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March 7, 2024

BY ELECTRONIC FILING

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

Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: 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

Dear Mr. Logan:

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

As indicated in Section II.A.12.b of the Appendix, an electronic copy of the map of the Virginia Department of Transportation "General Highway Map" for 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 6, 2024.

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

Highest regards,

Vishwa B. Link

Enclosures

cc: William H. Chambliss, Esq.

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Dominion Energy®

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

Before the State Corporation Commission of Virginia

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

Application No. 332

Case No. PUR-2024-00032

Filed: March 7, 2024

Volume 1 of 3

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

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

Application No. 332

Case No. PUR-2024-00032

Filed: March 7, 2024

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2024-00032
	)	
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	)	

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

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, and to maintain the structural integrity and reliability of its transmission system, Dominion Energy Virginia proposes in Loudoun County, Virginia, to:

(i) Construct a new 500-230 kilovolt ("kV") substation in Loudoun County, Virginia, entirely on Company-owned property ("Aspen Substation"). The 500 kV source to the Aspen Substation will be created by cutting the Company's existing overhead 500 kV Brambleton-Goose Creek Line #558 into the Aspen Substation between Structure #558/1857 and Structure #558/1856.[1] The cut-in of Line #558 to the Aspen Substation will result in (i) 500 kV Aspen-Brambleton Line #558 and (ii) 500 kV Aspen-Goose Creek Line #597.

(ii) In addition to the 500 kV Aspen-Goose Creek Line #597 that results from the cut in for the Aspen Substation as described above, construct a new 500 kV line to connect the proposed Aspen Substation to the existing Goose Creek Substation. Specifically, the Company proposes to construct a new 500 kV single circuit transmission line extending approximately 0.2 mile from the proposed 500-230 kV Aspen Substation to the Company's existing 500 kV Goose Creek Substation in Loudoun County, Virginia, named Aspen-Goose Creek Line #5002 (or the "Aspen-Goose Creek Line"). The Aspen-Goose Creek Line will be constructed entirely on Company-owned property or within existing right-of-way supported by one 500 kV single circuit monopole structure and will utilize three-phase triple-bundled 1351.5 Aluminum Conductor Steel Reinforced ("ACSR") conductors with a summer transfer capability of 4,357 MVA.[2]

[1] *See* Appendix Section I.F regarding transmission facilities to be removed for construction of the Aspen Substation.

[2] Apparent power, measured in megavolt amperes ("MVA"), is made up of real power (megawatt or "MW") and reactive power megavolt ampere reactive ("MVAR"). The power factor ("pf") is the ratio of real power to

Substation line terminal upgrade work will be required at the 500 kV Goose Creek Substation in order to terminate the two proposed Aspen-Goose Creek Lines (*i.e.*, Line #597 and Line #5002), as discussed in Appendix Section II.C. Combined with the new 500 kV Aspen-Goose Creek Line #597, this new 500 kV Aspen-Goose Creek Line #5002 will bring two new sources to the area by connecting Goose Creek Substation to the area grid via the proposed Aspen Substation.

(iii) Construct a new approximately 9.4-mile overhead 500 kV single circuit transmission line and a new 230 kV single circuit transmission line almost entirely on new right-of-way.[3] The new transmission lines will originate at the 500 kV and 230 kV buses of the proposed Aspen Substation[4] and continue to the proposed 500-230 kV Golden Substation,[5] where the new lines will terminate, resulting in (i) 500 kV Aspen-Golden Line #5001, and (ii) 230 kV Aspen-Golden Line #2333 (collectively, the "Aspen-

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apparent power. For loads with a high pf (approaching unity), real power will approach apparent power and the two can be used interchangeably. Load loss criteria specify real power (MW) units because that represents the real power that will be dropped; however, MVA is used to describe retail customer projected load, which incorporates representative pf, and the equipment ratings to handle the apparent power, which includes the real and reactive load components.

[3] The Aspen-Golden Lines will be entirely on new right-of-way except where the lines cross the existing 100-foot-wide transmission line right-of-way corridor containing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274, and where the lines cross the existing 130-foot-wide transmission line right-of-way corridor containing Beaumeade-BECO Line #2143, BECO-Paragon Park Line #2207, and BECO-Pacific Line #2165 near Broad Run. *See* Appendix Section I.F as to any impacts related to the crossing of these corridors.

[4] At the proposed Aspen Substation, the proposed 230 kV Aspen-Golden Line #2333 and the proposed 500 kV Aspen-Golden Line #5001 originate at their respective buses on separate rights-of-way and converge approximately 0.2 mile east of the substation. Specifically, the new 230 kV Aspen-Golden Line #2333 will begin from the easternmost portion of the proposed Aspen Substation where the 230 kV bus is located and travel in a northeastern direction, crossing the existing Line #227/#274 right-of-way transmission corridor, and then converge with the new 500 kV Aspen-Golden Line #5001. For that approximately 0.2 mile, the new 230 kV line will be supported on single circuit 230 kV H-frame structures in a separate, new 100-foot-wide right-of way. The new 500 kV Aspen-Golden Line #5001 will begin from the northern portion of the Aspen Substation where the 500 kV bus is located and travel in a northeastern direction, crossing the existing Line #227/#274 right-of-way transmission corridor, and then converge with the new 230 kV Aspen-Golden Line #2333. For that approximately 0.2 mile, the new 500 kV line will be supported on single circuit 500 kV H-frame structures in a separate, new 150-foot-wide right-of way. After the 500 kV and 230 kV corridors converge approximately 0.1 mile east of the Line #227/#274 corridor, the Aspen-Golden Lines will continue together within a new varying 100- to 150-foot-wide right-of-way corridor, until they split again just before terminating at the proposed Golden Substation. *See* Attachment II.A.6 to the Appendix, and *infra*, n. 5.

[5] Similar to how the lines exit the proposed Aspen Substation (*see supra*, n. 4), the 230 kV Aspen-Golden Line #2333 will split from the converged corridor into a separate new right-of-way before terminating at the proposed Golden Substation. Specifically, in order to route the new 230 kV Aspen-Golden Line #2333 into the southern portion of the proposed Golden Substation where the 230 kV bus is located, the new 230 kV line will split into a separate corridor and travel in a southeastern direction along approximately 0.3 mile of new right-of-way before terminating at the 230 kV bus within the proposed Golden Substation. For that approximately 0.3 mile, the new 230 kV line will be supported on single circuit 230 kV monopole structures in a separate, new 100-foot-wide right-of way. Based on the placement of the 500 kV bus in the proposed Golden Substation, the new 500 kV Aspen-Golden Line #5001 will enter directly into the western portion of the proposed Golden Substation approximately 0.1 mile from the converged corridor and terminate at the proposed Golden Substation. For that approximately 0.1 mile, the new 500 kV line extends from a double circuit two-pole structure (supporting both the 500 kV and 230 kV lines) located in the converged corridor to the proposed Golden Substation. *See* Attachment II.A.6 to the Appendix.

Golden Lines"). The proposed Aspen-Golden Lines will be constructed on new right-of-way varying between 100 and 150 feet in width[6] in order to support a 5-2 configuration[7] on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide right-of-way) or monopole or two-pole structures (100-foot-wide right-of-way), as well as to accommodate the routing of the lines to their respective buses in the proposed Aspen and Golden Substations. 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 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

(iv) Construct a new 500-230 kV substation in Loudoun County, Virginia, on property to be obtained by the Company ("Golden Substation").

(v) Loop the Company's existing 230 kV overhead Paragon Park-Sterling Park Line #2081

[6] For approximately 0.9 mile of the 9.4-mile Proposed Route of the Aspen-Golden Lines (between Structures #5001/6 / #2333/6 and #5001/12 / #2333/12) as defined herein, the Company is seeking approval to acquire additional right-of-way with varying widths between 100 and 140 feet to accommodate construction of two future 230 kV double circuit lines along the same corridor, referred to herein as the future Twin Creeks Lines. The additional right-of-way widths are variable as the proposed Aspen-Golden Lines and future Twin Creeks Lines need wider rights-of-way to accommodate horizontal configurations (rather than vertical) for the crossing of Goose Creek and to accommodate the crossing of the future Twin Creeks Lines underneath the Aspen-Golden Lines in two locations. The Company anticipates filing an application for Commission approval of the 230 kV double circuit Twin Creeks Lines and related transmission infrastructure later in March 2024, along with a motion to consolidate these two cases for purposes of judicial economy. *See* page 1 of Attachment II.A.6 to the Appendix for a map depicting the collocation of the Aspen-Golden Lines with the future Twin Creeks Lines where the Company seeks to voluntarily acquire additional right-of-way varying in widths between 100 and 140 feet (totaling between 200 to 260 feet, due to varying overlap of the two rights-of-way). *See also* Attachment I.A.5 to the Appendix for a one-line diagram of the transmission system upon completion of the Project. This is consistent with Guideline #1 of Attachment 1 to the *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*, which emphasizes that rights-of-way should be selected with the purpose of minimizing conflict between the rights-of-way and present and prospective uses of the land on which they are to be located and recommends that existing rights-of-way should be given priority as the locations for additions to existing transmission facilities. Accordingly, as part of this Application, the Company asks that the Commission not prohibit the Company from voluntarily obtaining the additional 100- to 140-foot-wide right-of-way for the Project proposed herein, with the understanding that the Company could not condemn for more than what is needed for the Aspen-Golden Lines based upon Commission approval received in this proceeding. This approach is consistent with the approach approved by the Commission in multiple proceedings, most recently in: *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 (June 7, 2023); *Application of Virginia Electric and Power Company for approval and certification of electric facilities: Butler Farm to Clover 230 kV Line, Butler Farm to Finneywood 230 kV Line and Related Projects*, Case No. PUR-2022-00175, Final Order at 15 (May 31, 2023). To be clear, the Company is proposing only a varying 100- to 150-foot-wide right-of way for the proposed Aspen-Golden Lines as described herein, and only the proposed 100- to 150-foot-wide right-of way will be cleared and utilized for the proposed Project.

[7] A "5-2 configuration" means that the supporting structures will be vertically 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.v-vii to the Appendix.

and Paragon Park-Sterling Park Line #2150, which are currently collocated on double circuit lattice towers, into and out of the proposed Golden Substation in Loudoun County, Virginia. Specifically, the Company proposes to cut Line #2081 and Line #2150 between Structure #2081/124 / #2150/184 and Structure #2081/123 / #2150/183, and loop the existing lines into and out of the proposed Golden Substation, resulting in (i) Golden-Sterling Park #2081, (ii) Golden-Sterling Park #2150, (iii) Golden-Paragon Park #2348, and (iv) Golden-Paragon Park #2351 (collectively, the "Lines #2081/#2150 Loop" or "Line Loop"). To cut the lines into the proposed Golden Substation, the Company will remove one existing double circuit lattice tower (Structure #2081/123 / #2150/183) and replace it with four dulled galvanized steel single circuit monopoles (Structures #2081/122A, #2150/182A, #2348/123A, and #2351/183A). The Line Loop will be constructed entirely within the existing transmission corridor right-of-way or on property to be obtained by the Company for the proposed Golden Substation. Temporary infrastructure may be installed within the existing transmission corridor to keep Lines #2081 and #2150 in service during construction of the Line Loop. The Company proposes to utilize three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA for the Line Loop, the rating of which will be limited to the rating of the existing lines. As the closest existing 230 kV lines to the proposed Golden Substation site, the Lines #2081/#2150 Loop will provide a new 230 kV source from the Aspen/Goose Creek Substation area into Data Center Alley (or "DCA") via the proposed Golden Substation.

The Aspen Substation, Aspen-Goose Creek Line #5002 and related Goose Creek Substation work, Aspen-Golden Lines, Golden Substation, and the Lines #2081/#2150 Loop are collectively referred to as the "Aspen-Golden 500-230 kV Electric Transmission Project" or the "Project."

4. The Project is needed to maintain and improve electric service to customers in the eastern Loudoun load area ("Eastern Loudoun Load Area"), which is generally to the north and west of the Washington Dulles International Airport and is inclusive of the DCA; to address significant load growth in the Eastern Loudoun Load Area; and to resolve identified NERC reliability violations. As of this filing, the Eastern Loudoun Load Area is inclusive of approximately 27 locations where load is being served. Based on load flow studies performed by PJM and validated by the Company, the Company anticipates that projected load growth in the area will produce multiple contingency conditions that would cause thermal overloads in several parts of the system by summer 2028. If not relieved by this proposed Project combined with others

proposed or planned in the near term,[8] the identified reliability 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.

5. For the Aspen-Goose Creek Line #5002, the Company identified one approximately 0.2-mile overhead proposed route ("Aspen-Goose Creek Proposed Route") that will be constructed entirely within existing right-of-way or on Company-owned property. Because the existing right-of-way and Company-owned property are adequate for the proposed Aspen-Goose Creek Line #5002, no new right-of-way is required. Given the availability of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Aspen-Goose Creek Line.

6. For the Aspen-Golden Lines, the Company identified one overhead 9.4-mile proposed route ("Proposed Route" or "Route 1AA") and three overhead alternative routes that are either 9.4 or 9.5 miles long ("Alternative Route 1AB" or "Route 1AB," "Alternative Route 1BA" or "Route 1BA," and "Alternative Route 1BB" or "Route 1BB"). The Proposed and Alternative Routes all are comprised of a combination of three overhead segments.

7. One segment extends along State Route 7 ("Rt. 7") adjacent to the Belmont Park planned development (the "Belmont Park Segment") and includes two 0.6-mile overhead variations ("Belmont Park Variation A" and "Belmont Park Variation B"). A second segment extends along Loudoun Water's Broad Run Water Reclamation Facility ("BRWRF") property and

[8] *See* Attachment I.A.5 to the Appendix for an ultimate one-line diagram, including the Project and additional supplemental projects presented to PJM in the Eastern Loudoun Load Area at the time of this Application filing.

adjacent privately owned properties (the "Broad Run Segment") and includes a 2.2-mile variation ("Broad Run Variation A")[9] and a 2.3-mile variation ("Broad Run Variation B").[10] A third segment, which is common to all of the Aspen-Golden Lines route alternatives, extends from the proposed Aspen Substation to the proposed Golden Substation, excluding the Belmont Park Segment and the Broad Run Segment where route variations were identified, for a combined total of 6.6 miles ("Route 1 Segment" or "Route 1").[11]

8. Accordingly, the Aspen-Golden Lines Proposed and Alternative Routes are comprised of a combination of Route 1, plus Belmont Park Variation A or B, plus Broad Run Variation A or B, with total mileages shown below and in Appendix Section II.A.1:

- Proposed Route (Route 1AA): Route 1 with Belmont Park Variation A and Broad Run Variation A (approximately 9.4 total miles);
- Alternative Route 1AB: Route 1 with Belmont Park Variation A and Broad Run Variation B (approximately 9.5 total miles);
- Alternative Route 1BA: Route 1 with Belmont Park Variation B and Broad Run Variation A (approximately 9.4 total miles); and

[9] While Loudoun Water has expressed support for Broad Run Variation B where it crosses a small portion of the BRWRF property, the Company is continuing negotiations with Loudoun Water for easements for Broad Run Variation A where it runs along the BRWRF property. As discussed in detail in Appendix Section II.A.9 and in the Environmental Routing Study, Broad Run Variation A is shorter, is located entirely on industrial-zoned land, and has reduced environmental impacts in comparison to Broad Run Variation B. For these reasons, the Company is proposing to include Broad Run Variation A as a segment of the Proposed Route for the Aspen-Golden Lines. To the extent the Company is not able to successfully conclude negotiations with Loudoun Water for the necessary easements, the Company will file a motion for Commission approval to withdraw Broad Run Variation A and will support Broad Run Variation B as part of the preferred route (*i.e.*, Alternative Route 1AB).

[10] Note that the four variations (Belmont Park Variation A and B and Broad Run Variation A and B) may be referred to in abbreviated format on maps and other documentation supporting this filing, such as "Belmont Park A and B" and "Broad Run A and B."

[11] *See* Section II.A.1 of the Appendix. Note that the proposed 230 kV Aspen-Golden Line #2333 along Route 1 (6.6 miles) is slightly longer (by approximately 0.2 mile) than the 500 kV Aspen-Golden Line #5001 along Route 1 (6.4 miles), as Line #5001 has a more direct entrance into the proposed Golden Substation based on the location of the 500 kV bus. *See supra*, n. 5. The longer of the routes (6.6 miles) is used herein for purposes of calculating the length and impacts of Route 1.

- Alternative Route 1BB: Route 1 with Belmont Park Variation B and Broad Run Variation B (approximately 9.5 total miles).

To be clear, the only difference between the Proposed Route (Route 1AA) and Alternative Routes 1AB, 1BA, and 1BB is the four potential combinations of Route 1 with one of the two Belmont Park Variations and one of the two Broad Run Variations.

9. For the Proposed Route for the Aspen-Golden Lines, Route 1AA (Route 1 + Belmont Park Variation A + Broad Run Variation A) was selected as it avoids or reasonably minimizes adverse impacts to the greatest extent reasonably practicable on the scenic assets, historic resources, and environment of the area concerned. The Proposed Route was selected because of its compatibility with existing and proposed land uses, avoidance of existing residences and commercial buildings, minimization of impacts to Loudoun County Board of Supervisors easements and planned developments, and avoidance of wetlands and forests. The Proposed Route also crosses future data center developments to the extent practicable, potentially minimizing the need for additional delivery point-driven transmission lines and rights-of-way to serve new customers. The Proposed Route is collocated with the future Twin Creeks Lines across Goose Creek and avoids crossing Rt. 7. For these reasons, and with regard to the importance of land use planning and compatibility in this developed and highly constrained area, Route 1 was selected in conjunction with Belmont Park Variation A and Broad Run Variation A as the Proposed Route (Route 1AA).

10. For the Lines #2081/#2150 Loop, the Company identified one approximately <0.1-mile (approximately 490 feet) overhead proposed route ("Line Loop Proposed Route") that will be constructed entirely on existing right-of-way or property to be obtained by the Company at the Golden Substation. Because the existing right-of-way and Company-owned property are adequate for the proposed Lines #2081/#2150 Loop, no new right-of-way is required. Given the availability

of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Lines #2081/#2150 Loop.

11. The Company is proposing all of the route alternatives identified above for notice and Commission consideration, including the Aspen-Goose Creek Proposed Route; the Aspen Golden Lines Proposed Route (Route 1AA) and Alternative Routes (Routes 1AB, 1BA, and 1BB); and the Line Loop Proposed Route. Discussion of the routes, as well as other overhead and underground routing solutions that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

12. The proposed Aspen Substation initially will be constructed with twelve 500 kV 5000 ampere ("A") circuit breakers, four 230 kV 4000A circuit breakers, four 500 kV line terminals, one 230 kV line terminal, one 500-230 kV transformer bank (4-480 MVA, single-phase units, including a spare) and other associated equipment. The Aspen Substation will be designed to accommodate future growth in the area with a build-out of twenty-one 500 kV 5000A circuit breakers, twelve 230 kV 4000A circuit breakers, seven 500 kV line terminals, six 230 kV line terminals, two 500-230 kV transformer banks (7-480 MVA, single-phase units, including a spare), and one 500 kV capacitor bank. Due to space constraints, the 500 kV and 230 kV infrastructure will be Gas Insulated Substation ("GIS"). Additionally, two control enclosures will be installed to accommodate the protective relay, communications, and security cabinets. The total area of the proposed Aspen Substation is approximately 6.5 acres.

13. The proposed Golden Substation initially will be constructed with six 500 kV 5000A circuit breakers, twelve 230 kV 4000A circuit breakers, one 500 kV line terminal, five 230

kV line terminals, two 500-230 kV transformer banks (7-480 MVA, single-phase units, including a spare) and other associated equipment. The Golden Substation will be designed to accommodate future growth in the area with a build-out of fourteen 500 kV 5000A circuit breakers, seventeen 230 kV 4000A circuit breakers, three 500 kV line terminals, seven 230 kV line terminals, three 500-230 kV transformer banks (11-480 MVA, single-phase units, including two spares), two 500 kV capacitor banks and two 230 kV capacitor banks. Due to space constraints, the 500 kV and 230 kV infrastructure will be GIS. Additionally, two control enclosures will also be installed to accommodate the protective relay, communications, and security cabinets. The total area of the proposed Golden Substation is approximately 8.5 acres.

14. At the existing 500 kV Goose Creek Substation, two 500 kV 4000A circuit breakers will be replaced with two 500 kV 5000A circuit breakers. One additional 500 kV 5000A circuit breaker will be added as part of the two 500 kV line terminations to the proposed Aspen Substation. The total area of the existing Goose Creek Substation, as currently expanded, is approximately 7.5 acres.

15. The desired in-service target date for the proposed Project is June 1, 2028. The Company estimates it will take approximately 44 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by October 7, 2024. Should the Commission issue a final order by October 7, 2024, to accommodate long-lead materials procurement, the Company estimates that construction should begin in June 2025 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 also is contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to purchase land for substation use. In addition, the Company is actively monitoring regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how they could potentially impact construction timing associated with time of year restrictions ("TOYRs"). The U.S. Fish and Wildlife Service ("USFWS") has indicated that it plans to issue final NLEB guidance to replace the interim guidance, which expires on March 31, 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS. The Company is also monitoring potential regulatory changes associated with the potential up-listing of the Tricolored bat ("TCB"). On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the Endangered Species Act. USFWS recently extended its Final Rule issuance target from September 2023 to September 2024. The Company is actively tracking this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

16. 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 a certificate of public convenience and necessity sunset date (*i.e.*, June 1, 2029) for energization of the Project.

17. The estimated conceptual cost of the Project utilizing the Aspen-Goose Creek Proposed Route, Aspen-Golden Lines Proposed Route, and the Line Loop Proposed Route is approximately $688.6 million, which includes approximately $171.1 million for transmission-related work and approximately $517.5 million for substation-related work (2023 dollars).[12]

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.

[12] These total Project costs include projected real estate costs, as well as costs related to the removal of transmission facilities required b y the Project on existing Lines #558, #2180, #227, and #274. *See* Appendix Section I.F. The total Project costs exclude costs associated with minor substation-related work described in Appendix Section II.C, and the costs to cut proposed Line #2333 into the future Starlight Substation. Note that the 2023 dollars provided herein are exclusive of all 2024 data. The Company will update the Project costs in 2024 dollars when all 2024 data is available.

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 Kunal S. Amare, Matthew B. Vinson, Kamlesh A. Joshi, Laura P. Meadows, and Jacob M. Rosenberg filed with this Application.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission:

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

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

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

VIRGINIA ELECTRIC AND POWER COMPANY

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March 7, 2023

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

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

Application No. 332

Appendix

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

Case No. PUR-2024-00032

Filed: March 7, 2024

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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, 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:

(i) Construct a new 500-230 kilovolt ("kV") substation in Loudoun County, Virginia, entirely on Company-owned property ("Aspen Substation"). The 500 kV source to the Aspen Substation will be created by cutting the Company's existing overhead 500 kV Brambleton-Goose Creek Line #558 into the Aspen Substation between Structure #558/1857 and Structure #558/1856.[1] The cut-in of Line #558 to the Aspen Substation will result in (i) 500 kV Aspen-Brambleton Line #558 and (ii) 500 kV Aspen-Goose Creek Line #597.

(ii) In addition to the 500 kV Aspen-Goose Creek Line #597 that results from the cut in for the Aspen Substation as described above, construct a new 500 kV line to connect the proposed Aspen Substation to the existing Goose Creek Substation. Specifically, the Company proposes to construct a new 500 kV single circuit transmission line extending approximately 0.2 mile from the proposed 500-230 kV Aspen Substation to the Company's existing 500 kV Goose Creek Substation in Loudoun County, Virginia, named Aspen-Goose Creek Line #5002 (or the "Aspen-Goose Creek Line"). The Aspen-Goose Creek Line will be constructed entirely on Company-owned property or within existing right-of-way supported by one 500 kV single circuit monopole structure and will utilize three-phase triple-bundled 1351.5 Aluminum Conductor Steel Reinforced ("ACSR") conductors with a summer transfer capability of 4,357 MVA.[2] Substation line terminal upgrade work will be required at the 500 kV Goose Creek Substation in order to terminate the two proposed Aspen-Goose Creek Lines (*i.e.*, Line #597 and Line #5002), as discussed in Section II.C. Combined with the new 500 kV Aspen-Goose Creek Line #597, this new 500 kV Aspen-Goose Creek Line #5002 will bring two new sources to the area by connecting Goose Creek Substation to the area grid via the proposed Aspen Substation.

(iii) Construct a new approximately 9.4-mile overhead 500 kV single circuit transmission line and a new 230 kV single circuit transmission line almost entirely on new right-of-

[1] *See* Section I.F regarding transmission facilities to be removed for construction of the Aspen Substation.

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

way.[3] The new transmission lines will originate at the 500 kV and 230 kV buses of the proposed Aspen Substation[4] and continue to the proposed 500-230 kV Golden Substation,[5] where the new lines will terminate, resulting in (i) 500 kV Aspen-Golden Line #5001, and (ii) 230 kV Aspen-Golden Line #2333 (collectively, the "Aspen-Golden Lines"). The proposed Aspen-Golden Lines will be constructed on new right-of-way varying between 100 and 150 feet in width[6] in order to support a 5-2

[3] The Aspen-Golden Lines will be entirely on new right-of-way except where the lines cross the existing 100-foot-wide transmission line right-of-way corridor containing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274, and where the lines cross the existing 130-foot-wide transmission line right-of-way corridor containing Beaumeade-BECO Line #2143, BECO-Paragon Park Line #2207, and BECO-Pacific Line #2165 near Broad Run. *See* Section I.F as to any impacts related to the crossing of these corridors.

[4] At the proposed Aspen Substation, the proposed 230 kV Aspen-Golden Line #2333 and the proposed 500 kV Aspen-Golden Line #5001 originate at their respective buses on separate rights-of-way and converge approximately 0.2 mile east of the substation. Specifically, the new 230 kV Aspen-Golden Line #2333 will begin from the easternmost portion of the proposed Aspen Substation where the 230 kV bus is located and travel in a northeastern direction, crossing the existing Line #227/#274 right-of-way transmission corridor, and then converge with the new 500 kV Aspen-Golden Line #5001. For that approximately 0.2 mile, the new 230 kV line will be supported on single circuit 230 kV H-frame structures in a separate, new 100-foot-wide right-of way. The new 500 kV Aspen-Golden Line #5001 will begin from the northern portion of the Aspen Substation where the 500 kV bus is located and travel in a northeastern direction, crossing the existing Line #227/#274 right-of-way transmission corridor, and then converge with the new 230 kV Aspen-Golden Line #2333. For that approximately 0.2 mile, the new 500 kV line will be supported on single circuit 500 kV H-frame structures in a separate, new 150-foot-wide right-of way. After the 500 kV and 230 kV corridors converge approximately 0.1 mile east of the Line #227/#274 corridor, the Aspen-Golden Lines will continue together within a new varying 100- to 150-foot-wide right-of-way corridor, until they split again just before terminating at the proposed Golden Substation. *See* Attachment II.A.6, and *infra*, n. 5.

[5] Similar to how the lines exit the proposed Aspen Substation (*see supra*, n. 4), the 230 kV Aspen-Golden Line #2333 will split from the converged corridor into a separate new right-of-way before terminating at the proposed Golden Substation. Specifically, in order to route the new 230 kV Aspen-Golden Line #2333 into the southern portion of the proposed Golden Substation where the 230 kV bus is located, the new 230 kV line will split into a separate corridor and travel in a southeastern direction along approximately 0.3 mile of new right-of-way before terminating at the 230 kV bus within the proposed Golden Substation. For that approximately 0.3 mile, the new 230 kV line will be supported on single circuit 230 kV monopole structures in a separate, new 100-foot-wide right-of way. Based on the placement of the 500 kV bus in the proposed Golden Substation, the new 500 kV Aspen-Golden Line #5001 will enter directly into the western portion of the proposed Golden Substation approximately 0.1 mile from the converged corridor and terminate at the proposed Golden Substation. For that approximately 0.1 mile, the new 500 kV line extends from a double circuit two-pole structure (supporting both the 500 kV and 230 kV lines) located in the converged corridor to the proposed Golden Substation. *See* Attachment II.A.6.

[6] For approximately 0.9 mile of the 9.4-mile Proposed Route of the Aspen-Golden Lines (between Structures #5001/6 / #2333/6 and #5001/12 / #2333/12) as defined herein, the Company is seeking approval to acquire additional right-of-way with varying widths between 100 and 140 feet to accommodate construction of two future 230 kV double circuit lines along the same corridor, referred to herein as the future Twin Creeks Lines. The additional right-of-way widths are variable as the proposed Aspen-Golden Lines and future Twin Creeks Lines need wider rights-of-way to accommodate horizontal configurations (rather than vertical) for the crossing of Goose Creek and to accommodate the crossing of the future Twin Creeks Lines underneath the Aspen-Golden Lines in two locations. The Company anticipates filing an application for State Corporation Commission ("Commission") approval of the 230 kV double circuit Twin Creeks Lines and related transmission infrastructure later in March 2024, along with a motion to consolidate these two cases for purposes of judicial economy. *See* page 1 of Attachment II.A.6 for a map depicting the collocation of the Aspen-Golden Lines with the future Twin Creeks Lines where the Company seeks to voluntarily acquire additional right-of-way varying in widths between 100 and 140 feet (totaling between 200 to 260 feet, due to varying overlap of the two rights-of-way). *See also* Attachment I.A.5 for a one-line diagram of the transmission system upon completion of the Project. This is consistent with Guideline #1 of Attachment 1 to the *Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia*, which emphasizes that rights-of-way

configuration[7] on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide right-of-way) or monopole or two-pole structures (100-foot-wide right-of-way), as well as to accommodate the routing of the lines to their respective buses in the proposed Aspen and Golden Substations. 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 768.2 Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength ("ACSS/TW/HS") type conductor with a summer transfer capability of 1,573 MVA.

(iv) Construct a new 500-230 kV substation in Loudoun County, Virginia, on property to be obtained by the Company ("Golden Substation").

(v) Loop the Company's existing 230 kV overhead Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150, which are currently collocated on double circuit lattice towers, into and out of the proposed Golden Substation in Loudoun County, Virginia. Specifically, the Company proposes to cut Line #2081 and Line #2150 between Structure #2081/124 / #2150/184 and Structure #2081/123 / #2150/183, and loop the existing lines into and out of the proposed Golden Substation, resulting in (i) Golden-Sterling Park #2081, (ii) Golden-Sterling Park #2150, (iii) Golden-Paragon Park #2348, and (iv) Golden-Paragon Park #2351 (collectively, the "Lines #2081/#2150 Loop" or "Line Loop"). To cut the lines into the proposed Golden Substation, the Company will remove one existing double circuit lattice tower (Structure #2081/123 / #2150/183) and replace it with four dulled galvanized steel single circuit monopoles (Structures #2081/122A, #2150/182A, #2348/123A, and #2351/183A). The Line Loop will be constructed entirely within the existing transmission corridor right-of-way or on property to be obtained by the Company for the proposed Golden Substation. Temporary infrastructure may be installed within the existing transmission corridor to keep Lines #2081 and #2150 in service during construction of the Line Loop. The Company proposes to utilize three-phase twin-

should be selected with the purpose of minimizing conflict between the rights-of-way and present and prospective uses of the land on which they are to be located and recommends that existing rights-of-way should be given priority as the locations for additions to existing transmission facilities. Accordingly, as part of this Application, the Company asks that the Commission not prohibit the Company from voluntarily obtaining the additional 100- to 140-foot-wide right-of-way for the Project proposed herein, with the understanding that the Company could not condemn for more than what is needed for the Aspen-Golden Lines based upon Commission approval received in this proceeding. This approach is consistent with the approach approved by the Commission in multiple proceedings, most recently in: *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 (June 7, 2023); *Application of Virginia Electric and Power Company for approval and certification of electric facilities: Butler Farm to Clover 230 kV Line, Butler Farm to Finneywood 230 kV Line and Related Projects*, Case No. PUR-2022-00175, Final Order at 15 (May 31, 2023). To be clear, the Company is proposing only a varying 100- to 150-foot-wide right-of way for the proposed Aspen-Golden Lines as described herein, and only the proposed 100- to 150-foot-wide right-of way will be cleared and utilized for the proposed Project.

[7] A "5-2 configuration" means that the supporting structures will be vertically 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.v-vii.

bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA for the Line Loop, the rating of which will be limited to the rating of the existing lines. As the closest existing 230 kV lines to the proposed Golden Substation site, the Lines #2081/#2150 Loop will provide a new 230 kV source from the Aspen/Goose Creek Substation area into Data Center Alley (or "DCA") via the proposed Golden Substation.

The Aspen Substation, Aspen-Goose Creek Line #5002 and related Goose Creek Substation work, Aspen-Golden Lines, Golden Substation, and the Lines #2081/#2150 Loop are collectively referred to as the "Aspen-Golden 500-230 kV Electric Transmission Project" or the "Project."

The Project is needed to maintain and improve electric service to customers in the eastern Loudoun load area ("Eastern Loudoun Load Area"), which is generally to the north and west of the Washington Dulles International Airport ("Dulles Airport") and is inclusive of the DCA; to address significant load growth in the Eastern Loudoun Load Area; and to resolve identified NERC reliability violations. As of this filing, the Eastern Loudoun Load Area is inclusive of approximately 27 locations where load is being served.[8] Based on load flow studies performed by PJM and validated by the Company, the Company anticipates that projected load growth in the area will produce multiple contingency conditions that would cause thermal overloads in several parts of the system by summer 2028. If not relieved by this proposed Project combined with others proposed or planned in the near term,[9] the identified reliability 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.

For the Aspen-Goose Creek Line #5002, the Company identified one approximately 0.2-mile overhead proposed route ("Aspen-Goose Creek Proposed Route") that will be constructed entirely within existing right-of-way or on Company-owned property. Because the existing right-of-way and Company-owned property are adequate for the proposed Aspen-Goose Creek Line #5002, no new right-of-way is required. Given the availability of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Aspen-Goose Creek Line.

For the Aspen-Golden Lines, the Company identified one overhead 9.4-mile proposed route ("Proposed Route" or "Route 1AA") and three overhead alternative routes that are either 9.4 or 9.5 miles long ("Alternative Route 1AB" or "Route 1AB," "Alternative Route 1BA" or "Route 1BA," and "Alternative Route 1BB" or "Route 1BB"). The Proposed and Alternative Routes all are comprised of a combination of three overhead segments.

One segment extends along State Route 7 ("Rt. 7") adjacent to the Belmont Park planned development (the "Belmont Park Segment") and includes two 0.6-mile overhead variations ("Belmont Park Variation A" and "Belmont Park Variation B").

[8] *See infra*, n. 21 and related text.

[9] *See* Attachment I.A.5 for an ultimate one-line diagram, including the Project and additional supplemental projects presented to PJM in the Eastern Loudoun Load Area at the time of this Application filing.

A second segment extends along Loudoun Water's Broad Run Water Reclamation Facility ("BRWRF") property and adjacent privately owned properties (the "Broad Run Segment") and includes a 2.2-mile variation ("Broad Run Variation A")[10] and a 2.3-mile variation ("Broad Run Variation B").[11]

A third segment, which is common to all of the Aspen-Golden Lines route alternatives, extends from the proposed Aspen Substation to the proposed Golden Substation, excluding the Belmont Park Segment and the Broad Run Segment where route variations were identified, for a combined total of 6.6 miles ("Route 1 Segment" or "Route 1").[12]

Accordingly, the Aspen-Golden Lines Proposed and Alternative Routes are comprised of a combination of Route 1, plus Belmont Park Variation A or B, plus Broad Run Variation A or B, with total mileages shown below and in Section II.A.1:

- Proposed Route (Route 1AA): Route 1 with Belmont Park Variation A and Broad Run Variation A (approximately 9.4 total miles);

- Alternative Route 1AB: Route 1 with Belmont Park Variation A and Broad Run Variation B (approximately 9.5 total miles);

- Alternative Route 1BA: Route 1 with Belmont Park Variation B and Broad Run Variation A (approximately 9.4 total miles); and

- Alternative Route 1BB: Route 1 with Belmont Park Variation B and Broad Run Variation B (approximately 9.5 total miles).

To be clear, the only difference between the Proposed Route (Route 1AA) and Alternative Routes 1AB, 1BA, and 1BB is the four potential combinations of Route 1 with one of the two Belmont Park Variations and one of the two Broad Run Variations.

For the Lines #2081/#2150 Loop, the Company identified one approximately <0.1-mile (approximately 490 feet) overhead proposed route ("Line Loop Proposed Route") that will be

[10] While Loudoun Water has expressed support for Broad Run Variation B where it crosses a small portion of the BRWRF property, the Company is continuing negotiations with Loudoun Water for easements for Broad Run Variation A where it runs along the BRWRF property. As discussed in detail in Section II.A.9 and in the Environmental Routing Study, Broad Run Variation A is shorter, is located entirely on industrial-zoned land, and has reduced environmental impacts in comparison to Broad Run Variation B. For these reasons, the Company is proposing to include Broad Run Variation A as a segment of the Proposed Route for the Aspen-Golden Lines. To the extent the Company is not able to successfully conclude negotiations with Loudoun Water for the necessary easements, the Company will file a motion for Commission approval to withdraw Broad Run Variation A and will support Broad Run Variation B as part of the preferred route (*i.e.*, Alternative Route 1AB).

[11] Note that the four variations (Belmont Park Variation A and B and Broad Run Variation A and B) may be referred to in abbreviated format on maps and other documentation supporting this filing, such as "Belmont Park A and B" and "Broad Run A and B."

[12] *See* Section II.A.1. Note that the proposed 230 kV Aspen-Golden Line #2333 along Route 1 (6.6 miles) is slightly longer (by approximately 0.2 mile) than the 500 kV Aspen-Golden Line #5001 along Route 1 (6.4 miles), as Line #5001 has a more direct entrance into the proposed Golden Substation based on the location of the 500 kV bus. See supra, n. 5. The longer of the routes (6.6 miles) is used herein for purposes of calculating the length and impacts of Route 1.

constructed entirely on existing right-of-way or property to be obtained by the Company at the Golden Substation. Because the existing right-of-way and Company-owned property are adequate for the proposed Lines #2081/#2150 Loop, no new right-of-way is required. Given the availability of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Lines #2081/#2150 Loop.

The Company is proposing all of the route alternatives identified above for notice and Commission consideration, including the Aspen-Goose Creek Proposed Route; the Aspen Golden Lines Proposed Route (Route 1AA) and Alternative Routes (Routes 1AB, 1BA, and 1BB); and the Line Loop Proposed Route. Discussion of the routes, as well as other overhead and underground routing solutions that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study (or "Routing Study") included with the Application.

The proposed Aspen Substation initially will be constructed with twelve 500 kV 5000 ampere ("A") circuit breakers, four 230 kV 4000A circuit breakers, four 500 kV line terminals, one 230 kV line terminal, one 500-230 kV transformer bank (4-480 MVA, single-phase units, including a spare) and other associated equipment. The Aspen Substation will be designed to accommodate future growth in the area with a build-out of twenty-one 500 kV 5000A circuit breakers, twelve 230 kV 4000A circuit breakers, seven 500 kV line terminals, six 230 kV line terminals, two 500-230 kV transformer banks (7-480 MVA, single-phase units, including a spare), and one 500 kV capacitor bank. Due to space constraints, the 500 kV and 230 kV infrastructure will be Gas Insulated Substation ("GIS"). Additionally, two control enclosures will be installed to accommodate the protective relay, communications, and security cabinets. The total area of the proposed Aspen Substation is approximately 6.5 acres.

The proposed Golden Substation initially will be constructed with six 500 kV 5000A circuit breakers, twelve 230 kV 4000A circuit breakers, one 500 kV line terminal, five 230 kV line terminals, two 500-230 kV transformer banks (7-480 MVA, single-phase units, including a spare) and other associated equipment. The Golden Substation will be designed to accommodate future growth in the area with a build-out of fourteen 500 kV 5000A circuit breakers, seventeen 230 kV 4000A circuit breakers, three 500 kV line terminals, seven 230 kV line terminals, three 500-230 kV transformer banks (11-480 MVA, single-phase units, including two spares), two 500 kV capacitor banks and two 230 kV capacitor banks. Due to space constraints, the 500 kV and 230 kV infrastructure will be GIS. Additionally, two control enclosures will also be installed to accommodate the protective relay, communications, and security cabinets. The total area of the proposed Golden Substation is approximately 8.5 acres.

At the existing 500 kV Goose Creek Substation, two 500 kV 4000A circuit breakers will be replaced with two 500 kV 5000A circuit breakers. One additional 500 kV 5000A circuit breaker will be added as part of the two 500 kV line terminations to the proposed Aspen Substation. The total area of the existing Goose Creek Substation, as currently expanded, is approximately 7.5 acres.

The estimated conceptual cost of the Project utilizing the Aspen-Goose Creek Proposed Route, the Aspen-Golden Lines Proposed Route, and the Line Loop Proposed Route is approximately $688.6

million, which includes approximately $171.1 million for transmission-related work and approximately $517.5 million for substation-related work (2023 dollars).[13]

The desired in-service target date for the proposed Project is June 1, 2028. The Company estimates it will take approximately 44 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by October 7, 2024. Should the Commission issue a final order by October 7, 2024, to accommodate long-lead materials procurement, the Company estimates that construction should begin in June 2025 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 also is contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to purchase land for substation use. In addition, the Company is actively monitoring regulatory changes and requirements associated with the Northern long-eared bat ("NLEB") and how they could potentially impact construction timing associated with time of year restrictions ("TOYRs"). The U.S. Fish and Wildlife Service ("USFWS") has indicated that it plans to issue final NLEB guidance to replace the interim guidance, which expires on March 31, 2024. The Company actively is tracking updates from the USFWS with respect to the final guidance. Once issued, the Company plans to review and follow the final guidance to the extent it applies to the Company's projects. Until the final guidance is issued, the Company will continue following the interim guidance. For projects that may require additional coordination, the Company will coordinate with the USFWS. The Company is also monitoring potential regulatory changes associated with the potential up-listing of the Tricolored bat ("TCB"). On September 14, 2022, the USFWS published the proposed rule to the Federal Register to list the TCB as endangered under the Endangered Species Act ("ESA"). USFWS recently extended its Final Rule issuance target from September 2023 to September 2024. The Company is actively tracking this ruling and evaluating the effects of potential outcomes on Company projects' permitting, construction, and in-service dates, including electric transmission projects.

Any adjustments to this Project schedule resulting from these or similar challenges could necessitate a minimum of a six- to twelve-month delay in the targeted in-service date. Accordingly, for purposes of judicial economy, the Company requests that the Commission issue a final order approving both a desired in-service target date (*i.e.*, June 1, 2028) and a certificate of

[13] These total Project costs include projected real estate costs, as well as costs related to the removal of transmission facilities required by the Project on existing Lines #558, #2180, #227, and #274. *See* Section I.F and related footnotes. The total Project costs exclude costs associated with minor substation-related work described in Section II.C, and the costs to cut proposed Line #2333 into the future Starlight Substation (*see supra*, n. 26). Finally, note that the 2023 dollars provided herein are exclusive of all 2024 data. The Company will update the Project costs in 2024 dollars when all 2024 data is available.

public convenience and necessity ("CPCN") sunset date (*i.e.*, June 1, 2029) for energization of the Project.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project is necessary to relieve identified violations of NERC Reliability Standards and to maintain the structural integrity and reliability of its transmission system. See Attachment I.A.1 for an overview map of the overall Project area.

Dominion Energy Virginia's transmission system is responsible for providing transmission service (i) for redelivery to the Company's retail customers; (ii) to Appalachian Power Company, Old Dominion Electric Cooperative, Northern Virginia Electric Cooperative ("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 to meet its customers' evolving power needs in the future.

Dominion Energy Virginia is part of the PJM Interconnection, L.L.C. ("PJM") regional transmission organization ("RTO"), which provides service to a large portion of the eastern United States. PJM is currently responsible for ensuring the reliability and coordinating the movement of electricity through all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia. This service area has a population of approximately 65 million and, on August 2, 2006, set a record high of 165,563 megawatts ("MW") for summer peak demand, of which Dominion Energy Virginia's load portion was approximately 19,256 MW. On July 28, 2023, the Company set a record high of 21,993 MW for summer peak demand. On December 24, 2022, the Company set a winter and all-time record demand of 22,189 MW. Based on the 2024 PJM Load Forecast, the DOM Zone is expected to grow with average growth rates of 5.6% summer and 5.1% winter over the next 10 years compared to the PJM average of 1.7% and 2.0% over the same period for the summer and winter, respectively.[14]

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

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

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.[15]

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.[16] 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.[17] Projects identified through the RTEP process are developed by the TO in coordination with PJM, and are presented at the Transmission Expansion Advisory Committee ("TEAC") meetings prior to inclusion in the RTEP, which is then presented for approval to the PJM Board of Managers (the "PJM Board").

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

[15] *See* FAC-001-3 (R1, R3) (effective April 1, 2021), which can be found at https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/virginia/parallel-generation/facility-interconnection-requirements-signed.pdf?la=en&rev=38f51ffb04b1489f921b32a41d9887c8.

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

[17] *See* PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria. *See supra*, n. 16.

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 is generally to the north and west of the Dulles Airport and is inclusive of Loudoun County's DCA; 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 largest concentration of data centers 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 is inclusive of approximately 27 locations where load is being served.[18] 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.

NEED FOR THE PROJECT

PJM Open Window

In response to FERC Order No. 1000,[19] 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.

[18] *See infra*, n. 21 and related text.

[19] 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.

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 and Attachment I.J.3.

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.[20]

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

[20] *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).

including the new 500 kV and 230 kV facilities proposed herein, will relieve the identified NERC reliability violations detailed in Section I.D.

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, Cabin Run, Cumulus, Davis Drive, Dranesville, Enterprise, Evergreen Mills, Farmwell, Greenway, Herndon Park, Lockridge, NIVO, Pacific, Paragon Park, Poland Road, Roundtable, Shellhorn Road, Sojourner, Sterling Park, Sunset Hills and Waxpool Substations; and NOVEC's Cochran Mills, Runway, and Yardley Ridge delivery points ("DPs").[21] On July 28, 2023, Dominion Energy Virginia set a new system summer peak of 21,993 MW, with these 27 substations combining to serve 2,325 MW of that new system peak.

In addition to the 27 existing substations, the 2022 RTEP 2027 and 2028 cases include six additional substations that are currently in detailed engineering or

[21] As of this filing, there are a total of 27 locations where load is served in the Eastern Loudoun Load Area. Note that the Company's Yardley Ridge Switching Station serves NOVEC's Yardley Ridge DP. For purposes of this discussion, Yardley Ridge is considered one location in the Eastern Loudoun Load Area where load is served. The locations are served by a combination of switching stations, substations and DPs owned by Dominion Energy Virginia, unless otherwise noted. For ease of reference, the remainder of this Appendix will refer to them collectively as "27 substations." *See* Attachment I.A.5 for locations where load will be served in the Eastern Loudoun Load Area once the Project is energized, and including all substations presented to PJM in the Eastern Loudoun Load Area at the time of this Application filing.

construction phases. Discussion regarding these additional substations is provided in Section I.B(4).

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 campuses and will require additional infrastructure, which includes the proposed Project.

Existing and Future Transmission System

Attachment I.A.2 provides the existing one-line diagram of the transmission system in the Eastern Loudoun Load Area. Attachment I.A.3 provides the 2023 RTEP 2028 configuration one-line diagram. Attachment I.A.4 provides the 2023 RTEP 2028 configuration one-line diagram, including all projects approved by PJM. Attachment I.A.5 provides a one-line diagram of the transmission system in the Eastern Loudoun Load Area once the Project is energized, which includes all baseline and supplemental projects that have been submitted to PJM.[22]

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

DESCRIPTION OF THE PROJECT

Aspen Substation

As part of the Project, the Company proposes to construct the new 500-230 kV Aspen Substation in Loudoun County, Virginia, entirely on Company-owned property. See Section I.F regarding the facilities to be removed in order to construct the proposed Aspen Substation, and Section II.C for a description of the substation, as well as a one-line diagram and general arrangement.

Aspen-Goose Creek Line #5002

In addition to the 500 kV Aspen-Goose Creek Line #597 that results from the cut in for the Aspen Substation as described above, construct a new 500 kV line to connect the proposed Aspen Substation to the existing Goose Creek Substation. Specifically, the Company proposes to construct a new 500 kV single circuit transmission line extending approximately 0.2 mile from the proposed 500-230 kV Aspen Substation to the Company's existing 500 kV Goose Creek Substation in Loudoun County, Virginia, named Aspen-Goose Creek Line #5002. The Aspen-Goose Creek Line will be constructed entirely on Company-owned property or within existing right-of-way supported by one 500 kV single circuit monopole

[22] *See* Attachment I.J.3. *See also, Application of Virginia Electric and Power Company For approval and certification of electric transmission facilities: 500 kV Line #514 Partial Rebuild Project,* Case No. PUR-2021-00276, Motion of Virginia Electric and Power Company to Cancel Approval and Certification of Electric Transmission Facilities: 500 kV Line #514 Partial Rebuild Project (filed, Feb. 13, 2024).

structure and will utilize three-phase triple-bundled 1351.5 ACSR conductors with a summer transfer capability of 4,357 MVA. Substation line terminal upgrade work will be required at the 500 kV Goose Creek Substation in order to terminate the two proposed Aspen-Goose Creek Lines (*i.e.*, Line #597 and Line #5002), as discussed in Section II.C. Combined with the new 500 kV Aspen-Goose Creek Line #597, this new 500 kV Aspen-Goose Creek Line #5002 will bring two new sources to the area by connecting Goose Creek Substation to the area grid via the proposed Aspen Substation.

For the Aspen-Goose Creek Line #5002, the Company identified one approximately 0.2-mile overhead proposed route (*i.e.*, the Aspen-Goose Creek Proposed Route) that will be constructed entirely within existing right-of-way or on Company-owned property. Because the existing right-of-way and Company-owned property are adequate for the proposed Aspen-Goose Creek Line #5002, no new right-of-way is required. Given the availability of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Aspen-Goose Creek Line.

Aspen-Golden Lines

The Company also proposes to construct the Aspen-Golden Lines, which include a new approximately 9.4-mile overhead 500 kV single circuit transmission line and a new 230 kV single circuit transmission line almost entirely[23] on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the proposed Aspen Substation and continue to the proposed 500-230 kV Golden Substation, where the new lines will terminate, resulting in (i) 500 kV Aspen-Golden Line #5001, and (ii) 230 kV Aspen-Golden Line #2333.

The proposed Aspen-Golden Lines will be constructed on new right-of-way varying between 100 and 150 feet in width in order to support a 5-2 configuration on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide right-of-way) or monopole or two-pole structures (100-foot-wide right-of-way), as well as to accommodate the routing of the lines to their respective buses in the proposed Aspen and Golden Substations. For approximately 0.9 mile of the 9.4-mile route, the Aspen-Golden Lines will be collocated with the future Twin Creeks Lines in rights-of-way varying from approximately 200 to 260 feet, in total. See Attachment II.A.6. To be clear, the Company is proposing only a varying 100- to 150-foot-wide right-of way for the proposed Aspen-Golden Lines as described herein, and only the proposed 100- to 150-foot-wide right-of way will be cleared and utilized for the proposed Project.[24]

[23] *See supra*, n. 3.

[24] *See supra*, n. 6.

At the proposed Aspen Substation, the proposed 230 kV Aspen-Golden Line #2333 and the proposed 500 kV Aspen-Golden Line #5001 originate at their respective buses on separate rights-of-way and converge approximately 0.2 mile east of the substation. Specifically, the new 230 kV Aspen-Golden Line #2333 will begin from the easternmost portion of the proposed Aspen Substation where the 230 kV bus is located and travel in a northeastern direction, crossing the existing Line #227/#274 right-of-way transmission corridor, and then converge with the new 500 kV Aspen-Golden Line #5001. For that approximately 0.2 mile, the new 230 kV line will be supported on single circuit 230 kV H-frame structures in a separate, new 100-foot-wide right-of way. The new 500 kV Aspen-Golden Line #5001 will begin from the northern portion of the Aspen Substation where the 500 kV bus is located and travel in a northeastern direction, crossing the existing Line #227/#274 right-of-way transmission corridor, and then converge with the new 230 kV Aspen-Golden Line #2333. For that approximately 0.2 mile, the new 500 kV line will be supported on single circuit 500 kV H-frame structures in a separate, new 150-foot-wide right-of way. After the 500 kV and 230 kV corridors converge approximately 0.1 mile east of the Line #227/#274 corridor, the Aspen-Golden Lines will continue together within a new varying 100- to 150-foot-wide right-of-way corridor, until they split again just before terminating at the proposed Golden Substation. See Attachment II.A.6.

Similar to how the lines exit the proposed Aspen Substation, the 230 kV Aspen-Golden Line #2333 will split from the converged corridor into a separate new right-of-way before terminating at the proposed Golden Substation. Specifically, in order to route the new 230 kV Aspen-Golden Line #2333 into the southern portion of the proposed Golden Substation where the 230 kV bus is located, the new 230 kV line will split into a separate corridor and travel in a southeastern direction along approximately 0.3 mile of new right-of-way before terminating at the 230 kV bus within the proposed Golden Substation. For that approximately 0.3 mile, the new 230 kV line will be supported on single circuit 230 kV monopole structures in a separate, new 100-foot-wide right-of way. Based on the placement of the 500 kV bus in the proposed Golden Substation, the new 500 kV Aspen-Golden Line #5001 will enter directly into the western portion of the proposed Golden Substation (approximately 0.1 mile) from the converged corridor and terminate at the proposed Golden Substation. For that approximately 0.1 mile, the new 500 kV line extends from a double circuit two-pole structure (supporting both the 500 kV and 230 kV lines) located in the converged corridor to the proposed Golden Substation. See Attachment II.A.6.

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 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.

For the Aspen-Golden Lines, the Company identified the overhead 9.4-mile Proposed Route (Route 1AA), as well as overhead Alternative Route 1AB (9.5 miles), Alternative Route 1BA (9.4 miles), and Alternative Route 1BB (9.5 miles).

The Proposed and Alternative Routes all are comprised of a combination of three overhead segments—the Belmont Park Segment, the Broad Run Segment, and the Route 1 Segment.

The Belmont Park Segment extends along Rt. 7 adjacent to the Belmont Park planned development and includes a 0.6-mile overhead Belmont Park Variation A and a 0.6-mile overhead Belmont Park Variation B.

The Broad Run Segment extends along Loudoun Water's BRWRF property and adjacent privately owned properties, and includes a 2.2-mile Broad Run Variation A and a 2.3-mile Broad Run Variation B.

The Route 1 Segment, which is common to all of the Aspen-Golden Lines route alternatives, extends from the proposed Aspen Substation to the proposed Golden Substation, excluding the Belmont Park Segment and the Broad Run Segment where route variations were identified, for a combined total of 6.6 miles. Accordingly, the Proposed and Alternative Routes are comprised of a combination of Route 1, plus Belmont Park Variation A or B, plus Broad Run Variation A or B, as follows, including total mileages:

- Proposed Route (Route 1AA): Route 1 with Belmont Park Variation A and Broad Run Variation A (approximately 9.4 total miles);

- Alternative Route 1AB: Route 1 with Belmont Park Variation A and Broad Run Variation B (approximately 9.5 total miles);

- Alternative Route 1BA: Route 1 with Belmont Park Variation B and Broad Run Variation A (approximately 9.4 total miles); and

- Alternative Route 1BB: Route 1 with Belmont Park Variation B and Broad Run Variation B (approximately 9.5 total miles).

To be clear, the only difference between the Proposed Route (Route 1AA) and Alternative Routes 1AB, 1BA, and 1BB is the four potential combinations of the Route 1 Segment with one of the two Belmont Park Variations and one of the two Broad Run Variations.

The Company is proposing all four of the Aspen-Golden Lines route alternatives identified above for notice and Commission consideration. Discussion of the routes, as well as other overhead and underground routing solutions that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

Golden Substation

The Company also proposes to construct the proposed 500-230 kV Golden Substation in Loudoun County, Virginia, on property to be obtained by the

Company. See Section II.C for a description of the proposed Golden Substation, as well as a one-line diagram and general arrangement.

Lines #2081/#2150 Loop

The Company also proposes to construct the Line #2081/#2150 Loop by cutting the Company's existing 230 kV overhead Paragon Park-Sterling Park Line #2081 and Paragon Park-Sterling Park Line #2150 and looping those lines into and out of the proposed Golden Substation in Loudoun County, Virginia.

Specifically, the Company proposes to cut Line #2081 and Line #2150 between Structure #2081/124 / #2150/184 and Structure #2081/123 / #2150/183, and loop the existing lines into and out of the proposed Golden Substation, resulting in (i) Golden-Sterling Park #2081, (ii) Golden-Sterling Park #2150, (iii) Golden-Paragon Park #2348, and (iv) Golden-Paragon Park #2351. To cut the lines into the proposed Golden Substation, the Company will remove one existing double circuit lattice tower (Structure #2081/123 / #2150/183) and replace it with four dulled galvanized steel single circuit monopoles (Structures #2081/122A, #2150/182A, #2348/123A, and #2351/183A).

From the proposed single circuit monopoles within the existing transmission corridor, the Company will extend new conductor for one span (approximately 490 feet (<0.1 mile)) that runs contiguous with the Line #2333 right-of-way where Line #2333 terminates into the proposed Golden Substation. The Line Loop will be constructed entirely within the existing transmission corridor right-of-way or on property to be obtained by the Company for the proposed Golden Substation. Temporary infrastructure may be installed within the existing transmission corridor to keep Lines #2081 and #2150 in service during construction of the Line Loop. The Company proposes to utilize three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA for the Line Loop, the rating of which will be limited to the rating of the existing lines. As the closest existing 230 kV lines to the proposed Golden Substation site, the Lines #2081/#2150 Loop will provide a new 230 kV source from the Aspen/Goose Creek Substation area into the DCA via the proposed Golden Substation.

For the Lines #2081/#2150 Loop, the Company identified one approximately <0.1-mile (approximately 490 feet) Line Loop Proposed Route that will be constructed entirely on existing right-of-way or property to be obtained by the Company at the Golden Substation. Because the existing right-of-way and Company-owned property are adequate for the proposed Lines #2081/#2150 Loop, no new right-of-way is required. Given the availability of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Lines #2081/#2150 Loop.

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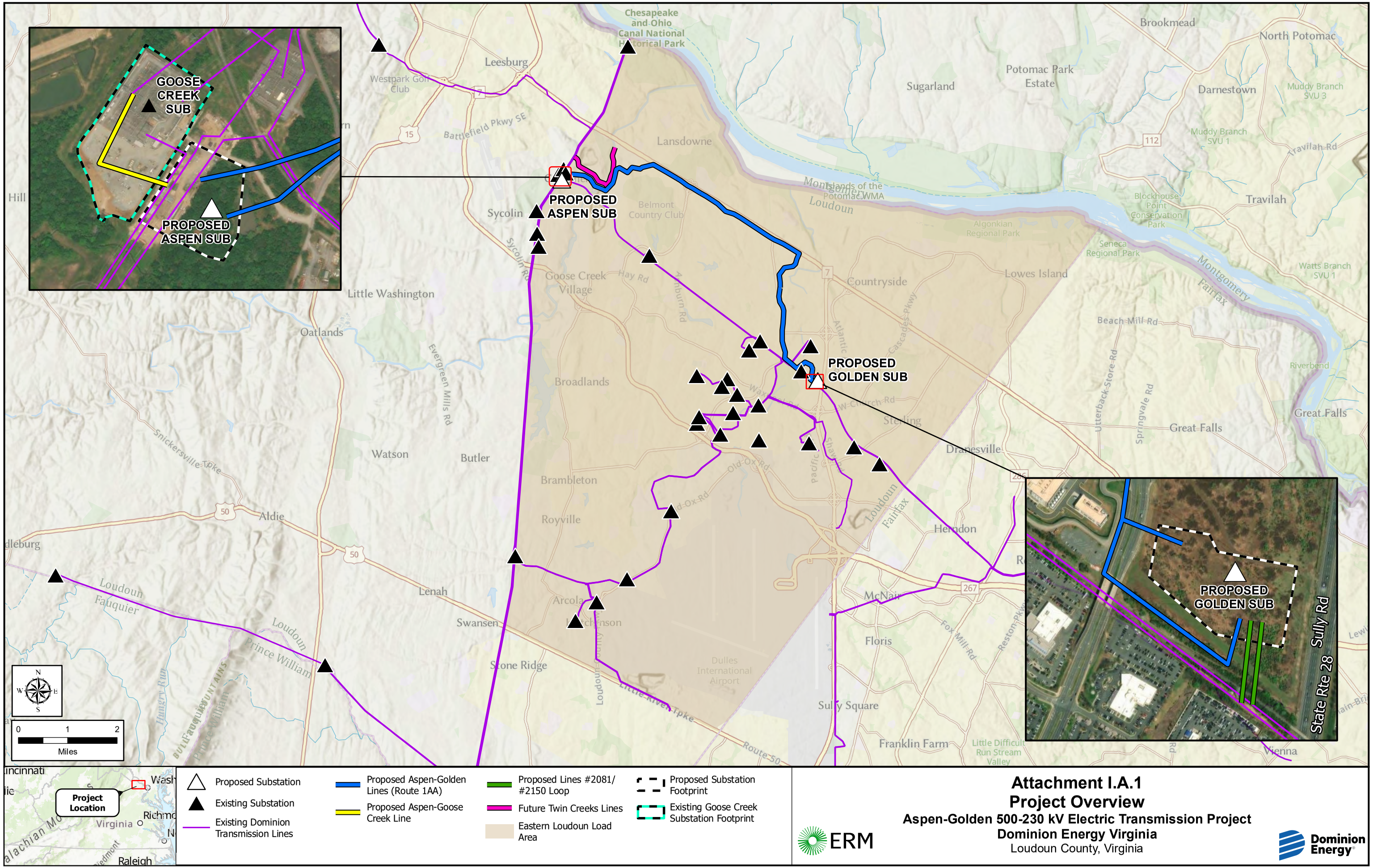
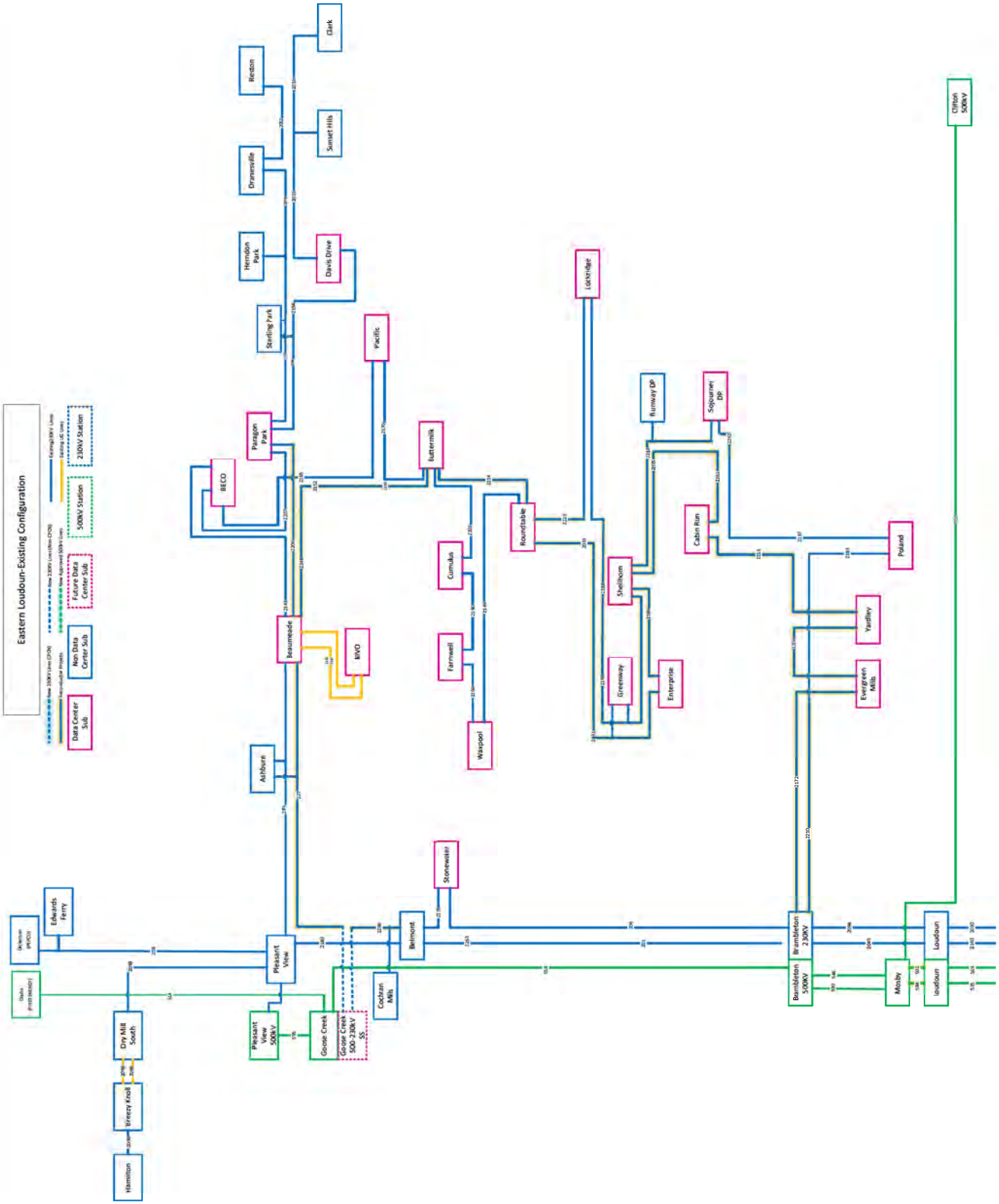
In summary, the proposed Project will relieve identified violations of mandatory NERC Reliability Standards beginning in the summer 2028 timeframe, and maintain the structural integrity and reliability of the transmission system for the overall load growth in the Project area.

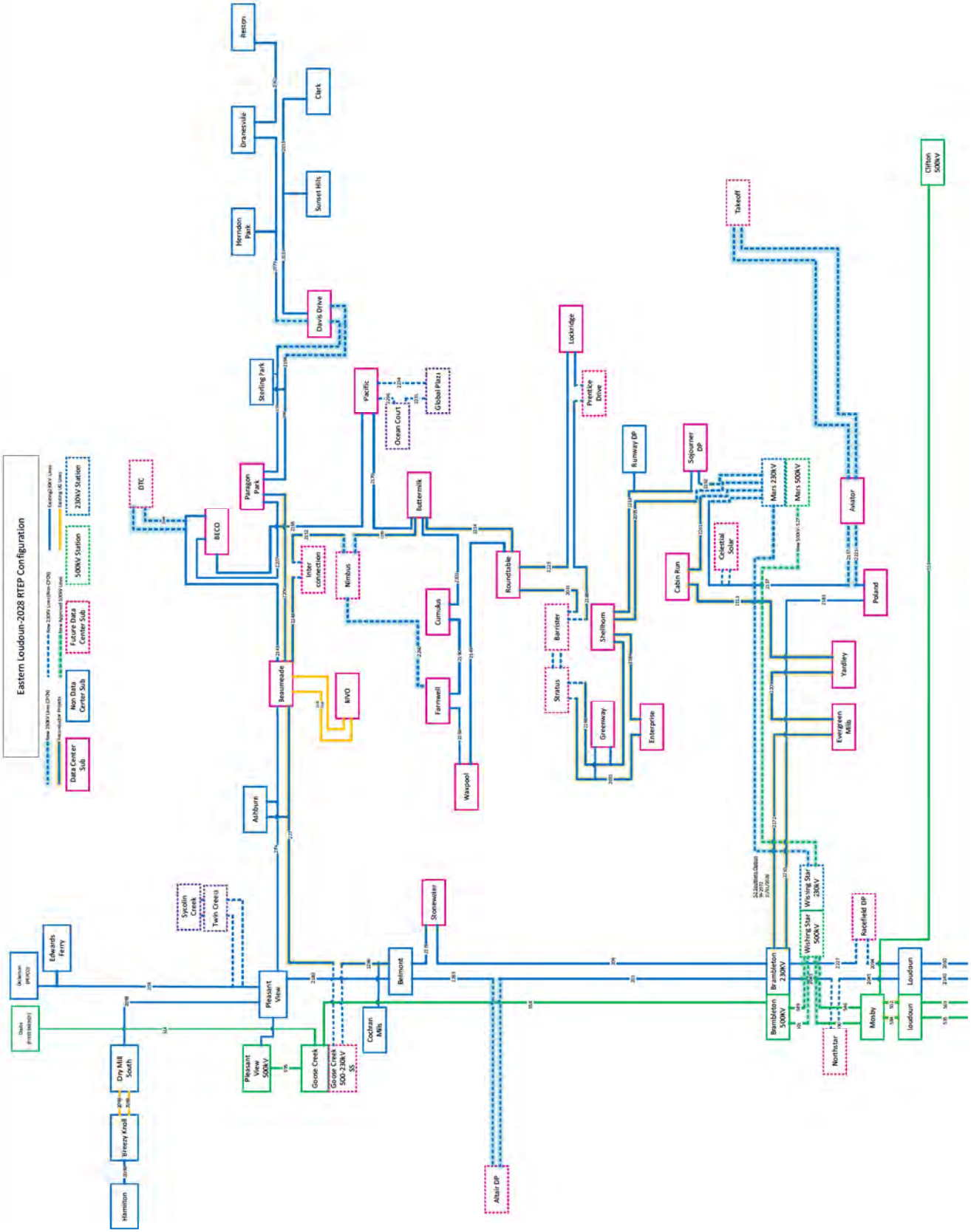


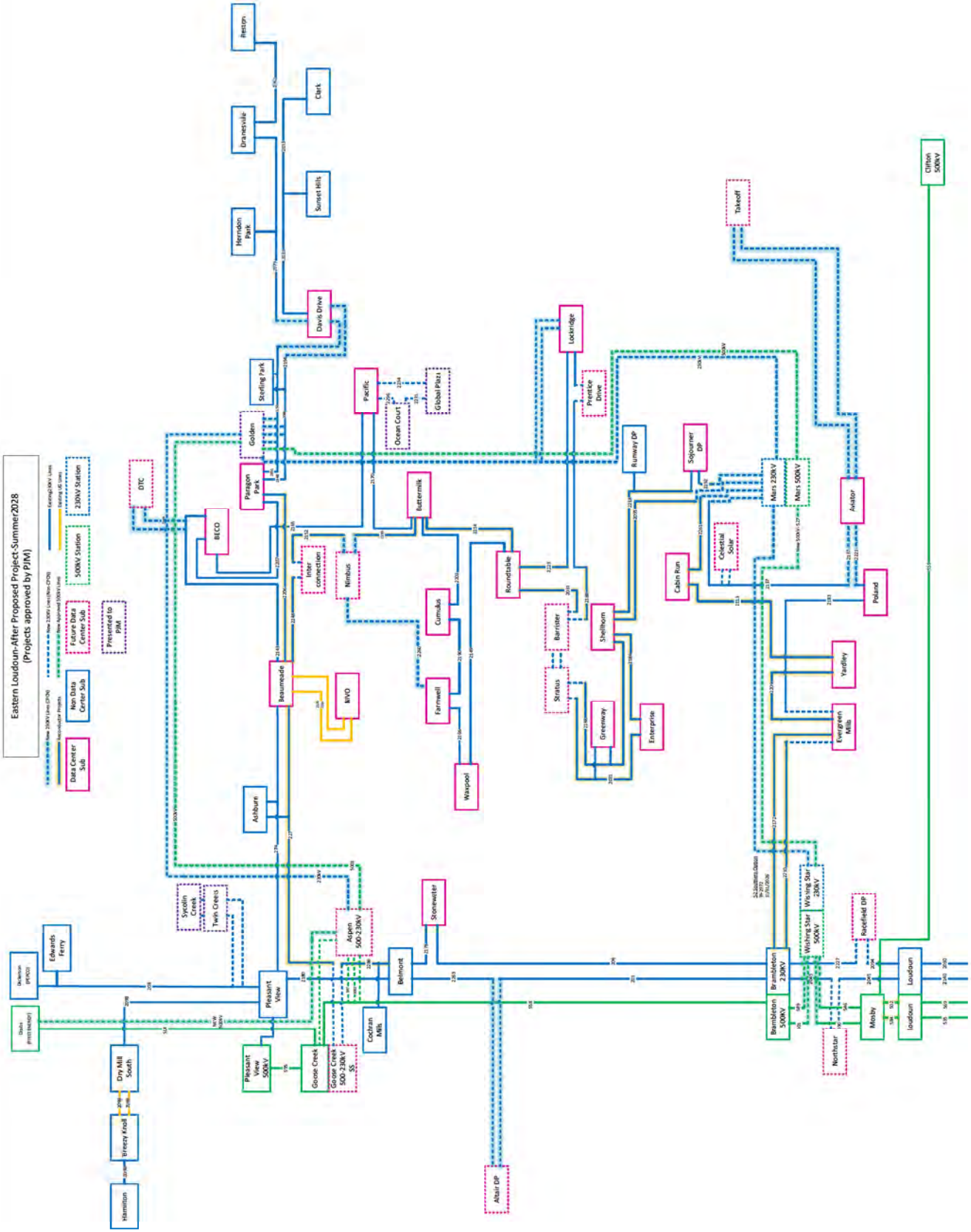
Attachment I.A.1
Project Overview
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

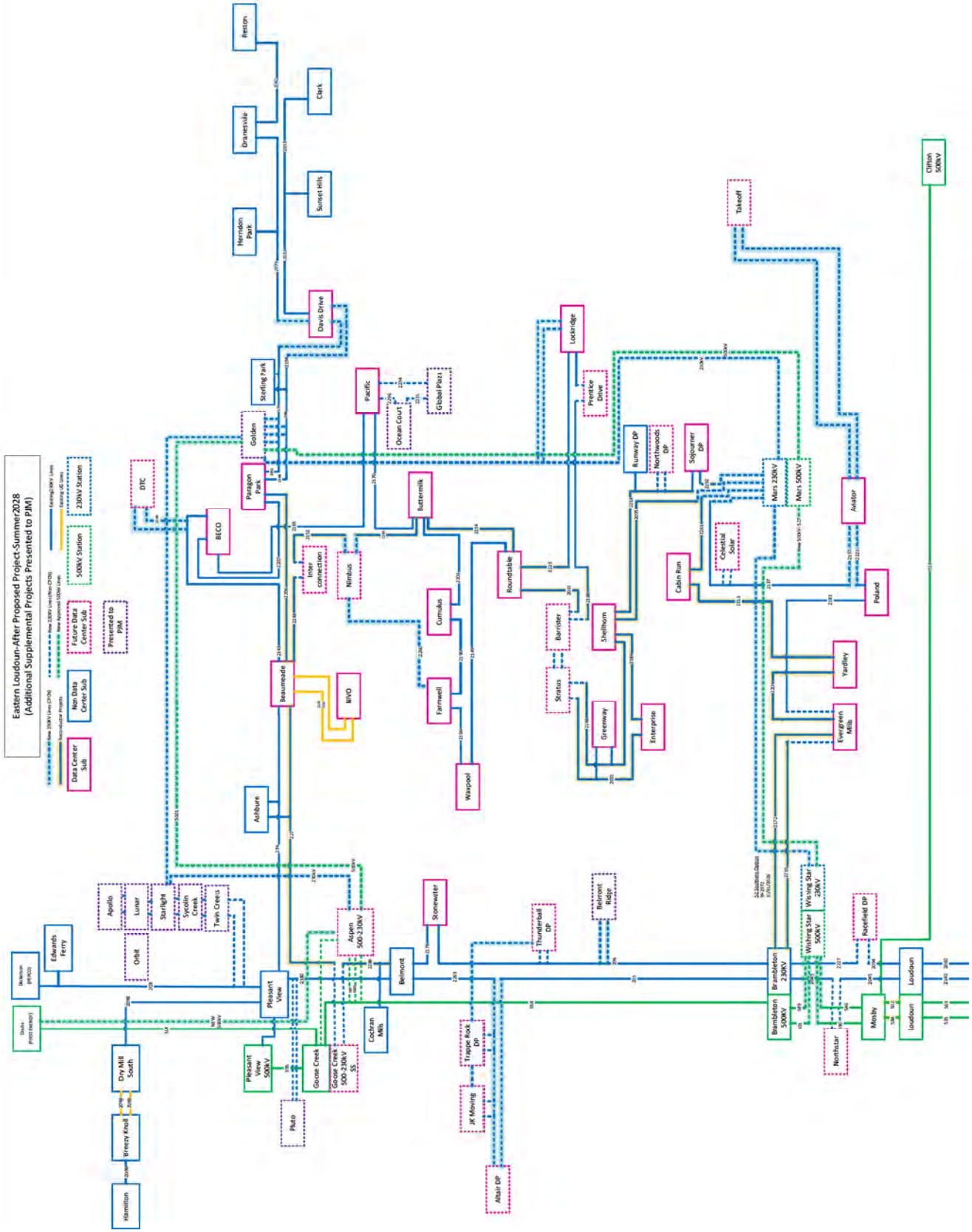
ERM

Dominion Energy


Eastern Loudoun-Existing Configuration
Data Center Sub
Non Data Center Sub
Future Data Center Sub
500kV Station
230kV Station
Clark
Reston
Sunset Hills
Dranesville
Herndon
Davis Drive
Sterling Park
Pacific
Paragon Park
BECO
Buttermilk
Lockridge
Runway DP
Sojourner DP
Roundtable
Cumulus
Cabin Run
Poland
Sheilhorn
Yardley
Beaumeade
INVO
Farmwell
Greenway
Enterprise
Evergreen Mills
Waxpool
Ashburn
Stonewall
Edwards Ferry
Pleasant View
Belmont
Brambleton 230kV
Brambleton 500kV
Loudoun
Cochran Mills
Pleasant View 500kV
Goose Creek
Goose Creek 500-230kV SS
Dry Mill South
Breezy Knoll
Hamilton
Mosby
Clifton 500kV


Eastern Loudoun-2028 RTEP Configuration
Data Center Sub
Non Data Center Sub
Future Data Center Sub
500kV Station
230kV Station
Reston
Clark
Dranesville
Herndon
Sunset Hills
Davis Drive
Sterling Park
Pacific
Ocean Court
Global Plaza
DTC
Paragon Park
BECO
Inter connection
Nimbus
Buttermilk
Roundtable
Lockridge
Prentice Drive
Runway DP
Sojourner DP
Takeoff
Clifton 500kV
Mars 230kV
Mars 500kV
Aviator
Celestial Solar
Cabin Run
Poland
Yardley
Evergreen Mills
Barrister
Shellhorn
Stratus
Greenway
Enterprise
Cumulus
Farmwell
Waxpool
Beaumeade
WVO
Ashburn
Sycolin Creek
Twin Creek
Edwards Ferry
Pleasant View
Belmont
Stonewater
Cochran Mills
Pleasant View 500kV
Goose Creek
Goose Creek 500-230kV SS
Dry Mill South
Breezy Knoll
Hamilton
Altair DP
Brambleton 230kV
Brambleton 500kV
Wishing Star 230kV
Wishing Star 500kV
Ratcliffe DP
Loudoun
Mosby
Northstar


Eastern Loudoun-After Proposed Project-Summer2028
(Projects approved by PJM)
Data Center Sub
Non Data Center Sub
Future Data Center Sub
Presented to PJM
500KV Station
230KV Station
Existing 500 KV Lines
Existing 230 KV Lines
Reston
Clark
Dranesville
Sunset Hills
Herndon
Davis Drive
Sterling Park
Golden
Paragon Park
DTC
BECO
Pacific
Ocean Court
Global Plaz
Lockridge
Prentice Drive
Runway DP
Sojourner DP
Takeoff
Clifton 500KV
Mars 230KV
Mars 500KV
Aviator
Poland
Yardley
Evergreen Mills
Celestial Solar
Cabin Run
Butternik
Inter connection
Nimbus
Roundtable
Barrister
Shellhorn
Stratus
Greenway
Enterprise
Cumulus
Farmwell
Waxpool
Beaumeade
INVO
Ashburn
Sycolin Creek
Twin Creeks
Edwards Ferry
Pleasant View
Aspen 500-230KV
Stonewater
Belmont
Cochran Mills
Pleasant View 500KV
Goose Creek
Goose Creek 500-230KV SS
Dry Mill South
Breezy Knoll
Hamilton
Altair DP
Brambleton 230KV
Brambleton 500KV
Wishing Star 230KV
Wishing Star 500KV
Ratcliffe DP
Northstar
Mosby
Loudoun


Eastern Loudoun-After Proposed Project-Summer2028
(Additional Supplemental Projects Presented to PJM)
230kV Station
500kV Station
Future Data Center Sub
Presented to PJM
Non Data Center Sub
Data Center Sub
Reston
Clark
Dranesville
Sunset Hills
Herndon
Davis Drive
Sterling Park
Golden
Paragon Park
DTC
BECO
Pacific
Ocean Court
Global Plaz
Buttermilk
Inter connection
Nimbus
Cumulus
Farmwell
Waxpool
Roundtable
Lockridge
Prentice Drive
Runway DP
Northwoods DP
Sojourner DP
Mars 230kV
Mars 500kV
Takeoff
Aviator
Celestial Solar
Cabin Run
Poland
Yardley
Evergreen Mills
Barrister
Shellhorn
Stratus
Greenway
Enterprise
Beaumeade
INVO
Ashburn
Apollo
Lunar
Starlight
Sycolin Creek
Twin Creeks
Orbit
Edwards Ferry
Pleasant View
Aspen 500-230kV
Stonewater
Belmont
Cochran Mills
Thunderbolt DP
Belmont Ridge
Brambleton 230kV
Brambleton 500kV
Wishing Star 230kV
Wishing Star 500kV
Ratcliffe DP
Northstar
Mosby
Loudoun
Clifton 500kV
Dry Mill South
Breezy Knoll
Hamilton
Pleasant View 500kV
Goose Creek
Goose Creek 500-230kV SS
Pluto
Trapp Rok DP
JK Moving
Altair DP

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: **(1) <u>Engineering Justification for Project</u>**

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

See Section I.A of the Appendix.

(2) <u>Known Future Projects</u>

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 First Energy's Doubs substation to address 500 kV loading concerns.[25] See <u>Attachment I.A.5</u> for a one-line diagram of the transmission system in the Eastern Loudoun Load Area, which includes all baseline and supplemental projects that have been submitted to PJM as of December 2023.

[25] *See supra*, n. 22.

Between 2022 and 2023, the Company received DP requests for five new substations (future Twin Creeks, Sycolin Creek, Starlight, Lunar, and Apollo Substations) in the Leesburg area, which are planned to be connected by cutting the Company's existing 230 kV Edwards Ferry-Pleasant View Line #203 and extending two new double circuit 230 kV lines (*i.e.*, the future Twin Creeks Lines) as part of the same project. Based on the DP requests, the Company anticipates that the total load of the five substations will exceed 300 MW in the future and hence will require a third source to connect the substations in order to mitigate a potential PJM 300 MW N-1-1 violation. When that need arises in the future, the Company plans to cut the proposed 230 kV Aspen-Golden Line #2333 into and out of the future Starlight Substation in order to support connection of all five substations with a third 230 kV source. This potential future work requires the completion of the proposed Project.[26]

The Company received an additional DP request for a new substation located near the future Apollo Substation, currently named Orbit Substation. The future Orbit Substation is generally located within the same load area as the proposed Project; however, it has its own unique load growth driver and will not require the proposed Project. The need slide for the future Orbit Substation was submitted to PJM in December 2023. The solution slide has not yet been presented to PJM.

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.

[26] As depicted on Attachment I.A.5, the proposed 230 kV Aspen-Golden Line #2333 will be cut into and out of the future Starlight Substation. After the future Starlight Substation is constructed, the Company will install one three-pole structure approximately 0.03 mile from the future Starlight Substation to connect the proposed 230 kV Aspen-Golden Line #2333 to one backbone structure in the future Starlight Substation, utilizing three-phase twin-bundled 768.2 ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA. The new three-pole structure will be constructed entirely within the existing Aspen-Golden Lines right-of-way, assuming Commission approval of this Project as proposed herein. The Company anticipates that this future work will be needed to resolve a 300 MW load loss violation in the event of an N-1-1 scenario related to the loss of both of the future Twin Creeks Lines, as discussed herein. The Company's work associated with connecting the proposed 230 kV Aspen-Golden Line #2333 to the future Starlight Substation is not a component of this Project and the Company considers this work described herein to qualify as an "ordinary extension[] or improvement[] in the usual course of business" (*i.e.*, "ordinary course") pursuant to § 56-265.2 A 1 of the Code of Virginia ("Va. Code") and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. As this work is not a component of the proposed Project, the costs associated with this work are not included in the total Project costs.

(3) Planning Studies

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

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. [27]

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.

2022 RTEP Open Window #3 Study Results

The 2022 RTEP Open Window #3 study results (Attachment I.D.1) show the worst violations for each monitored facility (transmission line or substation transformer). The list of violations is significantly reduced based on the proposed Project being implemented into the case.

(4) Facilities List

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

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

The Company presented solutions for five substations to PJM as part of the PJM M-3 process. The future Twin Creeks and Sycolin Substations are included in the 2022 RTEP 2027 planning cases, however, the future Starlight, Apollo, and Lunar Substations are not. The solution slide for a sixth substation (Orbit Substation) has not yet been presented to PJM. See the table below for additional information regarding these six substations.

Substation	Supplemental ID	Project Target	PJM Need	PJM Solution	Supplemental Project #
Twin Creek	DOM-2022-0043	3/2/2026	6/7/2022	6/6/2023	s3049
Sycolin Creek	DOM-2022-0042	6/15/2026	6/7/2022	6/6/2023	s3049
Lunar	DOM-2022-0054	7/1/2027	11/1/2022	7/11/2023	N/A
Apollo	DOM-2022-0055	7/1/2027	11/1/2022	7/11/2023	N/A
Starlight	DOM-2023-0001	6/1/2028	2/7/2023	7/11/2023	N/A
Orbit	DOM-2023-0050	11/1/2026	9/5/2023	To be presented in 2024	N/A

N/A (not available): Projects that have not been designated a Supplemental Project number by PJM as of this filing.

Additional substations in the Eastern Loudoun Load Area are in different stages of planning and will be added to the Supplemental list of projects that will be presented to PJM. The exact number, timing, and loading of these stations has not been determined at this time, but the expected load growth in the Eastern Loudoun Load Area should follow existing trends over the next five to ten years. 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 supplemental projects that have been submitted to PJM as of December 2023.

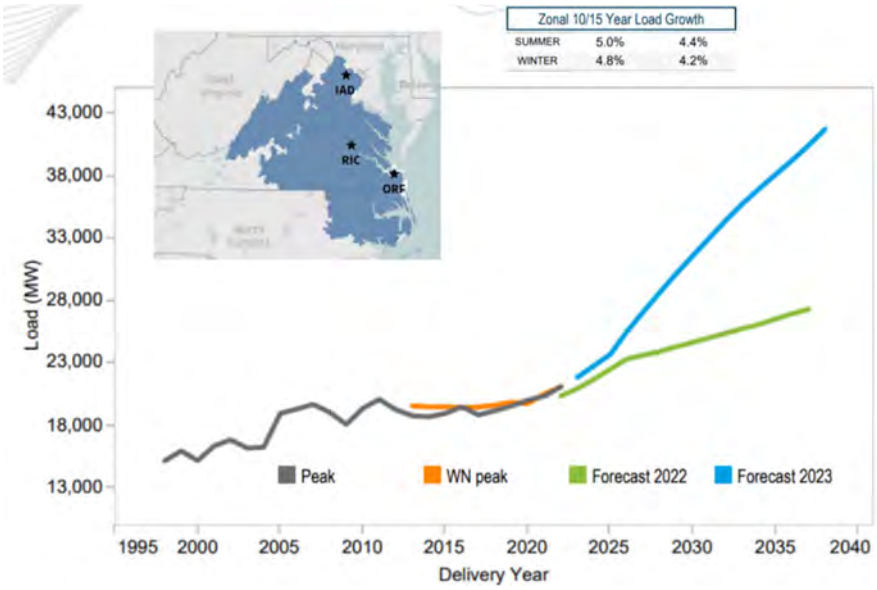
I. NECESSITY FOR THE PROPOSED PROJECT

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 filing, the Eastern Loudoun Load Area encompasses portions of Loudoun County bounded by the Potomac River to the north, the Loudoun-Fairfax County line to the east, Route 50 to the south, and the Company's existing 500 kV Brambleton-Goose Creek Line #558 to the west. The discussion below provides an overview of the historical and projected load growth in the Project area based on the 2023 and 2024 PJM Load Forecasts.

PJM Load Forecast

The 2023 PJM Load Forecast[28] 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 2022 PJM 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.



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

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 traditionally 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[29] 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 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 the 2024 PJM 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 2023 PJM Load Forecast is sufficient to 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,

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

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.

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	**########**	**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 thermal violations with worst case contingency identified in PJM's 2022 RTEP 2027 analysis. The 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
313393 8MARS 500 313399 6MARS 230 1 1	DVP_P1-3: 8WSHNGSTAR-TX#1_SRT-A	111.45	<90%
313398 6BARRISTER 230 313808 6ROUNDTABLE 230 1 1	DVP_P7-1: LN 227-274_SRT-S	98.14	<90%
313399 6MARS 230 313746 6SOJOURNER 230 1 1	DVP_P1-2: LN 2095_SRT-A	106.5	<90%
313399 6MARS 230 313805 6SHELLHORN1 230 1 1	DVP_P1-2: LN 9349_SRT-A	114.8	<90%
313721 6BUTTERMILK 230 313821 6PACIFIC 230 1 1	DVP_P4-2: 2095T9349_SRT-A	94.58	<90%
313733 6NIMBUS 230 313743 6INTERCONNEC 230 1 1	DVP_P4-2: 2095T9349_SRT-A	103.65	<90%
313743 6INTERCONNEC 230 314010 6BEAMEAD 230 1 1	DVP_P4-2: 2095T9349_SRT-A	117.36	<90%
313752 6TAKEOFF 230 313774 6LINC PRK 230 1 1	DVP_P4-2: 2095T9349_SRT-A	105.77	<90%
313774 6LINC PRK 230 314035 6DISCOVR 230 1 1	DVP_P1-2: LN 9233_SRT-A	110.82	<90%
313805 6SHELLHORN1 230 314098 6GREENWAY1 230 1 1	DVP_P1-2: LN 2186_SRT-A	102.62	<90%
313815 6SPRINGH 230 314079 6RESTON 230 1 1	DVP_P1-2: LN 202_SRT-A	104.02	<90%
313904 6GOOSECRK 230 314006 6ASHBURA 230 1 1	DVP_P1-2: LN 274_SRT-S	117.03	<90%
314004 6ASHBURN 230 314010 6BEAMEAD 230 1 1	DVP_P1-2: LN 227_SRT-A	108.91	<90%
314004 6ASHBURN 230 314072 6PL VIEW 230 1 1	DVP_P1-2: LN 227_SRT-A	113.35	<90%
314006 6ASHBURA 230 314010 6BEAMEAD 230 1 1	DVP_P1-2: LN 274_SRT-S	113.35	<90%
314009 6BRADOCK 230 314052 6IDYLWOD 230 1 1	DVP_P1-2: LN 2097_SRT-A	109.9	<90%
314035 6DISCOVR 230 314084 6SULLY 230 1 1	DVP_P1-2: LN 9233_SRT-A	121.16	<90%

314039 6GALLOWS A 230 314052 6IDYLWOD 230 1 1	DVP_P7-1: LN 207-266_SRT-A	105.54	<90%
314039 6GALLOWS A 230 314068 6OX 230 1 1	DVP_P7-1: LN 207-266_SRT-A	108.51	<90%
314041 6GLEBE 230 314185 6RADNOR 230 1 1	DVP_P4-2: 250T258_SRT-A	115.47	<90%
314919 8OX 500 314068 6OX 230 1 1	DVP_P4-2: 201342_SRT-S	101.79	<90%
314925 8PL VIEW 500 314072 6PL VIEW 230 1 1	DVP_P1-3: 8GOOSE CREEK-TX#1_SRT-A	109.58	<90%
314939 8GOOSE CREEK 500 313904 6GOOSECRK 230 1 1	DVP_P4-2: L3T203_SRT-A	108.14	<90%

Monitored Facility	Areas	Scenario	Final AC %Loading 2027_Base	Final AC %Loading Apen-Golden
223937 DICK 230 230 314290 6EDFERRY 230 1 1	233/345	DVP_P1-2: LN 514_SRT-A	111.15	107.1
		DVP_P4-2: 51482_SRT-A	104.97	101.02
		DVP_P4-2: 514T595_SRT-A	109.21	103.05
313393 8MARS 500 313399 6MARS 230 1 1	345	DVP_P1-2: LN 2172_SRT-A	97.74	
		DVP_P1-2: LN 227_SRT-A	95.61	
		DVP_P1-2: LN 595_SRT-A	95.93	
		DVP_P1-2: LN 9272_SRT-A	94.67	
		DVP_P1-2: LN 9303_SRT-A	94.3	
		DVP_P1-2: LN 9345_SRT-A	111.45	
		DVP_P1-3: 8BRAMBLETON-TX#2_SRT-A	99.35	
		DVP_P1-3: 8GOOSE CREEK-TX#1_SRT-A	101.62	
		DVP_P1-3: 8LOUDOUN-TX#1_SRT-A	95.25	
		DVP_P1-3: 8LOUDOUN-TX#2_SRT-A	95.27	
		DVP_P1-3: 8PL VIEW-TX#3_SRT-A	96.17	
		DVP_P1-3: 8WSHNGSTAR-TX#1_SRT-A	111.45	
		DVP_P4-2: 204502_SRT-A	95.19	
		DVP_P4-2: 209402_SRT-A	94.51	
		DVP_P4-2: 227T9292_SRT-S	97.24	
		DVP_P4-2: H1T595_SRT-A	105.63	
		DVP_P4-2: L1T227_SRT-A	97.35	
		DVP_P4-6: 9345T1_SRT-A	104.76	
		DVP_P4-6: 9345T2_SRT-A	104.76	
		DVP_P4-6: 9346T1_SRT-A	104.86	
		DVP_P4-6: 9347T1_SRT-A	104.86	
		DVP_P4-6: WISHI 9345T2_SRT-A	104.76	
		DVP_P7-1: LN 2172-2183_SRT-A	98.01	
		DVP_P7-1: LN 227-274_SRT-S	104.15	
		DVP_P1-2: LN 2209_SRT-A	95.42	
		DVP_P1-2: LN 274_SRT-S	95.37	
		DVP_P4-2: 218302_SRT-A	94.4	
313398 6BARRISTER 230 313808 6ROUNDTABLE 230 1 1	345	DVP_P7-1: LN 227-274_SRT-S	98.14	
313399 6MARS 230 313746 6SOJOURNER 230 1 1	345	DVP_P1-2: LN 2095_SRT-A	106.5	
		DVP_P4-2: 209542_SRT-A	100.1	
		DVP_P4-2: 2095T2186_SRT-A	96.83	
		DVP_P4-2: 2095T2213_SRT-A	99.14	
		DVP_P4-6: 2095T2_SRT-A	100.11	
		DVP_P7-1: LN 2095-2137_SRT-A	105.42	
313399 6MARS 230 313805 6SHELLHORN1 230 1 1	345	DVP_P1-2: LN 2218_SRT-A	108.67	
		DVP_P1-2: LN 9349_SRT-A	114.8	
		DVP_P4-2: 221842_SRT-A	101.89	
		DVP_P4-2: 221862-2_SRT-A	102.15	
		DVP_P4-2: 934962-1_SRT-A	107.91	
		DVP_P4-2: 934962-2_SRT-A	107.91	
		DVP_P4-2: XT2218_SRT-A	101.89	
		DVP_P4-6: 9349T1_SRT-A	95.39	
		DVP_P7-1: LN 227-274_SRT-S	112.09	
313401 6GOLDEN 230 313731 6PARAGON PK 230 1 1	345	DVP_P1-2: LN 9376_SRT-A		99.16
313401 6GOLDEN 230 313731 6PARAGON PK 230 2 1	345	DVP_P1-2: LN 9375_SRT-A		99.16
313440 8VINTHIL 500 314125 6VINTHIL 230 2 1	345	DVP_P4-2: H1T2114_SRT-A	97.44	
313440 8VINTHIL 500 314913 8LOUDOUN 500 1 1	345	DVP_P1-2: LN 5XX-2_SRT-S		96.47
		DVP_P4-2: H1T5XX-2a_SRT-A	94.9	97.78
		DVP_P7-1: LN 2222-5XX-2_SRT-A		94.67

Monitored Facility	Areas	Scenario	Final AC %Loading	
		Cont Name	2027_Base	Apen-Golden
313440 8VINTHIL 500 314916 8MORRSVL 500 1 1	345	DVP_P1-2: LN 535_SRT-S	112.66	113.69
		DVP_P1-2: LN 539_SRT-A	105.01	105.71
		DVP_P1-2: LN 545_SRT-S	99.39	99.81
		DVP_P1-2: LN 561_SRT-A		94.42
		DVP_P1-2: LN 568_SRT-S		94.26
		DVP_P4-2: 535T5XX-1_SRT-A	98.64	99.24
		DVP_P4-2: 545T552_SRT-S	109.75	109.8
		DVP_P4-2: H1T545_SRT-S		94.38
		DVP_P4-2: H2T539_SRT-A	98.7	99.36
		DVP_P4-2: H2T545_SRT-S	109.64	110.06
		DVP_P4-2: H2T5XX-2_SRT-A	102.6	103.87
		DVP_P4-2: H3T539_SRT-A	103.24	103.8
		DVP_P4-2: OX H1T539_SRT-A	98.69	99.36
		DVP_P7-1: LN 535-2114_SRT-S	119.49	120.34
313721 6BUTTERMILK 230 313821 6PACIFIC 230 1 1	345	DVP_P4-2: 2095T9349_SRT-A	94.58	
313733 6NIMBUS 230 313743 6INTERCONNEC 230 1 1	345	DVP_P4-2: 2095T9349_SRT-A	103.65	
313743 6INTERCONNEC 230 314010 6BEAMEAD 230 1 1	345	DVP_P4-2: 2095T9349_SRT-A	117.36	
313746 6SOJOURNER 230 313822 6RUNWAY 230 1 1	345	DVP_P1-2: LN 2095_SRT-A	99.76	
		DVP_P7-1: LN 2095-2137_SRT-A	99.04	
313751 6STRATUS 230 314098 6GREENWAY1 230 1 1	345	DVP_P1-2: LN 2186_SRT-A	96.64	
313752 6TAKEOFF 230 313774 6LINC PRK 230 1 1	345	DVP_P4-2: 2095T9349_SRT-A	105.77	
		DVP_P7-1: LN 227-274_SRT-S	99.94	
313774 6LINC PRK 230 314035 6DISCOVR 230 1 1	345	DVP_P1-2: LN 9233_SRT-A	110.82	
		DVP_P4-2: 9233Y2_SRT-A	104.17	
313805 6SHELLHORN1 230 313822 6RUNWAY 230 1 1	345	DVP_P1-2: LN 2095_SRT-A	95.82	
		DVP_P7-1: LN 2095-2137_SRT-A	95.31	
313805 6SHELLHORN1 230 313841 6ENTERPRIS 230 1 1	345	DVP_P1-2: LN 2188_SRT-A	98.1	
313805 6SHELLHORN1 230 314098 6GREENWAY1 230 1 1	345	DVP_P1-2: LN 2031_SRT-A	96.57	
		DVP_P1-2: LN 2186_SRT-A	102.62	
		DVP_P4-2: 218642_SRT-A	97.53	
		DVP_P4-2: H3T2186_SRT-A	96.47	
		DVP_P7-1: LN 227-274_SRT-S	94.09	
313815 6SPRINGH 230 314079 6RESTON 230 1 1	345	DVP_P1-2: LN 202_SRT-A	104.02	
		DVP_P4-2: 20212_SRT-A	97.78	
		DVP_P4-2: 202T2005_SRT-A	94.7	
		DVP_P4-2: 202T2033_SRT-A	96.64	
313821 6PACIFIC 230 314097 6BECO 230 1 1	345	DVP_P1-2: LN 9272_SRT-A		97.87
313837 6SUMMIT 230 314197 6LDYSMITH CT 230 1 1	345	DVP_P1-2: LN 568_SRT-S	94.85	
313904 6GOOSECRK 230 314006 6ASHBURA 230 1 1	345	DVP_P4-2: 203T274_SRT-A	109.19	
		DVP_P4-2: 2095T9349_SRT-A	110.05	
		DVP_P4-2: 274T2098_SRT-S	110.42	
		DVP_P4-2: 274T2130_SRT-S	110.03	
		DVP_P4-2: 274T2206_SRT-S	106.42	
		DVP_P4-2: L3T2180_SRT-S	98.6	
		DVP_P4-4: ASHBUR SC332_SRT-S	110.01	
		DVP_P1-2: LN 274_SRT-S	117.03	
313911 6TWINCREEKS 230 314290 6EDFERRY 230 1 1	345	DVP_P1-2: LN 514_SRT-A	109.19	105.14
		DVP_P4-2: 51482_SRT-A	103.1	99.15
		DVP_P4-2: 514T595_SRT-A	107.41	101.25
314004 6ASHBURN 230 314010 6BEAMEAD 230 1 1	345	DVP_P1-2: LN 227_SRT-A	108.91	
		DVP_P4-2: 2095T9349_SRT-A	100.81	
		DVP_P4-2: 227T2130_SRT-S	102.4	
		DVP_P4-2: 227T2152_SRT-A	94.9	
		DVP_P4-2: L1T9292_SRT-S	95.08	
		DVP_P4-4: SC432_SRT-A	103.11	

Monitored Facility	Areas	Scenario	Final AC %Loading	
			2027_Base	Apen-Golden
		Cont Name		
314004 6ASHBURN 230 314072 6PL VIEW 230 1 1	345	DVP_P1-2: LN 227_SRT-A	113.35	
		DVP_P4-2: 2095T9349_SRT-A	104.66	
		DVP_P4-2: 227T2130_SRT-S	106.55	
		DVP_P4-2: 227T2152_SRT-A	98.65	
		DVP_P4-2: 227T9292_SRT-S	97.75	
		DVP_P4-2: L1T227_SRT-A	97.61	
		DVP_P4-2: L1T9292_SRT-S	99.07	
		DVP_P4-4: SC432_SRT-A	106.33	
314006 6ASHBURA 230 314010 6BEAMEAD 230 1 1	345	DVP_P4-2: 203T274_SRT-A	105.73	
		DVP_P4-2: 2095T9349_SRT-A	106.61	
		DVP_P4-2: 274T2098_SRT-S	106.97	
		DVP_P4-2: 274T2130_SRT-S	106.57	
		DVP_P4-2: 274T2206_SRT-S	102.96	
		DVP_P4-2: L3T2180_SRT-S	95.21	
		DVP_P4-4: ASHBUR SC332_SRT-S	106.55	
		DVP_P1-2: LN 274_SRT-S	113.35	
314009 6BRADOCK 230 314052 6IDYLWOD 230 1 1	345	DVP_P1-2: LN 2097_SRT-A	109.9	
		DVP_P4-2: 207T2097_SRT-A	103.24	
		DVP_P4-2: 209712_SRT-A	103.31	
		DVP_P4-2: 209742_SRT-A	100.21	
		DVP_P4-2: 243T2097_SRT-A	108.08	
		DVP_P7-1: LN 2023-248_SRT-A	105.6	
		DVP_P7-1: LN 2097-237_SRT-A	103.28	
		DVP_P7-1: LN 2112-248_SRT-A	107.24	
		DVP_P7-1: LN 215-248_SRT-A	95.72	
		DVP_P7-1: LN 227-274_SRT-S	99.58	
314035 6DISCOVR 230 314084 6SULLY 230 1 1	345	DVP_P1-2: LN 9233_SRT-A	121.16	
		DVP_P4-2: 9233Y2_SRT-A	113.89	
314039 6GALLOWS A 230 314052 6IDYLWOD 230 1 1	345	DVP_P1-2: LN 207_SRT-A	101.06	
		DVP_P1-2: LN 9290_SRT-A	95.23	
		DVP_P4-2: 20712_SRT-A	94.86	
		DVP_P4-2: 207T281_SRT-A	95.17	
		DVP_P4-2: 207T294_SRT-A	95.3	
		DVP_P4-2: 251T2164_SRT-A	94.9	
		DVP_P4-2: 9290T248_SRT-A	102.46	
		DVP_P7-1: LN 2023-248_SRT-A	100.4	
		DVP_P7-1: LN 207-266_SRT-A	105.54	
		DVP_P7-1: LN 2112-248_SRT-A	101.82	
314039 6GALLOWS A 230 314068 6OX 230 1 1	345	DVP_P1-2: LN 207_SRT-A	104.24	
		DVP_P1-2: LN 9290_SRT-A	98.4	
		DVP_P4-2: 20712_SRT-A	97.84	
		DVP_P4-2: 207T281_SRT-A	98.15	
		DVP_P4-2: 207T294_SRT-A	98.28	
		DVP_P4-2: 251T2164_SRT-A	97.88	
		DVP_P4-2: 9290T248_SRT-A	105.44	
		DVP_P7-1: LN 2023-248_SRT-A	103.37	
		DVP_P7-1: LN 207-266_SRT-A	108.51	
		DVP_P7-1: LN 2112-248_SRT-A	104.8	
		DVP_P7-1: LN 227-274_SRT-S	95.13	
314041 6GLEBE 230 314185 6RADNOR 230 1 1	345	DVP_P4-2: 250T258_SRT-A	115.47	
		DVP_P7-1: LN 250-258_SRT-A	115.47	
314057 6LAKERD 230 314074 6POSSUM 230 1 1	345	DVP_P4-2: 201342_SRT-S	94.6	
314085 6REMNGCT 230 314099 6GI1MRUN 230 1 1	345	DVP_P4-2: 207762_SRT-A	98.8	97.07
314314 3LOCKS 115 314316 6LOCKS 230 2 1	345	DVP_P7-1: LN 2003-205_SRT-A	98.83	98.46
314749 6CHARLVL 230 314772 6PROFFIT 230 1 1	345	DVP_P1-2: LN 553_SRT-S	96.69	95.38
314900 8BRISTER 500 314130 6BRISTER 230 1 1	345	DVP_P4-2: H3T539_SRT-A	99.29	97.59
314900 8BRISTER 500 314916 8MORRSVL 500 1 1	345	DVP_P4-2: 5XX-2T569_SRT-S	95.44	
		DVP_P4-2: H2T569_MORR_SRT-S	94.71	
		DVP_P4-2: H2T569_SRT-S	94.42	

		Scenario	Final AC %Loading 2027_Base	Final AC %Loading Apen-Golden
Monitored Facility	Areas	Cont Name		
314900 8BRISTER 500 314919 8OX 500 1 1	345	DVP_P7-1: LN 569-2101_SRT-S	97.17	96.11
314904 8CLIFTON 500 314919 8OX 500 1 1	345	DVP_P7-1: LN 569-2101_SRT-S		98.04
314912 8LEXNGTN 500 314854 6LEXNGT1 230 1 1	345	DVP_P4-2: XT555_SRT-A	100.49	100.19
314912 8LEXNGTN 500 314856 6LEXNGT2 230 1 1	345	DVP_P4-2: 55502_SRT-A	101.84	101.54
314919 8OX 500 314068 6OX 230 1 1	345	DVP_P4-2: 201342_SRT-S	101.79	
314925 8PL VIEW 500 314072 6PL VIEW 230 1 1	345	DVP_P1-2: LN 9303_SRT-A	96.08	
		DVP_P1-3: 8GOOSE CREEK-TX#1_SRT-A	109.58	
		DVP_P4-2: 227T9292_SRT-S	97.54	
		DVP_P4-2: L1T227_SRT-A	97.8	
		DVP_P4-2: L1T9292_SRT-S	98.08	
		DVP_P4-6: 9344T1_SRT-A	96.13	
		DVP_P7-1: LN 9344-9345_SRT-A	96.13	
314933 8BRAMBLETON 500 314171 6BRAMBL 230 2 1	345	DVP_P4-6: 9344T1_SRT-A	96.45	
		DVP_P7-1: LN 9344-9345_SRT-A	96.44	
314939 8GOOSE CREEK 500 313904 6GOOSECRK 230 1 1	345	DVP_P1-2: LN 558_SRT-S	94.92	
		DVP_P1-2: LN 595_SRT-A	107.05	
		DVP_P1-2: LN 9303_SRT-A	100.52	
		DVP_P1-2: LN 9344_SRT-A	100.18	
		DVP_P1-2: LN 9345_SRT-A	97.22	
		DVP_P1-3: 8BRAMBLETON-TX#2_SRT-A	96.62	
		DVP_P1-3: 8MARS-TX#1_SRT-A	100.34	
		DVP_P1-3: 8PL VIEW-TX#3_SRT-A	106.57	
		DVP_P1-3: 8WSHNGSTAR-TX#1_SRT-A	97.22	
		P_P1-4: 6BELMONT_6X4-039GAS_1_SR	98.54	
		DVP_P4-2: 2095T9349_SRT-A	99.82	
		DVP_P4-2: L3T203_SRT-A	108.14	
		DVP_P4-3: PLEASAN H322_SRT-S	100.18	
		DVP_P4-6: 9344T1_SRT-A	107.32	
		DVP_P4-6: 9344T2_SRT-A	94.17	
		DVP_P4-6: 9349T1_SRT-A	96.27	
		DVP_P4-6: WISHI 9344T2_SRT-A	94.17	
		DVP_P7-1: LN 9344-9345_SRT-A	107.32	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
313007	6ROCKY FORGE	230	345	365	DVP_P4-5: L302_SRT-A	1.0845	
313276	3TW CULPEPER	115	345	363	DVP_P1-2: LN 2245_SRT-A	1.0568	1.0569
					DVP_P1-2: LN 2276_SRT-A	1.0735	1.0735
					DVP_P1-2: LN 9016_SRT-A	1.0552	1.0552
					DVP_P1-2: LN2245 _SRT-A	1.0568	1.0569
					DVP_P2-2: Germanna_SRT-A	1.0568	1.0569
					DVP_P4-2: 2077T9016_SRT-S	1.0552	1.0552
					DVP_P4-2: 2245T2276_SRT-A	1.0568	1.0569
					DVP_P4-2: 280T2276_SRT-S	1.0552	1.0552
					DVP_P4-2: 280T9016_SRT-S	1.0552	1.0552
					DVP_P4-2: 9016T2276_SRT-S	1.0552	1.0552
					DVP_P7-1: LN 2-2245_SRT-A	1.0569	1.0569
					DVP_P7-1: LN 2-9016_SRT-A	1.0553	1.0553
					DVP_P7-1: LN 2_2276_SRT-A	1.0736	1.0736
313393	8MARS	500	345	366	DVP_P1-2: LN 9344_SRT-A		1.1048
					DVP_P4-6: 9344T1_SRT-A		1.1026
					DVP_P7-1: LN 9344-9345_SRT-A		1.1026
313398	6BARRISTER	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.0507
					DVP_P4-2: 2137T9348_SRT-A		1.0503
					DVP_P4-2: 2149T2214_SRT-A	1.0588	1.0656
					DVP_P4-2: 221402_SRT-A		1.0507
					DVP_P4-2: 9293T2223_SRT-A	1.0610	1.0683
313399	6MARS	230	345	352	DVP_P4-2: 9293T2223_SRT-A		1.0501
313441	6RIXLEW	230	345	353	Base Case		-
					DVP_P1-2: LN 183_SRT-A	1.0505	
					DVP_P1-2: LN 2008_SRT-A	1.0502	
					DVP_P1-2: LN 2011_SRT-A	1.0554	1.059
					DVP_P1-2: LN 2080_SRT-A	1.0562	1.0586
					DVP_P1-2: LN 2114_SRT-A	1.0513	
					DVP_P1-2: LN 2151_SRT-A	1.0541	1.0566
					DVP_P1-2: LN 2161_SRT-A	1.0521	
					DVP_P1-2: LN 2182_SRT-A	1.0501	
					DVP_P1-2: LN 2196_SRT-A	1.0522	
					DVP_P1-2: LN 2228_SRT-A	1.0558	1.0582
					DVP_P1-2: LN 9238_SRT-A	1.0509	
					DVP_P1-2: LN 9306_SRT-A	1.0502	
					DVP_P1-2: LN 9309_SRT-A	1.051	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.0513	
					DVP_P4-2: 100212-3_SRT-A	1.0511	
					DVP_P4-2: 100212-4_SRT-A	1.0511	
					DVP_P4-2: 13462_SRT-A	1.0505	
					DVP_P4-2: 200852_SRT-A	1.0503	
					DVP_P4-2: 2008T2045_SRT-A	1.0501	
					DVP_P4-2: 2008Y2_SRT-A	1.0502	
					DVP_P4-2: 201182_SRT-A	1.0506	
					DVP_P4-2: 2011T2239_SRT-A	1.0554	1.059
					DVP_P4-2: 2011X2_SRT-A	1.0554	1.059
					DVP_P4-2: 2030T2151_SRT-A	1.0538	1.0564
					DVP_P4-2: 2080T2228_SRT-A	1.0615	1.0637
					DVP_P4-2: 2094T2140_SRT-A	1.0505	
					DVP_P4-2: 2101T2163_SRT-A	1.0504	
					DVP_P4-2: 211452-2_SRT-A	1.0513	
					DVP_P4-2: 211462_SRT-S	1.0513	
					DVP_P4-2: 2114T2155_SRT-A	1.0513	
					DVP_P4-2: 214004_SRT-A	1.0519	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: 215102-1_SRT-A	1.0541	1.0566
					DVP_P4-2: 2161T2174_SRT-A	1.0524	
					DVP_P4-2: 2161T2182_SRT-A	1.0524	
					DVP_P4-2: 2161T2222_SRT-A	1.0517	
					DVP_P4-2: 217602_SRT-A	1.0511	
					DVP_P4-2: 218402_SRT-A	1.0502	
					DVP_P4-2: 218502_SRT-A	1.0502	
					DVP_P4-2: 218792-1_SRT-A	1.0502	
					DVP_P4-2: 218792-2_SRT-A	1.0502	
					DVP_P4-2: 2196T2243_SRT-A	1.052	
					DVP_P4-2: 222812_SRT-A	1.0556	1.0579
					DVP_P4-2: 222862_SRT-A	1.0509	
					DVP_P4-2: 265T2008_SRT-A	1.0509	
					DVP_P4-2: 49T113_SRT-A	1.0501	
					DVP_P4-2: 59072_SRT-S	1.0507	
					DVP_P4-2: 9306T9308_SRT-A	1.0504	
					DVP_P4-2: 930992_SRT-A	1.0510	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0508	
					DVP_P4-2: H1T2114_SRT-A	1.0512	
					DVP_P4-2: H3T2151_SRT-A	1.0554	1.0589
					DVP_P4-2: L1T2101_SRT-A	1.0502	
					DVP_P4-2: L2T183_SRT-A	1.0505	
					DVP_P4-2: L3T183_SRT-A	1.0505	
					DVP_P4-2: L3T2101_SRT-A	1.0502	
					DVP_P4-2: SR102_SRT-A	1.0519	
					DVP_P4-2: SR202_SRT-A	1.0519	
					DVP_P4-2: XT2011_SRT-A	1.0544	1.0601
					DVP_P4-2: YT2196_SRT-A	1.0522	
					DVP_P4-3: H1TH3_SRT-A	1.0501	
					DVP_P4-5: L392_SRT-A	1.0513	
					DVP_P4-5: L662_SRT-A	1.0513	
					DVP_P7-1: LN 183-2101_SRT-A	1.0521	
					DVP_P7-1: LN 2008-2107_SRT-A	1.0501	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0513	
					DVP_P7-1: LN 2008-265_SRT-A	1.0509	
					DVP_P7-1: LN 2140-2176_SRT-A	1.0506	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0531	1.0569
					DVP_P7-1: LN 2161-2174_SRT-A	1.0524	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0911	1.0958
					DVP_P7-1: LN 546-2094_SRT-A	1.0502	
					DVP_P7-1: LN 9285-2176_SRT-A	1.0507	
313674	3CIRRUS	115	345	363	DVP_P1-2: LN 2245_SRT-A	1.0565	1.0565
					DVP_P1-2: LN 2276_SRT-A	1.0731	1.0731
					DVP_P1-2: LN 9016_SRT-A	1.0549	1.0549
					DVP_P1-2: LN2245 _SRT-A	1.0565	1.0565
					DVP_P2-2: Germanna_SRT-A	1.0565	1.0565
					DVP_P4-2: 2077T9016_SRT-S	1.0549	1.0549
					DVP_P4-2: 2245T2276_SRT-A	1.0565	1.0565
					DVP_P4-2: 280T2276_SRT-S	1.0549	1.0549
					DVP_P4-2: 280T9016_SRT-S	1.0549	1.0549
					DVP_P4-2: 9016T2276_SRT-S	1.0549	1.0549
					DVP_P7-1: LN 2-2245_SRT-A	1.0566	1.0566
					DVP_P7-1: LN 2-9016_SRT-A	1.055	1.055
					DVP_P7-1: LN 2_2276_SRT-A	1.0732	1.0732
313678	KYSER	230	345	363	DVP_P1-2: LN 2276_SRT-A	1.0546	1.0546
					DVP_P7-1: LN 2_2276_SRT-A	1.0547	1.0547

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
313679	CIRRUS	230	345	363	DVP_P1-2: LN 2276_SRT-A	1.0544	1.0545
					DVP_P7-1: LN 2_2276_SRT-A	1.0545	1.0545
313715	6WINTERS BR	230	345	353	Base Case	-	-
					DVP_P1-2: LN 2011_SRT-A	1.0602	1.0638
					DVP_P1-2: LN 2080_SRT-A	1.0572	1.0594
					DVP_P1-2: LN 2151_SRT-A	1.0553	
					DVP_P1-2: LN 2228_SRT-A	1.0558	
					DVP_P4-2: 201182_SRT-A		1.0599
					DVP_P4-2: 2011T2239_SRT-A	1.0603	1.0638
					DVP_P4-2: 2011X2_SRT-A	1.0602	1.0638
					DVP_P4-2: 2080T2228_SRT-A	1.0609	1.0629
					DVP_P4-2: 215102-1_SRT-A	1.0553	
					DVP_P4-2: 222812_SRT-A	1.0555	
					DVP_P4-2: H3T2151_SRT-A	1.0565	1.0599
					DVP_P4-2: XT2011_SRT-A	1.0592	1.0649
					DVP_P7-1: LN 2187-2228_SRT-A	1.0864	1.0911
313727	6PIONEER	230	345	353	Base Case		-
					DVP_P1-2: LN 2011_SRT-A	1.0554	1.0589
					DVP_P1-2: LN 2080_SRT-A	1.0551	1.0574
					DVP_P1-2: LN 2114_SRT-A	1.0505	
					DVP_P1-2: LN 2151_SRT-A	1.053	
					DVP_P1-2: LN 2161_SRT-A	1.0513	
					DVP_P1-2: LN 2196_SRT-A	1.0517	
					DVP_P1-2: LN 2228_SRT-A	1.0535	1.0558
					DVP_P1-2: LN 9306_SRT-A	1.0507	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.0506	
					DVP_P4-2: 100212-3_SRT-A	1.0503	
					DVP_P4-2: 100212-4_SRT-A	1.0503	
					DVP_P4-2: 201182_SRT-A	1.0505	
					DVP_P4-2: 2011T2239_SRT-A	1.0554	1.0589
					DVP_P4-2: 2011X2_SRT-A	1.0554	1.0589
					DVP_P4-2: 2030T2151_SRT-A	1.0528	
					DVP_P4-2: 2080T2228_SRT-A	1.0591	1.0613
					DVP_P4-2: 211452-2_SRT-A	1.0505	
					DVP_P4-2: 211462_SRT-S	1.0505	
					DVP_P4-2: 2114T2155_SRT-A	1.0505	
					DVP_P4-2: 214004_SRT-A	1.0511	
					DVP_P4-2: 215102-1_SRT-A	1.053	
					DVP_P4-2: 2161T2174_SRT-A	1.0515	
					DVP_P4-2: 2161T2182_SRT-A	1.0515	
					DVP_P4-2: 2161T2222_SRT-A	1.0509	
					DVP_P4-2: 217602_SRT-A	1.0504	
					DVP_P4-2: 218792-1_SRT-A	1.0507	
					DVP_P4-2: 218792-2_SRT-A	1.0507	
					DVP_P4-2: 2196T2243_SRT-A	1.0515	
					DVP_P4-2: 222812_SRT-A	1.0532	
					DVP_P4-2: 265T2008_SRT-A	1.0502	
					DVP_P4-2: 9306T9308_SRT-A	1.0508	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0502	
					DVP_P4-2: H1T2114_SRT-A	1.0503	
					DVP_P4-2: H3T2151_SRT-A	1.0544	1.0578
					DVP_P4-2: SR102_SRT-A	1.0512	
					DVP_P4-2: SR202_SRT-A	1.0512	
					DVP_P4-2: XT2011_SRT-A	1.0544	1.06
					DVP_P4-2: YT2196_SRT-A	1.0517	
					DVP_P4-5: L392_SRT-A	1.0506	
					DVP_P4-5: L662_SRT-A	1.0507	
					DVP_P7-1: LN 183-2101_SRT-A	1.0517	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0506	
					DVP_P7-1: LN 2008-265_SRT-A	1.0502	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0516	
					DVP_P7-1: LN 2161-2174_SRT-A	1.0515	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0886	1.0934

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
313728	6SANDLOT	230	345	353	Base Case		-
					DVP_P1-2: LN 183_SRT-A	1.0504	
					DVP_P1-2: LN 2011_SRT-A	1.0565	1.06
					DVP_P1-2: LN 2080_SRT-A	1.0554	1.0577
					DVP_P1-2: LN 2114_SRT-A	1.0509	
					DVP_P1-2: LN 2151_SRT-A	1.0534	
					DVP_P1-2: LN 2161_SRT-A	1.0517	
					DVP_P1-2: LN 2196_SRT-A	1.0529	
					DVP_P1-2: LN 2228_SRT-A	1.0539	
					DVP_P1-2: LN 9306_SRT-A	1.0511	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.0511	
					DVP_P4-2: 100212-3_SRT-A	1.0508	
					DVP_P4-2: 100212-4_SRT-A	1.0508	
					DVP_P4-2: 13462_SRT-A	1.0504	
					DVP_P4-2: 200852_SRT-A	1.0501	
					DVP_P4-2: 201182_SRT-A	1.0516	
					DVP_P4-2: 2011T2239_SRT-A	1.0565	1.06
					DVP_P4-2: 2011X2_SRT-A	1.0565	1.06
					DVP_P4-2: 2030T2151_SRT-A	1.0531	
					DVP_P4-2: 2080T2228_SRT-A	1.0593	1.0615
					DVP_P4-2: 2094T2140_SRT-A	1.0502	
					DVP_P4-2: 211452-2_SRT-A	1.0509	
					DVP_P4-2: 211462_SRT-S	1.0509	
					DVP_P4-2: 2114T2155_SRT-A	1.0509	
					DVP_P4-2: 214004_SRT-A	1.0515	
					DVP_P4-2: 215102-1_SRT-A	1.0534	
					DVP_P4-2: 2161T2174_SRT-A	1.0519	
					DVP_P4-2: 2161T2182_SRT-A	1.0519	
					DVP_P4-2: 2161T2222_SRT-A	1.0514	
					DVP_P4-2: 217602_SRT-A	1.0509	
					DVP_P4-2: 218402_SRT-A	1.05	
					DVP_P4-2: 218792-1_SRT-A	1.0511	
					DVP_P4-2: 218792-2_SRT-A	1.0511	
					DVP_P4-2: 2187T9308_SRT-A	1.0501	
					DVP_P4-2: 2196T2243_SRT-A	1.0526	
					DVP_P4-2: 222812_SRT-A	1.0536	
					DVP_P4-2: 265T2008_SRT-A	1.0507	
					DVP_P4-2: 59072_SRT-S	1.0505	
					DVP_P4-2: 9306T9308_SRT-A	1.0512	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0507	
					DVP_P4-2: H1T2114_SRT-A	1.0506	
					DVP_P4-2: H3T2151_SRT-A	1.0547	1.0581
					DVP_P4-2: L1T2101_SRT-A	1.0501	
					DVP_P4-2: L2T183_SRT-A	1.0503	
					DVP_P4-2: L3T183_SRT-A	1.0504	
					DVP_P4-2: L3T2101_SRT-A	1.0501	
					DVP_P4-2: SR102_SRT-A	1.0517	
					DVP_P4-2: SR202_SRT-A	1.0517	
					DVP_P4-2: XT2011_SRT-A	1.0554	1.0611
					DVP_P4-2: YT2196_SRT-A	1.0529	
					DVP_P4-5: L392_SRT-A	1.0511	
					DVP_P4-5: L662_SRT-A	1.0513	
					DVP_P7-1: LN 183-2101_SRT-A	1.0521	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0511	
					DVP_P7-1: LN 2008-265_SRT-A	1.0507	
					DVP_P7-1: LN 2140-2176_SRT-A	1.0504	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0518	
					DVP_P7-1: LN 2161-2174_SRT-A	1.0519	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0877	1.0924
					DVP_P7-1: LN 546-2094_SRT-A	1.05	
					DVP_P7-1: LN 9285-2176_SRT-A	1.0503	
313733	6NIMBUS	230	345	352	DVP_P4-2: 2152T9250_SRT-A		1.0504
313735	6LOCKRIDG	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.05
					DVP_P4-2: 2149T2214_SRT-A	1.0587	1.0655
					DVP_P4-2: 221402_SRT-A		1.05
					DVP_P4-2: 9293T2223_SRT-A	1.0609	1.0682

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
313745	6BRICKYARD	230	345	353	Base Case	-	-
					DVP_P1-2: LN 2011_SRT-A	1.0601	1.0636
					DVP_P1-2: LN 2080_SRT-A	1.057	1.0592
					DVP_P1-2: LN 2151_SRT-A	1.0551	
					DVP_P1-2: LN 2228_SRT-A	1.0556	
					DVP_P4-2: 201182_SRT-A	1.0551	1.0597
					DVP_P4-2: 2011T2239_SRT-A	1.06	1.0636
					DVP_P4-2: 2011X2_SRT-A	1.0601	1.0636
					DVP_P4-2: 2080T2228_SRT-A	1.0607	1.0627
					DVP_P4-2: 215102-1_SRT-A	1.0551	
					DVP_P4-2: 222812_SRT-A	1.0554	
					DVP_P4-2: H3T2151_SRT-A	1.0563	1.0598
					DVP_P4-2: XT2011_SRT-A	1.059	1.0648
					DVP_P7-1: LN 2187-2228_SRT-A	1.0861	1.0909
313746	6SOJOURNER	230	345	352	DVP_P4-2: 2149T2214_SRT-A		1.0522
					DVP_P4-2: 9293T2223_SRT-A		1.0537
313751	6STRATUS	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.0507
					DVP_P4-2: 2137T9348_SRT-A		1.0503
					DVP_P4-2: 2149T2214_SRT-A	1.0587	1.0654
					DVP_P4-2: 221402_SRT-A		1.0507
					DVP_P4-2: 9293T2223_SRT-A	1.0608	1.0681
313771	6DAWKINS BR	230	345	353	DVP_P1-2: LN 2011_SRT-A		1.0521
					DVP_P1-2: LN 2080_SRT-A	1.0518	1.0543
					DVP_P1-2: LN 2114_SRT-A		1.0509
					DVP_P1-2: LN 2151_SRT-A		1.0522
					DVP_P1-2: LN 2163_SRT-A		1.0505
					DVP_P4-2: 100212-3_SRT-A		1.0501
					DVP_P4-2: 100212-4_SRT-A		1.0501
					DVP_P4-2: 2011T2239_SRT-A		1.0521
					DVP_P4-2: 2011X2_SRT-A		1.0521
					DVP_P4-2: 2030T2151_SRT-A		1.052
					DVP_P4-2: 2080T2228_SRT-A		1.0526
					DVP_P4-2: 2101T2163_SRT-A		1.051
					DVP_P4-2: 211452-2_SRT-A		1.0509
					DVP_P4-2: 211462_SRT-S		1.051
					DVP_P4-2: 2114T2155_SRT-A		1.0509
					DVP_P4-2: 214004_SRT-A		1.0511
					DVP_P4-2: 215102-1_SRT-A		1.0522
					DVP_P4-2: 2161T2174_SRT-A		1.0509
					DVP_P4-2: 2161T2182_SRT-A		1.0509
					DVP_P4-2: 2163XX-1_SRT-A		1.0505
					DVP_P4-2: H1T2114_SRT-A		1.0522
					DVP_P4-2: H2T2163_SRT-A		1.0506
					DVP_P4-2: H3T2151_SRT-A	1.051	1.0545
					DVP_P4-2: XT2011_SRT-A		1.053
					DVP_P7-1: LN 2161-2174_SRT-A		1.0509
313773	6HOURGLASS	230	345	353	Base Case		-
					DVP_P1-2: LN 183_SRT-A	1.0502	
					DVP_P1-2: LN 2011_SRT-A	1.0562	1.0598
					DVP_P1-2: LN 2080_SRT-A	1.0553	1.0576
					DVP_P1-2: LN 2114_SRT-A	1.0508	
					DVP_P1-2: LN 2151_SRT-A	1.0533	
					DVP_P1-2: LN 2161_SRT-A	1.0515	
					DVP_P1-2: LN 2228_SRT-A	1.0537	
					DVP_P1-2: LN 9306_SRT-A	1.0510	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.051	
					DVP_P4-2: 100212-3_SRT-A	1.0506	
					DVP_P4-2: 100212-4_SRT-A	1.0506	
					DVP_P4-2: 13462_SRT-A	1.0503	
					DVP_P4-2: 200852_SRT-A	1.05	
					DVP_P4-2: 201182_SRT-A	1.0513	
					DVP_P4-2: 2011T2239_SRT-A	1.0562	1.0598
					DVP_P4-2: 2011X2_SRT-A	1.0562	1.0598
					DVP_P4-2: 2030T2151_SRT-A	1.053	
					DVP_P4-2: 2080T2228_SRT-A	1.0592	1.0614
					DVP_P4-2: 2094T2140_SRT-A	1.0501	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: 211452-2_SRT-A	1.0508	
					DVP_P4-2: 211462_SRT-S	1.0508	
					DVP_P4-2: 2114T2155_SRT-A	1.0508	
					DVP_P4-2: 214004_SRT-A	1.0514	
					DVP_P4-2: 215102-1_SRT-A	1.0533	
					DVP_P4-2: 2161T2174_SRT-A	1.0518	
					DVP_P4-2: 2161T2182_SRT-A	1.0518	
					DVP_P4-2: 2161T2222_SRT-A	1.0513	
					DVP_P4-2: 217602_SRT-A	1.0507	
					DVP_P4-2: 218792-1_SRT-A	1.0510	
					DVP_P4-2: 218792-2_SRT-A	1.0510	
					DVP_P4-2: 222812_SRT-A	1.0535	
					DVP_P4-2: 265T2008_SRT-A	1.0506	
					DVP_P4-2: 59072_SRT-S	1.0504	
					DVP_P4-2: 9306T9308_SRT-A	1.0511	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0505	
					DVP_P4-2: H1T2114_SRT-A	1.0505	
					DVP_P4-2: H3T2151_SRT-A	1.0546	1.058
					DVP_P4-2: L2T183_SRT-A	1.0502	
					DVP_P4-2: L3T183_SRT-A	1.0502	
					DVP_P4-2: SR102_SRT-A	1.0516	
					DVP_P4-2: SR202_SRT-A	1.0516	
					DVP_P4-2: XT2011_SRT-A	1.0552	1.0609
					DVP_P4-5: L392_SRT-A	1.051	
					DVP_P4-5: L662_SRT-A	1.0511	
					DVP_P7-1: LN 183-2101_SRT-A	1.052	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0509	
					DVP_P7-1: LN 2008-265_SRT-A	1.0506	
					DVP_P7-1: LN 2140-2176_SRT-A	1.0503	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0517	
					DVP_P7-1: LN 2161-2174_SRT-A	1.0518	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0878	1.0925
					DVP_P7-1: LN 9285-2176_SRT-A	1.0502	
313775	6ROL FORD	230	345	353	DVP_P4-2: 2161T2222_SRT-A		1.0504
					DVP_P4-2: 9364T2114_SRT-A		1.0511
313778	6WAKEMAN	230	345	353	Base Case	-	-
					DVP_P1-2: LN 2011_SRT-A	1.0603	1.0638
					DVP_P1-2: LN 2080_SRT-A	1.0574	1.0597
					DVP_P1-2: LN 2151_SRT-A	1.0556	
					DVP_P1-2: LN 2228_SRT-A	1.0561	
					DVP_P4-2: 201182_SRT-A		1.0599
					DVP_P4-2: 2011T2239_SRT-A	1.0604	1.0639
					DVP_P4-2: 2011X2_SRT-A	1.0603	1.0638
					DVP_P4-2: 2080T2228_SRT-A	1.0612	1.0632
					DVP_P4-2: 215102-1_SRT-A	1.0556	
					DVP_P4-2: 222812_SRT-A	1.0558	
					DVP_P4-2: H3T2151_SRT-A	1.0568	1.0602
					DVP_P4-2: XT2011_SRT-A	1.0593	1.065
					DVP_P7-1: LN 2187-2228_SRT-A	1.087	1.0917
313779	6HORNBAKER	230	345	353	DVP_P1-2: LN 2011_SRT-A		1.0532
					DVP_P1-2: LN 2080_SRT-A	1.0509	1.0534
					DVP_P1-2: LN 2114_SRT-A		1.0505
					DVP_P1-2: LN 2151_SRT-A		1.0515
					DVP_P4-2: 2011T2239_SRT-A		1.0532
					DVP_P4-2: 2011X2_SRT-A		1.0532
					DVP_P4-2: 2030T2151_SRT-A		1.0513
					DVP_P4-2: 2080T2228_SRT-A	1.0520	1.0544
					DVP_P4-2: 211452-2_SRT-A		1.0505
					DVP_P4-2: 211462_SRT-S		1.0506
					DVP_P4-2: 2114T2155_SRT-A		1.0505
					DVP_P4-2: 214004_SRT-A		1.0508
					DVP_P4-2: 215102-1_SRT-A		1.0515
					DVP_P4-2: 2161T2174_SRT-A		1.0506
					DVP_P4-2: 2161T2182_SRT-A		1.0506
					DVP_P4-2: 2187T9308_SRT-A		1.0525
					DVP_P4-2: H1T2114_SRT-A		1.0516

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: H3T2151_SRT-A	1.0503	1.0538
					DVP_P4-2: L1T2101_SRT-A		1.0512
					DVP_P4-2: L3T2101_SRT-A		1.0512
					DVP_P4-2: XT2011_SRT-A		1.0542
					DVP_P7-1: LN 183-2101_SRT-A		1.0524
					DVP_P7-1: LN 2151-2163_SRT-A		1.0506
					DVP_P7-1: LN 2161-2174_SRT-A		1.0506
313780	6YOUNGS_BR	230	345	353	DVP_P1-2: LN 9285_SRT-A	1.0529	1.0575
					DVP_P4-2: 214004_SRT-A		1.0530
					DVP_P4-2: 217602_SRT-A		1.0517
					DVP_P7-1: LN 9285-2176_SRT-A	1.0548	1.0589
313804	6GREENWAY2	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.0502
					DVP_P4-2: 2137T9348_SRT-A		1.0504
					DVP_P4-2: 2149T2214_SRT-A	1.0574	1.0641
					DVP_P4-2: 221402_SRT-A		1.0502
					DVP_P4-2: 9293T2223_SRT-A	1.0593	1.0666
313805	6SHELLHORN1	230	345	352	DVP_P4-2: 2137T9348_SRT-A		1.0507
					DVP_P4-2: 2149T2214_SRT-A	1.0561	1.0628
					DVP_P4-2: 9293T2223_SRT-A	1.0579	1.0652
313808	6ROUNDTABLE	230	345	352	DVP_P4-2: 2149T2214_SRT-A	1.0586	1.0654
313822	6RUNWAY	230	345	352	DVP_P4-2: 2149T2214_SRT-A		1.0547
					DVP_P4-2: 9293T2223_SRT-A		1.0564
313840	6HEATHCOTE2	230	345	353	DVP_P4-2: 214004_SRT-A		1.0504
					DVP_P4-2: 217602_SRT-A		1.0506
313841	6ENTERPRIS	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.0501
					DVP_P4-2: 2137T9348_SRT-A		1.0504
					DVP_P4-2: 2149T2214_SRT-A	1.0571	1.0638
					DVP_P4-2: 221402_SRT-A		1.0501
					DVP_P4-2: 9293T2223_SRT-A	1.0590	1.0663
313850	6AIRPORT DP	230	345	353	Base Case		-
					DVP_P1-2: LN 113_SRT-A	1.0504	
					DVP_P1-2: LN 134_SRT-A	1.0505	
					DVP_P1-2: LN 163_SRT-A	1.0508	
					DVP_P1-2: LN 183_SRT-A	1.0517	
					DVP_P1-2: LN 2008_SRT-A	1.0512	
					DVP_P1-2: LN 2011_SRT-A	1.0585	1.062
					DVP_P1-2: LN 2031_SRT-A	1.0506	
					DVP_P1-2: LN 2079_SRT-A	1.0509	
					DVP_P1-2: LN 2080_SRT-A	1.0564	1.0586
					DVP_P1-2: LN 2094_SRT-A	1.0508	
					DVP_P1-2: LN 2114_SRT-A	1.0521	
					DVP_P1-2: LN 2117_SRT-A	1.0501	
					DVP_P1-2: LN 2151_SRT-A	1.0544	
					DVP_P1-2: LN 2161_SRT-A	1.0528	
					DVP_P1-2: LN 2163_SRT-A	1.0504	
					DVP_P1-2: LN 2164_SRT-A	1.0504	
					DVP_P1-2: LN 2182_SRT-A	1.0512	
					DVP_P1-2: LN 2188_SRT-A	1.0509	
					DVP_P1-2: LN 2196_SRT-A	1.054	
					DVP_P1-2: LN 2228_SRT-A	1.0549	
					DVP_P1-2: LN 251_SRT-A	1.0502	
					DVP_P1-2: LN 265_SRT-A	1.0503	
					DVP_P1-2: LN 266_SRT-A	1.0504	
					DVP_P1-2: LN 49_SRT-A	1.0501	
					DVP_P1-2: LN 9287_SRT-A	1.0502	
					DVP_P1-2: LN 9306_SRT-A	1.0523	
					DVP_P1-2: LN 9308_SRT-A	1.0504	
					DVP_P1-3: 6CANNONB-TX#1_SRT-A	1.0502	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.0524	
					DVP_P1-3: BATH 3W1_SRT-A	1.0503	
					DVP_P1-3: BATH 3W3_SRT-A	1.0503	
					DVP_P1-3: BATH 3W5_SRT-A	1.0503	
					P1-4: 3CANNONB_3SW163T197_Z1_S	1.0502	
					P_P1-4: 8MOSBY_8MOSBYSVC1_1_SR	1.0501	
					P_P1-4: 8MOSBY_8MOSBYSVC2_1_SR	1.0501	
					DVP_P2-2: MOSBY B2_SRT-S	1.0501	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: 100212-3_SRT-A	1.0519	
					DVP_P4-2: 100212-4_SRT-A	1.0519	
					DVP_P4-2: 13462_SRT-A	1.0517	
					DVP_P4-2: 200852_SRT-A	1.0514	
					DVP_P4-2: 2008T2045_SRT-A	1.0511	
					DVP_P4-2: 2008Y2_SRT-A	1.0512	
					DVP_P4-2: 200T2051_SRT-A	1.0509	
					DVP_P4-2: 201182_SRT-A	1.0535	1.0581
					DVP_P4-2: 2011T2239_SRT-A	1.0585	1.062
					DVP_P4-2: 2011X2_SRT-A	1.0585	1.062
					DVP_P4-2: 2029T2035_SRT-A	1.0511	
					DVP_P4-2: 2029T2108_SRT-A	1.0505	
					DVP_P4-2: 2030T2117_SRT-A	1.0502	
					DVP_P4-2: 2030T2151_SRT-A	1.0542	
					DVP_P4-2: 2031T9299_SRT-A	1.0506	
					DVP_P4-2: 2079T9231_A_SRT-A	1.0508	
					DVP_P4-2: 2079T9231_SRT-A	1.051	
					DVP_P4-2: 2080T2228_SRT-A	1.0602	1.0623
					DVP_P4-2: 2081T2194_SRT-A	1.0505	
					DVP_P4-2: 209402_SRT-A	1.0502	
					DVP_P4-2: 211452-2_SRT-A	1.0521	
					DVP_P4-2: 2114T2155_SRT-A	1.0521	
					DVP_P4-2: 2116T2130_SRT-S	1.0504	
					DVP_P4-2: 214004_SRT-A	1.0526	
					DVP_P4-2: 215102-1_SRT-A	1.0544	
					DVP_P4-2: 2161T2174_SRT-A	1.053	
					DVP_P4-2: 2161T2182_SRT-A	1.053	
					DVP_P4-2: 2161T2222_SRT-A	1.0526	
					DVP_P4-2: 2163XX-1_SRT-A	1.0504	
					DVP_P4-2: 2174T2182_SRT-A	1.0503	
					DVP_P4-2: 217602_SRT-A	1.0521	
					DVP_P4-2: 218402_SRT-A	1.0512	
					DVP_P4-2: 218502_SRT-A	1.0512	
					DVP_P4-2: 218792-1_SRT-A	1.0523	
					DVP_P4-2: 218792-2_SRT-A	1.0523	
					DVP_P4-2: 2196T2243_SRT-A	1.0542	
					DVP_P4-2: 222812_SRT-A	1.0546	
					DVP_P4-2: 244T270_SRT-A	1.0506	
					DVP_P4-2: 25112_SRT-A	1.0502	
					DVP_P4-2: 251T266_SRT-A	1.0502	
					DVP_P4-2: 251T277_SRT-A	1.0503	
					DVP_P4-2: 264T2005_SRT-A	1.0505	
					DVP_P4-2: 265T2008_SRT-A	1.052	
					DVP_P4-2: 265Y2_SRT-A	1.0503	
					DVP_P4-2: 49T113_SRT-A	1.0512	
					DVP_P4-2: 50272_SRT-S	1.05	
					DVP_P4-2: 58472_SRT-S	1.05	
					DVP_P4-2: 9234T2107_SRT-A	1.051	
					DVP_P4-2: 9306T9308_SRT-A	1.0523	
					DVP_P4-2: 9348T2213_SRT-A	1.0509	
					DVP_P4-2: 9364T2114_SRT-A	1.0501	
					DVP_P4-2: CABIN R T122_SRT-A	1.0509	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0519	
					DVP_P4-2: H1T2117_SRT-A	1.0501	
					DVP_P4-2: H1T2195_SRT-A	1.05	
					DVP_P4-2: H1T547_SRT-S	1.0502	
					DVP_P4-2: H2T2163_SRT-A	1.0501	
					DVP_P4-2: H2T547_SRT-S	1.0502	
					DVP_P4-2: H2T548_SRT-S	1.0503	
					DVP_P4-2: H3T2031_SRT-A	1.0506	
					DVP_P4-2: H3T2151_SRT-A	1.0557	1.0591
					DVP_P4-2: H3T548_SRT-S	1.0503	
					DVP_P4-2: H5T2031_SRT-A	1.0506	
					DVP_P4-2: L1T2101_SRT-A	1.0512	
					DVP_P4-2: L1T49_SRT-A	1.0502	
					DVP_P4-2: L2T113_SRT-A	1.0504	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: L2T183_SRT-A	1.0516	
					DVP_P4-2: L3T183_SRT-A	1.0517	
					DVP_P4-2: L3T2101_SRT-A	1.0512	
					DVP_P4-2: SR102_SRT-A	1.0529	
					DVP_P4-2: SR202_SRT-A	1.0529	
					DVP_P4-2: XT2011_SRT-A	1.0574	1.0631
					DVP_P4-2: YT2196_SRT-A	1.054	
					DVP_P4-3: H122_SRT-A	1.0502	
					DVP_P4-3: H1TH3_SRT-A	1.0512	
					DVP_P4-3: T352_SRT-A	1.0502	
					DVP_P4-3: WAXPOOL H122_SRT-A	1.0502	
					DVP_P4-4: SR172_SRT-A	1.0504	
					DVP_P4-4: SV272_SRT-S	1.0501	
					DVP_P4-5: L392_SRT-A	1.0524	
					DVP_P4-5: L662_SRT-A	1.0526	
					DVP_P7-1: LN 145-18_SRT-A	1.05	
					DVP_P7-1: LN 183-2101_SRT-A	1.0532	
					DVP_P7-1: LN 200-2051-244_SRT-A	1.0501	
					DVP_P7-1: LN 200-2051_SRT-A	1.0509	
					DVP_P7-1: LN 2008-2107_SRT-A	1.0511	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0523	
					DVP_P7-1: LN 2008-265_SRT-A	1.052	
					DVP_P7-1: LN 2022-266_SRT-A	1.0505	
					DVP_P7-1: LN 2063-266_SRT-A	1.0503	
					DVP_P7-1: LN 2107-265_SRT-A	1.0501	
					DVP_P7-1: LN 2117-2123_SRT-A	1.0508	
					DVP_P7-1: LN 2140-2176_SRT-A	1.0516	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0528	
					DVP_P7-1: LN 2161-2174_SRT-A	1.053	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0871	1.0918
					DVP_P7-1: LN 266-281_SRT-A	1.0501	
					DVP_P7-1: LN 546-2094_SRT-A	1.0513	
					DVP_P7-1: LN 9285-2176_SRT-A	1.0515	
313873	6HEATHCOTE	230	345	353	DVP_P4-2: 214004_SRT-A		1.0503
					DVP_P4-2: 217602_SRT-A		1.0506
313876	6HAYMARKET	230	345	353	DVP_P4-2: 214004_SRT-A		1.0503
					DVP_P4-2: 217602_SRT-A		1.0506
313877	6RAILROAD	230	345	353	DVP_P1-2: LN 2011_SRT-A		1.0516
					DVP_P1-2: LN 2114_SRT-A		1.0503
					DVP_P1-2: LN 2151_SRT-A	1.0502	1.0529
					DVP_P4-2: 2011T2239_SRT-A		1.0516
					DVP_P4-2: 2011X2_SRT-A		1.0516
					DVP_P4-2: 2030T2151_SRT-A		1.0527
					DVP_P4-2: 211452-2_SRT-A		1.0503
					DVP_P4-2: 211462_SRT-S		1.0504
					DVP_P4-2: 2114T2155_SRT-A		1.0503
					DVP_P4-2: 214004_SRT-A		1.0508
					DVP_P4-2: 215102-1_SRT-A	1.0502	1.0529
					DVP_P4-2: 2161T2174_SRT-A		1.0507
					DVP_P4-2: 2161T2182_SRT-A		1.0507
					DVP_P4-2: H1T2114_SRT-A		1.0515
					DVP_P4-2: H3T2151_SRT-A	1.0517	1.0552
					DVP_P4-2: XT2011_SRT-A		1.0526
					DVP_P7-1: LN 2151-2163_SRT-A	1.0506	1.0544
					DVP_P7-1: LN 2161-2174_SRT-A		1.0507
313907	6PRENTICE	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.0503
					DVP_P4-2: 2149T2214_SRT-A	1.0589	1.0656
					DVP_P4-2: 221402_SRT-A		1.0503
					DVP_P4-2: 9293T2223_SRT-A	1.0610	1.0683
314016	6CANNONB	230	345	353	Base Case		-
					DVP_P1-2: LN 163_SRT-A	1.0502	
					DVP_P1-2: LN 183_SRT-A	1.051	
					DVP_P1-2: LN 2008_SRT-A	1.0505	
					DVP_P1-2: LN 2011_SRT-A	1.0575	1.061
					DVP_P1-2: LN 2031_SRT-A	1.0500	
					DVP_P1-2: LN 2079_SRT-A	1.0502	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P1-2: LN 2080_SRT-A	1.0558	1.0581
					DVP_P1-2: LN 2094_SRT-A	1.0501	
					DVP_P1-2: LN 2114_SRT-A	1.0515	
					DVP_P1-2: LN 2151_SRT-A	1.0539	
					DVP_P1-2: LN 2161_SRT-A	1.0522	
					DVP_P1-2: LN 2182_SRT-A	1.0505	
					DVP_P1-2: LN 2188_SRT-A	1.0503	
					DVP_P1-2: LN 2196_SRT-A	1.0534	
					DVP_P1-2: LN 2228_SRT-A	1.0544	
					DVP_P1-2: LN 9306_SRT-A	1.0517	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.0517	
					DVP_P4-2: 100212-3_SRT-A	1.0513	
					DVP_P4-2: 100212-4_SRT-A	1.0513	
					DVP_P4-2: 13462_SRT-A	1.0511	
					DVP_P4-2: 200852_SRT-A	1.0508	
					DVP_P4-2: 2008T2045_SRT-A	1.0505	
					DVP_P4-2: 2008Y2_SRT-A	1.0505	
					DVP_P4-2: 200T2051_SRT-A	1.0503	
					DVP_P4-2: 201182_SRT-A	1.0526	1.0572
					DVP_P4-2: 2011T2239_SRT-A	1.0575	1.061
					DVP_P4-2: 2011X2_SRT-A	1.0575	1.061
					DVP_P4-2: 2029T2035_SRT-A	1.0504	
					DVP_P4-2: 2030T2151_SRT-A	1.0536	
					DVP_P4-2: 206T2094_SRT-A	1.0502	
					DVP_P4-2: 2079T9231_A_SRT-A	1.0502	
					DVP_P4-2: 2079T9231_SRT-A	1.0503	
					DVP_P4-2: 2080T2228_SRT-A	1.0597	1.0618
					DVP_P4-2: 2094T2140_SRT-A	1.0508	
					DVP_P4-2: 2101T2163_SRT-A	1.0505	
					DVP_P4-2: 211452-2_SRT-A	1.0515	
					DVP_P4-2: 2114T2155_SRT-A	1.0515	
					DVP_P4-2: 214004_SRT-A	1.0520	
					DVP_P4-2: 215102-1_SRT-A	1.0539	
					DVP_P4-2: 2161T2174_SRT-A	1.0524	
					DVP_P4-2: 2161T2182_SRT-A	1.0524	
					DVP_P4-2: 2161T2222_SRT-A	1.052	
					DVP_P4-2: 217602_SRT-A	1.0515	
					DVP_P4-2: 218402_SRT-A	1.0506	
					DVP_P4-2: 218502_SRT-A	1.0506	
					DVP_P4-2: 218792-1_SRT-A	1.0517	
					DVP_P4-2: 218792-2_SRT-A	1.0517	
					DVP_P4-2: 2187T9308_SRT-A	1.0506	
					DVP_P4-2: 2188T9300_SRT-A	1.0503	
					DVP_P4-2: 2196T2243_SRT-A	1.0537	
					DVP_P4-2: 222812_SRT-A	1.0541	
					DVP_P4-2: 244T270_SRT-A	1.05	
					DVP_P4-2: 265T2008_SRT-A	1.0514	
					DVP_P4-2: 49T113_SRT-A	1.0506	
					DVP_P4-2: 59072_SRT-S	1.0512	
					DVP_P4-2: 9234T2107_SRT-A	1.0503	
					DVP_P4-2: 9306T9308_SRT-A	1.0517	
					DVP_P4-2: 9348T2213_SRT-A	1.0503	
					DVP_P4-2: CABIN R T122_SRT-A	1.0503	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0513	
					DVP_P4-2: H3T2031_SRT-A	1.0500	
					DVP_P4-2: H3T2151_SRT-A	1.0552	1.0586
					DVP_P4-2: H5T2031_SRT-A	1.0500	
					DVP_P4-2: L1T2101_SRT-A	1.0506	
					DVP_P4-2: L2T183_SRT-A	1.051	
					DVP_P4-2: L3T183_SRT-A	1.051	
					DVP_P4-2: L3T2101_SRT-A	1.0506	
					DVP_P4-2: SR102_SRT-A	1.0523	
					DVP_P4-2: SR202_SRT-A	1.0523	
					DVP_P4-2: XT2011_SRT-A	1.0565	1.0622
					DVP_P4-2: YT2196_SRT-A	1.0534	
					DVP_P4-3: H1TH3_SRT-A	1.0506	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-5: L392_SRT-A	1.0517	
					DVP_P4-5: L662_SRT-A	1.052	
					DVP_P7-1: LN 183-2101_SRT-A	1.0526	
					DVP_P7-1: LN 200-2051_SRT-A	1.0503	
					DVP_P7-1: LN 2008-2107_SRT-A	1.0505	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0517	
					DVP_P7-1: LN 2008-265_SRT-A	1.0514	
					DVP_P7-1: LN 2117-2123_SRT-A	1.0502	
					DVP_P7-1: LN 2140-2176_SRT-A	1.0510	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0523	
					DVP_P7-1: LN 2161-2174_SRT-A	1.0524	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0872	1.0919
					DVP_P7-1: LN 546-2094_SRT-A	1.0507	
					DVP_P7-1: LN 9285-2176_SRT-A	1.0509	
314027	6DULLES	230	345	352	DVP_P1-2: LN 9236_SRT-A		1.0508
					DVP_P4-2: 2008T9236_SRT-A		1.0506
					DVP_P4-2: 9236_SRT-A		1.0508
314046	6HAYFLD	230	345	351	DVP_P4-2: 215T241_SRT-A	1.0577	1.0609
					DVP_P4-2: 24142_SRT-A	1.0613	1.0644
314071	6PENTAGN	230	345	351	DVP_P4-2: 2036T2142_SRT-A	1.0511	1.0527
314088	6VANDORN	230	345	351	DVP_P4-2: 215T241_SRT-A	1.0517	1.0548
314098	6GREENWAY1	230	345	352	DVP_P1-2: LN 2214_SRT-A		1.0502
					DVP_P4-2: 2137T9348_SRT-A		1.0504
					DVP_P4-2: 2149T2214_SRT-A	1.0573	1.064
					DVP_P4-2: 221402_SRT-A		1.0502
					DVP_P4-2: 9293T2223_SRT-A	1.0592	1.0665
314103	6BATTERY	230	345	353	DVP_P1-2: LN 2080_SRT-A		1.0507
					DVP_P4-2: 2080T2228_SRT-A	1.0514	1.0531
					DVP_P4-2: 221282_SRT-A		1.0503
					DVP_P4-2: H3T2151_SRT-A		1.0516
					DVP_P7-1: LN 2187-2228_SRT-A	1.0645	1.0692
314117	6PR WLLM	230	345	353	DVP_P1-2: LN 134_SRT-A		1.0502
					DVP_P1-2: LN 2080_SRT-A	1.0509	1.0528
					DVP_P1-2: LN 2094_SRT-A		1.0502
					DVP_P1-2: LN 2114_SRT-A		1.0509
					DVP_P1-2: LN 2151_SRT-A		1.0516
					DVP_P1-2: LN 2161_SRT-A		1.0501
					DVP_P1-2: LN 2196_SRT-A		1.0509
					DVP_P1-2: LN 2228_SRT-A	1.05	1.0519
					DVP_P1-2: LN 9306_SRT-A		1.0506
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A		1.0503
					DVP_P2-2: CLIFTON B1_SRT-A		1.0511
					DVP_P4-2: 100212-3_SRT-A		1.0511
					DVP_P4-2: 100212-4_SRT-A		1.0511
					DVP_P4-2: 13462_SRT-A		1.0511
					DVP_P4-2: 2030T2151_SRT-A		1.0516
					DVP_P4-2: 205182_SRT-A		1.051
					DVP_P4-2: 2080T2228_SRT-A	1.0537	1.0555
					DVP_P4-2: 2101T2163_SRT-A		1.0501
					DVP_P4-2: 211452-2_SRT-A		1.0509
					DVP_P4-2: 211462_SRT-S		1.0509
					DVP_P4-2: 2114T2155_SRT-A		1.0509
					DVP_P4-2: 214004_SRT-A		1.0516
					DVP_P4-2: 215102-1_SRT-A		1.0516
					DVP_P4-2: 2161T2174_SRT-A		1.051
					DVP_P4-2: 2161T2182_SRT-A		1.051
					DVP_P4-2: 2161T2222_SRT-A		1.0508
					DVP_P4-2: 217602_SRT-A		1.0502
					DVP_P4-2: 218792-1_SRT-A		1.0506
					DVP_P4-2: 218792-2_SRT-A		1.0506
					DVP_P4-2: 2187T9308_SRT-A		1.05
					DVP_P4-2: 2196T2243_SRT-A		1.0511
					DVP_P4-2: 221282_SRT-A		1.0515
					DVP_P4-2: 222812_SRT-A		1.0517
					DVP_P4-2: 9306T9308_SRT-A		1.0508
					DVP_P4-2: H1T2114_SRT-A		1.0511

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: H1T2195_SRT-A		1.0502
					DVP_P4-2: H3T2151_SRT-A	1.0503	1.0536
					DVP_P4-2: SR102_SRT-A		1.0508
					DVP_P4-2: SR202_SRT-A		1.0508
					DVP_P4-2: YT2196_SRT-A		1.0509
					DVP_P4-4: SR182_SRT-A		1.0511
					DVP_P4-5: L392_SRT-A		1.0503
					DVP_P4-5: L662_SRT-A		1.05
					DVP_P7-1: LN 183-2101_SRT-A		1.0512
					DVP_P7-1: LN 2008-2173_SRT-A		1.0501
					DVP_P7-1: LN 2063-266_SRT-A		1.0509
					DVP_P7-1: LN 2151-2163_SRT-A		1.0503
					DVP_P7-1: LN 2161-2174_SRT-A		1.051
					DVP_P7-1: LN 2187-2228_SRT-A	1.0699	1.0746
					DVP_P7-1: LN 9285-2176_SRT-A		1.0501
314123	6WELLGTN	230	345	353	DVP_P1-2: LN 2011_SRT-A	1.0509	1.0545
					DVP_P1-2: LN 2080_SRT-A	1.0539	1.0563
					DVP_P1-2: LN 2094_SRT-A		1.0501
					DVP_P1-2: LN 2114_SRT-A		1.0522
					DVP_P1-2: LN 2151_SRT-A	1.0515	1.0541
					DVP_P1-2: LN 2161_SRT-A		1.0512
					DVP_P1-2: LN 2163_SRT-A		1.0507
					DVP_P1-2: LN 2196_SRT-A		1.0506
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A		1.0505
					DVP_P4-2: 100212-3_SRT-A		1.0516
					DVP_P4-2: 100212-4_SRT-A		1.0516
					DVP_P4-2: 13462_SRT-A		1.0507
					DVP_P4-2: 201182_SRT-A		1.0507
					DVP_P4-2: 2011T2239_SRT-A	1.0509	1.0545
					DVP_P4-2: 2011X2_SRT-A	1.0509	1.0545
					DVP_P4-2: 2030T2151_SRT-A	1.0512	1.0539
					DVP_P4-2: 2101T2163_SRT-A		1.0512
					DVP_P4-2: 211452-2_SRT-A		1.0522
					DVP_P4-2: 211462_SRT-S		1.0523
					DVP_P4-2: 2114T2155_SRT-A		1.0522
					DVP_P4-2: 214004_SRT-A		1.0526
					DVP_P4-2: 215102-1_SRT-A	1.0515	1.0541
					DVP_P4-2: 2161T2174_SRT-A		1.0524
					DVP_P4-2: 2161T2182_SRT-A		1.0524
					DVP_P4-2: 2161T2222_SRT-A		1.0512
					DVP_P4-2: 2163XX-1_SRT-A		1.0507
					DVP_P4-2: 217602_SRT-A		1.0502
					DVP_P4-2: 2196T2243_SRT-A		1.0505
					DVP_P4-2: 9364T2114_SRT-A		1.0513
					DVP_P4-2: H1T2114_SRT-A		1.0533
					DVP_P4-2: H2T2163_SRT-A		1.0508
					DVP_P4-2: H3T2151_SRT-A	1.0529	1.0564
					DVP_P4-2: L1T2101_SRT-A		1.0507
					DVP_P4-2: L3T2101_SRT-A		1.0506
					DVP_P4-2: SR102_SRT-A		1.0512
					DVP_P4-2: SR202_SRT-A		1.0512
					DVP_P4-2: XT2011_SRT-A		1.0555
					DVP_P4-2: YT2196_SRT-A		1.0506
					DVP_P4-5: L392_SRT-A		1.0505
					DVP_P7-1: LN 183-2101_SRT-A		1.0518
					DVP_P7-1: LN 2008-2173_SRT-A		1.0505
					DVP_P7-1: LN 2151-2163_SRT-A	1.0514	1.0552
					DVP_P7-1: LN 2161-2174_SRT-A		1.0524
					DVP_P7-1: LN 9285-2176_SRT-A		1.0506
314133	6LIBERTY	230	345	353	DVP_P1-2: LN 2011_SRT-A		1.0526
					DVP_P1-2: LN 2080_SRT-A	1.0529	1.0555
					DVP_P1-2: LN 2114_SRT-A		1.051
					DVP_P1-2: LN 2151_SRT-A	1.0504	1.0531
					DVP_P1-2: LN 2161_SRT-A		1.0501
					DVP_P4-2: 100212-3_SRT-A		1.0504
					DVP_P4-2: 100212-4_SRT-A		1.0504

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: 2011T2239_SRT-A		1.0526
					DVP_P4-2: 2011X2_SRT-A		1.0526
					DVP_P4-2: 2030T2151_SRT-A	1.0501	1.0529
					DVP_P4-2: 2080T2228_SRT-A	1.0509	1.0535
					DVP_P4-2: 2101T2163_SRT-A		1.0501
					DVP_P4-2: 211452-2_SRT-A		1.051
					DVP_P4-2: 211462_SRT-S		1.0511
					DVP_P4-2: 2114T2155_SRT-A		1.051
					DVP_P4-2: 214004_SRT-A		1.0515
					DVP_P4-2: 215102-1_SRT-A	1.0504	1.0531
					DVP_P4-2: 2161T2174_SRT-A		1.0513
					DVP_P4-2: 2161T2182_SRT-A		1.0513
					DVP_P4-2: 9364T2114_SRT-A		1.0502
					DVP_P4-2: H1T2114_SRT-A		1.0522
					DVP_P4-2: H3T2151_SRT-A	1.0519	1.0554
					DVP_P4-2: XT2011_SRT-A		1.0536
					DVP_P7-1: LN 183-2101_SRT-A		1.0503
					DVP_P7-1: LN 2151-2163_SRT-A	1.0508	1.0546
					DVP_P7-1: LN 2161-2174_SRT-A		1.0513
314157	6GODWIN	230	345	353	Base Case		-
					DVP_P1-2: LN 183_SRT-A	1.05	
					DVP_P1-2: LN 2011_SRT-A	1.0554	1.0589
					DVP_P1-2: LN 2080_SRT-A	1.0554	1.0577
					DVP_P1-2: LN 2114_SRT-A	1.0507	
					DVP_P1-2: LN 2151_SRT-A	1.0533	
					DVP_P1-2: LN 2161_SRT-A	1.0515	
					DVP_P1-2: LN 2196_SRT-A	1.0518	
					DVP_P1-2: LN 2228_SRT-A	1.0541	1.0564
					DVP_P1-2: LN 9238_SRT-A	1.0509	
					DVP_P1-2: LN 9306_SRT-A	1.0506	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.0508	
					DVP_P4-2: 100212-3_SRT-A	1.0505	
					DVP_P4-2: 100212-4_SRT-A	1.0505	
					DVP_P4-2: 13462_SRT-A	1.05	
					DVP_P4-2: 201182_SRT-A	1.0505	
					DVP_P4-2: 2011T2239_SRT-A	1.0554	1.0589
					DVP_P4-2: 2011X2_SRT-A	1.0554	1.0589
					DVP_P4-2: 2030T2151_SRT-A	1.053	
					DVP_P4-2: 2080T2228_SRT-A	1.0597	1.0619
					DVP_P4-2: 211452-2_SRT-A	1.0507	
					DVP_P4-2: 211462_SRT-S	1.0507	
					DVP_P4-2: 2114T2155_SRT-A	1.0507	
					DVP_P4-2: 214004_SRT-A	1.0513	
					DVP_P4-2: 215102-1_SRT-A	1.0533	
					DVP_P4-2: 2161T2174_SRT-A	1.0517	
					DVP_P4-2: 2161T2182_SRT-A	1.0517	
					DVP_P4-2: 2161T2222_SRT-A	1.0511	
					DVP_P4-2: 217602_SRT-A	1.0505	
					DVP_P4-2: 218792-1_SRT-A	1.0506	
					DVP_P4-2: 218792-2_SRT-A	1.0506	
					DVP_P4-2: 2196T2243_SRT-A	1.0516	
					DVP_P4-2: 222812_SRT-A	1.0538	1.0561
					DVP_P4-2: 222862_SRT-A	1.0509	
					DVP_P4-2: 265T2008_SRT-A	1.0504	
					DVP_P4-2: 59072_SRT-S	1.0502	
					DVP_P4-2: 9306T9308_SRT-A	1.0507	
					DVP_P4-2: EVERGRE H232_SRT-A	1.0503	
					DVP_P4-2: H1T2114_SRT-A	1.0505	
					DVP_P4-2: H3T2151_SRT-A	1.0546	1.0581
					DVP_P4-2: L3T183_SRT-A	1.05	
					DVP_P4-2: SR102_SRT-A	1.0514	
					DVP_P4-2: SR202_SRT-A	1.0514	
					DVP_P4-2: XT2011_SRT-A	1.0544	1.06
					DVP_P4-2: YT2196_SRT-A	1.0518	
					DVP_P4-5: L392_SRT-A	1.0508	
					DVP_P4-5: L662_SRT-A	1.0509	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P7-1: LN 183-2101_SRT-A	1.0518	
					DVP_P7-1: LN 2008-2173_SRT-A	1.0508	
					DVP_P7-1: LN 2008-265_SRT-A	1.0504	
					DVP_P7-1: LN 2140-2176_SRT-A	1.0501	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0519	
					DVP_P7-1: LN 2161-2174_SRT-A	1.0517	
					DVP_P7-1: LN 2187-2228_SRT-A	1.0892	1.094
					DVP_P7-1: LN 9285-2176_SRT-A	1.0501	
314165	6CLOVRHL	230	345	353	Base Case	-	-
					DVP_P1-2: LN 2011_SRT-A	1.0599	1.0635
					DVP_P1-2: LN 2080_SRT-A	1.057	1.0592
					DVP_P1-2: LN 2151_SRT-A	1.0551	
					DVP_P1-2: LN 2228_SRT-A	1.0556	
					DVP_P4-2: 201182_SRT-A		1.0596
					DVP_P4-2: 2011T2239_SRT-A	1.06	1.0635
					DVP_P4-2: 2011X2_SRT-A	1.0599	1.0635
					DVP_P4-2: 2080T2228_SRT-A	1.0607	1.0628
					DVP_P4-2: 215102-1_SRT-A	1.0551	
					DVP_P4-2: 222812_SRT-A	1.0553	
					DVP_P4-2: H3T2151_SRT-A	1.0563	1.0598
					DVP_P4-2: XT2011_SRT-A	1.0589	1.0646
					DVP_P7-1: LN 2187-2228_SRT-A	1.0864	1.0911
314168	6NEW RD	230	345	353	DVP_P1-2: LN 2117_SRT-A	1.0546	1.059
					DVP_P4-2: 2030T2117_SRT-A	1.0540	1.0590
					DVP_P4-2: 211752_SRT-A	1.051	1.0578
314185	6RADNOR	230	345	351	DVP_P4-2: 2036T2142_SRT-A	1.0511	1.0528
314345	3MT RUN	230	345	363	DVP_P1-2: LN 2276_SRT-A	1.0546	1.0546
					DVP_P7-1: LN 2_2276_SRT-A	1.0547	1.0547
314354	6ASHBURN_2	230	345	352	DVP_P1-2: LN 203_SRT-S		1.0501
					DVP_P1-2: LN 595_SRT-A		1.0503
					DVP_P1-2: LN 9303_SRT-A		1.0512
					DVP_P4-2: 558T595_SRT-A		1.0503
					DVP_P4-4: PLEASA SC322_SRT-S		1.05
314355	6HAYFL_1	230	345	351	DVP_P4-2: 215T241_SRT-A	1.061	1.0641
					DVP_P4-2: 24142_SRT-A	1.0645	1.0676
314359	6ASHBU_1	230	345	352	DVP_P1-2: LN 203_SRT-S		1.0501
					DVP_P1-2: LN 595_SRT-A		1.0503
					DVP_P1-2: LN 9303_SRT-A		1.0512
					DVP_P4-2: 558T595_SRT-A		1.0503
					DVP_P4-4: PLEASA SC322_SRT-S		1.05
314361	6DRANE_1	230	345	352	DVP_P1-2: LN 2079_SRT-A		1.0511
					DVP_P4-2: 2079T9231_A_SRT-A		1.051
314362	6DULLE_1	230	345	352	DVP_P1-2: LN 9236_SRT-A		1.054
					DVP_P4-2: 2008T9236_SRT-A		1.0538
					DVP_P4-2: 9236_SRT-A		1.054
314497	6SEWLSPT	230	345	359	DVP_P7-1: LN 2099-257_SRT-A	0.8886	0.8886
314500	6NAVYS	230	345	359	DVP_P7-1: LN 2099-257_SRT-A	0.8886	0.8886
314501	6NAVYS1	230	345	359	DVP_P7-1: LN 2099-257_SRT-A	0.8886	0.8886
314505	6NAVYN	230	345	359	DVP_P7-1: LN 2099-257_SRT-A	0.8886	0.8886
314510	6NAVYN1	230	345	359	DVP_P7-1: LN 2099-257_SRT-A	0.8886	0.8886
314646	6LIBERTY_1	230	345	353	Base Case		-
					DVP_P1-2: LN 2011_SRT-A	1.0522	1.0558
					DVP_P1-2: LN 2080_SRT-A	1.0561	1.0587
					DVP_P1-2: LN 2114_SRT-A	1.0502	
					DVP_P1-2: LN 2151_SRT-A	1.0536	1.0563
					DVP_P1-2: LN 2161_SRT-A	1.0511	
					DVP_P1-2: LN 2196_SRT-A	1.0503	
					DVP_P1-3: 6GAINSVL-TX#3_SRT-A	1.05	
					DVP_P4-2: 2011T2239_SRT-A	1.0522	1.0558
					DVP_P4-2: 2011X2_SRT-A	1.0522	1.0558
					DVP_P4-2: 2030T2151_SRT-A	1.0533	1.0561
					DVP_P4-2: 2080T2228_SRT-A	1.0541	1.0567
					DVP_P4-2: 211452-2_SRT-A	1.0502	
					DVP_P4-2: 211462_SRT-S	1.0502	
					DVP_P4-2: 2114T2155_SRT-A	1.0502	
					DVP_P4-2: 214004_SRT-A	1.0509	

						Cont Volt	
					Scenario	2027_Base	pen-Golden
Bus #	Bus Name	Base kV	Area	Zone	Cont Name		
					DVP_P4-2: 215102-1_SRT-A	1.0536	1.0563
					DVP_P4-2: 2161T2174_SRT-A	1.0514	
					DVP_P4-2: 2161T2182_SRT-A	1.0514	
					DVP_P4-2: 2161T2222_SRT-A	1.0504	
					DVP_P4-2: 2196T2243_SRT-A	1.0502	
					DVP_P4-2: H1T2114_SRT-A	1.0503	1.0554
					DVP_P4-2: H3T2151_SRT-A	1.0551	1.0586
					DVP_P4-2: SR102_SRT-A	1.0506	
					DVP_P4-2: SR202_SRT-A	1.0507	
					DVP_P4-2: XT2011_SRT-A	1.0512	1.0568
					DVP_P4-2: YT2196_SRT-A	1.0503	
					DVP_P4-5: L392_SRT-A	1.05	
					DVP_P7-1: LN 183-2101_SRT-A	1.0501	
					DVP_P7-1: LN 2151-2163_SRT-A	1.0540	1.0578
					DVP_P7-1: LN 2161-2174_SRT-A	1.0514	
314649	6SHELLHORN_1	230	345	352	Base Case		-
					DVP_P4-2: 2149T2214_SRT-A	1.0593	1.0661
					DVP_P4-2: 9293T2223_SRT-A	1.0611	1.0684
314650	6SHELLHORN_2	230	345	352	Base Case		-
					DVP_P4-2: 2149T2214_SRT-A	1.0593	1.0661
					DVP_P4-2: 9293T2223_SRT-A	1.0611	1.0684
314753	3CULPEPR	115	345	363	DVP_P1-2: LN 2245_SRT-A	1.0570	1.0570
					DVP_P1-2: LN 2276_SRT-A	1.0736	1.0737
					DVP_P1-2: LN 9016_SRT-A	1.0554	1.0554
					DVP_P1-2: LN2245 _SRT-A	1.057	1.057
					DVP_P2-2: Germanna_SRT-A	1.057	1.057
					DVP_P4-2: 2077T9016_SRT-S	1.0554	1.0554
					DVP_P4-2: 2245T2276_SRT-A	1.0570	1.057
					DVP_P4-2: 280T2276_SRT-S	1.0554	1.0554
					DVP_P4-2: 280T9016_SRT-S	1.0554	1.0554
					DVP_P4-2: 9016T2276_SRT-S	1.0554	1.0554
					DVP_P7-1: LN 2-2245_SRT-A	1.0571	1.0571
					DVP_P7-1: LN 2-9016_SRT-A	1.0554	1.0554
					DVP_P7-1: LN 2_2276_SRT-A	1.0737	1.0737
314855	6LOWMOOR	230	345	365	DVP_P4-5: L302_SRT-A	1.0843	
314870	6ENGPRVG	230	345	351	DVP_P4-2: 24142_SRT-A	1.0549	1.058
314873	3CULPE_1	115	345	363	DVP_P1-2: LN 2245_SRT-A	1.0575	1.0576
					DVP_P1-2: LN 2276_SRT-A	1.0742	1.0742
					DVP_P1-2: LN 9016_SRT-A	1.0559	1.0559
					DVP_P1-2: LN2245 _SRT-A	1.0575	1.0576
					DVP_P2-2: Germanna_SRT-A	1.0575	1.0576
					DVP_P4-2: 2077T9016_SRT-S	1.0559	1.0559
					DVP_P4-2: 2245T2276_SRT-A	1.0575	1.0576
					DVP_P4-2: 280T2276_SRT-S	1.0559	1.0559
					DVP_P4-2: 280T9016_SRT-S	1.0559	1.0559
					DVP_P4-2: 9016T2276_SRT-S	1.0559	1.0559
					DVP_P7-1: LN 2-2245_SRT-A	1.0576	1.0576
					DVP_P7-1: LN 2-9016_SRT-A	1.056	1.056
					DVP_P7-1: LN 2_2276_SRT-A	1.0743	1.0743
314907	8DOOMS	500	345	366	DVP_P4-2: 548T549_SRT-S	0.9936	0.9948
314910	8CUNINGHAM	500	345	366	DVP_P4-2: 548T549_SRT-S	1.0035	1.0047
314925	8PL VIEW	500	345	366	DVP_P1-2: LN 595_SRT-A	1.1209	1.1254
					DVP_P4-2: 514T595_SRT-A	1.1138	1.1183
					DVP_P4-2: 558T595_SRT-A		1.1254
					DVP_P4-2: H1T595_SRT-A	1.113	1.1246
314942	8FLUVANNAEAS	500	345	366	DVP_P4-2: 548T549_SRT-S	1.0036	1.0048
314943	8FLUVANNAWES	500	345	366	DVP_P4-2: 548T549_SRT-S	1.0035	1.0048

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Company identified one transmission electrical alternative to the proposed Project, which is discussed below. No distribution alternatives to the proposed Project were considered, consistent with the overload conditions and violations described in Sections I.A, I.C, and I.D.

Transmission Alternative: Construct a new 500-230 kV line from the proposed Aspen Substation to the Commanders substation site.

Under this electrical alternative, the Company would cut the existing Beaumeade-Paragon Park Line #2206, BECO-Paragon Park Line #2207, and BECO-Pacific Line #2165 and extend a new overhead 500 kV single circuit transmission line and a new 230 kV single circuit transmission line along a similar route alignment as the Aspen-Golden Lines Proposed Route (Route 1AA), but terminating the route at the alternative Commanders substation site instead of the proposed Golden Substation site. The Commanders substation site is located approximately 0.8 mile northwest of the proposed Golden Substation site east of the intersection of the Washington & Old Dominion ("W&OD") Trail and Pacific Boulevard. As explained in more detail below, the Company rejected the Commanders substation site due to significant challenges and, therefore, did not submit this electrical alternative to PJM from a feasibility perspective.

Notably, the Commanders substation site is encumbered with a major floodplain, the land uses of which are governed under the Loudoun County Zoning Ordinance ("LCZO") adopted December 13, 2023 (Section 5.03). Allowance of a substation use was informally determined by Loudoun County Planning and Zoning Staff in June 2021 to be allowable with a special exception to the ordinance under LCZO Section 5.03.F.4, which states: "Structures required for the operation of a public utility not otherwise permitted by the Zoning Ordinance." However, Section 5.03.F of the Revised 1993 LCZO states that "such uses must not cause any increase in the base flood elevation of the FOD (Major Floodplain)."[30]

Through past communication with the Assistant Director of the Loudoun County Planning and Zoning Office in June 2021, it was advised that such land development applications (both legislative and administrative) for substation use in this area likely would require each of the following:

- Written justification demonstrating that the proposed facility is necessary for the operation of a public utility, including documentation on alternatives and justification that there is *no other location* to accommodate the facility.

[30] *See* https://www.loudoun.gov/DocumentCenter/View/180071/Chapter-5-Overlay-Districts.

- Planning Commission Permit for the establishment of the transmission substation to determine whether the location, character, and extent of the use is in conformance with the Comprehensive Plan. Note that utility substations (and similar facilities) are not an anticipated use in the major floodplain per the Loudoun County 2019 General Plan.

- Floodplain Alteration application to Loudoun Floodplain and Natural Resource Teams with the special exception with more detail regarding the impacts to the floodplain.

With a preliminary floodplain study and siting and grading analysis of substation uses in this area, the Company determined that only a limited buildable area of 7.3 acres was available for this use at the Commanders substation site that would not increase the base flood elevation of the Major Floodplain.

Additionally, the Commanders substation site has the following development complications:

- Existing open space easement for the property restricts development and likely would require open space replacement.

- Comprehensive plan conformance because utility substations are not a contemplated use in the major floodplain.

- Proffer conformance for the property based on existing entitlements.

Further, regardless of the Company's ability to maintain a substation footprint within the 7.3 acres, based on resource impacts and the requirements of the special exception of Loudoun County, the uncertainties associated with the local review and approval processes pose a significant challenge to the timing and viability of the Project.

For all of these reasons, the Company rejected this electrical alternative.

Analysis of Demand-Side Resources:

Pursuant to the Commission's November 26, 2013, Order entered in Case No. PUE-2012-00029, and its November 1, 2018, Final Order entered in Case No. PUR-2018-00075 ("2018 Final Order"), the Company is required to provide analysis of demand-side resources ("DSM") incorporated into the Company's planning studies. DSM is the broad term that includes both energy efficiency ("EE") and demand response ("DR"). In this case, PJM and the Company have identified a need for the proposed Project 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.[31] 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 2023 PJM Load Forecast was 2,440 MW greater in 2027/2028 in comparison to the 2022 PJM 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 the 2024 PJM Load Forecast. By way of comparison, statewide, the Company achieved demand savings of 264.8 MW (net) / 404.8 MW (gross) from its DSM Programs in 2022.

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

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The proposed Project will require the removal of the following transmission facilities on Brambleton-Goose Creek Line #558[32] and Belmont-Pleasant View Line #2180[33] in order to construct the proposed Aspen Substation.

- Remove two structures in the existing Lines #558/#2180 corridor, including a single circuit three-pole structure supporting Line #558 (Structure #558/1856) and a recently-installed double circuit three-pole structure supporting Line #558 and Line #2180 (Structure #558/1856A / #2180/7A).
- Remove two spans (300-400 feet) of three-phase 3-1351 ACSR from the existing 500 kV Line #558 (Structure #558/1855 to Structure #558/1856 at Pleasant Valley Substation).
- Remove two spans (300-400 feet) of two Design Number ("DNO") 10100 fiber from the existing 500 kV Line #558 (Structure #558/1855 to Structure #558/1856 at Pleasant Valley Substation).

In addition, in order for the Aspen-Golden Lines to cross over existing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274, the proposed Project will require the transfer of one span (0.08 mile) of two fibers (S1-95/47 96 fiber and DNO-11410) between double circuit Structures #227/180 / #274/240 and

[32] As it pertains to Line #558, the Company considers the removal of one single circuit three pole structure (Structure #558/1856), one recently-installed double circuit three-pole structure (Structure #558/1856A / #2180/7A), two spans of ACSR conductor, and two spans of fiber as described herein, to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. As the Company considers the removal of these transmission facilities to be ordinary course, detailed supporting documentation has not been provided in this Appendix. However, as this work is required for construction of the Aspen Substation, the costs associated with this work are included in the total Project costs. *See* Section I.I. Should the Commission determine that a CPCN is required for the work associated with Line #558 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding. Note that as Structure #558/1856A / #2180/7A was recently installed, the Company anticipates using the structure on another transmission project when the opportunity arises.

[33] As it pertains to Line #2180, the Company considers the removal of one recently-installed double circuit three-pole structure (Structure #558/1856A / #2180/7A), as described herein, to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. As the Company considers the removal of this structure to be ordinary course, detailed supporting documentation has not been provided in this Appendix. However, as this work is required for construction of the Aspen Substation, the costs associated with this work are included in the total Project costs. *See* Section I.I. Should the Commission determine that a CPCN is required for the work associated with Line #2180 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding. Note that as Structure #558/1856A / #2180/7A was recently installed, the Company anticipates using the structure on another transmission project when the opportunity arises.

#227/181 / #274/241, and the installation of two static poles and additional fiber and splices as needed to reach the new poles.[34]

Finally, in order to cut the existing Lines #2081 and #2150 into and out of the proposed Golden Substation for the proposed Line Loop, the Company will remove one existing double circuit lattice tower (Structure #2081/123 / #2150/183) and replace it with four dulled galvanized single circuit monopoles (Structures #2081/122A, #2150/182A, #2348/123A, and #2351/183A). The existing conductor will be transferred to the four proposed monopoles. New bundled 768.2 ACSS/TW/HS conductor will be installed temporarily between the four structures to tie the existing lines back together until the station work is complete. The new twin bundled 768.2 ACSS/TW/HS will be pulled into the proposed Golden Substation to complete each line's tie-in.

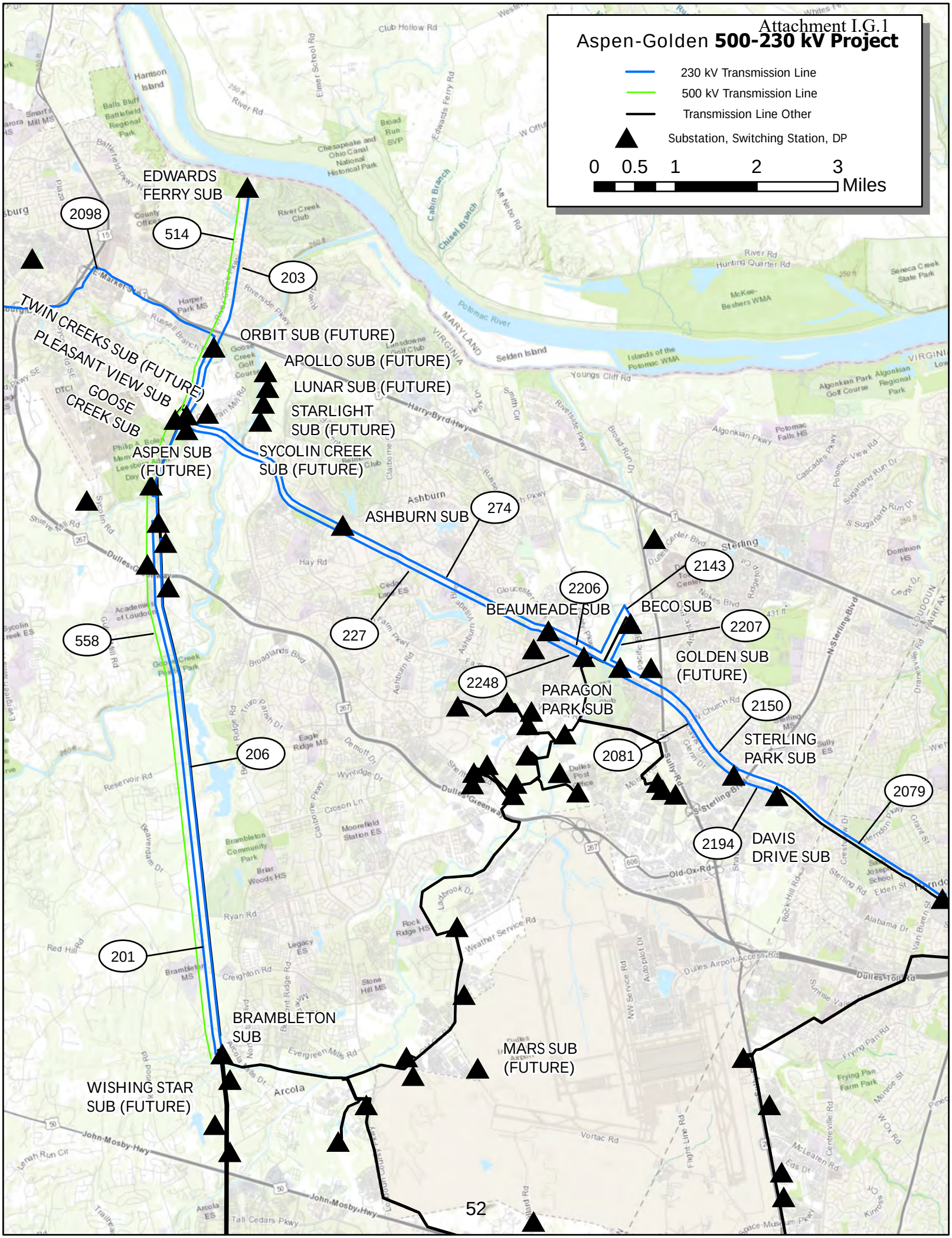
See Section II.C regarding substation facilities that will be removed as part of the Project.

[34] As it pertains to Lines #227 and #274, the Company considers the removal of one span (<0.1 mile) of two fibers between double circuit Structures #227/180 / #274/240 and #227/181 / #274/241 and the installation of two static poles and additional fiber as needed to reach the new poles, as described herein, to qualify as an "ordinary extension[] or improvement[] in the usual course of business" pursuant to Va. Code § 56-265.2 A 1 and, therefore, does not require approval pursuant to Va. Code § 56-46.1 B or a CPCN from the Commission. As the Company considers the removal of these fibers to be ordinary course, detailed supporting documentation has not been provided in this Appendix. However, as this work is required for the Aspen-Golden Lines to be constructed over the existing Line #227/#274 corridor, the costs associated with this work are included in the total Project costs. *See* Section I.I. Should the Commission determine that a CPCN is required for the work associated with Lines #227/#274 as described herein, the Company requests that the Commission grant such CPCN as part of its final order in this proceeding.

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.


Aspen-Golden 500-230 kV Project
230 kV Transmission Line
500 kV Transmission Line
Transmission Line Other
Substation, Switching Station, DP
0 0.5 1 2 3
Miles
EDWARDS FERRY SUB
2098
514
203
TWIN CREEKS SUB (FUTURE)
PLEASANT VIEW SUB (FUTURE)
GOOSE CREEK SUB
ORBIT SUB (FUTURE)
APOLLO SUB (FUTURE)
LUNAR SUB (FUTURE)
STARLIGHT SUB (FUTURE)
ASPEN SUB (FUTURE)
SYCOLIN CREEK SUB (FUTURE)
ASHBURN SUB
274
227
558
206
201
BRAMBLETON SUB
WISHING STAR SUB (FUTURE)
MARS SUB (FUTURE)
2206
BEAUMEADE SUB
2143
BECO SUB
2207
GOLDEN SUB (FUTURE)
2248
PARAGON PARK SUB
2150
STERLING PARK SUB
2081
2079
2194
DAVIS DRIVE SUB
Potomac River
MARYLAND
VIRGINIA
Selden Island
Harrison Island
Chesapeake and Ohio Canal National Historical Park
Harry Byrd Hwy
Dulles Toll Rd
Dulles Airport Access Rd
John Mosby Hwy
Sterling
Ashburn
Arcola

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 44 months for detailed engineering, materials procurement, permitting, real estate, and construction after a final order from the Commission. Accordingly, to support this estimated construction timeline and construction plan, the Company respectfully requests a final order by October 7, 2024. Should the Commission issue a final order by October 7, 2024, to accommodate long-lead materials procurement, the Company estimates that construction should begin around June 2025, 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 also is contingent upon the Company's ability to negotiate for easements with property owners along the approved route and to purchase land for substation use.

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

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

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

date (*i.e.*, June 1, 2028) and a CPCN sunset date (*i.e.*, June 1, 2029) for energization of the Project.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The estimated conceptual cost of the Project utilizing the Aspen-Goose Creek Proposed Route, the Aspen-Golden Lines Proposed Route and the Line Loop Proposed Route is approximately $688.6 million, which includes approximately $171.1 million for transmission-related work and approximately $517.5 million for substation-related work (2023 dollars).[35]

The estimated conceptual costs for the transmission-related work associated with the Project's Proposed and Alternative Routes are provided in the table below.

Transmission-Related Conceptual Costs
(Millions (approximate))

Route	Total*
Proposed Route (Route 1AA)	$171.1**
Alternative Route 1AB	$170.2
Alternative Route 1BA	$179.1**
Alternative Route 1BB	$173.4

* Inclusive of transmission-related costs associated with the ordinary course work described in Section I.F on Lines #558, #2180, #227 and #274. Also inclusive of the transmission-related costs associated with the Proposed Routes of Aspen-Goose Creek Line #5002 and the Lines #2081/#2150 Loop.

**Inclusive of distribution costs required to relocate distribution lines for Aspen-Golden Lines Proposed Route (Route 1AA) and Alternative Route 1BA.

The estimated conceptual costs for the substation-related work for the Project are broken out by substation in the table below. The substation-related costs remain the same regardless of which route for the Aspen-Golden Lines is selected.

Substation-Related Conceptual Costs
(Millions (approximate))

Substation	**Total**
Aspen Substation	$205.5
Golden Substation	$306.2
Goose Creek Substation	$5.9

See Section II.C for costs associated with minor substation work at the Company's existing Brambleton Substation, Paragon Park Substation, and Sterling Park Substation, which are not included in the total Project costs but are provided for informational purposes.

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

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 following PJM TEAC meetings.

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.

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 Attachment I.J.3. The Project is classified as a baseline project and is assigned the following sub identification numbers: b3800.200-202, b3800.213-218, and b3800.225-227.

Cost Allocation

The 230 kV components of the Project are 100% cost allocated to the DOM Zone. The cost allocation for the 500 kV components is shown in the tables below.

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.200	Build a new 500 kV line from Aspen-Golden on 500/230 kV double circuit structures with substation upgrades at Aspen and Golden. New conductor to have a minimum summer normal rating of 4357MVA.	$176.02	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: Dominion (100.00%)	6/1/2027
b3800.202	Install (1) 500-230 kV transformer bank at Aspen substation.	$42.00	Dominion	Dominion (86.28%) / PEPCO (13.72%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.213	Cut 500 kV line No. 558 Brambleton-Goose Creek into Aspen substation. Upgrade 500 kV terminal equipment at Aspen and Goose Creek to 5000A continuous rating current. At Goose Creek, replace circuit breakers 59582 and 55882, and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating.	$50.12	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 (99.39%) / Dominion (0.61%)	6/1/2027
b3800.214	Build a new 500 kV line from Aspen-Goose Creek to achieve a summer rating of 4357 MVA. Install new 500 kV terminal equipment at Aspen.	$38.53	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 (99.39%) / Dominion (0.61%)	6/1/2027
b3800.217	Build a new 230 kV line from Aspen-Sycolin Creek on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Sycolin Creek.	$60.42	Dominion	Dominion (86.28%) / PEPCO (13.72%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.225	Change 500 kV line No. 558 destination at Brambleton to Aspen substation and upgrade line protection relays.	$0.23	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 (5.20%) / DL (0.46%) / Dominion (91.40%) / ME (0.59%) / PEPCO (2.35%)	6/1/2027

Reliability Analysis Update

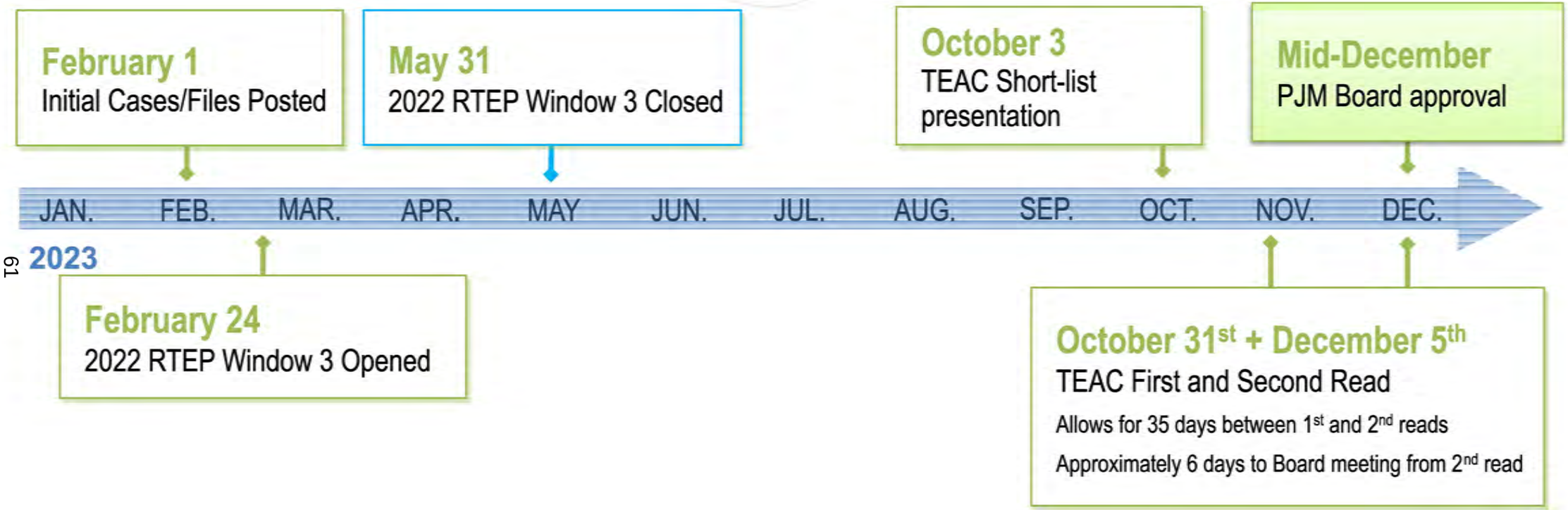
Sami Abdulsalam, Senior Manager
PJM Transmission Planning

Transmission Expansion Advisory Committee
October 31, 2023

First Read – 2022 Window 3

Baseline Reliability Projects

2022 RTEP Window 3 - Timeline



61

- 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

- 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

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.

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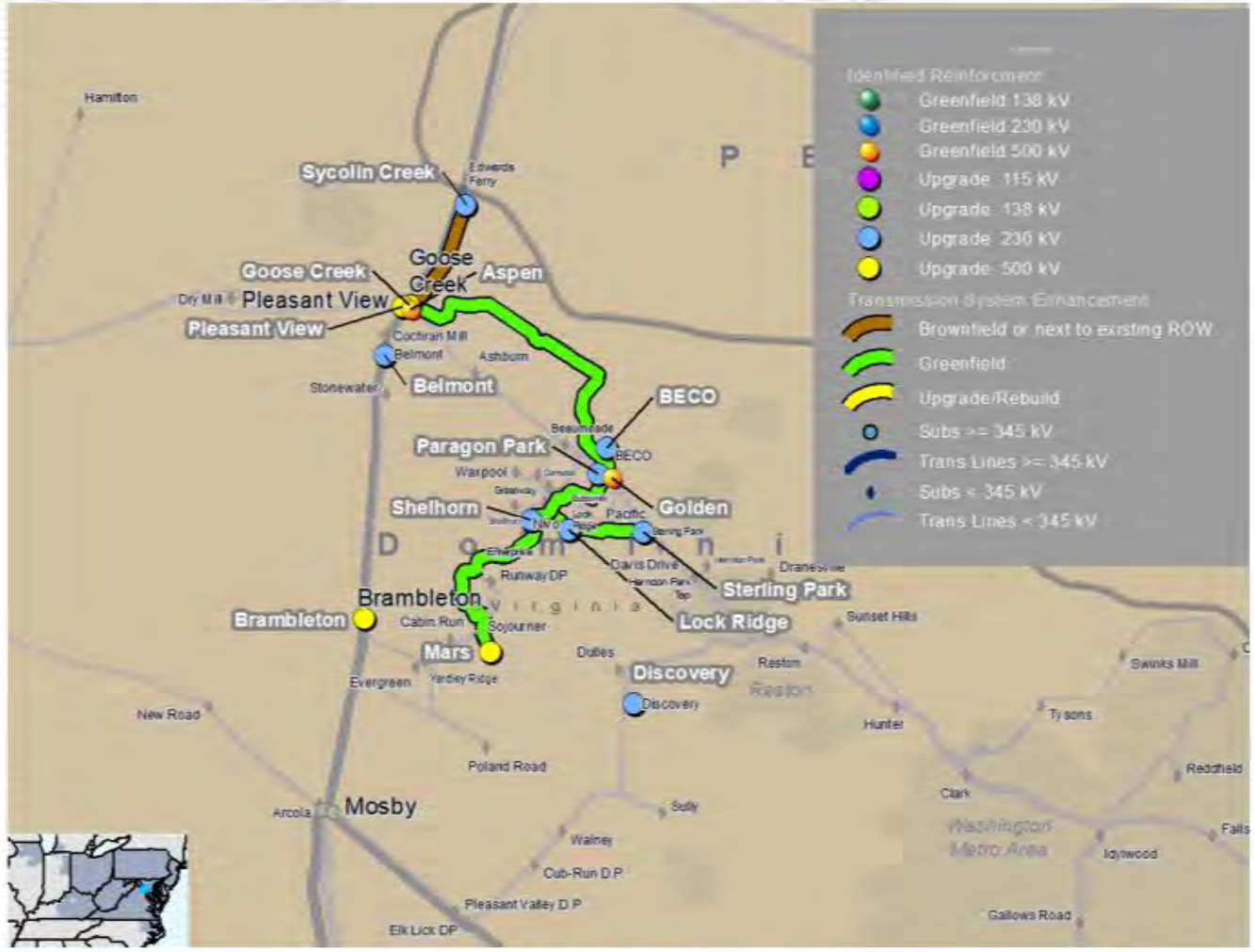
2022W3 – Preferred Solutions: Northern Virginia/Doubs Cluster

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…

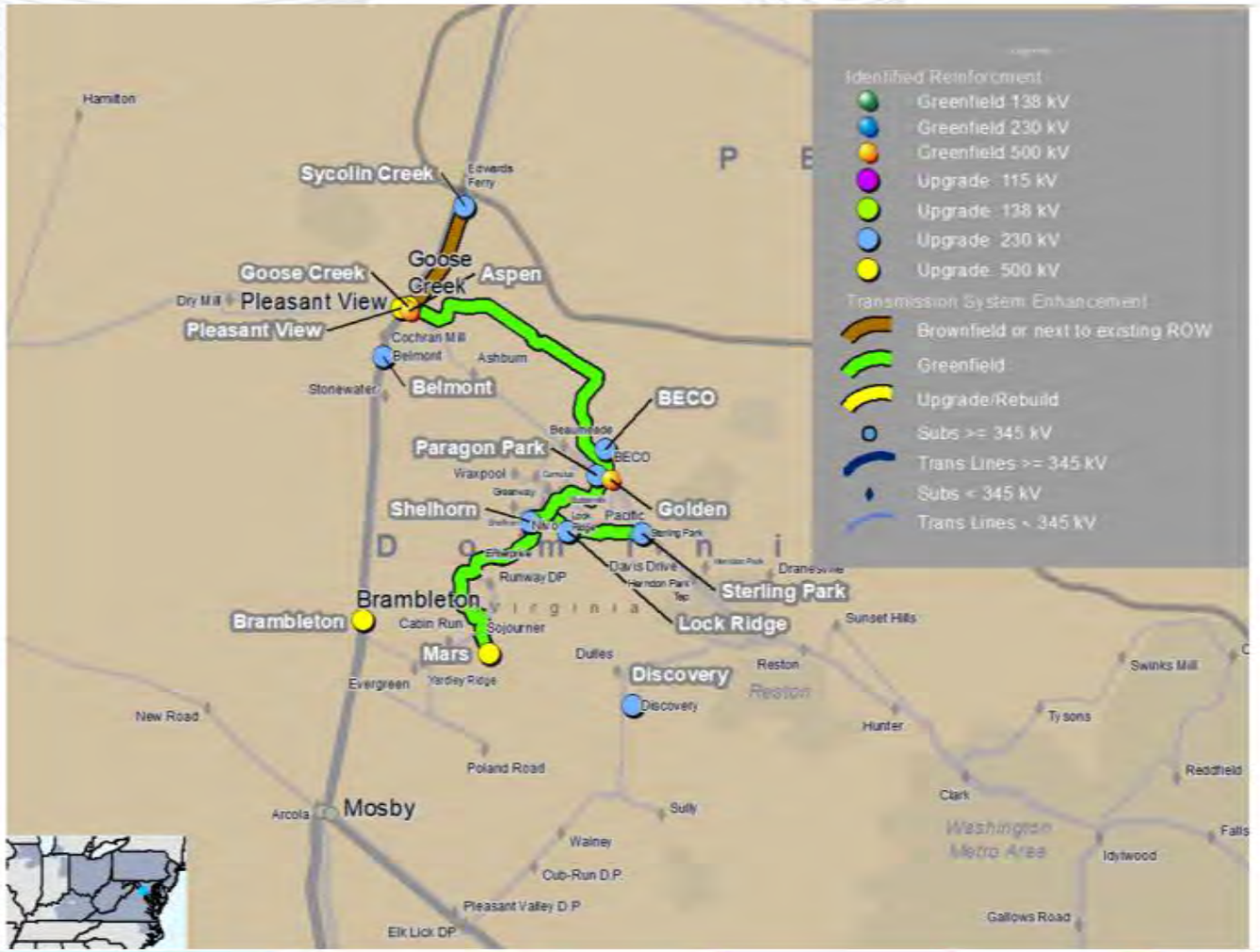


NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

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.

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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

Northern Virginia/Doubs- Selected Proposals

Baseline Reliability Projects

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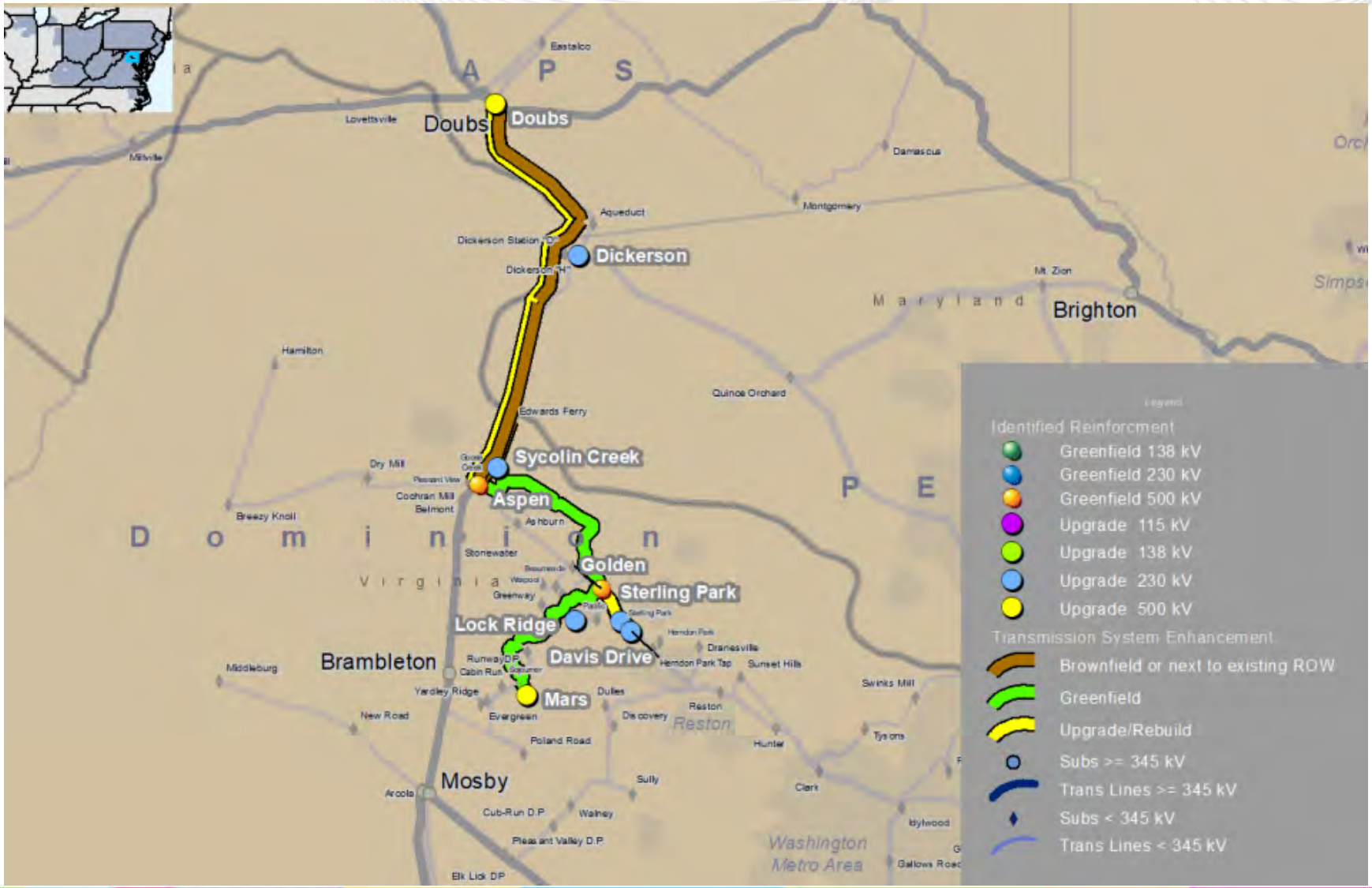
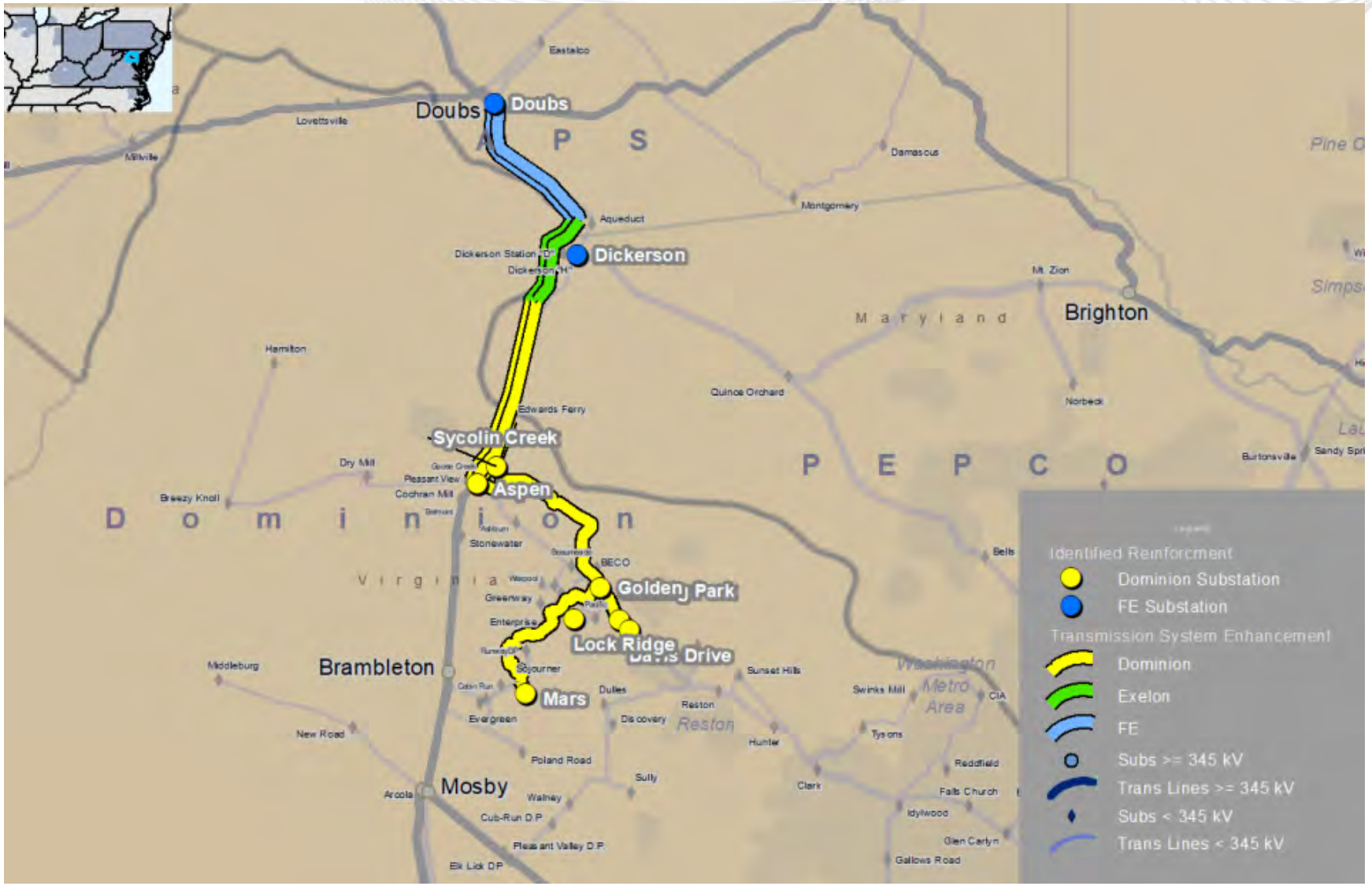
2022W3 – Recommended Solutions: North Virginia/Doubs Cluster



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.

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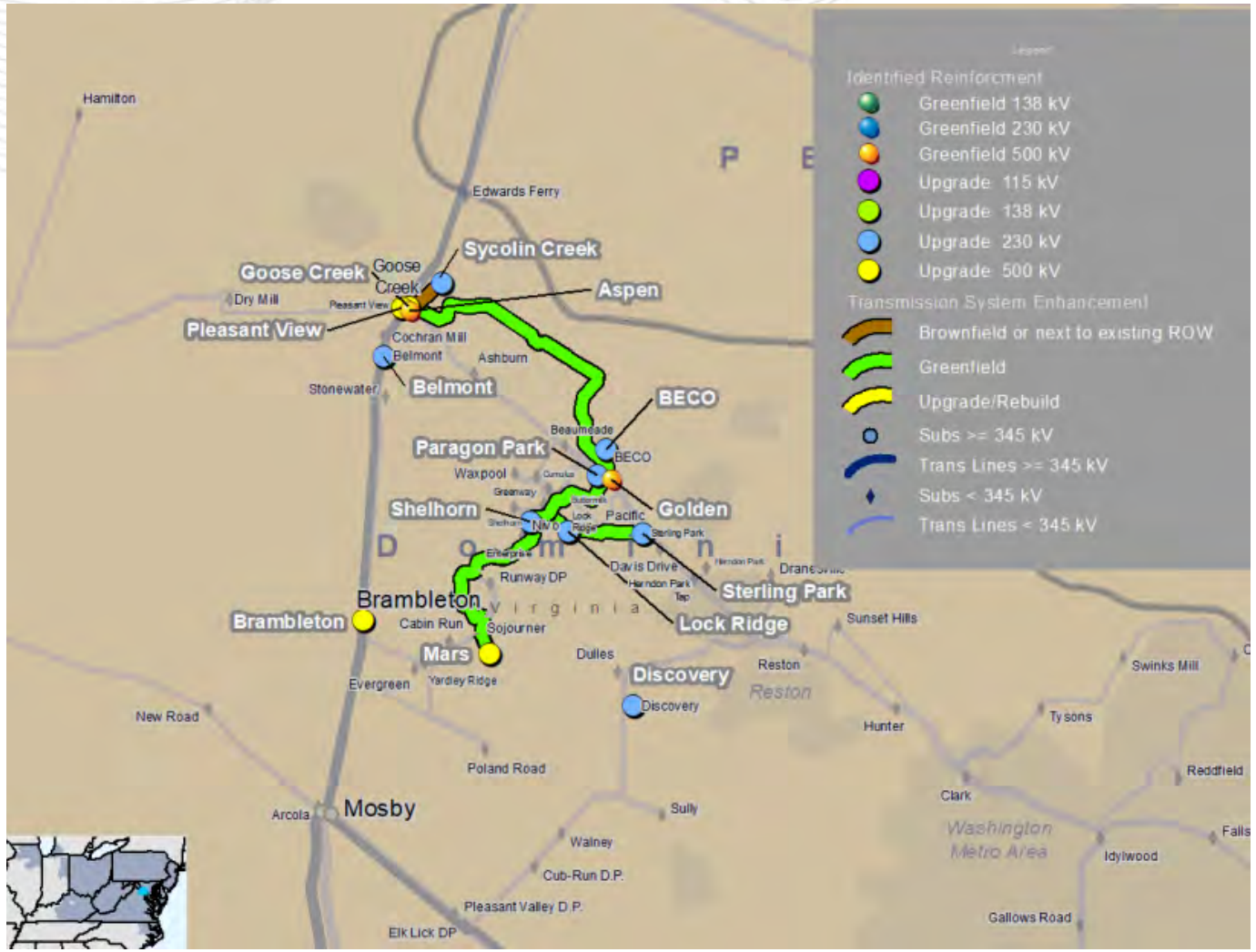

NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

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

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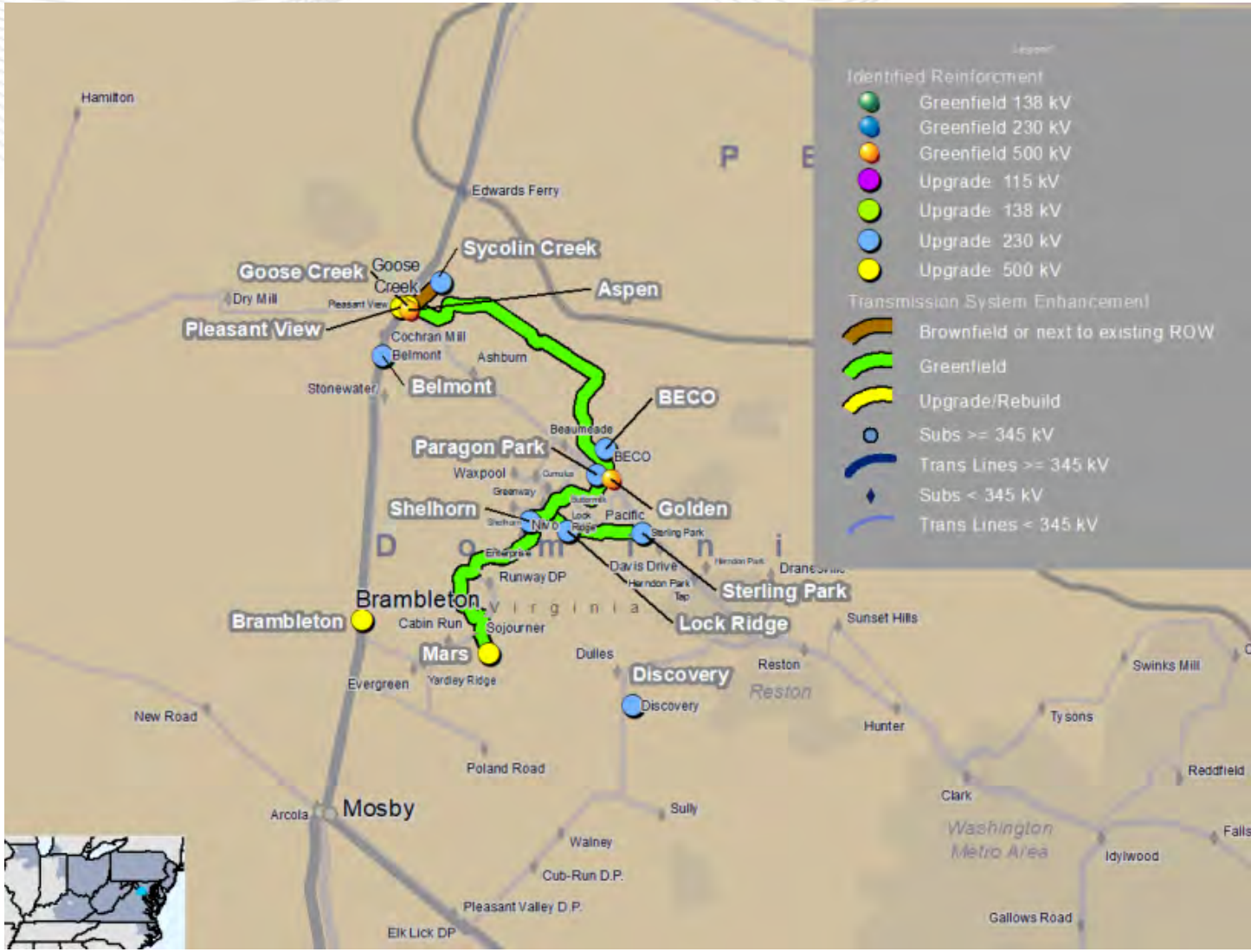

NOTE: *This map is only intended to illustrate the general electrical connectivity of the projects, and should not be relied upon for exact geographical substation locations or line routes.*

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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

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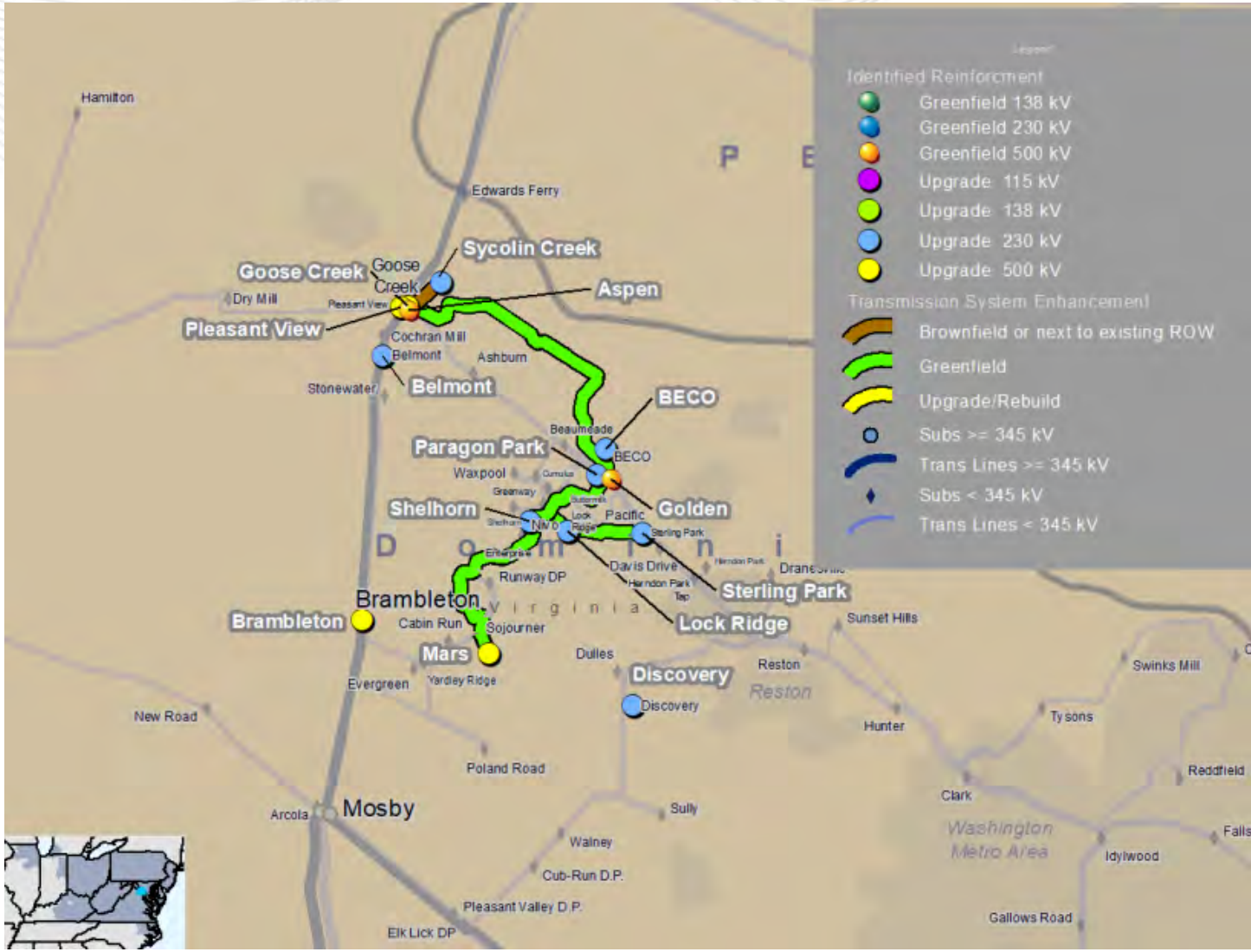

Baseline # B3800.200 – B3800.227

Estimated Cost: $1025.06 M

Required IS Date: 6/1/2027

Projected IS Date: 6/1/2028

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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

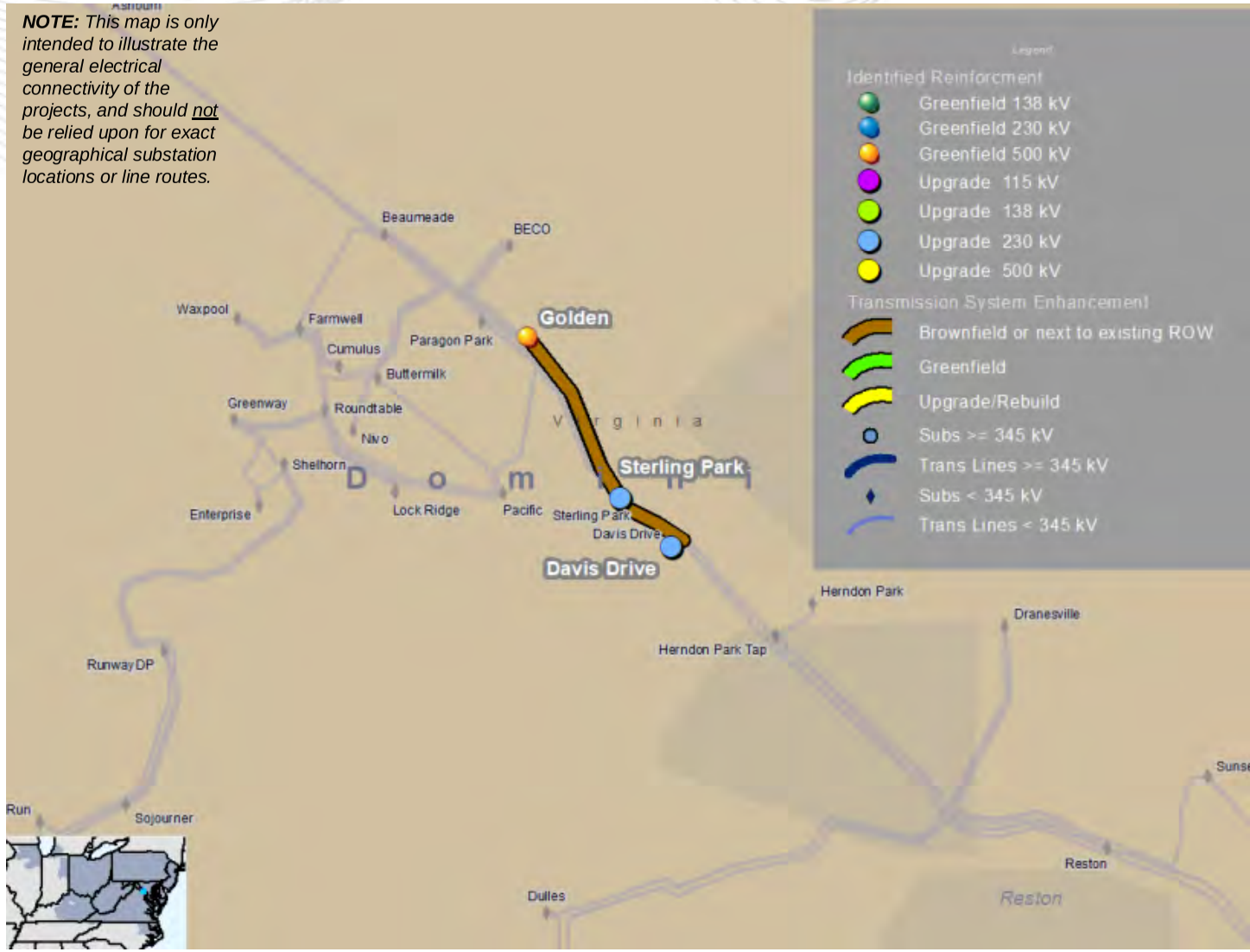
Existing Facility Ratings:

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



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

PJM Staff White Paper

PJM Interconnection
December 2023

For Public Use

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Contents

I. Executive Summary

On October 3, 2023, the PJM Board of Managers approved changes to the Regional Transmission Expansion Plan (RTEP), totaling a net increase of $0.69 million for baseline projects to resolve baseline reliability criteria violations and address changes to existing projects.

Since then, PJM has identified new baseline reliability criteria violations, and the transmission system enhancements needed to solve them, at an estimated cost of $5,142.98 million. Scope changes to existing projects will result in a net decrease of $32.17 million, and cancellation of existing projects will result in a net decrease of $24.96 million. This yields an overall RTEP net increase of $5,085.85 million, for which PJM recommended Board approval. PJM is also providing the annual update of RTEP generation and merchant transmission network upgrades in this white paper. PJM has identified $179.58 million in new network upgrades. Additionally, $41.45 million in previously identified network upgrades will be cancelled as a result of updates to analysis performed for project withdrawals in the New Services Queue. This yields an overall RTEP net increase of $138.13 million, for which PJM recommended Board approval. Altogether, the changes result in an overall RTEP net increase of approximately $5,223.98 million. With these changes, RTEP projects will total approximately $48,258.8 million since the first Board approvals in 2000.

PJM sought Reliability and Security Committee consideration and full Board approval of the RTEP baseline projects summarized in this white paper. On December 11, 2023, the Board approved the addition of RTEP baseline projects as well as other changes to the RTEP as summarized in this paper.

II. Baseline Project Recommendations

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

III. Baseline Reliability Projects Summary

A complete listing of all recommended projects and their associated cost allocations is included in Attachment A (allocations to a single zone) and Attachment B (allocations to multiple zones).

- Baseline project b3800 – 2022 RTEP Window 3 Recommended Solution: $5,142.98 million

A detailed description of the above project that PJM recommended to the Board is detailed in the 2022 RTEP Window 3 Reliability Analysis Report and the 2022 RTEP Window 3 Constructability & Financial Analysis Report.

IV. Changes to Previously Approved Projects

Scope/Cost Changes

The following scope/cost modifications were recommended:

NJ Offshore Wind State Agreement Approach (SAA) Project: b3737.47

The recommended solution for 2022 Window 3 includes the scope change to expand the North Delta 500 kV substation to a four bay breaker and half configuration, which will allow for the termination of six 500 kV lines and one 500/230 kV transformer. The original estimate cost for the Transource-proposed North Delta substation was $76.27 million, and the new expanded scope will be approximately $104.1 million.

The net cost increase for the New Jersey SAA project is $27.83 million.

Brandon Shores Deactivation Project: b3780

The recommended solution for 2022 Window 3 includes the scope change to the immediate need project stemming from the Brandon Shores deactivation request. The revised scope modifies the planned North Delta 500/230 kV substation, which will cut into Peach Bottom-Delta/Calpine 500 kV line. This scope of work is related to the above b3737.47 project scope from the NJ OSW SAA project, as the b3780 deactivation project initially proposed the construction of a 500/230 kV West Cooper substation (b3780.3) in lieu of the North Delta substation. The recommended solution cancels the b3780.3 West Cooper substation scope, resulting in a net decrease of $60 million.

- All of the scope/cost changes described in this section yield a net RTEP decrease of $32.17 million.

Cancellations

The following scope/cost modifications were recommended:

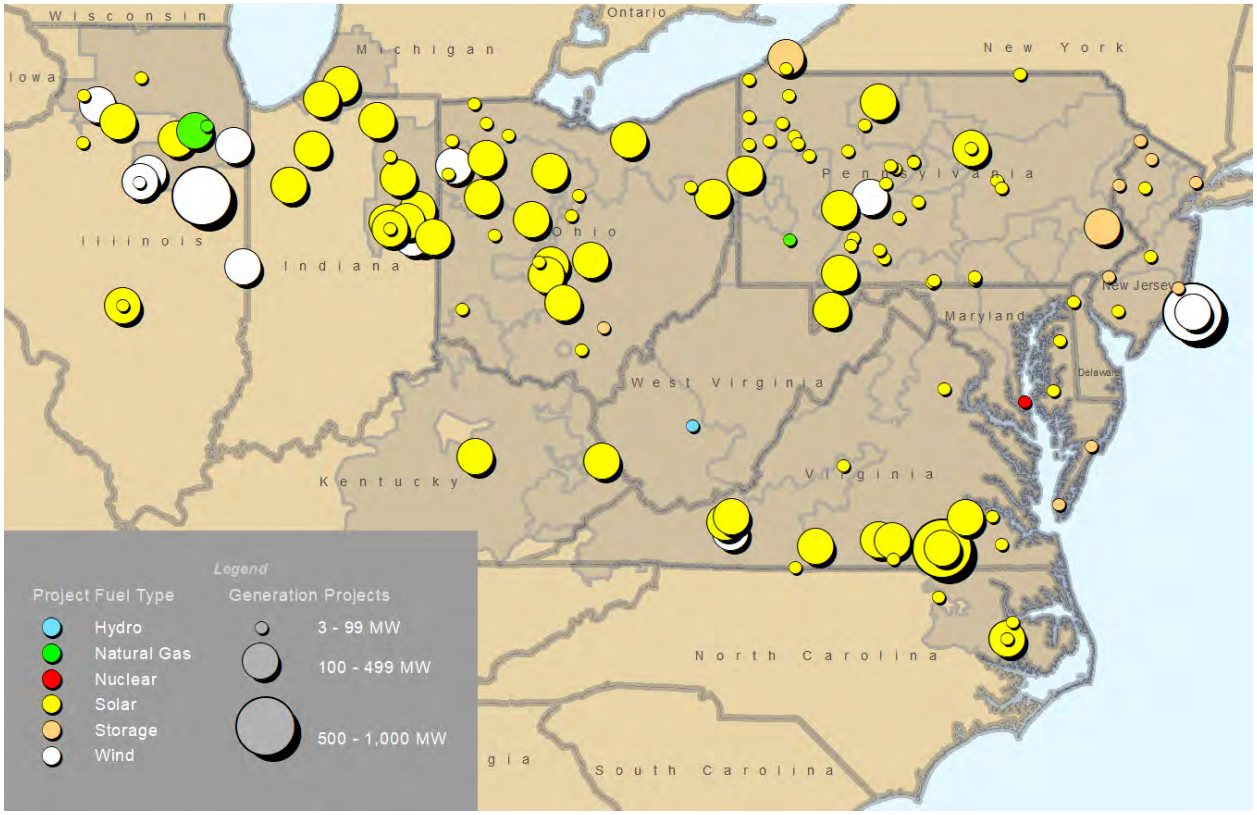
- Project b3768 (rebuild/reconductor the Germantown-Lincoln 115 kV line) is no longer required with the recommended 2022 Window 3 solution and yields a net decrease of $17.36 million.
- Project b3247 (Dominion portion of Doubs-Goose Creek 500 kV rebuild for End of Life “EOL”) is no longer required as the recommended 2022 Window 3 solution replaces this scope of work, and yields a net decrease of $7.6 million.
    - Note: The related supplemental project s2386, which includes the FirstEnergy (APS) portion of the Doubs-Goose Creek 500 kV EOL rebuild, is being converted to a baseline and is included in the recommended 2022 Window 3 solution.
- All of the cancellations described in this section yield a net RTEP decrease of $24.96 million.

V. Interconnection Queue Projects

Throughout 2023, PJM has continued to study new service customer requests that are submitted into our interconnection queue. These studies evaluate the impact of the new service request and include an evaluation of new generation interconnections, increases in generation at existing stations, long-term firm transmission service requests and merchant transmission interconnection requests.

These studies were last reviewed with the Board Reliability Committee in December of 2022. Since that time, PJM has completed 151 System Impact Studies, and 166 service requests have withdrawn. New projects with signed ISAs, project scope changes and project cancellations have resulted in a net increase of $138.13 million for network upgrades. The map below shows the locations of the new units associated with the completed interconnection System Impact Studies along with the fuel type and relative size. A listing of the projects with recently completed impact studies is provided in Attachment C to this white paper. A listing of the network upgrades associated with these projects is shown in Attachment D to this report. The cost for the network upgrades associated with these interconnection projects is the responsibility of the developer.

Map 1. Completed Interconnection System Impact Studies



VI. Review by the Transmission Expansion Advisory Committee (TEAC)

Project needs and recommended solutions as discussed in this report were reviewed with stakeholders during 2023, most recently at the October 31, 2023, and December 5, 2023, TEAC meetings. Written comments were requested to be submitted to PJM to communicate any concerns with project recommendations. All correspondence addressed to the PJM Board are available at the Board communications page[1].

VII. Cost Allocation

Cost allocations for recommended projects are shown in Attachment A (for allocation to a single zone) and Attachment B (for allocation to multiple zones).

Cost allocations are calculated in accordance with Schedule 12 of the Open Access Transmission Tariff (Tariff). Baseline reliability project allocations are calculated using a distribution factor methodology that allocates cost to the load zones that contribute to the loading on the new facility. The allocations will be filed at FERC no later than 30 days following approval by the Board.

VIII. Board Approval

The PJM Reliability and Security Committee is requested to endorse the additions and changes to the RTEP proposed in this white paper and to recommend to the full Board for approval the new projects and changes to the existing RTEP projects as detailed in this white paper. On December 11, 2023, the Board approved the addition of RTEP baseline projects as well as other changes to the RTEP as summarized in this paper.

[1] https://www.pjm.com/about-pjm/who-we-are/pjm-board/public-disclosures

Attachment A – Reliability Project Single-Zone Allocations

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.9	Rebuild the existing Hunterstown-Carroll 115/138 kV Corridor as Double Circuit using 230 kV construction standards. New circuit will be operated at 230 kV. Existing circuit to remain at 115/138 kV.	$0.00	APS	N/A, upgrade ID is for tracking only, no cost	6/1/2027
b3800.10	Rebuild the Germantown-Lincoln 115 kV line for 230 kV double circuit construction.	$30.10	ME	ME (100.00%)	6/1/2027
b3800.11	Rebuild the Hunterstown-Lincoln 115 kV line for 230 kV double circuit construction.	$11.48	ME	ME (100.00%)	6/1/2027
b3800.12	Rebuild the Germantown-Carroll 138 kV line for 230 kV double circuit construction (MAIT).	$12.16	ME	ME (100.00%)	6/1/2027
b3800.19	Reconductor Lincoln-Orrtanna 115 kV line.	$10.98	ME	ME (100.00%)	6/1/2027
b3800.20	Fayetteville-Grand Point 138 kV – Replace line trap at Grand Point 138 kV.	$0.40	APS	APS (100.00%)	6/1/2027
b3800.21	Reid-Ringgold 138 kV – Replace line trap, substation conductor, breaker, relaying and CTs at Ringgold.	$3.80	APS	APS (100.00%)	6/1/2027
b3800.22	Install DTT relaying at Straban substation.	$0.67	APS	APS (100.00%)	6/1/2027
b3800.23	Revise Relay Settings at Lincoln substation.	$0.31	APS	APS (100.00%)	6/1/2027
b3800.24	Revise Relay Settings at Germantown substation.	$0.47	APS	APS (100.00%)	6/1/2027
b3800.25	Taneytown substation terminal upgrade.	$0.53	APS	APS (100.00%)	6/1/2027
b3800.26	Build High Ridge 500 kV substation - Three bay breaker and half configuration.	$0.00	BGE	N/A, upgrade ID is for tracking only, no cost	6/1/2027
b3800.109	Termination work for two 500/138 kV transformer at Woodside 500 kV substation	$1.35	NEET	APS (100.00%)	6/1/2027
b3800.110	Two 500/138 kV transformers at Woodside 500 kV substation.	$33.68	NEET	APS (100.00%)	6/1/2027
b3800.111	Construct the Woodside-Stonewall 138 kV No. 1 line.	$6.28	APS	APS (100.00%)	6/1/2027
b3800.112	Construct the Woodside-Stonewall 138 kV No. 2 line.	$6.31	APS	APS (100.00%)	6/1/2027
b3800.114	Stonewall 138 kV substation two 138kV breaker expansion.	$8.30	APS	APS (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.201	Install two 500-230 kV transformer banks at Golden substation.	$70.00	Dominion	Dominion (100.00%)	6/1/2027
b3800.203	Install a 2nd 500-230 kV 1440MVA transformer at Mars substation.	$42.19	Dominion	Dominion (100.00%)	6/1/2027
b3800.204	Reconductor 0.5 mile section of 230 kV line No. 2150 Golden-Paragon Park Circuit 1 to achieve a summer rating of 1573 MVA.	$1.44	Dominion	Dominion (100.00%)	6/1/2027
b3800.205	Reconductor 0.5 mile section of 230 kV line No. 2081 Golden-Paragon Park Circuit 2 to achieve a summer rating of 1573 MVA.	$1.44	Dominion	Dominion (100.00%)	6/1/2027
b3800.206	Upgrade Paragon Park substation line conductors to 4000A continuous current rating for 230 kV lines No. 2081 & line No. 2150.	$0.09	Dominion	Dominion (100.00%)	6/1/2027
b3800.207	Reconductor 230 kV line No. 2207 Paragon Park-Beco to achieve a summer rating of 1573 MVA.	$3.36	Dominion	Dominion (100.00%)	6/1/2027
b3800.208	Upgrade Paragon Park substation conductor and line leads to 4000A continuous current rating for 230 kV line No. 2207.	$0.10	Dominion	Dominion (100.00%)	6/1/2027
b3800.209	Upgrade BECO substation equipment to 4000A continuous current rating for 230 kV line No. 2207.	$1.86	Dominion	Dominion (100.00%)	6/1/2027
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
b3800.215	Cut 230 kV line No. 2150 Sterling Park-Paragon Park Circuit 1 into Golden substation and install 230 kV equipment at Golden. Upgrade relay settings at Golden substation for upgrading 230 kV line No. 2150 to 4000A continuous current rating.	$57.62	Dominion	Dominion (100.00%)	6/1/2027
b3800.216	Cut 230 kV line No. 2081 Sterling Park-Paragon Park Circuit 2 into Golden substation and install 230 kV equipment at Golden. Upgrade relay settings at Golden substation for upgrading 230 kV line No. 2081 to 4000A continuous current rating.	$57.62	Dominion	Dominion (100.00%)	6/1/2027
b3800.218	Build a new 230 kV line from Sycolin Creek-Golden on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Sycolin Creek.	$69.84	Dominion	Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.219	Replace 7 overdutied 230 kV breakers at Beaumeade substation with 80 kA breakers.	$3.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.220	Replace 4 overdutied 230 kV breakers at BECO substation with 80 kA breakers.	$1.81	Dominion	Dominion (100.00%)	6/1/2027
b3800.221	Replace 4 overdutied 230 kV breakers at Belmont substation with 80 kA breakers.	$1.90	Dominion	Dominion (100.00%)	6/1/2027
b3800.222	Replace 1 overdutied 230 kV breaker at Discovery substation with 80 kA breaker.	$0.49	Dominion	Dominion (100.00%)	6/1/2027
b3800.223	Replace 1 overdutied 230 kV breaker at Pleasant View substation with 80 kA breaker.	$0.51	Dominion	Dominion (100.00%)	6/1/2027
b3800.224	Replace 2 overdutied 230 kV breakers at Shellhorn substation with 80 kA breakers.	$0.93	Dominion	Dominion (100.00%)	6/1/2027
b3800.226	Change 230 kV lines No. 2081 and 2150 at Paragon Park substation destination to Golden substation and upgrade line protection relays	$0.30	Dominion	Dominion (100.00%)	6/1/2027
b3800.227	Change 230 kV lines No. 2081 and 2150 at Sterling Park substation destination to Golden substation and upgrade line protection relays.	$0.30	Dominion	Dominion (100.00%)	6/1/2027
b3800.228	Reconductor 1.47 miles of 230 kV circuits 2081 and 2150 from Sterling Park to Golden substation. Upgrade terminal equipment at Sterling Park to 4000A continuous current.	$7.97	Dominion	Dominion (100.00%)	6/1/2027
b3800.229	Reconductor 0.67 miles of 230 kV circuits 2194 and 9231 from Davis Drive to Sterling Park substation. Terminal equipment at remote end substations will be installed or upgraded to 4000A continuous current rating to support new conductor ratings.	$5.53	Dominion	Dominion (100.00%)	6/1/2027
b3800.230	Reset relays at Breezy Knoll for the revised current rating of 230 kV line No. 2098 Plesant View-Hamilton.	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.231	Reset relays at Dry Mill for the revised current rating of 230 kV line No. 2098 Plesant View-Hamilton.	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.232	Reset relays at Hamilton for the revised current rating of 230 kV line No. 2098 Plesant View-Hamilton.	$0.01	Dominion	Dominion (100.00%)	6/1/2027
b3800.233	Upgrade equipment to 4000A continuous current rating at Pleasant View substation in support of 230 .kV line No. 2098 wreck and rebuild. Replace circuit breakers 274T2098 & 2098T2180 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 4000A rating.	$1.81	Dominion	Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.234	Wreck and rebuild approximately one mile of 230 kV line No. 2098 between Pleasant View and structure 2098/9, where line No. 2098 turn towards Hamilton substation.	$3.44	Dominion	Dominion (100.00%)	6/1/2027
b3800.235	Replace 5 overdutied 230 kV breakers at Loudoun substation with 80 kA breakers.	$2.32	Dominion	Dominion (100.00%)	6/1/2027
b3800.236	Replace 2 overdutied 230 kV breakers at Ox substation with 63kA breakers.	$2.51	Dominion	Dominion (100.00%)	6/1/2027
b3800.237	Replace 2 overdutied 230 kV breakers at Pleasant View substation with 63kA breakers.	$1.29	Dominion	Dominion (100.00%)	6/1/2027
b3800.300	Rebuild 230 kV line No. 2135 Hollymeade Junction-Cash's Corner using double-circuit capable 500/230 kV poles. New conductor has a summer rating of 1573 MVA. (The 500 kV circuit will not be wired as part of this project).	$32.45	Dominion	Dominion (100.00%)	6/1/2027
b3800.301	Rebuild 230 kV line No. 2135 Cash's Corner-Gordonsville using double-circuit capable 500/230 kV poles. New conductor has a summer rating of 1573 MVA. (The 500 kV circuit will not be wired as part of this project).	$21.51	Dominion	Dominion (100.00%)	6/1/2027
b3800.302	Upgrade Cash's Corner switches 213576 and 213579 and line leads to 4000A continuous current rating of 230 kV line No. 2135.	$0.51	Dominion	Dominion (100.00%)	6/1/2027
b3800.303	Upgrade Gordonsville substation line leads to 4000A continuous current rating of 230 kV line No. 2135.	$0.08	Dominion	Dominion (100.00%)	6/1/2027
b3800.304	Upgrade Hollymeade substation switch 213549 and line leads to 4000A continuous current rating of 230 kV line No. 2135.	$0.30	Dominion	Dominion (100.00%)	6/1/2027
b3800.305	Install one (1) 300 MVAR Static synchronous Compensator (STATCOM) & associated equipment at Beaumeade substation.	$43.57	Dominion	Dominion (100.00%)	6/1/2027
b3800.306	Install one (1) 500 kV, 150 MVAr Shunt Capacitor Bank & associated equipment at Morrisville substation. This addition will require a control house expansion to accommodate for two new panels.	$3.63	Dominion	Dominion (100.00%)	6/1/2027
b3800.308	Install one (1) 230 kV, 150MVAr Shunt Capacitor Bank & associated equipment at Mars substation.	$5.26	Dominion	Dominion (100.00%)	6/1/2027
b3800.309	Install one (1) 230 kV, 150MVAr Shunt Capacitor Bank & associated equipment at Wishing Star substation.	$6.09	Dominion	Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.316	Rebuild approximately 6.17 miles of 230 kV line No. 2030 Gainesville-Mint Springs to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$13.98	Dominion	Dominion (100.00%)	6/1/2027
b3800.317	Rebuild approximately 1.58 miles of 230 kV line No. 2030 Mint Springs-Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$3.59	Dominion	Dominion (100.00%)	6/1/2027
b3800.318	Rebuild approximately 4.2 miles of 230 kV line No. 2045 Loudoun-North Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$14.52	Dominion	Dominion (100.00%)	6/1/2027
b3800.319	Rebuild approximately 0.88 miles of 230 kV line No. 2045 North Star-Brambleton to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$3.04	Dominion	Dominion (100.00%)	6/1/2027
b3800.320	Rebuild approximately 1.22 miles of 230 kV line No. 2227 Brambleton-Racefield to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$4.36	Dominion	Dominion (100.00%)	6/1/2027
b3800.321	Rebuild approximately 3.69 miles of 230 kV line No. 2094 Racefield-Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$13.20	Dominion	Dominion (100.00%)	6/1/2027
b3800.322	Rebuild approximately 9.16 miles of 230 kV line No. 2101 Bristers-Nokesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$12.99	Dominion	Dominion (100.00%)	6/1/2027
b3800.323	Rebuild approximately 2.89 miles of 230 kV line No. 2101 Nokesville-Vint Hill TP to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$4.10	Dominion	Dominion (100.00%)	6/1/2027
b3800.324	Rebuild approximately 0.33 miles of 230 kV line No. 2101 Vint Hill TP-Vint Hill to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$0.47	Dominion	Dominion (100.00%)	6/1/2027
b3800.325	Rebuild approximately 3.32 miles of 230 kV line No. 2114 Rollins Ford-Vint Hill to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$4.35	Dominion	Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.326	Rebuild approximately 10.09 miles of 230 kV line No. 2114 Vint Hill-Elk Run to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$13.21	Dominion	Dominion (100.00%)	6/1/2027
b3800.327	Rebuild approximately 4.43 miles of 230 kV line No. 2140 Heathcote-Catharpin to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$10.64	Dominion	Dominion (100.00%)	6/1/2027
b3800.328	Rebuild approximately 2.88 miles of 230 kV line No. 2140 Catharpin-Loudoun to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$6.92	Dominion	Dominion (100.00%)	6/1/2027
b3800.329	Rebuild approximately 0.25 miles of 230 kV line No. 2151 Railroad DP-Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$4.39	Dominion	Dominion (100.00%)	6/1/2027
b3800.330	Rebuild approximately 4.14 miles of 230 kV line No. 2163 Vint Hill-Liberty to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$17.56	Dominion	Dominion (100.00%)	6/1/2027
b3800.331	Rebuild approximately 0.48 miles of line No. 2176 Heathcote-Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$8.78	Dominion	Dominion (100.00%)	6/1/2027
b3800.332	Rebuild approximately 1.11 miles of line No. 2222 Rollins Ford-Gainesville to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$13.17	Dominion	Dominion (100.00%)	6/1/2027
b3800.333	Rebuild approximately 1.65 miles of line No. 183 Bristers-Ox to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 1573 MVA.	$8.78	Dominion	Dominion (100.00%)	6/1/2027
b3800.334	Replace 4 overdutied 230 kV breakers at Loudoun substation with 80 kA breakers.	$1.72	Dominion	Dominion (100.00%)	6/1/2027
b3800.335	Replace 1 overdutied 500 kV breaker at Ox substation with a 63kA breaker.	$1.29	Dominion	Dominion (100.00%)	6/1/2027
b3800.337	Upgrade and install equipment at Brambleton substation to support the new conductor termination. All terminal equipment for 230 kV lines No. 2045 & No. 2094 to be rated for 4000A continuous current rating.	$4.65	Dominion	Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.338	Revise relay settings at Dawkins Branch.	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.339	Upgrade and install equipment at Gainesville substation to support the new conductor termination. All terminal equipment for 230 kV line No. 2030 to be rated for 4000A continuous current rating.	$3.71	Dominion	Dominion (100.00%)	6/1/2027
b3800.340	Revise relay settings at Heathcote.	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.341	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2094 Loudoun-Racefield to be rated for 4000A continuous current rating.	$2.50	Dominion	Dominion (100.00%)	6/1/2027
b3800.343	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2030 Loudoun-Mint Springs to be rated for 4000A continuous current rating.	$1.00	Dominion	Dominion (100.00%)	6/1/2027
b3800.342	Upgrade and install equipment at Loudoun substation for 230 kV line No. 2045 Loudoun-North Star to be rated for 4000A continuous current rating.	$2.50	Dominion	Dominion (100.00%)	6/1/2027
b3800.345	Revise relay settings at Mint Springs.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.347	Revise relay settings at North Star.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.348	Revise relay settings at Racefield.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.349	Revise relay settings at Railroad.	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.351	Update relay settings at Vint Hill for 230 kV line No. 2101 Vint Hill-Bristers.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.352	Update relay settings at Vint Hill for 230 kV line No. 2163 Vint Hill-Liberty.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.355	Revise relay settings at Youngs Branch.	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.358	Replace single unit Locks 230/115 kV 168MVA transformer TX No. 7 with new single unit transformer with a rating of 224 MVA. Lead lines at the 115 kV level will be upgraded to 2000A.	$7.14	Dominion	Dominion (100.00%)	6/1/2027
b3800.359	Wreck and rebuild line No. 2090 Ladysmith CT-Summit D.P. segment as a double circuit 230 kV line to achieve a summer rating of 1573 MVA. Only one circuit will be wired at this stage. Upgrade circuit breaker leads, switches and line leads at Ladysmith CT to 4000A	$36.50	Dominion	Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.360	Rebuild 230 kV line No. 2054 Charlottesville-Proffit DP using double-circuit capable 500/230 kV poles. (The 500 kV circuit will not be wired as part of this project).	$70.14	Dominion	Dominion (100.00%)	6/1/2027
b3800.361	Rebuild 230 kV line No. 233 segment from Barracks Road-Crozet to achieve a summer rating of 1573 MVA.	$54.54	Dominion	Dominion (100.00%)	6/1/2027
b3800.362	Rebuild 230 kV line No. 291 segment from Charlottesville-Barracks Road.	$22.50	Dominion	Dominion (100.00%)	6/1/2027
b3800.363	Rebuild 230 kV line No. 291 segment from Barracks Road-Crozet.	$20.81	Dominion	Dominion (100.00%)	6/1/2027
b3800.364	Rebuild 230 kV line No. 291 segment Crozet-Dooms.	$11.23	Dominion	Dominion (100.00%)	6/1/2027
b3800.365	Hollymeade substation Relay Revision for 230 kV line No. 2054 Charlottsville-Hollymeade.	$0.01	Dominion	Dominion (100.00%)	6/1/2027
b3800.366	Upgrade the terminal equipment at Charlottesville to 4000A for 230 kV line No. 2054 (Charlottsville-Hollymeade).	$0.97	Dominion	Dominion (100.00%)	6/1/2027
b3800.367	Proffit DP substation Relay Revision for 230 kV line No. 2054 Charlottsville-Hollymeade	$0.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.368	Barracks Rd substation Relay Reset to accommodate the rebuilt line 230 kV lines No. 233 and No. 291.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.369	Crozet substation Relay Reset to accommodate the rebuilt line 230 kV lines No. 233 and No. 291.	$0.03	Dominion	Dominion (100.00%)	6/1/2027
b3800.370	Charlottesville substation Terminal Equipment Upgrade for 230 kV lines No. 233 & No. 291 Rebuild.	$1.50	Dominion	Dominion (100.00%)	6/1/2027
b3800.371	Upgrade Hydraulic Rd substation Equipment for 230 kV line No. 233 & No. 291 Rebuild.	$0.65	Dominion	Dominion (100.00%)	6/1/2027
b3800.372	Dooms substation Terminal Equipment Upgrade for 230 kV linex No. 233 & No. 291 Rebuild.	$1.06	Dominion	Dominion (100.00%)	6/1/2027
b3800.373	Wreck and rebuild approximately 7.14 miles of 230 kV line No. 256 from St. Johns to structure 256/108 to achieve a summer rating of 1573 MVA. line switch 25666 at St. Johns to be upgraded to 4000A.	$21.75	Dominion	Dominion (100.00%)	6/1/2028
b3800.374	Reconductor approximately 5.30 miles of 230 kV line No. 256 from Ladysmith CT to structure 256/107 to achieve a summer rating of 1573 MVA. Terminal equipment at remote end substations will be upgraded to 4000A.	$16.14	Dominion	Dominion (100.00%)	6/1/2028

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required IS Date
b3800.401	Replace Ashburn 230 kV breaker SC432 with a breaker rated 63 kA.	$0.79	Dominion	Dominion (100.00%)	6/1/2027
b3800.402	Replace Beaumeade 230 kV breaker 227T2152 with a breaker rated 80 kA.	$2.31	Dominion	Dominion (100.00%)	6/1/2027
b3800.403	Replace BECO 230 kV breakers 215012 and H12T2150 with breakers rated 63kA.	$4.21	Dominion	Dominion (100.00%)	6/1/2027
b3800.404	Replace Belmont 230 kV breaker 227T2180 with a breaker rated 80 kA.	$2.24	Dominion	Dominion (100.00%)	6/1/2027
b3800.405	Replace Brambleton 230 kV breakers 20102, 20602, 204502, 209402, 201T2045, 206T2094 with breakers rated 80 kA.	$9.38	Dominion	Dominion (100.00%)	6/1/2027
b3800.406	Replace Gainesville 230 kV breaker 216192 with a breaker rated 80 kA.	$3.11	Dominion	Dominion (100.00%)	6/1/2027
b3800.407	Replace Loudoun 230 kV breakers 204552, 217352 with a breakers rated 80 kA.	$5.57	Dominion	Dominion (100.00%)	6/1/2027
b3800.408	Replace Ox 230 kV breakers 22042, 24342, 24842, 220T2063, 243T2097, 248T2013, H342 with a breakers rated 80 kA.	$9.02	Dominion	Dominion (100.00%)	6/1/2027
b3800.409	Replace Paragon Park 230 kV breakers 208132, 215032, 2081T2206, 2150T2207 with a breakers rated 80 kA.	$4.96	Dominion	Dominion (100.00%)	6/1/2027
b3800.410	Replace Reston 230 kV breaker 264T2015 with a breaker rated 63 kA.	$0.79	Dominion	Dominion (100.00%)	6/1/2027
b3800.411	Replace Stonewater 230 kV breakers 20662-1, 20662-2, 217862-1, 217862-2 with a breakers rated 80 kA.	$4.95	Dominion	Dominion (100.00%)	6/1/2027
b3800.412	Replace Waxpool 230 kV breakers 214922-5, 214922-6, 216622-5, 216622-6 with a breakers rated 63 kA.	$2.93	Dominion	Dominion (100.00%)	6/1/2027
b3800.413	Replace Double Toll Gate 138 kV breaker MDT 138 OCB with a breaker rated 80 kA.	$3.00	APS	APS (100.00%)	6/1/2027
b3800.414	Replace Doubs 500 kV breaker DL-55 522LIN with a breaker rated 80 kA.	$10.01	APS	APS (100.00%)	6/1/2027

Attachment B – Reliability Project Multi-Zone Allocations

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.1	Build New Otter Creek 500 kV - (switching station -Two bay three breaker configuration).	$32.76	PPL	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 (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) / PEPCO (10.59%) / PPL (0.22%)	6/1/2027
b3800.2	Break the existing TMI-Peach Bottom 500 kV line and reterminate into adjacent Otter Creek 500 kV Switchyard.	$7.03	ME	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 (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) / PEPCO (10.59%) / PPL (0.22%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.3	New Otter Creek to Doubs 500 kV line (Otter Creek 500 kV - MD Border). Rebuild and expand existing ~12 miles of Otter Creek-Conastone 230 kV line to become a double-circuit 500 and 230 kV lines.	$83.30	PPL	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 (13.16%) / BGE (0.71%) / Dominion (74.28%) / DPL (0.36%) / PECO (0.68%) / PEPCO (10.59%) / PPL (0.22%)	6/1/2027
b3800.4	New Otter Creek to Doubs 500 kV line (MD Border-PSEG Demarcation Point). Rebuild and expand existing ~1.6 miles of Otter Creek-Conastone 230 kV line to become a double-circuit 500 and 230 kV lines.	$11.11	BGE	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 (13.16%) / BGE (0.79%) / Dominion (74.28%) / DPL (0.41%) / PECO (0.77%) / PEPCO (10.59%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.5	Peach Bottom-TMI 500 kV - Replace terminal equipment at Peach Bottom.	$0.00	PECO	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: AEC (6.40%) / BGE (20.32%) / DPL (9.76%) / JCPL (17.57%) / Neptune (1.73%) / PECO (6.33%) / PEPCO (7.48%) / PSEG (29.15%) / RE (1.26%)	6/1/2027
b3800.6	Peach Bottom-TMI 500 kV - Replace terminal equipment at TMI.	$0.00	ME	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 (7.41%) / BGE (15.50%) / Dominion (45.08%) / DPL (2.46%) / JCPL (0.80%) / ME (0.34%) / Neptune (0.09%) / PECO (10.72%) / PEPCO (15.72%) / PPL (0.43%) / PSEG (1.39%) / RE (0.06%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.7	Construct 80 miles of 500 kV overhead AC line between the Conastone vicinity and the Doubs substations (BGE zone portion).	$195.00	PSEG	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 (13.16%) / BGE (0.79%) / Dominion (74.28%) / DPL (0.41%) / PECO (0.77%) / PEPCO (10.59%)	6/1/2027
b3800.8	Reconfigure Doubs 500 kV station and upgrade terminal equipment to terminate new line.	$57.50	APS	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 (13.16%) / BGE (0.79%) / Dominion (74.28%) / DPL (0.41%) / PECO (0.77%) / PEPCO (10.59%)	6/1/2027
b3800.13	Rebuild the Germantown-Carroll 138 kV line to 230 kV double circuit construction (APS-PE Section).	$47.31	APS	APS (82.49%) / ME (17.51%)	6/1/2027
b3800.14	Construct New 230 kV Hunterstown-Carroll line (MAIT section).	$17.37	ME	APS (99.86%) / ME (0.14%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.15	Construct New 230 kV Hunterstown-Carroll line (APS-PE Section).	$6.71	APS	APS (99.86%) / ME (0.14%)	6/1/2027
b3800.16	Expand Carroll 230 kV substation to ring bus.	$7.62	APS	APS (99.86%) / ME (0.14%)	6/1/2027
b3800.17	Network upgrade at Caroll substation.	$0.43	APS	APS (99.86%) / ME (0.14%)	6/1/2027
b3800.18	Add a new 230 kV Breaker at the Hunterstown 230 kV substation for the new Hunterstown-Carroll 230 kV termination.	$2.31	ME	APS (99.86%) / ME (0.14%)	6/1/2027
b3800.27	High Ridge 500 kV substation (cut into Brighton-Waugh Chapel 500 kV line) - Waugh Chapel side.	$33.67	BGE	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: BGE (70.66%) / PEPCO (29.34%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.28	High Ridge 500 kV substation (cut into Brighton-Waugh Chapel 500 kV line) -Brighton side.	$33.67	BGE	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 (0.68%) / BGE (97.41%) / Dominion (1.91%)	6/1/2027
b3800.29	High Ridge termination for the North Delta-High Ridge 500 kV line.	$33.67	BGE	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: BGE (2.58%) / Dominion (59.28%) / DPL (0.02%) / PEPCO (28.48%) / PSEG (9.24%) / RE (0.40%)	6/1/2027
b3800.30	High Ridge - Install two 500/230 kV transformers.	$22.11	BGE	BGE (62.75%) / PEPCO (37.25%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.31	Build new North Delta-High Ridge 500 kV line. (~6 miles).	$13.36	PECO	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: Dominion (60.85%) / DPL (0.01%) / PECO (0.01%) / PEPCO (29.24%) / PSEG (9.48%) / RE (0.41%)	6/1/2027
b3800.32	Build new North Delta-High Ridge 500 kV line. (~59 miles).	$407.11	BGE	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: BGE (2.58%) / Dominion (59.28%) / DPL (0.02%) / PEPCO (28.48%) / PSEG (9.24%) / RE (0.40%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.33	Replace terminal equipment limitations at Brighton 500 kV - on the existing Brighton-Waugh Chapel 500 kV (5053) or new Brighton-High Ridge 500 kV.	$4.13	PEPCO	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 (0.68%) / BGE (86.77%) / Dominion (1.91%) / PEPCO (10.64%)	6/1/2027
b3800.34	Rebuild 5012 (existing Peach Bottom-Conastone) (new Graceton-Conastone) 500 kV line on single circuit structures within existing ROW and cut into North Delta 500 kV and Gracetone 500 kV stations.	$70.00	BGE	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: BGE (12.36%) / Dominion (24.57%) / DPL (25.17%) / JCPL (7.90%) / Neptune (0.88%) / PENELEC (1.60%) / PEPCO (12.32%) / PSEG (14.57%) / RE (0.63%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.35	Rebuild 5012 (existing Peach Bottom-Conastone) (new North Delta-Graceton PECO) 500 kV line on single circuit structures within existing ROW and cut into North Delta 500 kV and Gracetone 500 kV stations.	$29.86	PECO	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: BGE (49.42%) / Dominion (31.22%) / DPL (0.01%) / JCPL (0.01%) / PECO (3.75%) / PEPCO (15.57%) / PSEG (0.02%)	6/1/2027
b3800.36	Rebuild 5012 (existing Peach Bottom-Conastone) (new North Delta-Graceton BGE) 500 kV line on single circuit structures within existing ROW and cut into North Delta 500 kV and Gracetone 500 kV stations.	$10.44	BGE	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: BGE (51.35%) / Dominion (32.44%) / DPL (0.01%) / JCPL (0.01%) / PEPCO (16.17%) / PSEG (0.02%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.37	Replace terminal equipment limitations at Conastone 500 kV - on the (existing Peach Bottom-Conastone) or (new Graceton-Conastone) 500 kV line.	$4.93	BGE	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: BGE (12.36%) / Dominion (24.57%) / DPL (25.17%) / JCPL (7.90%) / Neptune (0.88%) / PENELEC (1.60%) / PEPCO (12.32%) / PSEG (14.57%) / RE (0.63%)	6/1/2027
b3800.38	Chalk Point-Cheltanham 500 kV (5073) - Replace relay at Chalk Point 500 kV.	$0.34	PEPCO	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: BGE (39.75%) / Dominion (59.03%) / PEPCO (1.22%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.39	Red Lion-Hope Creek 500 kV - Replace terminal equipment at Red Lion.	$4.00	DPL	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: AEC (0.02%) / BGE (22.89%) / Dominion (48.61%) / DPL (9.46%) / JCPL (0.03%) / PEPCO (18.96%) / PSEG (0.03%)	6/1/2027
b3800.40	Conastone-Brighton 500 kV (5011 circuit) - Replace terminal equipment limitations at Brighton 500 kV.	$4.13	PEPCO	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: BGE (9.65%) / Dominion (63.04%) / DPL (0.02%) / PEPCO (27.29%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.41	Conastone-Brighton 500 kV (5011 circuit) - Replace terminal equipment limitations at Conastone 500 kV.	$7.16	BGE	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: BGE (9.65%) / Dominion (63.04%) / DPL (0.02%) / PEPCO (27.29%)	6/1/2027
b3800.42	Peach Bottom North bus upgrade - Replace 11 – Instances of strain bus conductor used for breaker drops or CT drops, 7 – 500 kV disconnect switches, 7 – Free Standing CTs, 1 – 500 kV breaker, 2 – Breaker relays or meters.	$2.70	PECO	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: BGE (62.82%) / DPL (7.25%) / JCPL (0.09%) / Neptune (0.01%) / PECO (0.01%) / PEPCO (29.63%) / PSEG (0.18%) / RE (0.01%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.43	Construct 80 miles of 500 kV overhead AC line between the Conastone vicinity and the Doubs substations (APS zone portion).	$195.00	PSEG	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 (13.16%) / BGE (0.79%) / Dominion (74.28%) / DPL (0.41%) / PECO (0.77%) / PEPCO (10.59%)	6/1/2027
b3800.44	North Delta termination for the North Delta-High Ridge 500 line (PECO work).	$3.40	PECO	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: Dominion (60.85%) / DPL (0.01%) / PECO (0.01%) / PEPCO (29.24%) / PSEG (9.48%) / RE (0.41%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.45	North Delta 500 kV termination for the Rock Springs 500 kV line (5034/5014 line) (PECO work).	$10.20	PECO	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: AEC (17.65%) / BGE (4.43%) / Dominion (9.87%) / DPL (22.25%) / JCPL (3.16%) / Neptune (0.36%) / PECO (2.98%) / PENELEC (0.44%) / PEPCO (3.80%) / PPL (5.99%) / PSEG (27.86%) / RE (1.21%)	6/1/2027
b3800.46	North Delta 500 kV termination for the new Peach Bottom-North Delta 500 kV line (PECO work).	$2.60	PECO	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: AEC (11.03%) / BGE (37.40%) / DPL (22.91%) / PEPCO (28.66%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.47	Build new Peach Bottom South-North Delta 500 kV line – cut in to Peach Bottom tie No. 1 and extending line to North Delta (~1.25 miles new ROW).	$5.50	PECO	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: AEC (11.03%) / BGE (37.40%) / DPL (22.91%) / PEPCO (28.66%)	6/1/2027
b3800.48	North Delta termination for the North Delta-High Ridge 500 line (Transource work).	$0.96	Transource	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: Dominion (60.85%) / DPL (0.01%) / PECO (0.01%) / PEPCO (29.24%) / PSEG (9.48%) / RE (0.41%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.49	North Delta 500 kV termination for the Calpine generator (Calpine/Transource work).	$4.05	Transource	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: PECO (100.00%)	6/1/2027
b3800.50	North Delta 500 kV termination for the Rock Springs 500 kV line (5034/5014 line) (Transource work).	$0.49	Transource	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: AEC (17.65%) / BGE (4.43%) / Dominion (9.87%) / DPL (22.25%) / JCPL (3.16%) / Neptune (0.36%) / PECO (2.98%) / PENELEC (0.44%) / PEPCO (3.80%) / PPL (5.99%) / PSEG (27.86%) / RE (1.21%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.51	North Delta 500 kV termination for the new Peach Bottom-North Delta 500 kV line (Transource work).	$0.29	Transource	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: AEC (11.03%) / BGE (37.40%) / DPL (22.91%) / PEPCO (28.66%)	6/1/2027
b3800.100	Establish a new 500 kV breaker position for the low-side of the existing 765/500 kV transformer at Cloverdale Station. The new position will be between two new 500 kV circuit breakers located in a new breaker string, electrically converting the 500 kV yard to "double-bus double-breaker" configuration.	$11.59	AEP	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: AEP (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.101	502 Junction substation two 500 kV circuit breaker expansion.	$30.60	APS	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 (25.59%) / BGE (9.79%) / Dominion (51.94%) / PEPCO (12.68%)	6/1/2027
b3800.102	New 500 kV line from existing 502 Junction substation to Woodside 500 KV substation (bypass Black Oak) NEET Portion.	$315.64	NEET	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 (25.59%) / BGE (9.79%) / Dominion (51.94%) / PEPCO (12.68%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.103	Rebuild ~16 miles of the Gore-Stonewall 138 kV line with 500 kV overbuild (502 Jct to Woodside 500 kV line section).	$151.72	APS	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 (25.59%) / BGE (9.79%) / Dominion (51.94%) / PEPCO (12.68%)	6/1/2027
b3800.104	Rebuild ~15 miles of the Stonewall-Millville 138 kV line with 500 kV overbuild (502 Jct to Woodside 500 kV line section).	$136.93	APS	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 (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.105	Rebuild ~6 miles of the Millville-Doubs 138 kV line with 500 kV overbuild (502 Jct to Woodside 500 kV line section).	$52.35	APS	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 (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)	6/1/2027
b3800.106	Woodside 500 kV substation (Except terminations, Transformer, Cap Banks and Statcom).	$43.96	NEET	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 (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.107	Line Termination cost at Woodside 500 kV for 502 Jct to Woodside 500 kV line.	$0.51	NEET	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 (25.59%) / BGE (9.79%) / Dominion (51.94%) / PEPCO (12.68%)	6/1/2027
b3800.108	Line Termination cost at Woodside 500 kV for Woodside to Aspen 500 kV line.	$0.51	NEET	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 (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.113	Two 150 MVAR Cap banks and one +500/-300 MVAR STATCOM at Woodside 500 kV substation.	$44.22	NEET	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 (100.00%)	6/1/2027
b3800.115	Line work for terminating Doubs to Bismark line for Doubs side for Woodside 500 kV substation. NEET Portion	$0.51	NEET	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 (27.49%) / BGE (9.83%) / Dominion (53.78%) / PEPCO (8.90%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.116	Line work for terminating Doubs to Bismark line for Doubs side for Woodside 500 kV substation. FE Portion	$0.06	APS	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 (27.49%) / BGE (9.83%) / Dominion (53.78%) / PEPCO (8.90%)	6/1/2027
b3800.117	Line work for terminating Doubs to Bismark line for Bismark side for Woodside 500 kV substation. NEET Portion	$0.51	NEET	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 (21.09%) / BGE (6.55%) / Dominion (64.94%) / PEPCO (7.42%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.118	Line work for terminating Doubs to Bismark line into Woodside 500 kV substation. DOM Portion	$5.10	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 (21.09%) / BGE (6.55%) / Dominion (64.94%) / PEPCO (7.42%)	6/1/2027
b3800.119	New 500 kV transmission line from Woodside substation to Aspen substation (in DOM zone). NEET Portion	$71.72	NEET	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 (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.120	Aspen substation work to terminate new NextEra 500 kV line. Include Aspen 500 kV subsation portion build.	$30.49	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 (9.18%) / BGE (7.21%) / Dominion (72.52%) / PEPCO (11.09%)	6/1/2027
b3800.121	Kammer to 502 Junction 500 kV line: Conduct LIDAR Sag Study to assess SE rating and needed upgrades.	$0.10	AEP	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: AEP (21.66%) / APS (0.01%) / BGE (7.14%) / DEOK (0.01%) / Dominion (62.25%) / PEPCO (8.93%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.122	Rebuild 500 kV line No. 514 from Doubs-Goose Creek 500 kV line. The Doubs-Goose Creek 500 kV line will be rebuilt and the Doubs-Dickerson 230 kV will be relocated and underbuilt on the same structure. APS Portion	$103.27	APS	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 (0.08%) / Dominion (99.90%) / PEPCO (0.02%)	6/1/2027
b3800.123	Doubs substation work - Re-terminate the rebuilt Doubs-Goose Creek 500 kV line in its existing bay, Terminate the new Doubs-Aspen 500 kV line in the open bay at Doubs, Replace three 500 kV breakers, Replace 500 kV terminal equipment including disconnect switches, CTs and substation conductor & Replace relaying. APS Portion	$31.70	APS	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 (0.08%) / Dominion (99.90%) / PEPCO (0.02%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.124	New Doubs to Aspen 500 kV line - Aspen substation is not yet constructed but is a component in Dominion's proposal 2022-W3-692. The Doubs-Aqueduct and Aqueduct-Dickerson 230 kV lines will be rebuilt and attached on the same structures. APS Portion	$68.80	APS	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 (0.09%) / Dominion (99.89%) / PEPCO (0.02%)	6/1/2027
b3800.125	Rebuild the Doubs-Dickerson 230 kV line. This will be underbuilt on the new Doubs-Goose Creek 500 kV line. APS Portion	$13.04	APS	PEPCO (100.00%)	6/1/2027
b3800.126	Rebuild the Doubs-Aqueduct 230 kV line. This will be underbuilt on the new Doubs-Aspen 500 kV line. APS Portion	$11.35	APS	PEPCO (100.00%)	6/1/2027
b3800.127	Rebuild the Dickerson-Aqueduct 230 kV line. This will be underbuilt on the new Doubs-Aspen 500 kV line. APS Portion	$6.80	APS	PEPCO (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.200	Build a new 500 kV line from Aspen-Golden on 500/230 kV double circuit structures with substation upgrades at Aspen and Golden. New conductor to have a minimum summer normal rating of 4357MVA.	$176.02	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: Dominion (100.00%)	6/1/2027
b3800.202	Install (1) 500-230 kV transformer bank at Aspen substation.	$42.00	Dominion	Dominion (86.28%) / PEPCO (13.72%)	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

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.213	Cut 500 kV line No. 558 Brambleton-Goose Creek into Aspen substation. Upgrade 500 kV terminal equipment at Aspen and Goose Creek to 5000A continuous rating current. At Goose Creek, replace circuit breakers 59582 and 55882, and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating.	$50.12	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 (99.39%) / Dominion (0.61%)	6/1/2027
b3800.214	Build a new 500 kV line from Aspen-Goose Creek to achieve a summer rating of 4357 MVA. Install new 500 kV terminal equipment at Aspen.	$38.53	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 (99.39%) / Dominion (0.61%)	6/1/2027
b3800.217	Build a new 230 kV line from Aspen-Sycolin Creek on 500/230 kV double circuit structures to achieve a summer rating of 1573 MVA. Install 230 kV equipment at Golden and Sycolin Creek.	$60.42	Dominion	Dominion (86.28%) / PEPCO (13.72%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.225	Change 500 kV line No. 558 destination at Brambleton to Aspen substation and upgrade line protection relays.	$0.23	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 (5.20%) / DL (0.46%) / Dominion (91.40%) / ME (0.59%) / PEPCO (2.35%)	6/1/2027
b3800.238	Upgrade equipment to 4000A continuous current rating at Pleasant View substation in support of 230 kV line No. 203 rebuild. Replace circuit breakers 203T274 & L3T203 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 4000A rating.	$1.81	Dominion	APS (8.09%) / BGE (8.25%) / Dominion (64.87%) / PEPCO (18.79%)	6/1/2027
b3800.239	Wreck and rebuild 230 kV line No. 203 between Pleasant View and structure 203/15 using double circuit 500/230 kV structures. The 500 kV line is from Aspen-Doubs.	$6.87	Dominion	APS (8.09%) / BGE (8.25%) / Dominion (64.87%) / PEPCO (18.79%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.240	Build a new 500 kV line from Aspen-Doubs using double circuit 500/230 kV structures. The 230 kV line is from Pleasant View-structure 203/15. Install terminal equipment at Aspen for a 5000A line to Doubs (First Energy). This includes GIS breakers, GIS-to-AIS transition equipment, and metering CCVTs and CTs for the tie line.	$41.68	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 (0.09%) / Dominion (99.89%) / PEPCO (0.02%)	6/1/2027
b3800.241	Rebuild 500 kV line No. 514 from Goose Creek-Doubs using 500/230 kV double circiut structures. The new double circuit towers will accommodate 230 kV line No. 2098 between Pleasant View substation and structure 2098/9. Upgrade equipment at Goose Creek to 5000A continuous current rating in support of line No. 514 wreck and rebuild. Replace circuit breakers 514T595 & 51482 and associated disconnect switches, breaker leads, bus, and line risers to accommodate 5000A rating.	$16.11	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 (0.08%) / Dominion (99.90%) / PEPCO (0.02%)	6/1/2027
b3800.242	Upgrading switches 20366M and 20369M and line leads to 4000A continuous current rating of 230 kV line No. 203 at Edwards Ferry substation	$0.51	Dominion	APS (11.45%) / BGE (14.14%) / Dominion (42.82%) / PEPCO (31.59%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.243	Rebuild 7.26 miles of existing 230 kV circuit from Dickerson Station H to Ed's Ferry area to accommodate the new 500 kV circuit between Doubs and Aspen. (the 500 kV portion of the work)	$37.20	PEPCO	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 (0.09%) / Dominion (99.89%) / PEPCO (0.02%)	6/1/2027
b3800.244	Rebuild 7.26 miles of existing 230 kV circuit from Dickerson Station H to Ed's Ferry area to accommodate the new 500 kV circuit between Doubs and Aspen. (The 230 kV portion of the project)	$18.60	PEPCO	APS (9.78%) / BGE (12.07%) / Dominion (51.18%) / PEPCO (26.97%)	6/1/2027
b3800.245	Reconfigure Dickerson H 230 kV substation and upgrade terminal equipment.	$10.58	PEPCO	APS (9.78%) / BGE (12.07%) / Dominion (51.18%) / PEPCO (26.97%)	6/1/2027
b3800.307	Install one (1) 500 kV, 300 MVAR Static synchronous Compensator (STATCOM) & associated equipment at Mars substation.	$41.27	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: Dominion (100.00%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.310	Install one 500 kV, 293.8MVAr Shunt Capacitor Bank & associated equipment at Wishing Star substation.	$3.97	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: Dominion (100.00%)	6/1/2027
b3800.311	Rebuild 500 kV line No. 545 Bristers-Morrisville as a single circuit monopole line to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA.	$65.86	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: Dominion (91.07%) / PEPCO (8.93%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.312	Rebuild 500 kV line No. 569 Loudoun-Morrisville to accommodate the new 500 kV line in the existing right-of-way. New conductor to have a summer rating of 4357 MVA.	$175.62	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 (11.72%) / Dominion (88.28%)	6/1/2027
b3800.313	Rebuild approximately 10.29 miles line segment of line No. 535 (Meadow Brook to Loudoun) to accommodate the new 500 kV line in the existing ROW.	$65.86	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 (13.93%) / BGE (6.86%) / Dominion (70.92%) / PEPCO (8.29%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.314	Rebuild approximately 4.83 miles of 500 kV line No. 546 Mosby-Wishing Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA. Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for 500 kV lines No. 546.	$49.79	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 (41.98%) / Dominion (34.03%) / PEPCO (23.99%)	6/1/2027
b3800.315	Rebuild approximately 4.59 miles of 500 kV line No. 590 Mosby-Wishing Star to accommodate the new 500 kV line in the existing ROW. New conductor to have a summer rating of 4357 MVA. Upgrade and install equipment at Mosby substation to upgrade terminal equipment to be rated for 5000A for 500 kV lines No. 590.	$49.79	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 (41.98%) / Dominion (34.03%) / PEPCO (23.99%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.336	Upgrade and install equipment at Bristers substation to support the new conductor 5000A rating for 500 kV line No. 545.	$5.72	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: Dominion (91.07%) / PEPCO (8.93%)	6/1/2027
b3800.344	Upgrade and install equipment at Loudoun substation to support the new conductor 5000A rating for 500 kV line No. 569 Loudoun-Morrisville.	$10.70	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 (11.72%) / Dominion (88.28%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.346	Upgrade and install equipment at Morrisville substation to support the new 500 kV conductor termination. All terminal equipment to be rated for 5000 A for 500 kV line No. 545 & No. 569. Upgrade 500 kV bus 2 to 5000 A.	$17.54	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 (11.72%) / Dominion (88.28%)	6/1/2027
b3800.350	Install terminal equipment at Vint Hill substation to support a 5000A line to Morrisville. Update relay settings for 230 kV lines No. 2101, No. 2163, and 500 kV line No. 535.	$23.64	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 (9.79%) / Dominion (90.21%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.353	Update relay settings at Vint Hill for 500 kV line No. 535 Vint Hill-Loudoun.	$0.03	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 (13.93%) / BGE (6.86%) / Dominion (70.92%) / PEPCO (8.29%)	6/1/2027
b3800.354	Install terminal equipment at Wishing Star substation to support a 5000A line to Vint Hill. Update relay settings for 500 kV lines No. 546 and No. 590.	$12.30	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 (21.45%) / Dominion (78.55%)	6/1/2027

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3800.356	Build a new 500 kV line from Vint Hill to Wishing Star. The line will be supported on single circuit monopoles. New conductor to have a summer rating of 4357 MVA. Line length is approximately 16.59 miles.	$87.81	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 (21.45%) / Dominion (78.55%)	6/1/2027
b3800.357	Build a new 500 kV line from Morrisville to Vint Hill. New conductor to have a summer rating of 4357 MVA. Line length is approximately 19.71 miles.	$101.89	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 (9.79%) / Dominion (90.21%)	6/1/2027

Attachment C – Reliability Project Multi-Driver Cost Allocations

Upgrade ID	Description	Cost Estimate ($M)	TO	Cost Responsibility	Required In-Service Date
b3737.47	Build New North Delta 500 kV substation (four bay breaker and half configuration) - the substation will include 12 - 500 kV breakers and one 500/230 kV transformer, will allow the termination of six - 500 kV lines.	104.1	Transource	Public Policy Driver: (73.27%) AEC (13.55%) / JCPL (31.74%) / PSEG (52.60%) / RE (2.11%) Reliability Driver: (26.73%) 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: PECO (100.00%)	6/1/2029

Figure 1. Project Cost by Cluster

Figure 2. Project Cost by Designated Entity

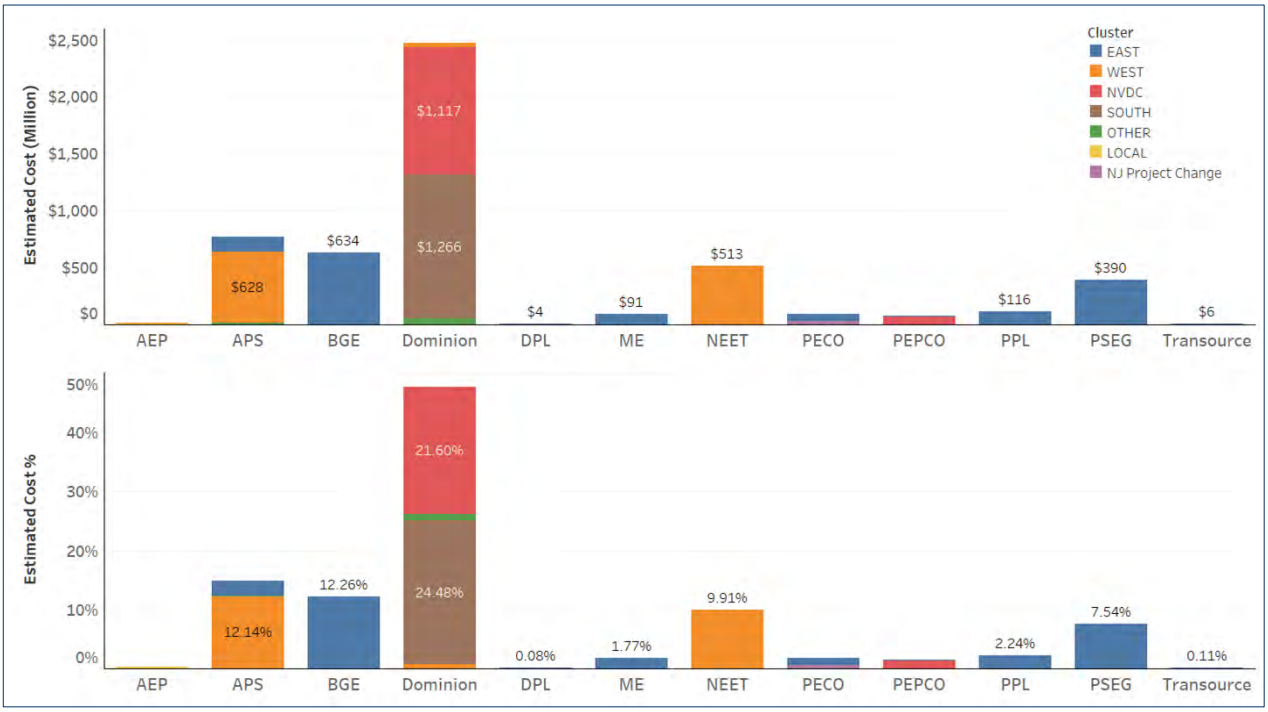
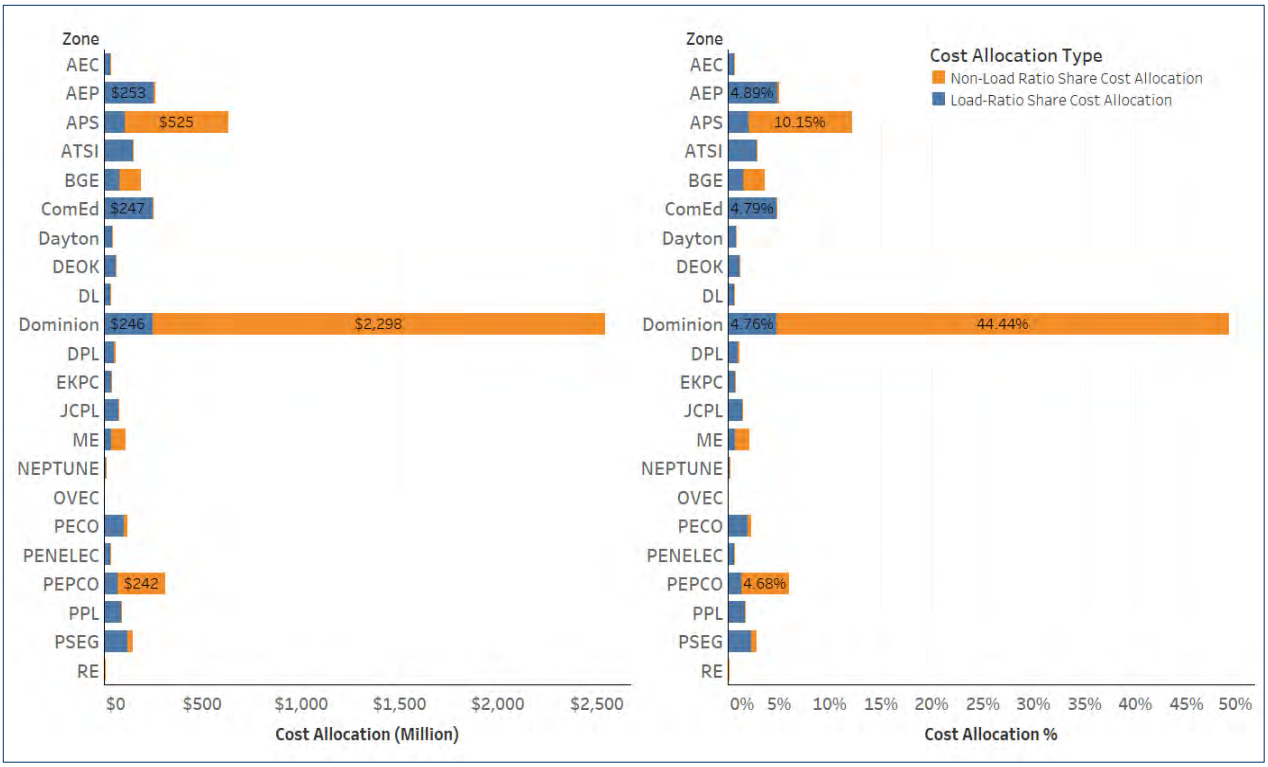


Figure 3. Cost Allocation by Zone



Attachment D – Interconnection Queue Projects With System Impact Study Reports Issued

Generation Interconnection Requests

Queue Position	Transmission Owner	Fuel Type	MW Energy	MW Capacity
AD1-013	ComEd	Solar	40	15.4
AD1-031	ComEd	Solar	70	26.6
AD1-039	ComEd	Natural Gas	102.7	93
AD1-056	Dominion	Solar	60	38.9
AD1-057	Dominion	Solar	33	21.7
AD1-074	Dominion	Solar	300	198.8
AD1-075	Dominion	Solar	75	49.7
AD1-076	Dominion	Solar	109	72.2
AD1-098	ComEd	Solar	100	57.8
AD1-100	ComEd	Wind	850	150
AD1-102	AEP	Wind	180.01	23.4
AD2-008	Dominion	Solar	52.1	16.4
AD2-033	Dominion	Solar	130	78
AD2-038	ComEd	Wind	150	26.4
AD2-046	Dominion	Solar	80	54.8
AD2-047	ComEd	Wind	200	34
AD2-063	Dominion	Solar	149.5	89.7
AD2-066	ComEd	Solar	116	69.6
AD2-077	PPL	Storage	150	100
AD2-100	ComEd	Solar	210	126
AD2-131	ComEd	Solar	50	8.3
AD2-134	ComEd	Wind	105.9	21.2
AD2-162	AEP	Solar	110	73.81
AD2-178	AEP	Solar	120	72
AD2-179	AEP	Solar	100	60
AD2-194	ComEd	Natural Gas	60	120
AD2-214	ComEd	Solar	68	40.8
AE1-001	BGE	Nuclear	28.1	7.1
AE1-068	Dominion	Solar	500	322.1
AE1-069	Dominion	Solar	400	254.5
AE1-093	AEP	Storage	42	42
AE1-107	DPL	Solar	53.1	31
AE1-113	ComEd	Wind	300	66
AE1-149	Dominion	Solar	100	60
AE1-163	ComEd	Wind	350	49
AE1-170	AEP	Solar	150	63

Queue Position	Transmission Owner	Fuel Type	MW Energy	MW Capacity
AE1-207	AEP	Solar	160	67.2
AE1-208	AEP	Solar	130	55
AE1-209	AEP	Wind	100	13
AE1-210	AEP	Wind	100	13
AE1-227	AEP	Solar	49.5	30.69
AE1-240	AEC	Solar	49.7	29
AE1-245	AEP	Wind	150	19.5
AE1-250	AEP	Solar	150	90
AE2-020	AEC	Offshore Wind	604.8	106.44
AE2-021	AEC	Offshore Wind	604.8	106.44
AE2-022	AEC	Offshore Wind	300	52.8
AE2-024	JCPL	Offshore Wind	882	155.23
AE2-025	JCPL	Offshore Wind	445.2	78.36
AE2-034	Dominion	Solar	60	42
AE2-047	AEP	Solar	50	32.4
AE2-072	AEP	Solar	150	90
AE2-089	AEP	Solar	155	93
AE2-113	PENELEC	Solar	120	61.9
AE2-137	APS	Natural Gas	84	87
AE2-160	AEP	Hydro	51	30
AE2-166	AEP	Solar	90	54
AE2-169	AEP	Solar	33	33
AE2-172	AEP	Storage	40	40
AE2-194	ATSI	Solar	145	84
AE2-195	AEP	Solar	19.7	9
AE2-214	AEP	Solar	200	120
AE2-219	AEP	Solar	100	42
AE2-236	AEP	Solar	55	38.5
AE2-255	ComEd	Wind	100	25
AE2-262	APS	Solar	83.6	50
AE2-263	APS	Solar	78.38	47
AE2-264	PENELEC	Solar	80	48
AE2-267	DEOK	Solar	49	28.6
AE2-281	ComEd	Wind	50	7
AE2-298	AEP	Solar	49.9	29.9
AE2-299	PENELEC	Storage	160	32
AE2-302	AEP	Solar	49.9	29.94
AE2-308	EKPC	Solar; Storage	150	110
AE2-316	APS	Solar	90	41.2
AE2-322	AEP	Solar	60	40.3
AE2-323	AEP	Solar	100	67.1

Queue Position	Transmission Owner	Fuel Type	MW Energy	MW Capacity
AF1-017	Dominion	Solar	20	7.6
AF1-019	JCPL	Storage	20	0
AF1-029	AEP	Solar	25	15
AF1-064	ATSI	Solar	50	33.4
AF1-078	Dayton	Solar	45	18.9
AF1-086	PENELEC	Wind	109.9	20.54
AF1-092	AEP	Solar; Storage	150	115
AF1-094	PENELEC	Solar	20	12
AF1-098	PENELEC	Solar	80	48
AF1-104	PENELEC	Solar; Storage	20	20
AF1-120	ATSI	Solar	40	26.6
AF1-122	ATSI	Solar	64	26.88
AF1-130	AEP	Solar	190	133.9
AF1-134	PENELEC	Solar	20	12
AF1-143	PENELEC	Solar	100	60
AF1-153	APS	Solar	20	12
AF1-158	AEP	Solar; Storage	150	90
AF1-164	AEP	Solar	300	195
AF1-167	APS	Solar	13.515	8.109
AF1-202	AEP	Wind	200	34
AF1-204	AEP	Wind	255	63.75
AF1-205	AMPT	Solar	40	24
AF1-207	AEP	Solar	180	34
AF1-215	AEP	Solar	300	180
AF1-216	PPL	Solar	143.11	85.87
AF1-223	AEP	Solar	150	90
AF1-225	APS	Solar	20	8.4
AF1-227	AEP	Solar	325	195
AF1-228	AEP	Solar	155	93
AF1-229	AEP	Solar	120	72
AF1-254	APS	Solar	20	12
AF1-272	PENELEC	Solar	110	66
AF1-279	ATSI	Solar; Storage	150	90
AF1-286	PENELEC	Solar	13.6	5
AF1-325	JCPL	Storage	20	0
AF2-001	PENELEC	Solar	20	12
AF2-002	PENELEC	Solar	10	6
AF2-021	AEC	Storage	20	8
AF2-024	AEC	Storage	24	9.6
AF2-039	PENELEC	Solar	13.5	8.1

Queue Position	Transmission Owner	Fuel Type	MW Energy	MW Capacity
AF2-055	ODEC	Storage; Solar	45	27
AF2-061	DPL	Storage	40	40
AF2-078	AEP	Solar; Storage	200	120
AF2-088	PENELEC	Solar	6.5	3.9
AF2-092	PENELEC	Solar	12	7.2
AF2-102	ME	Solar	3	1.8
AF2-119	Dominion	Solar	80	48
AF2-121	PENELEC	Solar	20	12
AF2-122	AEP	Solar	107.7	64.62
AF2-123	ATSI	Solar	49	20.58
AF2-129	ATSI	Solar	20	12
AF2-134	AEP	Solar	100	60
AF2-145	PPL	Solar	51	30.6
AF2-150	ATSI	Solar	88	36.96
AF2-165	PENELEC	Solar	20	12
AF2-166	PENELEC	Solar	20	12
AF2-175	ME	Solar	3	1.8
AF2-221	PENELEC	Solar	15	6.3
AF2-254	JCPL	Solar	10	4.2
AF2-313	DPL	Solar	19.9	12.7
AF2-322	ATSI	Solar	199.67	119.802
AF2-325	DPL	Solar; Storage	10	4.2
AF2-356	APS	Solar	175	105
AF2-416	PSEG	Storage	10	10
AG1-041	PENELEC	Solar	12	7.2
AG1-191	JCPL	Solar	15.4	6.5
AG1-193	PENELEC	Solar	20	12
AG1-252	ATSI	Solar	3.875	2.3
AG1-259	PPL	Solar	15.9	6.7
AG1-260	PPL	Solar	15.9	6.7
AG1-262	PPL	Storage	85	40
AG1-293	APS	Solar	7.5	4.9
AG1-301	PENELEC	Solar	20	12
AG1-478	ComEd	Solar; Storage	19.9	15.9

Attachment E – Interconnection Network Upgrades

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n4106	Replace two Switches at the Clifty Creek 345 kV station.	$0.41	10/31/2023
n4106.3	Jefferson-Clifty 345 kV line sag study remediation is one location of grading to remediate clearance location of concern in span 1 to 2. Latest Facility Study: Extend one Tower on the Jefferson-Clifty Creek (IKEC) 345 kV Circuit.	$0.41	12/31/2022
n5769.5	Replace four Dumont switches on the Stillwell-Dumont 345 kV line.	$2.40	6/1/2020
n5769.6	Adjust Dumont relay trip limit settings on the Stillwell-Dumont 345 kV line.	$0.60	6/1/2020
n5783	Reconductor the AC1-078 Tap-London 138 kV line.	$3.91	6/1/2020
n5806	Relay Modification Work to Accommodate AD1-037.	$0.03	5/1/2019
n5833	Mitigate the sag on the 17ST John-St John 345 kV line.	$3.80	6/1/2021
n5834	Mitigate the sag on the St John-Green Acre 345 kV line.	$3.80	6/1/2021
n5867	Cut the East-Springfield-Tangy 138 kV line and terminate the line inside the proposed AD2-163 ring bus in an in-out configuration at East Springfield-Tangy 138 kV line.	$0.37	12/1/2021
n5868	Adjust remote, relaying and metering settings and replace 138 kV wave trap, line tuner and coax at Tangy 138 kV substation.	$0.12	12/1/2021
n5869	Adjust remote, relaying and metering settings and replace 138 kV wave trap, line tuner and coax. Also replace line and carrier relaying at East Springfield 138 kV substation.	$0.27	12/1/2021
n5879	Rebuild the 6705 Sharptown-AD2-088 TAP 69 kV line.	$5.93	6/1/2020
n5880	Rebuild the 6705 AD2-088 TAP-Laurel 69 kV line	$5.09	6/1/2020
n5886	Install one span of Attachment Facility line from the Point of Interconnection (POI) to the tap point at or near MAIT structure No. 838-175 of the Lyons-Moselem 69 kV line.	$0.21	4/1/2020
n5887	Install two switches at the tap point at or near MAIT structure No. 838-175 of the Lyons-Moselem 69 kV line.	$0.42	4/1/2020
n5888	Estimated installation of 700 MHz radio system (70% penetration of FE territory) at AD2-115 to support the SCADA switch installations. Assumed SCADA work is included in this cost.	$0.05	4/1/2020
n6078	Substation – Design, install and test/commission Multiprotocol Label Switching (MPLS) Equipment for SCADA transport. Install fiber from AD2-158 to backbone for communication transport. SCADA work at Millville and Double Toll Gate substations to support wave trap & relay installations. Estimated one in-sub fiber run from AD2-158 substation control house to Interconnection Customer built fiber run to support communications and control to generator site.	$0.67	9/1/2020
n6079	Project Management, Environmental, Forestry, Real Estate and Right of Way at AD2-158 interconnection substation.	$1.34	9/1/2020
n6080	Double Toll Gate-Millville 138 kV Line – Cut the Double Toll Gate 138 kV line and install line loop to the new AD2-158 Wheatland 138 kV Interconnection substation.	$0.75	9/1/2020

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n6081	Double Toll Gate 138 kV substation – Upgrade carrier and line relaying and wave trap.	$0.55	9/1/2020
n6082	Millville 138 kV substation – Upgrade carrier relaying and wave trap.	$0.36	9/1/2020
n6134	Build a new three breaker 230 kV ring bus cutting the Clover-Sedge Hill 230 kV line.	$6.12	9/2/2019
n6135	Install new structures to cut and loop the line into AD1-087 switching station.	$1.28	9/2/2019
n6136	Protection and communication work to support interconnection of new AD1- 087 generator.	$0.16	9/2/2019
n6197.1	Uprate CT associated with Barren Co-Horsecave Jct 69 kV line.	$0.00	6/1/2022
n6197.2	Upgrade jumpers at Barren Co associated with Barren Co-Horsecave Jct 69 kV line.	$0.01	6/1/2022
n6198.2	Uprate high side and two lowside CTs associated with Barren Co 161/69 kV Auto to a minimum of 230 MVA summer LTE.	$0.00	6/1/2022
n6220	Install a second, back-to-back breaker between existing line positions No. 254 and No. 2141 at the Lakeview substation.	$1.96	12/31/2017
n6232	Upgrade the existing 500 MCM Cu bus jumpers to 750 MCM Cu. New rating after the upgrade will be 148 MVA.	$0.25	12/31/2023
n6235	Build a three-breaker ring bus at the new AC1-043 substation.	$5.47	10/2/2019
n6237	Modify protection and communication work to support interconnection of new AC1-105 generator.	$0.18	10/2/2019
n6239	Install metering and overhead conductors from the POI to the interconnection switching substation AC2-088/AD1-136.	$0.42	6/30/2020
n6274	Install an Attachment facility line from the AC1-074 interconnection substation to the first structure located outside of the switchyard. Also, install revenue metering.	$0.35	6/1/2019
n6275	Install a new loop-in tap line will be constructed from EKPC's existing Jacksonville to Renaker 138 kV transmission line to the new switching station.	$0.52	6/1/2019
n6279.2	Perform a sag study on the Desoto-Jay 138 kV line.	$0.05	12/31/2022
n6285	Modify breaker failure scheme to incorporate "A-Contact" logic to 138 kV blue bus to reduce total clearing times at TSS111 Electric Junction to 9 cycles for fault on 345/138 kV transformer 81.	$0.14	8/28/2023
n6331	Modify protection and communication work to support interconnection of new AC1-222 generator.	$0.18	1/31/2019
n6332	Build new structures to cut and loop the line No. 1016 into AC1-222 115 kV substation.	$0.68	1/31/2019
n6333	Build a three breaker 115 kV substation at the AC1-222 facility.	$5.10	1/31/2019
n6355	Modify protection and communication work to support interconnection of new AC1-221 generator.	$0.07	9/30/2018
n6356	Build new structures to cut and loop the line No. 1016 into AC1-221 230 kV substation.	$0.61	9/30/2018
n6357	Build a three breaker 230 kV substation at the AC1-221 facility.	$5.80	9/30/2018

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n6383	A Sag Study will be required on the 20 miles section of ACSR ~ 477 ~ 26/7 ~ HAWK conductor section 2 line to mitigate the overload. New Ratings after the sag study S/N: 185MVA S/E: 257MVA. Depending on the sag study results, cost for this upgrade is expected to be between $80,000 (no remediation required just sag study) and $30 million (complete line reconductor/rebuild required).	$0.08	10/1/2024
n6457.1	The sag study was completed under AE1-130 project and determined that no violations occur on this line when operating at Maximum Operating Temperature. No work required on the circuit at this time.	$0.00	9/1/2024
n6463.2	Upgrade bus and jumpers associated with Boone 138 kV bus using 2- 500 MCM 37 CU conductor or equivalent on the Boone Co-Longbranch 138 kV line.	$0.17	6/1/2022
n6463.5	Boone Co-Longbranch 138 kV line: Replace the 750 MCM copper substation bus and jumpers at the Longbranch substation with bundled 500 MCM copper or equivalent equipment.	$0.19	1/31/2022
n6476	Perform a sag study on the 11.7-mile single circuit line between Fostoria Central and South Berwick.	$0.07	6/1/2022
n6494	Increase the maximum operating temperature of the 266 MCM ACSR conductor in the Edmonton/JB Galloway Jct-Knob Lick 69 kV line section to 176 degrees F (5.7 miles).	$0.31	12/31/2023
n6494.1	Increase MOT (maximum operating temperature) of 266 MCM ACSR conductor to 212 degrees on the EDM-JBGAL J-Knob Lick 69 kV line.	$0.29	12/31/2022
n6526.2	Sag Study will be required on ACSR ~ 954 ~ 45/7, 18.3 miles line between South Berwick and Galion. The cost is expected to be 73,200. New Ratings after sag study: S/N: 1409 MVA S/E: 1887 MVA. Rebuild/Reconductor cost: $ 36.6 million.	$0.73	9/25/2024
n6538.1	Replace five substation conductor 2156 ACSR 84/19 Std at E Lima.	$0.50	6/1/2023
n6538.2	Sag study is required on four-mile single circuit line between Fremont Center and Fremont with 1033 ACSR. The cost is expected to be around $20,000.The Rating after the sag study S/N: 1409MVA S/E: 1887MVA. Rebuild/Reconductor cost : $8 million.	$0.02	6/1/2023
n6538.3	Replace substation conductor 2870 MCM ACSR at E Lima.	$0.10	12/1/2022
n6632	New 138 kV substation with a three-position ring bus for AB2-036 interconnection.	$5.44	8/31/2024
n6634.10	Telecom upgrades at Highland 138 kV	$0.01	2/16/2017
n6634.11	Warren 138 kV station: Replace the wave trap on the feeder to Clinton County 138 kV station and make necessary relay settings changes.	$0.12	2/16/2017
n6634.12	Clinton County 138 kV station: Replace the wave trap on the high side of TB1.	$0.10	2/16/2017
n6634.6	Install 138 kV Revenue Meter, generator lead transmission line span from the new Spickard 138 kV station to the Point of Interconnection, and extend dual fiber-optic from the Point of Interconnection to the new Spickard 138 kV station control house.	$0.57	2/16/2017

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n6634.7	Install new Spickard 138 kV three-breaker ring bus station along the Hillsboro-Clinton County 138 kV line, installation of associated protection and control equipment, line risers, switches, jumpers and supervisory control and data acquisition (SCADA) equipment.	$4.92	2/16/2017
n6634.8	Modify Hillsboro-Clinton County 138 kV T-Line and Fiber Cut In for AC2- 061 interconnection.	$0.96	2/16/2017
n6634.9	Upgrade line protection and fiber connectivity at Hillsboro 138 kV station for AC2-061 interconnection.	$0.28	2/16/2017
n6648	Build a three breaker 115 kV substation at the AC1-143 facility.	$5.30	6/30/2018
n6649	Build new structures to cut and loop the transmission line into AC1-143 115 kV substation.	$1.80	6/30/2018
n6650	Modify protection and communication work to support interconnection of new AC1-143 generator.	$0.15	6/30/2018
n6688	Attachment Facilities: Construct 69 kV Tap line, MOLBAB Switch, Poles, structure and foundations for AE1-226 interconnection.	$0.84	9/30/2020
n6689	Modifications to the Face Rock-Kinzer 69 kV line to tie in the AE1-226 Attachment Facilities.	$0.09	9/30/2020
n6690	Relay Modification Scope of Work at Face Rock substation.	$0.20	9/30/2020
n6759.1	Perform a sag study on the Deaborn-Pierce 345 kV line	$0.13	12/31/2021
n6764	Build a three breaker 115 kV substation at the AE1-084 facility.	$5.60	11/30/2020
n6765	Build new structures to cut and loop the transmission line into AE1-084 115 kV substation.	$0.80	11/30/2020
n6766	Modify protection and communication work to support interconnection of new AE1-084 generator.	$0.27	11/30/2020
n6770	Build a three breaker 230 kV substation at the AC2-165 facility.	$6.30	10/1/2019
n6771	Build new structures to cut and loop the transmission line into the Powhatan 230 kV substation.	$1.00	10/1/2019
n6772	Modify protection and communication work to support interconnection of new Powhatan generator.	$0.19	10/1/2019
n6929	Construct new substation for AF2-349 interconnection.	$15.00	12/26/2022
n6930	Cut circuit and loop into new AF2-349 substation.	$3.70	12/26/2022
n6931	Install communications equipment at new AF2-349 substation.	$2.90	12/26/2022
n6932	Update relays at Cherry Valley TSS 156 for AF2-349 interconnection.	$0.19	12/26/2022
n6933	Update relays at Silver Lake TSS 138 for AF2-349 interconnection.	$0.19	12/26/2022
n7267	Extend the Burlington 26 kV P-120 circuit to the Point of Interconnection (POI) and install revenue grade metering.	$0.34	12/28/2022
n7279	Old Chapel 138 kV substation – Modify substation nameplates and high-voltage circuit diagram.	$0.06	9/1/2020
n7280	Exit Span and 1st Structure to Gen Lead Line at Adam 138 kV.	$0.59	4/16/2016
n7281	Extend fiber-optic cables from the point of transition into the Adams 138 kV control house.	$0.12	4/16/2016

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n7289	Expand the Lockwood Road 138 kV substation: Install two additional 138 kV circuit breakers. Installation of associated protection and control equipment, 138 kV line risers and SCADA.	$1.60	9/28/2017
n7297	Install one New 138 kV Circuit Breaker, Associated Equipment, Update Protective Relay Settings at the Kirk 138 kV station.	$1.00	2/28/2020
n7298	Install three Dead End Structures, three Spans of Conductor, OPGW and Alumoweld Shield Wires from the Kirk 138 kV station to the Point of Interconnection.	$1.65	2/28/2020
n7299	Install Revenue Metering at Kirk 138 substation.	$0.31	2/28/2020
n7300	Install two Fiber-Optic Cable Paths from the Kirk 138 kV station to the Fiber-Optic Cable Points of Interconnection.	$0.27	2/28/2020
n7349	Engineering and construction oversight for a new three-breaker ring bus on the Greene-Clark 138 kV line for the AD1-140 interconnection. Includes review of drawings, nameplates and relay settings for FirstEnergy standards. Includes Project Management, Environmental and Right of Way.	$0.72	5/29/2020
n7350	AD1-140 Supervisory Control and Data Acquisition (SCADA): Design, install and test/commission Multiprotocol Label Switching (MPLS) equipment for SCADA transport.	$0.20	5/29/2020
n7351	Fiber Communication: ADSS fiber run from AD1-140 Interconnection Switchyard control house to Greene-East Springfield line fiber and to developer built fiber run to support communications and control to the generator site.	$0.08	5/29/2020
n7352	AD1-140 Clark-Green 138 kV Line Loop: Loop the Clark-Greene 138 kV circuit into the new AD1-140 Interconnection Switchyard. The proposed location of the new ring bus is near structure No. 5604. Includes project management, environmental, forestry, real estate and right-of-way.	$0.41	5/29/2020
n7353	Clark 138 kV substation: Install two 138 kV wave traps and tuners. Update Relay Settings.	$0.13	5/29/2020
n7384	Install 345 kV metering at the Marysville 345 kV station. Construct line from the Marysville 345 kV station to the Point of Interconnection. Install dual fiber telecommunications from the Marysville 345 kV station to the Customer Facility collector station.	$1.46	3/20/2018
n7385	Modify and expand the existing Marysville 345 kV station including one 345 kV circuit breaker installation.	$1.27	3/20/2018
n7422	Construct line No. 2 between Morrisville substation and AE1-044 Transition station.	$1.71	11/2/2020
n7433	Construct a new three circuit breaker 345 kV station, Chenoweth, physically configured and operated as a ring bus	$10.47	6/1/2022
n7434	Install 345 kV Revenue Meter, Generator lead first span exiting the POI station, including the first structure outside the fence at the new AE2-148 switching station	$1.60	6/1/2022
n7435	Install a cut in at Beatty Road-Greene 345 kV.	$1.43	6/1/2022
n7436	Upgrade line protection and controls at the Beatty Road 345 kV station.	$0.60	6/1/2022
n7449	Install new 345 kV three-breaker ring bus station along the Olive-Reynolds 345 kV line.	$0.35	5/31/2021

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n7450	Install three Structures, two Spans of Conductor, Connect Ora Ora 345 kV station to Existing Transmission Circuit	$1.19	5/31/2021
n7451	Replace Protective Relays at Olive 345 kV station.	$0.61	5/31/2021
n7469	Install 345 kV metering at the Gunn Road 345 kV station. Construct line from the Gunn Road 345 kV station to the Point of Interconnection. Install dual fiber telecommunications from the Gunn Road 345 kV station to the Customer Facility collector station.	$1.44	9/30/2019
n7475	Install a new 138 kV circuit breaker, physical structures, protection and control equipment, communications equipment and associated facilities at the Eldean 138 kV substation.	$0.85	12/31/2021
n7492	Install 138 kV metering at the Inez 138 kV station. Construct generator lead transmission line from the Inez 138 kV station to the Point of Interconnection. Install dual fiber telecommunications from the Inez 138 kV station to the Customer Facility collector station.	$0.88	9/18/2019
n7493	Expand Inez 138 kV station, including the addition of a new string and two 138 kV circuit breakers, installation of associated protection and control equipment, 138 kV line risers, switches, jumpers and supervisory control and data acquisition (SCADA) equipment.	$1.53	9/18/2019
n7751	Replace 1600A Switches at Sorenson 345 kV.	$0.10	12/31/2021
n7753	Upgrade circuit breaker and associated Current Transformers and Switches from 2000A to 3000A at Mt. Pleasant substation	$0.40	12/31/2021
n7754.1	Replace 5 substation conductor 2000 AAC 91 Str. at Danville2 138 kV station.	$0.00	11/30/2022
n7754.2	Replace 3 Sub conductor 2000 AAC 91 Str. at East Danville 138 kV station.	$0.00	11/30/2022
n7847	EKPC to install necessary equipment (a 69 kV isolation switch structure and associated switch, plus interconnection metering, fiber-optic connection and telecommunications equipment, circuit breaker and associated switches, and relay panel) at the new Eighty Eight 69 kV Switching station to accept the IC generator lead line/bus.	$1.03	2/14/2019
n7848	Construct a new 69 kV switching station built to 161 kV standards (Eighty Eight Switching) to facilitate connection of the Glover Creek Solar generation project	$3.74	12/31/2022
n7849	Construct facilities (~175 feet) to loop the existing Patton Road Junction-Summer Shade 69 kV line section into the new Eighty Eight Switching substation.	$0.56	12/31/2022
n7850	Modify relay settings at Fox Hollow substation for existing line to Eighty Eight Switching station.	$0.05	12/31/2022
n7851	Modify relay settings at Summer Shade substation for existing line to Eighty Eight Switching substation	$0.05	12/31/2022
n7852	install OPGW in the Summer Shade-Eighty Eight 69 kV line section (1.7 miles).	$0.50	12/31/2022
n7853.1	Re-arrange line No. 1012 to loop into and out of the new three breaker AD2- 063 115 kV switching station. A new three-breaker ring bus substation will be installed between structures 2068/446 and 2068/447.	$1.20	12/31/2024

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n7853.2	Build a three breaker AD1-152 230 kV switching station.	$7.60	12/31/2024
n7853.3	Remote protection and communications work at Clover 230 kV substation.	$0.06	12/31/2024
n7853.4	Remote drawing work at Sedge Hill 230 kV substation.	$0.02	12/31/2024
n7965	Millville-Old Chapel 138 kV Line: Loop the Millville-Old Chapel 138 kV line into new AE2-226 interconnection substation.	$1.02	12/1/2022
n7966	Double Toll Gate 138 kV: Adjust relay settings and update drawings and nameplates.	$0.05	12/1/2022
n7967	Old Chapel 138 kV: Modify SCADA RTU and update drawings and nameplates.	$0.05	12/1/2022
n7968	Wheatland 138 kV (AD2-158 Interconnect): Upgrade relaying as needed to accommodate the new AE2-226 generation queue project interconnection of 99 MW MFO.	$0.36	12/1/2022
n7969	AE2-226 Interconnect: Construct new Kabletown 138 kV substation as a 3- breaker ring bus looping in and out the Old Chapel-Millville 138 kV line.	$6.88	12/1/2022
n7970	Kabletown 138 kV substation Fiber Installation: Install fiber from Kabletown substation to AD2-158 Interconnection for communication transport.	$0.16	12/1/2022
n7971	SCADA/Fiber Communication: Design, install and test/commission MPLS Equipment at Kabletown 138 kV for SCADA transport.	$0.25	12/1/2022
n7991	Install 69 kV Revenue Meter, generator lead transmission line span from the new 69 kV station to the Point of Interconnection, including the first structure outside the new 69 kV station, and extend fiber-optic from the Point of Interconnection to the new 69 kV station control house.	$0.69	10/31/2016
n7992	Expand the Platter Creek 69 kV station, including the addition of one 69 kV circuit breaker, installation of associated protection and control equipment, 69 kV line risers, and supervisory control and data acquisition (SCADA) equipment.	$0.68	10/31/2016
n8004	Install new 138 kV three-breaker ring bus station along the Grandview- Clifftop 138 kV line, installation of associated protection and control equipment, 138 kV line risers, and supervisory control and data acquisition (SCADA) equipment.	$3.88	9/25/2018
n8005	Modify Grandview-Clifftop 138 kV T-Line Cut In.	$1.22	9/25/2018
n8006	Upgrade line protection and controls at the Grandview 138 kV station	$0.30	9/25/2018
n8018	AE2-256 substation 230 kV: Design, install and test/commission MPLS Equipment for SCADA transport.	$0.29	6/30/2022
n8019	North Lebanon substation 230 kV: Replace CVT & line/carrier Relaying	$0.67	6/30/2022
n8020	Copperstone-North Lebanon 230 kV: Loop the 1094-1(Copperstone- North Lebanon) 230 kV line into a new substation, approximately 7.5 miles from the North Lebanon substation.	$2.33	6/30/2022
n8021	North Hershey-North Temple 230 kV: Install one steel pole strain structure on the existing North Hershey-North Temple 230 kV line to avoid clearance violations to new loop structures on the 1094-1 (Copperstone-North Lebanon) 230 kV line.	$1.04	6/30/2022
n8022	Copperstone substation (PPL 230 kV): Replace CVT & line/carrier Relaying.	$0.52	6/30/2022

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8029.1	Attachment facility line and Revenue Metering Installation at the new AF1- 202 345 kV switching station.	$1.08	12/31/2022
n8029.2	Construct a new three breaker 345 kV Switching station for AF1-202 interconnection.	$17.44	12/31/2022
n8029.3	Construct a new loop-in tap line at the Keyston-Desoto 345 kV line for AF1-202 interconnection.	$1.21	12/31/2022
n8029.4	Modify relay settings at Desoto 345 kV substation	$0.05	12/31/2021
n8031.1	New 138 kV switching station (Wapahani switching station) to interconnect AD1-128 customer facility.	$5.37	10/31/2021
n8031.2	Loop-in tap line to new AD1-128 switching station from College Corner-Desota 138 kV line.	$0.93	10/31/2021
n8035.1	Install 69 kV Revenue Meter, generator lead transmission line spans from the Buckskin 69 kV station to the Point of Interconnection, including the first two structures outside the Buckskin 69 kV station, and extend dual fiber-optic from the Point of Interconnection to the Buckskin 69 kV station control house.	$1.02	2/16/2017
n8035.2	Expand the Buckskin 69 kV station, including the addition of one 69 kV circuit breaker, installation of associated protection and control equipment, 69 kV line risers, and supervisory control and data acquisition (SCADA) equipment.	$0.71	2/16/2017
n8035.3	Buckskin-Highland 69 kV T-Line Re-termination. External station associated work, including two structures, including one double circuit structure.	$0.82	2/16/2017
n8059.1	Construct one 69 kV generator lead transmission line from the Steubenville 69 kV station to the Point of Interconnection, install 69 kV revenue meter, extend dual fiber-optic cable from the Point of Interconnection to the Steubenville 69 kV station control house. Expand the Steubenville 69 kV station, including the addition of one 69 kV circuit breaker, installation of associated protection and control equipment, line risers, switches, jumpers and SCADA.	$1.57	11/7/2017
n8059.2	Install one additional 69 kV circuit breaker on the 69 kV side of the Steubenville 138/69/12 kV autotransformer.	$0.37	11/7/2017
n8072.1	Design, install and test/commission MPLS Equipment for SCADA transport at the new AE2-345 substation.	$0.26	4/9/2019
n8072.2	SCADA/Fiber Communication: Install fiber from AE2-345 Interconnection to Hunterstown for relaying communication and MPLS transport.	$1.07	4/9/2019
n8072.3	Gardners-Hunterstown 115 kV Line Loop: Loop existing L991 Gardners-Hunterstown 115 kV line into the new three-breaker Ring Bus approximately 4.2 miles from the Hunterstown substation.	$0.77	4/9/2019
n8072.4	Gardeners 115 kV: Modify drawings, relay settings and nameplates for line name change.	$0.10	4/9/2019
n8072.5	Hunterstown 115 kV: Modify drawings, relay settings and nameplates for line name change.	$0.10	4/9/2019
n8072.6	AE2-345 option to build: FirstEnergy Work at new station built by developer (Security & Network).	$1.57	4/9/2019

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8075.1	Construct a new switching station (North Taylor County switching station) to interconnect AF1-083 customer facility.	$3.95	12/31/2022
n8075.2	Loop-in tap line to new AF1-083 switching station from Green County-Marion County 161 kV line.	$0.34	12/31/2022
n8075.3	Modify relay settings at Green County 161 kV substation.	$0.01	12/31/2022
n8075.4	Modify relay settings at Marion County 161 kV substation.	$0.01	12/31/2022
n8075.5	Install OPGW at Green County-North Taylor Switching station.	$0.90	12/31/2022
n8083.1	Construct a new Switching station for AF2-205 interconnection	$5.41	12/31/2022
n8083.2	Transmission line cut-in of Swingle 345 kV switching station & update remote end protection settings.	$0.71	12/31/2022
n8083.3	Install two fiber-optic connections at Swingle-Tatertown 345 kV transmission line.	$0.56	12/31/2022
n8097.1	AE2-001: Tap the existing Nittany-Zion 46 kV line and install 2 main line switches and 1 tap switch to interconnect queue project AE2-001. Tap and CTs/PTs mounted in the customer's station.	$0.16	6/30/2025
n8097.2	Nittany 46 kV: Replace Stone Junction 46 kV line relaying at Nittany for AE2-001 interconnection.	$0.26	6/30/2025
n8097.3	Pleasant Gap 46 kV: Replace Stone Junction 46 kV line relaying at Pleasant Gap for AE2-001 interconnection	$0.26	6/30/2025
n8097.4	Milesburg 46 kV: Replace Stone Junction 46 kV line relaying at Milesburg for AE2-001 interconnection.	$0.26	6/30/2025
n8098.1	East Fayette 138 kV: To connect the AE2-282 solar project with the Toledo Edison transmission system, a new line position will be established within the East Fayette 138 kV substation by adding a new 138 kV circuit breaker and related equipment. A circuit breaker, 3 CCVTs, 1 138 kV Tubular Steel H- frame Dead End, and a relaying panel will be installed to accommodate the new line terminal.	$1.03	9/15/2021
n8098.2	East Fayette 138 kV: Estimated SCADA work at East Fayette substation to support breaker installation, relay installation and updated relay setting. Estimated in-sub fiber run from East Fayette control house to developer ran fiber build for communications to AE2-282 Generator.	$0.06	9/15/2021
n8113	The Contingency driving this upgrade/overload is DVP_P7-1: LN 25-2034-A which is the tower failure of the Dominion 115 kV line No. 25 Trowbridge-Everett and 230 kV line No. 2034 who share a common tower. Dominion new proposal is to resolve the overload by splitting line No. 25 off of line No. 2034, which eliminate the tower contingency.	$4.74	12/31/2022
n8118	AE2-256 substation: Construct a new three-breaker ring bus on the 230 kV (1094) line between Copperstone and North Lebanon. Includes Project Management, Environmental, Forestry, Real Estate and Right of Way.	$6.14	6/30/2022
n8119	AE2-256 substation: Estimated in-sub fiber run to customer built fiber run outside AE2-256 substation. Estimated SCADA work at North Lebanon substation to support relay installation and updated relay settings.	$0.05	6/30/2022
n8151.1	The Hackettstown to Pohatcong 34.5 kV line will be tapped to accommodate the AF1-328 interconnect project. This tap will take place at	$0.44	8/31/2021

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
	a location that is approximately 1.25 miles from the Pohatcong substation and 1.50 miles from the Hackettstown substation.		
n8151.2	Relay settings will be revised for tap at Pohatcong 34.5 kV.	$0.04	8/31/2021
n8151.3	Adjust relay settings at AF1-328 substation.	$0.07	8/31/2021
n8157	Update 138 kV line relaying at the Bremo 138 kV station.	$0.18	9/12/2018
n8159.1	AF1-290 Mechanicstown Interconnection Sub: Design, install and test/commission MPLS Equipment for SCADA transport.	$0.25	11/15/2023
n8159.2	Fiber from AF1-290 Mechanicstown to Feagans Mill-Millville: Install fiber from Mechanicstown to backbone for communication transport.	$0.27	11/15/2023
n8159.3	Feagans Mill-Millville 138 kV Line Loop: Loop the Feagans Mill-Millville 138 kV into the new Mechanicstown substation.	$1.91	11/15/2023
n8159.4	Stonewall substation: Line Terminal Upgrade.	$0.66	11/15/2023
n8159.5	Feagans Mill substation: Modify drawings and nameplates for line name change.	$0.03	11/15/2023
n8159.6	Millville substation: Line Terminal Upgrade.	$0.62	11/15/2023
n8160.1	Tap the Y701 Cozy Lake (Franklin) 34.5 kV line to interconnect to the new AF1-325 customer substation.	$1.50	1/1/2026
n8160.2	Revise relay settings at Franklin 34.5 kV.	$0.05	1/1/2026
n8166.1	115 kV line to provide for the AF1-320 interconnection at the new Merrill Creek 115 kV substation.	$6.36	12/1/2022
n8166.2	Modify drawings, relay settings and nameplates for line name change at Flanders 115 kV.	$0.13	12/1/2022
n8166.3	Modify drawings, relay settings and nameplates for line name change at Drakestown 115 kV.	$0.13	12/1/2022
n8166.4	Replace one 115 kV wave trap, line tuner and coax for Gilbert line exit at Morris Park 115 kV.	$0.82	12/1/2022
n8166.5	Relay setting changes at Pequest River 115 kV.	$0.21	12/1/2022
n8166.6	Review drawings, nameplates and relay settings Gilbert 115 kV.	$0.15	12/1/2022
n8166.7	Merrill Creek substation: Install new three-breaker ring bus at Merrill Creek substation 115 kV.	$13.74	12/1/2022
n8166.8	SCADA/Fiber Communication: Install fiber from Merrill Creek to backbone for communication transport. Fiber backbone location is subject to change at Merrill Creek to Fiber Backbone. Design, install and test/commission MPLS Equipment for SCADA transport at Merrill Creek 115 kV.	$1.39	12/1/2022
n8166.9	SCADA/Fiber Communication: Design, install and test/commission MPLS Equipment for SCADA transport at Merrill Creek 115 kV.	$0.39	12/1/2022
n8187.1	Farmers Valley-Ridgway 115 kV Line Loop: Construct a loop from the Farmers Valley-Ridgway 115 kV line to the new substation, approximately 14.4 miles from Farmers Valley substation.	$1.69	12/31/2020
n8187.2	Ridgway substation 115 kV: Line terminal upgrade.	$0.19	12/31/2020
n8187.3	Farmers substation 115 kV: Line terminal upgrade.	$0.30	12/31/2020
n8187.4	Pierce Brook substation 115 kV: Line terminal upgrade.	$0.06	12/31/2020

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8188.1	Brookville-Squab Hollow 138 kV Line: Loop the Brookville-Squab Hollow 138 kV line into the new AE2-316 interconnection sub.	$1.58	12/31/2020
n8188.2	Brookville 138 kV: Install new relays and modify relay settings.	$0.24	12/31/2020
n8188.3	Armstrong 138 kV: Install anti-islanding transmitter.	$0.19	12/31/2020
n8188.4	Squab Hollow 138 kV: Install anti-islanding transmitter.	$0.21	12/31/2020
n8188.5	Install fiber from AE2-316 to Backbone for communication transport at AE2- 316 Direct Connect – Squab Solar.	$1.11	12/31/2020
n8188.6	SCADA/Fiber Communication: Design, install and test/commission MPLS Equipment for SCADA transport at AE2-316 interconnection substation.	$0.29	12/31/2020
n8193.1	Install fiber from AE2-344 interconnection substation to Edinboro South for communication transport.	$0.40	3/31/2026
n8193.10	Morgan Street substation 115 kV: Line Terminal Upgrade.	$0.59	3/31/2026
n8193.2	Design, install and test/commission MPLS Equipment for SCADA transport at AE2-344 interconnection substation.	$0.19	3/31/2026
n8193.3	Edinboro South-Morgan Street-Springboro 115 kV Line Loop: Loop from the MF1/MFS (Edinboro South-Morgan Street-Springboro) 115 kV line to the new AE2-344 interconnection substation.	$0.97	3/31/2026
n8193.4	Edinboro South 115 kV: Line Terminal Upgrade.	$0.55	3/31/2026
n8193.5	Wayne substation 115 kV: Line Terminal Upgrade.	$0.03	3/31/2026
n8193.6	Geneva substation 115 kV: Line Terminal Upgrade.	$0.53	3/31/2026
n8193.7	Erie West substation 115 kV: Line Terminal Upgrade.	$0.21	3/31/2026
n8193.8	Erie South substation 115 kV: Line Terminal Upgrade.	$0.21	3/31/2026
n8193.9	Springboro substation 115 kV: Line Terminal Upgrade.	$0.52	3/31/2026
n8198.1	Install (3) 34.5 kV load-break air switches with SCADA control on the Cookstown-New Lisbon (W75) 34.5 kV line approximately 0.3 miles from the Fort Dix W75 Tap and 3.1 miles from the Hanover Solar Tap (at structures 116 & 117).	$0.36	12/31/2020
n8198.2	Review Cookstown line relay settings as required for AF2-254 tap at New Lisbon 34.5 kV.	$0.04	12/31/2020
n8198.3	Review New Lisbon line relay settings as required for AF2-254 tap at Cookstown 34.5 kV.	$0.04	12/31/2020
n8206	Snyder: Extend the Snyder 69 kV bus. Install one 69 kV circuit breaker.	$0.87	10/31/2021
n8207.1	New SCADA switch at AF2-130 POI: Add new SCADA switch at the proposed tap point near pole No. 0C-37451 on the 34.5 kV Tionesta Jct./Crown distribution ckt No. 00519-51	$0.10	6/30/2023
n8207.2	AF2-130 Generation substation: Integrate customer protection and controls to the FE transmission system.	$0.08	6/30/2023
n8207.3	Crown substation: Installing 34.5 kV PT as well as SEL-351S.	$0.63	6/30/2023
n8207.4	Tionesta substation 34.5 kV: Revise relay settings.	$0.11	6/30/2023
n8210.1	Branchville to Holiday Lakes 34.5 kV line: The Branchville to Holiday Lakes 34.5 kV line will be tapped to accommodate the Customer Facility. This tap will take place at a location that is approximately 1.50 miles from the Holiday Lakes substation and 10 miles from the Branchville substation	$1.42	3/1/2021

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8210.2	Branchville substation 34.5 kV: Revise relay settings.	$0.05	3/1/2021
n8211.1	Albright-Cross School 138 kV Line: Loop in and out the Albright-Cross School AFA 138 kV line to new three-breaker ring bus at Swanton 138 kV substation.	$1.36	8/31/2025
n8211.2	Cross School 138 kV substation: Replace one 138 kV, 2000A, wave trap, line tuner and coax on Albright line exit with one 138 kV, 2000A wideband wave trap, line tuner and coax. Replace line relaying panel for the Swanton line terminal.	$1.38	8/31/2025
n8211.3	Albright 138kV substation: Replace one 138 kV, 2000A, wave trap, line tuner and coax on Cross School line exit with one 138 kV, 2000A wideband wave trap, line tuner and coax. Replace line relaying panel for the Swanton line terminal.	$1.81	8/31/2025
n8211.4	Dan's Rock substation 138 kV: Design, install and test/commission new licensed microwave link at Dan's Rock MW.	$0.19	8/31/2025
n8211.5	Design, install and test/commission MPLS Equipment for SCADA transport at Swanton 138 kV substation.	$0.66	8/31/2025
n8211.6	AF2-356 Interconnection substation (OTB): Install physical security camera system.	$1.80	8/31/2025
n8217.1	Groton substation 138 kV: Expand existing Groton ring bus to a four- breaker ring bus.	$1.64	12/31/2021
n8217.2	Hayes substation 138 kV: Modify relay setting.	$0.13	12/31/2021
n8217.3	West Fremont substation 138 kV: Revise relay settings.	$0.13	12/31/2021
n8221.1	Construct a new 69 kV three-breaker ring bus on the Cardington-Tangy 69 kV line.	$5.78	11/30/2022
n8221.2	Design, install and test/commission MPLS Equipment for SCADA transport on the Cardington-Tangy 69 kV line.	$0.26	11/30/2022
n8221.3	Loop the Cardington-Tangy 69 kV line to create the interconnection for the new AF1-122 three-breaker ring bus, approximately 1.1 miles from the Cardington substation. Install fiber from the new AF1-122 three-breaker ring bus to the Cardington substation.	$1.14	11/30/2022
n8221.4	Relay Settings Changes, Drawing Updates and Nameplates at Tangy 69 kV substation.	$0.06	11/30/2022
n8221.5	Upgrade line relaying at Cardington 69 kV substation.	$0.56	11/30/2022
n8312.1	Corry East-Four Mile 115 kV Line Loop: Loop the Corry East-Four Mile Junction 115 kV line into the new substation, approximately 7.7 miles from Four Mile Junction substation.	$0.96	8/30/2019
n8312.2	Warren substation 115 kV: Provide interconnection facilities for PJM AF1- 098.	$0.59	8/30/2019
n8312.3	Corry East substation 115 kV: Provide interconnection facilities for PJM AF1-098. Replace carrier equipment and relaying at Corry East.	$0.89	8/30/2019
n8312.4	Four Mile substation 115 kV: Provide interconnection facilities for PJM AF1- 098. Replace carrier equipment and relaying at Four Mile Junction.	$0.77	8/30/2019
n8312.5	Construct a new interconnection substation with 3-115 kV breakers in a ring bus configuration at Four Mile 115 kV substation.	$7.90	8/30/2019

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8312.6	Install fiber from AF1-098 to Four Mile Junction for communication transport at AF1-098.	$4.70	8/30/2019
n8312.7	Design, install and test/commission MPLS Equipment for SCADA transport at AF1-098	$0.29	8/30/2019
n8313.1	Install Tap Pole at Emlenton 34.5 kV.	$0.02	3/17/2020
n8313.2	Haynie 34.5 kV: Revise Relay Settings.	$0.27	3/17/2020
n8313.3	Emlenton 34.5 kV: Revise Relay Settings.	$0.27	3/17/2020
n8314.1	SCADA/Fiber Communication: Design, install and test/commission MPLS Equipment for SCADA transport at the new AF1-086 interconnection substation.	$0.21	9/20/2019
n8314.2	Install fiber from AF1-086 interconnection substation to ADSS Backbone for communication transport.	$1.26	9/20/2019
n8314.3	Garman-Shawville 115 kV Line Loop: Loop existing Garman Shawville 115 kV line into the new CPV Rogue's Wind interconnection substation.	$1.21	9/20/2019
n8314.4	Madera 115 kV: Modify drawings and nameplates for line name change.	$0.03	9/20/2019
n8314.5	Westover 115 kV: Modify drawings and nameplates for line name change.	$0.03	9/20/2019
n8314.6	Glory 115 kV: Line Terminal upgrade.	$0.39	9/20/2019
n8314.7	Shawville 115 kV: Line Terminal upgrade.	$0.57	9/20/2019
n8314.8	Garman 115 kV: Line Terminal upgrade.	$0.81	9/20/2019
n8319	Relocate the East Bend 345 kV line from the T bay to the R bay at the Tanners Creek 345 kV substation. This addresses the breaker failure contingency AEP_P4_No. 14920_05TANNER 345_T_SRT-A for the Tanners tie breaker failure.	$3.10	12/31/2021
n8327	Replace existing 23 kV Bedford relaying with one SEL-351S and install one SATEC meter.	$0.77	9/15/2022
n8337.1	Construct a new line exit out of the Galion substation by adding a new 138 kV breaker.	$2.14	12/31/2023
n8337.2	Modify Relay Settings Roberts 138 kV.	$0.10	12/31/2023
n8337.3	Modify Relay Settings at Cardington 138 kV.	$0.10	12/31/2023
n8337.4	Modify Relay Settings at Leaside 138 kV.	$0.10	12/31/2023
n8337.5	Modify Relay Settings at Ontario 138 kV.	$0.10	12/31/2023
n8359.1	Upgrade existing Sullivan 138 kV (previously named Napoleon Muni Northside) substation to a five-breaker ring bus substation.	$2.94	11/1/2022
n8359.2	Re-terminate the Midway-Sullivan 138 kV line into the expanded substation to support new generation interconnection.	$0.71	11/1/2022
n8359.3	Revise relay settings at Striker 138 kV substation.	$0.08	11/1/2022
n8359.4	Perform end to end testing and revising relay settings at Midway 138 kV substation.	$0.08	11/1/2022
n8359.5	Integrate upgrades to the Sullivan 138 kV substation to the FirstEnergy transmission system.	$0.08	11/1/2022
n8370.1	Tap Cambridge Springs-Corry Central 34.5kV line and convert approximately three-quarters of a mile of 12 kV to 35 kV.	$0.42	1/1/2023

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8370.2	Update relay settings on 34.5 kV Cambridge Springs line.	$0.05	1/1/2023
n8370.3	Installation of one 700 MHz radio system to support SCADA Switch at AF1- 094 tap location.	$0.06	1/1/2023
n8374.1	Warfordsburg substation: Replace existing McConnellsburg line relaying with one standard line relaying panel with two SEL-421 and one SEL-501 BFT.	$0.19	3/28/2019
n8374.2	Warfordsburg-Purcell Jct 34.5 kV Line: Install two main line switches on the existing Warfordsburg-Purcell Jct 34.5 kV line.	$0.12	3/28/2019
n8374.3	Mercersburg-AD1-061 34.5 kV Tap: Reconductor approximately 1.6 mi from Mercersburg-AD1-061 (Elk Hill 1) Tap 34.5 kV line from Mercersburg substation to Pole PA406-WP47 with 795 ACSR conductor.	$1.32	3/28/2019
n8374.4	Mercersburg substation 34.5 kV: Replace limiting conductors and revise relay settings.	$0.23	3/28/2019
n8374.5	McConnellsburg substation 34.5 kV: Revise relay settings.	$0.13	3/28/2019
n8438.1	Construct three Breaker 138 kV station in a Breaker and a Half Configuration for AE2-323 interconnection.	$6.36	4/4/2019
n8438.2	Install two Dead End Structures, two Spans of Conductor, two Spans of OPGW Shield wire, Connect New 138 kV station to Existing Twin Branch-Guardian Transmission Circuit and upgrade remote end relays.	$0.69	4/4/2019
n8443.1	Build a new 69 kV IC substation with a three-breaker ring bus. Two of the positions on the ring bus will be transmission line terminals for the tie-in of the Kellam-Cheriton 69 kV line (Line 6750) to the substation. The other position will be a terminal configured for AF2-055 with a disconnect switch.	$5.00	6/1/2027
n8443.2	Rebuild about 20 miles of Cheriton/Bayview-Kellam 69 kV. Install reverse power relay at Cheriton station to trip the generator tie if power flow is greater that 0.15 MW toward AF2-055.	$20.00	6/1/2027
n8443.3	Install dynamic VAR compensation at Kellam-Chriton 69 kV substation.	$5.00	6/1/2027
n8443.4	Communication network upgrades for Island detection at Oakhall 69 kV substation.	$0.50	6/1/2027
n8443.5	Communication network upgrades for Island detection at Oakhall 69 kV substation.	$0.50	6/1/2027
n8445	Update Protective Relay Settings at the Proposed AF1-215 345 kV station.	$0.05	3/16/2020
n8449.1	Install one 230 kV breaker and a new 230 kV line terminal position to create a five-breaker ring bus at Erie East substation.	$2.91	6/1/2026
n8449.2	Install anti-islanding (transfer trip) equipment at Four Mile Junction substation.	$0.63	6/1/2026
n8449.3	Fiber connection and associated conduit to customer substation at Erie East substation.	$0.18	6/1/2026
n8450.1	Bruceton Mills Interconnection Sub 138 kV: Construct three-breaker ring-bus substation for new generation interconnection.	$8.38	9/30/2021
n8450.2	AE1-106 Sub: Design, install and test/commission multi-protocol label switching (MPLS) equipment for SCADA transport.	$0.74	9/30/2021

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8450.3	Design, install and test/commission microwave equipment for Supervisory Control and Data Acquisition (SCADA) transport between AE1-106 Customer Facility and Bruceton Mills 138 kV substation.	$0.23	9/30/2021
n8450.4	Brandonville Junction (Albright-Hazelton-Lake Lynn) 138 kV: Loop the existing Brandonville Junction (Albright-Hazelton-Lake Lynn) 138 kV line into the new Bruceton Mills substation.	$1.67	9/30/2021
n8450.5	Lake Lynn substation 138 kV: Replace Panel No. 4 existing line relaying with new breaker control panel with one SEL451 and one SATEC meter.	$0.33	9/30/2021
n8450.6	Hazelton substation 138 kV: Provide remote end equipment required for AE1-106.	$0.93	9/30/2021
n8450.7	Albright substation 138 kV: Provide remote end equipment required for AE1-106.	$1.72	9/30/2021
n8451.1	Construct a new 138 kV three-breaker ring bus looping in the South Akron- Toronto 138 kV line to provide interconnection facilities for AE2-194.	$6.38	5/1/2022
n8451.10	Relay settings for the Gilchrist- Lakemore 138 kV line will be adjusted.	$0.09	5/1/2022
n8451.12	Relay settings for the Lakemore- South Akron 138 kV line will be adjusted.	$0.19	5/1/2022
n8451.13	Relay settings for the Boardman-Toronto 138 kV line will be adjusted.	$0.09	5/1/2022
n8451.14	Relay settings for the Lowellville- Dobbins 138 kV line will be adjusted.	$0.09	5/1/2022
n8451.15	Relay settings for the Urban-Firestone 138 kV line will be adjusted.	$0.19	5/1/2022
n8451.16	Relay settings for the Tusc-Urban 138 kV line will be adjusted.	$0.09	5/1/2022
n8451.2	The South Akron to Toronto 138 kV line will be cut and looped into the new 138 kV interconnection substation. This cut will take place at a location that is approximately 21 miles from the Toronto substation. It is assumed that the interconnection substation will be located within one span (approximately 0.1 mile) from the existing line.	$3.06	5/1/2022
n8451.5	138 kV line relay setting for AE2-194 Interconnection (South Akron) will be changed.	$0.50	5/1/2022
n8451.6	One 138 kV 2000A dual-frequency wave traps, line tuners and coax will be installed.	$0.17	5/1/2022
n8451.7	Relay settings for the Dobbins-Toronoto 138 kV line will be adjusted.	$0.19	5/1/2022
n8451.8	Relay settings for the Dale- South Akron 138 kV line will be adjusted.	$0.09	5/1/2022
n8451.9	Relay settings for the Sammis-Toronoto 138 kV line will be adjusted.	$0.09	5/1/2022
n8455.1	Sandridge substation: Establish new 69 kV line position for AF1-064.	$1.56	3/31/2022
n8455.2	Midway substation 69 kV: Install Carrier equipment for anti-islanding.	$0.50	3/31/2022
n8455.3	Bowling Green No.2 69 kV: Install Carrier equipment for anti-islanding.	$0.47	3/31/2022
n8457.1	AE2-262/AE2-263 Interconnection Sub: Construct a new 230 kV three-breaker ring bus looping in the Moshannon-Milesburg 230 kV line to provide interconnection facilities for AE2-262/AE2-263.	$11.43	6/30/2022
n8457.2	AE2-262/AE2-263 Interconnection Sub: Design, install and test/commission MPLS Equipment for SCADA transport at new Interconnection Sub.	$0.24	6/30/2022
n8457.3	AE2-262/AE2-263 Interconnection Sub: Install fiber from AE2-262/AE2-263 New Interconnection substation to fiber backbone for communication transport.	$0.15	6/30/2022

Upgrade ID	Description	Cost Estimate ($M)	Required In-Service Date
n8457.4	Moshannon-Milesburg 230 kV Line: The Moshannon-Milesburg 230 kV line will be cut and looped into the new 230 kV interconnect substation. This cut will take place at a location that is approximately 16.3 miles from the Moshannon substation.	$1.72	6/30/2022
n8457.5	Moshannon 230 kV: Anti-islanding and carrier equipment will be installed in existing relay panels. Existing Milesburg line relaying will be replaced.	$0.69	6/30/2022
n8457.6	Milesburg 230 kV: One existing 230 kV CVT, wave trap, line tuner and circuit breaker will be replaced. Anti-islanding will be installed. Existing Moshannon line relaying panel will be replaced.	$1.82	6/30/2022
n8457.7	Dale Summit 230 kV: A new carrier relaying panel with anti-islanding will be installed for the Milesburg and Shingletown exits.	$0.57	6/30/2022
n8457.8	Shingletown 230 kV: A new carrier relaying panel with anti-islanding will be installed for the Dale Summit exit.	$0.61	6/30/2022
n8458	Install one 23 kV line potential transformer and associated structure on Bedford North line Replace 23 kV Bedford North line relays with one line relaying panel with one SEL351S and one SATEC Meter.	$0.69	12/15/2022

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: The proposed Aspen and Golden Substations will serve the Eastern Loudoun Load Area described in Section I.C. The Project will also be used to support future load in the area.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The approximate lengths of the Aspen-Goose Creek Proposed Route, the Aspen-Golden Lines Proposed and Alternative Routes, and the Lines Loop Proposed Route are as follows:

Aspen-Goose Creek Line #5002

Proposed Route: 0.2 mile

Aspen Golden Lines

Proposed Route (Route 1AA): 9.4 miles

Alternative Route 1AB: 9.5 miles

Alternative Route 1BA: 9.4 miles

Alternative Route 1BB: 9.5 miles

Lines #2081/#2150 Loop

Proposed Route: <0.1 mile (490 feet)

The following table provides a breakdown of route lengths (in approximate miles) for the Aspen-Golden Lines.

Route	Route 1*	Belmont Park Variation A	Belmont Park Variation B	Broad Run Variation A	Broad Run Variation B	Total
Proposed Route (Route 1AA)	6.6	0.6	-	2.2	-	9.4
Alternative Route 1AB	6.6	0.6	-	-	2.3	9.5
Alternative Route 1BA	6.6	-	0.6	2.2	-	9.4
Alternative Route 1BB	6.6	-	0.6	-	2.3	9.5

Note that the table reflects the total length of Route 1 using the length of 230 kV Aspen-Golden Line #2333 (6.6 miles), as it is slightly longer (by approximately 0.2 mile) than the 500 kV Aspen-Golden Line #5001 (6.4 miles), which has a more direct entrance into the proposed Golden Substation based on the location of the 500 kV bus.

See Section II.A.9 for an explanation of the Company's route selection process, as well as the Environmental Routing Study referenced therein. See Attachment II.A.1 for a route overview map of all of the Project's Proposed and Alternative Routes.

Aspen-Golden Lines Proposed Route and Alternative Routes

- Proposed Route (Route 1AA): Route 1, Belmont Park Variation A, Broad Run Variation A (9.4 miles)
- Alternative Route 1AB: Route 1, Belmont Park Variation A, Broad Run Variation B (9.5 miles)
- Alternative Route 1BA: Route 1, Belmont Park Variation B, Broad Run Variation A (9.4 miles)
- Alternative Route 1BB: Route 1, Belmont Park Variation B, Broad Run Variation B (9.5 miles)

PLEASANT VIEW 500 SUB
GOOSE CREEK SUB
PLEASANT VIEW SUB
PROPOSED ASPEN SUB
COCHRAN MILL DP
BELMONT SUB
STONEWATER SUB
ASHBURN SUB
BEAUMEADE SUB
NIVO SUB
WAXPOOL SUB
FARMWELL SUB
UUNET SUB
CUMULUS SUB
PARAGON PARK SUB
BECO SUB
PROPOSED GOLDEN SUB

Maintenance Facility
Leesburg Executive Airport
Philip A. Bolen Memorial Park / Leesburg Adult Day Center
Sycolin
Belmont
Belmont Country Club
Lansdowne Golf Club
Inova Loudoun Hospital-Lansdowne
The George Washington University Virginia Campus
University Center
One Loudoun
Algonkian Elementary School
Countryside
Kincora
Dulles Town Center
Dulles Town Center Park And Ride
Dulles Town Crossing
1757 Golf Club
Claude Moore Park / Recreation And Community Center / Heritage Farm Museum
Newton-Lee Elementary School
Stone Bridge High School
Ashburn
Ashburn Village
Cedar Lane Elementary School
Goose Creek Village
Academies of Loudoun
Broad Run High School
Discovery Elementary School
Broadlands
Eagle Ridge Middle School
Beaverdam Reservoir
Trailside Park
Part of
412 ft
332 ft
318 ft
270 ft
267
28
7

N W E S

0 0.5 1
Miles

Project Location
Cincinnati
Washington
Richmond
Virginia
Raleigh

Existing Substation
Proposed Substation
Route 1
Belmont Park Variation A
Belmont Park Variation B
Broad Run Variation A
Broad Run Variation B
Aspen-Goose Creek Line
Lines #2081/#2150 Loop
Existing Dominion Transmission Lines

ERM

Attachment II.A.1
Route Overview
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

Dominion Energy

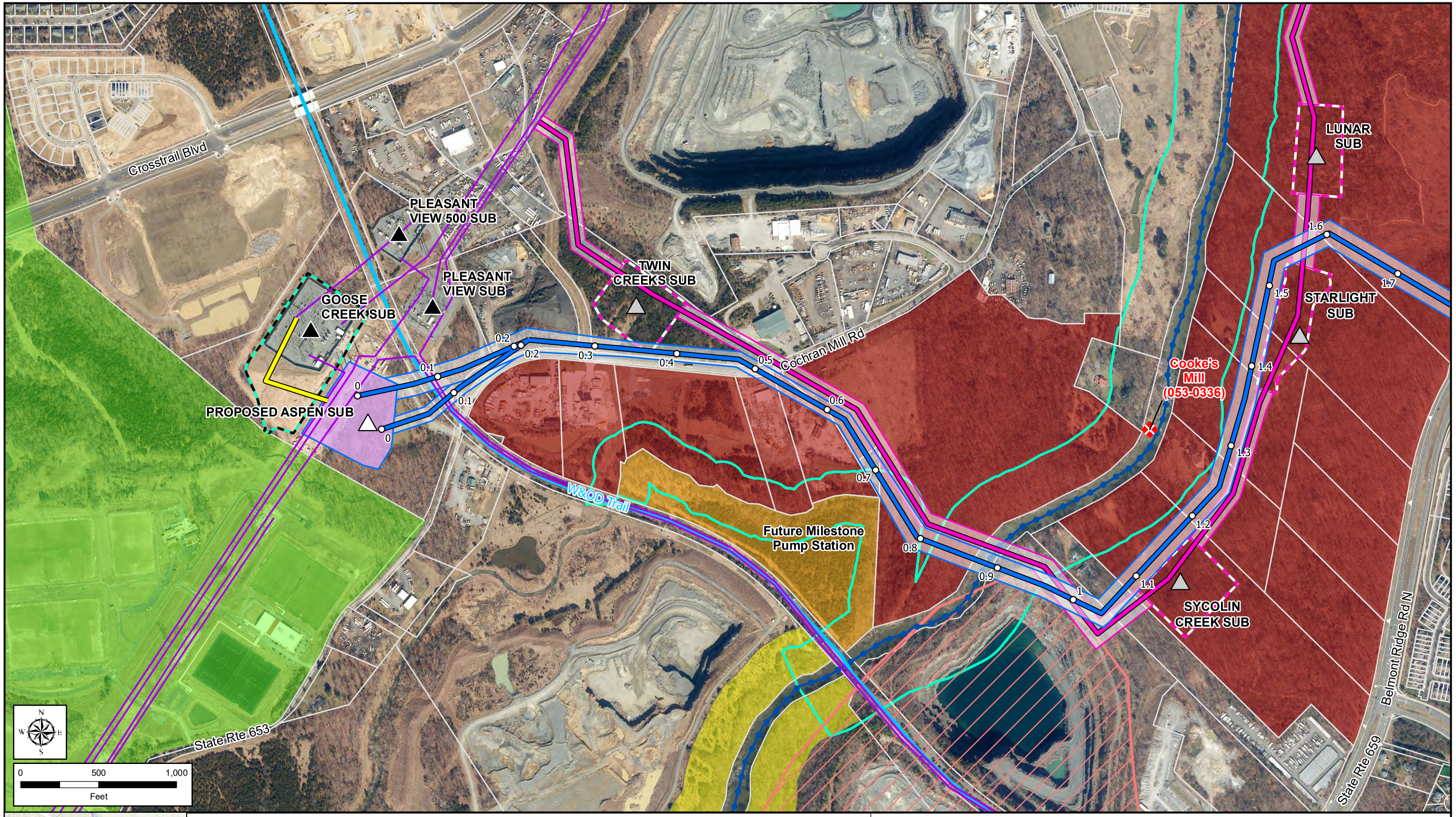
II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: See Attachment II.A.2. 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 Map
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 1 of 8

ERM

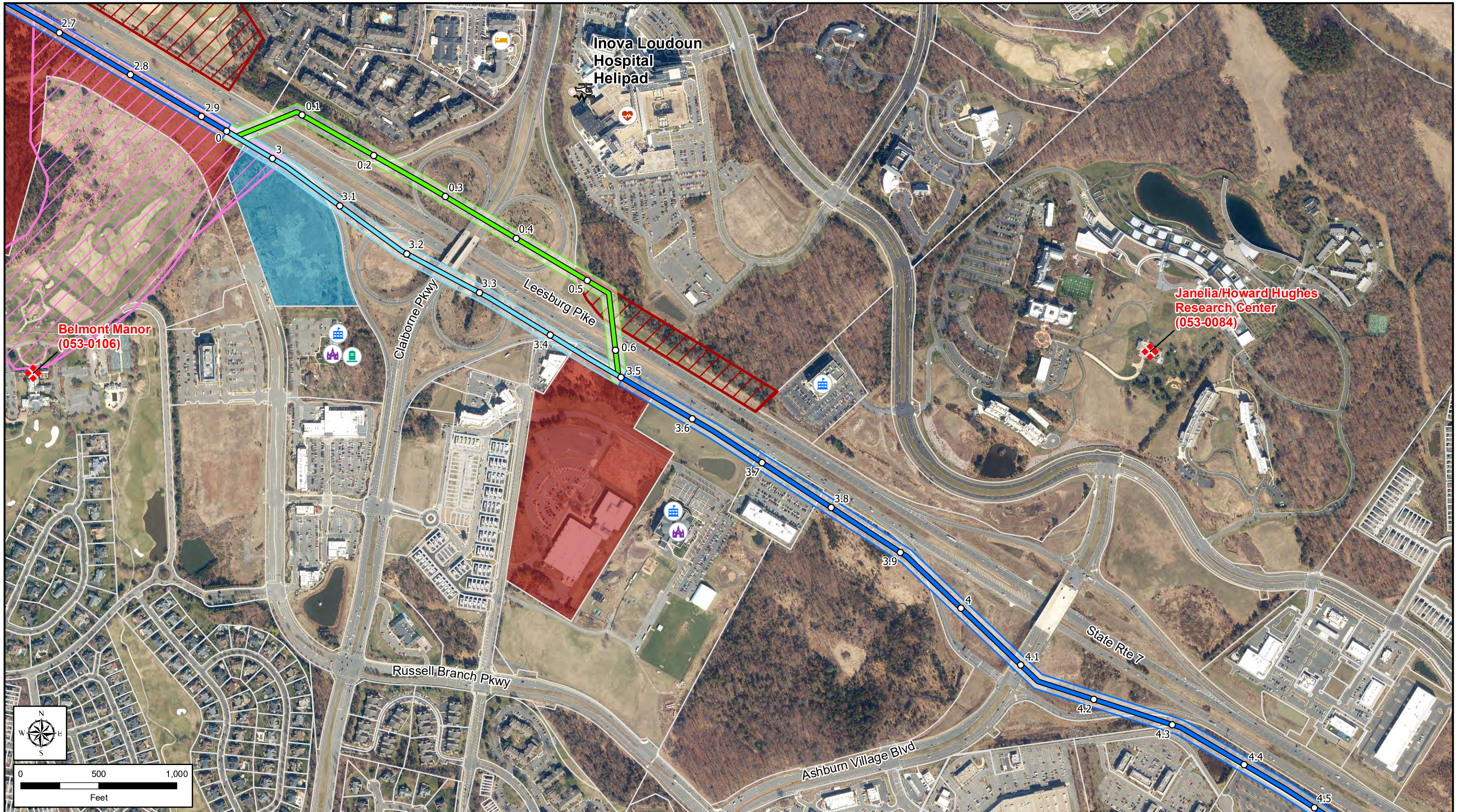
Dominion Energy

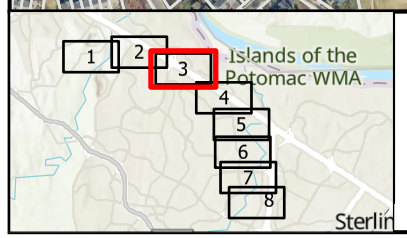
Attachment II.A.2

APOLLO SUB
LUNAR SUB
STARLIGHT SUB
SYCOLIN CREEK SUB
E Market St
State Rte 7
Leesburg Pike
State Rte 659
Belmont Ridge Rd N
Russell Branch Pkwy
Claiborne Pkwy
African-American Burial Ground for the Enslaved at Belmont (053-6238)
Cooke's Mill (053-0336)
Belmont Manor (053-0106)
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
0
3
3.1
3.2
0.1
0.2
0.3
N
W
E
S
0
500
1,000
Feet
Islands of the Potomac WMA
1
2
3
4
5
6
7
8
Future Substation
Milepost
Route 1
Belmont Park Variation A
Belmont Park Variation B
Future Twin Creeks Lines
Future Substation Boundary
Places of Worship
Cemeteries
Schools
Cultural/Historic Resources
Goose Creek Scenic River
Scenic Creek Valley Buffers
Planned Development - Data Center
Planned Development - Residential
DCR Easement
Board of Supervisors Easement
Belmont Viewshed Easement
Lansdowne Scenic Easement
Parcel Boundary

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

ERM
Dominion Energy



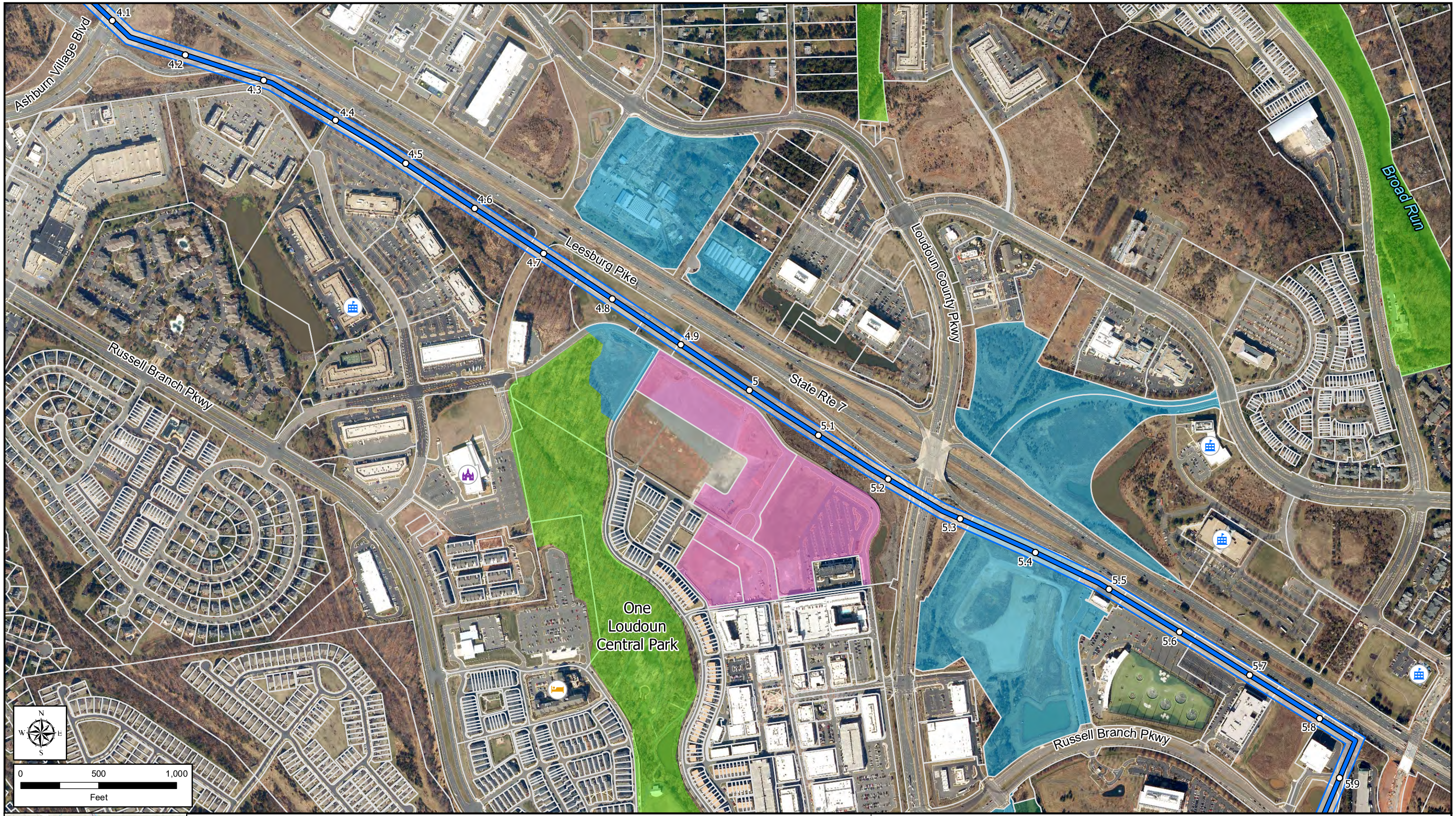


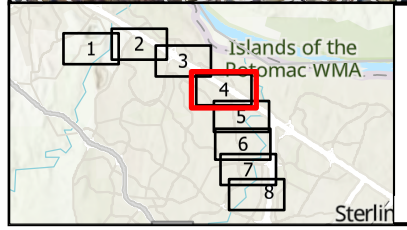
- Milepost
- Route 1
- Belmont Park Variation A
- Belmont Park Variation B
- Heliport (Private)
- Places of Worship
- Cemeteries
- Schools
- Convalescent Center
- Hospital
- Cultural/Historic Resources
- Planned Development - Data Center
- Planned Development - Residential
- Belmont Viewshed Easement
- Lansdowne Scenic Easement
- Parcel Boundary

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

ERM

Dominion Energy



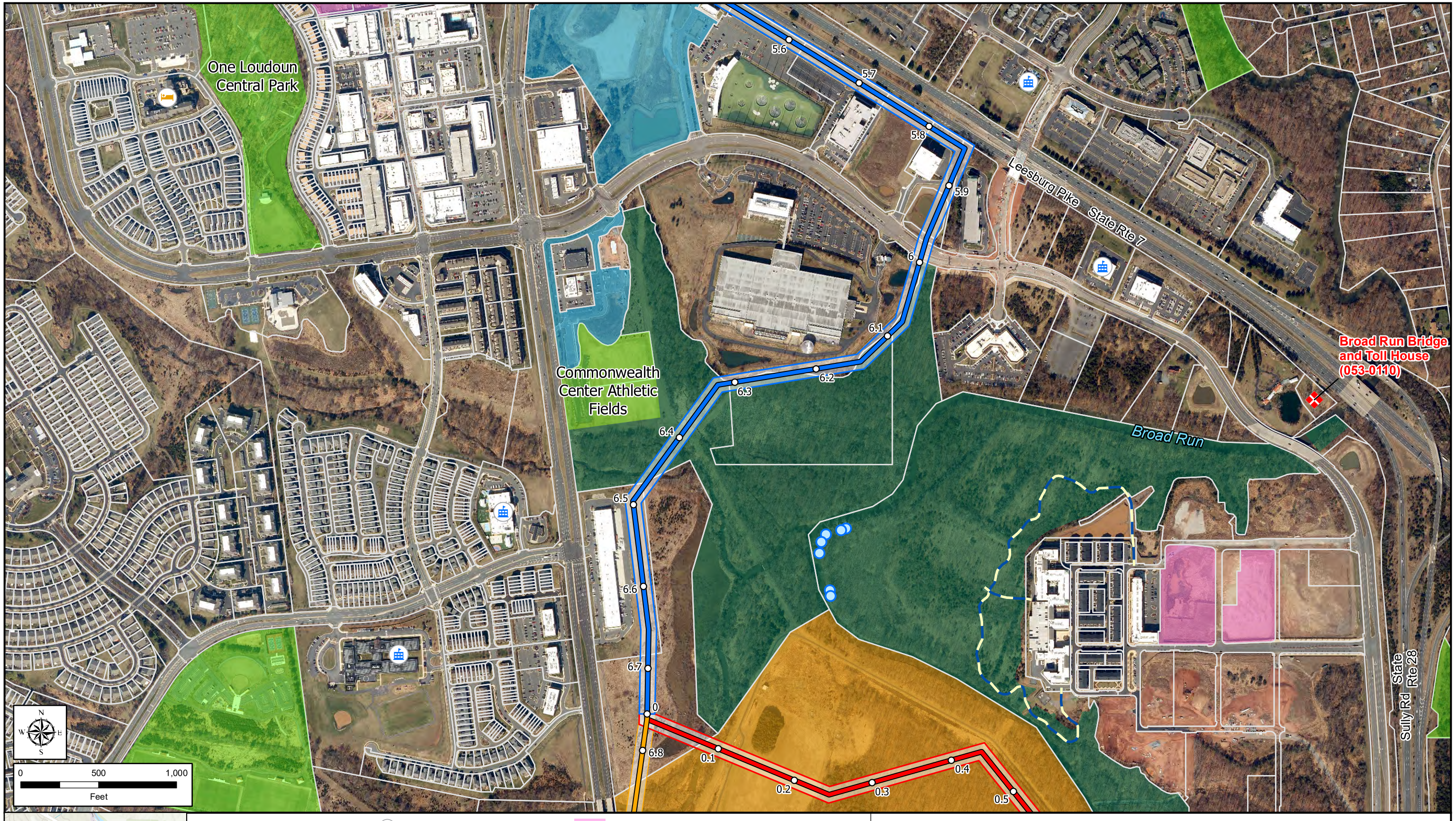


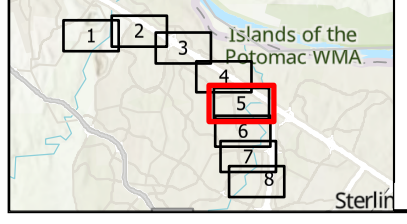
- Milepost
- Route 1
- Places of Worship
- Schools
- Convalescent Center
- Loudoun County Park
- Planned Development - Mixed Use
- Planned Development - Residential
- Board of Supervisors Easement
- Parcel Boundary

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

ERM

Dominion Energy



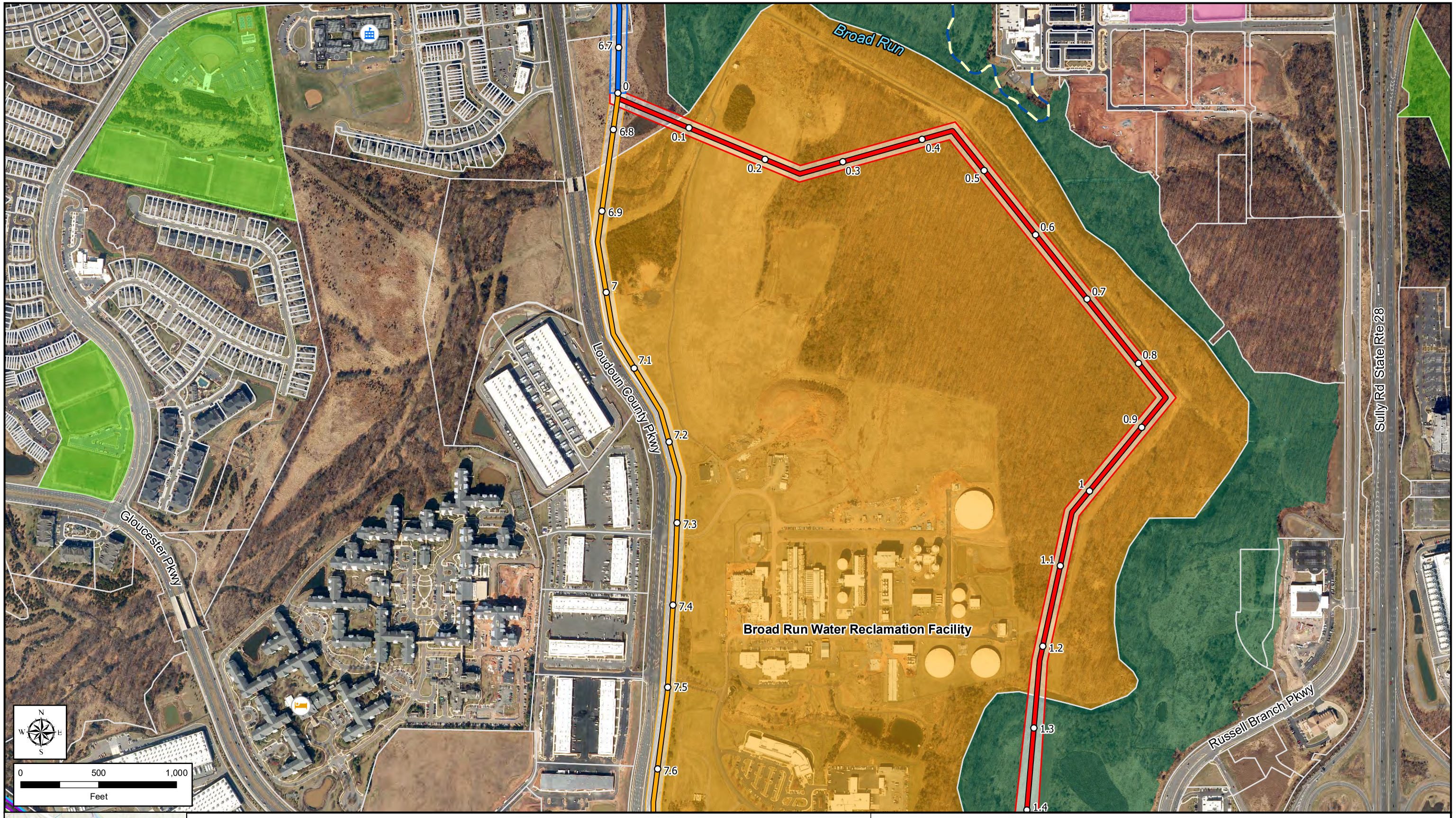


- Milepost
- Route 1
- Broad Run Variation A
- Broad Run Variation B
- Schools
- Convalescent Center
- Heron Rookery
- Cultural/Historic Resources
- Kincora Heron Trail
- Loudoun County Park
- Planned Development - Mixed Use
- Planned Development - Residential
- Loudoun Water
- Board of Supervisors Easement
- Parcel Boundary

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

ERM

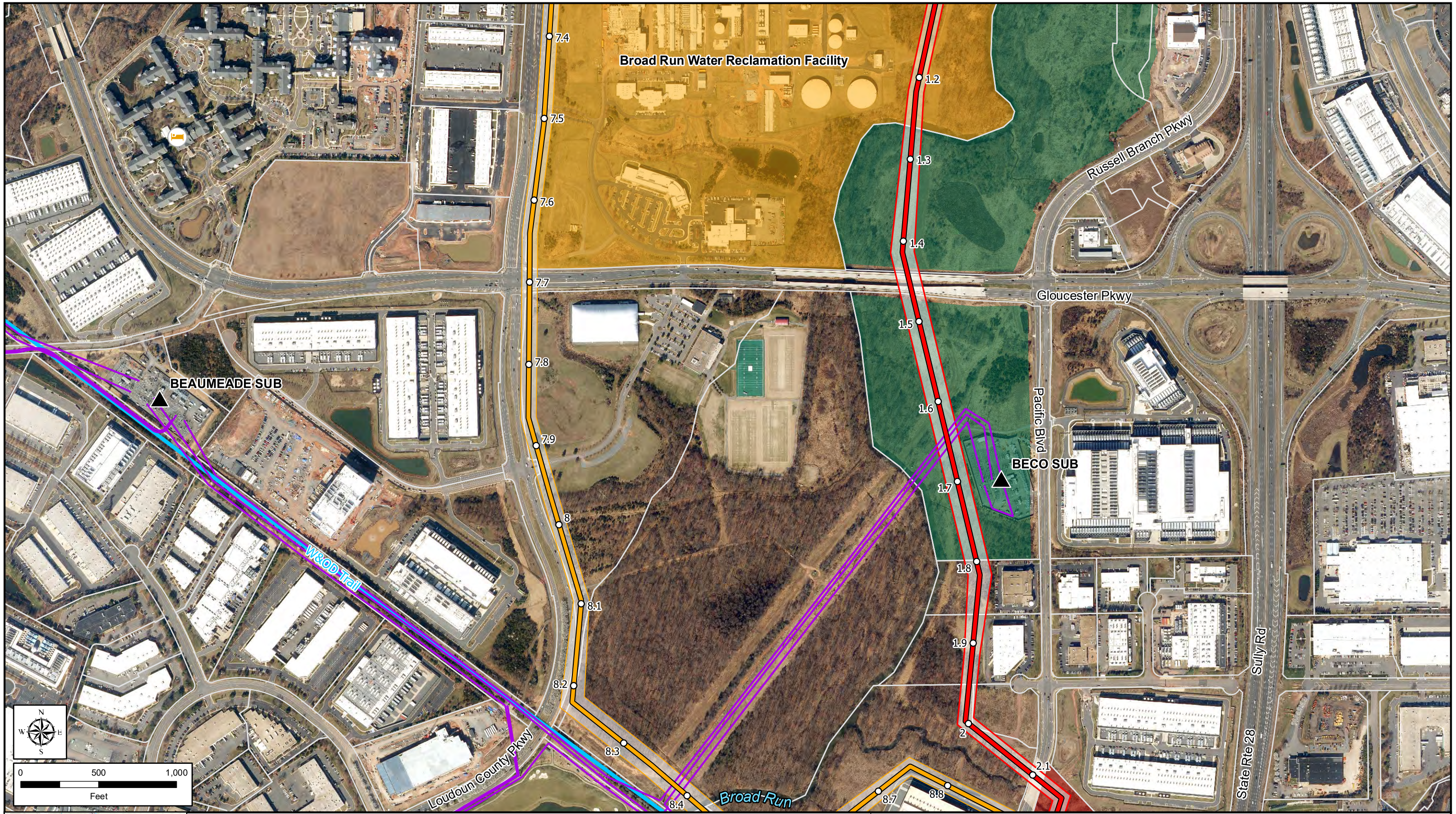
Dominion Energy



Attachment II.A.2
Project Overview and Constraints Map
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 6 of 8

ERM

Dominion Energy

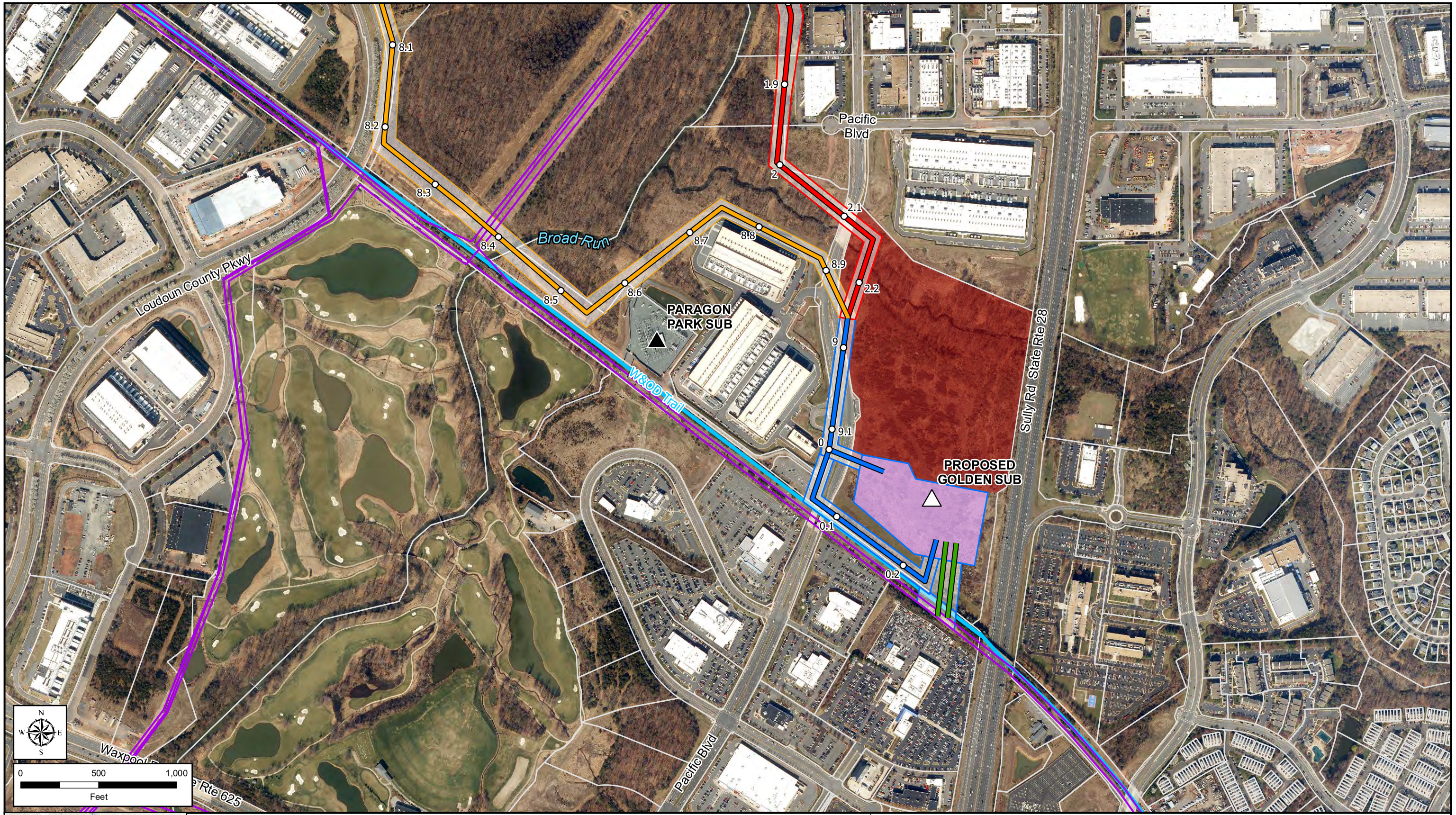


- Existing Substation
- Milepost
- Broad Run Variation A
- Broad Run Variation B
- Existing Dominion Transmission Line
- Convalescent Center
- W&OD Trail
- Planned Development - Data Center
- Loudoun Water
- Board of Supervisors Easement
- Parcel Boundary

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

ERM

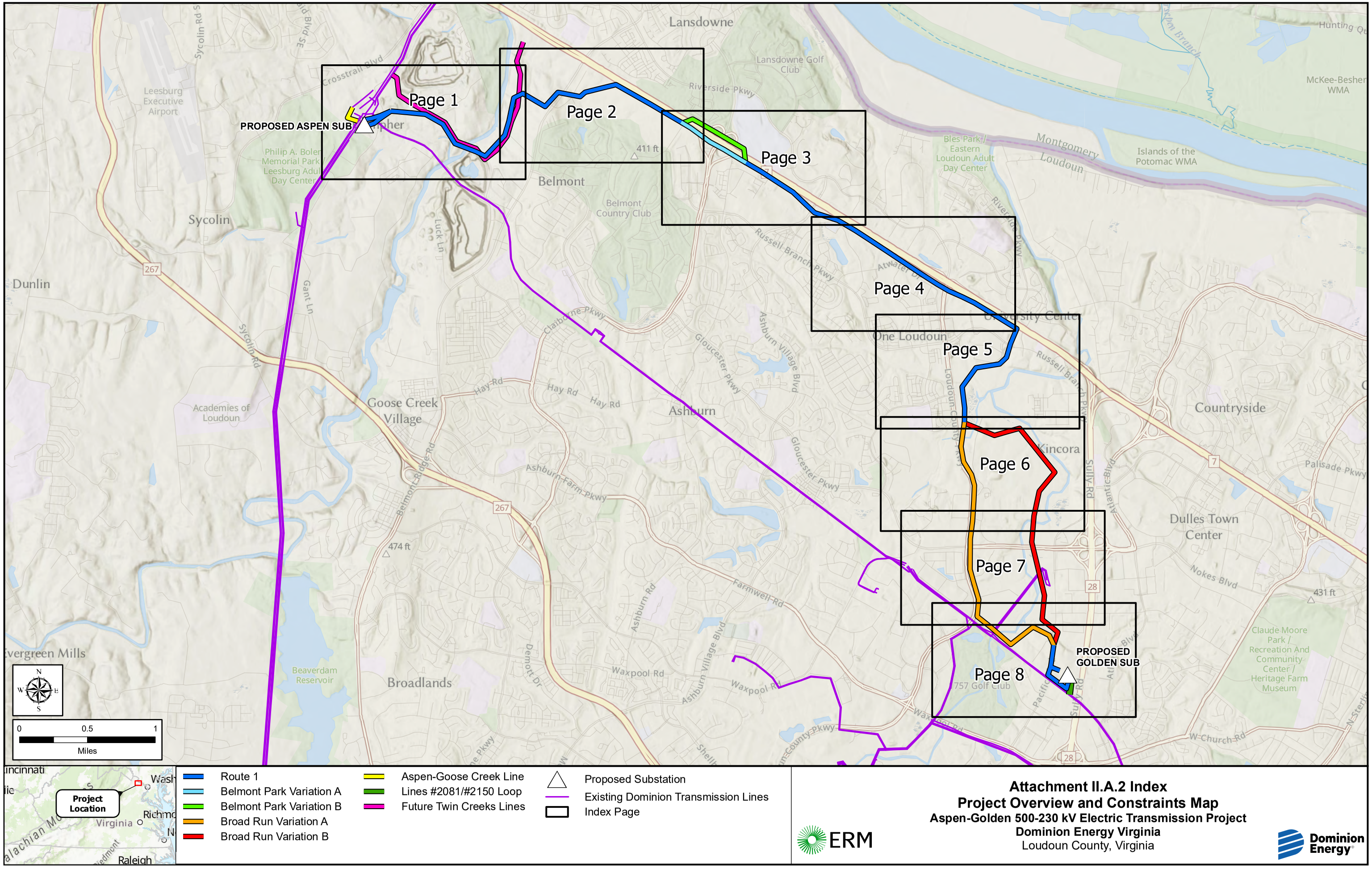
Dominion Energy



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

ERM

Dominion Energy



Attachment II.A.2 Index
Project Overview and Constraints Map
Aspen-Golden 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")

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

Response: See Attachment I.G.1 for existing transmission line rights-of-way and Attachment II.B.3.xi for proposed transmission line rights-of-way.

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: Aspen-Goose Creek Line #5002

The proposed Aspen-Goose Creek Line #5002 will be located entirely within existing rights-of-way or on Company-owned property. See Attachment II.A.6.

Aspen-Golden Lines

There is no existing Company-owned right-of-way that connects the proposed Aspen and Golden Substations adequate to accommodate the Aspen-Golden Lines as proposed.[36]

The Company has an existing 100-foot-wide right-of-way containing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274 (along the W&OD Trail). The existing right-of-way is located less than 0.1 mile north of the proposed Aspen Substation, extends to the southeast and crosses within 0.1 mile of the proposed Golden Substation. Despite the proposed substations' proximity to the existing 100-foot-wide right-of-way, 100 feet is insufficient to accommodate the existing Lines #227/#274 and the Aspen-Golden Lines. In order to utilize part of or collocate with this existing corridor for the Aspen-Golden Lines, an additional 75- to 100-foot-wide right-of-way would be required along either the north or south side of the existing right-of-way for the entirety of the length of the Aspen-Golden Lines, approximately doubling the current width. As discussed in Section 4 of the Environmental Routing Study, the additional new right-of-way to support collocation of the Aspen-Golden Lines with existing Lines #227 and #274 would require the removal of a minimum of 61 residences, as well as require obtaining new or expanded right-of-way from NOVA Parks. The Company does not support the removal of these existing homes because a viable alternative exists, and NOVA Parks does not support providing the Company with additional right-of-way in this area. Furthermore, it is unlikely that the Company could acquire new right-of-way along the Loudoun County School Board-owned lands or Loudoun County owned park lands that abut the existing right-of-way to the north and south of Line #227 and Line #274. As no other existing right-of-way connects the proposed Aspen and Golden Substations and the right-of-way of existing Line #227 and Line #274 is inadequate, there is no existing right-of-way that can adequately serve the need of the Company.

The Aspen-Golden Lines utilize existing Company-owned electric distribution

[36] But note, the Company is proposing to acquire sufficient right-of-way to collocate the future Twin Creeks Lines with the Aspen-Golden Lines. *See supra*, n. 6.

rights-of-way to the extent practicable. See Attachment II.A.6.

Lines #2081/#2150 Loop

The proposed Lines #2081/#2150 Loop will be located entirely within existing rights-of-way or on property to-be-owned by the Company. See Attachment II.A.6.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

a. ROW width for each cross section drawing;

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

c. Existing utility facilities on the ROW; and

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

Response: See Attachments II.A.5.a-c.[37]

For additional information on the structures, see Section II.B.3.[38]

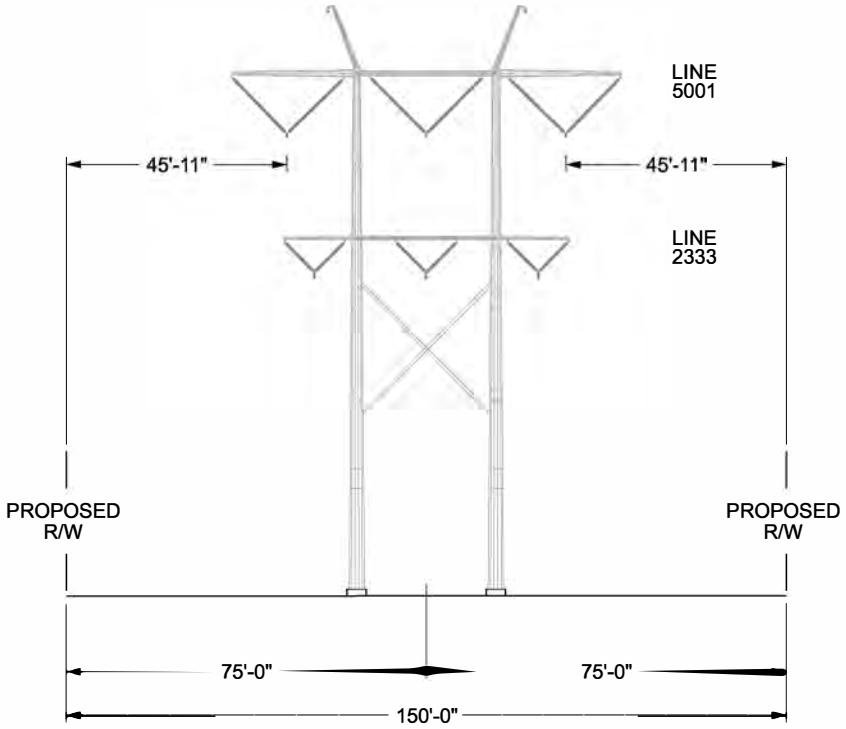
[37] Note that the right-of-way cross section drawing showing typical transmission line structure placements where the Aspen-Golden Lines and the future Twin Creeks Lines are collocated is provided in Attachment II.A.5.b. The total right-of-way in this section of the collocated lines varies from 200 feet to 260 feet, for an average of 225 feet, as noted on Attachment II.A.5.b. *See* page 1 of Attachment II.A.6 for a map depicting the right-of-way widths where the lines are collocated. The double circuit three-pole structure shown in Attachment II.A.5.b for the Aspen-Golden Lines is the typical structure supporting the Aspen-Golden Lines in the section collocated with the future Twin Creeks Lines (Structures #5001/6 / #2333/6 – #5001/12 / #2333/12). Additionally, the double circuit three-pole structure depicted in Attachment II.A.5.b has the greatest loading and largest footprint of the structures and conductors to the edge of the right-of-way, making it the most conservative right-of-way cross section drawing along this collocated section to analyze for electromagnetic field calculations. *See* Section IV.A. *See also* Section II.B.3 for the specific structure types proposed for the Aspen-Golden Lines within the collocated section. Finally, note that between Structures #5001/9 / #2333/9 - 5001/10 / 2333/10, the Aspen-Golden Lines cross over the future Twin Creeks Lines, at which point the remaining Aspen-Golden Lines structures in the collocated section are on the opposite side of the right-of-way (*i.e.*, a mirror image of the structures as shown in Attachment II.A.5.b).

[38] Note that the Company has not provided any attachments in Section II.A.5 representing the Aspen-Goose Creek Line #5002 or the Lines #2081/#2150 Loop as they will be located within existing right-of-way or on property owned or to-be-owned by the Company. As such, there is no actual new or defined right-of-way and, accordingly, no "typical transmission line structure placements referenced to the edge of the [right-of-way]." That said, the Company has included proposed structure drawings in Section II.B.3 representative of the Line #5002 structure (Attachment II.B.3.x) and of the Lines #2081/#2150 Loop structures (Attachment II.B.3.ix).

PRELIMINARY PROPOSED
ASPEN - GOLDEN

STRUCTURES: *5001/2,*5001/3, 5001/4, 2333/4, 5001/13, 2333/13 - 5001/16, 2333/16, 5001/63, 2333/63 - 5001/68, 2333/68

PROPOSED
500 KV & 230 KV CIRCUITS



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GOLDEN

NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 170' FOR THE 5-2 STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

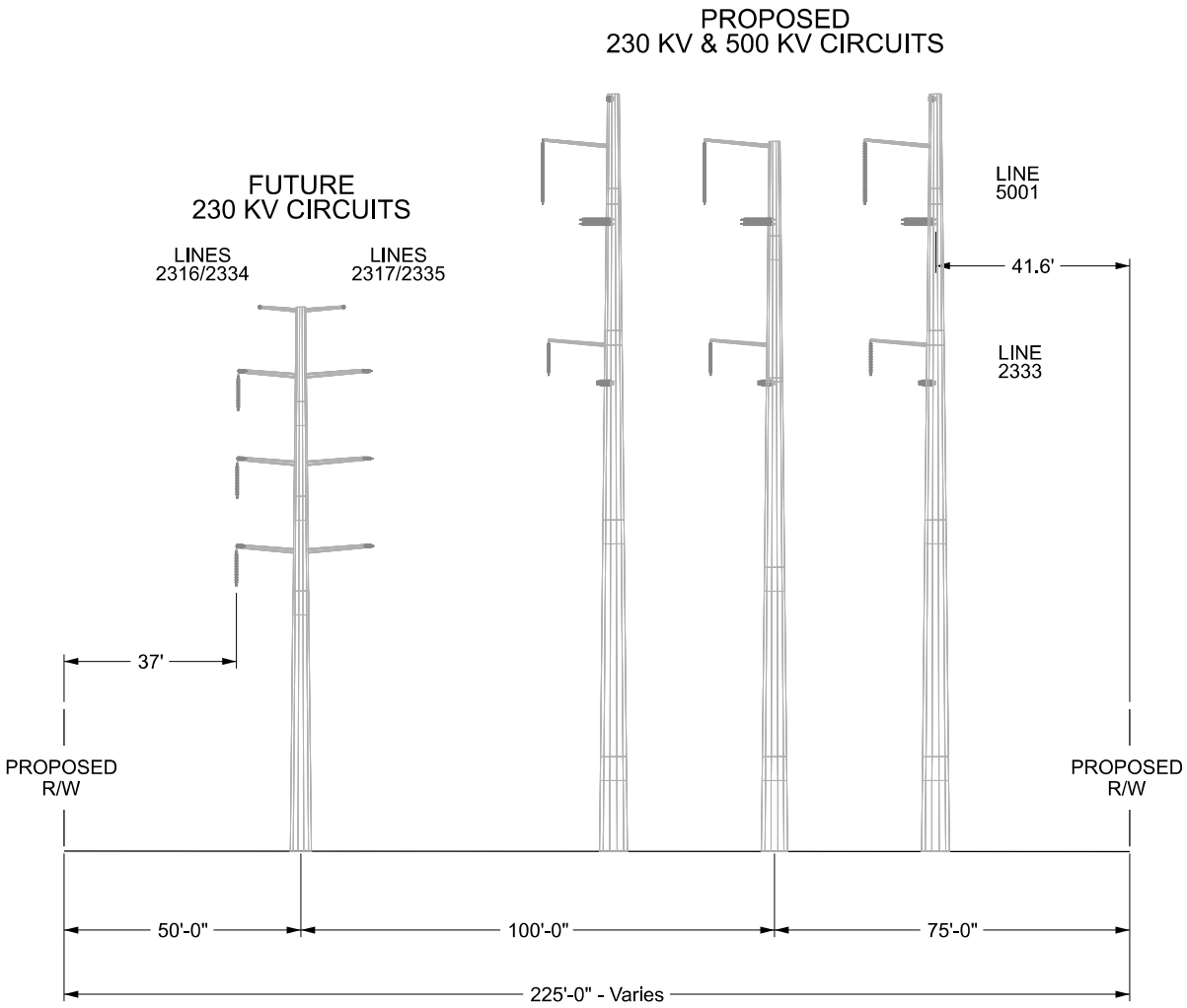
2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE.

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

* STRUCTURES 5001/2 AND 5001/3 ARE SINGLE CIRCUIT 500KV H-FRAME STRUCTURES WITH SIMILAR HEIGHT SAME ROW WIDTH.

PRELIMINARY PROPOSED
ASPEN - GOLDEN

STRUCTURES: 5001/6, 2333/6 - 5001/12, 2333/12



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GOLDEN

NOTE:

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

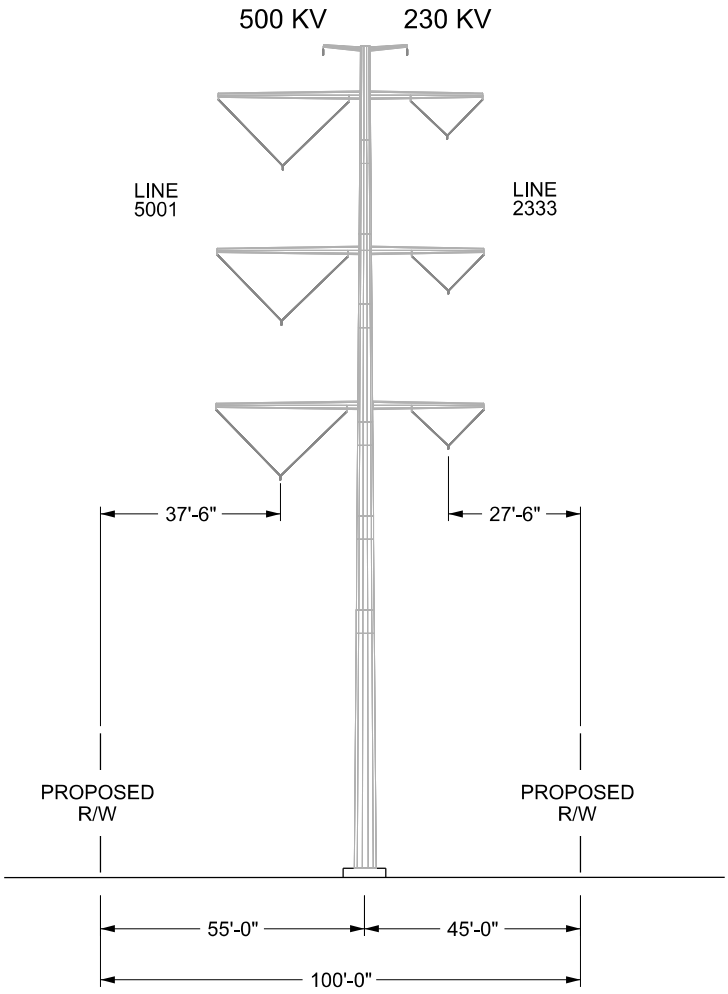
2. APPROXIMATE AVERAGE HEIGHT IS MEASURED FROM GROUNDLINE AT STRUCTURE CENTERLINE.

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

PRELIMINARY PROPOSED
ASPEN - GOLDEN

STRUCTURES: 5001/5, 2333/5, 5001/17, 2333/17 - 5001/62, 2333/62, 5001/69, 2333/69 - 5001/71, 2333/71

PROPOSED CIRCUITS



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GOLDEN

NOTE:

1. PROPOSED STRUCTURE SHOWN WITH APPROXIMATE AVERAGE HEIGHT OF 176' FOR THE 5-2 STRUCTURES. THIS DOES NOT INCLUDE FOUNDATION REVEAL.

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

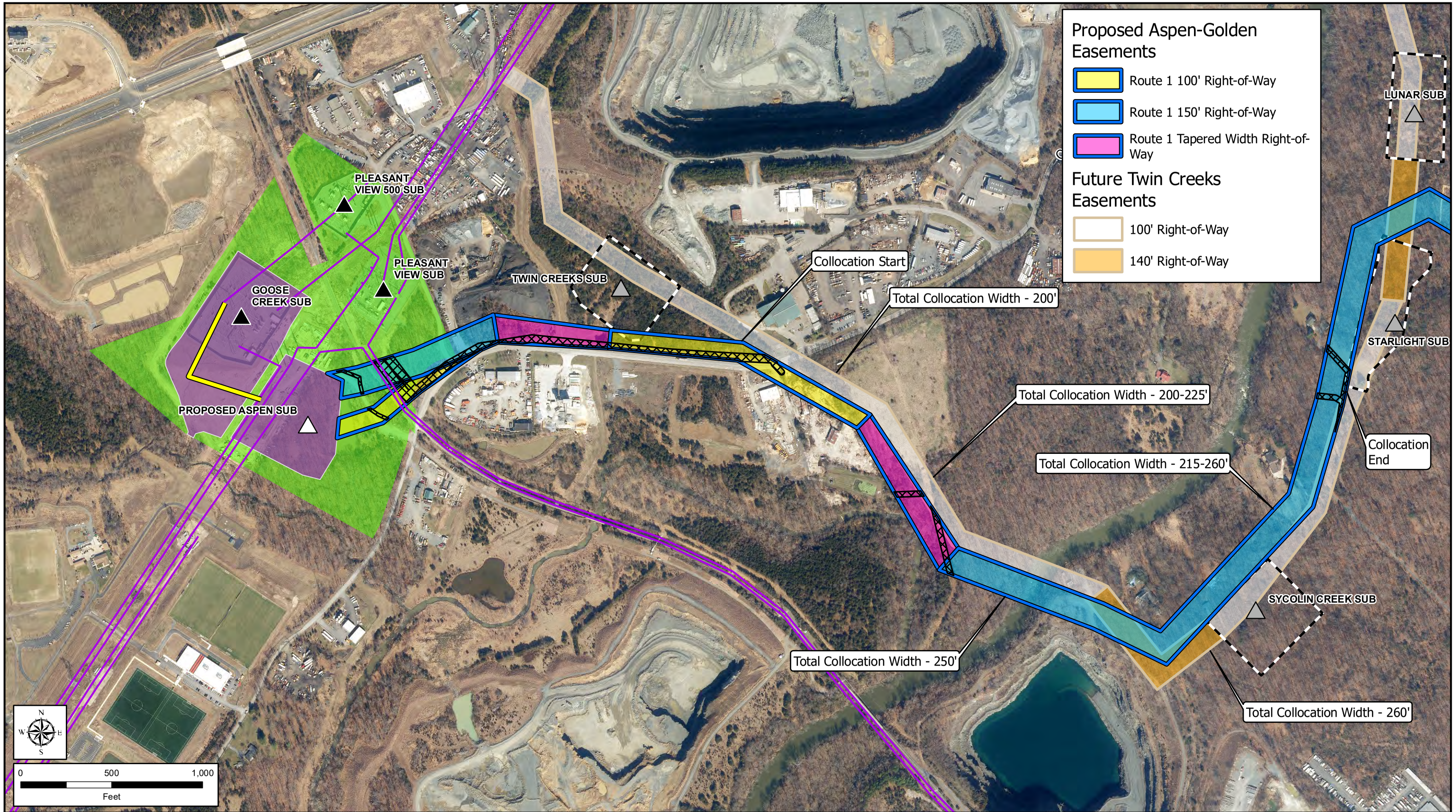
A. Right-of-way ("ROW")

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

Response: As discussed in Section II.A.4, there is no existing Company-owned transmission right-of-way that connects the proposed Aspen and Golden Substations adequate to accommodate the Aspen-Golden Lines as proposed. The proposed Aspen-Goose Creek Line and the proposed Lines #2081/#2150 Loop will be located entirely within existing rights-of-way or on Company-owned or to-be-owned property.

The majority of the right-of-way for the Aspen-Golden Lines Proposed Route will require easements for the new-build transmission lines except where the route (i) crosses Company-owned property at the proposed Aspen Substation, (ii) crosses existing Dominion Energy Virginia transmission lines, or (iii) crosses or runs parallel to portions of existing Dominion Energy Virginia distribution lines, in which case the Company would require expanded easements from the underlying property owners. The proposed Aspen and Golden Substations will be located on property owned by or to-be-owned by the Company.

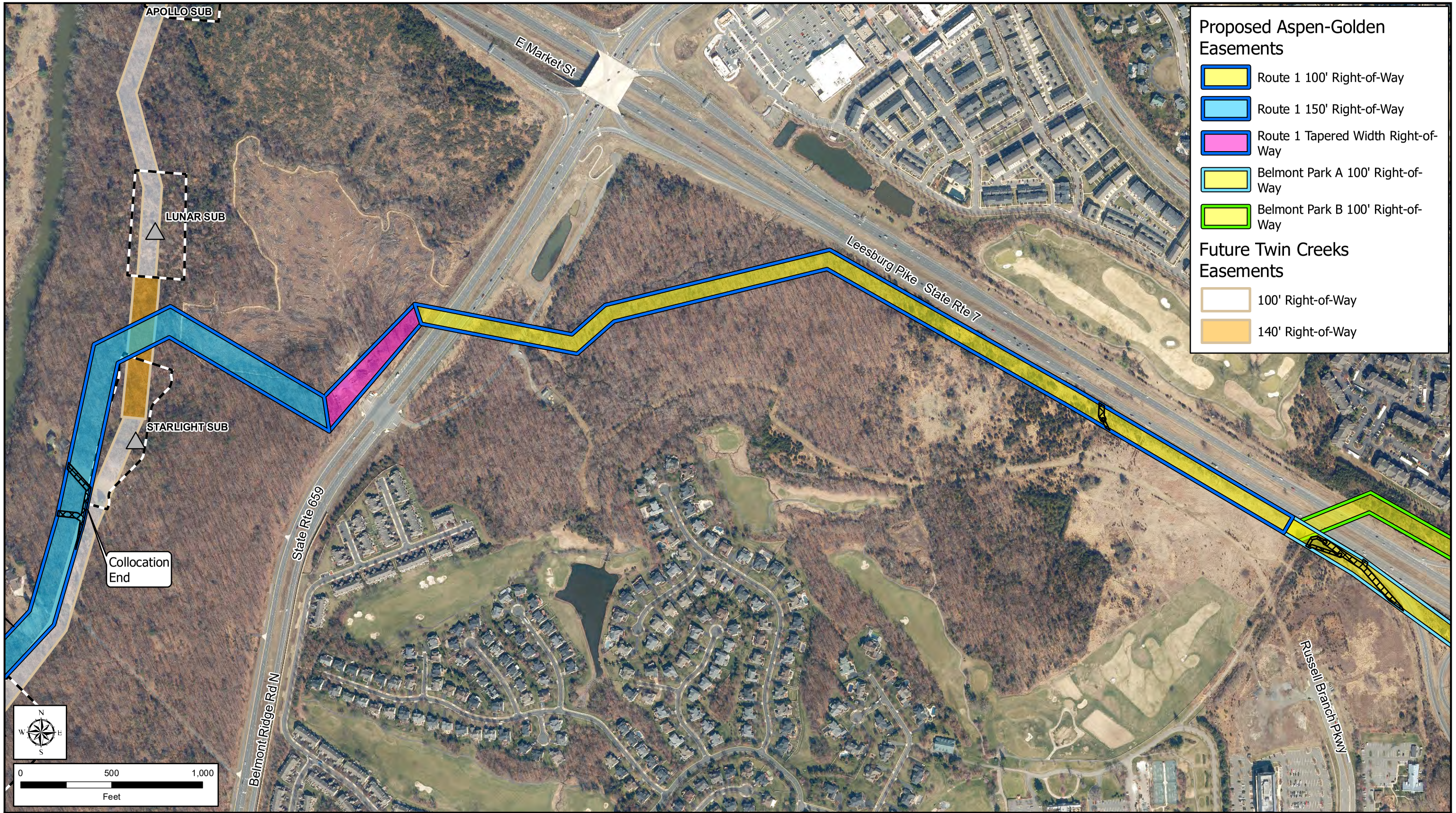
See Attachment II.A.6 for a depiction of the Aspen-Golden Lines Proposed Route right-of-way subject to existing easements, as well as approximate mapping of the proposed variable width right-of-way for the Aspen-Golden Lines where collocated with the future Twin Creeks Lines. Note that the Aspen-Goose Creek Proposed Route and the Line Loop Proposed Route are also depicted on the map.

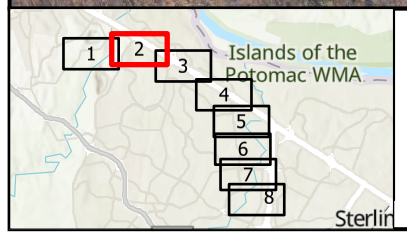


Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy





Future Substation

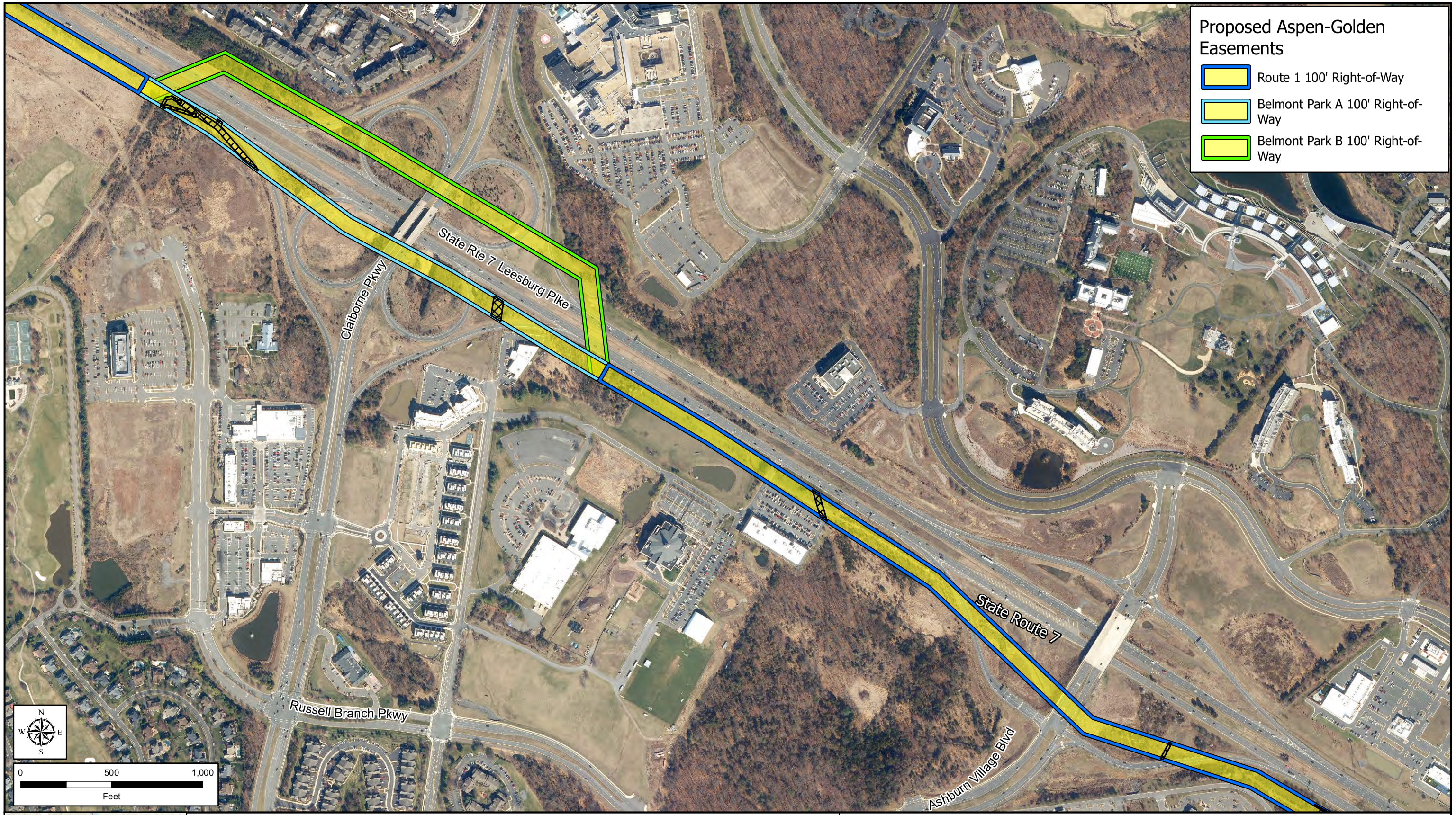
Existing Company Easement Crossed

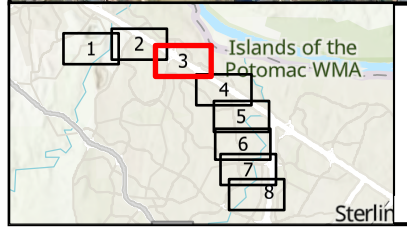
Future Substation

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

ERM

Dominion Energy



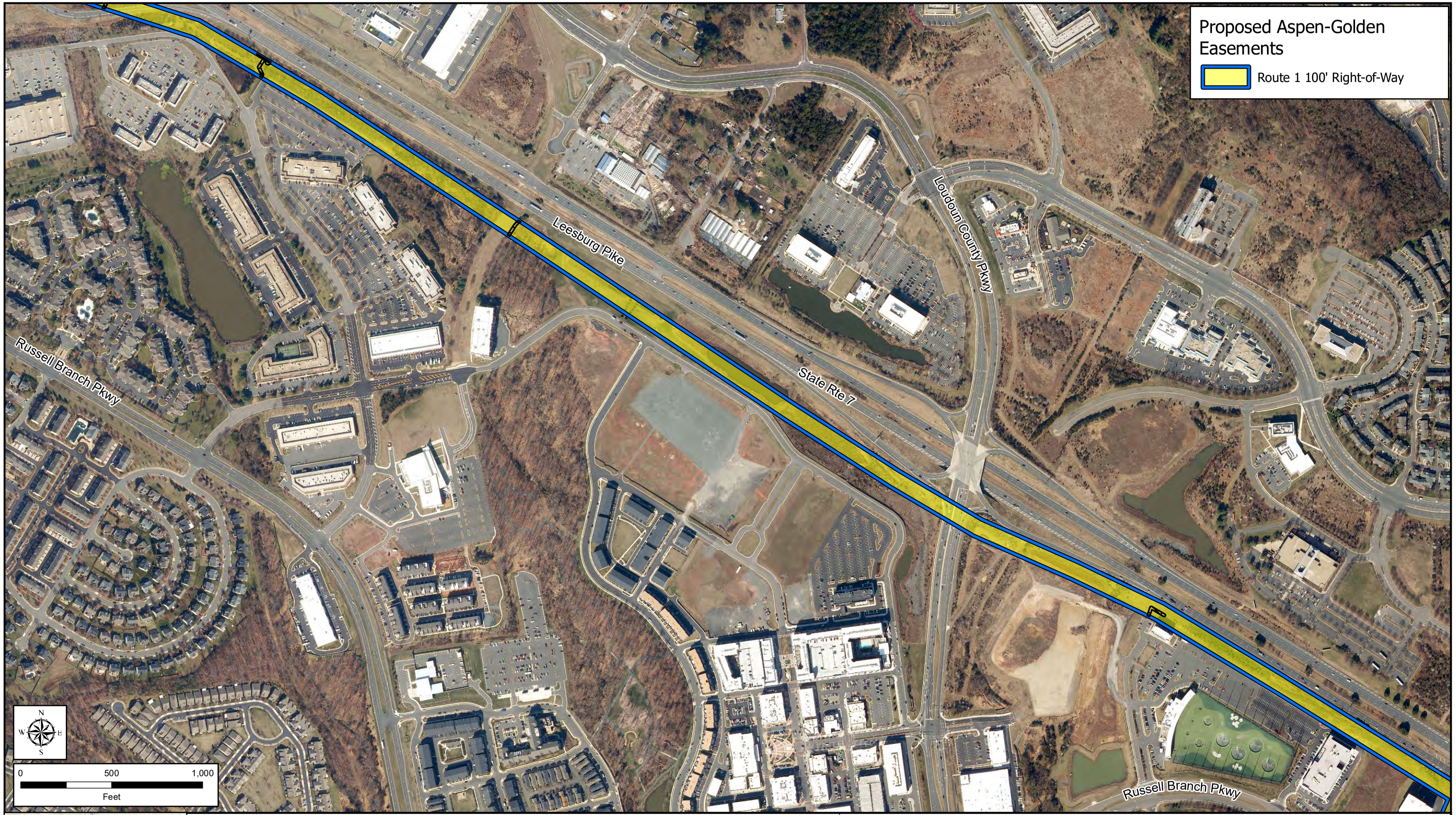


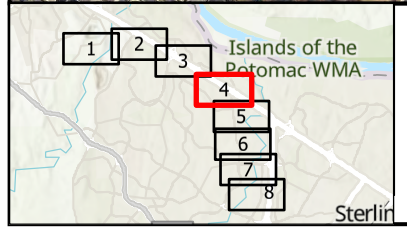
Existing Company Easement Crossed

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

ERM

Dominion Energy



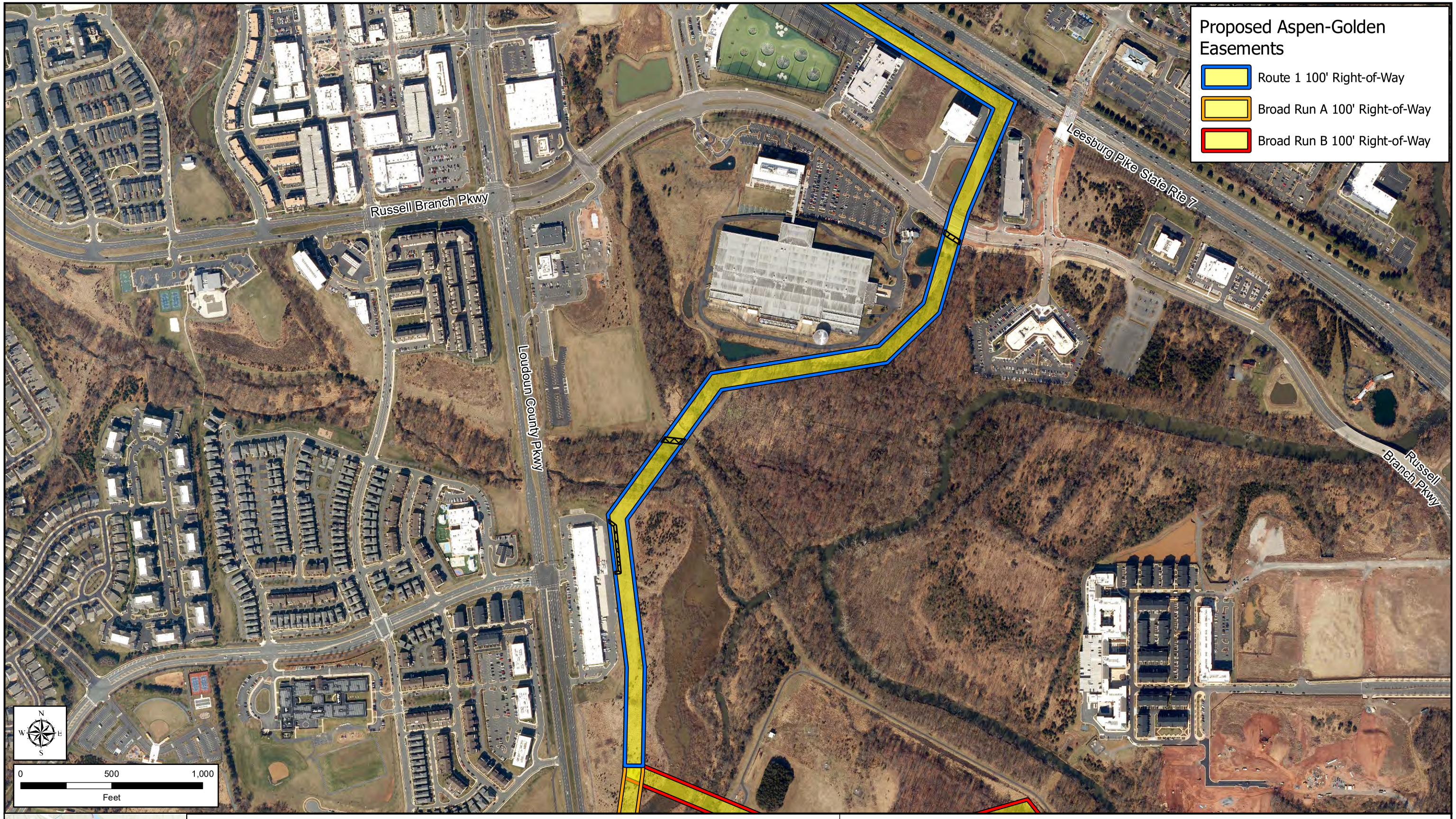


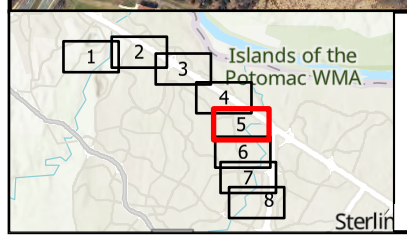
Existing Company Easement Crossed

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

ERM

Dominion Energy



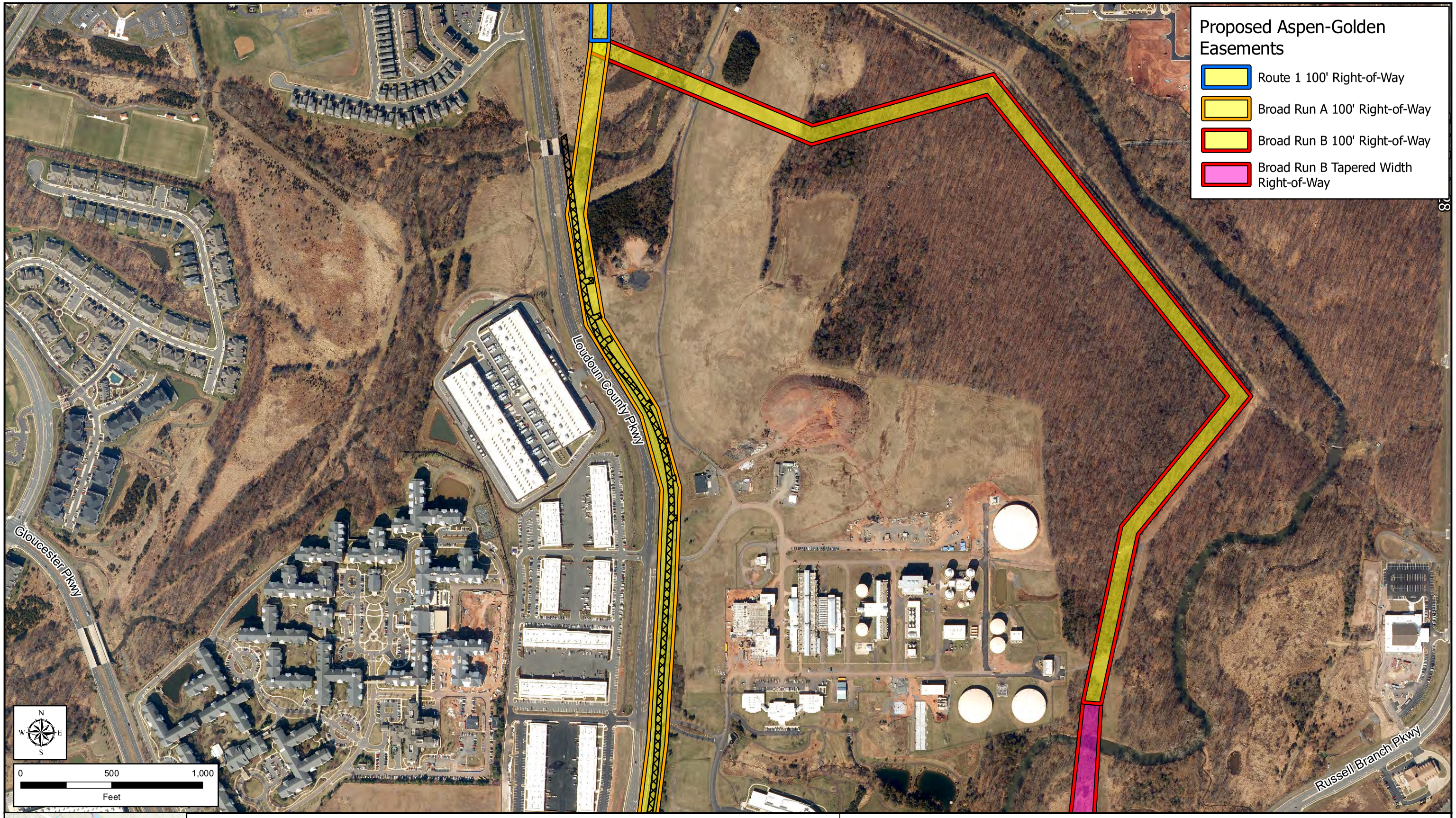


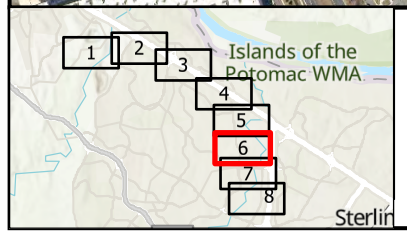
Existing Company Easement Crossed

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

ERM

Dominion Energy



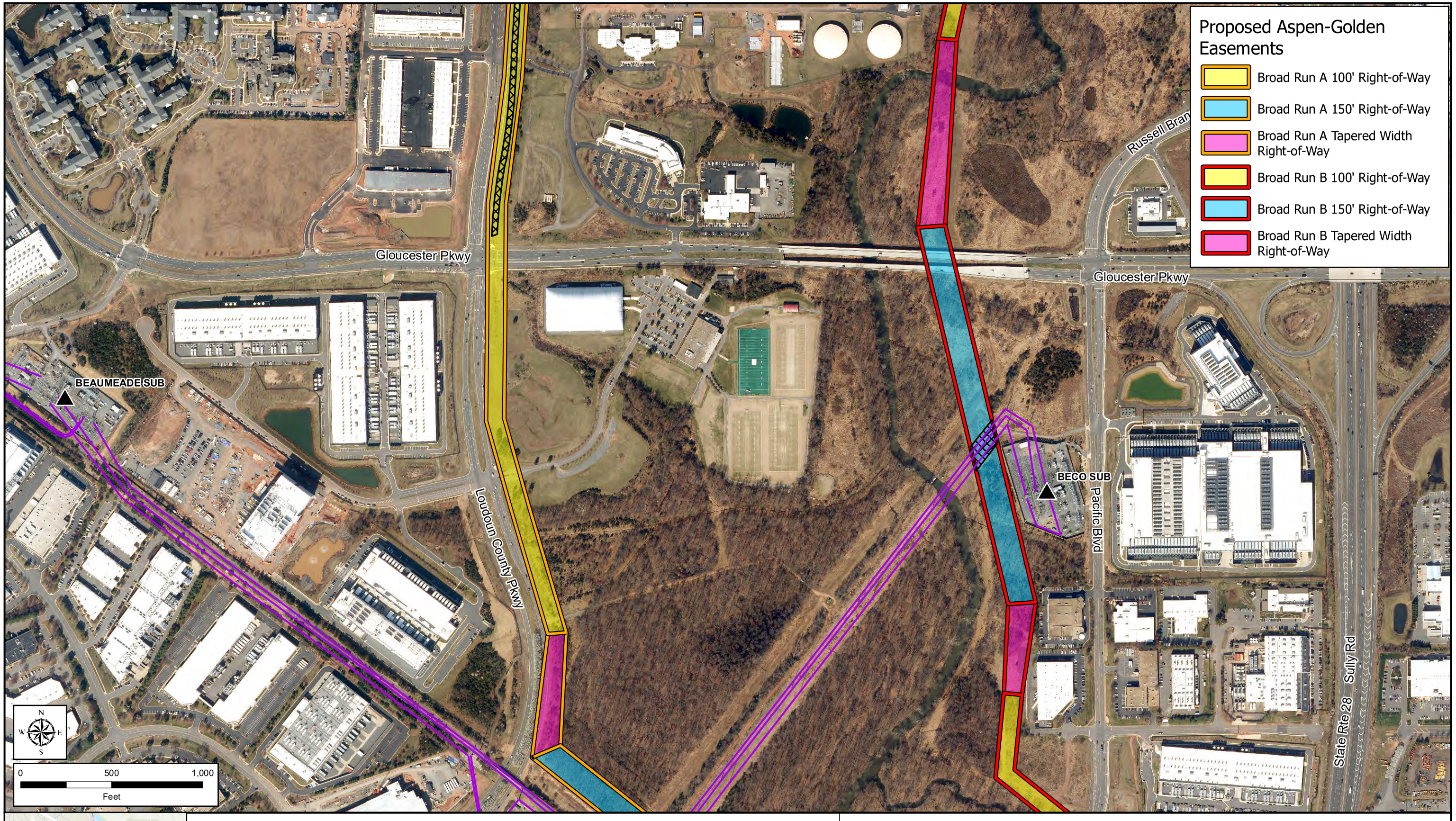


Existing Company Easement Crossed

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

ERM

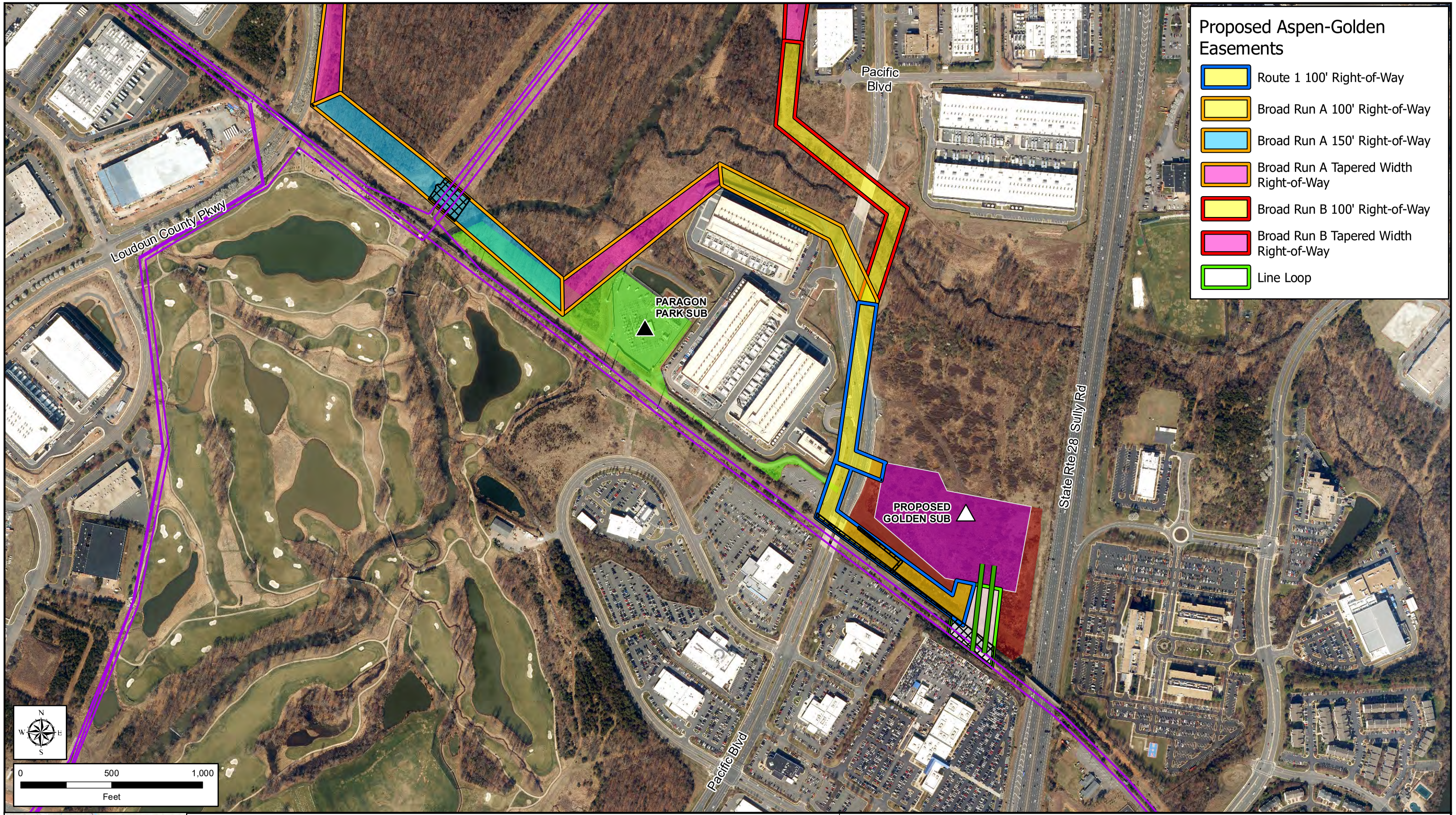
Dominion Energy

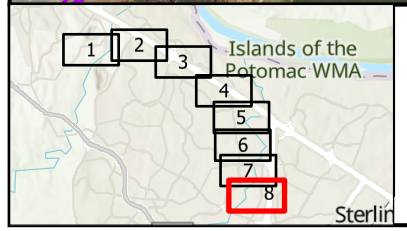


Attachment II.A.6
Right-of-Way Subject to New and Existing Easements
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Dominion Energy



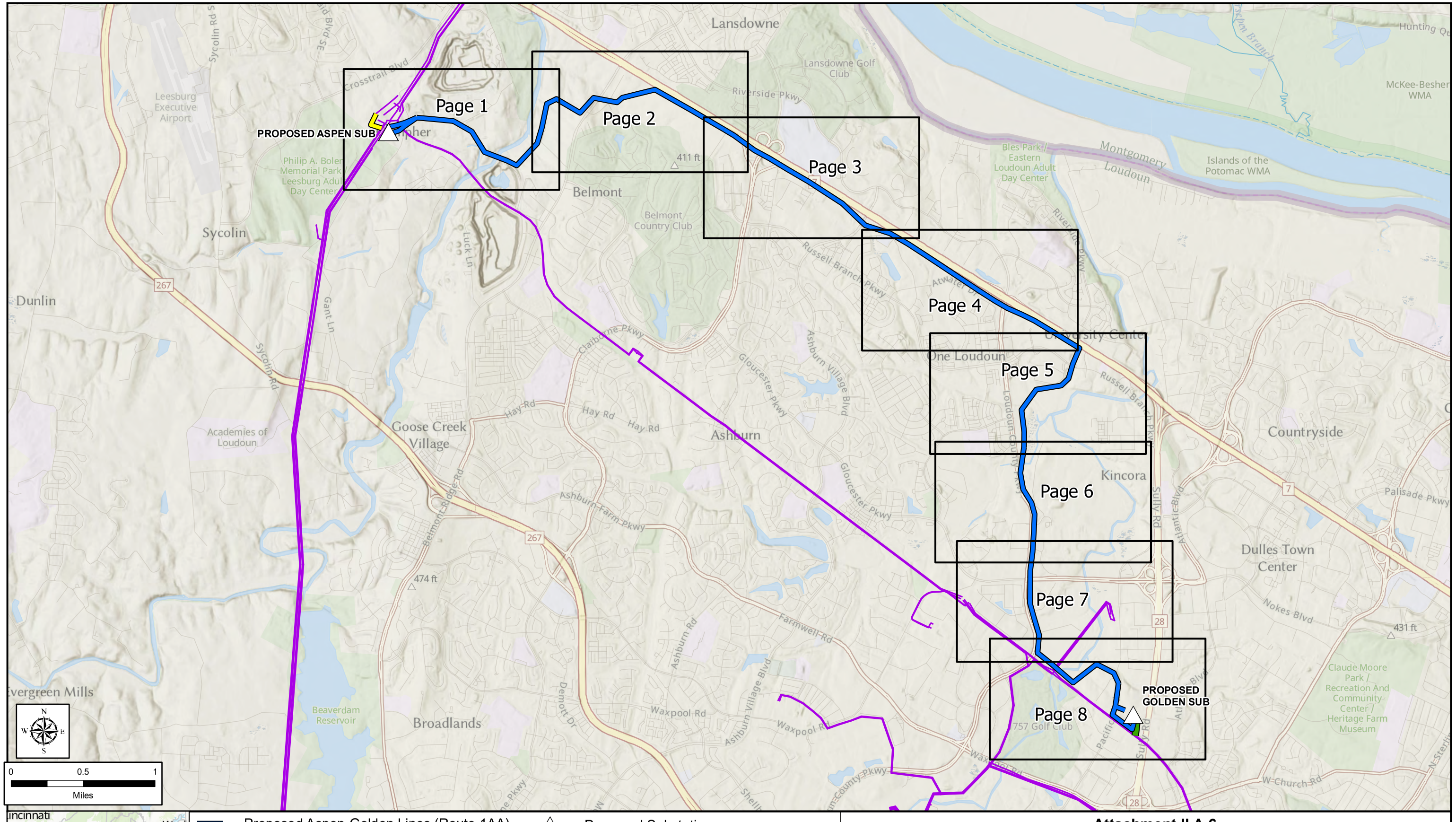


Lines #2081/#2150 Loop
Existing Substation
Proposed Substation
Existing Dominion Transmission Line
Existing Company Easement Crossed
Company Owned Land
Land to be Obtained by the Company
Substation Boundary

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

ERM

Dominion Energy



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

ERM

Dominion Energy

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The right-of-way width for the Aspen-Golden Lines Proposed Route will vary between 100 and 150 feet wide. See Attachment II.A.6. Based on existing conditions, tree clearing would be required along limited portions of the Aspen-Golden Lines Proposed Route that are not maintained as grasses or shrubs, or have not been cleared during recent land development.[39]

Based on existing conditions, tree clearing required for the Aspen-Goose Creek Line will be limited to the Aspen Substation and the alignment of Route 1 where it exits the substation, which is anticipated to be minimal to none.[40]

Based on existing conditions, tree clearing will be required along the Lines #2081/#2150 Loop.[41]

Trimming of tree limbs along the edge of the right-of-way also may be conducted to support construction activities for the Project. For any such minimal clearing within the right-of-way, 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*

[39] *See supra*, n. 6. To be clear, only the proposed 100- to 150-foot-wide right-of way for the proposed Aspen-Golden Lines as described herein will be cleared and utilized for the proposed Project. The additional 100 to 140 feet that the Company seeks to voluntarily obtain for purposes of the future Twin Creeks Lines would not be cleared.

[40] *See infra*, n. 53.

[41] *See infra*, n. 53.

Maintenance of Linear Electric Transmission Facilities that was approved by the Virginia Department of Environmental Quality ("DEQ"). Time of year and weather conditions may affect when permanent stabilization takes place.

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

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

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

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

For the Aspen-Golden Lines, 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 found one electrical option for the Aspen-Golden Lines, which is located entirely within Loudoun County, Virginia.[42]

The study area encompasses an area containing the Aspen-Golden Lines origin and termination points and is bounded by the following features:

- The Company's existing 500 kV Line #558 to the west;
- Riverside Parkway to the north;

[42] Because the existing right-of-way and Company-owned or to-be-owned property are adequate for the proposed Aspen-Goose Creek Line #5002 and Lines #2081/#2150 Loop, no new right-of-way is required. Given the availability of existing right-of-way and the statutory preference given to use of existing rights-of-way, and because additional costs and environmental impacts would be associated with the acquisition of and construction on new right-of-way, the Company did not consider any alternative routes requiring new right-of-way for the proposed Aspen-Goose Creek Line or the Line Loop. Accordingly, those Project components are not discussed in this Section II.A.9 of the Appendix.

- Atlantic Boulevard to the east; and
- State Route 267 (Dulles Greenway) to the south.

The Company considered the facilities required to construct and operate the new infrastructure, the length of new right-of-way that would be required for the Aspen-Golden Lines, the amount of existing development in the area, the potential for environmental impacts and impacts on communities, and cost. As discussed in more detail below and in the Environmental Routing Study, ERM identified four viable overhead route alternatives based on Route 1 and the combination of four viable route variations (Belmont Park Variation A and B and Broad Run Variation A and B) for the Aspen-Golden Lines.

In anticipation of public interest regarding underground options for the Aspen-Golden Lines, multiple underground routing solutions were studied to assess feasibility, cost, impacts, and schedule. In addition to how unprecedented it is to underground high voltage lines (500 kV or greater), especially at this length, the Company concluded that it would be inappropriate to propose an underground solution for the Aspen-Golden Lines in the context of the study area because a viable, constructable overhead solution exists. Further discussion of underground feasibility is discussed in Section 5.3.2 of the Environmental Routing Study.

In addition to the Company's own analysis and at the request of the Lansdowne Conservancy, the Company reviewed a proposal for a hybrid overhead/underground route utilizing an underground segment along Rt. 7. Representatives of the Lansdowne Conservancy proposed that an approximately 2.0-mile-long segment of Route 1 (from Belmont Ridge Road to Ashburn Village Boulevard) be installed underground. The Lansdowne Conservancy provided the Company with a feasibility study produced by RLC Engineering, LLC titled *500kV and 230kV XLPE Dual Circuit Underground Transmission Lines Summary Estimate*, dated January 31, 2024. The Company reviewed this report and determined several of the underlying assumptions used by RLC Engineering, LLC were not applicable to the Project, including the total number of cables per phase per circuit required to meet the Company's loading requirements, the cable and ductbank spacing, the size of the ductbank, and the area required to construct and operate transition stations. Furthermore, the report did not specify the size and location of temporary workspace or the width of the permanent right-of-way needed for ductbank installation and/or trenchless installation methods such as horizontal directional drilling.

The assumptions used in the study by RLC Engineering LLC did not appear to allow for the underground segment to meet the Company's construction and operations standards or the electrical requirements of the Project from a planning perspective. As a result, the Company did not believe that a hybrid project as

presented in the report was viable. The report additionally did not appear to account for major routing constraints and permitting risks, including crossings of planned developments, the need to condemn and remove one or more commercial buildings, crossings of known archaeological sites, the need to relocate gas and water utilities, the inability to serve future delivery point requests at two proposed data center campuses, impacts to nearby residences, and significant delay to the Project in-service date.

The Company met with Lansdowne Conservancy and RLC Engineering, LLC on February 15, 2024, to discuss the underground study and share information on engineering and routing. Following the meeting, the Company continued to discuss their underground proposal. In particular, the Lansdowne Conservancy's claim that the 2.0-mile underground segment would significantly alleviate visual impacts to nearby historic resources is unfounded. Based on the location of the transition stations, the underground route would likely exacerbate visual impacts to several resources, particularly Janelia and the African American Burial Ground for the Enslaved at Belmont. In contrast to the overhead structures, the transition stations needed for the underground route—a minimum of five acres in size and similar in scale to substations—could localize and intensify visual impacts to the nearby Belmont neighborhood and the Community Church, if parcels of that size exist in the area.

For the reasons discussed above and in Section 5.3.2 of the Routing Study, no viable underground or hybrid alternatives exist for the Project.

PROPOSED AND ALTERNATIVE ROUTES

As discussed in Section I.A, ERM identified a total of four route alternatives comprised of a combination of Route 1, Belmont Park Variation A or B, and Broad Run Variation A or B, as follows:

- Proposed Route (Route 1AA): Route 1 with Belmont Park Variation A and Broad Run Variation A (approximately 9.4 total miles);

- Alternative Route 1AB: Route 1 with Belmont Park Variation A and Broad Run Variation B (approximately 9.5 total miles);

- Alternative Route 1BA: Route 1 with Belmont Park Variation B and Broad Run Variation A (approximately 9.4 total miles); and

- Alternative Route 1BB: Route 1 with Belmont Park Variation B and Broad Run Variation B (approximately 9.5 total miles).

As all four Aspen-Golden Lines route alternatives are comprised of a combination of the Route 1 Segment, a Belmont Park Variation, and a Broad Run Variation, the discussion of each segment of the route alternatives are described separately below.

Estimated conceptual costs for the Proposed and Alternative Routes are provided in Section I.I.

Route 1

Route 1 would construct an overhead 500 kV transmission line with a 230 kV transmission line entirely on new 100- to 150-foot-wide right-of-way to support a 5-2 configuration on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide right-of-way) or monopole or two-pole structures (100-foot-wide right-of-way). Route 1 is comprised of three segments separated by the Belmont Park Segment (Belmont Park Variation A and B) and the Broad Run Segment (Broad Run Variation A and B). Route 1 begins at the proposed Aspen Substation and extends approximately 2.9 miles to the Belmont Park Segment, continues from the Belmont Park Segment approximately 3.3 miles to the Broad Run Segment, and then continues for 0.4 mile from the Broad Segment to where it terminates at the proposed Golden Substation. No alternatives to Route 1 were selected due to limits to constructability and significant impacts to one or more sensitive environmental or cultural resources. Discussion of the routes that the Company studied but ultimately rejected is provided in the Environmental Routing Study included with the Application.

Route 1 begins at the proposed Aspen Substation, located on a Company-owned parcel on the east side of the existing 500 kV Brambleton-Goose Creek Line #558, and west of the intersection of Cochran Mill Road and Samuels Mill Court. Route 1 leaves the proposed Aspen Substation heading northeast along two separate new rights-of-way[43] and then crosses the existing 230 kV Line #227/#274 transmission corridor, east of the proposed Aspen Substation. After crossing existing Lines #227 and #274, the rights-of-way merge into one new predominantly 100-foot-wide right-of-way. See Attachment II.A.6. As Route 1 continues east along the north side of Cochran Mill Road for approximately 0.4 mile, it crosses the southern edge of the future Twin Creeks Substation. From there, Route 1 crosses Cochran Mill Road and Goose Creek as it turns southeast for an approximately 0.6 mile crossing between proposed buildings on a planned data center campus. After crossing Goose Creek, Route 1 turns north for approximately 0.5 mile and passes the future Sycolin Creek and Starlight Substations. North of the future Starlight Substation, Route 1 turns east for 0.9 mile, crossing between two proposed data center campuses, over Belmont Ridge Road, then along the west side of a forested, undeveloped parcel, currently planned as a data center campus, whereupon it reaches the south side of Rt. 7. Route 1 then turns to the southeast to parallel Rt. 7 for approximately 0.6 mile where it reaches the Belmont Park Segment described below.

After the Belmont Park Segment, Route 1 continues southeast along the south side of Rt. 7 for approximately 2.4 miles as it crosses Ashburn Village Boulevard and Loudoun County Parkway. Before reaching George Washington Boulevard Bridge, Route 1 turns south for 0.3 mile, crossing Russell Branch Parkway, and

[43] *See supra*, n. 4 and Attachment II.A.6.

then turns to the southwest for 0.3 mile toward Loudoun County Parkway south of an existing data center building, where it crosses portions of two parcels (approximately 0.4 mile total) dedicated to the Loudoun County Board of Supervisors ("BOS") as open space easements.

Note that the Company is working with the Loudoun County BOS and County Attorney to secure approval of the approximately 0.4-mile BOS open space easement crossings. The crossings of the two easement parcels will result in the installation of two double circuit two-pole structures (Structures #5001/47-48 / #2333/47-48 and #5001/48 / #2333/48) on one BOS easement and installation of one double circuit two-pole structure (Structure #5001/49 / #2333/49) on the other. On February 8, 2024, the Company met with the Loudoun County Attorney, Deputy County Administrator, and Senior Land Use Planner to discuss routing and the proposed BOS easement crossings. The Company explained that in order to avoid residential development, maximize collocation along existing buried utilities, and minimize environmental impacts, the BOS easement crossings were the preferred route alternatives. Rather than include inferior route alternatives that avoid the BOS easements—any of which would result in greater impacts to Loudoun County residents and environmental resources—the Company suggested working toward consensus on a single route alignment that best achieved County Staff's direction, land use planning objectives, and stakeholder preference. County Staff concurred with the Company's proposed route alignment and agreed to work toward BOS approval. Without County support and approval of the proposed BOS easement crossings, Route 1 would no longer be viable and the Company would revert the Route 1 alignment to one of several rejected alternatives. After crossing the BOS easements, Route 1 turns south for 0.3 mile and reaches the Broad Run Segment described below.

Resuming after the Broad Run Segment, Route 1 continues south for approximately 0.1 mile, crossing Pacific Boulevard. Route 1 then splits into two separate new rights-of-way, with the 500 kV Line #5001 heading east into the proposed Golden Substation and the 230 kV Line #2333 continuing south and east for 0.3 mile to enter the proposed Golden Substation from the south.[44] In total, the 500 kV component of Route 1 measures approximately 6.4 miles in length, and the 230 kV component of Route 1 measures approximately 6.6 miles in length.

Route 1 will cross a total of 45 parcels affecting 106.1 acres of right-of-way. A total of 44 privately owned parcels and one publicly owned parcel (a NOVA Parks owned parcel with an existing Company easement) will be crossed. Land use along the right-of-way consists of 56.5 acres of forested land, 20.4 acres of open space, 1.6 acres of open water, and 27.6 acres of developed area. No agricultural land is crossed by Route 1.

[44] *See supra*, n. 5 and Attachment II.A.6.

Route 1 will be collocated with existing linear facilities for approximately 76% (5.0 miles) of its total length, including 3.6 miles collocated within existing roadways, 0.2 mile with existing transmission lines, 0.4 mile with existing water and sewer lines, and 0.9 mile with the future Twin Creeks Lines.

The existing zoning along Route 1 includes 70% (4.6 miles) zoned as either Industrial Park ("IP"), General Industrial ("GI"), or Mineral Resource/Heavy Industry ("MR-HI"), which allow data centers as a by-right use. In addition, it also crosses 23% (1.5 miles) of land zoned as Office Park ("OP"), which had data center as a by-right use prior to adoption of the December 2023 Zoning Ordinance, and as such, OP parcels with a previously submitted data center site plan are still considered a permitted (by-right) use. Of the 1.5 miles of OP-zoned land crossed by Route 1, approximately 0.9 mile are parcels with a data center site plan submitted to Loudoun County prior to December 2023. Therefore, a total of 83% (5.5 miles) of Route 1 is located on land that allows by-right data center development. As discussed in Section 6.1 of the Environmental Routing Study, land use, including current zoning and planned developments, is carefully considered in the routing process with the goal of avoiding incompatible land uses (*e.g.*, residential areas) in favor of areas that are more compatible with new overhead transmission lines (*e.g.*, data centers and industrial areas).

Route 1 minimizes impacts to residences in an area where the predominate land use is residential. There is one existing single-family residence within 250 feet of the centerline and two single-family residences within 500 feet of the centerline of Route 1. The one residence within 250 feet of the centerline is a single-family home that is located on a parcel near Goose Creek in the MR-HI zoning district, and the one additional residence within 500 feet of the centerline is a multi-family home that is approximately 490 feet from the centerline across Belmont Ridge Road. The Company has coordinated directly with the landowner and resident located within 250 feet of the centerline to minimize impacts to the extent practicable. No commercial buildings are located within the Route 1 right-of-way.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Route 1 will encompass approximately 15.4% (16.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these, less than half (6.4 acres) consist of forested wetlands. Route 1 has a total of 32 waterbody crossings, including 27 intermittent streams and 3 perennial waterbodies. Route 1 will require the clearing of approximately 55.2 acres of forested land. Of this forested land, 0.4 acre is classified as having a Forest Conservation Value ("FCV") of "high," 3.1 acres are classified as "moderate," and 30.2 acres are classified as "average."

Route 1 is the least impactful alignment for the Aspen-Golden Lines because it maximizes collocation opportunities along major roadways and existing utility corridors, best avoids existing homes and businesses, and provides the greatest degree of compatibility with existing and planned land use in the study area. Route

1 collocates with the future Twin Creeks Lines across Goose Creek (thereby ensuring one, not two, new transmission line corridors across the Scenic River) and three future data center campuses and anticipates two future delivery points at planned data centers between Belmont Ridge Road and Ashburn Village Boulevard. After extensive study and public outreach, several route alternatives and variations for Route 1 were rejected because they were either more impactful to one or more resources or contradicted input the Company received from the public and stakeholders. Because the foremost concern voiced by the community was the Project's potential for visual impacts to residential areas, routing along Rt. 7 and major roadways, and away from existing neighborhoods, is the most practical solution for minimizing visibility of the lines.

Belmont Park Variation A

Belmont Park Variation A would construct an overhead 500 kV transmission line with a 230 kV transmission line on new 100-foot-wide right-of-way to support a 5-2 configuration on dulled galvanized steel monopole structures. Belmont Park Variation A extends approximately 0.6 mile between the adjacent segments of Route 1.

From the first segment of Route 1 (approximately 0.3 mile west of Claiborne Parkway), Belmont Park Variation A follows the south side of Rt. 7 for approximately 0.6 mile to the southeast, crossing the Rt. 7-Claiborne Parkway interchange before rejoining Route 1 approximately 0.3 mile east of Claiborne Parkway.

Belmont Park Variation A will cross four privately owned parcels and Virginia Department of Transportation ("VDOT") right-of-way (at the Claiborne Parkway-Rt.7 interchange) affecting 6.9 acres of right-of-way. Land use along the right-of-way consists of 2.3 acres of forested land, 0.8 acre of open space, and 3.7 acres of developed area. No agricultural land or open water is crossed by Belmont Park Variation A.

The existing zoning along Belmont Park Variation A includes 67% (0.4 mile) zoned as either IP or OP, both of which allow data centers as a by-right use, while approximately 0.2 mile of land zoned as either Residential 16 ("R-16") or Rural Commercial ("RC") comprise the remaining zoning districts crossed. There is currently one existing 48-unit multi-family building within 500 feet of the Belmont Park Variation A centerline (approximately 460 feet to the south), and no residences within 100 or 250 feet of the centerline. Belmont Park Variation A has approximately three planned dwellings (attached single-family townhomes) within 100 feet of centerline, 34 planned future residential units within 250 feet, and 90 planned future residential units within 500 feet of the centerline. The Company has coordinated with the affected developer to adjust the right-of-way to avoid residential lot encroachments in order to minimize impacts to the approved site plan

and proffers. No commercial buildings are located within the Belmont Park Variation A right-of-way.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Belmont Park Variation A will encompass approximately 11.6% (0.8 acre) of land with a medium or higher probability of containing wetlands and waterbodies. Of these, the majority (0.7 acre) consist of forested wetlands. Belmont Park Variation A has no waterbody crossings. Lastly, Belmont Park Variation A will require the clearing of approximately 2.3 acres of forested land, 0.1 acre of which is classified as having a FCV classification of "average."

Belmont Park Variation A is primarily located on IP and OP zoned land, including parcels with proposed data center developments. Although Belmont Park Variation A would cross an approved residential development for 0.1 mile, construction has not commenced on the residential development as of March 2024 and the right-of-way has been adjusted so that it would not cross any of the approved residential lots. Belmont Park Variation A has zero residences within 250 feet of the centerline, and only one multi-family building within 500 feet of the centerline. In addition, Belmont Park Variation A is collocated entirely along Rt. 7, and it would not require crossing Rt. 7, thereby avoiding significant VDOT coordination and permitting for construction, and operations and maintenance activities. Inova Loudoun Hospital also indicated in an email to the Company on February 15, 2024, that the Belmont Park Variation A would not likely impact use of their existing helipad as long as the transmission line has the appropriate visual markers. See Attachment III.H.1 for a copy of the email. In contrast, the Belmont Park Variation B would impact helipad operations. See additional discussion in Section III.H. For these reasons, Belmont Park Variation A was selected to be incorporated into the Aspen-Golden Lines Proposed Route.

Belmont Park Variation B

Belmont Park Variation B would construct an overhead 500 kV transmission line with a 230 kV transmission line on new 100-foot-wide right-of-way in order to support a 5-2 configuration primarily on dulled galvanized steel double circuit monopole and two-pole structures. Belmont Park Variation B extends approximately 0.6 mile between the adjacent segments of Route 1.

From Route 1 (approximately 0.3 mile west of Claiborne Parkway), Belmont Park Variation B turns northeast for 0.1 mile and crosses Rt. 7. The route then follows the north side of Rt. 7 for 0.4 mile, crossing Lansdowne Boulevard, where it crosses Rt. 7 and rejoins Route 1 (approximately 0.3 mile east of Claiborne Parkway). While the length of Belmont Park Variation A and B are similar, due to the crossing of Rt. 7, the Belmont Park Variation B will require four two-pole angle structures and three monopoles for seven total structures, while Belmont Park Variation A only requires four monopole structures, and no two-pole angle structures.

Belmont Park Variation B will cross a total of five parcels affecting 7.7 acres of right-of-way. A total of five privately owned parcels are crossed, as well as two crossings of Rt. 7 and one crossing of Lansdowne Boulevard. Land use along the right-of-way consists of 2.4 acres of forested land, 0.9 acre of open space, and 4.4 acres of developed area. No agricultural land or open water is crossed by Belmont Park Variation B. Belmont Park Variation B is also located approximately 960 feet south of the Inova Loudoun Hospital Helipad, which, as a private helipad, does not have Federal Aviation Administration ("FAA")-granted airspace protections. However, Inova Health indicated to the Company in an email on February 15, 2024, that the Belmont Park Variation B would likely affect hospital helipad operations, in contrast, the Belmont Park Variation A would not affect helipad operations if the transmission line has appropriate visual markers. See Attachment III.H.1 and additional discussion in Section III.H.

The existing zoning along Belmont Park Variation B includes 66% (0.4 mile) zoned as Housing (PD-H3), which allows single- and multi-family homes and other non-residential uses that support a community setting and is not typically compatible with transmission lines. The remaining 33% (0.2 mile) is zoned as IP or OP. No existing residences are located within 100 feet of the centerline of Belmont Park Variation B, but there are three existing multi-family buildings (112 total dwelling units) located within 250 feet of the centerline and ten existing multi-family buildings (334 total dwelling units total, inclusive of the 112 units within 250 feet) of the centerline. There are no planned residences within 100 or 250 feet of the centerline, but there are 28 planned single-family residences within 500 feet of the centerline. No commercial buildings are located within the Belmont Park Variation B right-of-way.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Belmont Park Variation B will encompass approximately 32% (2.5 acres) of land with a medium or higher probability of containing wetlands, but does not cross any waterbodies. Of the wetlands, the majority (1.8 acres) consist of forested wetlands. Lastly, Belmont Park Variation B will require the clearing of approximately 2.4 acres of forested land, 0.4 acre of which is classified as having a FCV classification of "average," and provides a forested buffer between the existing Camden Lansdowne apartment buildings and Rt. 7.

While Belmont Park Variation B avoids crossing the approved Belmont Park residential development, this variation would require two crossings of Rt. 7, leading to increased construction and maintenance costs as well as traffic impacts during construction. Any road closures along Rt. 7 would be significant because it is a major highway with some of the highest average daily traffic volumes in Virginia. Belmont Park Variation A avoids these impacts. Belmont Park Variation B would also increase the number of existing residences proximate to centerline from zero within 250 feet and one building with 48 dwelling units within 500 feet to three multi-family buildings (with 112 total dwelling units) within 250 feet and ten multi-

family buildings (with 334 total dwelling units) within 500 feet for Belmont Park Variations A and B, respectively. Based on this greater impact to existing residences, the additional crossings of Rt. 7 and the additional structures needed, and the closer proximity to the Inova Loudoun Hospital helipad, Belmont Park Variation B is inferior to Belmont Park Variation A.

Broad Run Variation A

Broad Run Variation A would construct an overhead 500 kV transmission line with a 230 kV transmission line on new 100- to 150-foot-wide right-of-way in order to support a 5-2 configuration on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide right-of-way) or monopole or two-pole structures (100-foot-wide right-of-way). Broad Run Variation A extends approximately 2.2 miles between the adjacent segments of Route 1.

From Route 1 (approximately 0.1 mile north of Beaverdam Run), Broad Run Variation A continues south for 0.2 mile then parallels Loudoun County Parkway for 1.3 miles, crossing Reuse Lane, Aquiary Way, Gloucester Parkway, and Coach Gibbs Drive. The route variation then turns southeast for 0.3 mile along the W&OD Trail and the Company's existing Beaumeade-Belmont Line #227 and Beaumeade-Pleasant View Line #274 right-of-way, where it crosses the existing Beaumeade-BECO Line #2143, BECO-Paragon Park Line #2207, and BECO-Pacific Line #2165 and then continues northeast for 0.2 mile and southeast for 0.2 mile before rejoining Route 1 near Pacific Boulevard.

Broad Run Variation A will cross a total of seven parcels affecting 29.7 acres of right-of-way. A total of six privately owned parcels and one publicly owned parcel (the Loudoun Water BRWRF) are crossed. The Company is continuing negotiations with Loudoun Water for easements for Broad Run Variation A where it runs along the BRWRF property.[45] Land use along the right-of-way consists of 9.1 acres of forested land, 12.8 acres of open space, 0.3 acre of open water, and 7.5 acres of developed area. Broad Run Variation A does not cross any conservation easements. No agricultural land is crossed by Broad Run Variation A.

The existing zoning along Broad Run Variation A is entirely the IP zoning district, which allow data centers as a by-right use. No existing or planned residences are located within 500 feet of the centerline. Broad Run Variation A is collocated with existing linear features for 73% (1.6 miles) of its total length, including 59% (1.3 miles) along Loudoun County Parkway and 14% (0.3 mile) along existing Dominion Energy Virginia overhead transmission lines. No residences are located within 500 feet of the Broad Run Variation A centerline, and no commercial building are located within the right-of-way.

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

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Broad Run Variation A will encompass approximately 22% (6.6 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these, the majority (5.3 acres) consist of forested wetlands. Broad Run Variation A has a total of five waterbody crossings, including three intermittent streams and two perennial waterbodies. Broad Run Variation A will require the clearing of approximately 9.1 acres of forested land. Of this forested land, 0.1 acre is classified as having a FCV of "high," 0.7 acre is classified as "moderate," and 6.5 acres are classified as "average."

In sum, Broad Run Variation A is shorter than Broad Run Variation B, is located entirely on industrial-zoned land, avoids residences within 500 feet, has a significant amount of collocation with existing linear features, does not cross any open space or conservation easements, and has reduced wetland (including forested wetland) and forested land impacts. As such, Broad Run Variation A is the preferred route for the Broad Run Segment.

Broad Run Variation B

Broad Run Variation B would construct an overhead 500 kV transmission line with a 230 kV transmission line on new 100- to 150-foot-wide right-of-way in order to support a 5-2 configuration on a combination of dulled galvanized steel double circuit three-pole or two-pole H-frame structures (150-foot-wide right-of-way) or monopole or two-pole structures (100-foot-wide right-of-way). Broad Run Variation B extends approximately 2.3 miles between the adjacent segments of Route 1.

From Route 1 (approximately 0.1 mile north of Beaverdam Run), Broad Run Variation B turns east for 0.4 mile then south for 0.8 mile across Loudoun Water's BRWRF property following an existing Dominion Energy Virginia overhead distribution line and a buried sewer utility right-of-way and access road. Broad Run Variation B then crosses Broad Run and continues to the south for 0.2 mile before crossing Gloucester Parkway, then continues south for 0.6 mile, passing the existing BECO Substation and continuing south for 0.2 mile where it crosses Pacific Boulevard and rejoins Route 1.

The Company coordinated with Loudoun Water on the location of the Broad Run Variation B right-of-way across the BRWRF parcel. As of February 20, 2024, Loudoun Water has agreed to allow Broad Run Variation B across the BRWRF, while coordination between the Company and Loudoun Water regarding the use of Broad Run Variation A is ongoing.[46]

Broad Run Variation B will cross a total of eight parcels affecting 30.6 acres of right-of-way. A total of seven privately owned parcels and one publicly owned parcel (the Loudoun Water BRWRF), are crossed. Land use along the right-of-way

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

consists of 19.5 acres of forested land, 9.3 acres of open space, 0.3 acre of open water, and 1.4 acres of developed area. No agricultural land is crossed by Broad Run Variation B. Broad Run Variation B would be collocated with existing linear features for 52% (1.2 miles) of its total length, including 35% (0.8 mile) along buried water/sewer lines and the future BECO-DTC 230 kV transmission line (the "future 230 kV BECO-DTC Line #2249")[47] and 18% (0.4 mile) along overhead electric distribution lines.

The existing zoning along Broad Run Variation B includes 74% (1.7 miles) zoned as IP, which allow data centers as a by-right use, with the remaining 26% (0.6 mile) zoned as Mixed-Use Business ("MUB"), which does not have data centers as a by-right use. Broad Run Variation B also crosses 0.5 mile (8.7 acres) of existing Loudoun County BOS open space easements located south of Broad Run on both sides of Gloucester Parkway. The Loudoun County Attorney's Office indicated in a joint meeting with the Company and Loudoun Water on February 8, 2024, that a crossing of this Loudoun County BOS easement south of Broad Run can be negotiated if Loudoun Water only will allow the Broad Run Variation B across the BRWRF. However, Loudoun County indicated that avoidance of this easement through the use of the Broad Run Variation A is preferred. No residences are located within 500 feet of the centerline of Broad Run Variation B, and no commercial buildings are located within the right-of-way.

Based on ERM's desktop wetland and waterbody analysis, the right-of-way of Broad Run Variation A will encompass approximately 59% (18.0 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these, the majority (14.4 acres) consist of forested wetlands. In addition, based on wetland delineation data provided by Loudoun Water, the Company anticipates that greater than two contiguous acres of forested wetlands will be impacted by Broad Run Variation B, likely requiring an Individual Permit from the U.S. Army Corps of Engineers ("Corps"), adding permitting time and cost to the Project. Broad Run Variation B has a total of six waterbody crossings, including three intermittent streams and three perennial waterbodies. Lastly, Broad Run Variation B will require the clearing of approximately 19.5 acres of forested land, 18.5 acres of which are classified as having a forest conservation value of "average."

In addition to the slight increase in length and acreage of right-of-way, Broad Run Variation B would impact significantly more wetlands, including forested wetlands, and would add additional wetland permitting cost and overall Project schedule risk when compared to Broad Run Variation A. Broad Run Variation B would more than double the amount of forested land clearing (19.5 acres) when compared to Broad Run Variation A (9.1 acres). While Broad Run Variation B has 1.2 miles of collocation, including 0.8 mile along the future BECO-DTC 230 kV

[47] *Application of Virginia Electric and Power Company for approval and certification of electric transmission facilities: DTC 230 kV Line Loop and DTC Substation*, Case No. PUR-2021-00280, Final Order (July 7, 2022).

Line #2249, it has 0.4 mile less overall collocation than Broad Run Variation A. While Broad Run Variation A is entirely on industrial-zoned land, Broad Run Variation B crosses non-industrial land. Significantly, Broad Run Variation B would require crossing 0.5 mile (8.7 acres) of Loudoun County BOS open space easements, while Broad Run Variation A avoids Loudoun County BOS easements. For these reasons, Broad Run Variation A is preferred over Broad Run Variation B and was incorporated into the Aspen-Golden Lines Proposed Route.

Summary of Analysis in Support of Aspen-Golden Lines Proposed Route (Route 1AA)

Route 1AA (Route 1 + Belmont Park Variation A + Broad Run Variation A) was selected as the Proposed Route for the Aspen-Golden Lines as it avoids or reasonably minimizes adverse impacts to the greatest extent reasonably practicable on the scenic assets, historic resources, and environment of the area concerned. Specifically, the Proposed Route was selected because of its compatibility with existing and proposed land uses, avoidance of existing residences and commercial buildings, minimization of impacts to Loudoun County BOS easements and planned developments, and avoidance of wetlands and forests. The Proposed Route also crosses future data center developments to the extent practicable, potentially minimizing the need for additional delivery point-driven transmission lines and rights-of-way to serve new customers. The Proposed Route is collocated with the future Twin Creeks Lines across Goose Creek and avoids crossing Rt. 7. For these reasons, and with regard to the importance of land use planning and compatibility in this developed and highly constrained area, Route 1 was selected in conjunction with Belmont Park Variation A and Broad Run Variation A as the Proposed Route (Route 1AA).

In comparison, Alternative Routes 1AB, 1BA, and 1BB all use Belmont Park Variation B and/or Broad Run Variation B in combination with Route 1. Because Belmont Park Variation B is in closer proximity to existing residences, requires two crossings of Rt. 7, and impacts more forest lands and wetlands, Alternative Routes 1BA and 1BB were not selected for the Proposed Route. Similarly, because Broad Run Variation B would impact significantly more forested wetlands and other environmental features than the Broad Run Variation A, Alternative Route 1AB was also not selected for incorporation into the Proposed Route.

See Section 6 of the Environmental Routing Study for a discussion of resources and impacts by each route segment.

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 time, as described below. Assuming a final order from the Commission by October 7, 2024, as requested in Section I.H, the Company estimates that the proposed Project construction will commence in June 2025 and be completed by June 2028.

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

<u>Aspen Substation</u>

The Company anticipates requesting outage durations for the Aspen Substation for the following transmission facilities, which will be scheduled as timing allows:

- Brambleton-Goose Creek Line #558.

<u>Aspen-Goose Creek Line</u>

The Company anticipates requesting outage durations for the Aspen-Goose Creek Line for the following transmission facilities, which will be scheduled as timing allows and grouped as efficiently as possible:

- Goose Creek Substation 500 kV bus;
- Goose Creek-Pleasant View Line #595;
- Belmont-Pleasant View Line #2180;
- Belmont-Goose Creek Line #2286; and
- Beaumeade-Goose Creek Line #227.

Aspen-Golden Lines

The Company anticipates requesting outage durations for the Aspen-Golden Lines for the following transmission facilities, which will be scheduled as timing allows and grouped as efficiently as possible:

- Beaumeade-Goose Creek Line #227;
- Beaumeade-Pleasant View Line #274;
- Beaumeade-BECO Line #2143;
- BECO-Paragon Park Line #2207; and
- BECO-Pacific Line #2165.

Lines #2081/#2150 Loop

The Company anticipates requesting outage durations for the Lines #2081/#2150 Loop for the following transmission facilities, which will be scheduled as timing allows:

- Paragon Park-Sterling Park Line #2081; and
- Paragon Park-Sterling Park Line #2150.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The Company routinely uses Attachment 1 to these Guidelines in routing its transmission line projects.

The Company utilized Guideline #1 by minimizing conflict between the rights-of-way and present and prospective uses of the land on which the proposed Project is to be located (To the extent permitted by the property interest involved, rights-of-way should be selected with the purpose of minimizing conflict between the rights-of-way and present and prospective uses of the land on which they are to be located. To this end, existing rights-of-way should be given priority as the locations for additions to existing transmission facilities, and the joint use of existing rights-of-way by different kinds of utility services should be considered). As discussed in Section I.E, collocation opportunities along existing transmission facilities were evaluated but no feasible collocation corridors were identified for the Aspen-Golden Lines. Instead, secondary linear features such as highway corridors and existing utility rights-of-way were identified for collocation. The Aspen-Golden Lines Proposed Route (Route 1AA) is collocated with existing utility easements (water, gas, and electric distribution rights-of-way), has compatible land uses (*i.e.*, crosses proposed data center developments and other industrial zoned parcels), parallels major roads and highways, and will be collocated with the future Twin Creeks Lines, as discussed in Section 6.7 of the Environmental Routing Study. Further, the Aspen-Goose Creek Proposed Route and the Line Loop Proposed Route are located entirely within existing right-of-way, on Company-owned property, or on property to be acquired by the Company.

The Aspen-Golden Lines Proposed Route (Route 1AA), Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB are expected to have no more than a moderate impact on Belmont Manor (053-0106), which is listed on the National Register of Historic Places ("NRHP"), as there is no viable alternative that avoids all impacts to this site. Guideline #2 generally states that where practical, rights of-way should avoid sites listed on the NRHP, and if rights-of-way must be routed near these sites, they should be the located in a manner so as to be least visible from areas of public view and preserve the character of the area. In accordance with this Guideline, the Aspen-Golden Lines Proposed Route is located as far from this NRHP site as is compatible with the planned development on the adjacent parcel to minimize these impacts. A Stage I Pre-Application Analysis prepared by ERM on behalf of the Company, which is included with the Environmental Routing Study as Appendix H, was submitted to the Virginia Department of Historic Resources ("VDHR") on March 6, 2024.

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

The Company selected a crossing location of Goose Creek that utilizes a natural bend in the river and adjusted route angles on either side of Goose Creek to avoid long tunnel views along Goose Creek, a designated Virginia Scenic River, in accordance with Guidelines #6 and #19. The Company also coordinated the Aspen-Golden Lines crossing of Goose Creek with the routing of the future Twin Creeks Lines to ensure that new rights-of-way were collocated in order to avoid cutting two new corridors across the Scenic River. The Company also solicited input from the Goose Creek Scenic River Advisory Committee, Loudoun County Staff, and input from various environmental stakeholder groups on how to best mitigate impacts to the resource.

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")

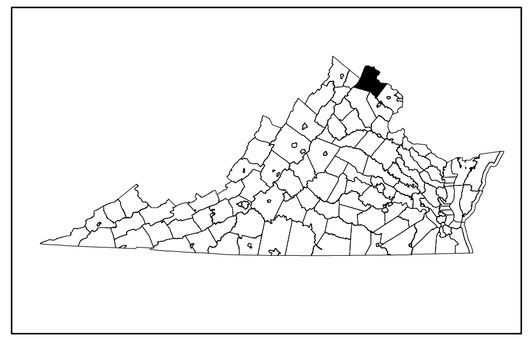
12. a. Detail counties and localities through which the line will pass. If any portion of the line will be located outside of the Applicant's certificated service area: (1) identify each electric utility affected; (2) state whether any affected electric utility objects to such construction; and (3) identify 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. The Aspen-Golden Lines cross Loudoun County for a total of approximately 9.4 miles, the Aspen-Goose Creek Line crosses Loudoun County for a total of approximately 0.2 mile, and the Lines #2081/#2150 Loop crosses Loudoun County for a total of approximately <0.1 mile. The Project is located entirely within Dominion Energy Virginia's service territory.

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

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 2/7/2024. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.

West Virginia

Maryland

Clarke County

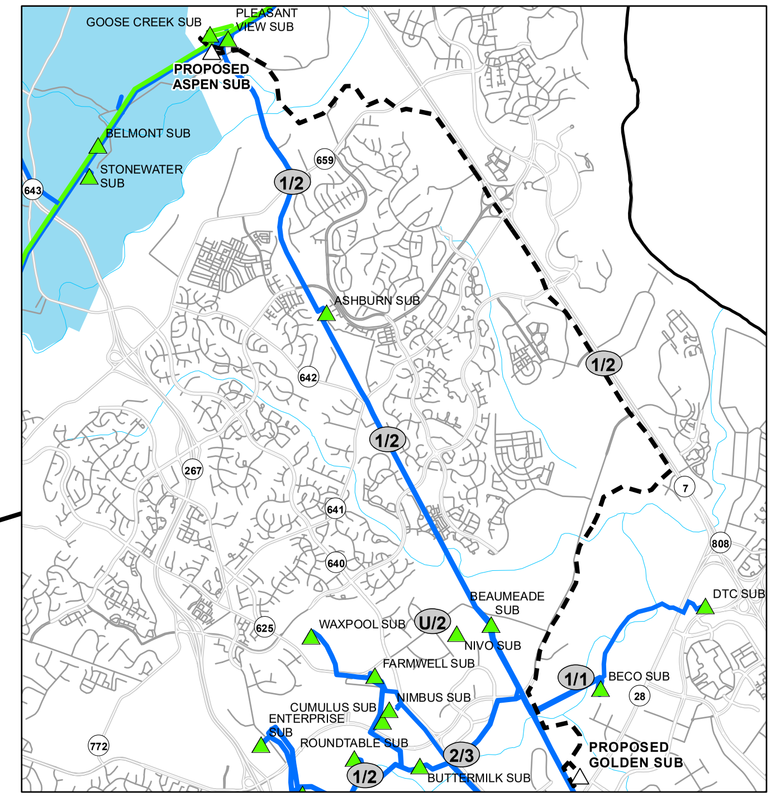
Fauquier County

Prince William County

Fairfax County

Maryland

HAMILTON SUB
BREEZY KNOLL SUB
DRY MILL SOUTH SUB
GOOSE CREEK
ALTAIR SWITCHING STATION
PLEASANT VIEW SUB
STONEWATER SUB
BELMONT SUB
ASHBURN SUB
BEAUMEADE SUB
DTC SUB
WAXPOOL SUB
FARMWELL SUB
CUMULUS SUB
NIMBUS SUB
ENTERPRISE SUB
ROUNDTABLE SUB
BECO SUB
BUTTERMILK SUB
MIDDLEBURG SUB
WISHING STAR SUB
BRAMBLETON SUB
NEW ROAD SUB
EVERGREEN MILLS SUB
HARDLEY RIDGE SUB
CABIN RUN SUB
MARS SUB
LOUDOUN SUB
MOSBY SUB
POLAND ROAD SUB
AVIATOR SUB
WASHINGTON-DULLES INT'L AIRPORT
LOUDOUN SUB
PACIFIC SUB
STERLING PARK SUB
GLOBAL PLAZA SUB
DAVIS DRIVE SUB



Legend

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

Provider Service Territory

- NOVEC
- VEPCO

Miles
2 1 0 2 4 6

*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: The proposed 500 kV lines will be designed and operated at 500 kV with no anticipated voltage upgrade and have a transfer capability of 4,357 MVA.[48]

The proposed 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.[49]

[48] This includes Aspen-Golden Line #5001 and Aspen-Goose Creek Line #5002.

[49] This includes Aspen-Golden Line #2333 and the Line Loop (Golden-Sterling Park #2081, Golden-Sterling Park #2150, Golden-Paragon Park #2348, and Golden-Paragon Park #2351). Note that the rating of the Line Loop lines will be limited to the rating of the existing lines.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: The proposed 500 kV lines will include three-phase triple-bundled 1351.5 ACSR conductors arranged as shown in Attachments II.B.3.i-vii, and x. The three-phase triple-bundled 1351.5 ACSR conductors are a Company standard for new 500 kV construction.[50]

The proposed 230 kV lines will include three-phase twin-bundled 768.2 ACSS/TW/HS conductors arranged as shown in Attachments II.B.3.ii-ix. The twin-bundled 768.2 ACSS/TW/HS conductors are a Company standard for new 230 kV construction.[51]

[50] This includes Aspen-Golden Line #5001 and Aspen-Goose Creek Line #5002.

[51] This includes Aspen-Golden Line #2333 and the Line Loop (Golden-Sterling Park #2081, Golden-Sterling Park #2150, Golden-Paragon Park #2348, and Golden-Paragon Park #2351).

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

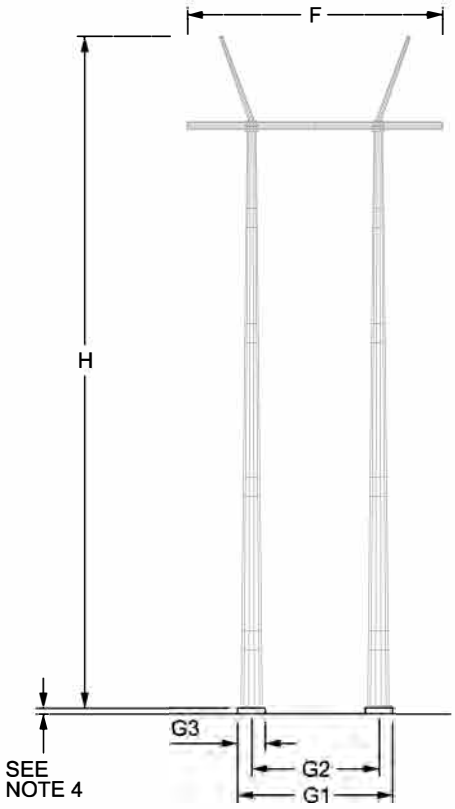
j. the minimum conductor-to-ground clearances under maximum operating conditions.

Response: For subparts (b)-(j), see Attachments II.B.3.i-x.[52]

For subpart (a), see Attachment II.B.3.xi, which provides approximate mapping of the proposed structures along the Proposed Routes of the Aspen-Goose Creek Line, the Aspen-Golden Lines, and the Line Loop, which are subject to change during final engineering.

[52] Note that "one-poles" and "monopoles" are the same type of structure, and the names can be used interchangeably.

STRUCTURE: 5001/2, 5001/3



SC 500 KV H-FRAME STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION TO REDUCE HEIGHT FOR LINE CROSSING, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (2 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	66.5'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 41'\G2: 33'\G3: 8' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 170' 165'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	27.5' (500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

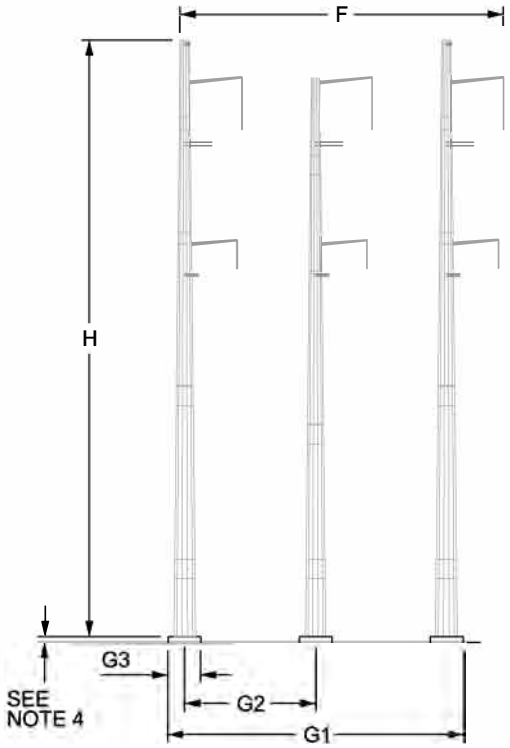
Dominion Energy
5000 Dominion Blvd
Glen Allen, VA 23060

STRUCTURE: 5001/2, 5001/3

DRAWING NO.
ATTACHMENT II.B.3.i

DRAWN: MBV

STRUCTURE: 5001/4, 2333/4, 5001/8, 2333/8, 5001/10, 2333/10, 5001/11, 2333/11, 5001/13, 2333/13 - 5001/15, 2333/15, 5001/64, 2333/64, 5001/67, 2333/67



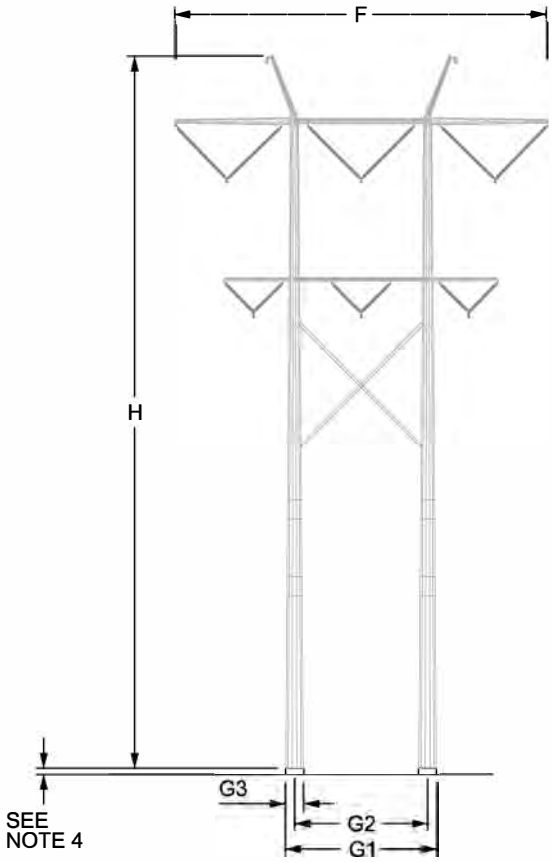
DOUBLE CIRCUIT 3-POLE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (9 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	84.3'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 77'\G2: 34'\G3: 8' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	130' 180' 153'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission	STRUCTURE: 5001/4, 2333/4, 5001/8, 2333/8, 5001/10, 2333/10, 5001/11, 2333/11, 5001/13, 2333/13 - 5001/15, 2333/15, 5001/64, 2333/64, 5001/67, 2333/67	DRAWING NO. ATTACHMENT II.B.3.ii
Dominion Energy Dominion Energy 5000 Dominion Blvd Glen Allen, VA 23060		DRAWN: MBV

STRUCTURE: 5001/9, 2333/9, 5001/65, 2333/65, 5001/66, 2333/66



DOUBLE CIRCUIT H-FRAME SUSPENSION

B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (3 STRUCTURE)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	96.9'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 40.2'\G2: 34.7'\G3: 5.5' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	161' 196' 184'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

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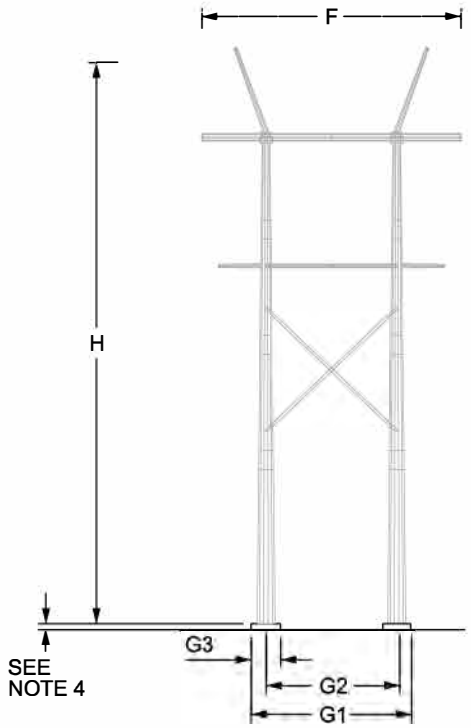
Glen Allen, VA 23060

STRUCTURE: 5001/9, 2333/9, 5001/65, 2333/65, 5001/66, 2333/66

DRAWING NO.
ATTACHMENT II.B.3.iii

DRAWN: MBV

STRUCTURE: 5001/12, 2333/12



DOUBLE CIRCUIT H-FRAME DDE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	SHORTER STRUCTURES FOR DOUBLE CIRCUIT CONFIGURATION, PREFERRED BY PUBLIC OVER LATTICE
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (1 STRUCTURE)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	67.5'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 43'\G2: 34'\G3: 9' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	145' 145' 145'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

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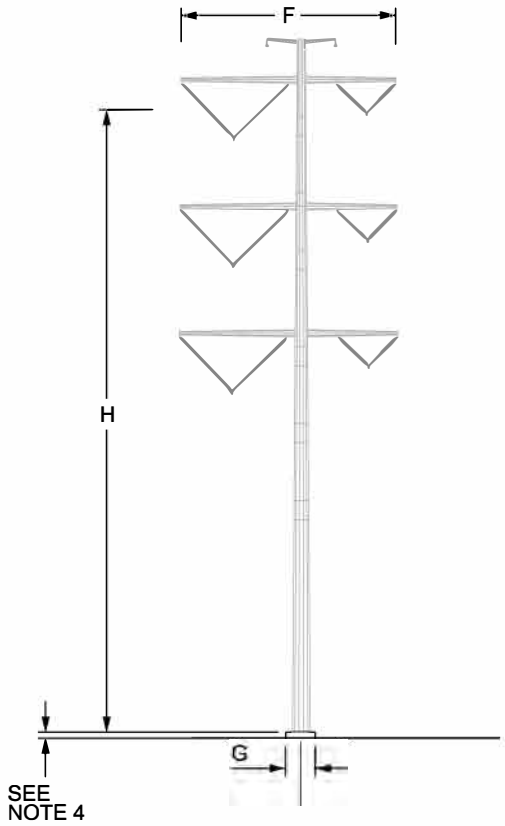
STRUCTURE: 5001/12, 2333/12

DRAWING NO.
ATTACHMENT II.B.3.iv

DRAWN: MBV

STRUCTURE: 5001/19, 2333/19, 5001/21, 2333/21 - 5001/24, 2333/24, 5001/26, 2333/26, 5001/28, 2333/28, 5001/29, 2333/29, 5001/31, 2333/31, 5001/34, 2333/34 - 5001/39, 2333/39, 5001/41, 2333/41, 5001/43, 2333/43, 5001/52, 2333/52, 5001/60, 2333/60, 5001/62, 2333/62



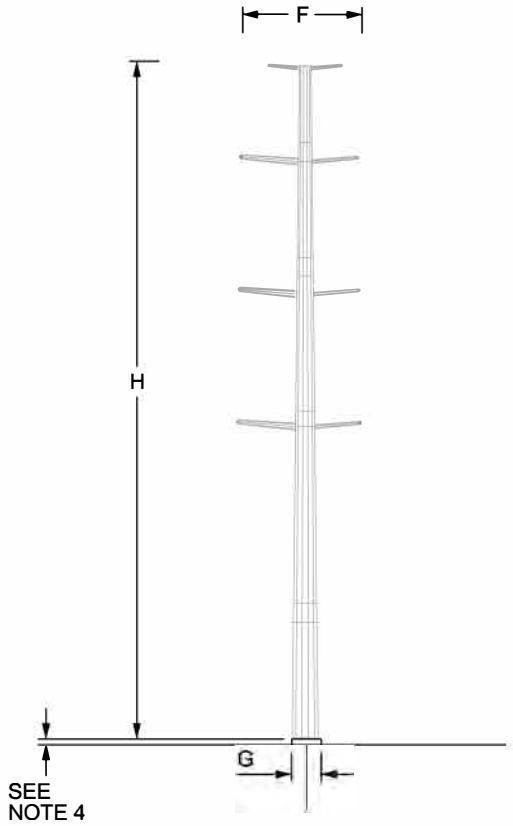
DOUBLE CIRCUIT 1-POLE SUS STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	500KV AND 230KV VERTICALLY ARRANGED TO REDUCE ROW REQUIREMENTS
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (20 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	56.3'
G. AVERAGE WIDTH AT BASE:	8' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 195' 178'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission	STRUCTURE: 5001/19, 2333/19, 5001/21, 2333/21 - 5001/24, 2333/24, 5001/26, 2333/26, 5001/28, 2333/28, 5001/29, 2333/29, 5001/31, 2333/31, 5001/34, 2333/34 - 5001/39, 2333/39, 5001/41, 2333/41, 5001/43, 2333/43, 5001/52, 2333/52, 5001/60, 2333/60, 5001/62, 2333/62	DRAWING NO. ATTACHMENT II.B.3.v
Dominion Energy **Dominion Energy** **5000 Dominion Blvd** **Glen Allen, VA 23060**		DRAWN: MBV

STRUCTURE: 5001/5, 2333/5, 5001/18, 2333/18, 5001/25, 2333/25, 5001/27, 2333/27, 5001/30, 2333/30, 5001/33, 2333/33, 5001/40, 2333/40, 5001/42, 2333/42, 5001/44, 2333/44, 5001/46, 2333/46, 5001/51, 2333/51, 5001/53, 2333/53, 5001/55, 2333/55 - 5001/59, 2333/59, 5001/61, 2333/61



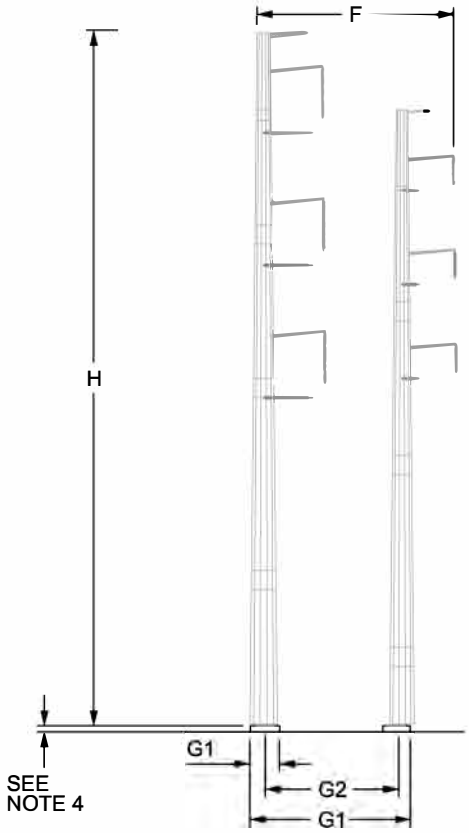
DOUBLE CIRCUIT 1-POLE DDE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	500KV AND 230KV VERTICALLY ARRANGED TO REDUCE ROW REQUIREMENTS
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (18 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	31.1'
G. AVERAGE WIDTH AT BASE:	10' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 195' 174'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission	STRUCTURE: 5001/5, 2333/5, 5001/18, 2333/18, 5001/25, 2333/25, 5001/27, 2333/27, 5001/30, 2333/30 5001/33, 2333/33, 5001/40, 2333/40, 5001/42, 2333/42, 5001/44, 2333/44, 5001/46, 2333/46, 5001/51, 2333/51, 5001/53, 2333/53, 5001/55, 2333/55 - 5001/59, 2333/59, 5001/61, 2333/61	DRAWING NO. ATTACHMENT II.B.3.vi
Dominion Energy 5000 Dominion Blvd Glen Allen, VA 23060		DRAWN: MBV

STRUCTURE: 5001/6, 2333/6, 5001/7, 2333/7, 5001/16, 2333/16, 5001/17, 2333/17, 5001/20, 2333/20, 5001/32, 2333/32, 5001/45, 2333/45, 5001/47, 2333/47 - 5001/50, 2333/50, 5001/54, 2333/54, 5001/63, 2333/63, 5001/68, 2333/68 - 5001/71, 2333/71



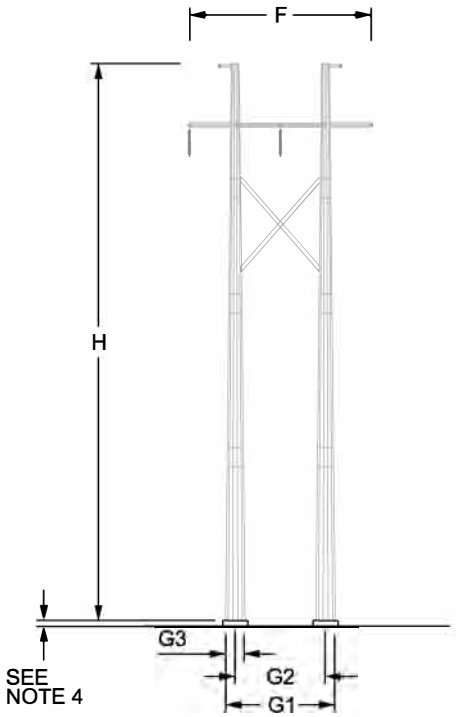
DOUBLE CIRCUIT 2-POLE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	500KV AND 230KV VERTICALLY ARRANGED TO REDUCE ROW REQUIREMENTS. TWO SEPARATE POLES TO REDUCE LOADING FOR FOUNDATIONS.
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (17 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	52.1'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 43'\G2: 34'\G3: 9' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	160' 190' 179'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5'/27.5' (230/500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission	STRUCTURE: 5001/6, 2333/6, 5001/7, 2333/7, 5001/16, 2333/16, 5001/17, 2333/17, 5001/20, 2333/20, 5001/32, 2333/32, 5001/45, 2333/45, 5001/47, 2333/47 - 5001/50, 2333/50, 5001/54, 2333/54, 5001/63, 2333/63, 5001/68, 2333/68 - 5001/71, 2333/71	DRAWING NO. ATTACHMENT II.B.3.vii
Dominion Energy Dominion Energy 5000 Dominion Blvd Glen Allen, VA 23060		DRAWN: MBV

STRUCTURE: 2333/2, 2333/3



SC 230 KV H-FRAME STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	HORIZONTAL CONFIGURATION TO REDUCE HEIGHT FOR LINE CROSSING. STRUCTURES FOR SINGLE CIRCUIT 230KV CONFIGURATION
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (2 STRUCTURE)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	47.4'
G1:AVERAGE WIDTH AT BASE\G2: POLE SPACING G3: BASE WIDTH:	G1: 29'\G2: 23.5'\G3: 5.5' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	140' 145' 143'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5' (230 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

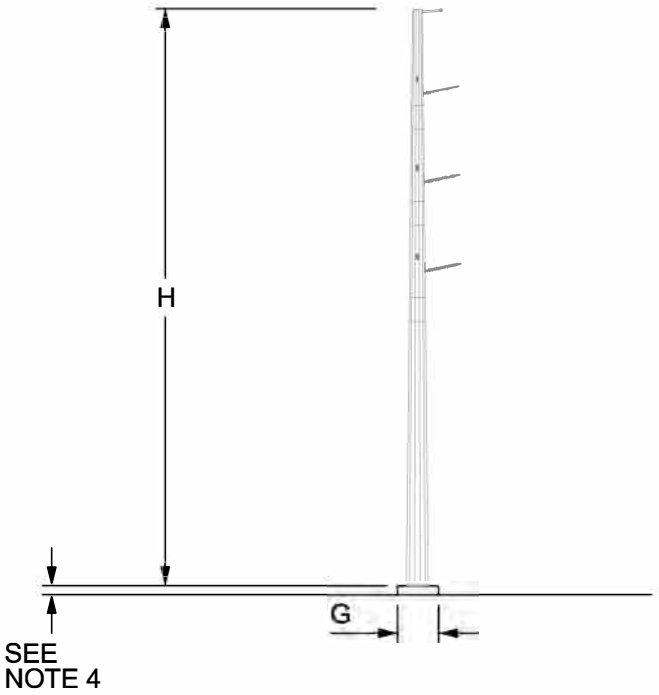
Dominion Energy
Dominion Energy
5000 Dominion Blvd
Glen Allen, VA 23060

STRUCTURE: 2333/2, 2333/3

DRAWING NO.
ATTACHMENT II.B.3.viii

DRAWN: MBV

STRUCTURE: 2333/72, 2333/73, 2351/183A, 2150/182A, 2348/123A, 2081/122A



SC 230 KV 1-POLE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	MORE COMPACT STRUCTURES FOR SINGLE CIRCUIT 230KV CONFIGURATION
C. LENGTH OF R/W (STRUCTURE QUANTITY):	9.4 MILES (6 STRUCTURES)
D. STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	DULLED GALVANIZED STEEL TO MINIMIZE VISUAL IMPACT BY REDUCING THE GLARE ON THE NEW STRUCTURES
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	3'
G. AVERAGE WIDTH AT BASE:	8.5' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT:	105'
MAXIMUM STRUCTURE HEIGHT:	120'
AVERAGE STRUCTURE HEIGHT:	113'
I. AVERAGE SPAN LENGTH:	670' (257'-1108')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	22.5' (230 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

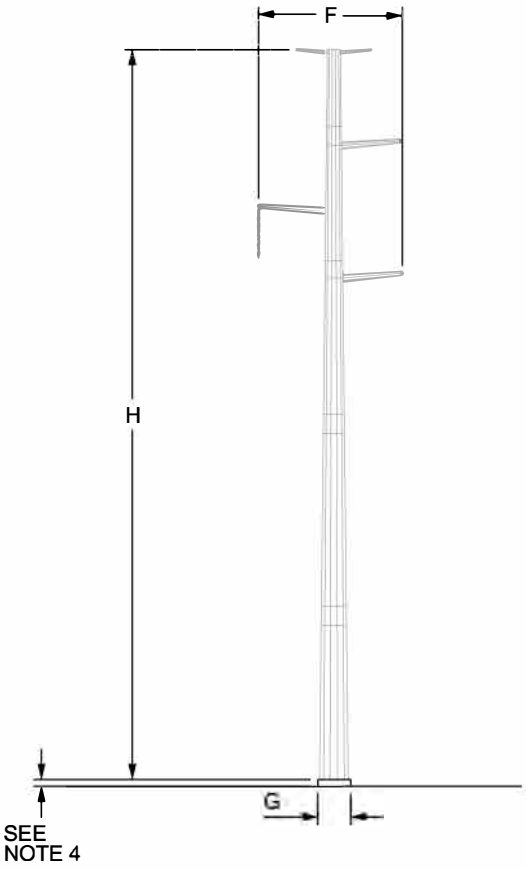
Dominion Energy
Dominion Energy
5000 Dominion Blvd
Glen Allen, VA 23060

STRUCTURE: 2333/72, 2333/73, 2150/183A, 2150X/182A, 2081/123A, 2081X/122A

DRAWING NO.
ATTACHMENT II.B.3.ix

DRAWN: MBV

STRUCTURE: 5002/2



SC 500 KV 1-POLE DDE STRUCTURE

B. RATIONALE FOR STRUCTURE TYPE:	COMPACT SINGLE CIRCUIT 500KV DESIGN FOR MINIMAL FOOTPRINT
C. LENGTH OF R/W (STRUCTURE QUANTITY):	0.2 MILES (1 STRUCTURE)
D. STRUCTURE MATERIAL:	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL:	GALVANIZED STEEL TO MATCH SUBSTATION STRUCTURES, SINCE INSIDE SUBSTATION FENCE
E. FOUNDATION MATERIAL: AVERAGE FOUNDATION REVEAL:	CONCRETE SEE NOTE 4
F. AVERAGE WIDTH AT CROSSARM:	37.4'
G. AVERAGE WIDTH AT BASE:	10' (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT: MAXIMUM STRUCTURE HEIGHT: AVERAGE STRUCTURE HEIGHT:	190' 190' 190'
I. AVERAGE SPAN LENGTH:	432' (405'-460')
J. MINIMUM CONDUCTOR-TO-GROUND AT MAXIMUM OPERATING TEMPERATURE:	27.5' (500 KV) PER THE NATIONAL ELECTRICAL SAFETY CODE

NOTES
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. FINAL FOUNDATION DIAMETER SHALL BE BASED UPON FINAL ENGINEERING
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

Electric Transmission

Dominion Energy
5000 Dominion Blvd
Glen Allen, VA 23060

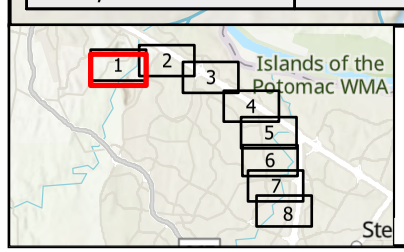
STRUCTURE: 5002/2

DRAWING NO.
ATTACHMENT II.B.3.x

DRAWN: MBV

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 (Feet)	Structure Type
2333/1	75	Backbone
2333/2	145	H-Frame
2333/3	140	H-Frame
5001/1	115	Backbone
5001/10 / 2333/10	150	3-Pole
5001/11 / 2333/11	145	3-Pole
5001/12 / 2333/12	145	H-Frame
5001/13 / 2333/13	180	3-Pole
5001/14 / 2333/14	170	3-Pole
5001/2	170	H-Frame
5001/3	160	H-Frame
5001/4 / 2333/4	150	3-Pole
5001/5 / 2333/5	180	Monopole
5001/6 / 2333/6	180	2-Pole
5001/7 / 2333/7	185	2-Pole
5001/8 / 2333/8	140	3-Pole
5001/9 / 2333/9	161	H-Frame
5002/1	115	Backbone
5002/2	190	Monopole
5002/3	115	Backbone



Proposed Aspen-Golden Lines (Route 1AA)
Proposed Aspen-Goose Creek Line
Proposed Right-of-Way
Existing Substation
Proposed Substation
Proposed Structure Location
Existing Dominion Transmission Lines
Dominion Substation Boundary

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

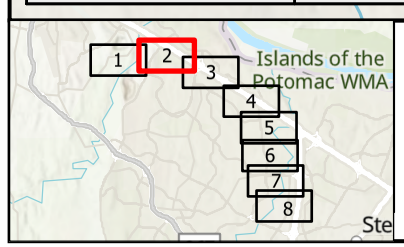
ERM

Dominion Energy

Attachment II.B.3.xi

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 (Feet)	Structure Type
5001/11 / 2333/11	145	3-Pole
5001/12 / 2333/12	145	H-Frame
5001/13 / 2333/13	180	3-Pole
5001/14 / 2333/14	170	3-Pole
5001/15 / 2333/15	130	3-Pole
5001/16 / 2333/16	190	2-Pole
5001/17 / 2333/17	190	2-Pole
5001/18 / 2333/18	175	Monopole
5001/19 / 2333/19	165	Monopole
5001/20 / 2333/20	180	2-Pole
5001/21 / 2333/21	185	Monopole
5001/22 / 2333/22	190	Monopole
5001/23 / 2333/23	180	Monopole
5001/24 / 2333/24	185	Monopole



Proposed Aspen-Golden Lines (Route 1AA)

Proposed Right-of-Way

Proposed Structure Location

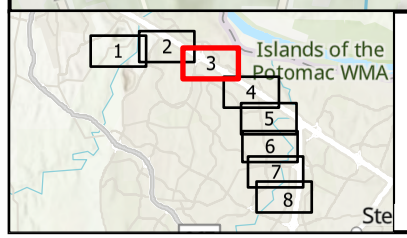
Attachment II.B.3.xi
Structure Locations along the Proposed Routes
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

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 (Feet)	Structure Type
5001/23 / 2333/23	180	Monopole
5001/24 / 2333/24	185	Monopole
5001/25 / 2333/25	195	Monopole
5001/26 / 2333/26	195	Monopole
5001/27 / 2333/27	175	Monopole
5001/28 / 2333/28	190	Monopole
5001/29 / 2333/29	175	Monopole
5001/30 / 2333/30	175	Monopole
5001/31 / 2333/31	180	Monopole
5001/32 / 2333/32	180	2-Pole
5001/33 / 2333/33	180	Monopole



Proposed Aspen-Golden Lines (Route 1AA)

Proposed Right-of-Way

Proposed Structure Location

Attachment II.B.3.xi
Structure Locations along the Proposed Routes
Aspen-Golden 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 (Feet)	Structure Type
5001/33 / 2333/33	180	Monopole
5001/34 / 2333/34	170	Monopole
5001/35 / 2333/35	170	Monopole
5001/36 / 2333/36	180	Monopole
5001/37 / 2333/37	180	Monopole
5001/38 / 2333/38	175	Monopole
5001/39 / 2333/39	185	Monopole
5001/40 / 2333/40	180	Monopole
5001/41 / 2333/41	160	Monopole
5001/42 / 2333/42	170	Monopole
5001/43 / 2333/43	180	Monopole
5001/44 / 2333/44	165	Monopole

Proposed Aspen-Golden Lines (Route 1AA)

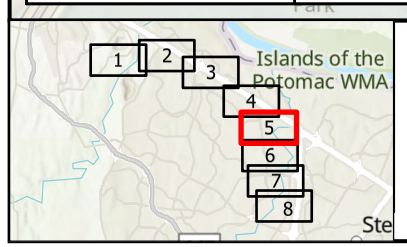
Proposed Right-of-Way

Proposed Structure Location

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

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 (Feet)	Structure Type
5001/44 / 2333/44	165	Monopole
5001/45 / 2333/45	170	2-Pole
5001/46 / 2333/46	175	Monopole
5001/47 / 2333/47	160	2-Pole
5001/48 / 2333/48	180	2-Pole
5001/49 / 2333/49	180	2-Pole
5001/50 / 2333/50	180	2-Pole
5001/51 / 2333/51	175	Monopole
5001/52 / 2333/52	170	Monopole



Proposed Aspen-Golden Lines (Route 1AA)

Proposed Right-of-Way

Proposed Structure Location

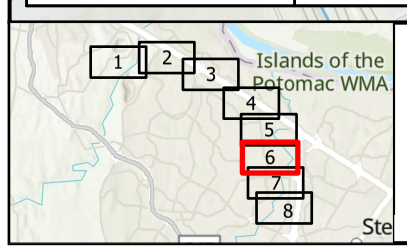
Attachment II.B.3.xi
Structure Locations along the Proposed Routes
Aspen-Golden 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, Virginia

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 (Feet)	Structure Type
5001/52 / 2333/52	170	Monopole
5001/53 / 2333/53	180	Monopole
5001/54 / 2333/54	170	2-Pole
5001/55 / 2333/55	160	Monopole
5001/56 / 2333/56	160	Monopole
5001/57 / 2333/57	185	Monopole
5001/58 / 2333/58	185	Monopole



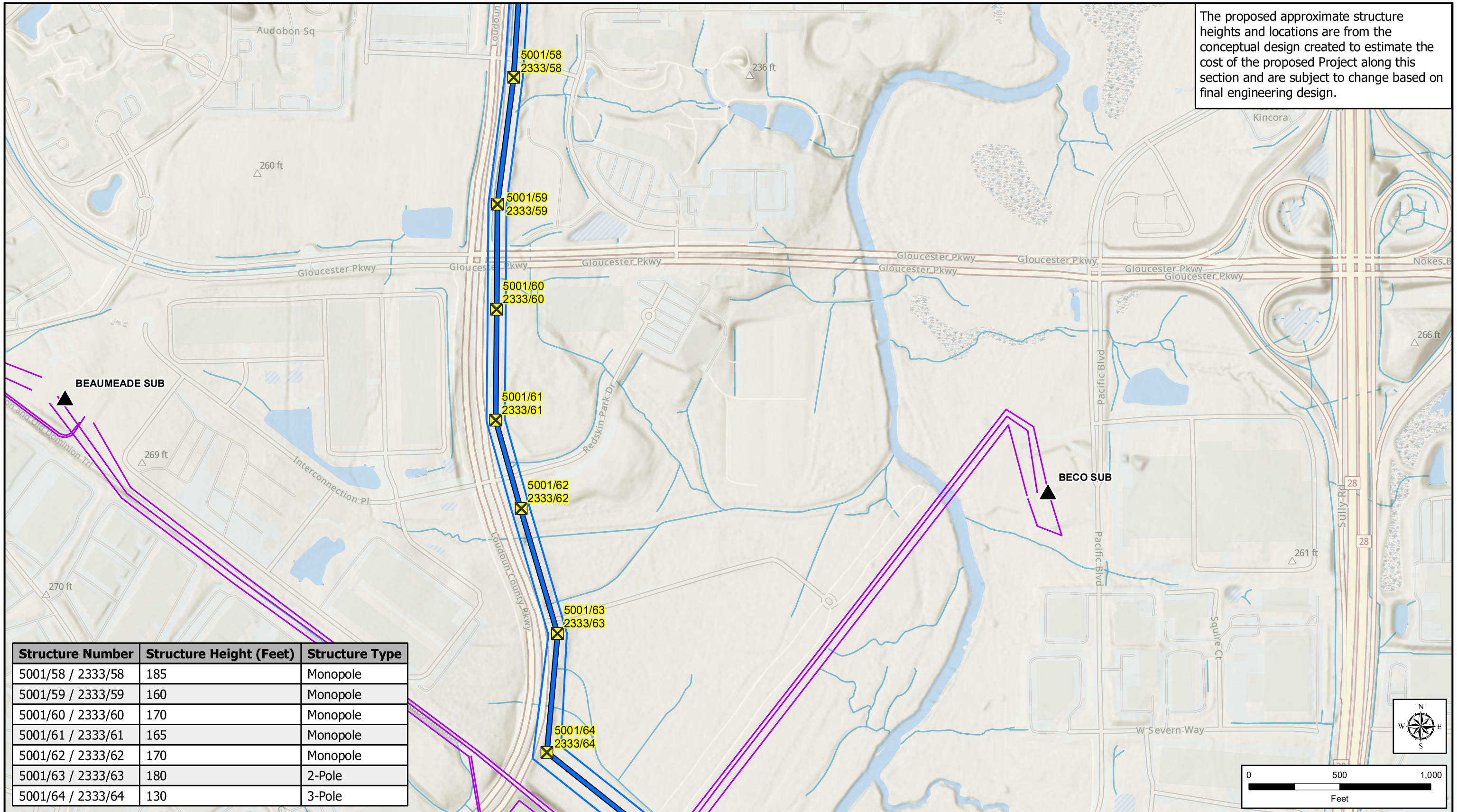
Proposed Aspen-Golden Lines (Route 1AA)

Proposed Right-of-Way

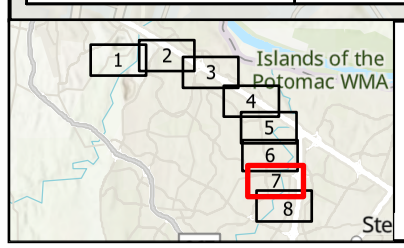
Proposed Structure Location

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

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 (Feet)	Structure Type
5001/58 / 2333/58	185	Monopole
5001/59 / 2333/59	160	Monopole
5001/60 / 2333/60	170	Monopole
5001/61 / 2333/61	165	Monopole
5001/62 / 2333/62	170	Monopole
5001/63 / 2333/63	180	2-Pole
5001/64 / 2333/64	130	3-Pole



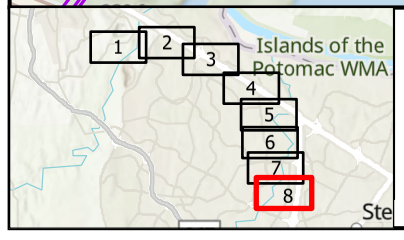
Proposed Aspen-Golden Lines (Route 1AA)
Proposed Right-of-Way
Existing Substation
Proposed Structure Location
Existing Dominion Transmission Lines

Attachment II.B.3.xi
Structure Locations along the Proposed Routes
Aspen-Golden 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 (Feet)	Structure Type
2081/122A	110	Monopole
2150/182A	115	Monopole
2150/183	95	Backbone
2333/72	120	Monopole
2333/73	120	Monopole
2333/74 / 2351/183	95	Backbone
2348/123 / 2081/123	95	Backbone
2348/123A	110	Monopole
2351/183A	105	Monopole
5001/64 / 2333/64	130	3-Pole
5001/65 / 2333/65	196	H-Frame
5001/66 / 2333/66	196	H-Frame
5001/67 / 2333/67	180	3-Pole
5001/68 / 2333/68	185	2-Pole
5001/69 / 2333/69	170	2-Pole
5001/70 / 2333/70	185	2-Pole
5001/71 / 2333/71	175	2-Pole
5001/72	115	Backbone

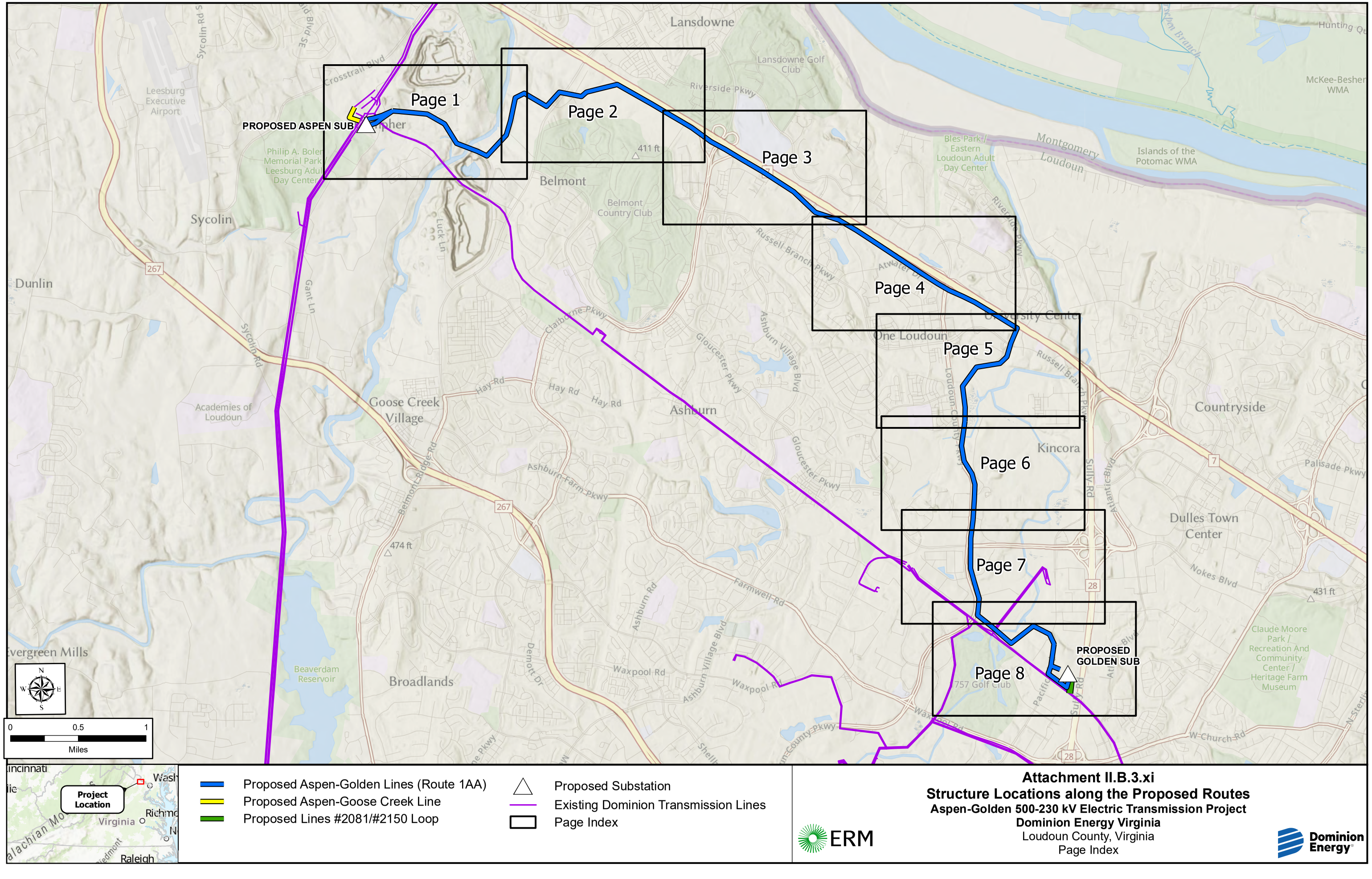


Proposed Aspen-Golden Lines (Route 1AA)
Proposed Lines #2081/#2150 Loop
Proposed Right-of-Way
Existing Substation
Proposed Substation
Proposed Structure Location
Existing Dominion Transmission Lines
Dominion Substation Boundary

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

ERM

Dominion Energy



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

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.

Route	Minimum (ft.)	Maximum (ft.)	Average (ft.)
Aspen-Goose Creek Line			
Proposed Route	190	190	190
Aspen-Golden Lines			
Proposed Route (Route 1AA)	120	196	171
Alternative Route 1AB	120	195	171
Alternative Route 1BA	120	196	170
Alternative Route 1BB	120	190	170
Lines #2081/#2150 Loop			
Proposed Route	105	115	110

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: Not applicable.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: [a] See Attachment II.B.6.a.i-ii for photographs of typical existing facilities to be removed.

[b] See Attachment II.B.6.b.i-ix for representative photographs of the proposed structures. There is no representative photograph for the double circuit 500 kV and 230 kV two-pole structure proposed for the Aspen-Golden Lines because this proposed structure type does not presently exist within the Company's footprint. However, see Attachment II.B.6.x for a rendering of this structure type (referred to therein as the 2-Pole Turning Structure).

[c] Visual simulations showing the appearance of the proposed transmission structures at identified historic locations within 1.0 mile of the Project's Proposed and Alternative Routes of the centerlines are provided. See Attachment II.B.6.c for a map of the simulation locations, the existing views at the historic properties, and simulated proposed views from key observation points ("KOPs"). These simulations were created using Geographic Information Systems modeling to depict whether the proposed structures will be visible from the identified historic property. The historic properties evaluated are described below. See also the Stage I Pre-Application Analysis Report contained in Appendix H of the Environmental Routing Study.

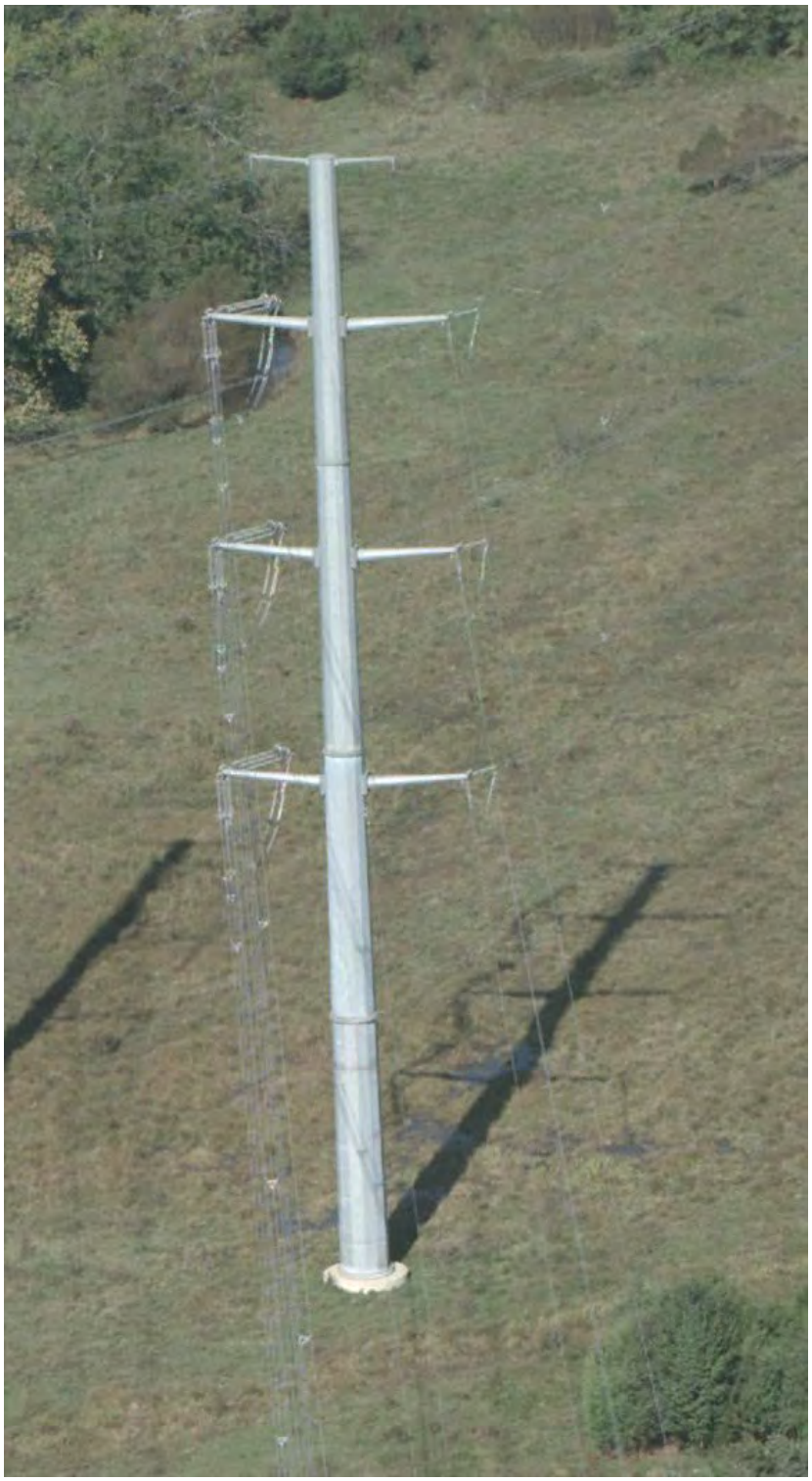
Historic Property	Viewpoint	Comments
Janelia/Howard Hughes Research Center (VDHR ID# 053-0084)	16	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB will have no more than a moderate impact on 053-0084.
Belmont Manor (VDHR ID# 053-0106	1, 2, 4	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB will have no more than a moderate impact on 053-0106.
Broad Run Bridge and Toll House (VDHR ID# 053-0110)	17, 21	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB will have no impact on 053-0110.
Washington & Old Dominion Railroad Historic District (VDHR ID# 053-0276)	5, 7, 18, 19, 20	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB, the Aspen-Goose Creek Proposed Route, the Line Loop Proposed Route, the Proposed Aspen

		Substation, and the Proposed Golden Substation will have no more than a minimal impact on 053-0276.
Belmont Chapel and Cemetery (VDHR ID# 053-0278)	8, 9	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB will have no more than a minimal impact on 053-0278.
Cooke's Mill (VDHR ID# 053-0336)	27, 28, 29, 30	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB, the Aspen-Goose Creek Proposed Route, and the Proposed Aspen Substation will have no more than a minimal impact on 053-0336.
Nokes House (VDHR ID# 053-5223)	32, 33	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB, Line Loop Proposed Route, and the Proposed Golden Substation will have no impact on 053-5223.
African American Burial Ground for the Enslaved at Belmont (VDHR ID# 053-6238)	301, 302, 303, 308	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB will have no more than a moderate impact on 053-6238.
Tippet's Hill Cemetery (VDHR ID# 053-6406)	31	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB, the Line Loop Proposed Route, and the Proposed Golden Substation will have no impact on 053-6406.
Ball's Bluff Battlefield & National Cemetery Historic District Boundary Increase (VDHR ID# 253-5182)	26	The Aspen-Golden Lines Proposed Route, Alternative Route 1AB, Alternative Route 1BA, and Alternative Route 1BB will have no impact on 253-5182.

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

Str. 558/1856 Galvanized 3-Pole to be Removed

Str. # 2081/123, 2150/183

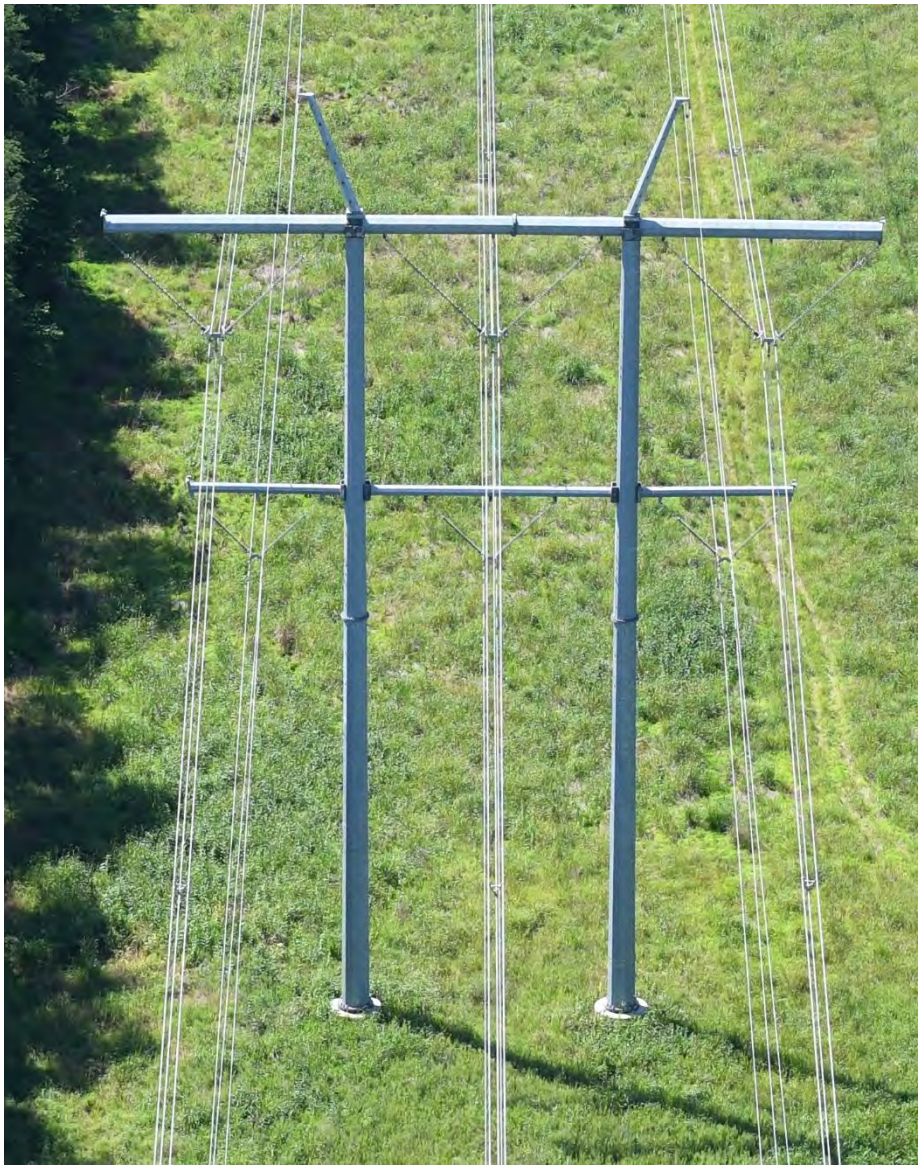


II.B.6.b.i – Double Circuit 500 kV / 230 kV 1-Pole Double Dead End Structure

II.B.6.b.ii – Double Circuit 500 kV / 230 kV Suspension Structure

II.B.6.b.iii – Double Circuit 500kV/230kV 3-Pole Structure

II.B.6.b.iv – Double Circuit 500kV/230kV H-Frame Double Dead End Structure



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

II.B.6.b.vi – Single Circuit 230kV 1-Pole Structure

II.B.6.b.vii – Single Circuit 230kV H-Frame Structure

II.B.6.b.viii – Single Circuit 500kV 1-Pole Double Dead End Structure

II.B.6.b.ix – Single Circuit 500kV H-Frame Structure

ASPEN TO GOLDEN
Transmission Line Project

Typical Proposed Structures

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

Dominion Energy®

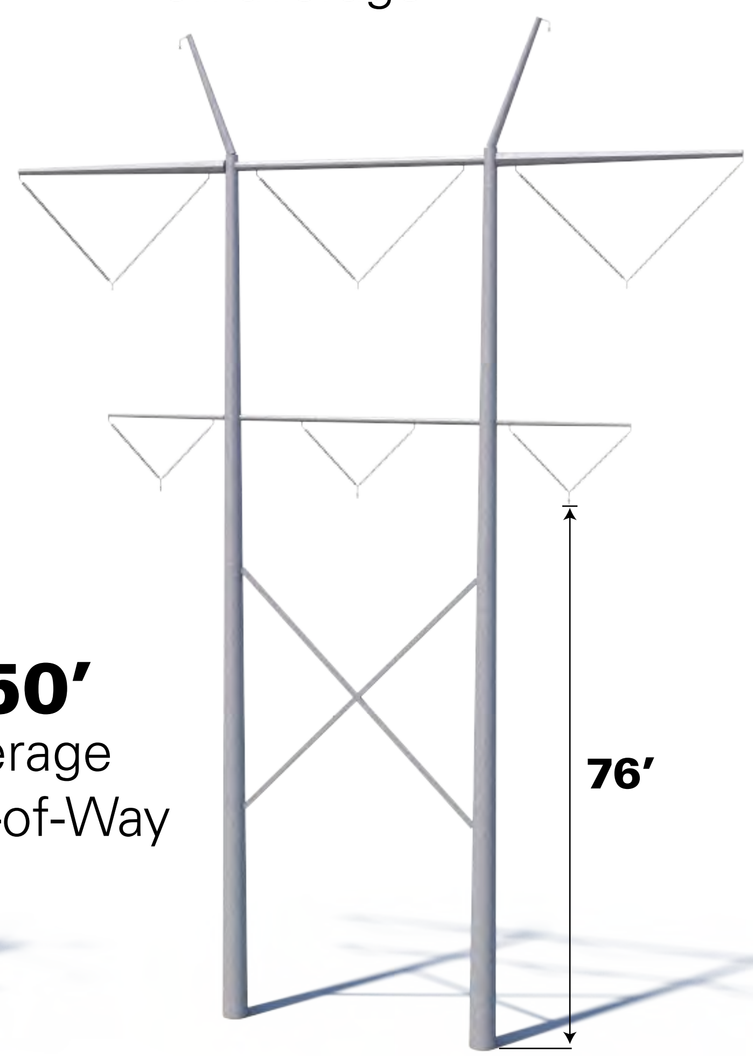
H-Frame Configuration

Monopole Configuration

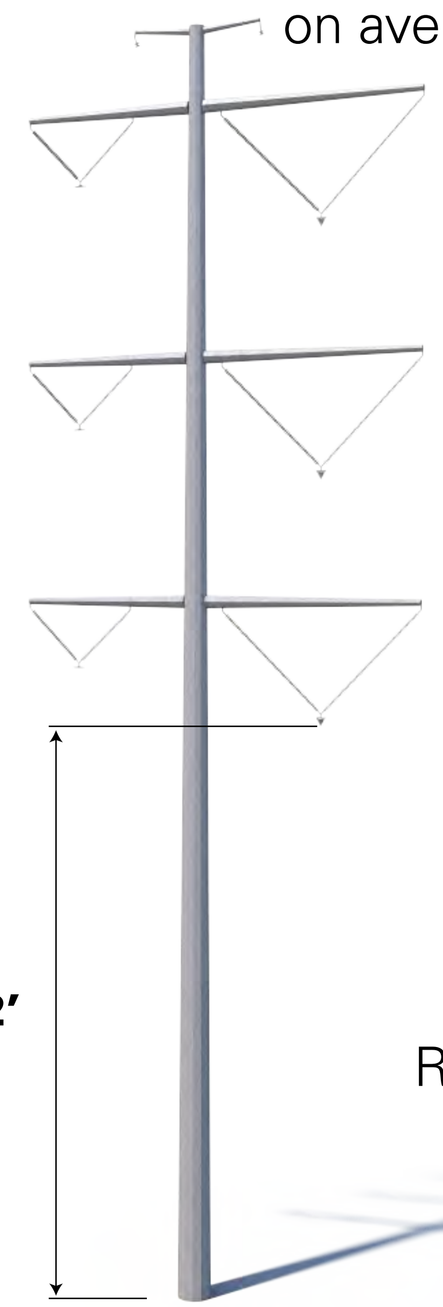
140’ Tall
on average

150’
Average
Right-of-Way

144’ Tall
on average

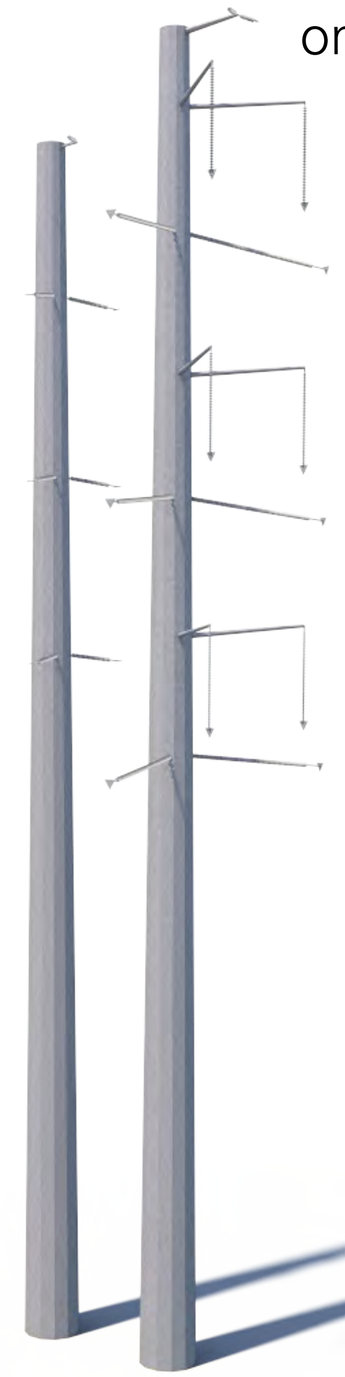


175’ Tall
on average



100’
Average
Right-of-Way

180’ Tall
on average

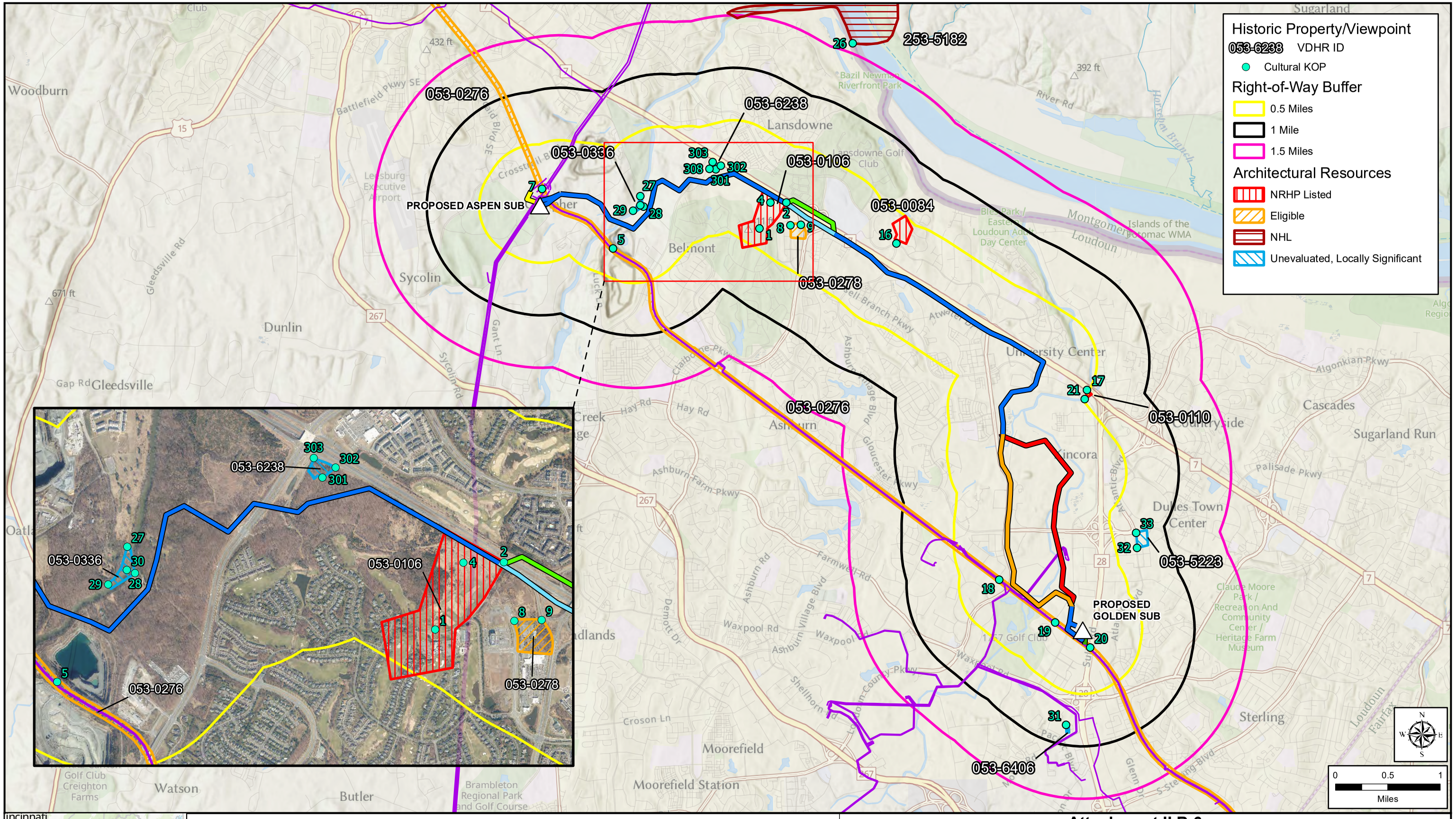


3-Pole
Turning Structure
Galvanized Steel

H-Frame
Tangent Structure
Galvanized Steel

Monopole
Tangent Structure
Galvanized Steel

2-Pole
Turning Structure
Galvanized Steel



Attachment II.B.6.c
Locations of Considered and Historic Resources Along and Near Route Alternatives
Aspen-Golden 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 053-0084.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	286556E 4327207N
View Direction:	185 degrees
Viewpoint Elevation:	206 feet
Distance to Development:	1359 feet
Horizontal Field of View:	78 degrees

Date of Photography:	22nd March 2023 09:32
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 2
Route 1 Viewpoint SP 16
Riverside Pkwy at Ashburn Village Blvd
053-0084

Pre-Application Analysis
Aspen to Golden

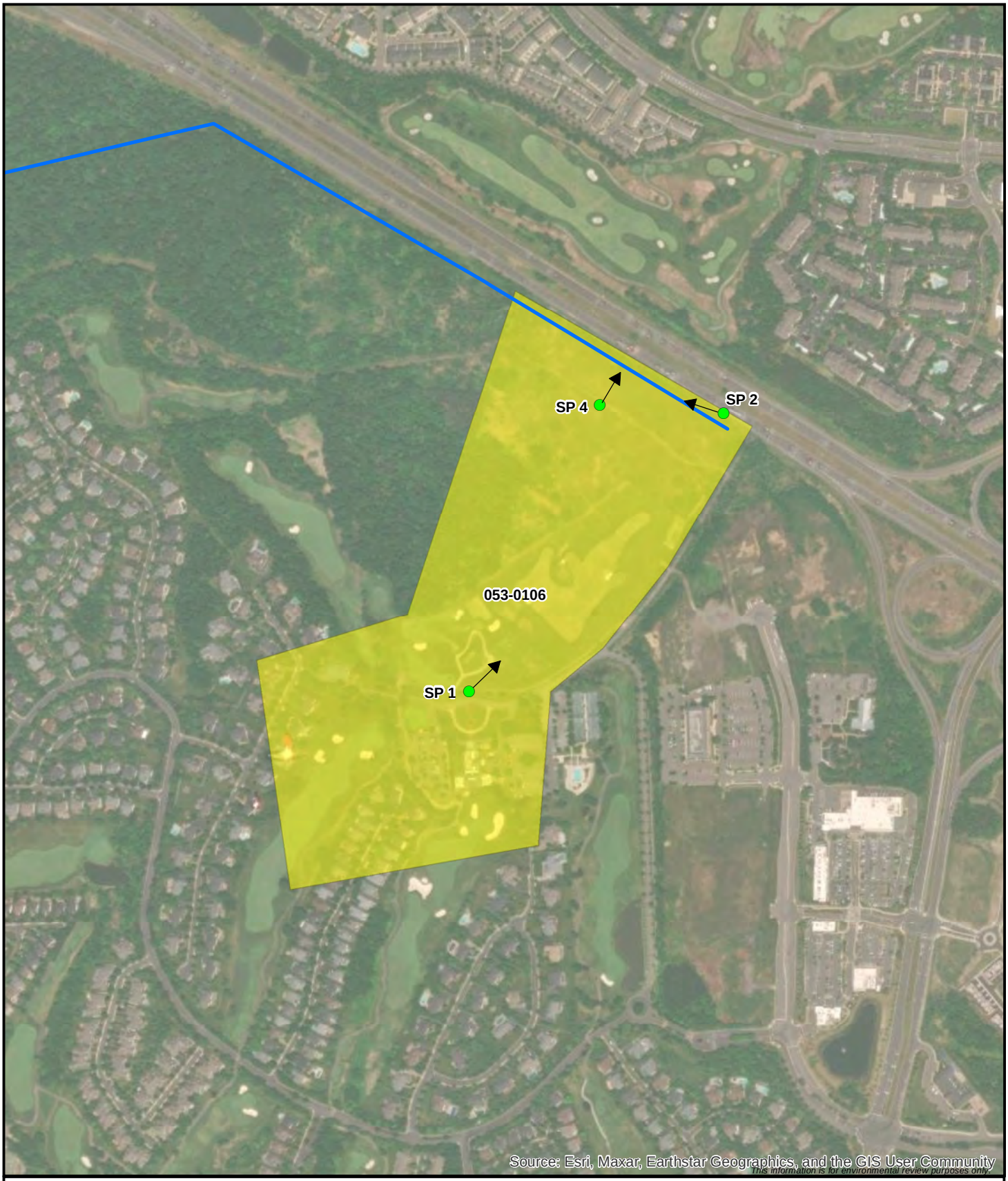


Figure 3. Aerial photograph depicting land use and photo view for 053-0106.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284469E 4327523N
View Direction:	42 degrees
Viewpoint Elevation:	394 feet
Distance to Development:	1746 feet
Horizontal Field of View:	94 degrees

Date of Photography:	28th August 2023 10:04
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 4
Route 1 Viewpoint SP 01
Ridge Rd W of Belmont Manor Ln
053-0106

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284675E 4327942N
View Direction:	351 degrees
Viewpoint Elevation:	237 feet
Distance to Development:	224 feet
Horizontal Field of View:	91 degrees

Date of Photography:	28th August 2023 12:11
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	58 inches

VIEWPOINT CONTEXT

Figure 5
Route 1 Viewpoint SP 04
Harry Byrd Hwy W of Ridge Rd
053-0106

Pre-Application Analysis
Aspen to Golden

254

Existing View

Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	284860E 4327925N
View Direction:	285 degrees
Viewpoint Elevation:	255 feet
Distance to Development:	54 feet
Horizontal Field of View:	84 degrees

Date of Photography:	22nd March 2023 15:27
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 6
Route 1 Viewpoint SP 02
Harry Byrd Hwy W of Ridge Rd
053-0106

Pre-Application Analysis
Aspen to Golden

Figure 7. Aerial photograph depicting land use and photo view for 053-0110.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	289406E 4324846N
View Direction:	339 degrees
Viewpoint Elevation:	133 feet
Distance to Development:	2592 feet
Horizontal Field of View:	89 degrees

Date of Photography:	23rd March 2023 11:55
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches

VIEWPOINT CONTEXT

Figure 8
Route 1 Viewpoint SP 17
Harry Byrd Hwy W of Ridge Rd
053-0110

Pre-Application Analysis
Aspen to Golden

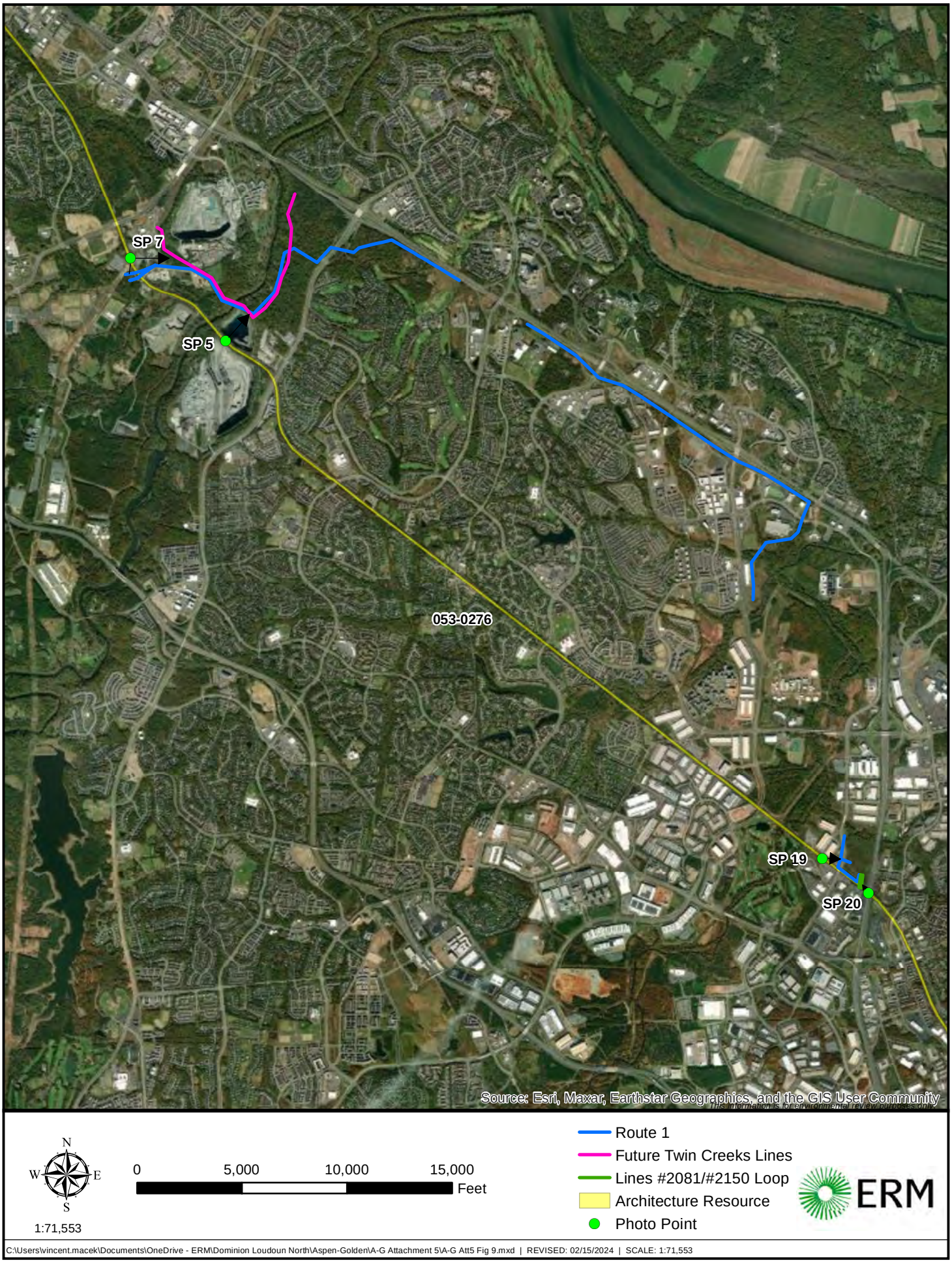


Figure 9. Aerial photograph depicting land use and photo view for 053-0276.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

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

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

VIEWPOINT CONTEXT

Figure 10
Route 1 and Aspen-Goose Creek Line Viewpoint SP 07
Trail NW of Cochran Mill Rd & Samuels Mill Ct
053-0276

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	288788E 4321292N
View Direction:	93 degrees
Viewpoint Elevation:	148 feet
Distance to Development:	646 feet
Horizontal Field of View:	88 degrees

Date of Photography:	23rd March 2023 16:48
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

Figure 11
Route 1 Viewpoint SP 19
Trail SSE of SW End of Charles View Dr
053-0276

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282204E 4327293N
View Direction:	45 degrees
Viewpoint Elevation:	185 feet
Distance to Development:	1346 feet
Horizontal Field of View:	91 degrees

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

VIEWPOINT CONTEXT

Figure 12
Route 1 Viewpoint SP 05
Trail NW of Jackpit Ln & Belmont Ridge Rd
053-0276

Pre-Application Analysis
Aspen to Golden

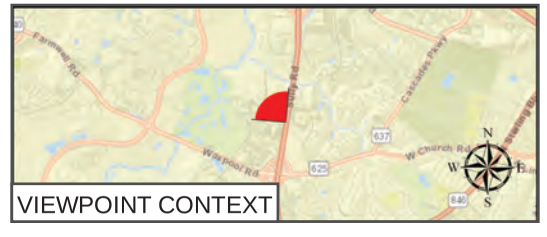
Existing View

Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	289301E 4320886N
View Direction:	320 degrees
Viewpoint Elevation:	219 feet
Distance to Development:	604 feet
Horizontal Field of View:	90 degrees

Date of Photography:	23rd March 2023 13:07
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches



VIEWPOINT CONTEXT

Figure 13
Route 1 Viewpoint SP 20
Sully Rd N of Waxpool Rd
053-0276

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of Twin Creeks to Apollo transmission line structures (highlighted in purple), no view of Route 1

Dominion Energy

ERM

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

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

VIEWPOINT CONTEXT

Figure 14
Twin Creeks to Apollo Viewpoint SP 07 East
Trail NW of Cochran Mill Rd
053-0276

Pre-Application Analysis
Apen to Golden

Figure 15. Aerial photograph depicting land use and photo view for 053-0278.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284947E 4327536N
View Direction:	278 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1231 feet
Horizontal Field of View:	96 degrees

Date of Photography:	23rd March 2023 10:45
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 16
Route 1 Viewpoint SP 08
Russell Branch Pkwy N of Tournament Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of visible Belmont Park Variation A transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284947E 4327536N
View Direction:	278 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1231 feet
Horizontal Field of View:	96 degrees

Date of Photography:	23rd March 2023 10:45
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 17
Route 1 Viewpoint SP 08
Russell Branch Pkwy N of Tournament Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	285112E 4327551N
View Direction:	12 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1408 feet
Horizontal Field of View:	102 degrees

Date of Photography:	22nd March 2023 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 18
Route 1 Viewpoint SP 09
W Ramp - Harry Byrd Hwy to Claiborne Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

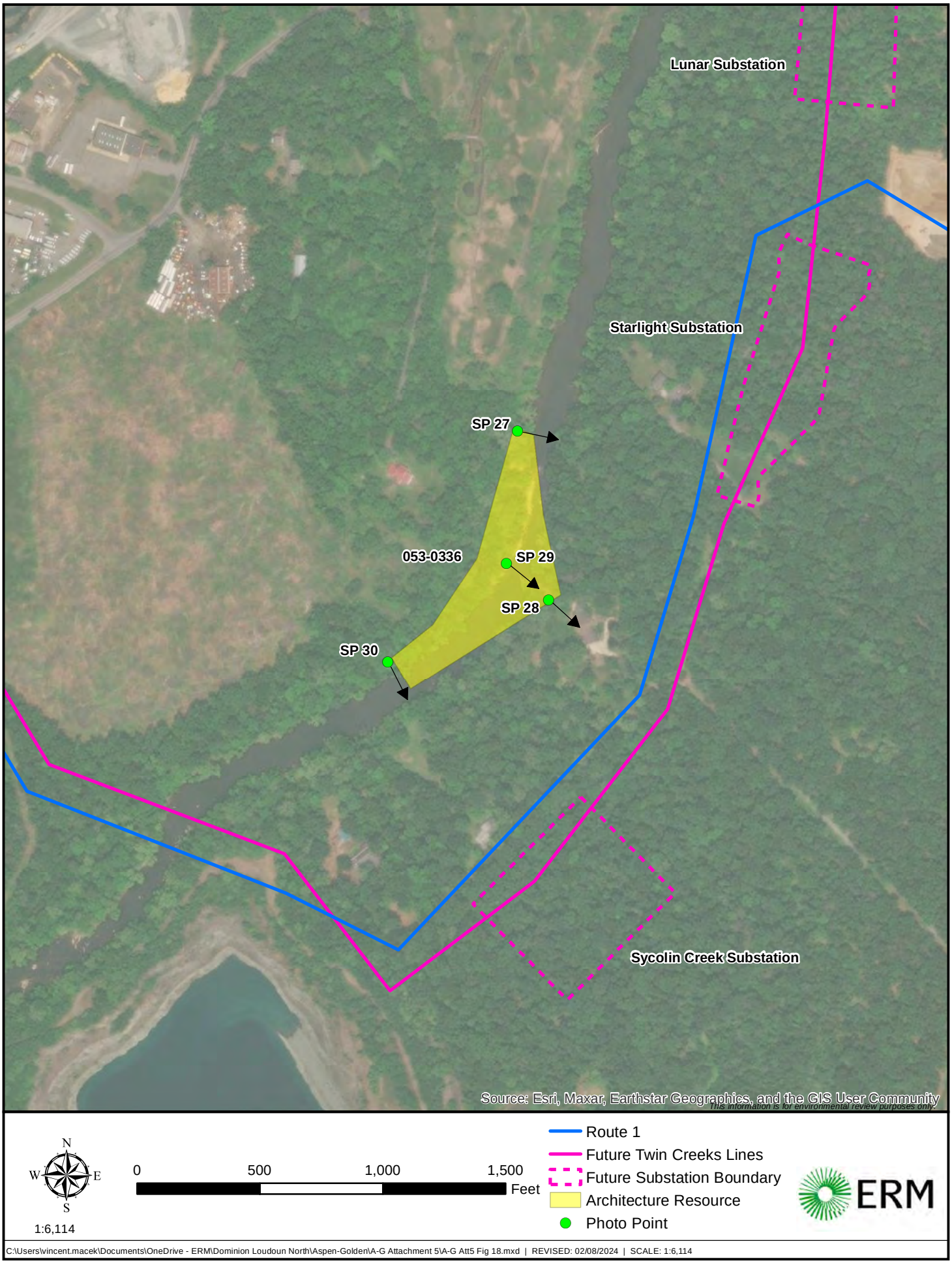


Figure 19. Aerial photograph depicting land use and photo view for 053-0336.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282661E 4328083N
View Direction:	100 degrees
Viewpoint Elevation:	203 feet
Distance to Development:	601 feet
Horizontal Field of View:	90 degrees

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

VIEWPOINT CONTEXT

Figure 20
Route 1 Viewpoint SP 27
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

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

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

VIEWPOINT CONTEXT

Figure 21
Route 1 Viewpoint SP 29
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures for Route 1 (pink) and Twin Creeks to Apollo (purple)

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	282686E 4327920N
View Direction:	133 degrees
Viewpoint Elevation:	210 feet
Distance to Development:	362 feet
Horizontal Field of View:	90 degrees

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

VIEWPOINT CONTEXT

Figure 22
Route 1 and Twin Creeks to Apollo Project Viewpoint SP 28
E Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures for Route 1 (pink) and Twin Creeks to Apollo (purple)

Dominion Energy

ERM

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

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

VIEWPOINT CONTEXT

Figure 23
Route 1 and Twin Creeks to Apollo Project Viewpoint SP 30
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

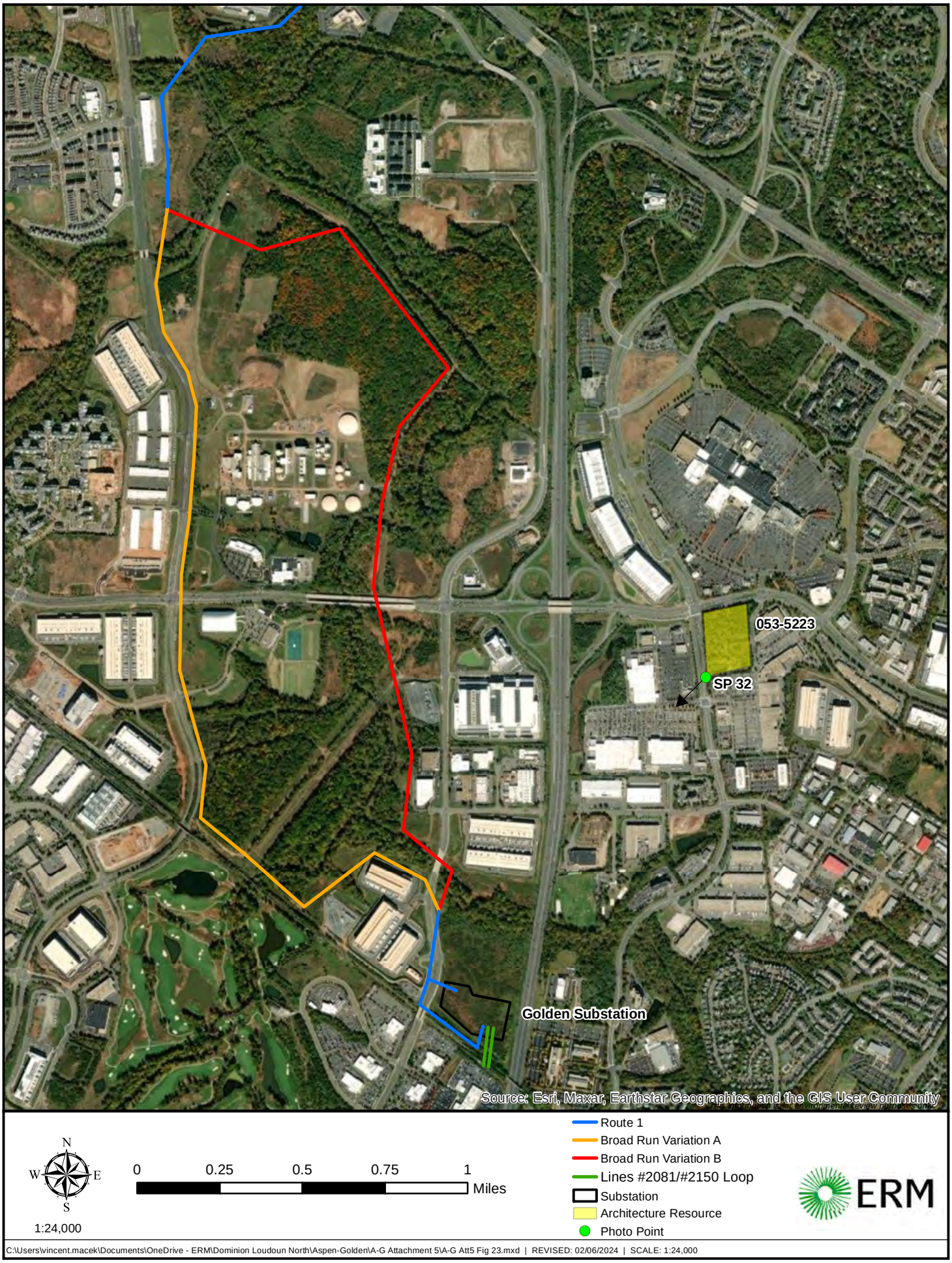


Figure 24. Aerial photograph depicting land use and photo view for 053-5223.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	290077E 4322391N
View Direction:	215 degrees
Viewpoint Elevation:	201 feet
Distance to Development:	4408 feet
Horizontal Field of View:	88 degrees

Date of Photography:	30th August 2023 13:24
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	55 inches

VIEWPOINT CONTEXT

Figure 25
Route 1 Viewpoint SP 32
Atlantic Blvd N of Dulles Crossing Plz
053-5223

Pre-Application Analysis
Aspen to Golden

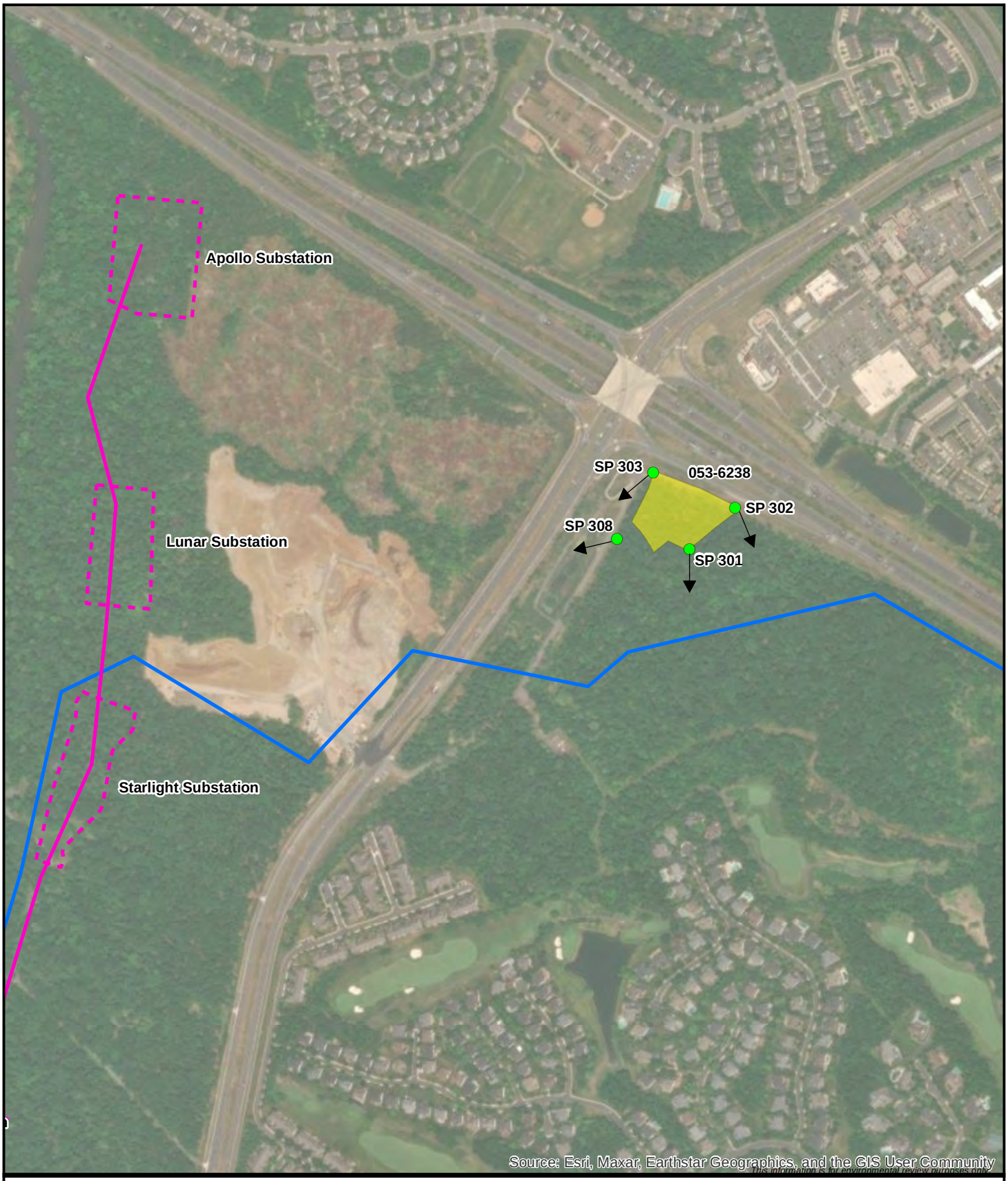


Figure 26. Aerial photograph depicting land use and photo view for 053-6238.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283837E 4328450N
View Direction:	180 degrees
Viewpoint Elevation:	288 feet
Distance to Development:	420 feet
Horizontal Field of View:	90 degrees

Date of Photography:	7th December 2023 09:50
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

VIEWPOINT CONTEXT

Figure 27
Route 1 Viewpoint SP 301
SE of NE End of Freedom Trail
053-6238

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	283907E 4328510N
View Direction:	154 degrees
Viewpoint Elevation:	309 feet
Distance to Development:	565 feet
Horizontal Field of View:	89 degrees

Date of Photography:	7th December 2023 09:34
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

VIEWPOINT CONTEXT

Figure 28
Route 1 Viewpoint SP 302
Harry Byrd Hwy SE of Belmont Ridge Rd
053-6238

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283787E 4328565N
View Direction:	234 degrees
Viewpoint Elevation:	288 feet
Distance to Development:	822 feet
Horizontal Field of View:	89 degrees

Date of Photography:	7th December 2023 09:33
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

Figure 29
Route 1 Viewpoint SP 303 West
NE End of Freedom Trail Rd
053-6238

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of Route 1 transmission line structures (highlighted in pink) and Twin Creeks to Apollo (highlighted in purple)

Dominion Energy

ERM

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

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

VIEWPOINT CONTEXT

Figure 30
Route 1 and Twin Creeks to Apollo Viewpoint SP 308
Freedom Trail Rd SW of Leesburg Pike
053-6238

Pre-Application Analysis
Apen to Golden

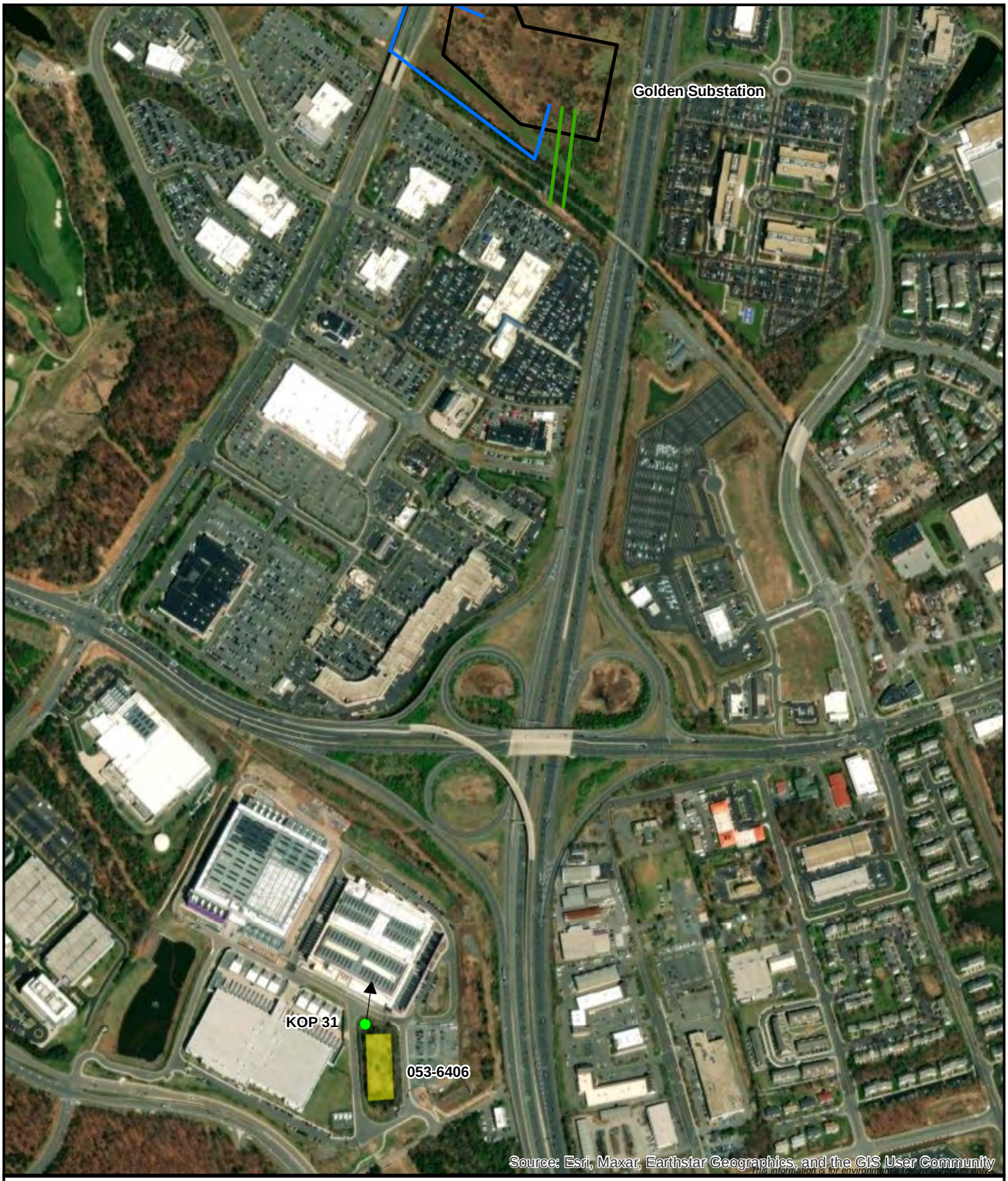


Figure 31. Aerial photograph depicting land use and photo view for 053-6406.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	288881E 4319721N
View Direction:	11 degrees
Viewpoint Elevation:	280 feet
Distance to Development:	4357 feet
Horizontal Field of View:	99 degrees

Date of Photography:	30th August 2023 12:10
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	60 inches

VIEWPOINT CONTEXT

Figure 32
Route 1 Viewpoint SP 31
Vantage Data Plz N of Moran Rd
053-6406

Pre-Application Analysis
Aspen to Golden

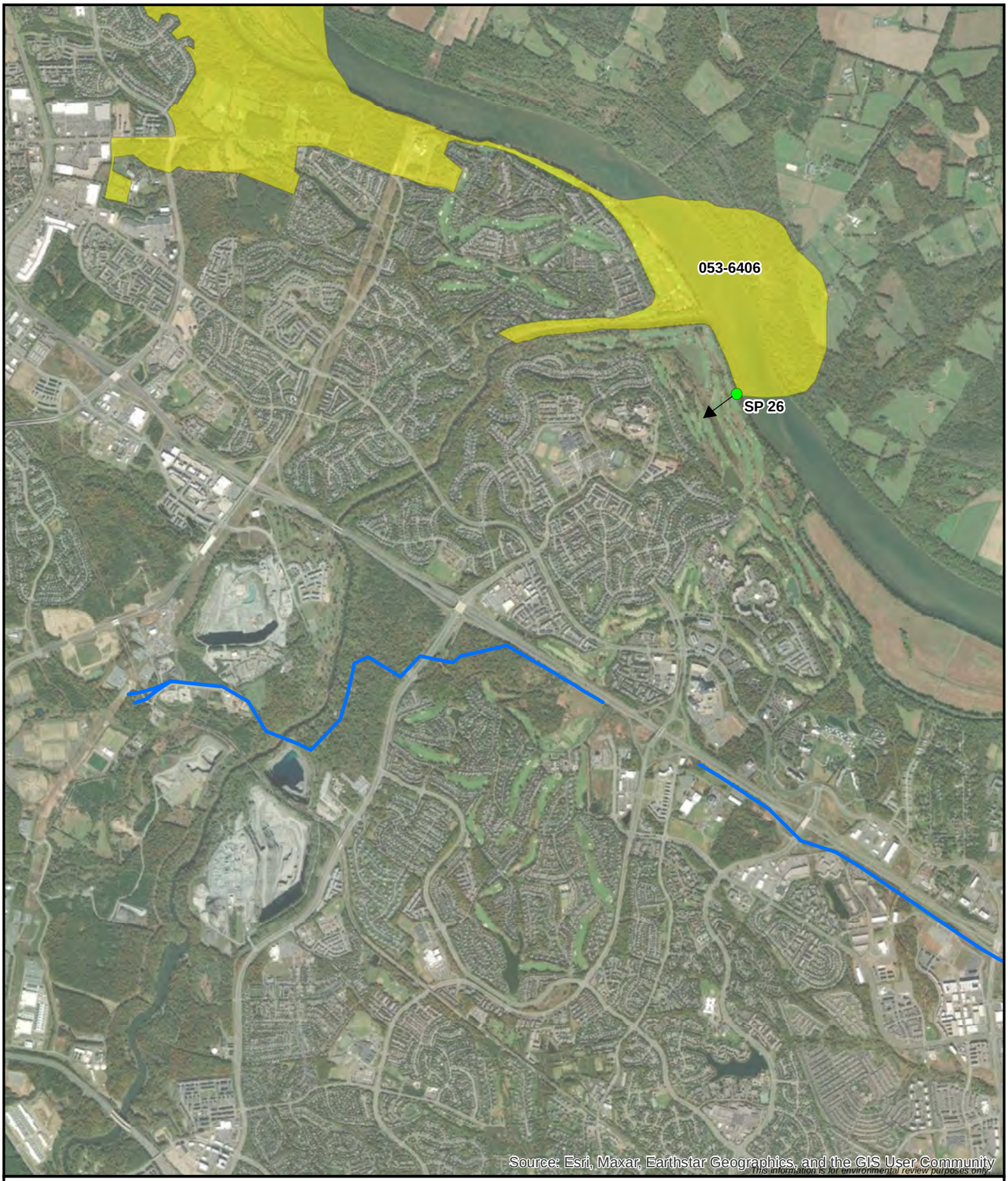


Figure 33. Aerial photograph depicting land use and photo view for 253-5182.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284322E 4327596N
View Direction:	232 degrees
Viewpoint Elevation:	279 feet
Distance to Development:	1806 feet
Horizontal Field of View:	90 degrees

Date of Photography:	28th August 2023 10:55
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 34
Route 1 Viewpoint SP 26
Ridge Rd W of Willowdale Pl
053-0106

Pre-Application Analysis
Aspen to Golden

Figure 35. Aerial photograph depicting land use and photo view for 053-0084.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284469E 4327523N
View Direction:	267 degrees
Viewpoint Elevation:	206 feet
Distance to Development:	3133 feet
Horizontal Field of View:	75 degrees

Date of Photography:	22nd March 2023 09:32
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 36
Belmont Park Variation A Viewpoint SP 16
Riverside Pkwy at Ashburn Village Blvd
053-0084

Pre-Application Analysis
Aspen to Golden

Figure 37. Aerial photograph depicting land use and photo view for 053-0106.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284469E 4327523N
View Direction:	42 degrees
Viewpoint Elevation:	394 feet
Distance to Development:	1796 feet
Horizontal Field of View:	94 degrees

Date of Photography:	28th August 2023 10:04
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 38
Belmont Park Variation A Viewpoint SP 01
Ridge Rd W of Belmont Manor Ln
053-0106

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284675E 4327942N
View Direction:	73 degrees
Viewpoint Elevation:	237 feet
Distance to Development:	639 feet
Horizontal Field of View:	89 degrees

Date of Photography:	28th August 2023 12:11
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	58 inches

VIEWPOINT CONTEXT

Figure 39
Belmont Park Variation A Viewpoint SP 04
Harry Byrd Hwy W of Ridge Rd
053-0106

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284860E 4327925N
View Direction:	120 degrees
Viewpoint Elevation:	255 feet
Distance to Development:	77 feet
Horizontal Field of View:	92 degrees

Date of Photography:	22nd March 2023 15:27
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 40
Belmont Park Variation A Viewpoint SP 02
Harry Byrd Hwy W of Ridge Rd
053-0106

Pre-Application Analysis
Aspen to Golden

Figure 41. Aerial photograph depicting land use and photo view for 053-0278.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284947E 4327536N
View Direction:	278 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	814 feet
Horizontal Field of View:	96 degrees

Date of Photography:	23rd March 2023 10:45
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 42
Belmont Park Variation A Viewpoint SP 08
Russell Branch Pkwy N of Tournament Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284947E 4327536N
View Direction:	66 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	814 feet
Horizontal Field of View:	92 degrees

Date of Photography:	23rd March 2023 10:45
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 43
Belmont Park Variation A Viewpoint SP 08
Russell Branch Pkwy N of Tournament Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	285112E 4327551N
View Direction:	12 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	438 feet
Horizontal Field of View:	102 degrees

Date of Photography:	22nd March 2023 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 44
Belmont Park Variation A Viewpoint SP 09
W Ramp - Harry Byrd Hwy to Claiborne Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

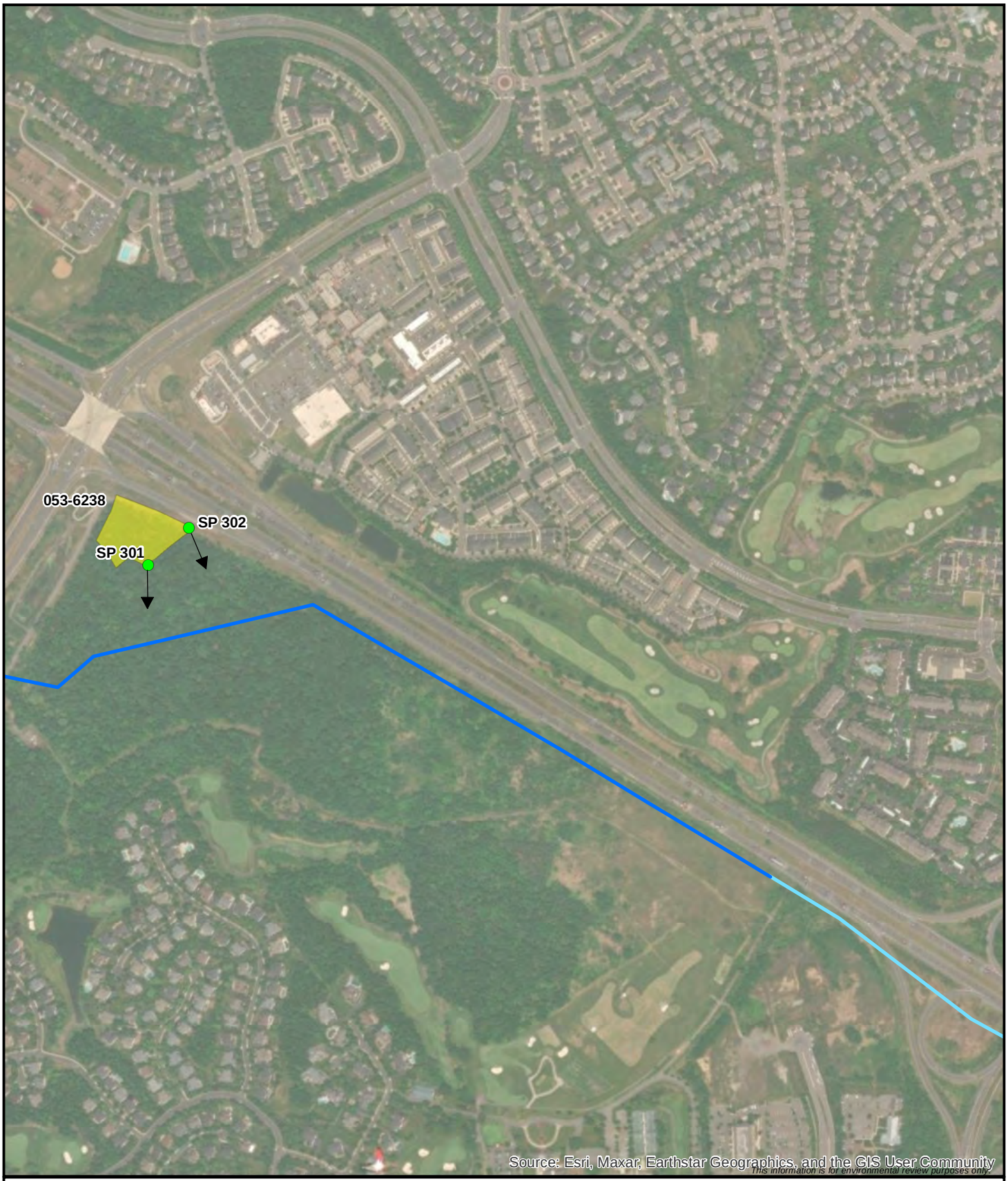


Figure 45. Aerial photograph depicting land use and photo view for 053-6238.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283837E 4328450N
View Direction:	180 degrees
Viewpoint Elevation:	288 feet
Distance to Development:	3819 feet
Horizontal Field of View:	90 degrees

Date of Photography:	7th December 2023 09:50
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

VIEWPOINT CONTEXT

Figure 46
Route 1 Viewpoint SP 301
SE of NE End of Freedom Trail
053-6238

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	283907E 4328510N
View Direction:	154 degrees
Viewpoint Elevation:	309 feet
Distance to Development:	3719 feet
Horizontal Field of View:	89 degrees

Date of Photography:	7th December 2023 09:34
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

VIEWPOINT CONTEXT

Figure 47
Belmont Park Variation A Viewpoint SP 302
Harry Byrd Hwy SE of Belmont Ridge Rd
053-6238

Pre-Application Analysis
Aspen to Golden

Figure 48. Aerial photograph depicting land use and photo view for 053-0084.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284469E 4327523N
View Direction:	267 degrees
Viewpoint Elevation:	206 feet
Distance to Development:	3133 feet
Horizontal Field of View:	75 degrees

Date of Photography:	22nd March 2023 09:32
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 49
Belmont Park Variation B Viewpoint SP 16
Riverside Pkwy at Ashburn Village Blvd
053-0084

Pre-Application Analysis
Aspen to Golden

Figure 50. Aerial photograph depicting land use and photo view for 053-0106.

Existing View

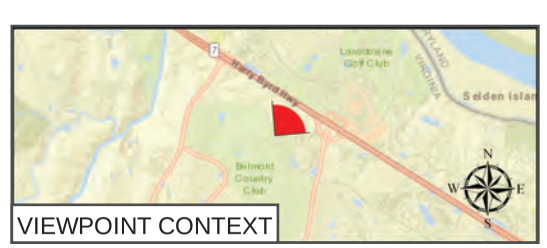
Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284469E 4327523N
View Direction:	42 degrees
Viewpoint Elevation:	394 feet
Distance to Development:	1796 feet
Horizontal Field of View:	94 degrees

Date of Photography:	28th August 2023 10:04
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches



VIEWPOINT CONTEXT

Figure 51
Belmont Park Variation B Viewpoint SP 01
Ridge Rd W of Belmont Manor Ln
053-0106

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	284675E 4327942N
View Direction:	73 degrees
Viewpoint Elevation:	237 feet
Distance to Development:	634 feet
Horizontal Field of View:	89 degrees

Date of Photography:	28th August 2023 12:11
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	58 inches

VIEWPOINT CONTEXT

Figure 52
Belmont Park Variation B Viewpoint SP 04
Harry Byrd Hwy W of Ridge Rd
053-0106

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284860E 4327925N
View Direction:	120 degrees
Viewpoint Elevation:	255 feet
Distance to Development:	77 feet
Horizontal Field of View:	92 degrees

Date of Photography:	22nd March 2023 15:27
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	63 inches

VIEWPOINT CONTEXT

Figure 53
Belmont Park Variation B Viewpoint SP 02
Harry Byrd Hwy W of Ridge Rd
053-0106

Pre-Application Analysis
Aspen to Golden

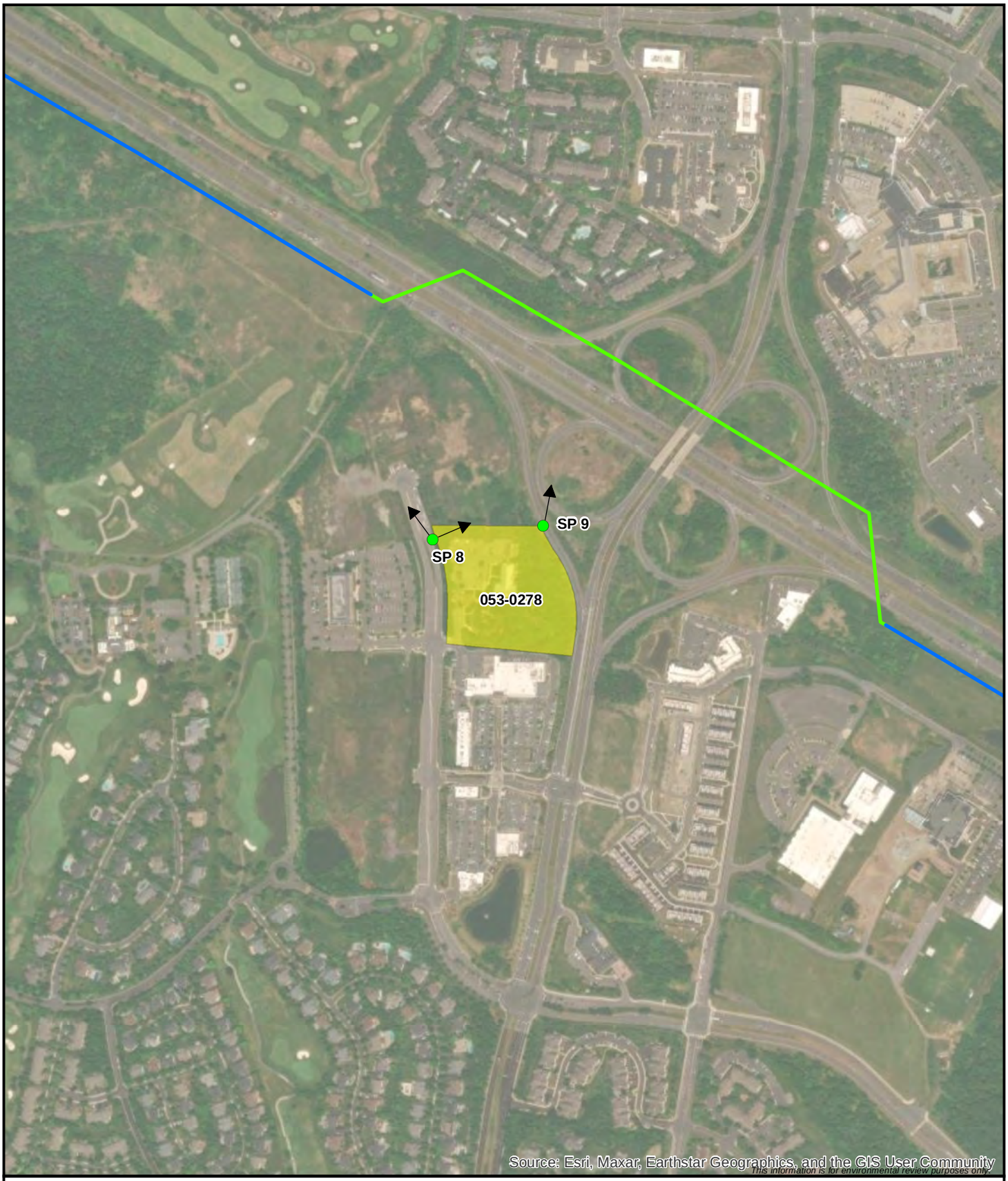


Figure 54. Aerial photograph depicting land use and photo view for 053-0278.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	284947E 4327536N
View Direction:	278 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1183 feet
Horizontal Field of View:	96 degrees

Date of Photography:	23rd March 2023 10:45
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 55
Belmont Park Variation B Viewpoint SP 08
Russell Branch Pkwy N of Tournament Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	284947E 4327536N
View Direction:	66 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	1183 feet
Horizontal Field of View:	92 degrees

Date of Photography:	23rd March 2023 10:45
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 56
Belmont Park Variation B Viewpoint SP 08
Russell Branch Pkwy N of Tournament Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	285112E 4327551N
View Direction:	12 degrees
Viewpoint Elevation:	240 feet
Distance to Development:	879 feet
Horizontal Field of View:	102 degrees

Date of Photography:	22nd March 2023 15:43
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 57
Belmont Park Variation B Viewpoint SP 09
W Ramp - Harry Byrd Hwy to Claiborne Pkwy
053-0278

Pre-Application Analysis
Aspen to Golden

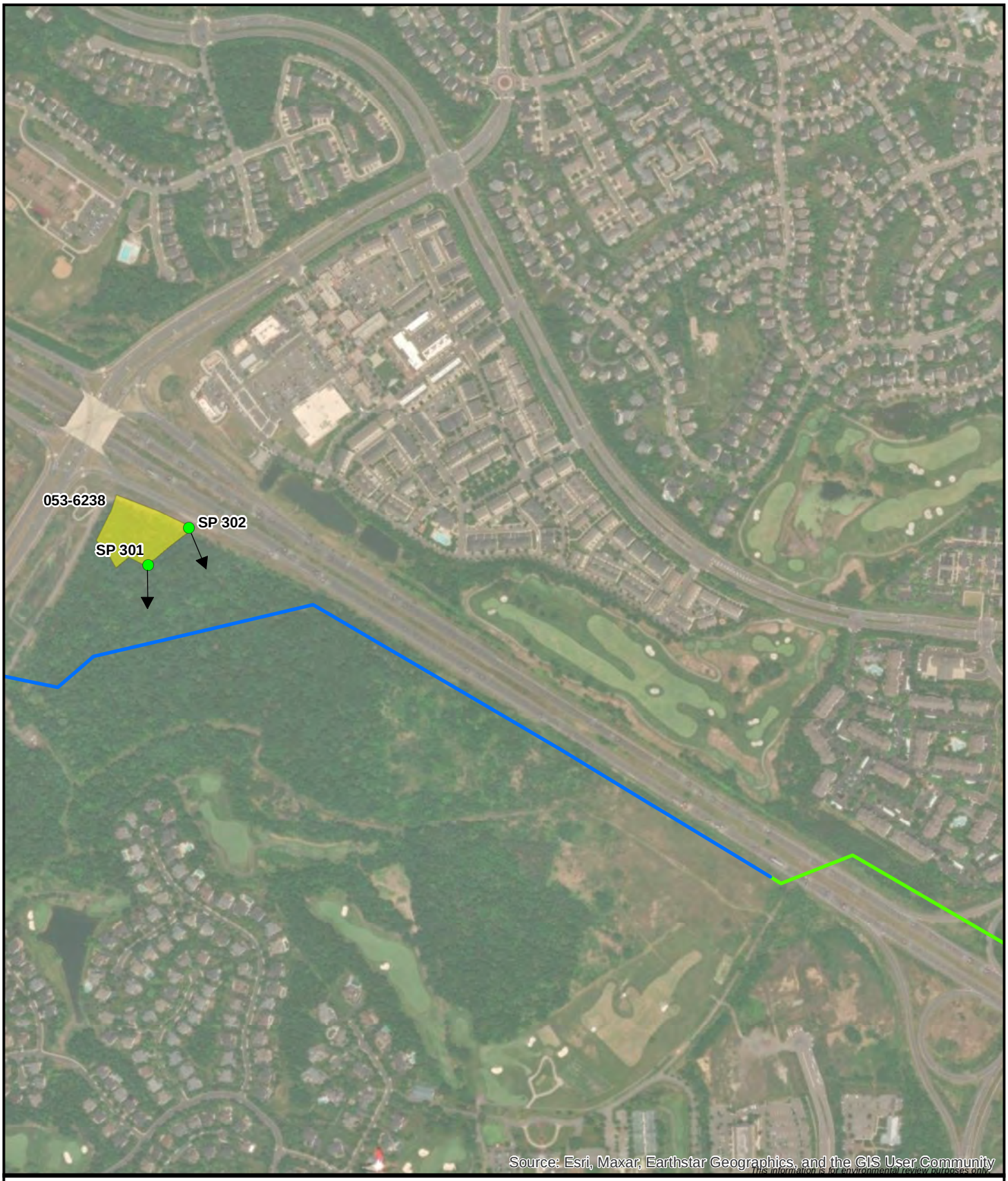


Figure 58. Aerial photograph depicting land use and photo view for 053-6238.

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283837E 4328450N
View Direction:	180 degrees
Viewpoint Elevation:	288 feet
Distance to Development:	3819 feet
Horizontal Field of View:	90 degrees

Date of Photography:	7th December 2023 09:50
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

VIEWPOINT CONTEXT

Figure 59
Route 1 Viewpoint SP 301
SE of NE End of Freedom Trail
053-6238

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	283907E 4328510N
View Direction:	154 degrees
Viewpoint Elevation:	309 feet
Distance to Development:	3719 feet
Horizontal Field of View:	89 degrees

Date of Photography:	7th December 2023 09:34
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	66 inches

VIEWPOINT CONTEXT

Figure 60
Belmont Park Variation B Viewpoint SP 302
Harry Byrd Hwy SE of Belmont Ridge Rd
053-6238

Pre-Application Analysis
Aspen to Golden

Figure 61. Aerial photograph depicting land use and photo view for 053-0110.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	289337E 4324703N
View Direction:	193 degrees
Viewpoint Elevation:	127 feet
Distance to Development:	4404 feet
Horizontal Field of View:	90 degrees

Date of Photography:	23rd March 2023 11:23
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches

VIEWPOINT CONTEXT

Figure 62
Broad Run Variation A Viewpoint SP 21
Pacific Blvd NW of Admiral Dr
053-0110

Pre-Application Analysis
Aspen to Golden

Figure 63. Aerial photograph depicting land use and photo view for 053-0276.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	287939E 4321987N
View Direction:	102 degrees
Viewpoint Elevation:	162 feet
Distance to Development:	709 feet
Horizontal Field of View:	89 degrees

Date of Photography:	23rd March 2023 15:25
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 64
Broad Run Variation A Viewpoint SP 18
Trail NW of Loudoun County Pkwy
053-0276

Pre-Application Analysis
Aspen to Golden

Existing View

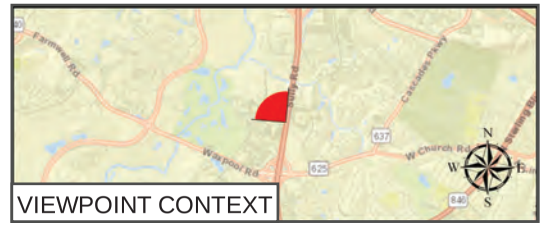
Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	289301E 4320886N
View Direction:	320 degrees
Viewpoint Elevation:	219 feet
Distance to Development:	2298 feet
Horizontal Field of View:	90 degrees

Date of Photography:	23rd March 2023 13:07
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches



VIEWPOINT CONTEXT

Figure 65
Broad Run Variation A Viewpoint SP 20
Sully Rd N of Waxpool Rd
053-0276

Pre-Application Analysis
Aspen to Golden

Figure 66. Aerial photograph depicting land use and photo view for 053-5223.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	290072E 4322636N
View Direction:	284 degrees
Viewpoint Elevation:	215 feet
Distance to Development:	4782 feet
Horizontal Field of View:	89 degrees

Date of Photography:	30th August 2023 12:54
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 67
Broad Run Variation A Viewpoint SP 33
Nokes Blvd at Atlantic Blvd
053-5223

Pre-Application Analysis
Aspen to Golden

Figure 68. Aerial photograph depicting land use and photo view for 053-0110.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	289337E 4324703N
View Direction:	193 degrees
Viewpoint Elevation:	127 feet
Distance to Development:	2746 feet
Horizontal Field of View:	90 degrees

Date of Photography:	23rd March 2023 11:23
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches

VIEWPOINT CONTEXT

Figure 69
Broad Run Variation B Viewpoint SP 21
Pacific Blvd NW of Admiral Dr
053-0110

Pre-Application Analysis
Aspen to Golden

Figure 70. Aerial photograph depicting land use and photo view for 053-0276.

Existing View

320

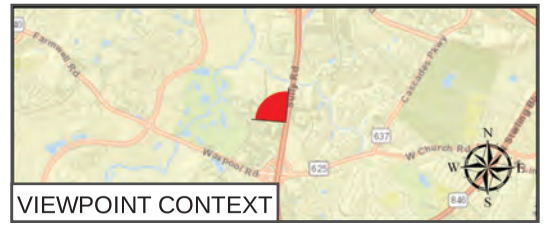
Proposed view showing location of transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	289301E 4320886N
View Direction:	320 degrees
Viewpoint Elevation:	219 feet
Distance to Development:	2298 feet
Horizontal Field of View:	90 degrees

Date of Photography:	23rd March 2023 13:07
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	64 inches



VIEWPOINT CONTEXT

Figure 71
Broad Run Variation B Viewpoint SP 20
Sully Rd N of Waxpool Rd
053-0276

Pre-Application Analysis
Aspen to Golden

Figure 72. Aerial photograph depicting land use and photo view for 053-5223.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy

ERM

Viewpoint Location UTM Zone 18N:	290072E 4322636N
View Direction:	284 degrees
Viewpoint Elevation:	215 feet
Distance to Development:	3921 feet
Horizontal Field of View:	89 degrees

Date of Photography:	30th August 2023 12:54
Camera:	Nikon D800
Lens:	Nikkor 50mm 1.4
Camera Height:	62 inches

VIEWPOINT CONTEXT

Figure 73
Broad Run Variation B Viewpoint SP 33
Nokes Blvd at Atlantic Blvd
053-5223

Pre-Application Analysis
Aspen to Golden

Figure 74. Aerial photograph depicting land use and photo view for 053-0276.

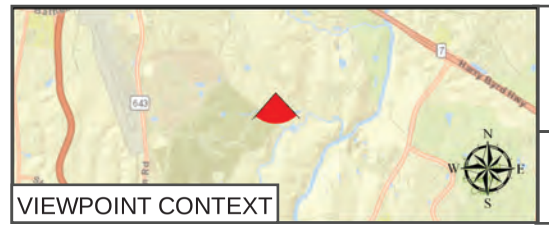
Existing View

Proposed view showing location of transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	281156E 4328250N
View Direction:	179 degrees
Viewpoint Elevation:	185 feet
Distance to Development:	576 feet
Horizontal Field of View:	84 degrees

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



VIEWPOINT CONTEXT

Figure 75
Aspen-Goose Creek Line and Route 1 Viewpoint SP 07
Trail NW of Cochran Mill Rd & Samuels Mill Ct
053-0276

Pre-Application Analysis
Aspen to Golden

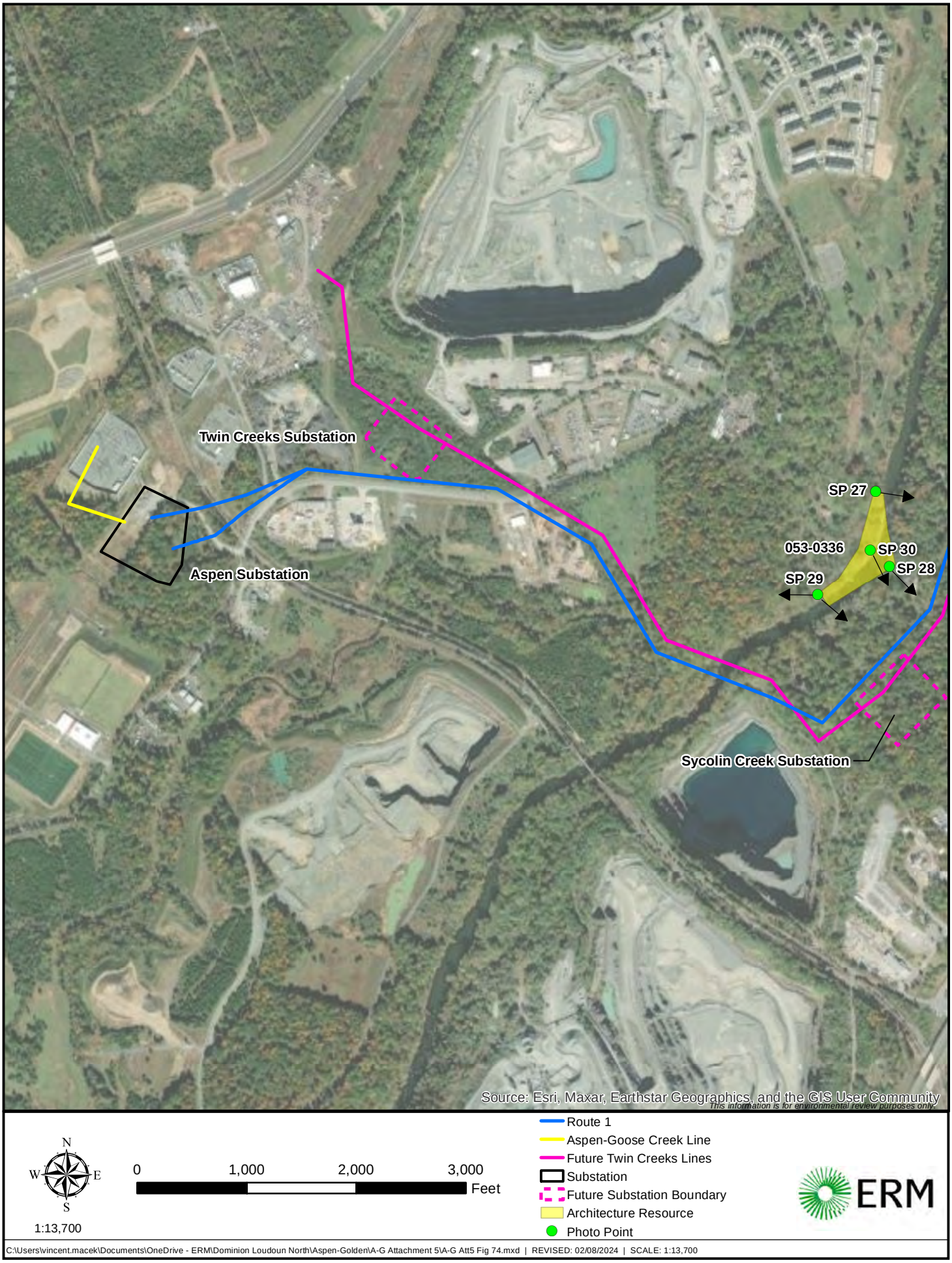


Figure 76. Aerial photograph depicting land use and photo view for 053-0336.

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	282530E 4327865N
View Direction:	278 degrees
Viewpoint Elevation:	215 feet
Distance to Development:	4941 feet
Horizontal Field of View:	90 degrees

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

VIEWPOINT CONTEXT

Figure 77
Aspen-Goose Creek Line Viewpoint SP 29
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	282661E 4328083N
View Direction:	100 degrees
Viewpoint Elevation:	203 feet
Distance to Development:	5330 feet
Horizontal Field of View:	90 degrees

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

VIEWPOINT CONTEXT

Figure 78
Route 1 Viewpoint SP 27
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing hidden transmission line structures

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	282530E 4327865N
View Direction:	126 degrees
Viewpoint Elevation:	215 feet
Distance to Development:	4941 feet
Horizontal Field of View:	90 degrees

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

VIEWPOINT CONTEXT

Figure 79
Route 1 Viewpoint SP 29
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures for Route 1 (pink) and Twin Creeks to Apollo (purple)

Dominion Energy

ERM

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

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

VIEWPOINT CONTEXT

Figure 80
Route 1 and Twin Creeks to Apollo Project Viewpoint SP 28
E Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden

Existing View

Proposed view showing location of transmission line structures for Route 1 (pink) and Twin Creeks to Apollo (purple)

Dominion Energy™ ERM

Viewpoint Location UTM Zone 18N:	282646E 4327956N
View Direction:	153 degrees
Viewpoint Elevation:	202 feet
Distance to Development:	5292 feet
Horizontal Field of View:	94 degrees

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

VIEWPOINT CONTEXT

Figure 81
Route 1 and Twin Creeks to Apollo Project Viewpoint SP 30
W Bank of Goose Creek W of Goose Glen Ln
053-0336

Pre-Application Analysis
Aspen to Golden