one 230 kV line with a maximum current of 9,000 amps. The only long-distance segment of an underground 500 kV line operating in North America is the 3.6-mile segment of the Chino Hills 500 kV transmission line ("Chino Hills line"). The Chino Hills line was built in existing electric transmission right-of-way that was unencumbered by superseding easements and land rights. In contrast, the Company has no existing rights-of-way in which to construct the Golden-Mars Lines nor are there any constructible areas in this part of Loudoun County that are not already encumbered by multiple, sometimes overlapping, easements and rights-of-way controlled by VDOT, other incumbent utilities, and State and Federal agencies. From a technical perspective, the Golden-Mars Lines are also larger and more complicated than the Chino Hills line. For example, the Chino Hills line operates a single circuit 500 kV line with three cables per phase compared to the Golden-Mars Lines, which require a single circuit 500 kV line with five cables per phase and a single circuit 230 kV line with four cables per phase. The Company lacks both the existing right-of-way to underground the Golden-Mars Lines and control over the various risk factors outlined in the Underground Feasibility Study that could delay construction. Given the risk of undergrounding and criticality of the in-service requirements, the Company concluded that no hybrid or underground route could be constructed to address reliability violations and prevent potential area-wide outages.

For additional information on underground feasibility, please refer to Section 5.3.2 and the Appendix C (Underground Feasibility Study) of the Environmental Routing Study.

PROPOSED AND ALTERNATIVE ROUTES

Golden-Mars Lines

The table below provides a comparison of key features and quantitative impacts to resources relevant to route selection for the Golden-Mars Lines, followed by a description of the route alternatives. Section 5 of the Environmental Routing Study provides additional details on Project resource impacts and route comparisons. The estimated conceptual costs of the Golden-Mars route alternatives are provided in Section I.I.

Golden-Mars Lines Key Features Table

Environmental Feature	Unit	Route 1	Route 2	Route 3	Route 4	Route 5
Centerline Length	miles	9.4	9.3	8.3	8.3	9.8
New Right-of-Way	acres	123.5	121.7	108.6	109.3	129.3
Transmission Structures	count	92	90	83	83	97
Collocation	-	-	-	-	-	-
Collocation/parallel with existing and future 230 kV transmission infrastructure	miles	2.8	4.0	4.0	4.4	2.8
Dwellings	-	-	-	-	-	-
Dwellings within ROW	count	0	0	0	0	0
Dwellings within 100 Feet of Centerline	count	116	110	4	1	125
Dwellings within 250 Feet of Centerline	count	275	231	28	10	312
Dwellings within 500 Feet of Centerline	count	984	697	133	69	1,163
Non-Residential Structures Within Right-of-Way	count	1	1	4	4	3
General Plan Place Types	-	-	-	-	-	-
Suburban Employment	miles	1.4	1.4	1.4	1.4	1.4
Suburban Industrial/ Mineral Extraction	miles	1.6	2.8	3.2	3.4	1.6
Suburban Mixed Use	miles	1.0	1.0	1.0	1.0	1.0
Suburban Neighborhood	miles	3.0	3.0	1.6	1.5	3.0
Urban Employment	miles	0.7	0.7	0.7	0.7	0.7
Urban Mixed Use	miles	0.1	0.0	0.0	0.0	0.6
Urban Transit Center	miles	1.5	0.3	0.3	0.3	1.5
Land Ownership	-	-	-	-	-	-
Private Parcels	count	58	49	49	47	71
Loudoun County School Board	count (acres)	0 0.0	1 3.2	1 3.0	1 7.1	0 0.0
Loudoun County Board of Supervisors	count (acres)	1 <0.1*	1 0.9	5 8.7	3 4.9	1 <0.1*
Conservation Easements	-	-	-	-	-	-
Loudoun County Board of Supervisors Open Space Easements	count (acres)	1 3.1	1 0.9	2 5.1	1 2.5	0 0.0
Natural Resources	-	-	-	-	-	-
Wetlands Affected (total)	acres	27.2	34.7	28.1	29.8	27.2
Forest	acres	50.3	64.7	66.5	67.0	49.1
Floodplain	acres	38.9	61.9	57.2	52.7	38.8
Waterbody Crossings	count	33	40	34	31	37

* Routes 1 and 5 cross a 15-foot-wide strip of BOS-owned land that is part of a future road right-of-way dedication to VDOT. Loudoun County officials gave the Company verbal approval for this crossing in order to avoid additional road crossings and impacts to an existing neighborhood and dwellings on the south side of Loudoun County Parkway.

Golden-Mars Route 1

Golden-Mars Route 1 would construct an overhead 500 kV single circuit transmission line with a 230 kV transmission line on right-of-way primarily varying between 100 and 150 feet wide to accommodate a 5/2 configuration on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way). The route begins at the future Golden Substation and extends approximately 9.4 miles southwest to the future Mars Substation.

Golden-Mars Route 1 is approximately 9.4 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back south, and parallels the west side of Loudoun County Parkway from Gleedsville Manor Drive south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

Golden-Mars Route 1 was considered because it is shorter and is in proximity to fewer residences compared to the other routes that parallel Loudoun County Parkway (*e.g.*, Golden-Mars Route 5). Unlike Golden-Mars Route 5, Route 1 crosses BOS open space easements along Loudoun County Parkway whereas Golden-Mars Route 5 diverts west along Ryan Road and Claiborne Parkway to avoid them. Golden-Mars Route 1 is preferable to Golden-Mars Route 5 based on proximity to residences, length, and non-conforming road crossing needed to avoid open space easements, as shown in the table above. Golden-Mars Route 1 is inferior to Golden-Mars Routes 2, 3, and 4 because it parallels Loudoun County Parkway and is in closer proximity to homes and neighborhoods. Unless the Company obtains permission to cross one BOS open space easement, Golden-Mars Route 1 is not viable.

Golden-Mars Route 2

Golden-Mars Route 2 would construct an overhead 500 kV single circuit transmission line with a 230 kV transmission line on new right-of-way primarily varying between 100 and 150 feet wide to accommodate a 5/2 configuration on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way). The route begins at the future Golden Substation and

extends approximately 9.3 miles southwest to the future Mars Substation.

Golden-Mars Route 2 is approximately 9.3 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route continues southwest where it parallels existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before reaching Loudoun County Parkway. The route continues south and parallels the west side of Loudoun County Parkway past Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

Golden-Mars Route 2 was considered because it is shorter, has greater collocation with existing Company-owned right-of-way, and is in proximity to fewer residences compared to Golden-Mars Routes 1 and 5. The primary advantage of Golden-Mars Route 2 is that it avoids planned developments and existing residences along Loudoun County Parkway between the Greenway and Ryan Road by collocating with the existing lines along Broad Run. Golden-Mars Route 2 is preferable to Golden-Mars Routes 1 and 5 on proximity to residences, length, and impacts to planned developments, as shown in the table above. Golden-Mars Route 2 is inferior to Golden-Mars Routes 3 and 4 because it parallels Loudoun County Parkway and is in closer proximity to homes and neighborhoods. Unless the Company obtains permission to cross BOS and LCSB lands, Golden-Mars Route 2 is not viable.

Golden-Mars Route 3

Golden-Mars Route 3 would construct an overhead 500 kV single circuit transmission line with a 230 kV transmission line on new right-of-way primarily varying between 100 and 150 feet wide to accommodate a 5/2 configuration on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way). The route begins at the future Golden Substation and extends approximately 8.3 miles southwest to the future Mars Substation.

Golden-Mars Route 3 is approximately 8.3 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission

lines and crosses Broad Run twice before crossing the Dulles Greenway. The route continues southwest where it parallels existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before turning south and crossing Loudoun Reserve Drive. The route continues south through Broad Run Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation.

Golden-Mars Route 3 was considered because it is shorter, has greater collocation with existing Company-owned right-of-way, and is in proximity to fewer residences compared to Golden-Mars Routes 1, 2, and 5, as shown in the table above. The primary advantage of Golden-Mars Route 3 is that it does not parallel Loudoun County Parkway and thereby avoids planned developments and existing residences by following existing lines and the Broad Run riparian corridor. Notably, it is the County's secondary route preference (see Attachment II.A.9.b). And while LCSB voted against all overhead routes (8-1) that impact LCSB property at the March 25 LCSB meeting, Golden-Mars Route 3 remains the second least impactful route overall, the County's secondary route preference, and the route that the Company believes to be least impactful to LCSB property. For all these reasons, Golden-Mars Route 3 minimizes adverse impacts to scenic assets, historical and cultural resources, and environment to the greatest extent practicable. That said, unless the Company obtains consent to cross LCSB lands, Golden-Mars Route 3 is not viable.

Golden-Mars Route 4

Golden-Mars Route 4 would construct an overhead 500 kV single circuit transmission line with a 230 kV transmission line on new right-of-way primarily varying between 100 and 150 feet wide to accommodate a 5/2 configuration on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way). The route begins at the future Golden Substation and extends approximately 8.3 miles southwest to the future Mars Substation.

Golden-Mars Route 4 is approximately 8.3 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route continues southwest where it parallels existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns south and continues to parallel existing transmission lines before turning west along Loudoun Reserve Drive. The route then turns south through Broad Run Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation.

Golden-Mars Route 4 is the same length as Golden-Mars Route 3 (8.3 miles), utilizes the most miles of collocation with existing transmission lines, and is in proximity to fewer residences compared to all other Golden-Mars route alternatives, as shown in the table above. Accordingly, Golden-Mars Route 4 is the least impactful route overall. Further, Golden-Mars Route 4 is the BOS's preferred route. See Attachment II.A.9.b. However, at the March 25 LCSB meeting, LCSB voted against all overhead routes (8-1) crossing LCSB property, including Golden-Mars Route 4. Believing that Golden-Mars Route 4 would be more impactful to the LCSB property than Route 3, the Company and ERM consider Golden-Mars Route 3 to be superior to Route 4. Regardless, unless the Company obtains consent to cross LCSB lands, Golden-Mars Route 4 is not viable.

Golden-Mars Route 5

Golden-Mars Route 5 would construct an overhead 500 kV single circuit transmission line with a 230 kV transmission line on new right-of-way primarily varying between 100 and 150 feet wide to accommodate a 5/2 configuration on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way). The route begins at the future Golden Substation and extends approximately 9.8 miles southwest to the future Mars Substation.

Golden-Mars Route 5 is approximately 9.8 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back south, and parallels the west side of Loudoun County Parkway past Gleedsville Manor Drive, then turns west to parallel the north side of Ryan Road. Near Claiborne Parkway, the route turns south to rejoin Loudoun County Parkway and continues south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

Golden-Mars Route 5 was selected because it does not cross public lands and easements except for a <0.1-acre portion of BOS-owned property that the County indicated verbally was acceptable to cross, and does not cross any LCSB lands, making it the only viable Golden-Mars route. However, compared to the other Golden-Mars route alternatives, Golden-Mars Route 5 has several significant disadvantages. Golden-Mars Route 5 is the longest route and runs closest to the greatest number of residences, as shown in the table above. Golden-Mars Route 5

also has minimal collocation with existing transmission lines and generally is incompatible with the policies in the Loudoun County 2019 General Plan as well as general routing principles. Furthermore, the route crosses several planned developments, which could be impacted or, in the case of the approved Moorefield Gas Station development, require complete abandonment. Without approvals from the BOS and/or LCSB allowing the construction of Golden-Mars Routes 1, 2, 3, or 4, Golden-Mars Route 5 will become the Proposed Route for lack of any other constructable route options.

Lockridge 230 kV Loop

Lockridge Loop Proposed Route

The Lockridge Loop Proposed Route would construct an overhead 230 kV double circuit transmission line on new 100-foot-wide right-of-way primarily supported by double circuit monopoles. The route cuts in at Structure #2412/8 along the 230 kV Golden-Mars Line and extends 0.6 mile west to the Lockridge Substation.

The Lockridge Loop Proposed Route is approximately 0.6 mile in length. The route originates approximately 0.3 mile north of the Dulles Greenway and 0.2 east of Shellhorn Road where it cuts into the 230 kV Golden-Mars Line. The route travels east from the 230 kV Golden-Mars Line and crosses Broad Run and Lockridge Road before looping into and out of Lockridge Substation.

The Lockridge Loop Proposed Route is the shortest, most direct, least impactful loop route between the cut-in along the 230 kV Golden-Mars Line and Lockridge Substation. Additionally, the alignment of the Lockridge Loop Proposed Route is supported by the landowner and developer on which the majority of the route is located. Accordingly, the Company developed no alternative routes because all other alignments would result in conflicts with proposed land uses and greater impacts to environmental resources.

Sojourner 230 kV Loop

Sojourner Loop Proposed Route

The Sojourner Loop Proposed Route would construct a new overhead double circuit 230 kV transmission line on a new 100-foot-wide right-of-way primarily supported by double circuit monopoles. The route begins at the Sojourner Substation and extends approximately 1.9 miles south to the Golden Substation.

The Sojourner Loop Proposed Route is approximately 1.9 miles in length. The route originates at Sojourner Substation located between Beaver Meadow Road and Digital Dulles Drive. The route travels east before turning south to parallel the western perimeter of Dulles Airport. The route then turns west, terminating at Mars

Substation near Carters School Road.[56]

The Sojourner Loop Proposed Route is the most direct route between Sojourner Substation and Mars Substation that accounts for multiple future substation delivery points along the route. Additionally, the alignment of the Sojourner Loop Proposed Route is supported by the landowner and developer on which the entirety of the route is located. Accordingly, the Company did not develop route alternatives because all other alignments would result in conflicts with proposed land uses and could not interconnect the future substations without additional new rights-of-way.

Summary of Route Analysis

For all the reasons stated above and in the Routing Study, ERM and the Company support the Golden-Mars Proposed Route (Route 3), the Lockridge Loop Proposed Route, and the Sojourner Loop Proposed Route as the Project route alternatives that avoid or reasonably minimize adverse impact to the greatest extent reasonably practicable on the scenic assets, historical and cultural resources, and environment of the area concerned. Despite the LCSB March 25 vote in opposition to the Proposed Route just before the March 28 filing date, the Company continues to support the BOS's secondary route preference and is proceeding with Golden-Mars Route 3 as the Proposed Route pending continued discussion with LCSB to reiterate the infeasibility of an underground alternative and attempt to obtain timely consent from LCSB for Route 3. Without approvals from the BOS and/or LCSB allowing the construction of the Golden-Mars Proposed Route (Route 3), Golden-Mars Route 5 will become the Proposed Route for lack of any other constructable route options.

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

Date of Meeting: January 22, 2025

11

BOARD OF SUPERVISORS
BUSINESS MEETING
ACTION ITEM

SUBJECT: **Golden to Mars Transmission Line Alignment**

ELECTION DISTRICT(S): Countywide

STAFF CONTACT(S): Pat Giglio, Planning and Zoning
Daniel Galindo, Planning and Zoning

PURPOSE: The purpose of this item is to seek Board of Supervisors (Board) affirmation of the County's preferred alignment for the proposed Golden to Mars Transmission Line. The proposed overhead transmission line alignments follow major roadways and segments of the Broad Run floodplain west of Route 28 and Washington Dulles International Airport (IAD) as provided in Attachment 1.

RECOMMENDATION(S): Staff recommends the Board affirm the County's position supporting Route 4 for the proposed Golden to Mars Transmission Line alignment as the County's preferred route and direct staff to continue to work with property owners, Loudoun County Public Schools (LCPS), the Virginia Department of Transportation (VDOT), Metropolitan Washington Airports Authority (MWAA), and Dominion Energy (Dominion) to develop the proposed route. Staff further recommends that the Board direct staff to communicate the Board's preferred alignment to LCPS and encourage them to consider adopting Route 4 as their preferred alignment. Of the five proposed overhead routes, Route 4 provides the most direct route, poses the least impact to existing and planned urban and residential neighborhood development, and minimizes environmental and visual impacts on the surrounding community, while remaining in conformance with the land use and energy policies of the *Loudoun County 2019 General Plan* (2019 GP).

BACKGROUND: Dominion is anticipated to file an application for the Golden to Mars Transmission Line Alignment for review by State Corporation Commission (SCC) in February/March 2025. The transmission line project includes options for five potential overhead routes that vary from 8.2 to 9.8 miles in length, one of which will be approved by the SCC for construction. The project proposes the construction of a double circuit 500 kilovolt (kV) and 230 kV overhead transmission lines supported by galvanized metal monopole and H-frame design transmission poles that are between 100 to 185 feet in height within an approximately 100 foot right of way (ROW). The proposed transmission line project originates at the Golden Substation (located in the northwest quadrant of the intersection of Route 28 and the Washington & Old Dominion Trail) and terminates at Mars Substation southeast of Old Ox Road (Route 606) adjacent to IAD (Attachment 1). Commission Permits are required for the proposed Golden and Mars

substations, which the County will review separately through the legislative process. The proposed Golden to Mars Transmission Line project is required to meet current and future electrical demand and to comply with mandatory North American Electric Reliability Corporation Standards.

The five proposed transmission line routes all originate at the Golden Substation site and follow Pacific Boulevard south through the commercial and future data center uses within Dulles 28 Centre before crossing Waxpool Road. The route follows an existing 230 kV transmission line parallel to Waxpool Road to the west before turning southwest to parallel another existing 230 kV transmission line within the Broad Run floodplain that adjoins data center and industrial uses until it crosses the Dulles Greenway. The five proposed routes begin to diverge immediately south of the Dulles Greenway. The southern portions of Routes 1 and 5 bisect existing urban centers, mixed-use developments, and residential communities. The southern portions of Routes 2, 3, and 4 follow the Broad Run floodplain near industrial parks and residential communities. South of Dulles Trade Center, Routes 1 through 5 all converge before crossing Old Ox Road (Route 606) and terminating at the Mars Substation.

The portions of Routes 1 through 5 between the Dulles Toll Road and Dulles Trade Center are described in greater detail below.

Route 1 and Route 5 proceeds northwest through Silver District West before turning southwest to parallel Loudoun County Parkway for approximately 3.5 miles through Moorefield Station, Loudoun Parkway Center, Loudoun Valley Estates, and Brambleton, then turn southeast to bisect the Broad Run floodplain south of Dulles Trade Center. Route 5 is similar to Route 1 except for an approximately 1.2-mile segment that parallels Ryan Road and Claiborne Parkway to avoid crossing County-owned open space. Dominion has identified Route 5 as the only route that is construction-ready since it does not require any agreements to cross County or LCPS property.

Routes 2, 3, and 4 continue southwest approximately 1.5 miles parallel to an existing 230 kV transmission line located within the Broad Run floodplain that is bordered to the south by flex industrial and data center uses within Mercure Business Park. Routes 2, 3, and 4 diverge east of the LCPS property occupied by Rosa Lee Carter Elementary School and Rock Ridge High School. Route 2 crosses the northern portion of the LCPS property within the Broad Run floodplain before proceeding southwest parallel to Loudoun County Parkway for approximately 2 miles through Loudoun Valley Estates and Brambleton following the proposed alignment for Routes 1 and 5.

Route 3 is located within the Broad Run floodplain and crosses the northern portion of the LCPS property following Route 2 before proceeding south on the edge of the floodplain near homes in Loudoun Valley Estates until intersecting and paralleling an existing Loudoun Water sewer easement within the County's Broad Run Stream Valley Park. Route 3 proceeds southwest to follow the western edge of Dulles Trade Center and Broad Run Stream Valley Park before converging with Routes 1 through 5 south of Dulles Trade Center.

Route 4 parallels an existing 230 kV transmission line adjoining the eastern boundary of the LCPS property before proceeding west parallel to the access road (Loudoun Reserve Drive) on the LCPS

property until it intersects an existing sewer easement within the County's Broad Run Stream Valley Park. Route 4 then proceeds southwest and shares the same route as Route 3 described above.

Staff seeks Board direction regarding the County's preferred route of the Golden to Mars Transmission Line alignment. This item includes an assessment of the land use and environmental impacts associated with the five proposed overhead transmission line routes being considered by Dominion.

ISSUES: Loudoun County views electrical service as an essential component of daily life and supports the construction of necessary electrical transmission infrastructure to ensure the capacity and reliability of the electrical transmission system to support existing and future business and residential uses.[1] Specifically, the electrical policies in the 2019 GP call for the County to work with electrical providers to identify potential high voltage transmission/distribution lines and substation locations that minimize impacts on key travel corridors, sensitive cultural and historic resources, and existing residential communities; and, where possible, use existing transmission corridors to expand capacity.[2] The electrical policies call for additional consideration of the appearance of electrical transmission lines and substations to ensure they are adequately sited and screened to reduce the visual impact on the surrounding community.[3]

Segments of the proposed Golden to Mars Transmission Line alignment bisect areas within the Suburban Policy Area identified as the Suburban Employment and Suburban Industrial/Mineral Extraction Place Types, where office and industrial parks, data center campuses, flex space and warehousing, and other business uses exist and/or are planned to develop. The County has supported the location of high voltage electric transmission corridors in areas planned for employment and industrial uses, where public utilities are more in keeping with the types of uses and design characteristics anticipated in the area.

Other segments of the proposed Golden to Mars Transmission Line alignment cross large areas in the Suburban and Urban Policy Areas south of the Dulles Greenway near existing residential uses and where the introduction of an overhead high voltage transmission corridor has the potential to significantly impact the visual characteristics of the community and surrounding area. This includes areas identified as the Suburban Mixed Use and Suburban Neighborhood Place Types where vertically integrated mixed-use residential and commercial centers, as well as traditional residential developments, currently exist and/or are planned to develop. A small portion of the proposed transmission line located near the Ashburn Metro Station impacts areas identified as the Urban Transit Center, Urban Mixed Use, and Urban Employment Place Types, which are planned to develop as dense, walkable, mixed-use urban environments with a with a host of office, employment, commercial, and high/medium density residential uses.

[1]2019 GP, Chapter 6, Energy and Communication, text
[2]2019 GP, Chapter 6, Electrical, Action 6.1.C
[3]2019 CP, Chapter 6, Energy and Communication, text

Dominion in developing the proposed route for the Golden to Mars Transmission Line Alignment had previously considered options for potential underground utility routes south of the Dulles Greenway. Several iterations of potential underground routes were planned to originate at a transition station located in the northwest quadrant of the intersection of Dulles Greenway and Old Ox Road (Route 606) where the overhead transmission lines would be placed underground. One of the proposed underground routes crossed Horsepen Dam to parallel Old Ox Road before crossing the VDOT ROW to enter property occupied by IAD managed by MWAA and terminating at the Mars Substation. The other proposed underground route crossed Old Ox Road and remained on IAD property where it was planned to parallel a future Loudoun Water sewer line easement before terminating at the Mars Substation. Both proposed underground routes were presented and discussed at Community Meetings facilitated by Dominion in July and August 2024.[4] Since that time Dominion has completed more detailed engineering and analysis and conducted outreach with affected property owners on IAD that include the National Oceanic and Atmospheric Administration (NOAA), Washington Metropolitan Area Transit Authority (MWATA), and MWAA regarding underground route alternatives. Dominion has determined that construction of the underground routes for the Golden to Mars Transmission Lines, including those originating from the transition station site mentioned above, is not feasible. Specifically, the location of the proposed transition station and proposed underground ROW within the Horsepen Dam flood inundation zone, the presence of seams of diabase rock requiring blasting and that are prohibitive to horizontal directional drilling (HDD), lack of adequate workspace for HDD and mircrotunnel for VDOT crossings, VDOT requirements for HDD under roadways and prohibitions on open trench construction, the presence of existing underground utilities and easements (fiber, water and sewer), the inability to secure permissions for ROW from VDOT, NOAA, and MWAA, and concerns with timing of delivery for electrical service by June 1, 2028, were identified as contributing factors to why the two previously proposed underground routes where no longer being considered by Dominion. Dominion in Community Meetings held on January 14 and 15, 2025, provided the public with an overview of the five proposed overhead transmission line alignments (Routes 1 through 5) and explained why the previously proposed underground routes where no longer being considered.[5]

Routes 1, 2, and 5 south of the Dulles Greenway require the establishment of a new transmission corridor right-of-way (ROW) that parallels segments of Loudoun County Parkway with the highest concentrations of existing and planned residential uses. The transmission structures are anticipated to be 140 to 185 feet in height with an average height of 166 feet within an approximately 100 foot ROW. The County's quality development policies emphasize design characteristics that contribute to a sense of place, including the size, scale and configuration of buildings and their relationship to the surrounding built environment and natural areas.[6] The proposed overhead high

[4] Golden to Mars 500-230 kV Electric Transmission Project (Dominion webpage)
[5] Golden to Mars 500-230 kV Electric Transmission Project (Dominion webpage)

[6] 2019 GP, Chapter 2, Quality Development, Place Types, text.

voltage transmission corridor in these predominantly residential areas will significantly impact the visual characteristics and sense of place of existing master planned residential communities, as well as the existing and future vertically integrated, mixed-use development surrounding Ashburn Station. The proposed transmission corridors (Routes 1, 2, and 5) that parallel segments of Loudoun County Parkway are not in keeping with the design characteristics or community character envisioned for these planned residential and mixed-use development areas.[7]

Routes 3 and 4 are located predominantly within the Broad Run floodplain in areas identified as the Suburban Employment and Suburban Industrial/Mineral Extraction Place Types, where residential uses are prohibited and where electrical infrastructure (i.e. transmission poles, switch stations, and substations) is more in keeping with the anticipated types of uses and design characteristics. Routes 3 and 4 also parallel an existing 230 kV overhead high voltage transmission corridor for approximately 4 miles from Waxpool Road to a location east of the LCPS property occupied by Rosa Lee Carter Elementary School and Rock Ridge High School. The proposed alignments for Routes 3 and 4 within areas planned for industrial and employment uses proximate to existing overhead high-voltage transmission corridors are in keeping with the County's land use policies and minimize the visual impact of the new construction on the surrounding area.[8]

All five of the proposed routes cross properties which are owned or have open space easements held by the County or LCPS that require the granting of permission to Dominion to authorize the use of the properties for the proposed transmission line ROW. The southern portion of Routes 3 and 4 bisect the LCPS property and pass within approximately 325 to 425 feet of Rosa Lee Carter Elementary School and Rock Ridge High School, which have a combined enrollment of 2,400 students and 295 assigned staff. LCPS staff and members of the Loudoun County School Board have attended meetings with Dominion, though LCPS has not taken a position on the proposed alignments. Staff recommends that the Board direct staff to send a letter to LCPS, provided as Attachment 2, advising them of the Board's preferred alignment decision and to encourage them to consider adopting it as their preferred alignment.

The alignments for Routes 3 and 4 proximate to the LCPS property also pass near the rear yards of existing homes within Loudoun Valley Estates II and III, although the overall number of affected homes is significantly lower than those identified for the other proposed routes. Routes 3 and 4 bisect the County-owned Broad Run Stream Valley Park for approximately 1.2 miles where the routes follow an existing sewer line easement and are located at the rear of flex-industrial properties located in Dulles Trade Center to avoid additional environmental impacts. County staff will return to the Board to seek approval to initiate the process to negotiate with Dominion for the use of County property for the final transmission line alignment at a future meeting. The transmission structures for Routes 3 and 4 are anticipated to be 115 to 170 feet in height with an average height of 162 feet within an approximately 100 foot ROW. While Routes 3 and 4 are

[7]2019 GP, Chapter 6, Electrical, Action 6.1.C
[8]2019 GP, Chapter 6, Electrical, Action 6.1.B-D

similar in length, Route 4 impacts the fewest acres of floodplain and wetlands and is proximate to the fewest number residences of all the proposed routes.

Each of the five proposed overhead routes has the potential to impact businesses, residents, County-owned schools and parks, and river and stream corridor resources to some degree. Table 1 provides an overview of the land use and environmental impacts associated with the five proposed overhead transmission line routes being considered by Dominion (see complete table Attachment 3).

Table 1. Feature Crossings Table - Golden to Mars Transmission Lines*

Feature	Unit	Route 1 Red	Route 2 Yellow	Route 3 Green	Route 4 Blue	Route 5 Orange
Route Details						
Centerline Total Length	miles	9.37	9.26	8.25	8.33	9.84
New Right-of Way	acres	128.43	123.37	110.27	109.09	134.19
Transmission Structures	count	92	90	83	83	97
Collocation						
Collocation with existing 230 kV transmission lines	miles	1.8	3.3	3.3	3.8	1.8
Residences						
Dwellings within ROW	count	0	0	0	0	0
Dwellings within 100 Feet of Centerline	count	116	110	4	1	125
Dwellings within 250 Feet of Centerline	count	275	233	30	12	312
Dwellings within 500 Feet of Centerline	count	982	689	128	64	1161
Natural Resources						
Wetlands Affected (total)	acres miles	3.58 0.27	4.10 0.31	2.76 0.19	2.34 0.17	3.29 0.25
Forest	acres	56.94	65.61	67.07	66.44	55.41
Floodplain	acres	38.9	59.0	54.2	49.3	38.8
Waterbody Crossings	count	20	22	15	12	21

*Tabulations provided January 7, 2025, by ERM (Environmental Resources Management) on behalf of Dominion Energy.

Staff finds that Route 4 provides the most direct route and poses the least impact to existing and planned mixed use and residential development by locating the proposed 500-230kV transmission line alignment near existing commercial, data center and flex-industrial uses. Most of Route 4 parallels an existing 230 kV transmission line ROW and segments of a sewer line easement, both of which are located within the Broad Run floodplain. Collocating the proposed 500-230kV transmission line with the existing 230kV transmission line and sewer easements allows the new poles and lines to overlap these existing easements, which minimizes environmental impacts and the overall visual impact on the surrounding community.

The alignment for Route 4 of the proposed Mars to Golden Transmission Line Alignment would locate the proposed transmission corridor in areas planned for employment and industrial uses, in keeping with the County's planned land use and existing development patterns. The collocation of the proposed high voltage transmission line with existing electrical infrastructure for the majority of Route 4 is supported by County policies. The alignment for Route 4 proposes the most direct route and is the least impactful to existing and planned urban and residential neighborhood development and environmental resources. Therefore, staff recommends that Dominion continue to work with elected officials, County staff, property owners, LCPS, and VDOT to identify Route 4 as the preferred route within the upcoming SCC filing for the Golden to Mars Transmission Line alignment.

FISCAL IMPACT: There are no fiscal impacts associated with the item.

ALTERNATIVES:

1. The Board may affirm the County's position identifying Route 4 of the Golden to Mars Transmission Line Alignment as the County's preferred route and direct staff to continue work with property owners, LCPS, VDOT, MWAA, and Dominion to develop the proposed route (Attachment 1) and direct staff to send a letter to LCPS (Attachment 2) requesting their support of Route 4.

2. The Board may identify an alternative route of the Golden to Mars Transmission Line alignment as the County's preferred route and direct staff to continue work with property owners, LCPS, VDOT, MWAA, and Dominion to develop the proposed route (Attachment 1).

3. The Board may take no action.

DRAFT MOTIONS:

1. I move that the Board of Supervisors affirm the County's position identifying Route 4 of the Golden to Mars Transmission Line alignment as the County's preferred route and direct staff to continue work with property owners, Loudoun County Public Schools, the Virginia Department of Transportation, Metropolitan Washington Airports Authority, and Dominion Energy to develop the proposed route.

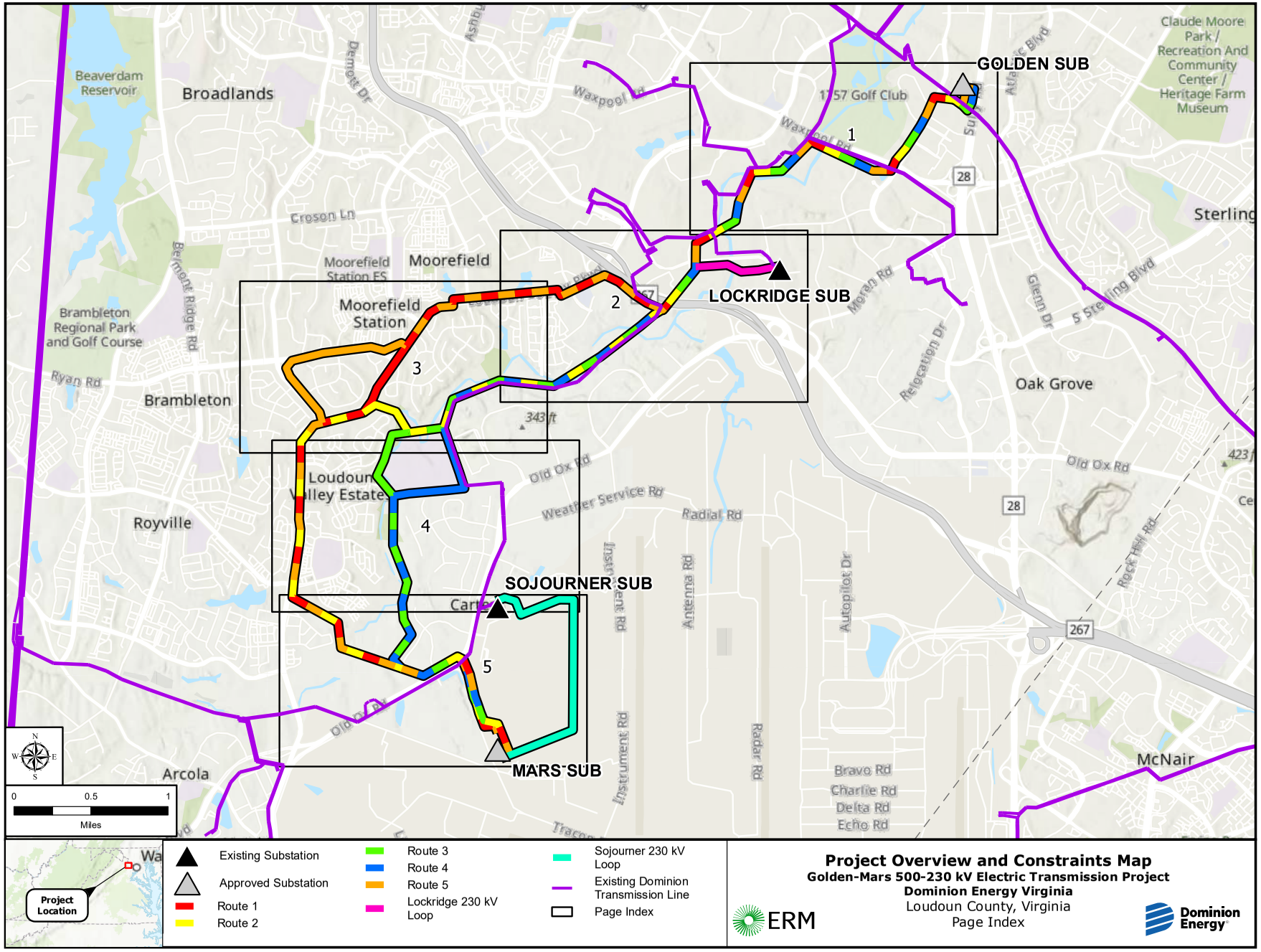
I further move that the Board of Supervisors direct staff to send a letter to the Loudoun County Public Schools requesting their support of Route 4 of the proposed Golden to Mars Transmission Line alignment.

OR

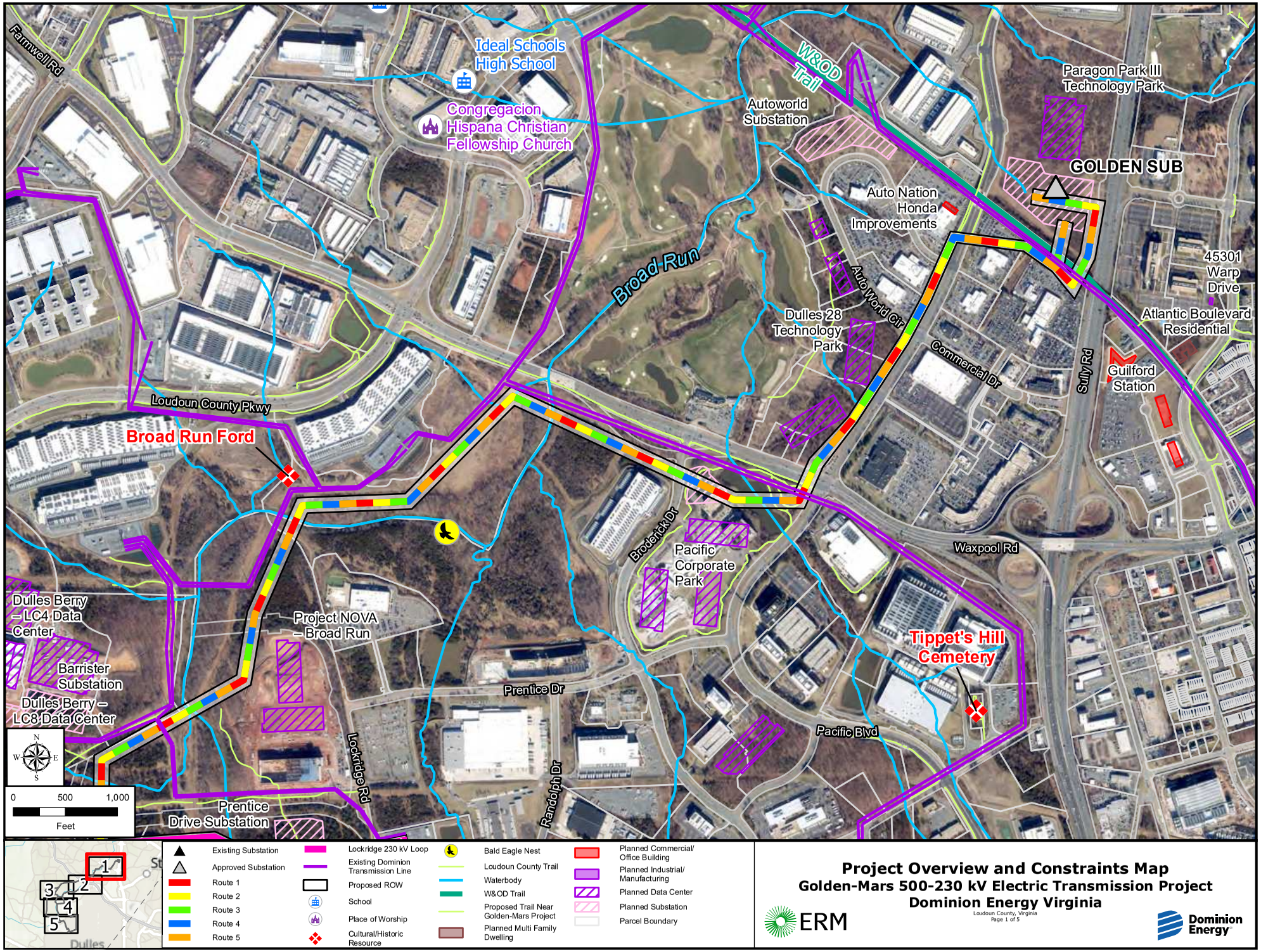
2. I move an alternate motion.

ATTACHMENT(S):

1. Golden to Mars Transmission Line Alignment Project Overview and Constraints Map, prepared by ERM for Dominion Energy (December 31, 2024)
2. Draft letter to LCPS for the purpose of communicating the Board's preferred alignment
3. Golden to Mars Transmission Line-Feature Crossing Table, prepared by ERM for Dominion Energy (January 7, 2025)



Attachment 1

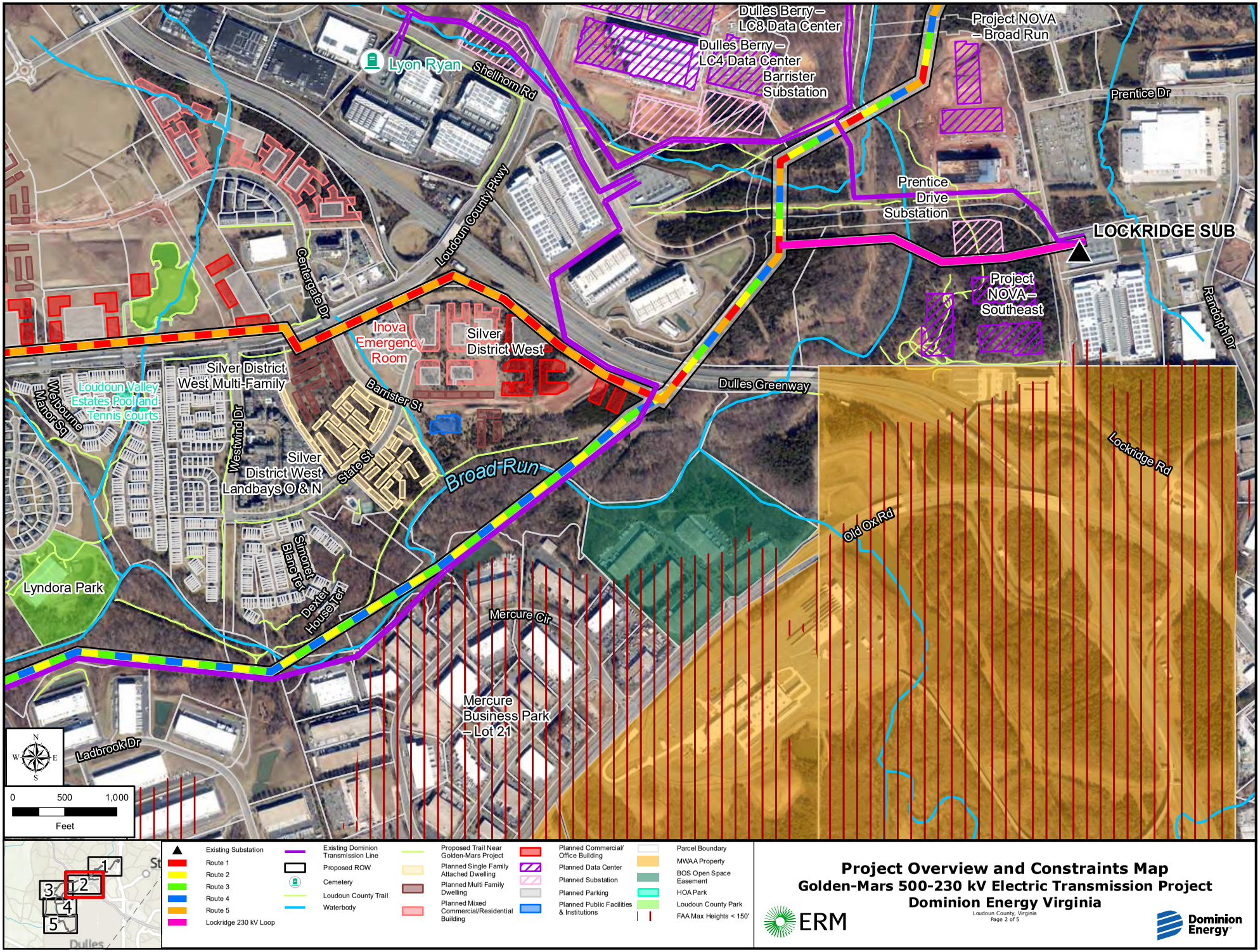


Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia

Loudoun County, Virginia
Page 1 of 5

ERM

Dominion Energy

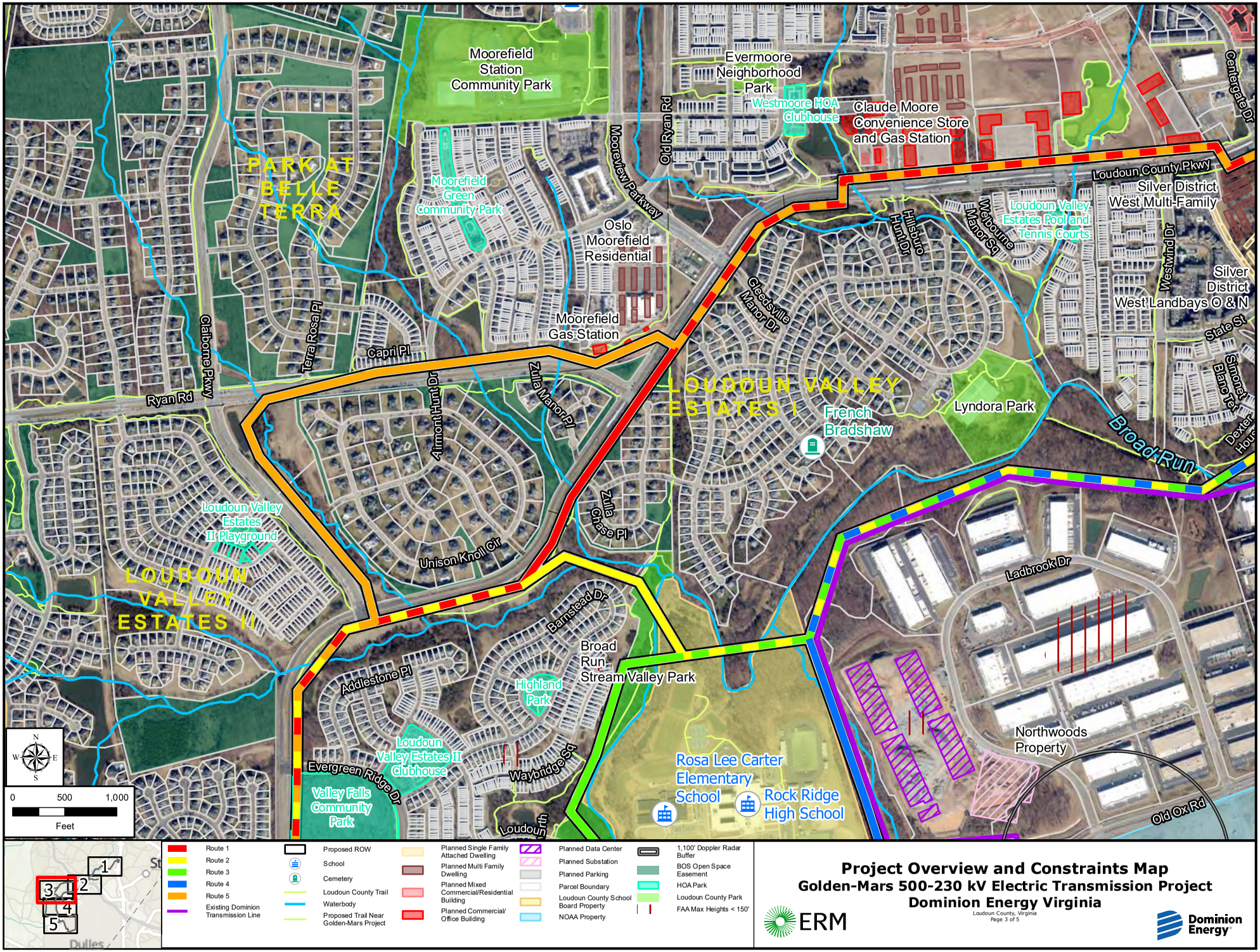


Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia

Loudoun County, Virginia
Page 2 of 5

ERM

Dominion Energy

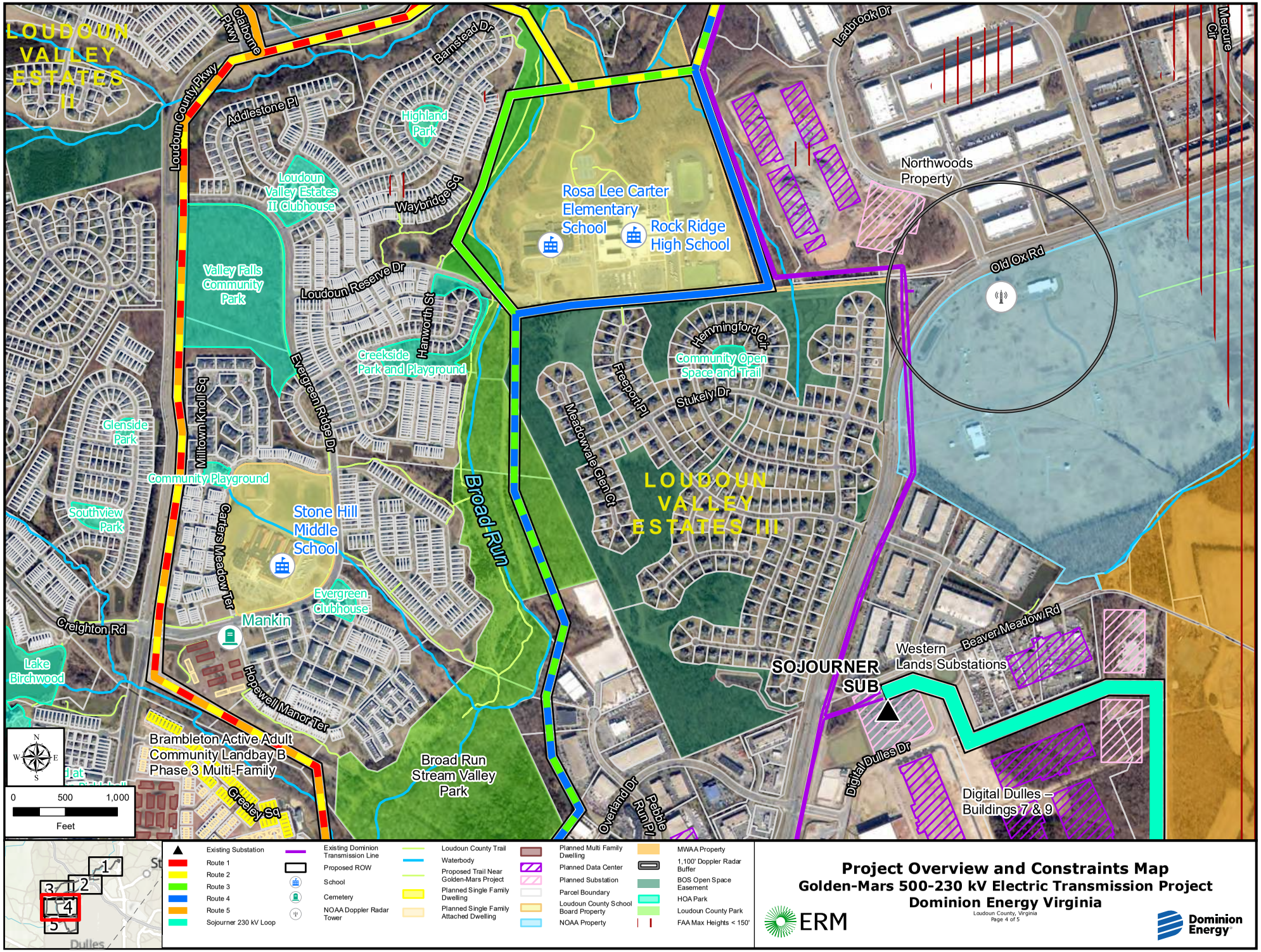


Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia

Loudoun County, Virginia
Page 3 of 5

ERM

Dominion Energy

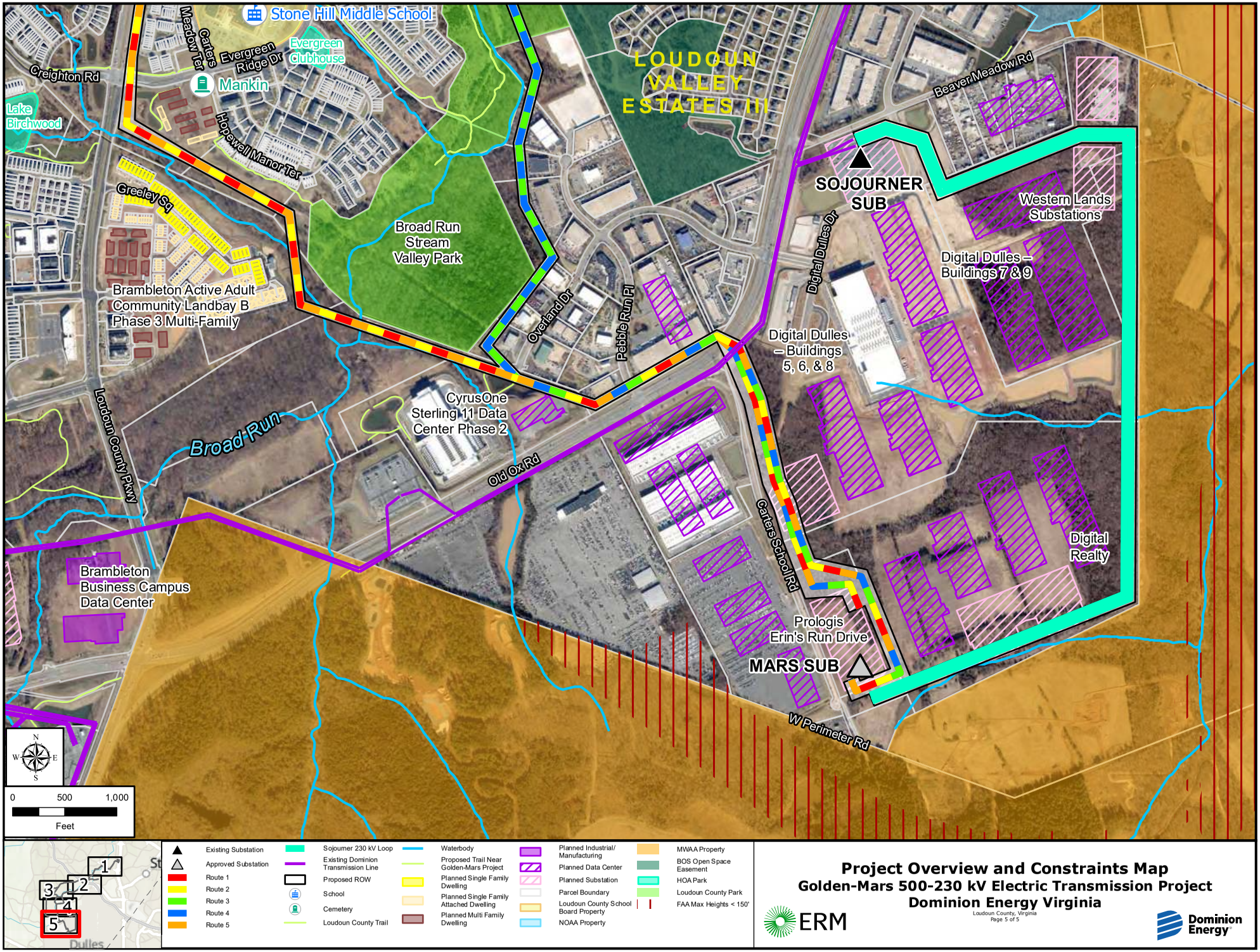


Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia

Loudoun County, Virginia
Page 4 of 5

ERM

Dominion Energy



Project Overview and Constraints Map
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia

Loudoun County, Virginia
Page 5 of 5

ERM

Dominion Energy

Insert Date

Mr. Aaron Spence, Ed.D.
Loudoun County Public Schools
21000 Education Court
Ashburn, VA 20148

Ref: Dominion Energy Virginia, Proposed Electric Transmission Line Project, Golden to Mars Substation

Dear Superintendent Spence,

On Wednesday, January 22, 2025, the Loudoun County Board of Supervisors (Board) convened to discuss Dominion Energy Virginia's (Dominion) proposed electric transmission line project. This project, known as the "Golden to Mars 500-230 kV Electric Transmission Project," includes a new double circuit overhead transmission line which originates at the future Golden Substation, located in the northwest quadrant of the intersection of Route 28 and the Washington & Old Dominion Trail and terminates at Mars Substation southeast of Old Ox Road (Route 606) adjacent to Dulles International Airport.

According to Dominion, they plan to submit their application to the State Corporation Commission (SCC) in February or March 2025. The Board customarily identifies a preferred alignment for such applications and communicates this preference to both Dominion and the SCC.

After evaluating the potential community and environmental impacts of each proposed alignment, the Board has selected Route 4 as its preferred alignment. We encourage the School Board to consider adopting this route as your preferred alignment as well. Our staff remains committed to collaborating closely with you and your team to advance the route that best serves our communities and minimizes adverse impacts to existing developed properties.

Sincerely,

Tim Hemstreet
County Administrator

Attachment 2

FEATURE CROSSINGS TABLE - GOLDEN TO MARS TRANSMISSION LINES

Feature	Unit	Route 1 Red	Route 2 Yellow	Route 3 Green	Route 4 Blue	Route 5 Orange
Route Details						
Centerline Total Length	miles	9.4	9.3	8.2	8.3	9.8
New Right-of Way	acres	123.5	118.5	105.4	105.0	129.3
Transmission Structures	count	92	90	83	83	97
Collocation						
Collocation/parallel with existing and future 230 kV transmission infrastructure	miles	2.8	4.0	4.0	4.5	2.8
Residences						
Dwellings within ROW	count	0	0	0	0	0
Dwellings within 100 Feet of Centerline	count	116	110	4	1	125
Dwellings within 250 Feet of Centerline	count	275	233	30	12	312
Dwellings within 500 Feet of Centerline	count	982	689	128	64	1,161
General Plan Place Types						
Suburban Mixed Use	miles	1.0	1.0	1.0	1.0	1.0
Suburban Employment	miles	1.4	1.4	1.4	1.4	1.4
Urban Employment	miles	0.7	0.7	0.7	0.7	0.7
Suburban Neighborhood	miles	3.0	2.9	1.6	1.2	3.0
Suburban Industrial/ Mineral Extraction	miles	1.6	2.9	3.2	3.6	1.6
Urban Transit Center	miles	1.5	0.3	0.3	0.3	1.5
Urban Mixed Use	miles	0.1	0.0	0.0	0.0	0.6
Land Ownership						
Private	parcels (miles)	57 8.9	48 8.7	48 7.0	46 7.3	70 9.1
Loudoun County School Board	parcels (miles)	0 0.00	1 0.2	1 0.2	1 0.4	0 0.0

Feature	Unit	Route 1 Red	Route 2 Yellow	Route 3 Green	Route 4 Blue	Route 5 Orange
Loudoun County Board of Supervisors	parcels (miles)	1 <0.1	1 0.1	5 0.7	3 0.4	1 <0.1
Conservation Easements						
Loudoun County Board of Supervisors Open Space Easements	count (miles)	2 0.3	1 0.1	4 0.4	2 0.1	0 0.0
Natural Resources						
Wetlands Affected (total)	acres	3.6	4.1	2.8	2.3	3.3
Forest	acres	41.1	56.9	56.7	57.2	41.1
Floodplain	acres	38.9	59.0	54.2	49.3	38.8
Waterbody Crossings	count	20	22	15	12	21

* Tabulations provided January 7, 2025 by ERM (Environmental Resources Management) on behalf of Dominion Energy.

Alternative Motion – Supervisor Saines

Board Business Meeting
January 22, 2025

11. *Golden to Mars Transmission Line Alignment (Countywide)
Staff Contacts: Pat Giglio & Daniel Galindo, Planning and Zoning

1. I move that the Board of Supervisors affirm the County's position identifying Route 4 of the Golden to Mars Transmission Line alignment as the County's preferred route and Route 3 of the Golden to Mars Transmission Line alignment as the County's secondary route preference, advocate to have Dominion Energy bury any transmission lines planned to pass closer than 500 feet from any residence or public school, and direct staff to continue to work with property owners, Loudoun County Public Schools, the Virginia Department of Transportation, Metropolitan Washington Airports Authority, and Dominion Energy to develop the proposed route.

   And,

   I further move that the Board of Supervisors direct staff to send a letter to the Loudoun County Public Schools requesting their support of either Routes 3 or 4 of the proposed Golden to Mars Transmission Line alignment.

Loudoun County, Virginia
www.loudoun.gov
Office of the County Administrator
1 Harrison Street, S.E., 5th Floor, P.O. Box 7000, Leesburg, VA 20177-7000
Telephone (703) 777-0200 • Fax (703) 777-0325

At a business meeting of the Board of Supervisors of Loudoun County, Virginia, held in the County Government Center, Board of Supervisors' Meeting Room, 1 Harrison St., S.E., Leesburg, Virginia, on Wednesday, January 22, 2025, at 4:00 p.m.

IN RE: Golden to Mars Transmission Line Alignment (Countywide)

Supervisor Saines moved that the Board of Supervisors affirm the County's position identifying Route 4 of the Golden to Mars Transmission Line alignment as the County's preferred route and Route 3 of the Golden to Mars Transmission Line alignment as the County's secondary route preference, advocate to have Dominion Energy bury any transmission lines planned to pass closer than 500 feet from any residence or public school, and direct staff to continue to work with property owners, Loudoun County Public Schools, the Virginia Department of Transportation, Metropolitan Washington Airports Authority, and Dominion Energy to develop the proposed route.

Supervisor Saines further moved that the Board of Supervisors direct staff to send a letter to the Loudoun County Public Schools requesting their support of either Routes 3 or 4 of the proposed Golden to Mars Transmission Line alignment.

Seconded by Vice Chair Turner.

Voting on the Motion: Supervisors Briskman, Glass, Letourneau, Randall, Saines, TeKrony, Turner, and Umstattd – Yes; None – No; Supervisor Kershner – Absent.

COPY TESTE:

Jennifer A. Brownell

_____

DEPUTY CLERK TO THE LOUDOUN COUNTY
BOARD OF SUPERVISORS

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. Assuming the Commission issues a final order by December 1, 2025, and real estate acquisition, detailed engineering, and permitting commences in January 2027, the Company anticipates that all construction will be complete and the Project will be energized by June 1, 2028.

The Company will request the outages discussed below from PJM prior to the date of such outages. 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. As a result, 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.

Golden-Mars Lines

The Company anticipates requesting outages on the following 230 kV transmission facilities, which will be scheduled as timing allows:

- Cabin Run-Shellhorn Line #2095
- Mars-Sojourner Line #2292
- Buttermilk-Pacific Line #2170
- BECO-Pacific Line #2165
- Paragon Park-Sterling Park Line #2081
- Paragon Park-Sterling Park Line #2150
- Golden-Paragon Park Line #2348

Assuming a final order from the Commission by December 1, 2025, as requested in Section I.H, the Company estimates that construction of the Golden-Mars Lines will commence around winter 2027 and be completed by summer 2028.

Lockridge 230 kV Loop

The Company is currently evaluating whether a full station outage will be required at the Lockridge Substation to loop the proposed Lockridge Loop into and out of the station, or if the work can be completed under alternating outages by utilizing

temporary configurations within the substation. Any required outages will be scheduled as timing allows.

Sojourner 230 kV Loop

The Company anticipates requesting outages on the following 230 kV transmission facilities, which will be scheduled as timing allows:

- Cabin Run-Shellhorn Line #2095
- Mars-Sojourner Line #2292
- Mars-Wishing Star Line #2291

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[57] provides a tool routinely used by the Company in routing its transmission line projects. The following discussion addresses the Guidelines most pertinent to the Project and its context within the study area.

Golden-Mars Lines

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 wherever possible by prioritizing existing rights-of-way as routing opportunities and minimizing impacts to existing and planned land use wherever possible. As discussed in Sections II.A.4 and II.A.9, collocation opportunities along existing transmission facilities were evaluated and used wherever possible. Where no collocation corridors were available, secondary linear features such as highway corridors and existing utility rights-of-way were identified for collocation. The Golden-Mars Lines Proposed and Alternative Routes are collocated with existing utility easements (water, gas, and electric distribution rights-of-way), cross compatible land uses (*i.e.*, cross proposed data center developments and other industrial zoned parcels), and parallel major roads and highways wherever practicable, as discussed in Section 4.5 of the Environmental Routing Study.

Consistent with Guideline #2, the Golden-Mars Proposed and Alternative Routes avoid the national historic places listed in the National Register of Historic Places ("NRHP") and natural landmarks listed in the National Register of Natural Landmarks but cross various public and privately maintained parklands. Where the rights-of-way are routed through parklands, they are located along the edge of the property or parallel to existing utility rights-of-way or roads and in a manner designed to preserve the character of the area.

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 staff, LCSB staff, the Loudoun County BOS, and Virginia Department of Transportation ("VDOT"). See Sections III.B, III.J, and V.A 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,

[57] *See* Guideline #1 in Attachment 1 of the *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*, which is available at https://scc.virginia.gov/getattachment/921b6b42-4e06-4ab5-b296-e73fdcd60cac/Trans.pdf.

#16, #18, and #22).

Lockridge 230 kV Loop

The Company utilized Guidelines #1 and #3 by routing across a proposed data center development and, in consultation with that developer, identified a route that minimizes impacts to forested areas along Broad Run and collocates with portions of a future substation site.

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).

Sojourner 230 kV Loop

The Company utilized Guidelines #1 and #3 by routing across a proposed data center development and, in consultation with that developer, identified a route that minimizes impacts to tree-save areas and collocates with portions of a future substation site.

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).

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. **Golden-Mars Lines**

The Golden-Mars Proposed Route (Route 3) crosses Loudoun County for a total of approximately 8.3 miles. Approximately 4.1 miles of the Golden-Mars Lines are located within Dominion Energy Virginia's service territory and approximately 4.2 miles are within NOVEC's service territory. NOVEC does not object to the construction of the Golden-Mars Lines. See Attachment II.A.12.b.

Lockridge 230 kV Loop

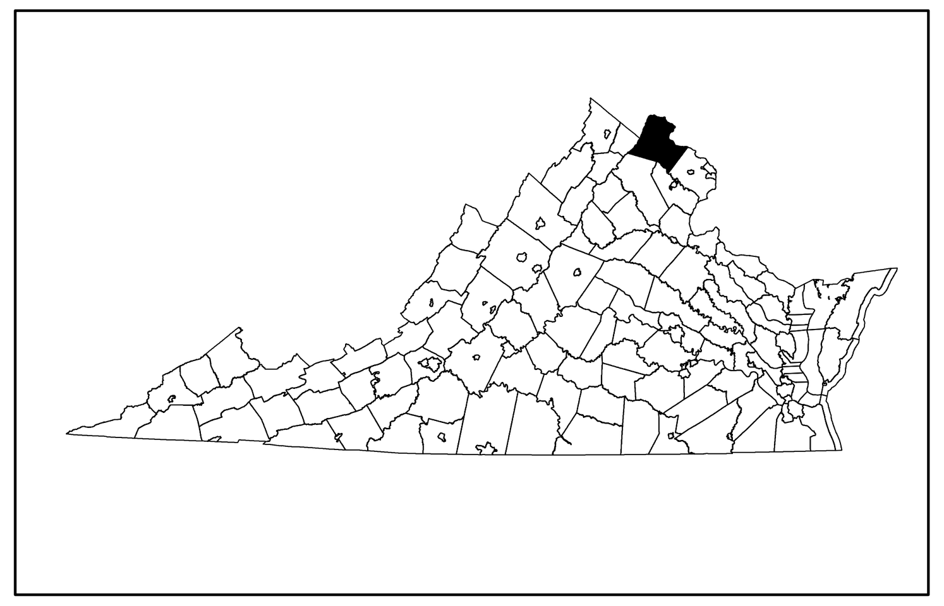
The Lockridge Loop Proposed Route crosses Loudoun County for a total of approximately 0.6 mile. The Lockridge Loop is located entirely within Dominion Energy Virginia's service territory.

Sojourner 230 kV Loop

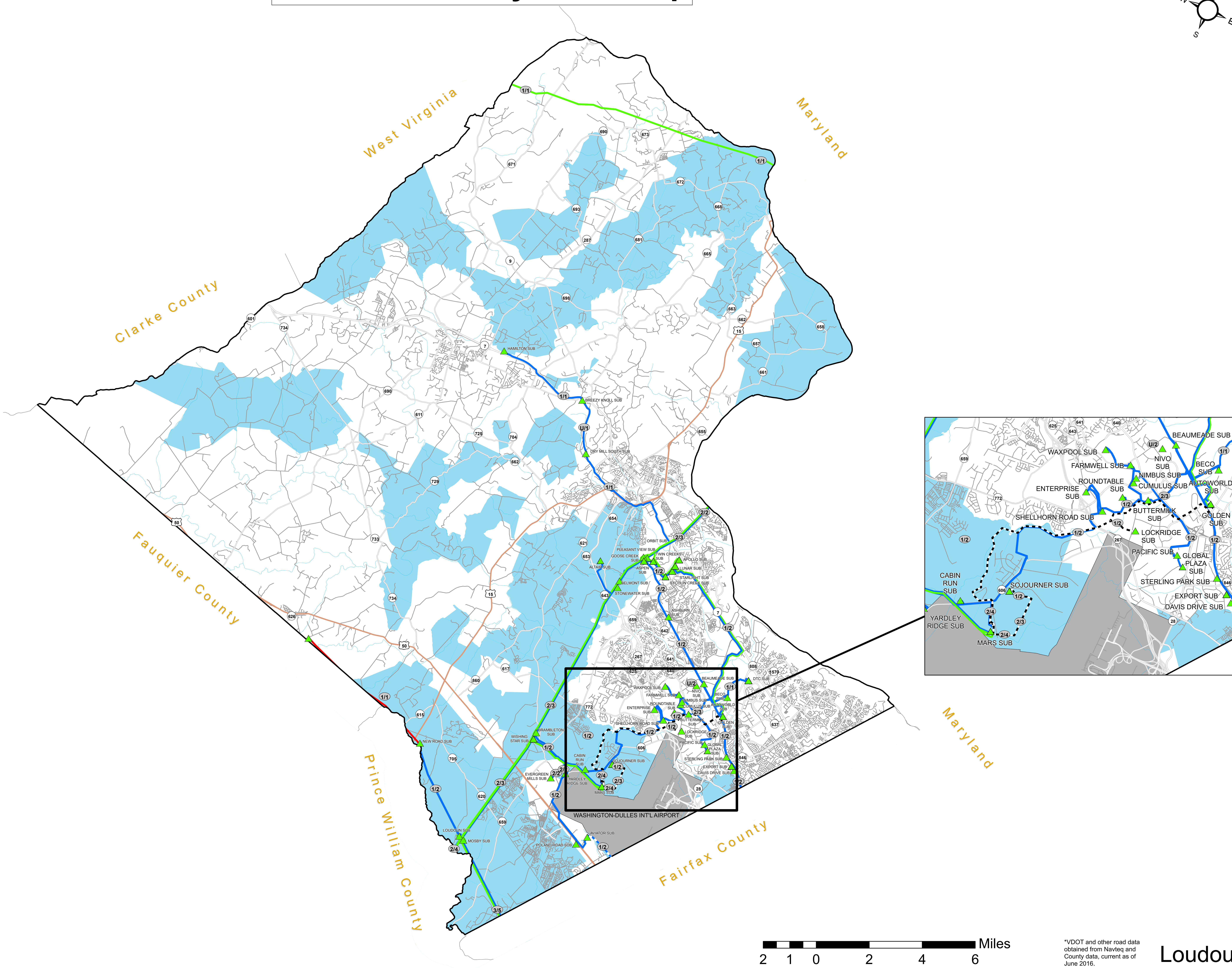
The Sojourner Loop Proposed Route crosses Loudoun County for a total of approximately 1.9 miles. The Sojourner Loop is located entirely within NOVEC's service territory. NOVEC does not object to the construction of the Sojourner Loop. See Attachment II.A.12.b.

b. An electronic copy of the VDOT "General Highway Map" for Loudoun County is marked as required and submitted with the Application. Reduced copies of the maps are provided as Attachment II.A.12.b (Loudoun County).

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 2/19/2024. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.



133

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

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

SIGNATURE *Thomas Pierpoint*

DATE 2/14/2025 TITLE VP, Operations

Legend

- Proposed Project
- 500kV Under Consideration by SCC
- 230kV Under Consideration by SCC
- Number of Lines of Structures/Number of Circuits
- Proposed Substation (None in Loudoun County)
- Existing Substation
- 115 kV
- 230 kV
- 500 kV

Provider Service Territory

- NOVEC
- VEPCO

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

Loudoun

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: **Golden-Mars Lines**

The proposed 500 kV line will be designed and operated at 500 kV with no anticipated voltage upgrade and have a transfer capability of 4,357 MVA.

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

Lockridge 230 kV Loop

The proposed double circuit 230 kV lines will be designed and operated at 230 kV with no anticipated voltage upgrade and have a transfer capability of 1,573 MVA.

Sojourner 230 kV Loop

The proposed double circuit 230 kV 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: **Golden-Mars Lines**

The proposed 500 kV line will include three-phase triple-bundled 1351.5 ACSR conductors arranged as shown in Attachments II.B.3.vi-xiv. The three-phase triple-bundled 1351.5 ACSR conductors are a Company standard for new 500 kV construction.

The proposed 230 kV line will include three-phase twin-bundled 768.2 ACSS/TW/HS conductors arranged as shown in Attachments II.B.3.vi-xi. The twin-bundled 768.2 ACSS/TW/HS conductors are a Company standard for new 230 kV construction.

Lockridge 230 kV Loop

The two proposed double circuit 230 kV lines will include 3-phase twin-bundled 768.2 ACSS/TW/HS conductors arranged as shown in Attachments II.B.3.i, ii, & v. The twin-bundled 768.2 ACSS/TW/HS conductors are a Company standard for new 230 kV construction.

Sojourner 230 kV Loop

The two proposed double circuit 230 kV lines will include 3-phase twin-bundled 768.2 ACSS/TW/HS conductors arranged as shown in Attachments II.B.3.i-v. 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.

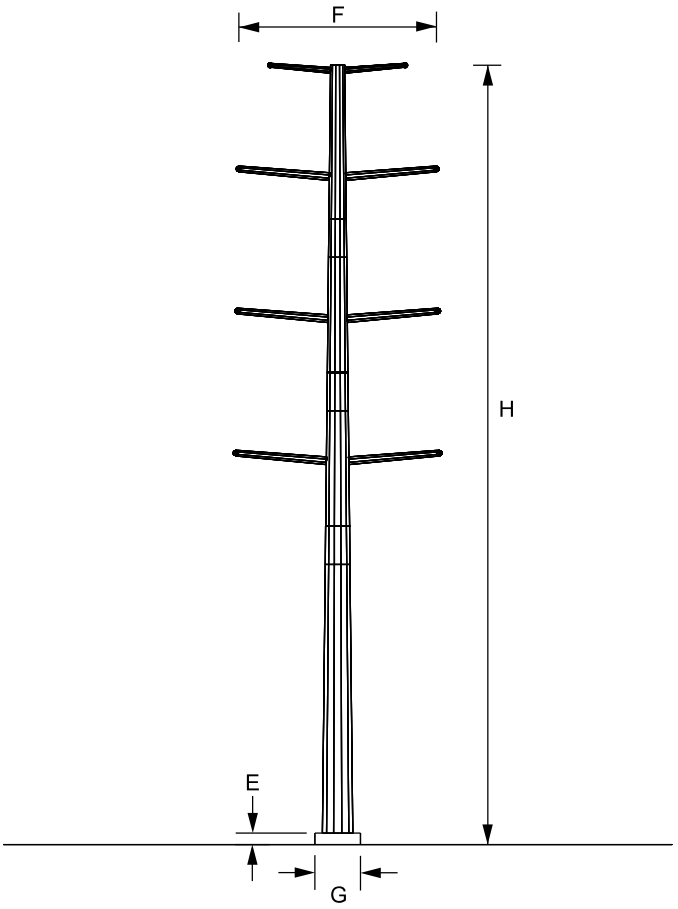
Response: For subparts (b)-(j), the descriptions and diagrams of the supporting structures for the Project as proposed are provided as Attachments II.B.3.i-xiv as follows:

Golden-Mars Lines: See Attachments II.B.3.v-xiv.

Lockridge 230 kV Loop: See Attachments II.B.3.i, ii, & v.

Sojourner 230 kV Loop: See Attachments II.B.3.i-v.

For subpart (a), Attachment II.B.3.xv provides approximate mapping of the structures for the Project as proposed, which is subject to change during final engineering.



TYPICAL DC 230KV ENGINEERED MONOPOLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (6) - SOJOURNER LOOP (SEE NOTE 1) 0.6 MILES (5) - LOCKRIDGE LOOP (SEE NOTE 1)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	100' (SOJOURNER LOOP) / 100' (LOCKRIDGE LOOP) 100' (SOJOURNER LOOP) / 120' (LOCKRIDGE LOOP) 100' (SOJOURNER LOOP) / 111' (LOCKRIDGE LOOP)
I. AVERAGE SPAN LENGTH:	492' (SOJOURNER LOOP) / 478' (LOCKRIDGE LOOP) - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (230KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

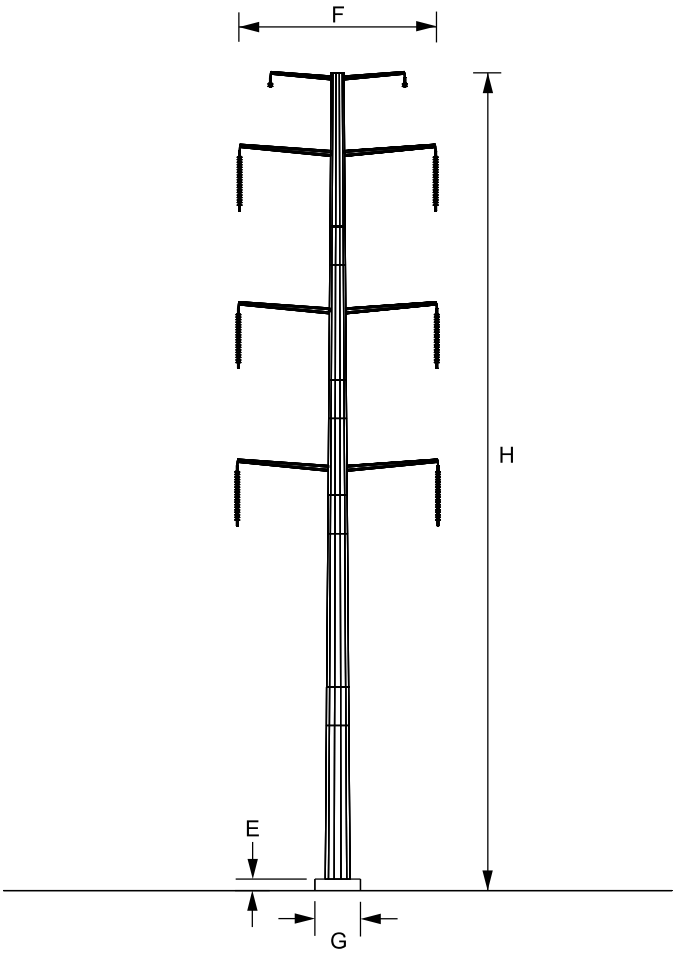
LINES 2292, 2412, 2413, & 2427

TYPICAL 230KV DC ENGINEERED MONOPOLE - DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.i

DRAWN BY: TMR



TYPICAL DC 230KV ENGINEERED MONOPOLE - SUSPENSION

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (8) - SOJOURNER LOOP (SEE NOTE 1) 0.6 MILES (1) - LOCKRIDGE LOOP (SEE NOTE 1)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	110' (SOJOURNER LOOP) / 115' (LOCKRIDGE LOOP) 120' (SOJOURNER LOOP) / 115' (LOCKRIDGE LOOP) 116' (SOJOURNER LOOP) / 115' (LOCKRIDGE LOOP)
I. AVERAGE SPAN LENGTH:	643' (SOJOURNER LOOP) / 497' (LOCKRIDGE LOOP) - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (230KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

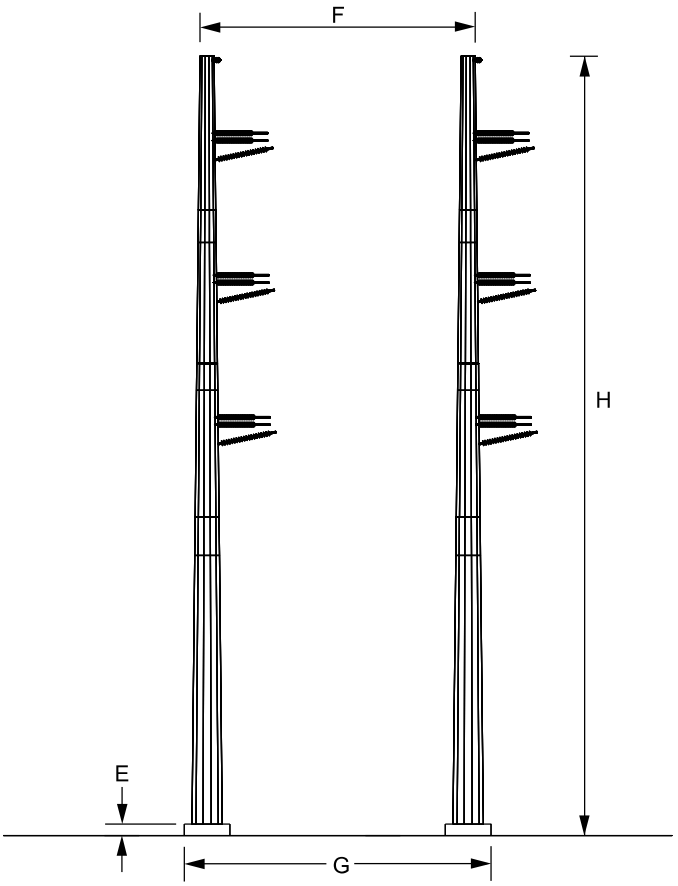
LINES 2292, 2412, 2413, & 2427

TYPICAL DC 230KV ENGINEERED MONOPOLE - SUSPENSION

ATTACHMENT NO.

II.B.3.ii

DRAWN BY: TMR



TYPICAL DC 230KV ENGINEERED 2-POLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; 2-POLES USED FOR HEAVY ANGLES TO OPTIMIZE POLE/FOUNDATION SIZE AND COST
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (3) - SOJOURNER LOOP (SEE NOTE 1)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	36'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	95' (SOJOURNER LOOP) 100' (SOJOURNER LOOP) 97' (SOJOURNER LOOP)
I. AVERAGE SPAN LENGTH:	455' (SOJOURNER LOOP) - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (230KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

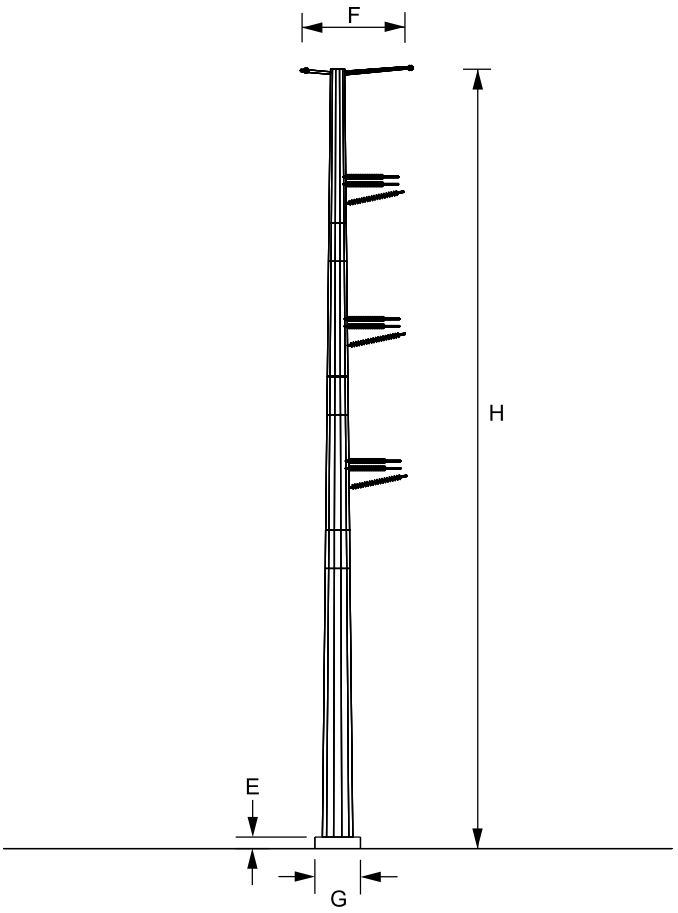
LINES 2292, 2412, 2413, & 2427

TYPICAL DC 230KV ENGINEERED 2-POLE DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.iii

DRAWN BY: TMR



TYPICAL SC 230KV ENGINEERED MONOPOLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; USED TO SEPARATE CIRCUITS NEAR SUBSTATION TERMINATIONS
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (4) - SOJOURNER LOOP (SEE NOTE 1)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	14'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	100' (SOJOURNER LOOP) 120' (SOJOURNER LOOP) 105' (SOJOURNER LOOP)
I. AVERAGE SPAN LENGTH:	272' (SOJOURNER LOOP) - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (230KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

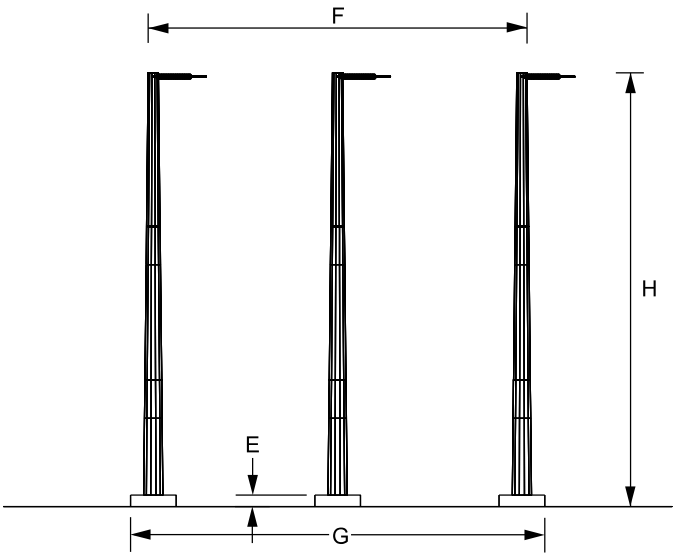
LINES 2095, 2292, & 2427

TYPICAL SC 230KV ENGINEERED MONOPOLE - DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.iv

DRAWN BY: TMR



TYPICAL SC 230KV ENGINEERED 3-POLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	USED FOR 230KV HEAVY ANGLES WHERE 500KV IS OVERHEAD
C. LENGTH OF R/W (STRUCTURE QTY):	1.9 MILES (1) - SOJOURNER LOOP (SEE NOTE 1) 0.6 MILES (1) - LOCKRIDGE LOOP (SEE NOTE 1)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	50'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	50' (SOJOURNER LOOP) / 55' (LOCKRIDGE LOOP) 50' (SOJOURNER LOOP) / 55' (LOCKRIDGE LOOP) 50' (SOJOURNER LOOP) / 55' (LOCKRIDGE LOOP)
I. AVERAGE SPAN LENGTH:	914' (SOJOURNER LOOP) / 152' (LOCKRIDGE LOOP) - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (230KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

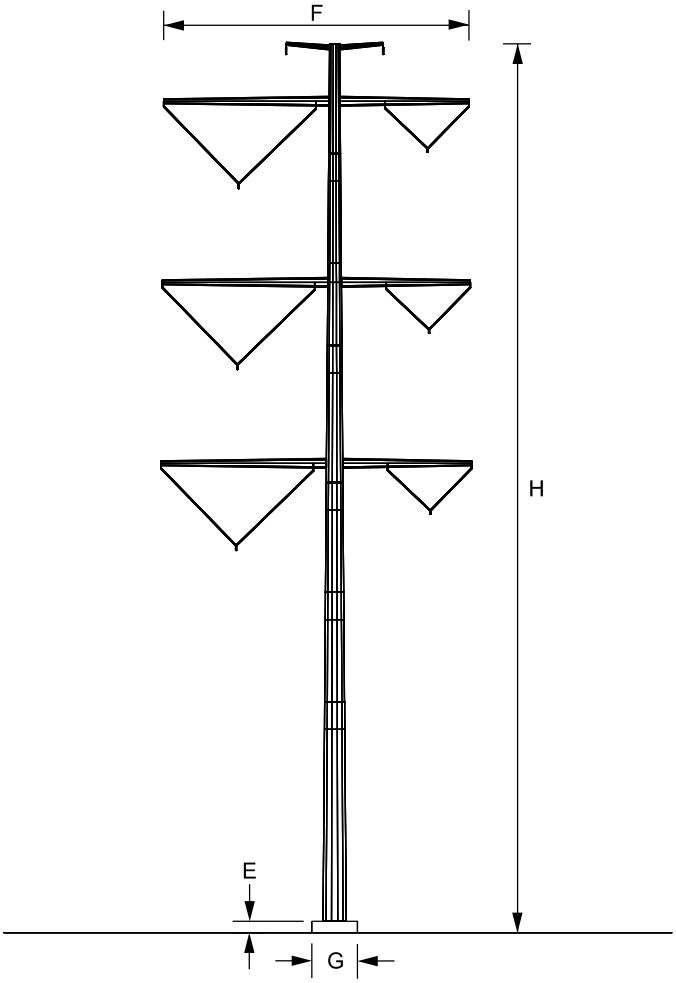
LINES 2292 & 2412

TYPICAL SC 230KV ENGINEERED 3-POLE
DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.v

DRAWN BY: TMR



TYPICAL DC 500KV/230KV ENGINEERED MONOPOLE - SUSPENSION

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (17) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	56'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	155' 175' 163'
I. AVERAGE SPAN LENGTH:	593' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5'/27.5' (230KV/500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy

Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

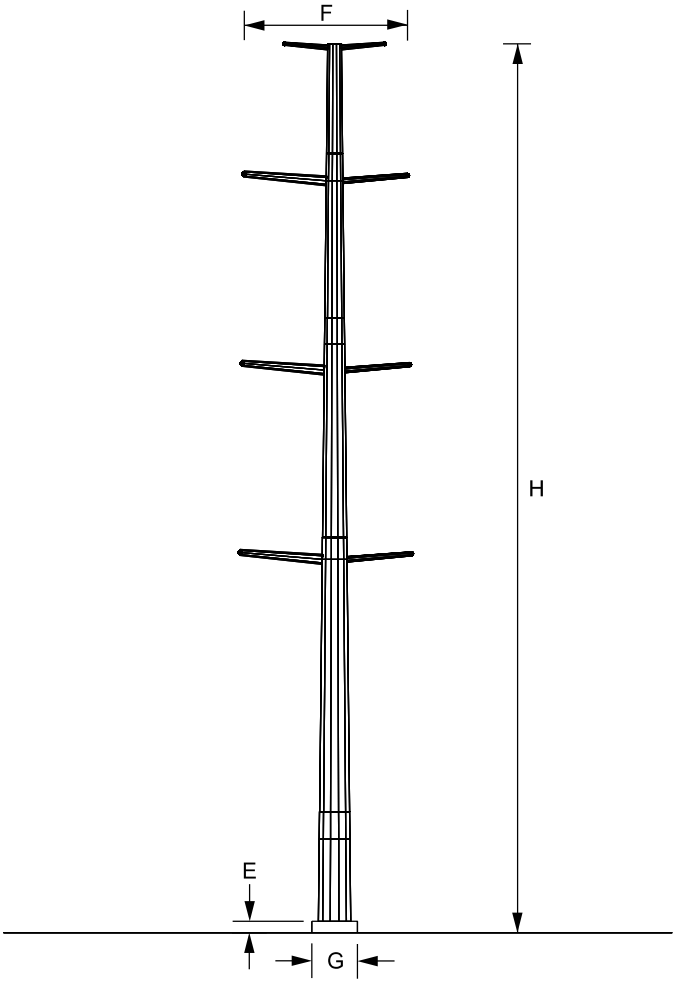
LINES 5003, 2412 & 2413

TYPICAL 500KV/230KV DC ENGINEERED MONOPOLE - SUSPENSION

ATTACHMENT NO.

II.B.3.vi

DRAWN BY: TMR



TYPICAL DC 500KV/230KV ENGINEERED MONOPOLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (19) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	30'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	155'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	170'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	163'
I. AVERAGE SPAN LENGTH:	586' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5'/27.5' (230KV/500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

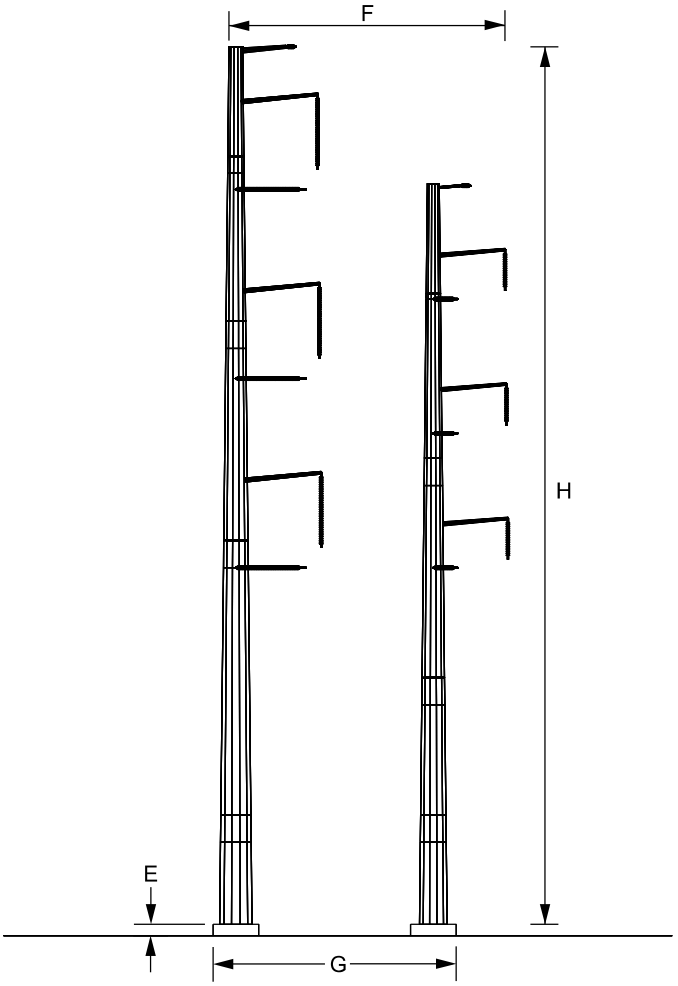
LINES 5003, 2412 & 2413

TYPICAL 500KV/230KV DC ENGINEERED MONOPOLE - DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.vii

DRAWN BY: TMR



TYPICAL DC 500KV/230KV ENGINEERED 2-POLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; 2-POLES USED FOR HEAVY ANGLES TO OPTIMIZE POLE/FOUNDATION SIZE AND COST
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (7) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	42'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	160' 175' 165'
I. AVERAGE SPAN LENGTH:	567' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5'/27.5' (230KV/500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

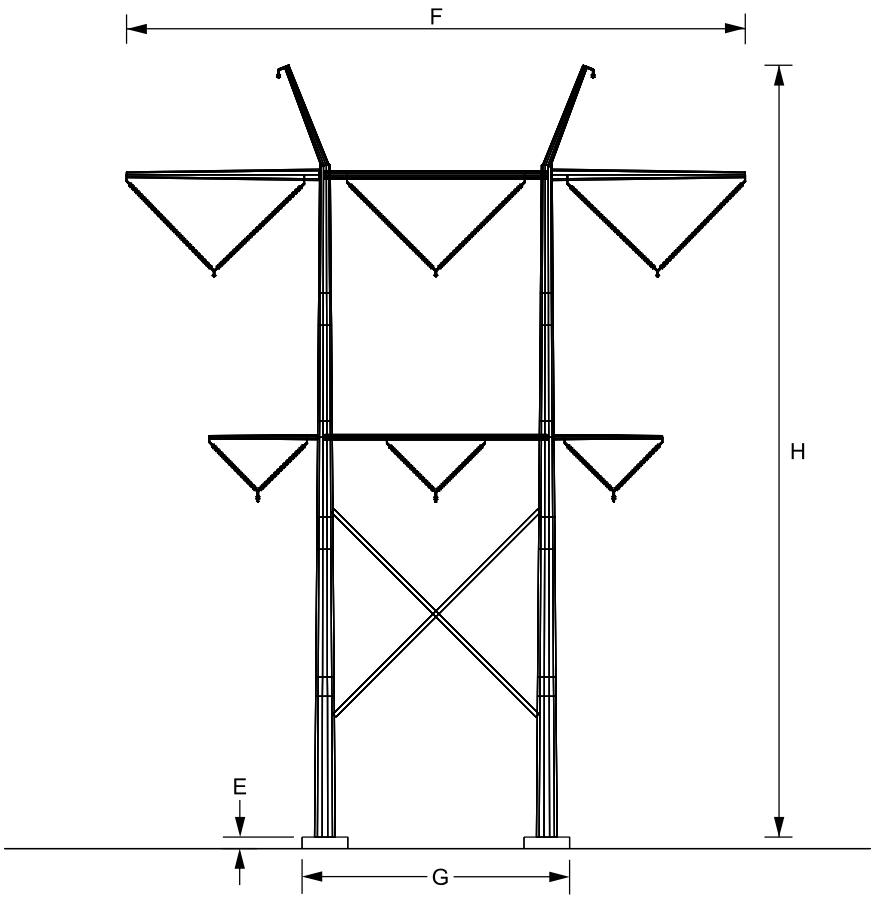
LINES 5003, 2412, & 2413

TYPICAL 500KV/230KV DC ENGINEERED 2-POLE - DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.viii

DRAWN BY: TMR



TYPICAL DC 500KV/230KV ENGINEERED H-FRAME - SUSPENSION

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION REDUCES STR. HEIGHTS WHERE CROSSING HIGHWAYS, RAILROADS, AND OTHER TRANSMISSION FACILITIES
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (2) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	97'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	120'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	125'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	123'
I. AVERAGE SPAN LENGTH:	803' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5'/27.5' (230KV/500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

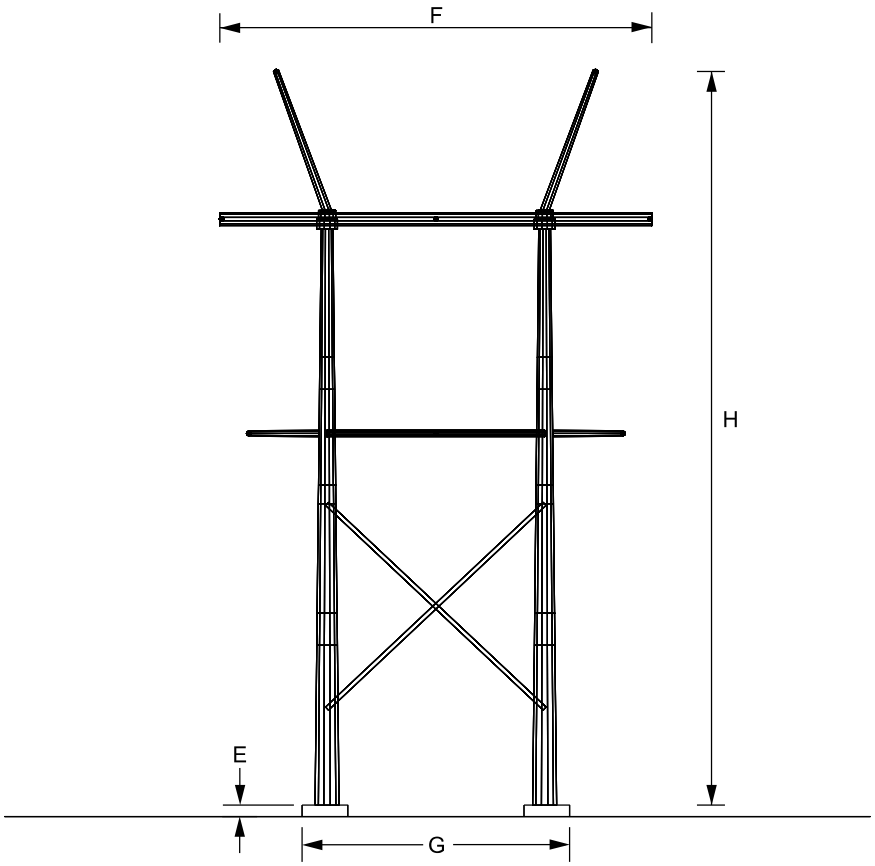
LINES 5003 & 2412

TYPICAL DC 500KV/230KV ENGINEERED H-FRAME - SUSPENSION

ATTACHMENT NO.

II.B.3.ix

DRAWN BY: TMR



TYPICAL DC 500KV/230KV ENGINEERED H-FRAME - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION REDUCES STR. HEIGHTS WHERE CROSSING HIGHWAYS, RAILROADS, AND OTHER TRANSMISSION FACILITIES
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (8) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	68'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	130' 175' 150'
I. AVERAGE SPAN LENGTH:	754' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5'/27.5' (230KV/500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

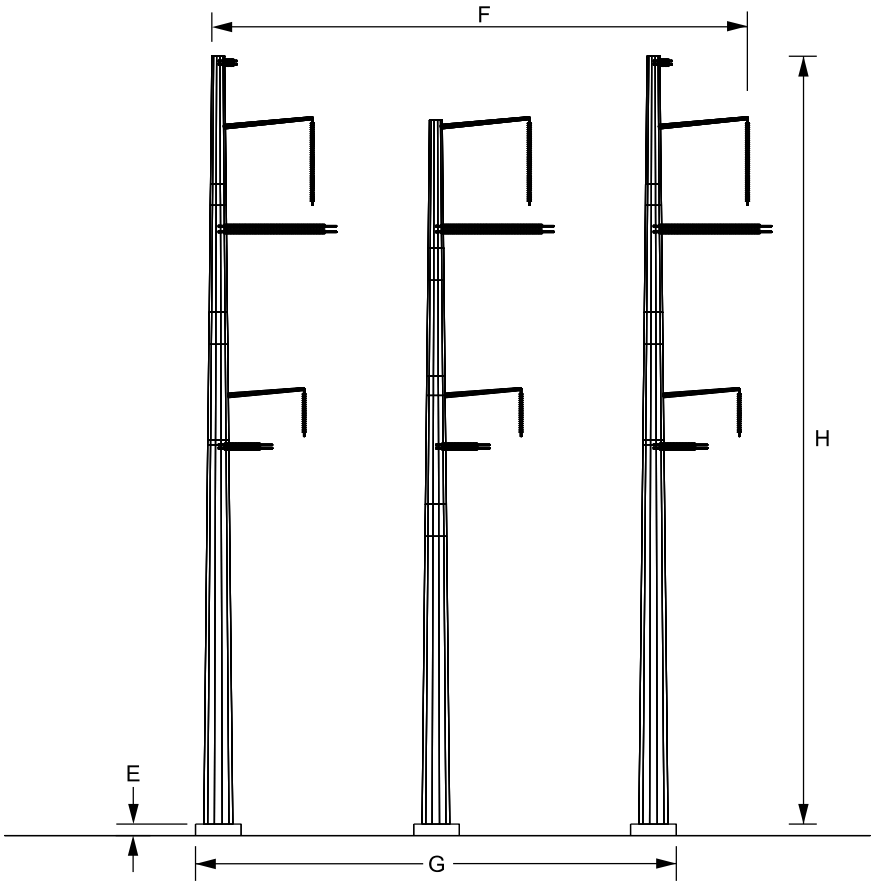
LINES 5003, 2413, & 2412

TYPICAL DC 500KV/230KV ENGINEERED H-FRAME - DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.x

DRAWN BY: TMR



TYPICAL DC 500KV/230KV ENGINEERED 3-POLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION REDUCES STR. HEIGHTS WHERE CROSSING HIGHWAYS, RAILROADS, AND OTHER TRANSMISSION FACILITIES
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (7) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	84' MIN. (VARIES WITH LINE ANGLE)
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	110'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	180'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	143'
I. AVERAGE SPAN LENGTH:	724' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5'/27.5' (230KV/500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

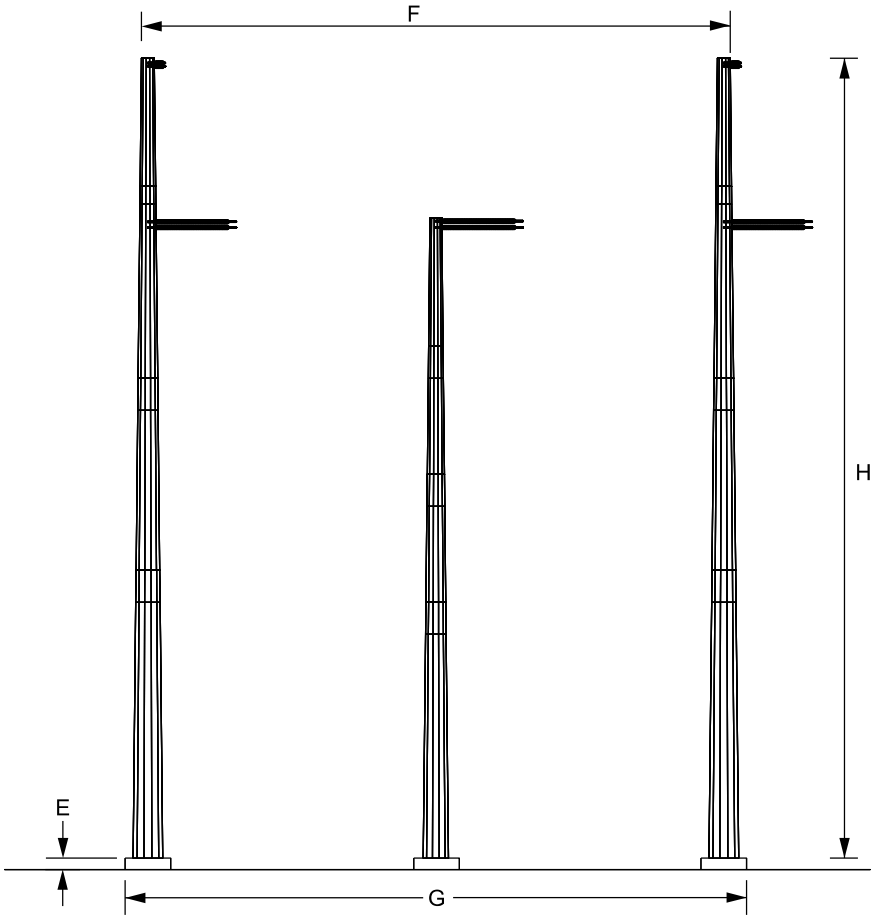
LINES 5003, 2413, & 2412

TYPICAL DC 500KV/230KV ENGINEERED 3-POLE - DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.xi

DRAWN BY: TMR



TYPICAL SC 500KV ENGINEERED 3-POLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION REDUCES STR. HEIGHTS WHERE CROSSING HIGHWAYS, RAILROADS, AND OTHER TRANSMISSION FACILITIES
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (4) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	84' MIN. (VARIES WITH LINE ANGLE)
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	120'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	165'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	149'
I. AVERAGE SPAN LENGTH:	569' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	27.5' (500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

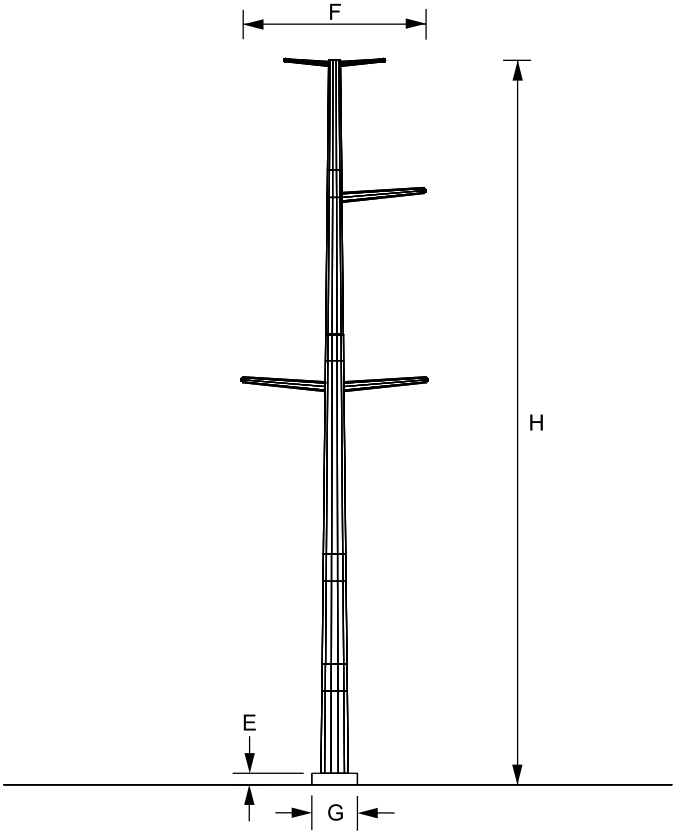
LINE 5003

TYPICAL SC 500KV ENGINEERED 3-POLE
DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.xii

DRAWN BY: TMR



TYPICAL SC 500KV ENGINEERED MONOPOLE (DELTA) - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; DELTA STRUCTURES USED TO STAY BELOW FAA HEIGHT RESTRICTIONS NEAR IAD
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (5) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	34'
G. AVERAGE WIDTH AT BASE:	VARIES - SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4):	120'
MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4):	135'
AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	128'
I. AVERAGE SPAN LENGTH:	438' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	27.5' (500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

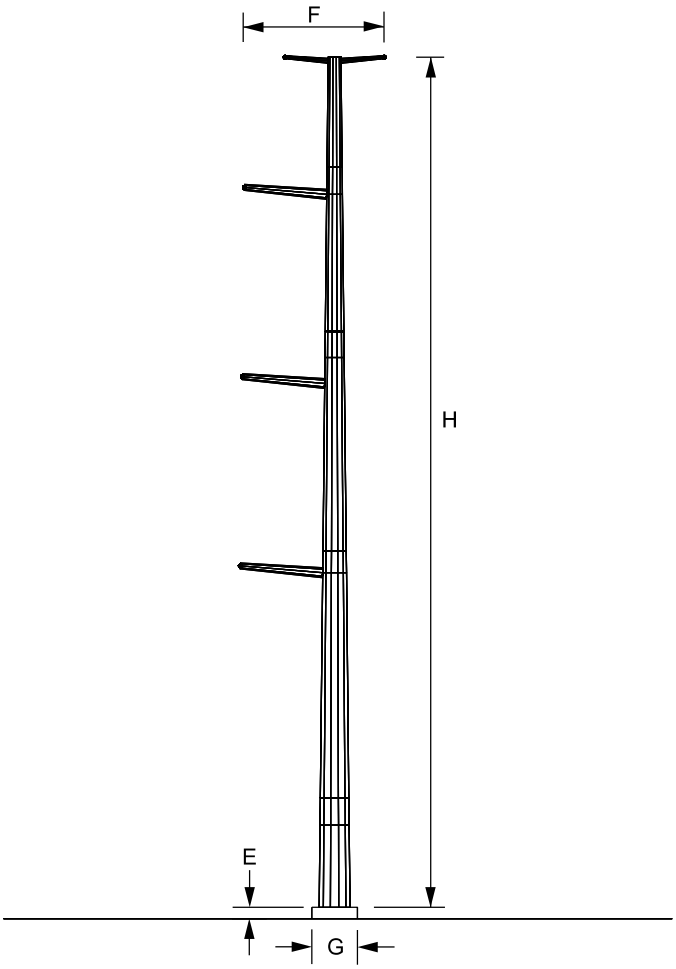
LINE 5003

TYPICAL SC 500KV ENGINEERED MONOPOLE (DETLA) DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.xiii

DRAWN BY: TMR



TYPICAL SC 500KV ENGINEERED MONOPOLE - DOUBLE DEADEND

B. RATIONALE FOR STRUCTURE TYPE:	MINIMIZES RIGHT OF WAY ACQUISITION; STRUCTURE IS USED TO REDUCE CONDUCTOR FOOTPRINT AROUND A FUTURE SUBSTATION
C. LENGTH OF R/W (STRUCTURE QTY):	8.1 MILES (1) - SEE NOTE 1
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL USED TO MINIMIZE VISUAL IMPACTS BY REDUCING GLARE & MATCHING NEARBY EXISTING STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 2
F. AVERAGE WIDTH AT CROSSARM:	26'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 3
H. MINIMUM STRUCTURE HEIGHT (SEE NOTE 4): MAXIMUM STRUCTURE HEIGHT (SEE NOTE 4): AVERAGE STRUCTURE HEIGHT (SEE NOTE 4):	155' 155' 155'
I. AVERAGE SPAN LENGTH:	262' - SEE NOTE 5
J. MINIMUM CONDUCTOR-TO-GROUND:	27.5' (500KV) AT MAXIMUM OPERATING TEMPERATURE PER 2023 NESC CODE

NOTES:
1. ROW LENGTH & STRUCTURE QUANTITY ARE EXCLUSIVE OF COMPANY SUBSTATION PROPERTIES
2. MINIMUM FOUNDATION REVEAL SHALL BE 1.5'
3. FOUNDATION DIAMETER SHALL BE BASED ON GEOTECHNICAL FINDINGS DURING FINAL ENGINEERING
4. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND EXCLUDE FOUNDATION REVEAL
5. THE SPAN LENGTHS ASSOCIATED WITH THIS STRUCTURE TYPE ARE THE AHEAD SPANS

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

Dominion Energy
Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

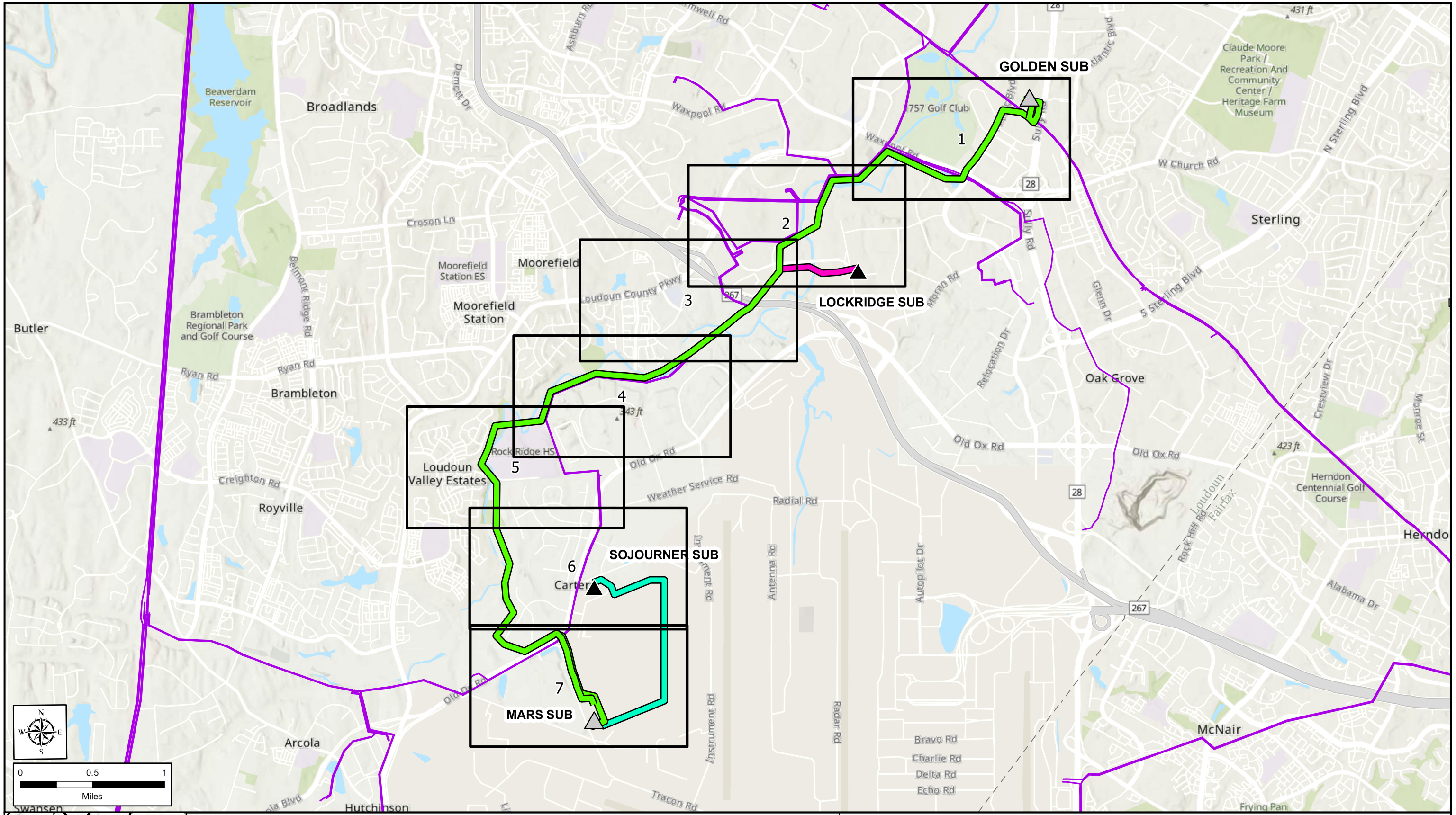
LINE 5003

TYPICAL SC 500KV ENGINEERED MONOPOLE DOUBLE DEADEND

ATTACHMENT NO.

II.B.3.xiv

DRAWN BY: TMR



Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page Index

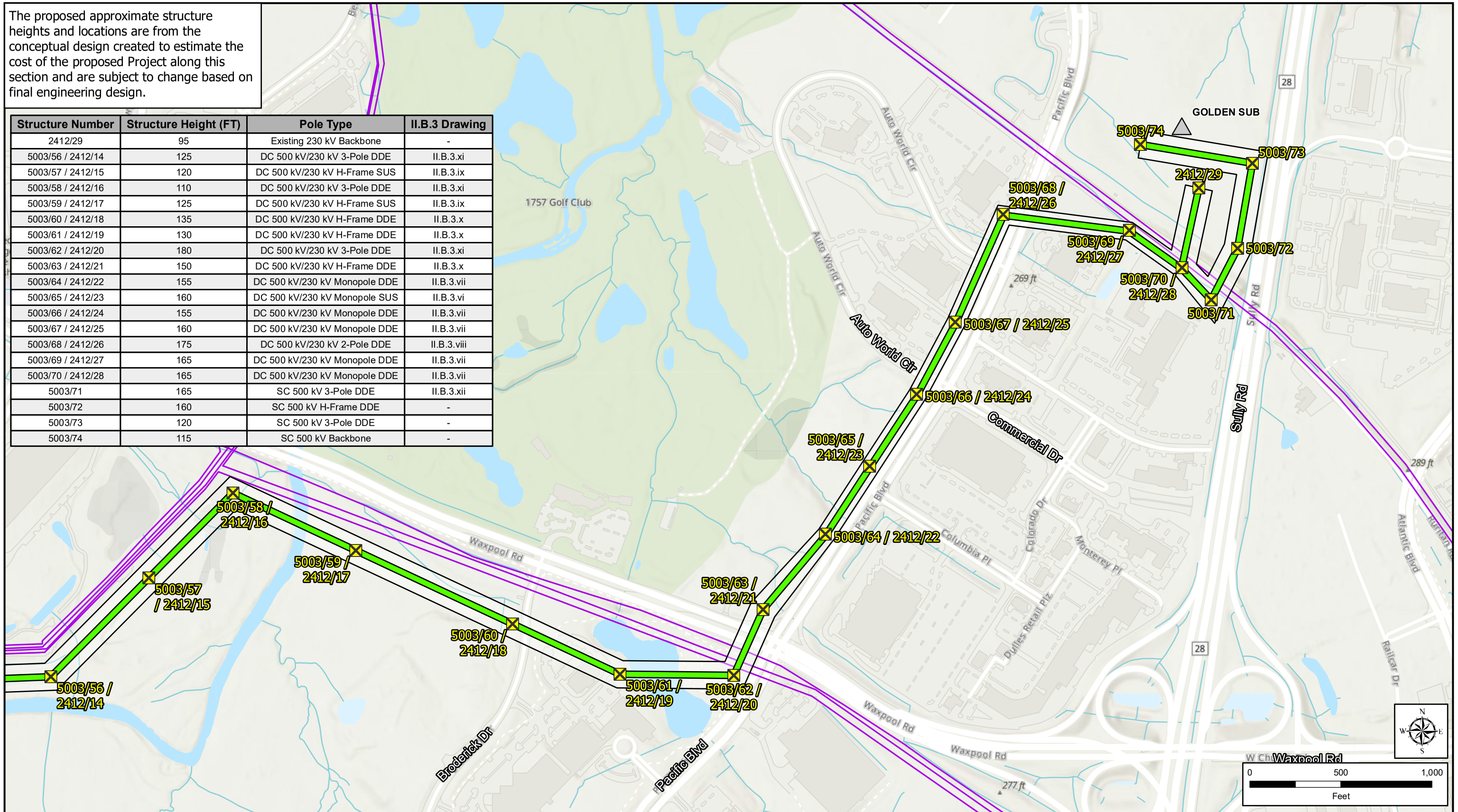
ERM

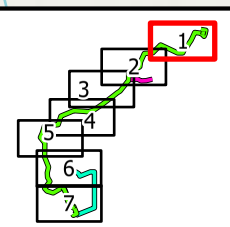
Dominion Energy

Attachment II.B.3.xv

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

Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
2412/29	95	Existing 230 kV Backbone	-
5003/56 / 2412/14	125	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/57 / 2412/15	120	DC 500 kV/230 kV H-Frame SUS	II.B.3.ix
5003/58 / 2412/16	110	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/59 / 2412/17	125	DC 500 kV/230 kV H-Frame SUS	II.B.3.ix
5003/60 / 2412/18	135	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/61 / 2412/19	130	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/62 / 2412/20	180	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/63 / 2412/21	150	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/64 / 2412/22	155	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/65 / 2412/23	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/66 / 2412/24	155	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/67 / 2412/25	160	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/68 / 2412/26	175	DC 500 kV/230 kV 2-Pole DDE	II.B.3.viii
5003/69 / 2412/27	165	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/70 / 2412/28	165	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/71	165	SC 500 kV 3-Pole DDE	II.B.3.xii
5003/72	160	SC 500 kV H-Frame DDE	-
5003/73	120	SC 500 kV 3-Pole DDE	-
5003/74	115	SC 500 kV Backbone	-





Future Substation
Proposed Structure Location
Golden-Mars Proposed Route
Existing Dominion Transmission Lines

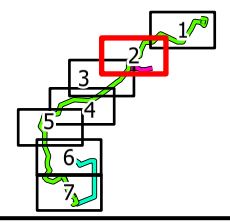
Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 1 of 7

ERM

Dominion Energy

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

Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
2413/63 / 2412/7	100	DC 230 kV Monopole DDE	II.B.3.i
2413/64 / 2412/6	115	DC 230 kV Monopole SUS	II.B.3.ii
2413/65 / 2412/5	115	DC 230 kV Monopole DDE	II.B.3.i
2413/66 / 2412/4	115	DC 230 kV Monopole DDE	II.B.3.i
2413/67 / 2412/3	105	DC 230 kV Monopole DDE	II.B.3.i
2413/68 / 2412/2	120	DC 230 kV Monopole DDE	II.B.3.i
2413/69 / 2412/1	95	Existing 230 kV Backbone	
5003/50 / 2413/48	125	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/51 / 2412/9	125	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/52 / 2412/10	175	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/53 / 2412/11	140	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/54 / 2412/12	145	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/55 / 2412/13	130	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/56 / 2412/14	125	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/57 / 2412/15	120	DC 500 kV/230 kV H-Frame SUS	II.B.3.ix



Existing Substation
Proposed Structure Location
Golden-Mars Proposed Route
Lockridge Loop Proposed Route
Existing Dominion Transmission Lines

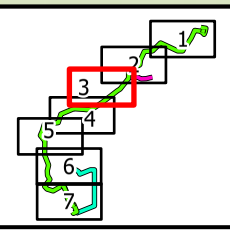
Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

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

Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
2413/63 / 2412/7	100	DC 230 kV Monopole DDE	II.B.3.i
2413/64 / 2412/6	115	DC 230 kV Monopole SUS	II.B.3.ii
5003/42 / 2413/40	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/43 / 2413/41	160	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/44 / 2413/42	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/45 / 2413/43	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/46 / 2413/44	170	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/47 / 2413/45	170	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/48 / 2413/46	170	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/49 / 2413/47	130	DC 500 kV/230 kV H-Frame DDE	II.B.3.x
5003/50 / 2413/48	125	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi
5003/51 / 2412/9	125	DC 500 kV/230 kV 3-Pole DDE	II.B.3.xi



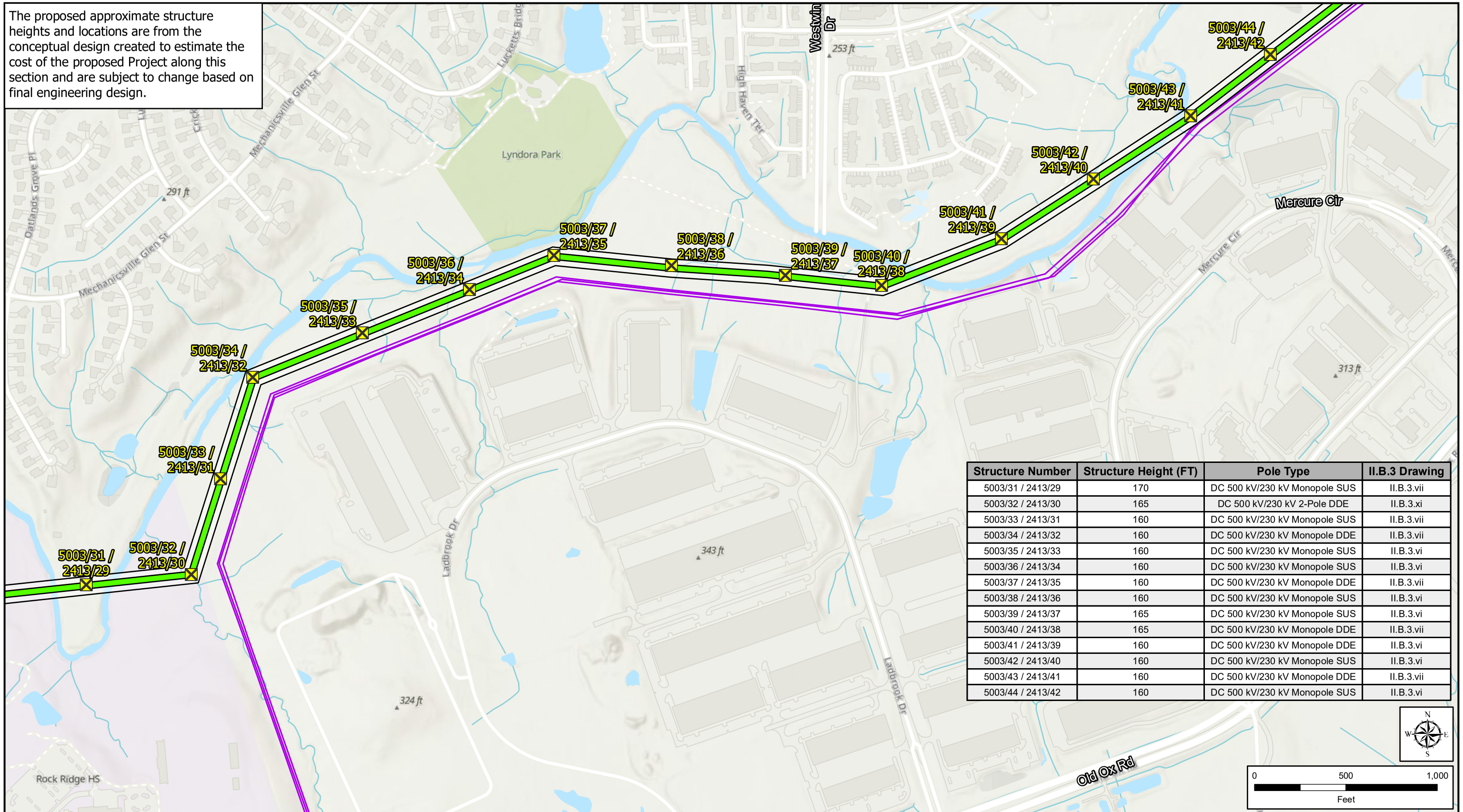
Proposed Structure Location
Golden-Mars Proposed Route
Lockridge Loop Proposed Route
Existing Dominion Transmission Lines

Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

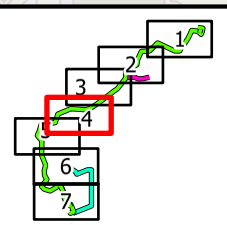
ERM

Dominion Energy

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



Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
5003/31 / 2413/29	170	DC 500 kV/230 kV Monopole SUS	II.B.3.vii
5003/32 / 2413/30	165	DC 500 kV/230 kV 2-Pole DDE	II.B.3.xi
5003/33 / 2413/31	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vii
5003/34 / 2413/32	160	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/35 / 2413/33	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/36 / 2413/34	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/37 / 2413/35	160	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/38 / 2413/36	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/39 / 2413/37	165	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/40 / 2413/38	165	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/41 / 2413/39	160	DC 500 kV/230 kV Monopole DDE	II.B.3.vi
5003/42 / 2413/40	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/43 / 2413/41	160	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/44 / 2413/42	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi



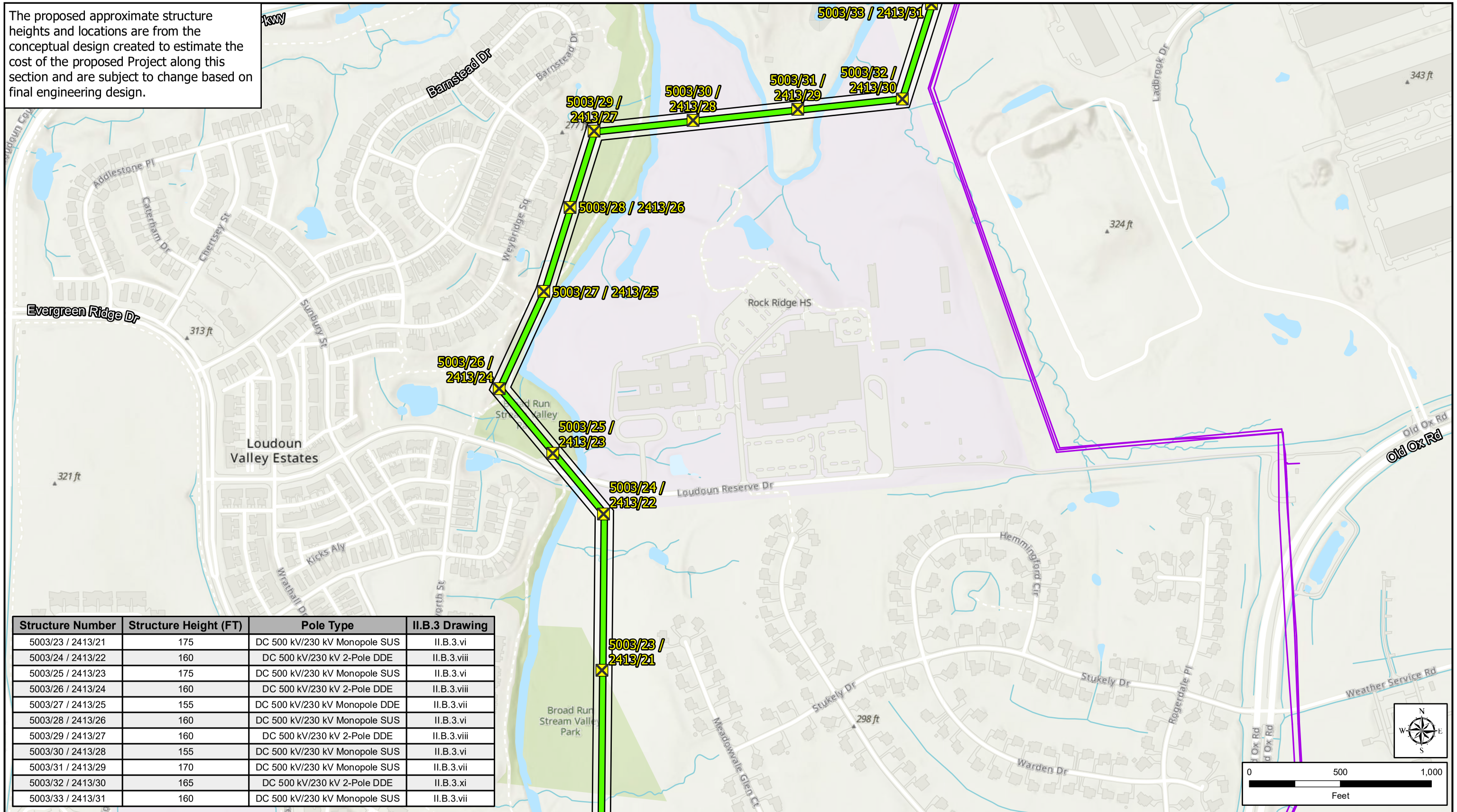
- Proposed Structure Location
- Golden-Mars Proposed Route
- Existing Dominion Transmission Lines

Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

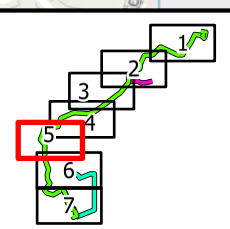
ERM

Dominion Energy

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



Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
5003/23 / 2413/21	175	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/24 / 2413/22	160	DC 500 kV/230 kV 2-Pole DDE	II.B.3.viii
5003/25 / 2413/23	175	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/26 / 2413/24	160	DC 500 kV/230 kV 2-Pole DDE	II.B.3.viii
5003/27 / 2413/25	155	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/28 / 2413/26	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/29 / 2413/27	160	DC 500 kV/230 kV 2-Pole DDE	II.B.3.viii
5003/30 / 2413/28	155	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/31 / 2413/29	170	DC 500 kV/230 kV Monopole SUS	II.B.3.vii
5003/32 / 2413/30	165	DC 500 kV/230 kV 2-Pole DDE	II.B.3.xi
5003/33 / 2413/31	160	DC 500 kV/230 kV Monopole SUS	II.B.3.vii



Proposed Structure Location
Golden-Mars Proposed Route
Existing Dominion Transmission Lines

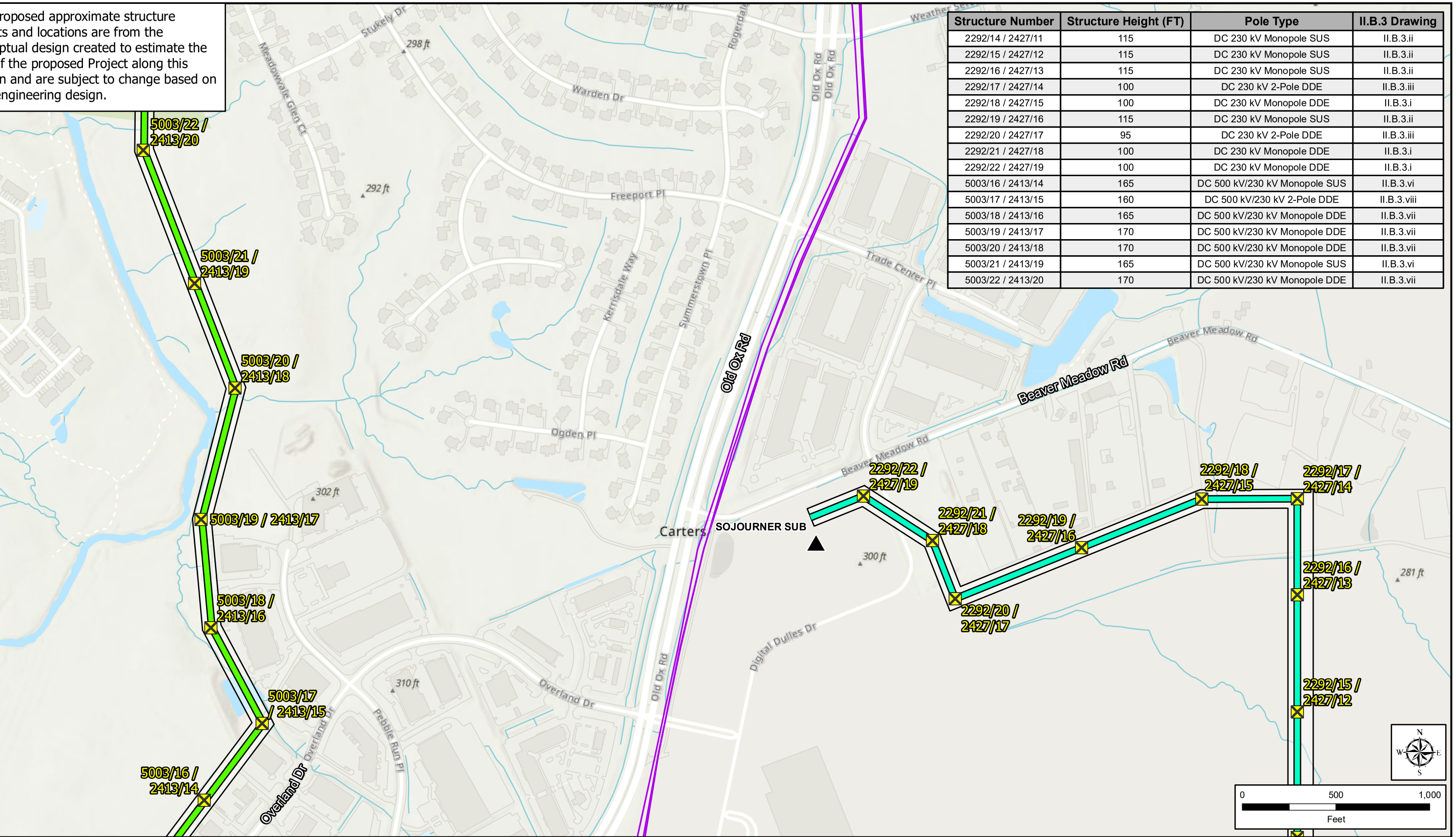
Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

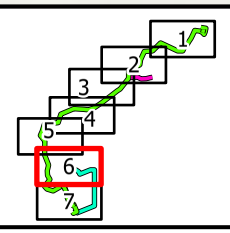
ERM

Dominion Energy

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

Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
2292/14 / 2427/11	115	DC 230 kV Monopole SUS	II.B.3.ii
2292/15 / 2427/12	115	DC 230 kV Monopole SUS	II.B.3.ii
2292/16 / 2427/13	115	DC 230 kV Monopole SUS	II.B.3.ii
2292/17 / 2427/14	100	DC 230 kV 2-Pole DDE	II.B.3.iii
2292/18 / 2427/15	100	DC 230 kV Monopole DDE	II.B.3.i
2292/19 / 2427/16	115	DC 230 kV Monopole SUS	II.B.3.ii
2292/20 / 2427/17	95	DC 230 kV 2-Pole DDE	II.B.3.iii
2292/21 / 2427/18	100	DC 230 kV Monopole DDE	II.B.3.i
2292/22 / 2427/19	100	DC 230 kV Monopole DDE	II.B.3.i
5003/16 / 2413/14	165	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/17 / 2413/15	160	DC 500 kV/230 kV 2-Pole DDE	II.B.3.viii
5003/18 / 2413/16	165	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/19 / 2413/17	170	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/20 / 2413/18	170	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/21 / 2413/19	165	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/22 / 2413/20	170	DC 500 kV/230 kV Monopole DDE	II.B.3.vii





Existing Substation
Proposed Structure Location
Golden-Mars Proposed Route
Sojourner Loop Proposed Route
Existing Dominion Transmission Lines

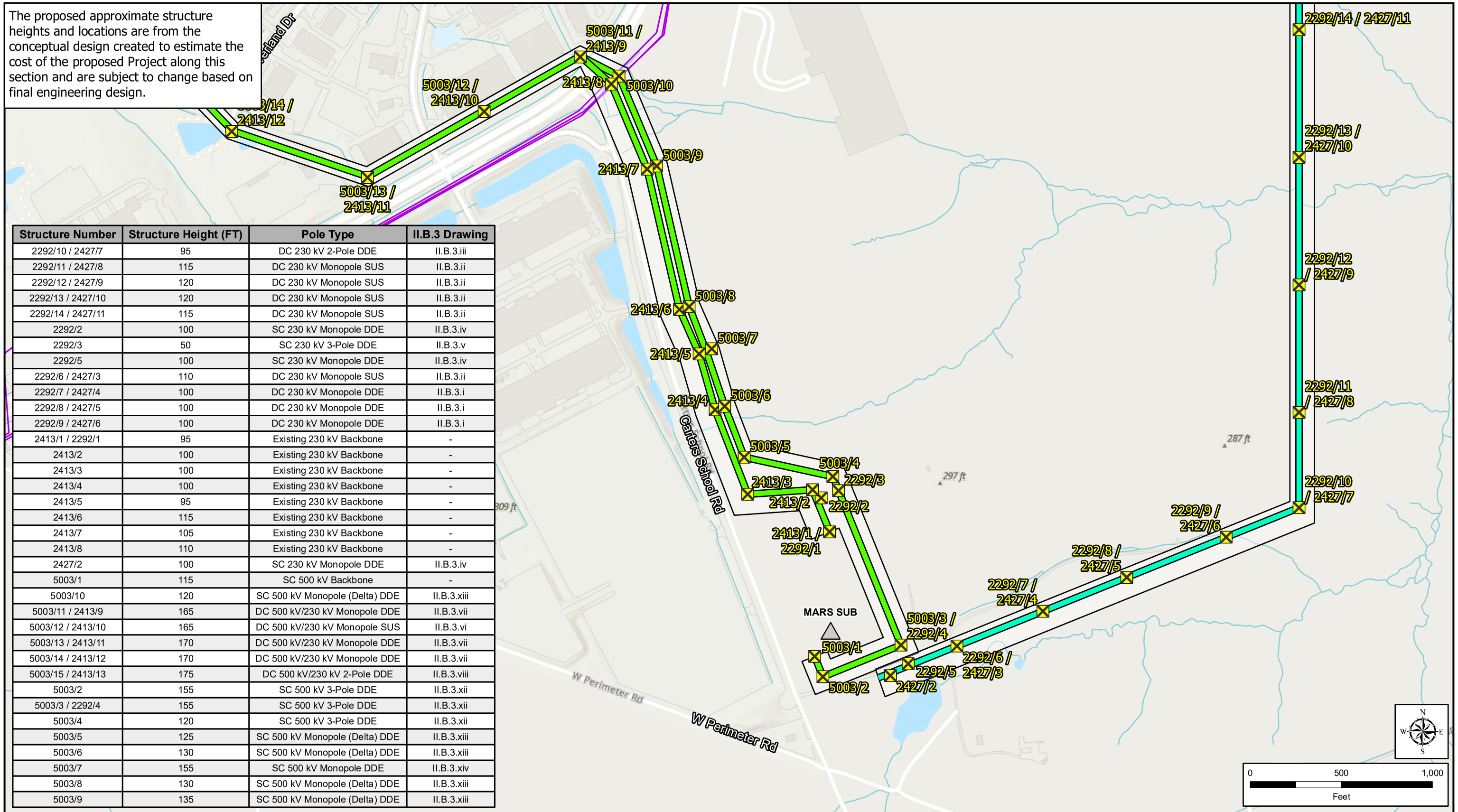
Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

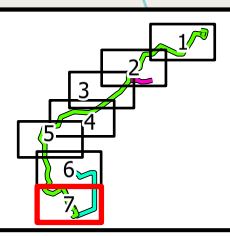
ERM

Dominion Energy

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

Structure Number	Structure Height (FT)	Pole Type	II.B.3 Drawing
2292/10 / 2427/7	95	DC 230 kV 2-Pole DDE	II.B.3.iii
2292/11 / 2427/8	115	DC 230 kV Monopole SUS	II.B.3.ii
2292/12 / 2427/9	120	DC 230 kV Monopole SUS	II.B.3.ii
2292/13 / 2427/10	120	DC 230 kV Monopole SUS	II.B.3.ii
2292/14 / 2427/11	115	DC 230 kV Monopole SUS	II.B.3.ii
2292/2	100	SC 230 kV Monopole DDE	II.B.3.iv
2292/3	50	SC 230 kV 3-Pole DDE	II.B.3.v
2292/5	100	SC 230 kV Monopole DDE	II.B.3.iv
2292/6 / 2427/3	110	DC 230 kV Monopole SUS	II.B.3.ii
2292/7 / 2427/4	100	DC 230 kV Monopole DDE	II.B.3.i
2292/8 / 2427/5	100	DC 230 kV Monopole DDE	II.B.3.i
2292/9 / 2427/6	100	DC 230 kV Monopole DDE	II.B.3.i
2413/1 / 2292/1	95	Existing 230 kV Backbone	-
2413/2	100	Existing 230 kV Backbone	-
2413/3	100	Existing 230 kV Backbone	-
2413/4	100	Existing 230 kV Backbone	-
2413/5	95	Existing 230 kV Backbone	-
2413/6	115	Existing 230 kV Backbone	-
2413/7	105	Existing 230 kV Backbone	-
2413/8	110	Existing 230 kV Backbone	-
2427/2	100	SC 230 kV Monopole DDE	II.B.3.iv
5003/1	115	SC 500 kV Backbone	-
5003/10	120	SC 500 kV Monopole (Delta) DDE	II.B.3.xiii
5003/11 / 2413/9	165	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/12 / 2413/10	165	DC 500 kV/230 kV Monopole SUS	II.B.3.vi
5003/13 / 2413/11	170	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/14 / 2413/12	170	DC 500 kV/230 kV Monopole DDE	II.B.3.vii
5003/15 / 2413/13	175	DC 500 kV/230 kV 2-Pole DDE	II.B.3.viii
5003/2	155	SC 500 kV 3-Pole DDE	II.B.3.xii
5003/3 / 2292/4	155	SC 500 kV 3-Pole DDE	II.B.3.xii
5003/4	120	SC 500 kV 3-Pole DDE	II.B.3.xii
5003/5	125	SC 500 kV Monopole (Delta) DDE	II.B.3.xiii
5003/6	130	SC 500 kV Monopole (Delta) DDE	II.B.3.xiii
5003/7	155	SC 500 kV Monopole DDE	II.B.3.xiv
5003/8	130	SC 500 kV Monopole (Delta) DDE	II.B.3.xiii
5003/9	135	SC 500 kV Monopole (Delta) DDE	II.B.3.xiii





Future Substation
Proposed Structure Location
Golden-Mars Proposed Route
Sojourner Loop Proposed Route
Existing Dominion Transmission Lines

Attachment II.B.3.xv
Structure Locations along the Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
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: The approximate structure heights along the Project's Proposed and Alternative Routes are provided in the table below, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Golden-Mars Lines

Route	Minimum (ft.)	Maximum (ft.)	Average (ft.)
Golden-Mars Alternative Route 1	110	185	156
Golden-Mars Alternative Route 2	110	180	154
Golden-Mars Alternative Route 3	110	180	154
Golden-Mars Alternative Route 4	110	180	155
Golden-Mars Alternative Route 5	110	185	157

Lockridge 230 kV Loop

Route	Minimum (ft.)	Maximum (ft.)	Average (ft.)
Lockridge Loop Proposed Route	100*	120	112

* One approximately 55-foot-tall structure (Structure #2412/8) was excluded from this table as including it would create a downward bias in the overall average height of the Lockridge 230 kV Loop of approximately 104 feet.

Sojourner 230 kV Loop

Route	Minimum (ft.)	Maximum (ft.)	Average (ft.)
Sojourner Loop Proposed Route	95*	120	106

* One approximately 50-foot-tall structure (Structure #2292/3) was excluded from this table as including it would create a downward bias in the overall average height of the Sojourner 230 kV Loop of approximately 104 feet.

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]** ***Photographs for typical existing facilities to be removed***

See Attachment II.B.6.a.i-ii for representative photographs of typical existing facilities to be removed as described in Section I.F.

[b] ***Comparable photographs or representations for proposed structures***

Golden-Mars Lines

See Attachment II.B.6.b.v-xiv for representative photographs of the proposed structure types.

Lockridge 230 kV Loop

See Attachment II.B.6.b.i, ii, and v for representative photographs of the proposed structure types.

Sojourner 230 kV Loop

See Attachment II.B.6.b.i-v for representative photographs of the proposed structure types.

[c] ***Visual simulations from historic and other key locations***

Visual simulations[58] showing the appearance of the proposed transmission structures at identified historic locations within 1.0 mile of the proposed centerlines of the Project routes—including the Proposed and Alternative Routes for the Golden-Mars Lines, Lockridge 230 kV Loop, and Sojourner 230 kV Loop—are provided. See Attachment II.B.6.c[59] for an overview map of the simulation locations for historic resources along the Project routes, the existing views at the historic properties, and simulated proposed views. These simulations were created using Geographic Information Systems modeling to depict whether the proposed

[58] One three-dimensional rendering is provided for the Dulles Airport due to access restrictions.

[59] All aboveground historic resources are located near areas where Golden-Mars Routes 1 through 5 are in a shared alignment, and therefore only the Golden-Mars Route 1 simulation is included in Attachment II.B.6.c, as simulations of Golden-Mars Routes 2, 3, 4, and 5 are duplicative of the Golden-Mars Route 1 simulation.

structures will be visible from the identified historic property. The historic properties evaluated are described below. See also the Stage I Pre-Application Analysis contained in Appendix H of the Environmental Routing Study.

Golden-Mars Lines

Historic Property	Viewpoint	Comments
Dulles International Airport Historic District (VDHR ID# 053-0008)	3D Rendering	Golden-Mars Routes 1, 2, 3, 4, and 5 would have no more than a Minimal Impact on 053-0008.
Washington & Old Dominion Railroad Historic District (VDHR ID# 053-0276)	KOP 001 & KOP 002	Golden-Mars Routes 1, 2, 3, 4, and 5 would have no more than a Minimal Impact on 053-0276.
Guilford Baptist Church (VDHR ID# 053-0968)	KOP 005	Golden-Mars Routes 1, 2, 3, 4, and 5 would have no more than a Minimal Impact on 053-0968.
Tippet's Hill Cemetery (VDHR ID# 053-6406)	KOP 010	Golden-Mars Routes 1, 2, 3, 4, and 5 would have no more than a Minimal Impact on 053-6406.
Ox Road Trace (VDHR ID# 053-6416)	KOP 014	Golden-Mars Routes 1, 2, 3, 4, and 5 would have no more than a Minimal Impact on 053-6416.

Lockridge 230 kV Loop

Historic Location	Viewpoint	Comments
Ox Road Trace (VDHR ID# 053-6416)	KOP 014	The Lockridge Loop Proposed Route would have No Impact on 053-6416.

Sojourner 230 kV Loop

Historic Location	Viewpoint	Comments
Dulles International Airport Historic District (VDHR ID# 053-0008)	3D Rendering	The Sojourner Loop Proposed Route would have No Impact on 053-0008.

See Attachment III.B.1 and Attachment III.B.2 for visual simulations of key locations evaluated.

II.B.6.a.i – Removal – Existing Str. 2095/72 (2292/82) along Route 606

II.B.6.a.ii – Removal – Existing Strs. 2095/70 (2292/80) and 2095/71 (2292/81) along Route 606

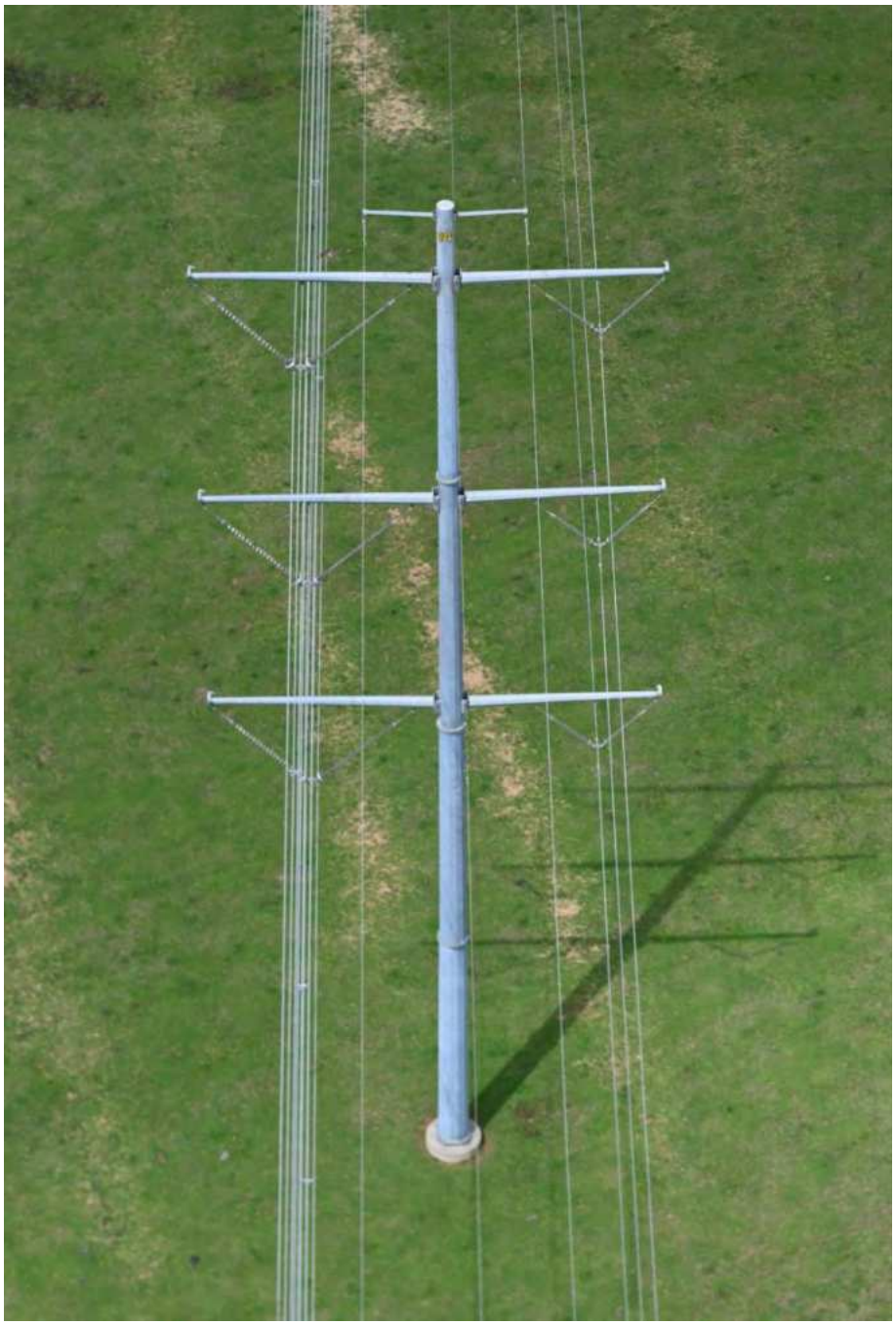
II.B.6.b.i – Typical Double Circuit 230kV Monopole – Double Deadend

II.B.6.b.ii – Typical Double Circuit 230kV Monopole – Suspension

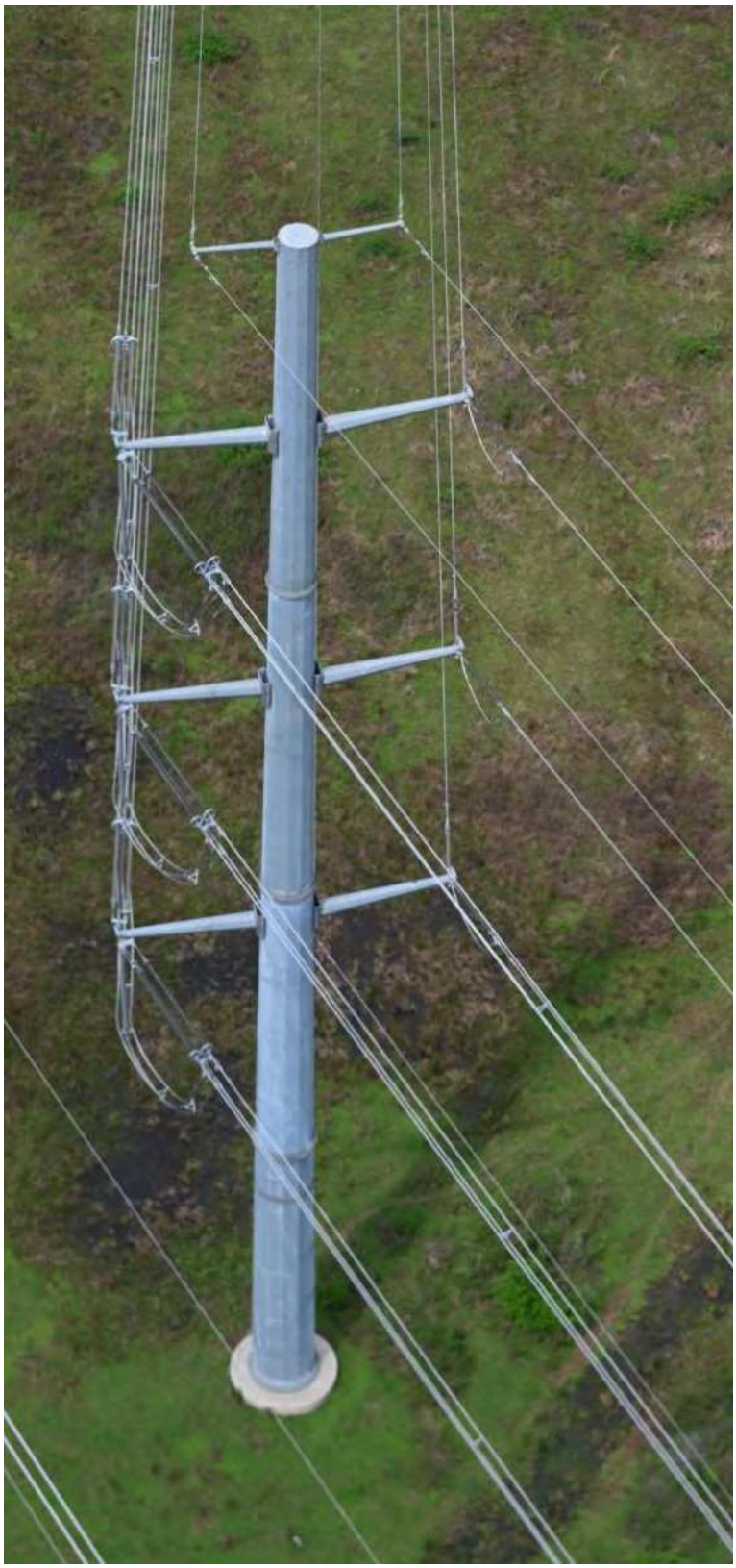
II.B.6.b.iii – Typical Double Circuit 230kV 2-Pole – Double Deadend

II.B.6.b.iv – Typical Single Circuit 230kV Monopole – Double Deadend

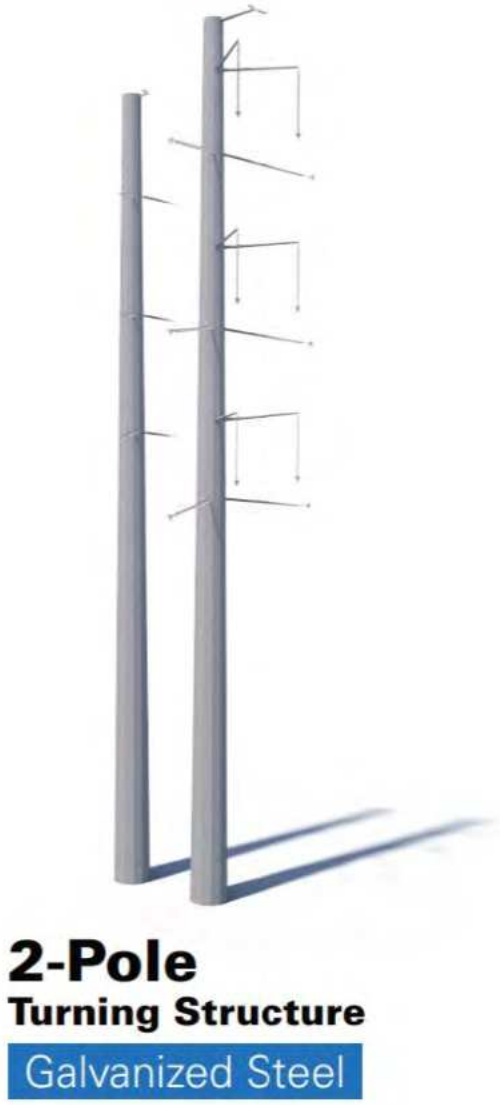
II.B.6.b.v – Typical Single Circuit 230kV 3-Pole – Double Deadend



II.B.6.b.vi – Typical Double Circuit 500kV/230kV Monopole – Suspension



II.B.6.b.vii – Typical Double Circuit 500kV/230kV Monopole – Double Deadend



II.B.6.b.viii – Typical Double Circuit 500kV/230kV 2-Pole – Double Deadend

II.B.6.b.ix – Typical Double Circuit 500kV/230kV H-Frame – Suspension

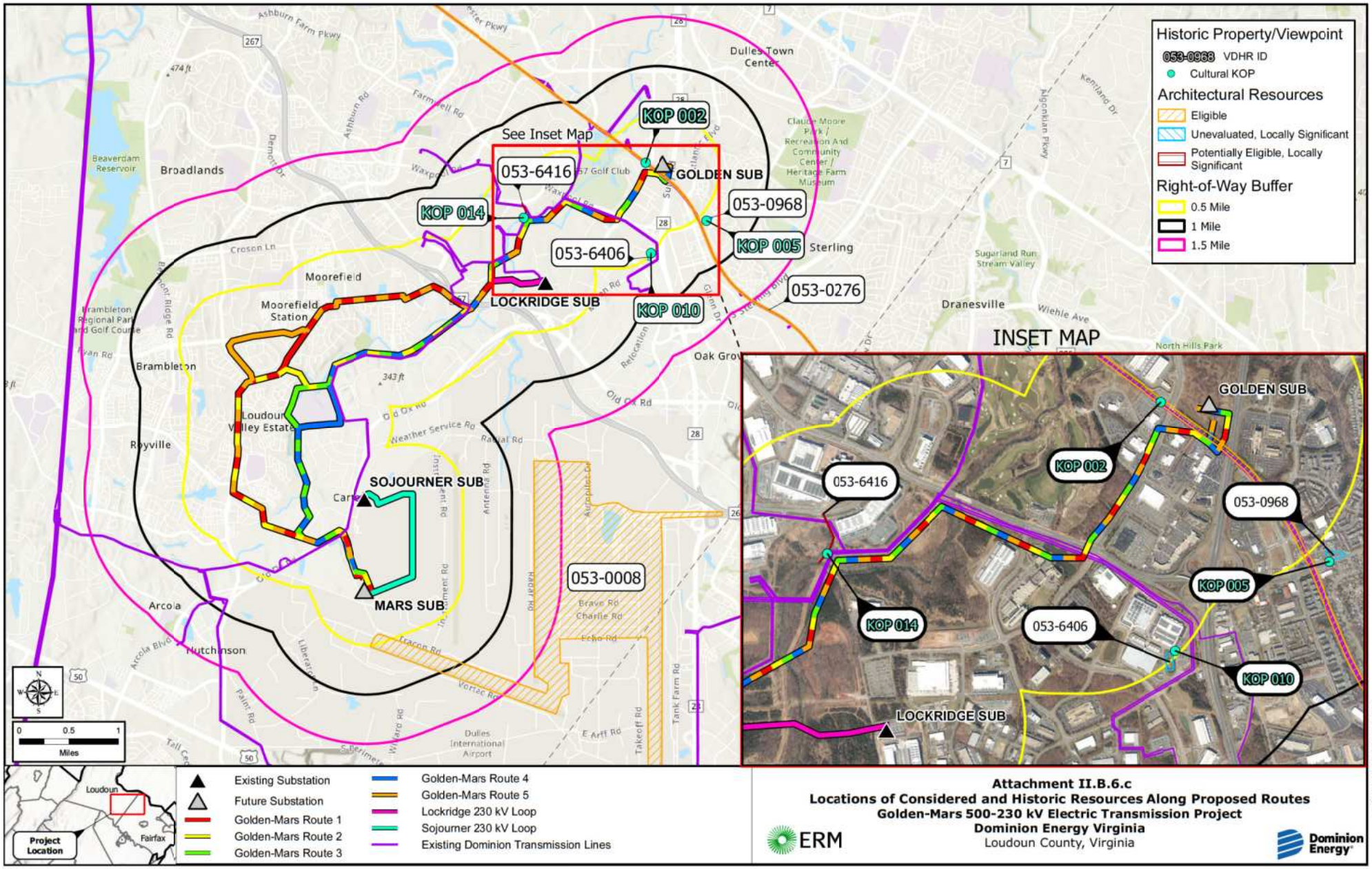
II.B.6.b.x – Typical Double Circuit 500kV/230kV H-Frame – Double Deadend

II.B.6.b.xi – Typical Double Circuit 500kV/230kV 3-Pole – Double Deadend

II.B.6.b.xii – Typical Single Circuit 500kV 3-Pole – Double Deadend

II.B.6.b.xiii – Typical Single Circuit 500kV Monopole (Delta) – Double Deadend

II.B.6.b.xiv – Typical Single Circuit 500kV Monopole – Double Deadend



Attachment II.B.6.c
Locations of Considered and Historic Resources Along Proposed Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy

Attachment II.B.6.c

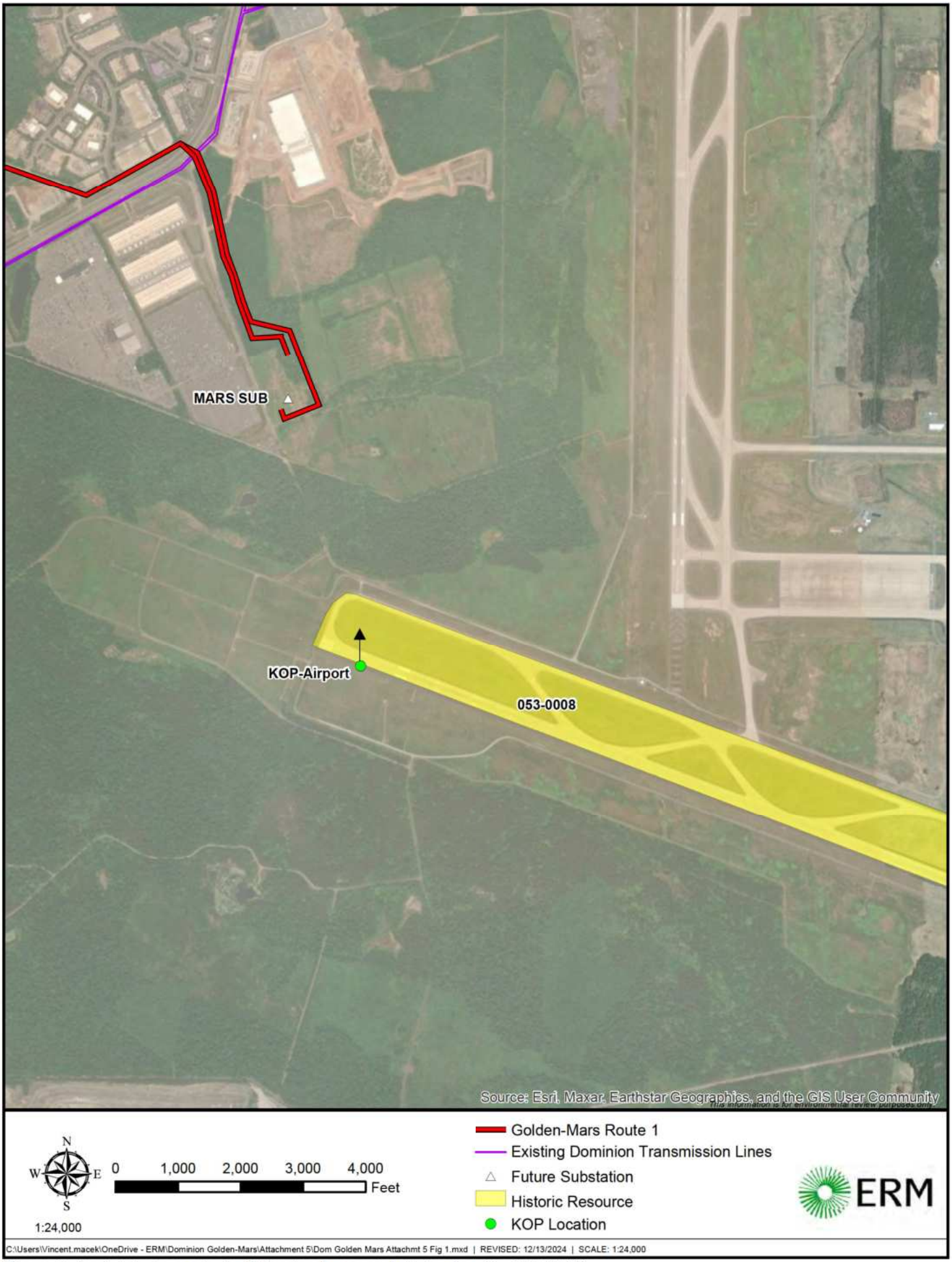


Figure 1. Aerial photograph depicting land use and photo view for 053-0008.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

181

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP GE

Vortac Rd

Figure 2
Route: Golden-Mars Route 1
Date:09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles

Legend

Golden-Mars 500-230 kV Electric Transmission Project - Route 1
KOP View Direction

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

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

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

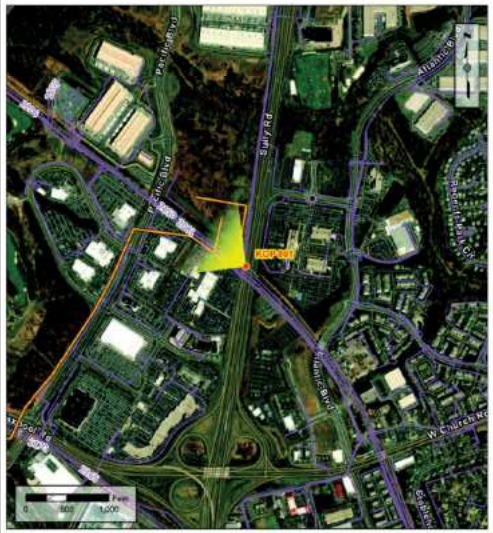
Loudoun County, Virginia

Dominion Energy℠

KOP 001

Sully Rd

Figure 4
Route: Golden-Mars Route 1
Date:04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles



Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

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

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 002

Pacific Blvd

Figure 5
Route: Golden-Mars Route 1
Date:04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

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

Figure 6. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars 500-230 kV Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 005

W Church Rd

Figure 7
Route: Golden-Mars Route 1
Date:04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles

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

Figure 8. Aerial photograph depicting land use and photo view for 053-6406.

EXISTING CONDITIONS

PROPOSED CONDITIONS

188

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 010

Vantage Data Plz

Figure 9
Route: Golden-Mars Route 1
Date:04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

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

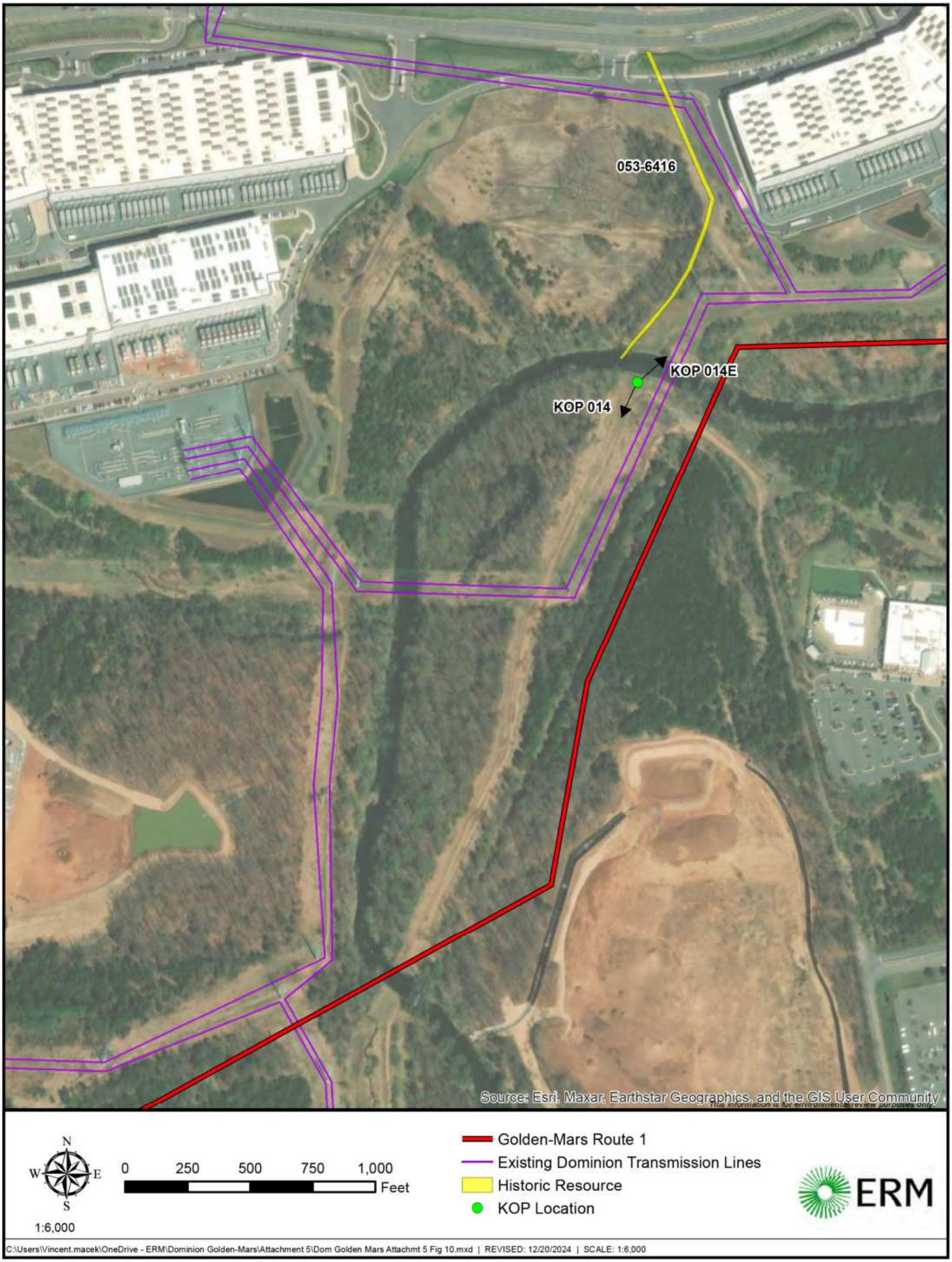


Figure 10. Aerial photograph depicting land use and photo view for 053-6416.

EXISTING CONDITIONS

PROPOSED CONDITIONS

190

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 014

Round Table Plz

Figure 11
Route: Golden-Mars Route 1
Date:04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

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

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 014E

Round Table Plz

Figure 12
Route: Golden-Mars Route 1
Date:04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

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

Figure 13. Aerial photograph depicting land use and photo view for 053-0008.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

193

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP GE

Vortac Rd

Figure 14
Route: Golden-Mars Route 2
Date:09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles

Legend

Golden-Mars 500-230 kV Electric Transmission Project - Route 2
KOP View Direction

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

Figure 15. Aerial photograph depicting land use and photo view for 053-0276.

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 001

Sully Rd

Figure 16
Route: Golden-Mars Route 2
Date:04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

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

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 002

Pacific Blvd

Figure 17
Route: Golden-Mars Route 2
Date:04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

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

Figure 18. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 005

W Church Rd

Figure 19
Route: Golden-Mars Route 2
Date:04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

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

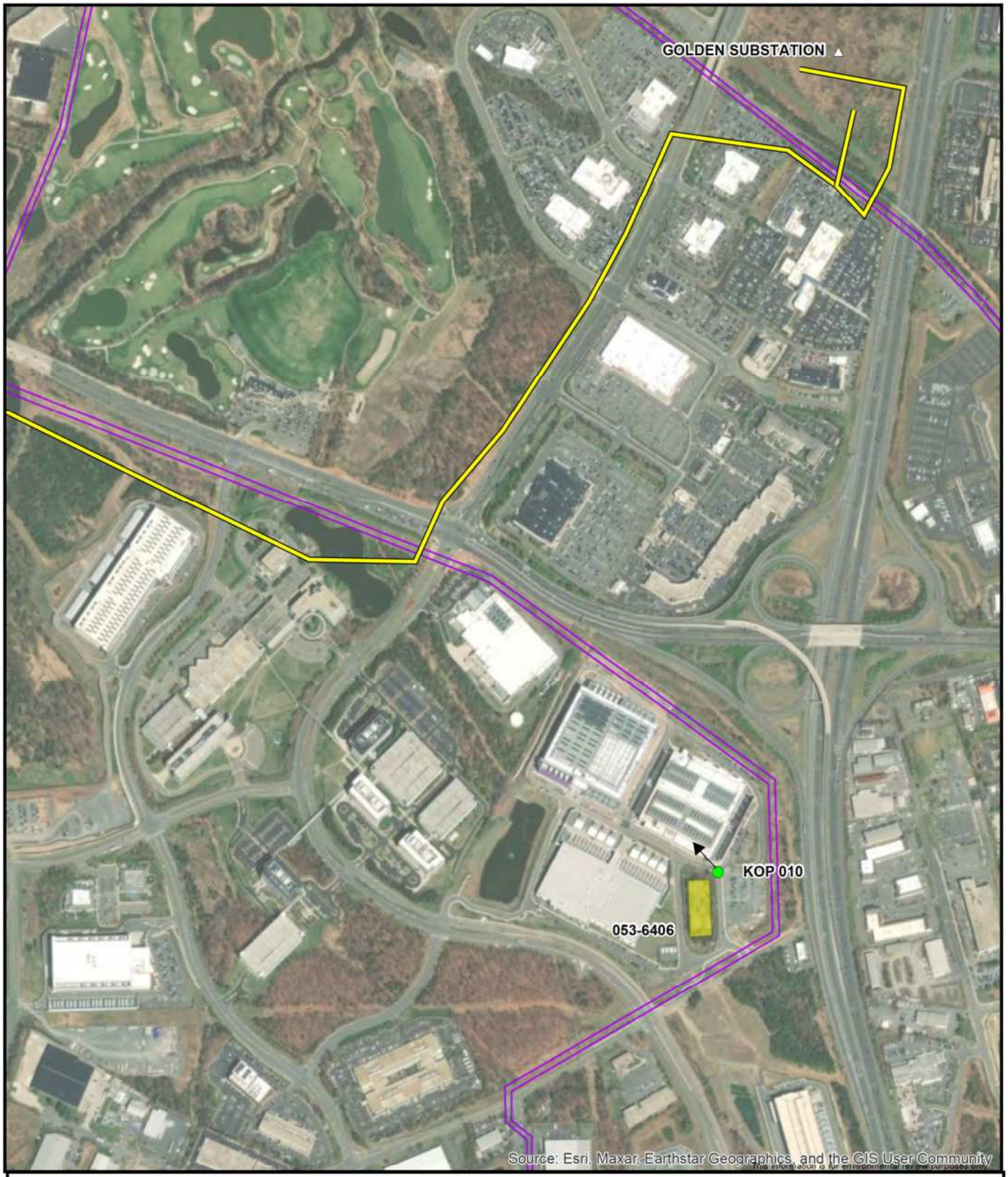


Figure 20. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

EXISTING CONDITIONS

PROPOSED CONDITIONS

200

KOP 010

Vantage Data Plz

Figure 21
Route: Golden-Mars Route 2
Date:04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

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

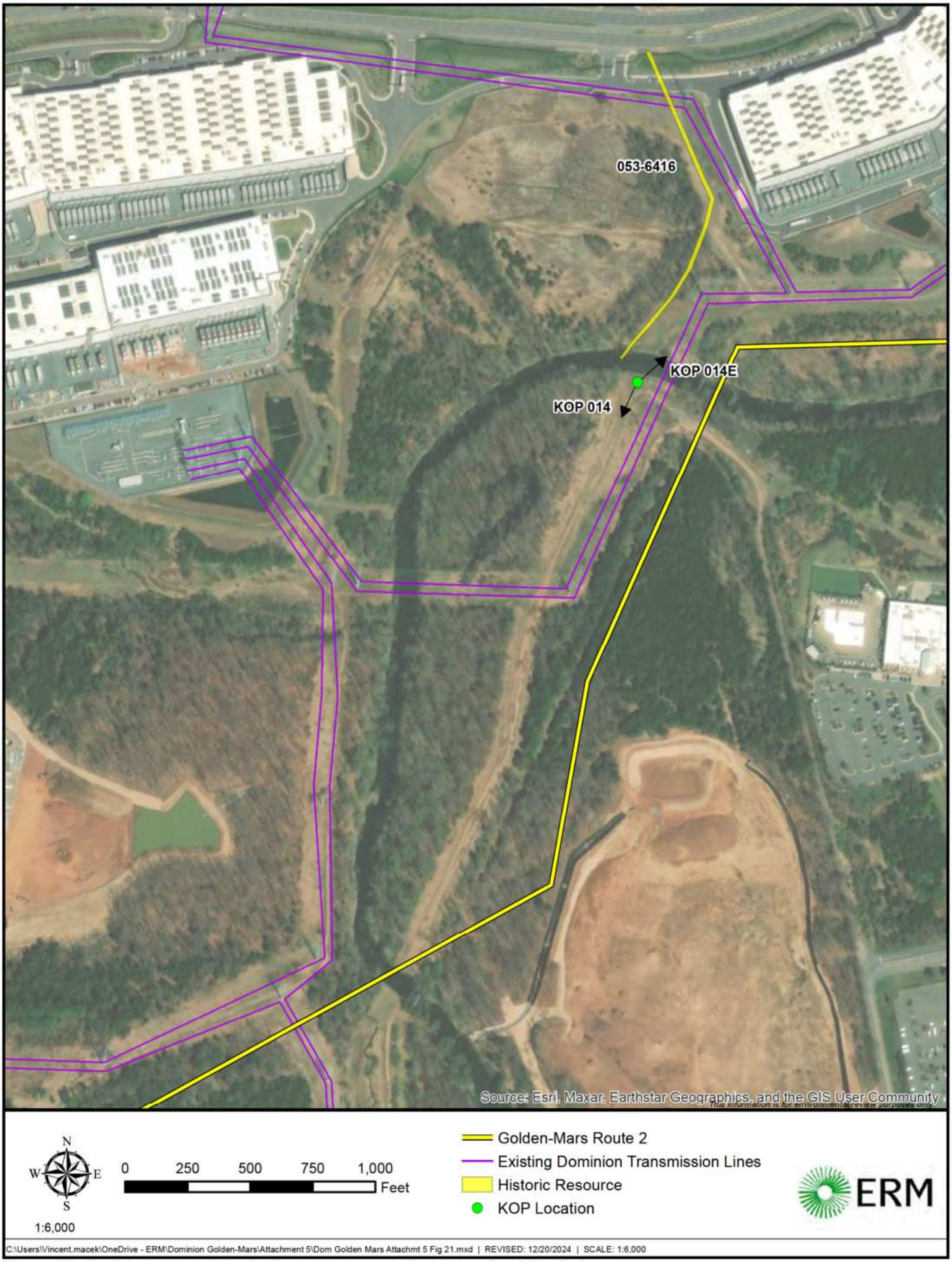


Figure 22. Aerial photograph depicting land use and photo view for 053-6416.

EXISTING CONDITIONS

PROPOSED CONDITIONS

202

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 014

Round Table Plz

Figure 23
Route: Golden-Mars Route 2
Date:04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

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

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 014E

Round Table Plz

Figure 24
Route: Golden-Mars Route 2
Date:04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

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

Figure 25. Aerial photograph depicting land use and photo view for 053-0008.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

205

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP GE

Vortac Rd

Figure 26
Route: Golden-Mars Route 3
Date:09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles

Legend

Golden-Mars 500-230 kV Electric Transmission Project - Route 3
KOP View Direction

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

Figure 27. Aerial photograph depicting land use and photo view for 053-0276.

EXISTING CONDITIONS

PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 001

Sully Rd

Figure 28
Route: Golden-Mars Route 3
Date:04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

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

EXISTING CONDITIONS

PROPOSED CONDITIONS

208

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 002

Pacific Blvd

Figure 29
Route: Golden-Mars Route 3
Date:04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

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

Figure 30. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project

Loudoun County, Virginia

Dominion Energy

KOP 005

W Church Rd

Figure 31
Route: Golden-Mars Route 3
Date:04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles

Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

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