Dominion Energy®

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

Before the State Corporation Commission of Virginia

Lockridge 230 kV Line Loop and Lockridge Substation

Application No. 296

Case No. PUR-2019-00215

Filed: December 17, 2019

Volume 1 of 2

Application

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

FOR APPROVAL AND CERTIFICATION
OF ELECTRIC FACILITIES

Lockridge 230 kV Line Loop and Lockridge Substation

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COMMONWEALTH OF VIRGINIA

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APPLICATION OF	)	
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VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2019-00215
	)	
For approval and certification of electric transmission facilities: Lockridge 230 kV Line Loop and Lockridge Substation	)	

APPLICATION OF VIRGINIA ELECTRIC AND POWER COMPANY FOR APPROVAL AND CERTIFICATION OF ELECTRIC TRANSMISSION FACILITIES: LOCKRIDGE 230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

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 facilities (the "Application"). In support of its Application, Dominion Energy Virginia respectfully states as follows:

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

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

construct new transmission facilities in its system. The electric facilities proposed in this Application are necessary so that Dominion Energy Virginia can continue to provide reliable electric service to its customers, consistent with applicable reliability standards.

3. In this Application, in order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214[1] approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

4. The Project is necessary to assure that Dominion Energy Virginia can maintain and improve reliable electric service to customers in the Lockridge-Shellhorn Load Area.

5. The Customer is developing a data center campus on 28.4 acres centrally located along Lockridge Road in Loudoun County's Data Center Alley. The Customer is also developing two additional data center campuses in the Project area, and has requested retail electric service from Dominion Energy Virginia to support the future build-out of its three

[1] Prior to construction of the proposed Project, Buttermilk Substation, which has a construction target date of December 30, 2020, will be constructed by cutting into existing Line #2170, creating future Buttermilk-Roundtable Line #2214.

campuses. Specifically, the Customer is requesting a total of 306 MVA of power for the three campuses combined, with both normal service feeds and full capacity alternate feeds.

6. In addition to the Customer's three campuses, two other data center customers have announced future projects in the area. These additional data center projects are in various stages of development and are independently progressing through Loudoun County zoning and permitting approvals. The timing of these projects is not yet defined, but the Company is tracking these as future load growth in the area, and existing Shellhorn Substation and the proposed Lockridge Substation will be used to serve them.

7. Using conservative load estimates, these future projects (including the two future data center projects described above) could add approximately 300 to 400 MVA of load to the Shellhorn-Lockridge Load Area. This is in addition to the Customer's three data center campuses. Moreover, there are other parcels within the Shellhorn-Lockridge Load Area that have potential to be developed as data centers, and there are many existing buildings that could be redeveloped into data centers.

8. Accordingly, the proposed Project is needed to meet the load requirements of the Customer's planned new three data center campuses along with future load growth in the Lockridge-Shellhorn Load Area, which will, in turn, facilitate economic growth in the Commonwealth.

9. As part of the Project, the Company proposes to construct the approximately 0.6-mile Lockridge Loop by cutting future 230 kV Buttermilk-Roundtable Line #2214 at a junction located approximately 0.29 mile east of the Roundtable Substation, resulting in: (i) 230 kV Lockridge-Roundtable Line #2214, and (ii) 230 kV Buttermilk-Lockridge Line #2205. From the tap point junction, the Lockridge Loop will extend approximately 0.6 mile generally southeast to

the new Lockridge Substation (the "Proposed Route"). While the proposed tap point junction is located in existing right-of-way, the proposed Lockridge Loop will be constructed on new right-of-way supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1572 MVA.

10. The Company identified four viable alternative routes ("Alternative Routes") to the Proposed Route, all of which the Company is proposing for notice. Discussion of the Proposed and Alternative Routes, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with this Application.

11. The Company will obtain an easement from the Customer for the proposed Lockridge Substation, which will be located on the Customer's 28.4-acre data center campus. The proposed Lockridge Substation will be constructed initially with four 230 kV breakers in a ring bus arrangement, two 84 MVA, 230-34.5 kV transformers, nine 34.5 kV distribution circuits, and other associated equipment. In total, it will be designed to accommodate future growth in the area with a build-out of six 230 kV breakers in a ring bus arrangement, five 84 MVA, 230-34.5 kV transformers, and up to twenty-five 34.5 kV distribution circuits. A more detailed description of the proposed Project, including the Lockridge Loop and Lockridge Substation, is provided in Sections I and II of the Appendix attached to this Application.

12. The desired in-service target date for the Project is July 31, 2022. The Company estimates it will take approximately 20 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 November 30, 2020. Should the Commission issue a final order by November 30, 2020, the Company estimates that construction should begin around October 4, 2021, and be completed by the in-service target date, which is July 31, 2022.

13. The estimated conceptual cost of the Project is approximately $35.4 million, which includes approximately $14.5 million for transmission-related work and approximately $20.9 million for substation-related work (2019 dollars).

14. The proposed Project will afford the best means of meeting the continuing need for reliable service while reasonably minimizing adverse impacts on the scenic, environmental, and historic features of the area. The Proposed Route is the shortest route (0.62 mile) and requires the least amount of new right-of-way (10.71 acre) of all the routes considered. The route would affect 2.86 acres of forestland, which is the second lowest amount of the routes considered. The Proposed Route would affect 0.98 acre of wetlands, of which 0.15 acre are forested. No waterbodies or stream conservation units would be crossed by this route. Finally, the Proposed Route is collocated or overlaps with existing rights-of-way for 0.40 mile. Section III of the Appendix describes the existing area and potential impacts of the Project on scenic, environmental and historic features.

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

16. Based on the Company's experience, the advice of consultants, and a review of published studies by experts in the field, the Company believes that there is no causal link to harmful health or safety effects from electric and magnetic fields generated by the Company's

existing or proposed facilities. Section IV of the Appendix provides further details on Dominion Energy Virginia's consideration of the health aspects of electric and magnetic fields.

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

18. In addition to the information provided in the Appendix, the DEQ Supplement, and the Environmental Routing Study, this Application is supported by the prefiled direct testimony of Company Witnesses Harrison S. Potter, David M. Burnam, Tyler G. Hock, Mohammad M. Othman, Laura P. Meadows and Jon M. Berkin 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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December 17, 2019

Appendix

COMMONWEALTH OF VIRGINIA
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APPLICATION OF

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Appendix

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

Case No. PUR-2019-00215

Filed: December 17, 2019

TABLE OF CONTENTS

EXECUTIVE SUMMARY

In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company") proposes to construct in Loudoun County, Virginia:

(i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214[1] approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and

(ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation").

The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

The Project is necessary to assure that Dominion Energy Virginia can maintain and improve reliable electric service to customers in the Lockridge-Shellhorn Load Area, which includes a portion of Data Center Alley. Specifically, the Customer is developing a data center campus on 28.4 acres centrally located along Lockridge Road in Loudoun County's Data Center Alley. The Customer is also developing two additional data center campuses in the Project area, and has requested retail electric service from Dominion Energy Virginia to support the future build-out of its three campuses. The Customer is requesting a total of 306 MVA[2] of power for the three campuses combined, with both normal service feeds and full capacity alternate feeds.

In addition to the Customer's three campuses, two other data center customers have announced future projects in the area. These additional data center projects are in various stages of development and are independently progressing through Loudoun County zoning and permitting approvals. The timing of these projects is not yet defined, but the Company is tracking these as future load growth in the area, and existing Shellhorn Substation and the proposed Lockridge Substation will be used to serve them.

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[1] Prior to construction of the proposed Project, Buttermilk Substation, which has a construction target date of December 30, 2020, will be constructed by cutting into existing Line #2170, creating future Buttermilk-Roundtable Line #2214. For purposes of this Appendix, the Company will refer to the line being tapped for the proposed Project as future Buttermilk-Roundtable Line #2214 or future Line #2214. See Attachments I.A.1-3.

[2] Apparent power, measured in megavolt amperes ("MVA"), is made up of real power (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 the equipment ratings to handle the apparent power, which includes the real and reactive load components.

Using conservative load estimates, these future projects (including the two future data center projects described above) could add approximately 300 to 400 MVA of load to the Shellhorn-Lockridge Load Area. This is in addition to the Customer's three data center campuses. Moreover, there are other parcels within the Shellhorn-Lockridge Load Area that have potential to be developed as data centers, and there are many existing buildings that could be redeveloped into data centers.

Accordingly, the proposed Project is needed to meet the load requirements of the Customer's planned new three data center campuses along with future load growth in the Lockridge-Shellhorn Load Area, which will, in turn, facilitate economic growth in the Commonwealth.

The Company identified a proposed route for the Lockridge Loop as described above ("Proposed Route"), as well as four alternative routes to the Proposed Route ("Alternative Routes"), all of which the Company is proposing for notice. Discussion of the Proposed and Alternative Routes, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Routing Study included with the Application.

The Company will obtain an easement from the Customer for the proposed Lockridge Substation, which will be located on the Customer's 28.4-acre data center campus. The proposed Lockridge Substation will be constructed initially with four 230 kV breakers in a ring bus arrangement, two 84 MVA, 230-34.5 kV transformers, nine 34.5 kV distribution circuits, and other associated equipment. In total, it will be designed to accommodate future growth in the area with a build-out of six 230 kV breakers in a ring bus arrangement, five 84 MVA, 230-34.5 kV transformers, and up to twenty-five 34.5 kV distribution circuits.

The estimated conceptual cost of the Project is approximately $35.4 million, which includes approximately $14.5 million for transmission-related work and approximately $20.9 million for substation-related work (2019 dollars).

The desired in-service target date for the Project is July 31, 2022. The Company estimates it will take approximately 20 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 November 30, 2020. Should the Commission issue a final order by November 30, 2020, the Company estimates that construction should begin around October 4, 2021, and be completed by the in-service target date, which is July 31, 2022.

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 in order to provide service requested by the Customer in Loudoun County, Virginia, to maintain reliable service for the overall growth in the Project area, and to comply with mandatory NERC Reliability Standards.

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 "Dominion Energy Zone" or "DOM Zone"). The Company needs to be able to maintain the overall, long-term reliability of its transmission system as its customers require more power in the future.

Dominion Energy Virginia is part of the PJM 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 166,929 megawatts ("MW") for summer peak demand, of which Dominion Energy Virginia's load portion was approximately 19,256 MW. On July 22, 2011, the Company set a record high of 20,061 MW for summer peak demand. On February 20, 2015, the Company set a winter and all-time record demand of 21,651 MW.

Dominion Energy Virginia's load zone is the third largest area in PJM, behind only the American Electric and Power Company and Commonwealth Edison Zones. Moreover, based on the 2019 PJM Load Forecast, the DOM Zone is expected to be the fastest growing zone in PJM with average annual growth rates of 0.9% (summer) and 1.1% (winter) over the next 10 years compared to the PJM average of 0.3% and 0.4% over the same period for summer and winter, respectively.

Dominion Energy Virginia is also part of the Eastern Interconnection transmission

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

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 and in excess of $1 million a day per violation. NERC has been designated by the Federal Energy Regulatory Commission ("FERC") as the electric reliability organization for the United States.

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.[3] PJM's annual RTEP is based on the effective criteria in place at the time of the analyses, including applicable standards and criteria of NERC, PJM, and local reliability planning criteria, among others.[4] Projects identified through the RTEP process are developed by the transmission owner ("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 infrastructure resilience. The Project is classified as a supplemental project initiated by the TO in order to interconnect new customer load. While supplemental projects are included in the RTEP, the PJM Board does not actually approve such projects. See Section I.J for a discussion of the PJM process as it relates to this Project.

The Northern Virginia data center market is spread across Loudoun, Fairfax, and

[3] PJM Manual 14B focuses on the RTEP process and can be found at http://www.pjm.com/documents/manuals.aspx.
[4] *See* PJM Manual 14B, Attachment D: PJM Reliability Planning Criteria.

Prince William Counties. Loudoun County's Data Center Alley—which is generally bounded by Gloucester Parkway to the north, Dulles Greenway to the south, Ashburn Village Parkway to the west, and Sully Road (Route 28) to the east—boasts the world's largest concentration of data centers. 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.

The Customer is developing a data center campus ("Campus A") on 28.4 acres centrally located along Lockridge Road in Loudoun County's Data Center Alley. The Customer is also developing two additional data center campuses in the Project area, one that is located on approximately 24 acres along Broderick Drive where a second building is planned ("Campus B"), and one that will be located on approximately 28 acres along Shellhorn Road ("Campus C"). The Customer has requested retail electric service from Dominion Energy Virginia to support the future build-out of its three campuses. Specifically, the Customer is requesting a total of 306 MVA of power (116 MVA at Campus A, 74 MVA at Campus B, and 116 MVA at Campus C), with both normal service feeds and full capacity alternate feeds. The Company plans to serve the Customer's Campus A and build-out of Campus B from the proposed Lockridge Substation, and to serve the Customer's Campus C from the existing Shellhorn Substation (with additional necessary equipment to build out Shellhorn Substation). Other area customers, both existing and planned in the future, also will be served from both the proposed Lockridge Substation and the existing Shellhorn Substation. This plan is based on the proximity of the Customer's campuses to these substations, as well as existing and future projected load in the Project area (the "Shellhorn-Lockridge Load Area"). See Attachment I.A.1 for a map generally illustrating the Shellhorn-Lockridge Load Area and location of Campuses A, B and C.

Specifically, the Customer's request for 306 MVA of power and for both normal and alternate feed (*i.e.*, redundant) services, will overload the existing distribution substation equipment if all of it were to be connected to the existing Shellhorn Substation. Connecting the Customer's requested load to Shellhorn Substation alone would result in (i) substation transformer thermal overloads, (ii) substation transformer contingency plan overloads, and (iii) violation of NERC transmission system reliability criteria. Further, without the proposed Lockridge Substation, the load of Campus A and Campus C, and the build-out of Campus B would theoretically be served from the existing Shellhorn Substation, even though it is impractical to construct the necessary new distribution circuits from Shellhorn Substation to Campuses A and B. Campus C is directly adjacent to Shellhorn Substation, so that is the logical substation to use to serve that data center campus. Section I.C. of this Appendix describes these violations in further detail.

The in-service date of the proposed Project is July 31, 2022, in order to serve the Customer's new development without overloading existing facilities. The total loading at Lockridge Substation, including the Customer's load described above

at Campuses A and B, is projected to be approximately 236 MVA at full build-out.

In addition to the Customer's three project campuses, two other data center customers have announced future projects in the area (*e.g.*, Loudoun County PARID: 062176281000 (260 acres) and Loudoun County PARID: 089309997000 (26.58 acres) and PARID: 062361210000 (96.8 acres)). These additional data center projects are in various stages of development and are independently progressing through Loudoun County zoning and permitting approvals. The timing of these projects is not yet defined, but the Company is tracking these as future load growth in the area, and existing Shellhorn Substation and the proposed Lockridge Substation will be used to serve them.

Using conservative load estimates, these future projects (including the future data center projects described above) could add approximately 300 to 400 MVA of load to the Shellhorn-Lockridge Load Area. This is in addition to the Customer's projects at Campuses A, B and C. Moreover, there are other parcels within the Shellhorn-Lockridge Load Area that have potential to be developed as data centers, and there are many existing buildings that could be redeveloped into data centers. Constructing the proposed Project within this high potential growth area will allow the Company to continue to serve economic growth in the area in a timely manner.

Accordingly, the proposed Project is needed to meet the load requirements of the Customer's planned new three data center campuses along with future load growth in the Lockridge-Shellhorn Load Area.

As part of the Project, the Company proposes to construct the approximately 0.6-mile Lockridge Loop by cutting future 230 kV Buttermilk-Roundtable Line #2214 at a junction located 0.29 mile east of the Roundtable Substation, resulting in (i) 230 kV Lockridge-Roundtable Line #2214, and (ii) 230 kV Buttermilk-Lockridge Line #2205. From the tap point junction, the Lockridge Loop will extend along the Proposed Route approximately 0.6 mile generally southeast to the new Lockridge Substation. While the proposed tap point junction is located in existing right-of-way, the proposed Lockridge Loop will be constructed on new right-of-way supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1572 MVA.

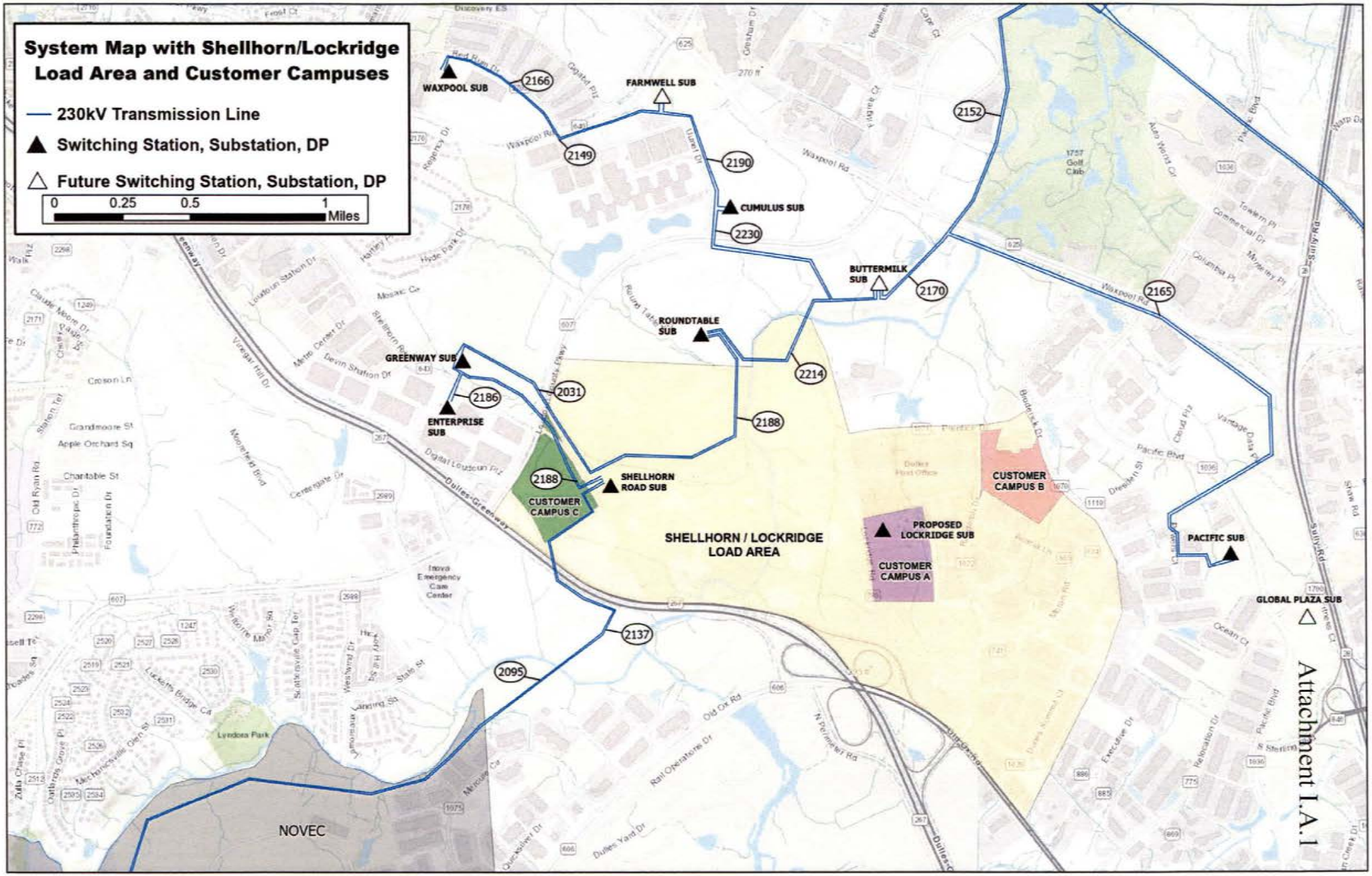
The Company identified four viable Alternative Routes to the Proposed Route, all of which the Company is proposing for notice. Discussion of the Proposed and Alternative Routes, as well as other overhead routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and in the Environmental Routing Study included with the Application.

The Company also proposes to construct the Lockridge Substation as part of the Project. The proposed Lockridge Substation will be constructed initially with

four 230 kV breakers in a ring bus arrangement, two 84 MVA, 230-34.5 kV transformers, nine 34.5 kV distribution circuits, and other associated equipment. In total, it will be designed to accommodate future growth in the area with a build-out of six 230 kV breakers in a ring bus arrangement, five 84 MVA, 230-34.5 kV transformers, and up to twenty-five 34.5 kV distribution circuits.

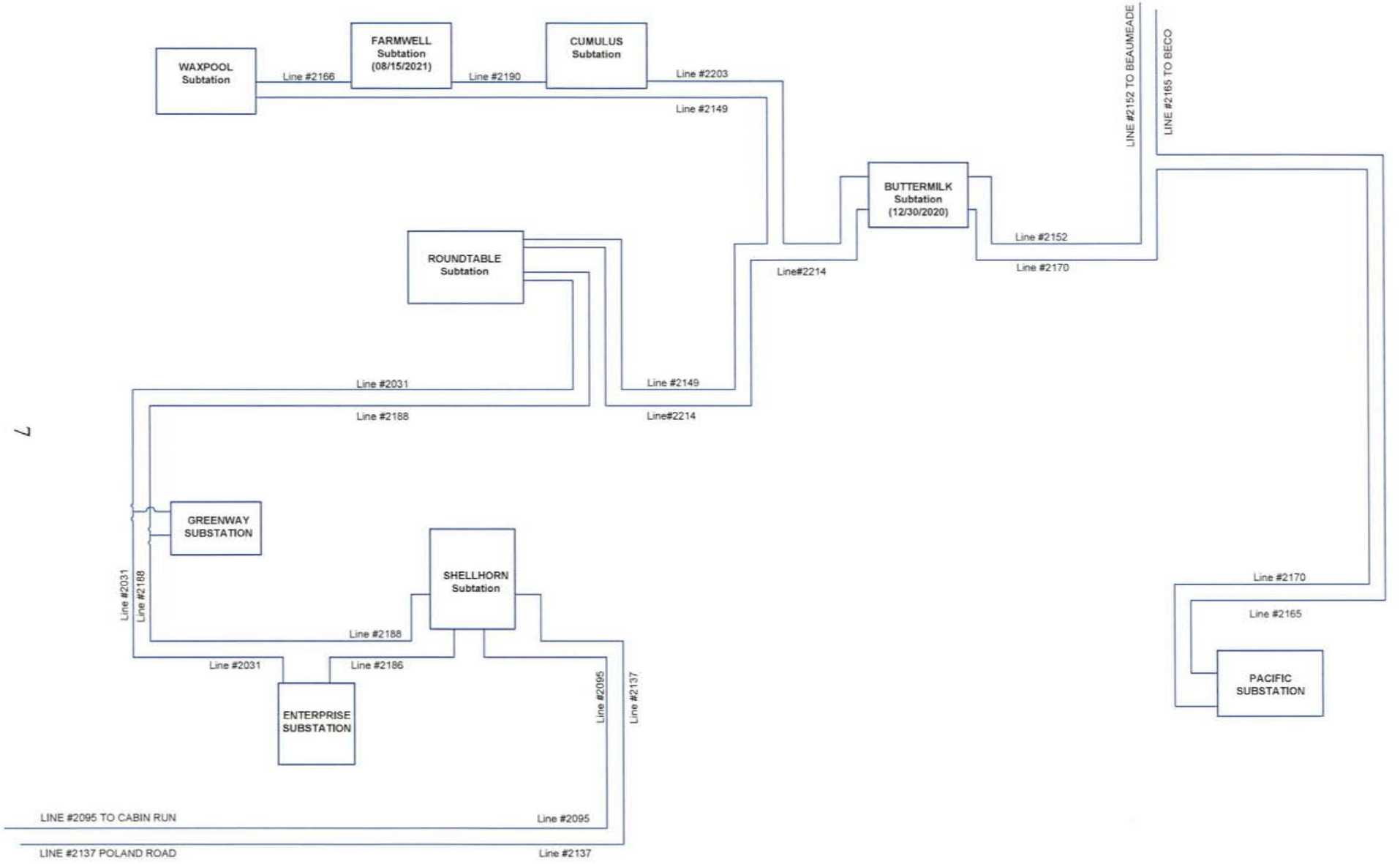
Attachments I.A.2 and I.A.3 are one-line diagrams of the area transmission system before and after construction of the Project, respectively. See Attachment II.A.2 for a map depicting the proposed Project.

The proposed Project will provide service requested by the Customer in Loudoun County, Virginia, maintain reliable service for the overall growth in the Project area, and comply with mandatory NERC Reliability Standards.



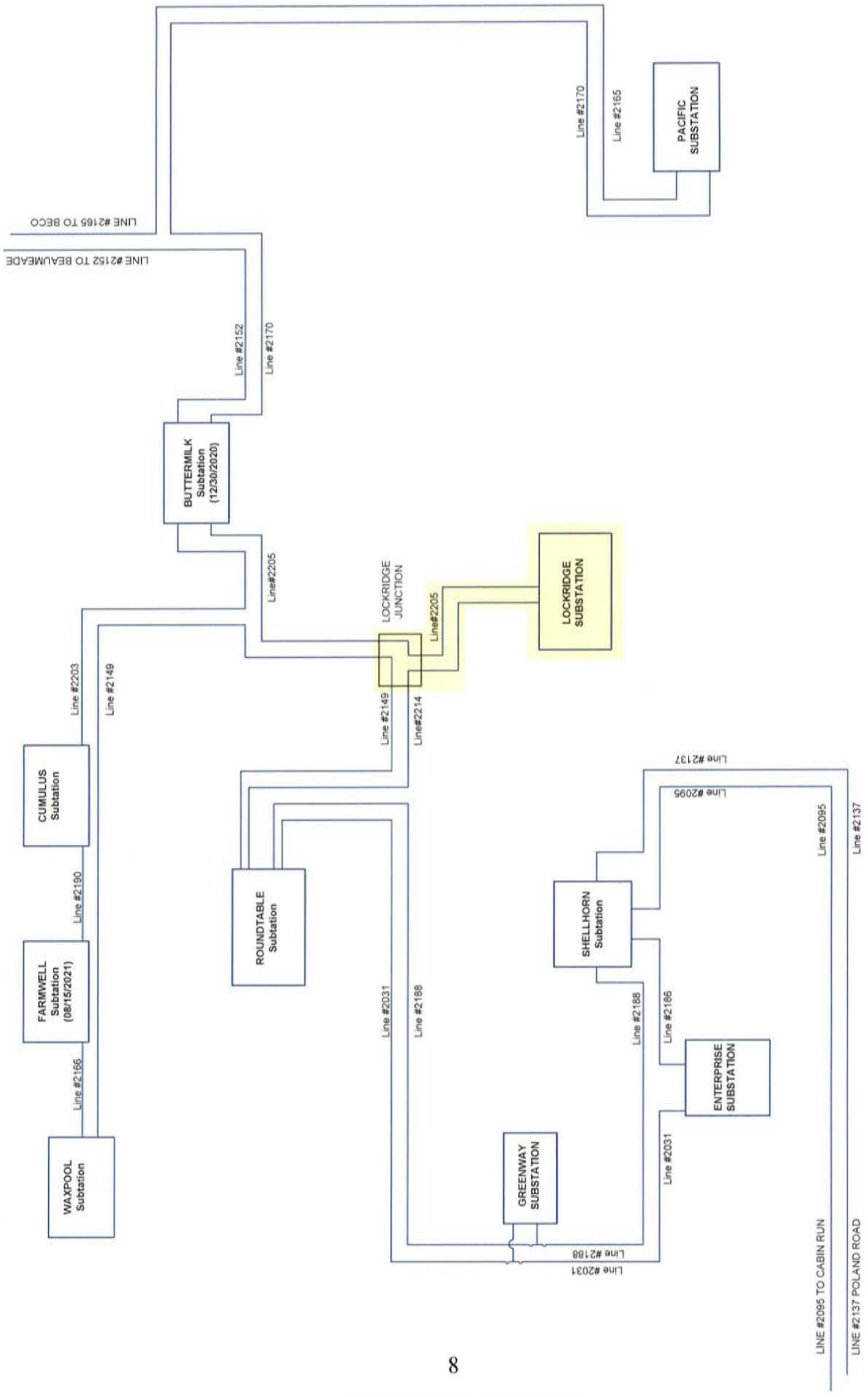
Attachment I.A.1

One-Line Diagram Prior to Lockridge Project Construction



Attachment I.A.2

One-Line Diagram of the Proposed Project



I. NECESSITY FOR THE PROPOSED PROJECT

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

Response:

(1) Engineering Justification for Project

See Section I.A of the Appendix.

(2) Known Future Projects

The proposed Project is needed to serve future data center developments in the Project area as described in Section I.A. See Attachment I.A.1 for existing and future distribution and transmission facilities in the affected load area, including the proposed Project, which will work together to serve Data Center Alley. While future Company projects are located within approximately 3.0 miles of the proposed Lockridge Substation (as shown on Attachment I.A.1), each has its own unique load growth drivers, and as such, these future projects do not "require" the proposed Project to be constructed.

(3) Planning Studies

For this Project, the Company's Distribution Planning group first used the Customer's load projection information for its Campuses A, B, and C and other load growth information for the Shellhorn-Lockridge Load Area to create a composite load projection. Starting with the scenario to feed the entire projected load from an existing substation (*i.e.*, Shellhorn Substation), Distribution Planning determined that overloads would occur on equipment and loading criteria would be violated. When the projected load was divided between existing Shellhorn Substation and the proposed Lockridge Substation, the overloads and violations are avoided.

Distribution Planning then conferred with the Company's Transmission Planning group to analyze the effects of the projected growth and the addition of a Lockridge Substation on the transmission system.

Dominion Energy Virginia's Electric Transmission Planning group performs planning studies to ensure delivery of bulk power to a continuously changing customer demand under a wide variety of operating conditions. Studies are

performed in coordination with the Company's RTO (*i.e.*, PJM) and in accordance with NERC Reliability Standards. In completing these studies, the Company considered all other known generation and transmission facilities impacting the affected load area.

In order to maintain reliable service to customers of the Company and to comply with mandatory NERC Reliability Standards, specifically Facility Connection ("FAC") standard FAC-001,[5] the Company's Facility Interconnection Requirements ("FIR")[6] document addresses the interconnection requirements of generation, transmission, and electricity end-user facilities. The purpose of the NERC FAC standards is to avoid adverse impacts on reliability by requiring each TO to establish facility connection and performance requirements in accordance with FAC-001, and the TO's and end-users meet and adhere to the established facility connection and performance requirements in accordance with FAC-002.

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

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

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

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

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

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

The Project is being constructed as a double circuit loop instead of a single circuit tap to comply with Section 6.2 of the Company's FIR, which requires a ring bus arrangement for load interconnections in excess of 100 MW.

[5] *See* FAC-001-2, effective January 1, 2016 at http://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-001-2.pdf.

[6] The Company's FIR is available at: https://www.dominionenergy.com/library/domcom/media/large-business/selling-power-to-dominion-energy/parallel-generation-and-interconnection/facility-connection-requirements.pdf.

The Project is electrically more robust than the electric alternatives described in Section I.E of this Appendix, as it allows Lockridge Substation to be loaded to 300 MW and still meet all NERC Reliability Standards. See Section I.C of the Appendix for further discussion of the NERC Criteria regarding 300 MW total substation loading.

(4) Facilities List

See Attachment I.A.1 for existing and future distribution and transmission facilities in the affected Shellhorn-Lockridge Load Area.

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 existing Shellhorn-Lockridge Load Area is located in the Sterling area of Loudoun County and is generally bounded by Loudoun County Parkway to the west, Broderick Drive to the east, Prentice Drive to the North, and Old Ox Road (Rt. 606) to the south. See Attachments I.A.1 and I.G.1 for the portion of the Company's transmission facilities in the area of the Project. The existing Shellhorn Substation is the primary source of distribution power to the load area. The projected load at the Customer's three campuses combined in 10 years is projected to be approximately 214 MVA. Adding this load from the Customer's planned new and built-out data center campuses (*i.e.*, Campuses A, B, and C) to Shellhorn Substation would result in overload conditions and NERC transmission system reliability criteria violations.

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

- Attachment I.C.1.a shows loading at Shellhorn Substation without the Customer's projects at Campuses A, B, or C, and without Lockridge Substation.
- Attachment I.C.1.b shows loading at Shellhorn Substation with the addition of the Customer's projects at Campuses A, B, or C, and without Lockridge Substation.
- Attachment I.C.1.c shows loading at Shellhorn Substation with the addition of the Customer's project at Campus C, and at Lockridge Substation with the addition of the Customer's projects at Campuses A and B.

Shellhorn Substation is designed to have ultimately four 84 MVA, 230-34.5 kV transformers. Each of these transformers has a normal overload ("NOL") rating of 90 MVA. Each of the four substation transformers has a number of feeder circuits connected to it that ultimately connect to customers through distribution facilities. These distribution circuits each have a thermal overload rating that is based on the type of equipment and the configuration of the equipment in the field. To prevent overloads that could damage or fail equipment, the maximum capacity limits of the distribution circuits and the substation transformers cannot be exceeded.

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

NERC criteria restricts total substation loading to no more than 300 MW. If the projected load inside a given substation will exceed 300 MW, the Company must create a project that eliminates the overload, such as constructing a new substation like the proposed Lockridge Substation.

From Attachment I.C.1.b, the Shellhorn Substation is projected to have TX#1 and TX#2 overloads starting in summer 2023 (with Customer Campuses A, B, C and without Lockridge Substation). TX#3 is projected to overload starting in summer 2024.

The Shellhorn Substation distribution transformer contingency plans overload starting in summer 2022.

The NERC Criteria for 300 MW total substation loading is exceeded starting in summer 2026 at Shellhorn Substation. In summer 2024, the total substation load is projected to be at 241 MW (80% of criteria), and, in summer 2025, the total substation load is projected to be at 283 MW (94% of criteria). For the purposes of this NERC Criterion, the load values do not include the redundant, alternate feed contract values, but rather just the projected Customer loading in Shellhorn Substation.[7]

Based on all these stated projected overloads and criteria violations above, the Company needs to construct the Lockridge Substation by summer 2022 to avoid these issues.

A secondary reason for having Lockridge Substation energized by summer 2022 is to allow for the prudent construction of distribution facilities to the Customer's Campus A. It is prudent to begin connection to Lockridge Substation as early as possible to avoid having to construct longer and more expensive distribution circuits from Shellhorn Substation. With the need justified for Lockridge Substation, the substation should be built as soon as practical in order to construct the distribution system in the most efficient manner. Additionally, there are many constraints and issues to constructing distribution circuits to Campus A from Shellhorn Substation due to distance, the fullness of existing distribution rights-of-way, and construction difficulty.

[7] Note that in the "Substation Total Calc for 300 MW criterion" row of Attachment I.C.1.b, the load values are shown as MVA, while the numbers referenced here are in MW. *See supra* n. 2.

It is important to note that Attachments I.C.1.a, I.C.1.b and I.C.1.c include only the normal feed circuits to the Customer's three data center campuses. The Customer has requested that each of its data center buildings include a totally independent, redundant distribution feed. This is referred to as an alternate feed. At any customer's request, the Company will endeavor to design a distribution system that provides for a back-up source of power should their normal feed have an outage. The cost of this alternate feed arrangement is compared to the normal arrangement of service, and the difference in cost is collected through an excess facilities charge. The Customer's business plan counts on the requested alternate feed plan to meet the non-outage demands of its data center clients. Therefore, the Company plans to serve the Customer's three data center campuses with both normal feed circuits and alternate feed circuits. This essentially doubles the required substation transformer capacity that the customer will contract for and double the number of distribution circuits required compared to providing normal feed service only. Attachments I.C.1 a, I.C.1.b, and I.C.1.c do include alternate feed loads from other customers that have existing alternate feed contracts.

Table I.C.1.a

Shellhorn / Lockridge Load Area (Loads and Ratings in MVA)

Shellhorn Sub (without Customer's Projects A, B, and C, and without Lockridge Sub)

			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection
Substation Total			*25.0*	*39.9*	*51.0*	*35.9*	*63.4*	*119.6*	*133.1*	*141.6*	*190.1*	*224.1*	*241.1*	*241.1*	*241.1*	*241.1*	*241.1*
Substation Total Calc for 300MW criterion			*25.0*	*30.4*	*30.3*	*29.1*	*38.4*	*54.5*	*68.0*	*76.5*	*95.0*	*129.0*	*146.0*	*146.0*	*146.0*	*146.0*	*146.0*
Transformer	Nameplate	NOL															
TX#3	84	90	0.0	0.0	0.0	0.0	2.0	41.6	46.1	49.6	83.1	87.8	87.8	87.8	87.8	87.8	87.8
TX#2	84	90	0.0	0.0	8.0	0.5	0.2	44.0	30.0	35.0	50.0	79.3	74.3	74.3	74.3	74.3	74.3
TX#1	84	90	25.0	39.9	43.0	35.4	61.2	34.0	57.0	57.0	57.0	57.0	57.0	57.0	57.0	57.0	57.0
TX#4	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.0	22.0	22.0	22.0	22.0
			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection

Table I.C.1.b

Shellhorn / Lockridge Load Area (Loads and Ratings in MVA)

Shellhorn Sub (with the Customer's Projects A, B, and C, and without Lockridge Sub)

			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection
Substation Total			*25.0*	*39.9*	*39.9*	*35.9*	*63.4*	*127.6*	*167.1*	*210.6*	*290.1*	*349.1*	*448.1*	*472.1*	*485.1*	*485.1*	*485.1*
Substation Total Calc for 300MW criterion			*25.0*	*30.4*	*30.3*	*29.1*	*38.4*	*62.5*	*102.0*	*145.5*	*195.0*	*254.0*	*298.0*	*322.0*	*335.0*	*335.0*	*335.0*
Transformer	Nameplate	NOL															
TX#3	84	90	0.0	0.0	0.0	0.0	2.0	41.6	46.1	49.6	83.1	91.8	146.8	146.8	146.8	146.8	146.8
TX#2	84	90	0.0	0.0	0.0	0.5	0.2	48.0	50.0	80.0	112.0	150.3	167.3	167.3	167.3	167.3	167.3
TX#1	84	90	25.0	39.9	39.9	35.4	61.2	38.0	71.0	81.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0
TX#4	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	39.0	63.0	76.0	76.0	76.0
			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection

Table I.C.1.c

Shellhorn / Lockridge Load Area (Loads and Ratings in MVA)

Shellhorn Sub (with the Customer's Project C fed from Shellhorn Sub and Projects A and B fed from Lockridge Sub)

			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection
Substation Total			*25.0*	*39.9*	*39.9*	*35.9*	*63.4*	*127.6*	*167.1*	*69.0*	*128.0*	*169.3*	*198.3*	*210.3*	*212.3*	*212.3*	*212.3*
Substation Total Calc for 300MW criterion			*25.0*	*30.4*	*30.3*	*29.1*	*38.4*	*62.5*	*102.0*	*39.0*	*68.0*	*109.3*	*138.3*	*150.3*	*152.3*	*152.3*	*152.3*
Transformer	Nameplate	NOL															
TX#3	84	90	0.0	0.0	0.0	0.0	2.0	41.6	46.1	0.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
TX#2	84	90	0.0	0.0	0.0	0.5	0.2	48.0	50.0	35.0	50.0	79.3	74.3	74.3	74.3	74.3	74.3
TX#1	84	90	25.0	39.9	39.9	35.4	61.2	38.0	71.0	34.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
TX#4	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	46.0	58.0	60.0	60.0	60.0
			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection

Lockridge Sub (with the Customer's Project C fed from Shellhorn Sub and Projects A and B fed from Lockridge Sub)

			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection
Substation Total			*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*116.5*	*137.0*	*154.7*	*224.7*	*236.7*	*247.7*	*247.7*	*247.7*
Substation Total Calc for 300MW criterion			*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*131.6*	*152.1*	*169.8*	*184.8*	*196.8*	*207.8*	*207.8*	*207.8*
Transformer	Nameplate	NOL															
TX#5	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	59.0	59.0	59.0	59.0	59.0
TX#4	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	62.0	71.0	71.0	71.0	71.0	71.0	71.0
TX#3	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.5	75.0	79.7	79.7	79.7	79.7	79.7	79.7
TX#2	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.1	25.1	25.1	40.1	52.1	63.1	63.1	63.1
TX#1	84	90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	27.0	38.0	38.0	38.0
			Load (MVA) S2015 Actual	Load (MVA) S2016 Actual	Load (MVA) S2017 Actual	Load (MVA) S2018 Actual	Load (MVA) S2019 Actual	Load (MVA) S2020 Projection	Load (MVA) S2021 Projection	Load (MVA) S2022 Projection	Load (MVA) S2023 Projection	Load (MVA) S2024 Projection	Load (MVA) S2025 Projection	Load (MVA) S2026 Projection	Load (MVA) S2027 Projection	Load (MVA) S2028 Projection	Load (MVA) S2029 Projection

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: See Section I.C for the substation transformer contingency planning rationale from a distribution system perspective. For the Shellhorn Substation transformer contingencies review, in summer 2022, for the loss of Shellhorn TX#2, Shellhorn TX#1 shows an overload (123 MVA of load on a 90 MVA rating or 136% overload) and for loss of Shellhorn TX#3, Shellhorn TX#2 shows an overload (130 MVA of load on a 90 MVA rating or 144% overload). For these contingency scenarios, load is transferred to other busses and transformers within Shellhorn Substation, resulting in the overloads of equipment rating.

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 considered electrical alternatives to the proposed Project, including the use of distribution facilities as well as existing and planned substations to serve the need for the Project.

Distribution Alternatives:

Distribution Alternative (1): *Feed the Lockridge/Shellhorn Load Area growth from Pacific Substation*

Under this distribution alternative scenario, Lockridge Substation would not be constructed and the projected load growth, including the Customer's three data center campuses, would be split between existing Shellhorn Substation and existing Pacific Substation. Due to its proximity to Shellhorn Substation, Campus C would be fed from there, and Campus A and Campus B would be fed from Pacific Substation. Pacific Substation is approximately 1.0 straight-line mile from Campus A.

Distribution Alternative (1) was rejected for five key reasons. First, if the load from Campus A (116 MVA) and the growth load from Campus B (74 MVA) are added to Pacific Substation, the total projected Pacific Substation load would exceed 300 MW, in violation of NERC Reliability Standards. Second, the four Pacific Substation transformers would each overload. Third, these overloads are caused by the normal feed loading and do not provide for any of the Customer's requested alternate feed circuit capacity. Fourth, the available capacity (i.e., the capacity that is available beyond the currently projected existing and future loads) at Pacific Substation is needed to serve future growth from customers close to Pacific Substation. Fifth, it is not practical to construct distribution circuits from Pacific Substation to Campus A. Campus A will require four normal feeder circuits. The existing distribution corridors to get from Pacific Substation to Campus A are already filled with existing Pacific Substation circuits feeding existing customers in the area. While the distance between the two is approximately 1.0 straight-line mile, the distance each distribution circuit would need to take is approximately 1.6 circuit miles.

Distribution Alternative (2): *Feed the Lockridge/Shellhorn Load Area growth from future Global Plaza Substation*

This distribution alternative scenario is similar to Distribution Alternative (1) above, except that instead of using Pacific Substation alone, this alternative scenario would divide the Campus A and Campus B load between existing Pacific Substation and future Global Plaza Substation. The future Global Plaza

Substation is proposed to be located along Pacific Boulevard south of Pacific Substation and is intended to serve projected data center load growth in the Sterling Park Load Area.

Distribution Alternative (2) was rejected because of three key reasons. First, the available capacity at both Pacific Substation and the future Global Plaza Substations are needed for planned and expected load growth in the vicinity of these substations in the Sterling Park Load Area. Second, the distribution circuit construction issues described in Distribution Alternative (1) also pertain to this alternative, only worse. The proposed Global Plaza Substation is approximately 1.4 straight-line miles from the Campus A campus and approximately 2.3 circuit miles away. The distribution corridors in this area are already filled with existing circuits, making it very difficult to construct. Third, like Distribution Alternative (1) above, this scenario does not provide the Customer with their requested alternate feed circuits for their required redundancy for reliability.

Transmission Alternatives:

Each of the three transmission alternatives is similar in scope to the Project as described. Each require (i) Lockridge Substation and (ii) a similar Lockridge Loop as proposed to be constructed on new right-of-way using double circuit, single-shaft galvanized steel poles with three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1572 MVA. The major difference between the three alternatives is the 230 kV line being cut and the possible routing scenarios along with the available capacity for Lockridge Substation prior to a NERC 300 MW N-1-1 criteria violation requiring a future project. As discussed below, see Attachment I.E.1 for the available capacity for Lockridge Substation by transmission alternative. For the reasons discussed below, the Company is proposing Transmission Alternative (1) for notice, and rejected Transmission Alternatives (2) and (3).

Transmission Alternative (1): *Cut the 230 kV Line #2188 between Shellhorn and Roundtable Substations*

By cutting Line #2188 between Shellhorn and Roundtable Substations, Transmission Alternative (1) would create two new 230 kV lines to be designated 230 kV Lockridge-Shellhorn Line #2188 and 230 kV Lockridge-Roundtable Line #22XX, as shown in Attachment I.E.2. Existing 230 kV Line #2188 sources Greenway TX#2 and TX#3, thereby limiting the available capacity at Lockridge Substation. An N-1-1 contingency scenario including the loss of Lockridge-Shellhorn Line #2188 and Lockridge-Roundtable Line #22XX as shown in Attachment I.E.1 would exceed 300 MW in 2027 due to the combination of Greenway and Lockridge Substation loading. While Transmission Alternative (1) is not electrically as robust as the proposed Project, the Company determined that this solution is a feasible alternative to the Project, and is proposed for notice as Option 2, Alternative Routes 2A and 2B, as there are no violations currently

showing up until 2027. See Section II of this Appendix for additional discussion of the alternative routes associated with Option 2.

Transmission Alternative (2): *Cut the 230 kV Line #2170 between future Buttermilk Substation and existing Pacific Substation*

By cutting Line #2170 between future Buttermilk Substation and existing Pacific Substation, Transmission Alternative (2) would create two new 230 kV lines to be designated 230 kV Buttermilk-Lockridge Line #2170 and 230 kV Lockridge-Pacific Line #22YY, as shown in Attachment I.E.3. Existing 230 kV Line #2170 and 230 kV Line #2165 source Pacific Substation, thereby limiting the available capacity at Lockridge Substation. An N-1-1 contingency scenario including the loss of Buttermilk-Lockridge Line #2170 and Beco-Pacific Line #2165 as shown in Attachment I.E.1 would exceed 300 MW in 2022 due to the combination of Pacific and Lockridge Substation loading. Therefore, the Company rejected this transmission alternative and did not study it as a routing alternative, as a violation shows up in 2022.

Transmission Alternative (3): *Cut the 230 kV Line #2137 between Shellhorn and Poland Road Substations*

By cutting Line #2137 between Shellhorn and Poland Road Substations, Transmission Alternative (3) would create two new 230 kV lines to be designated 230 kV Lockridge-Poland Line #2137 and 230 kV Lockridge-Shellhorn Line #22ZZ, as shown in Attachment I.E.4. Existing 230 kV Line #2137 feeds Runway and Poland Road Substations, which would limit the available capacity at Lockridge Substation. An N-1-1 contingency scenario including the loss of Lockridge-Shellhorn Line #22ZZ and Brambleton-Poland Line #2183 as shown in Attachment I.E.1 would exceed 300 MW in 2023 due to the combination of Poland, Runway, and Lockridge Substation loading. Therefore, the Company rejected this transmission alternative and did not study it as a routing alternative, as a violation shows up in 2023.

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, the Company has identified a need for the proposed Project based on the need to provide service to a data center customer and to comply with mandatory NERC Reliability Standards, while

maintaining the overall long-term reliability of its transmission system.[8] Notwithstanding, when performing an analysis based on PJM's 50/50 load forecast, there is no adjustment in load for DR programs that are bid into the PJM reliability pricing model ("RPM") auction 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 into PJM's RPM 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. As noted in the 2018 Final Order, the Company must propose $870 million of EE programs by 2028 pursuant to the Grid Transformation and Security Act of 2018. The implementation of these programs is subject to Commission approval. On May 2, 2019, the Commission approved implementation of new DSM programs in Case No. PUR-2018-00168. At the time of this filing, no analyses have been conducted to determine if these new programs qualify to be bid into the PJM RPM auction, and assuming they qualified, no decisions have been made whether to bid these new programs into the PJM RPM auction.

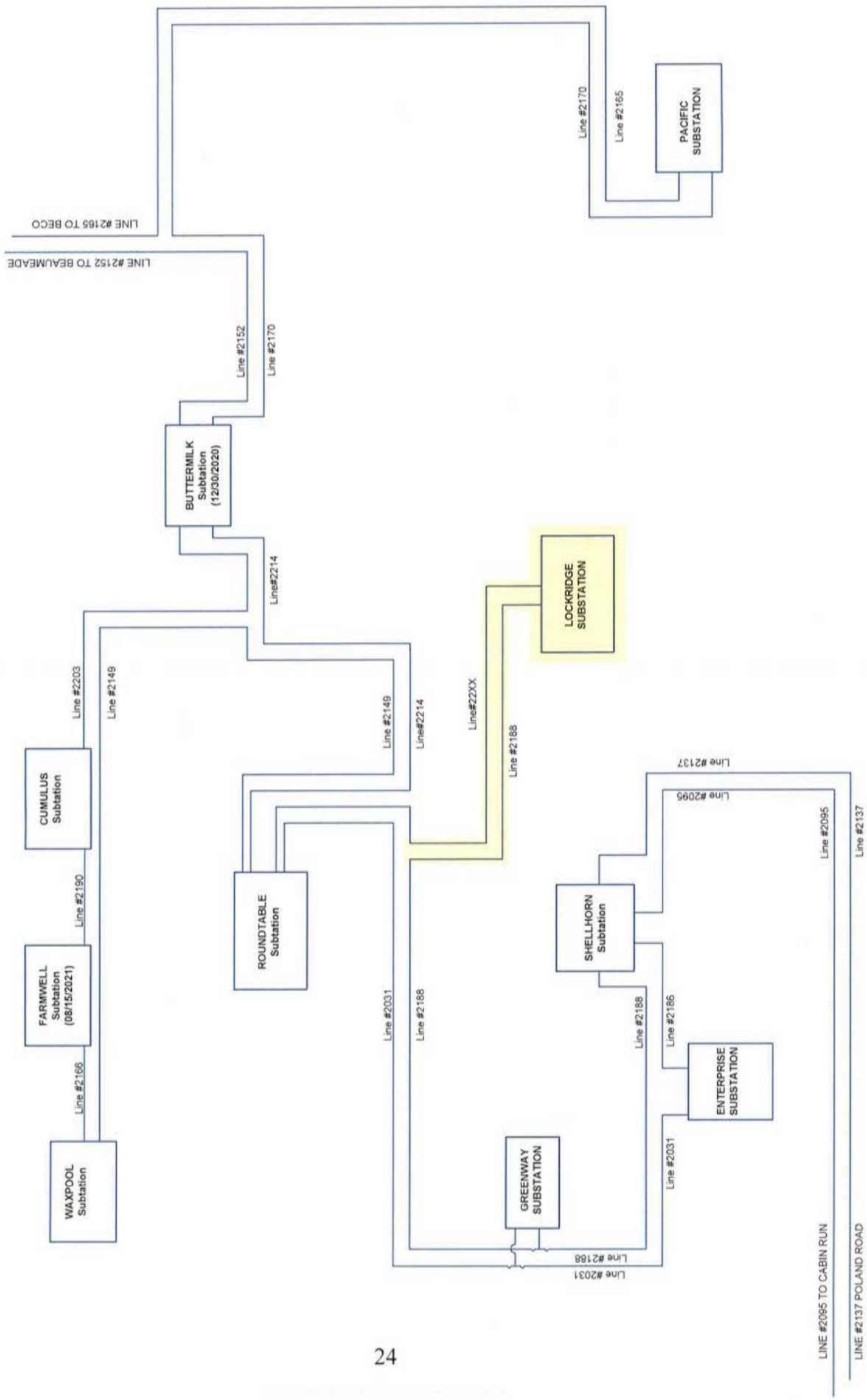
[8] While the PJM load forecast does not directly incorporate DR, its load forecast incorporates variables derived from Itron that reflect EE by modeling the stock of end-use equipment and its usages. Further, because PJM's load forecast considers the historical non-coincident peak ("NCP") for each load 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.

Available capacity for Lockridge Substation prior to NERC 300MW N-1-1 reliability criteria violation.

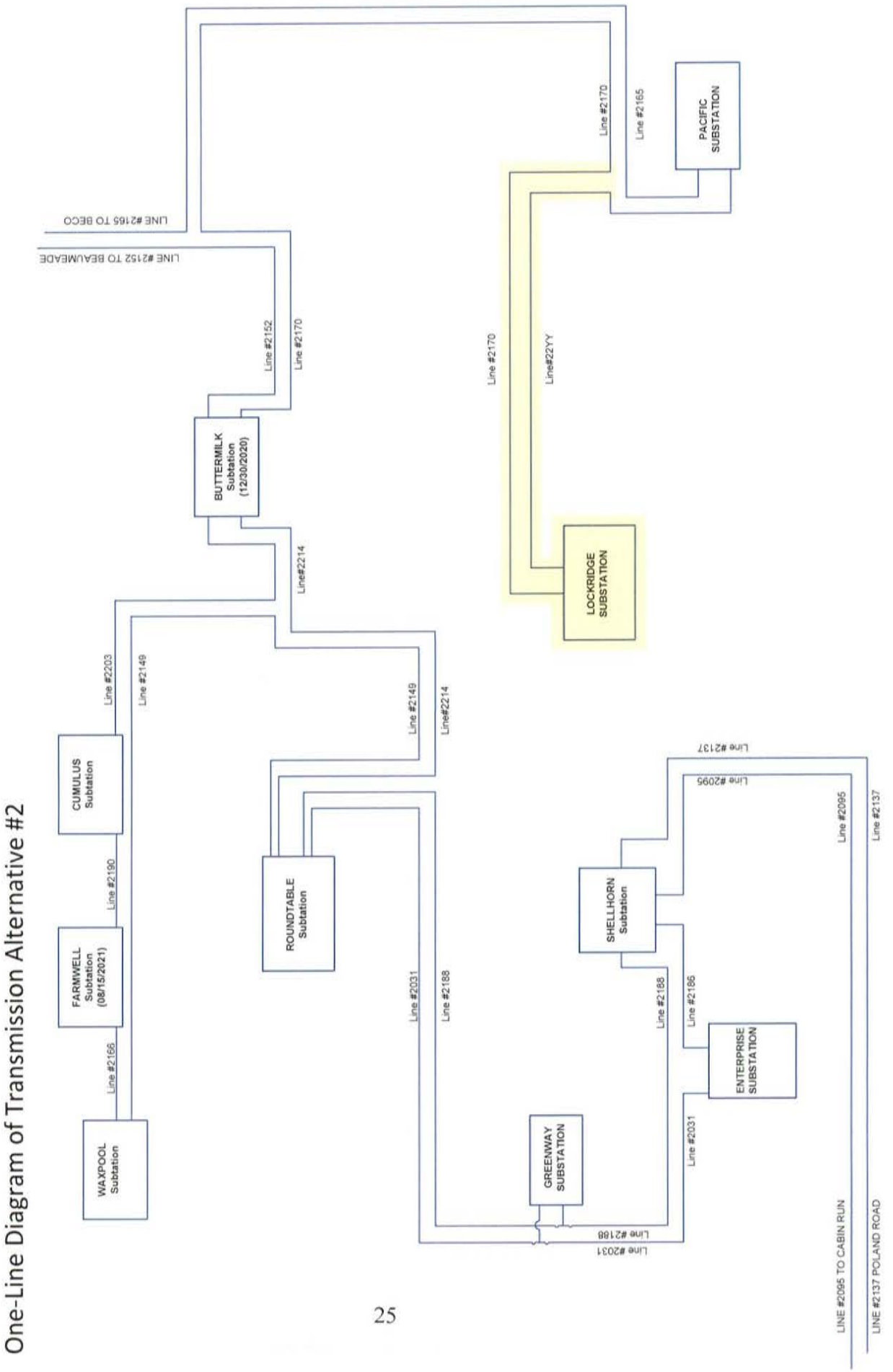
All loads in MW	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Proposed Lockridge Loading				**116.5**	**137.0**	**154.7**	**224.7**	**236.7**	**247.7**	**247.9**
Proposed Project										
Total Load with Lockridge	**0**	**0**	**0**	**116.5**	**137.0**	**154.7**	**224.7**	**236.7**	**247.7**	**247.9**
Transmission Alternative 1										
Greenway	47.4	48.3	49.3	50.3	51.3	52.3	53.4	54.4	55.5	56.6
Total Load with Lockridge	**47.4**	**48.3**	**49.3**	**166.8**	**188.3**	**207.0**	**278.1**	**291.1**	**303.2**	**304.5**
Transmission Alternative 2										
Pacific	95.1	154.5	199.2	200.2	203.2	206.2	212.2	216.4	220.8	225.2
Total Load with Lockridge	**95.1**	**154.5**	**199.2**	**316.7**	**340.2**	**360.9**	**436.9**	**453.1**	**468.5**	**473.1**
Transmission Alternative 3										
Runway	30.4	31.0	31.6	32.3	32.9	33.6	34.2	34.9	35.6	36.3
Poland	29.4	57.0	85.0	132.0	189.0	246.0	272.2	292.2	292.4	292.6
Total Load with Lockridge	**59.8**	**88.0**	**116.6**	**280.8**	**358.9**	**434.3**	**531.1**	**563.8**	**575.7**	**576.8**
Proposed Lockridge Loading				**116.5**	**137.0**	**154.7**	**224.7**	**236.7**	**247.7**	**247.9**

Note:
Shaded cells represent 300MW NERC Reliability Criteria Violations
Proposed Project is not limited by any additional substation loading.
Transmission Alternative 1 is limited by Greenway Substation loading.
Transmission Alternative 2 is limited by Pacific Substation loading.
Transmission Alternative 3 is limited by Runway and Poland loading.

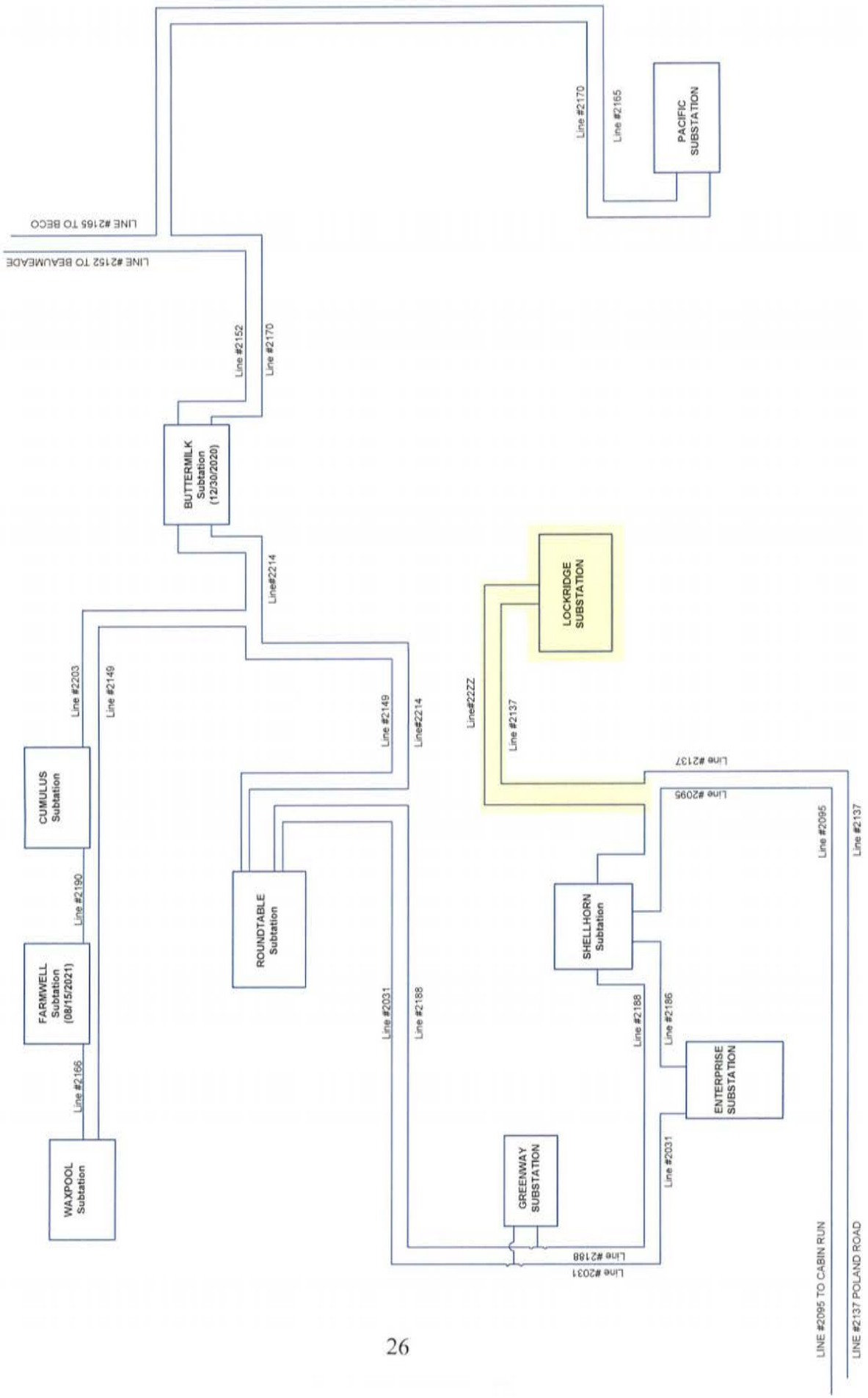
One-Line Diagram of Transmission Alternative #1



One-Line Diagram of Transmission Alternative #2



One-Line Diagram of Transmission Alternative #3



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.

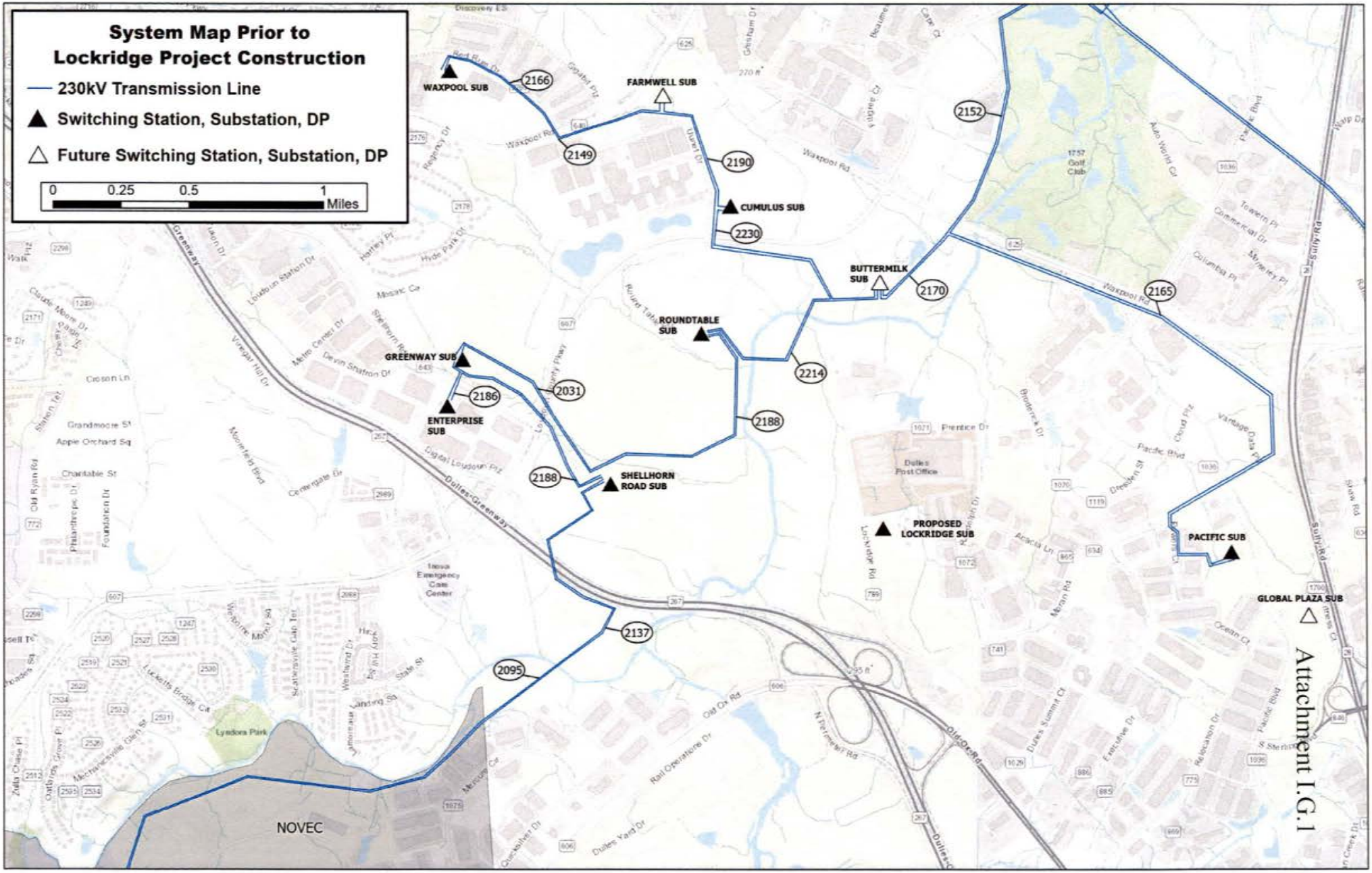
Response: No lines or facilities will be removed, replaced or taken out of service upon completion of the Project along Route 1A. See Attachment I.F.1 for mapping of the proposed structures along the Proposed Route (Route 1A), which is subject to change during final engineering.


Broad Run
100
90
1A
Proposed Prentice Drive Ext.
90
90
Sanitary Sewer Easement
110
Prentice Drive
Utility Easement
Lockridge Road
115
115
Pipeline Right of Way
Proposed Shellhorn Road Ext.
1A
Broad Run
100
Lockridge Substation
Option 1 - Route 1A
Proposed Route
Proposed Right of Way
Proposed Structure* (Height in Feet)
Project Location
VIRGINIA
Richmond
Greensboro
Proposed Substation
Existing Substation
Substation Polygon
NHD Flowline
Existing Dominion Transmission Line
Existing Dominion Right of Way
Pipeline Right of Way
Sanitary Sewer Easement
Parcel Boundary
1:3,000
0 125 250 Feet
* Structure locations and heights subject to change during final engineering. Foundation reveals are not included in structure height.
N
Section A of Attachment II.B.3
Route 1A Overview Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia
ERM
Dominion Energy
MPLS M:\Clients\D-F\DOM\Lockridge_ArcGIS\2019\11\Figures_DOM_LOCK_Route1A_20191115.mxd | REVISED: 11/15/2019 | SCALE: 1:3,000 when printed at 11x17
DRAWN BY: 0239

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.



Attachment I.G.1

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The desired in-service target date for the proposed Project is July 31, 2022. The Company estimates it will take approximately 20 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 November 30, 2020. Should the Commission issue a final order by November 30, 2020, the Company estimates that construction should begin around October 4, 2021, and be completed by the in-service target date, which is July 31, 2022.

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 is approximately $35.4 million, which includes approximately $14.5 million for transmission-related work and approximately $20.9 million for substation-related work (2019 dollars).

The estimated conceptual cost of Transmission Alternative (1), also referred to as Option 2, includes the same approximate costs for substation-related work as the Project; the approximate costs for the transmission-related work for Option 2 (Alternative Routes 2A and 2B) are provided in Section II.A.9.

I. NECESSITY FOR THE PROPOSED PROJECT

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

Response: The Project is classified as a supplemental project (Supplemental Project DOM-2019-0005) initiated by the TO in order to interconnect new customer load. The Project was submitted to PJM on February 7, 2019 and the solution slide was submitted to PJM on August 8, 2019. See Attachments I.J.1 and I.J.2, respectively. The Company is currently awaiting for PJM to conduct its do-no-harm analysis and acceptance in the Local Plan.

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

Dominion Supplemental Projects

Transmission Expansion Advisory Committee

February 7, 2019

Needs

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

Dominion Transmission Zone: Supplemental Customer Load Request

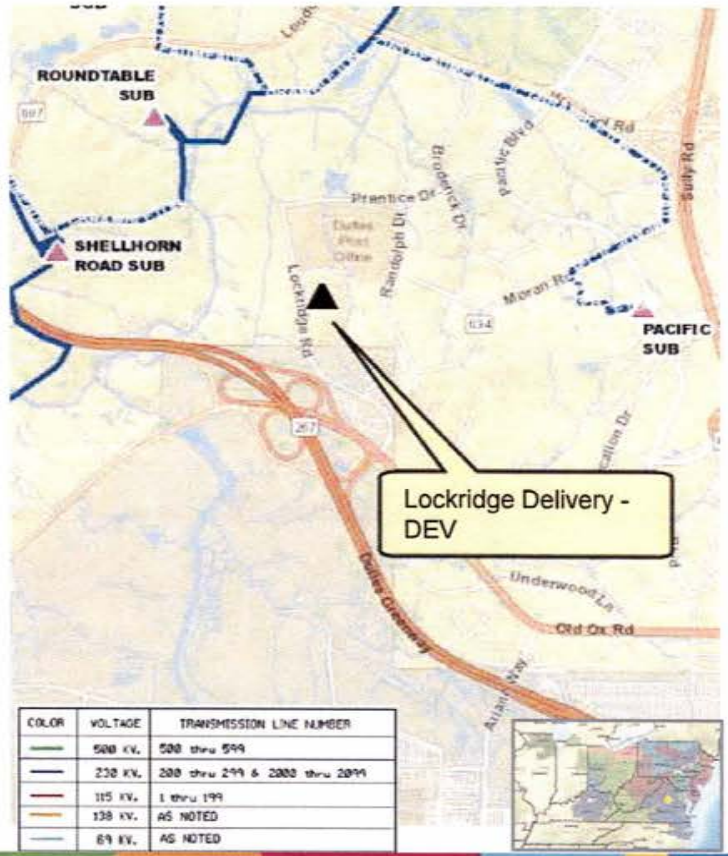
Need Number: DOM-2019-0005

Meeting Date: 02/07/2019
Process Stage: NEED
Supplemental Project Driver: Customer Service

Problem Statement:
DEV Distribution has submitted a DP Request for a new substation (Lockridge) to support a new datacenter campus in Loudoun County with a total load in excess of 100 MW. The new station will also support existing data center load in the immediate area. Requested in-service date is 09/30/2021.

Initial In-Service Load	Projected 2024 Load
Summer: 169.5 MW	Summer: 224.7 MW

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



PJM TEAC Committee
Dominion Supplemental Projects

August 8, 2019

Solutions

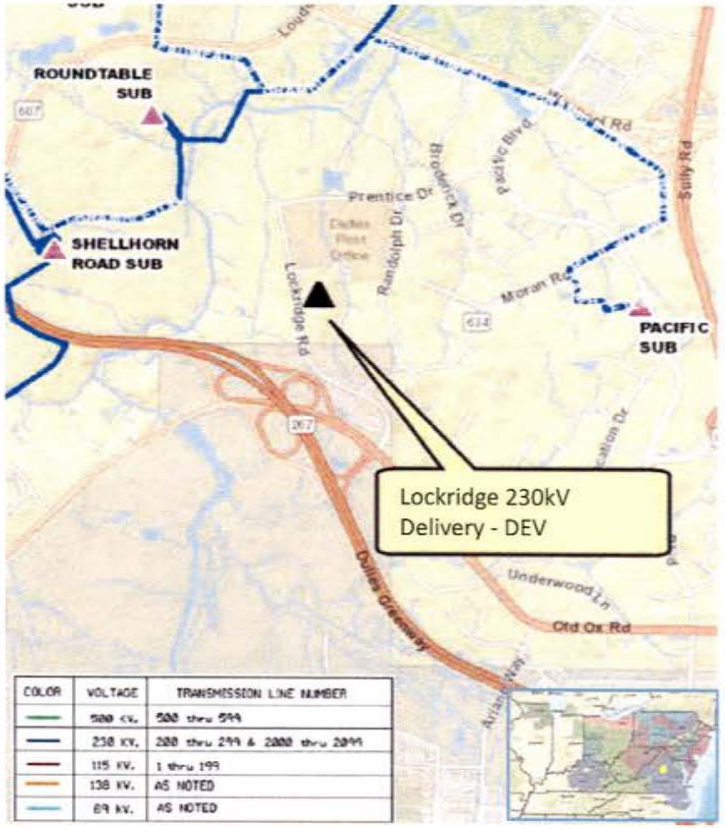
Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

Dominion Transmission Zone M-3 Process
Lockridge 230 kV Delivery - DEV

Need Number: DOM-2019-0005
Process Stage: Solutions Meeting 08/08/2019
Previously Presented: Need Meeting 02/07/2019
Supplemental Project Driver: Customer Service

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

Problem Statement:
DEV Distribution has submitted a DP Request for a new substation (Lockridge) to support a new datacenter campus in Loudoun County with a total load in excess of 100 MW. The new station will also support existing data center load in the immediate area. Requested in-service date is 7/31/2022. Date changed from 09/30/2021 as previously presented.



Dominion Transmission Zone M-3 Process
Lockridge 230 kV Delivery - DEV

Need Number: DOM-2019-0005

Process Stage: Solutions Meeting 08/08/2019

Proposed Solution :
Cut an existing 230kV line between Roundtable and Buttermilk substations. Construct a 1.8 mile 230kV loop to Lockridge substation.

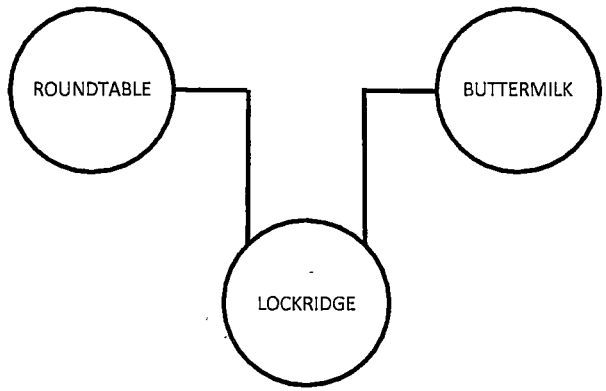
At Lockridge, install four 230kV breakers (station arranged as six breaker ring) to terminate the two lines. Install two 230kV circuit switchers and any necessary high side switches and bus work for two initial transformers (five ultimate).

Alternatives Considered :
No feasible alternatives

Estimated cost: $35 M
Projected In-service Date: 07/31/2022

Project Status: Engineering

Model: 2023 RTEP



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 due to 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. The need for the proposed Project is not due to deterioration of structures and associated equipment. 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 Lockridge Substation will serve the Shellhorn-Lockridge Load Area described in Section I.C. See also Attachment I.A.1. The Project may be used to support future load centers 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 Proposed and Alternative Routes are as follows:

Route 1A (Proposed Route): 0.62 mile

Alternative Route 1B: 0.64 mile

Alternative Route 1C: 0.68 mile

Alternative Route 2A: 0.66 mile

Alternative Route 2B: 0.65 mile

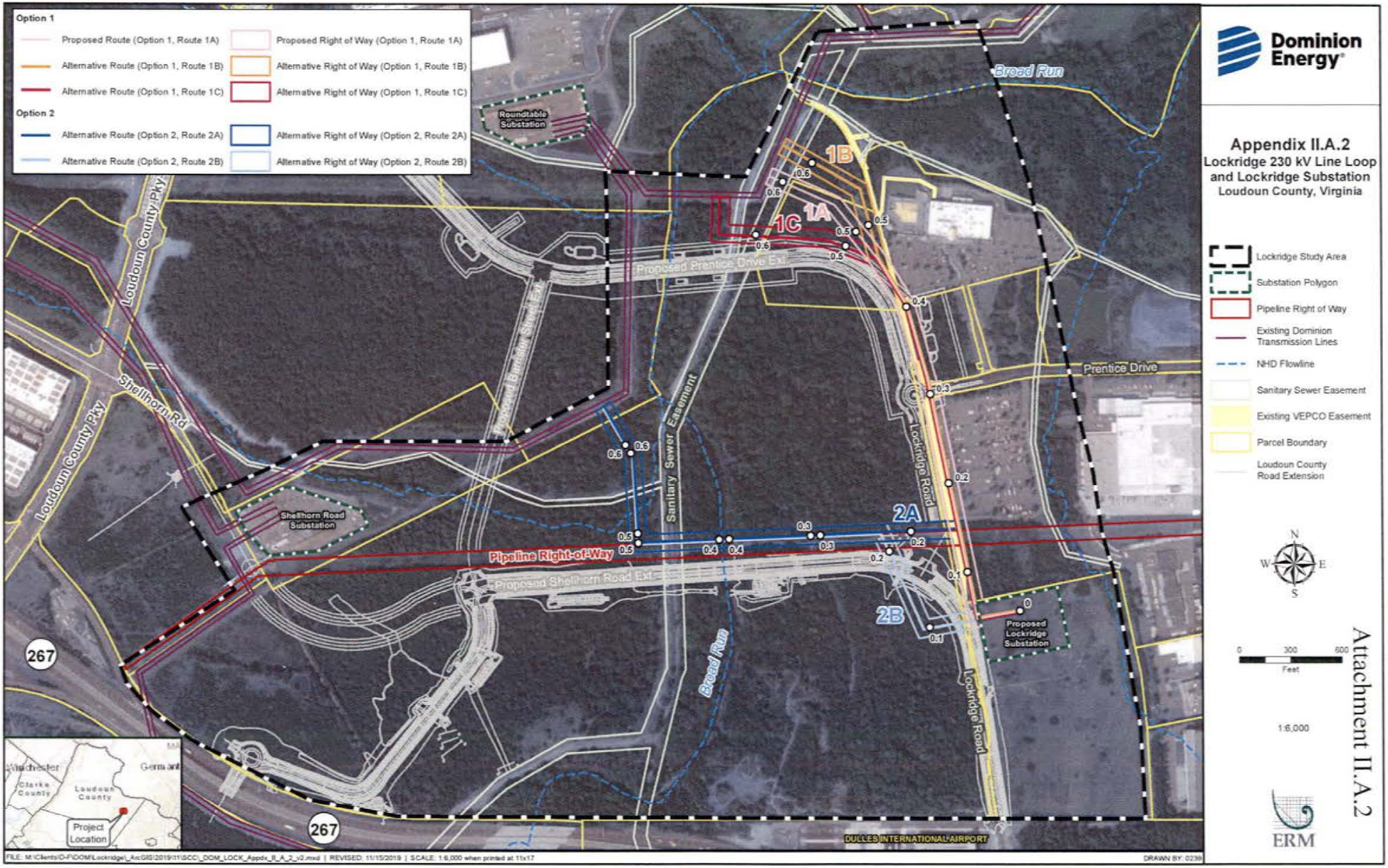
See Section II.A.7 of this Appendix for further discussion of the Proposed and Alternative Routes.

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 ("GIS") shape file available to interested persons upon request to the Company's legal counsel as listed in the Project Application.



Dominion Energy

Appendix II.A.2
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

ERM

Attachment II.A.2

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: See Attachment I.G.1.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: There is no existing Company-owned right-of-way that serves the Customer site.

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

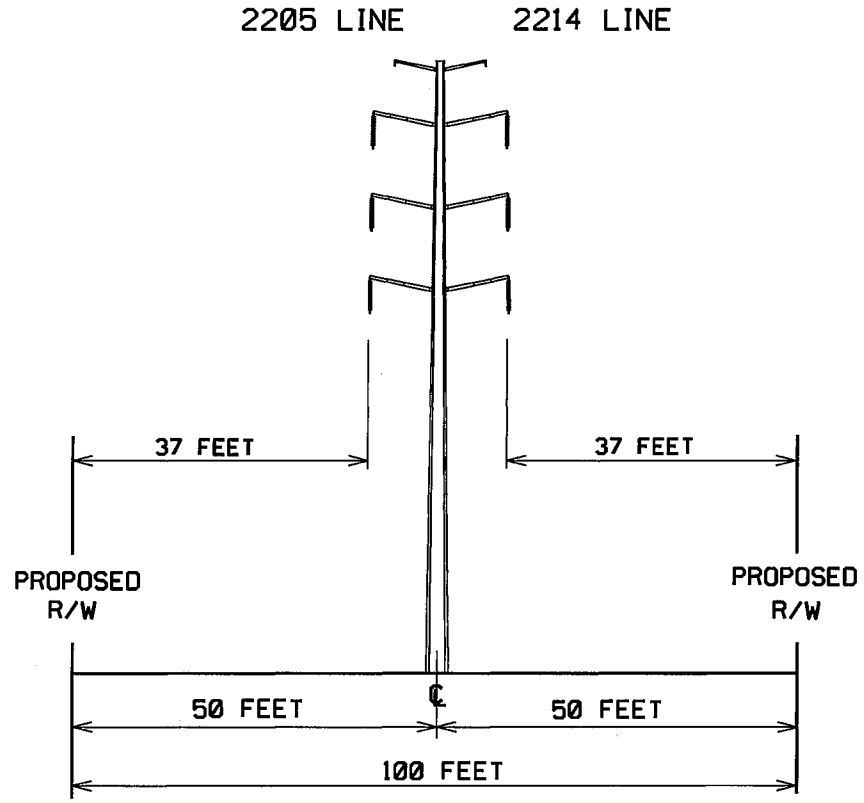
d. For lines being rebuilt in existing ROW, provide all of the above (i) as it currently exists, and (ii) as it will exist at the conclusion of the proposed project.

Response: See Attachment II.A.5.a.

PROPOSED STRUCTURES

PRELIMINARY

ROUTE 1A



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

NOTES: 1. ROUTE 1A BORDERS AND SHARES AN ELECTRIC EASEMENT FOR A PORTION OF THE ROUTE

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

$DGNSPEC$

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: As discussed in Section II.A.4, there is no existing Company-owned right-of-way that serves the Customer site. Therefore, the entire right-of-way for the Project will require easements for a new-build transmission line. However, portions of the routes will overlap existing, non-transmission line easements—namely, an existing distribution line right-of-way and natural gas pipeline right-of-way.

The portion of the Proposed Route that will parallel Lockridge Road will overlap an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way for approximately 0.4 mile; however, the Proposed Route will extend approximately 69 feet beyond the eastern limits of this easement. Alternative Routes 1B and 1C would utilize the same length and width of the Company's existing distribution line easement. Alternative Route 2A would overlap the Company's existing right-of-way for about 0.1 mile. Route 2B would not follow or overlap Dominion Energy Virginia's existing distribution line right-of-way.

Alternative Route 2A would also overlap a portion of an existing TC Energy-owned Columbia Gas Transmission ("Columbia Gas") natural gas pipeline right-of-way for approximately 0.4 mile of the Project; however, this section of the route would extend approximately 55 feet beyond the northern boundary of the pipeline easement. Alternative Route 2B would follow the natural gas pipeline right-of-way for about 0.3 mile with the same overlap as described for Alternative Route 2A.

The Company will obtain an easement from the Customer for the Lockridge Substation.

See Attachment II.A.2, which depicts the parcels crossed by the Proposed and Alternative Routes.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

Response: The right-of-way width for the Proposed Route will be 100 feet wide In general, the entire right-of-way would require clearing; however, based on existing conditions, clearing would not be required over certain portions of the Proposed Route that overlap existing maintained rights-of-way. The same would be true for the Alternative Routes 1B, 1C, 2A and 2B. The locations of these existing rights-of-way are discussed above in Section II.A.6.

Trimming of tree limbs along the edge of the right-of-way 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 on an ongoing basis during all clearing and construction activities accompanied by weekly Virginia Stormwater Management Program inspections.

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

This right-of-way will continue to be maintained on a regular cycle to prevent interruptions to electric service and provide ready access to the right-of-way in order to patrol and make emergency repairs. Periodic maintenance to control woody growth will consist of hand cutting, machine mowing and 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 this project, the Company requested the services of Environmental Resources Management ("ERM") to help collect information within the study area, identity potential routes, perform a routing analysis comparing the route alternatives, and document the routing efforts in an Environmental Routing Study. After investigating various electrical solutions, the Company identified two electrical solutions for the Project (Options 1 and 2):

- Option 1: a 230 kV overhead route that would tap the future 230 kV Buttermilk-Roundtable Line #2214 between the proposed Lockridge Substation and a proposed junction located east of the Roundtable Substation; and,

- Option 2: a 230 kV overhead route that would tap the existing 230 kV Roundtable-Shellhorn Line #2188 between the proposed Lockridge Substation and a proposed junction located northeast of the Shellhorn Substation. Option 2 is also referred to as Transmission Alternative (1) in Section I.E of this Appendix.

After these two potential termination points for the Project were identified, a study area was developed that encompassed the area surrounding the proposed Lockridge Substation and potential junction locations. The route development process for the Project is described in more detail in the Environmental Routing

Study.

A total of eight routes were initially identified, six routes associated with Option 1 and two routes associated with Option 2. As discussed in more detail below, all of the Option 1 Routes (Routes 1A-1F) and one of the Option 2 Routes (Route 2A) cross lands managed by the United States Postal Service ("USPS"). One Option 2 Route (Route 2B) was developed so that in the event that the Company was unable to secure an easement to cross property managed by the USPS, that a route could still be constructed.

Of these eight routes, one route was identified as the Proposed Route, four routes were identified as potentially viable alternatives to the Proposed Route and three routes were rejected as infeasible. The Proposed Route, the four viable Alternatives Routes and the three routes rejected as infeasible, are discussed below.

OPTION 1 ROUTES

Option 1 proposes an electrical solution to the identified need that would entail tapping the Lockridge Loop into the future Buttermilk-Roundtable Line #2214. The Company identified three viable routes for Option 1 (Proposed Route 1A, Alternative Route 1B, and Alternative Route 1C) for notice, as discussed in more detail below. Overall, Option 1 represents the most electrically robust solution to the identified need, and the noticed Option 1 Routes are less expensive, shorter, and less environmentally impactful than the Option 2 Routes. Based on consultations with Loudoun County (Loudoun County Department of Transportation and Capital Infrastructure ("DTCI") and Loudoun County Department of Planning and Zoning ("DPZ")), the Company is aware of concerns regarding impacts to the County's planned Prentice Drive Extension, which encompasses Lockridge Road in the Project area. See Appendix Section III.J, Section 3.1.4 of the Environmental Routing Study, and DEQ Supplement Attachment 2.N.1. Based on preliminary drawings shared by the County, the Company believes that none of the noticed Option 1 Routes will conflict with the County's current road extension plans. The Company will work with the County to ensure the planned roads and proposed transmission facilities can co-exist. Additionally, as discussed in Appendix Section III.H, Metropolitan Washington Airports Authority ("MWAA") does not oppose the noticed Option 1 Routes.

Option 1, Proposed Route 1A

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.29 mile east of the Roundtable Substation

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Buttermilk-Roundtable Line #2214 located 0.29 mile east of the Roundtable Substation. The

estimated conceptual cost of the Proposed Route is approximately $14.5 million (2019 dollars).

The length of the corridor for Route 1A is approximately 0.62 mile. Beginning at the proposed Lockridge Substation, Route 1A heads west from the substation for 0.05 mile before turning north for 0.27 mile along the east side of Lockridge Road. This portion of the route is parallel to and overlaps an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as the road verge along the eastern edge of Lockridge Road, and abuts the paved parking lot that services the Dulles Post Office that is owned by the USPS. After crossing the existing Prentice Drive, the route continues north within the Dominion Energy Virginia right-of-way for about 0.09 mile, following the western boundary of an undeveloped parcel owned by Boston Properties Limited Partnership ("Boston Properties"). The route then continues across the southwest corner of the Life Time Athletic parking lot. The route then veers slightly northwest for 0.14 mile, away from the Life Time Athletic parking lot, and onto an undeveloped parcel owned by SDC Ashburn I, LLC. The Proposed Route then continues west for 0.07 mile crossing DC Water's Potomac Interceptor easement and Loudoun Water's Broad Run Interceptor easement (referred to collectively as the sanitary sewer easement) until reaching the tap point location at future Line #2214.

The Proposed Route is the shortest route (0.62 mile) and requires the least amount of new right-of-way (10.71 acre) of all the routes considered. The route would affect 2.86 acres of forestland, which is the second lowest amount of the routes considered. The Proposed Route would affect 0.98 acre of wetlands, of which 0.15 acre are forested. This is slightly more wetland impacts than Alternative Route 1C and significantly less than Alternative Route 1B. No waterbodies or stream conservation units ("SCUs") would be crossed by this route. Finally, the Proposed Route is collocated or overlaps with existing rights-of-way for 0.40 mile.

The Proposed Route (Route 1A) and Alternative Routes 1B and 1C follow the same alignment for the first 0.48 mile of their length. The Proposed Route has three primary benefits that distinguish this route from Alternative Routes 1B and 1C.

First, in comparison to Alternative Route 1B, the Proposed Route would have less of a visual impact on the Life Time Athletic facility. In particular, the alignment of Alternative Route 1B is very close to an outdoor pool on the east side of this facility.

Second, as noted above, the Company believes that none of the noticed Option 1 Routes will conflict with the County's planned roads (based on preliminary drawings shared by the County) and can co-exist. However, in comparison to Alternative Route 1C, which parallels the northern portion of the Prentice Drive Extension, the northern portion of the Proposed Route deviates away from that

portion of the Prentice Drive Extension. As noted above, it is the Company's understanding that the avoidance of any potential constraints to the construction of the extension of the road is of primary importance to Loudoun County.

Finally, since the Proposed Route is the shortest route and requires the least amount of total right-of-way, it would be the least expensive route to construct. For these reasons, the Company has selected Route 1A as its Proposed Route.

Option 1, Alternative Route 1B

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.31 mile east of the Roundtable Substation

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Buttermilk-Roundtable Line #2214 located 0.31 mile east of the Roundtable Substation. The estimated conceptual cost of Alternative Route 1B is approximately $14.7 million (2019 dollars).

The length of the corridor for Alternative Route 1B is approximately 0.64 mile. Beginning at the proposed Lockridge Substation, Alternative Route 1B heads west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road. This portion of the route is parallel to and overlaps an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as the road verge along the eastern edge of Lockridge Road, and abuts a paved parking lot that services the Dulles Post Office that is owned by the USPS. After crossing the existing Prentice Drive, the route continues north for about 0.09 mile, following the western boundary of an undeveloped parcel owned by Digital Loudoun IV, LLC. The route then continues across the southwest corner of the Life Time Athletic parking lot. Alternative Route 1B then veers slightly northwest for 0.06 mile, away from the Life Time Athletic parking lot, and onto an undeveloped parcel owned by SDC Ashburn I, LLC. The route then continues north then west for 0.17 mile, crossing a sanitary sewer easement, until reaching the tap point location at future Line #2214.

Alternative Route 1B is the second shortest route (0.64 mile), and requires the second least amount of new right-of-way (10.97 acre) of the routes considered. Alternative Route 1B affects the least amount of forest lands (2.77 acres) and would affect 1.46 acres of wetlands, of which 0.63 acre are forested. This route has the largest wetland impacts of the Option 1 Routes. No waterbodies or SCUs would be crossed by this route. Finally, Alternative Route 1B makes the most use of existing rights-of-way by collocating and/or overlapping 0.47 mile of existing rights-of-way.

Additionally, as noted above, the Company believes that none of the noticed

Option 1 Routes will conflict with the County's planned roads (based on preliminary drawings shared by the County) and can co-exist. However, in comparison to Alternative Route 1C, which parallels the northern portion of the Prentice Drive Extension, the northern portion of Alternative Route 1B deviates away from that portion of the Prentice Drive Extension, and is, in fact, the furthest of the noticed Option 1 Routes from the northern portion of the Prentice Drive Extension. As noted above, it is the Company's understanding that the avoidance of any potential constraints to the construction of the extension of the road is of primary importance to Loudoun County.

The primary disadvantage of Alternative Route 1B is that the northern portion of the alignment of this route is, at its closest, about 37 feet from the Life Time Athletic facility. In particular, the route would have a significant visual impact on the pool area on the west side of the Life Time Athletic facility where the route runs parallel with the property boundary for approximately 300 feet.

Option 1, Alternative Route 1C

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.21 mile east of the Roundtable Substation

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Buttermilk-Roundtable Line #2214 located 0.21 mile east of the Roundtable Substation. The estimated conceptual cost of Alternative Route 1C is approximately $15.1 million (2019 dollars).

The length of the corridor for Alternative Route 1C is approximately 0.68 mile. Beginning at the proposed Lockridge Substation, Alternative Route 1C heads west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road. This portion of the route is parallel to and overlaps an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as the road verge along the eastern side of Lockridge Road, and abuts a paved parking lot that services the Dulles Post Office that is owned by the USPS. After crossing the existing Prentice Drive, the route then continues north for about 0.09 mile, following the western boundary of an undeveloped parcel owned by Digital Loudoun IV, LLC and crosses the southwest corner of the Life Time Athletic parking lot. The route then veers slightly northwest for 0.06 mile away from the Life Time Athletic. The route then heads west for 0.17 mile, running parallel to and north of the planned Prentice Drive Extension, and crossing a sanitary sewer easement before heading north for 0.04 mile to a tap point location at future Line #2214.

Route 1C is the longest route (0.68 mile) and requires the most amount of new right-of-way (11.49 acres) of all the routes considered. Alternative Route 1C would affect the third lowest amount of forestland (3.35 acres). This route would

result in 0.95 acre of total wetland impacts, which is the least amount affected by the routes considered; 0.11 acre would all be forested wetland, resulting in the lowest wetland impact of the routes considered. No waterbodies or SCUs would be crossed by this route. Alternative Route 1C makes use of existing rights-of-way by collocating and/or overlapping 0.44 mile of existing rights-of-way.

The primary disadvantage of Alternative Route 1C is that the northern portion of the alignment of this route is would be located adjacent to the proposed Prentice Drive Extension. As noted above, while the Company believes that none of the noticed Option 1 Routes will conflict with the County's planned roads (based on preliminary drawings shared by the County) and can co-exist, in comparison to the other noticed Option 1 Routes, Alternative Route 1C is the closest to the northern portion of the Prentice Drive Extension.

OPTION 2 ROUTES

Option 2 represents an alternative electrical solution for the Project that would entail tapping the Lockridge Loop into the existing 230 kV Roundtable-Shellhorn Line #2188. The Company only was able to identify two routes for Option 2 (Alternative Routes 2A and 2B) due to presence of a number of constraints in the area between Broad Run and Line #2188. As discussed in more detail in Section 3.1.4 of the Environmental Routing Study, there is a planned data center that will occupy much of the Project area. There are several building envelopes associated with that planned data center project in the area to the northeast of the Shellhorn Road Substation, between the substation and Broad Run. In addition, the Loudoun County DTCI also is planning to extend Barrister Street through this area. The presence of these planned developments precluded the development of a route that would extend further west along the Columbia Gas natural gas pipeline corridor and though this area. In addition, it was not possible to develop a route that would extend further to the north in the area between the sanitary sewer easement and Line #2188 without significantly impacting Broad Run. Finally, the Company is aware of DTCI's planned Shellhorn Road Extension, which precluded the development of a route to the south of the Columbia gas natural gas pipeline corridor. As discussed in Appendix Section III.H, MWAA does not oppose the Option 2 Routes.

Option 2, Alternative Route 2A

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.41 mile northeast of the Shellhorn Substation

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along Line #2188, 0.41 mile east of the Shellhorn Substation. The estimated conceptual cost of Alternative Route 2A is approximately $15.2 million (2019 dollars).

The length of the corridor for Alternative Route 2A is approximately 0.66 mile. Beginning at the proposed Lockridge Substation, Alternative Route 2A heads west from the substation for 0.05 mile before heading north for 0.1 mile along the east side of Lockridge Road, parallel and overlapping an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way. After crossing a Columbia Gas natural gas pipeline right-of-way, the route heads west for 0.35 mile along an undeveloped parcel owned by SDC Ashburn I, LLC. Along this section, Alternative Route 2A crosses Lockridge Road and runs parallel with and overlaps the pipeline right-of-way, then crosses Broad Run, a tributary to Broad Run and a sanitary sewer easement. Route 2A then veers north and northwest for 0.16 mile, crossing a tributary to Broad Run and continuing along a parcel owned by Vizsla Ventures, LLC to a tap point location at Line #2188.

Option 2, Route 2A, is the second longest route (0.66 mile) and requires the second largest amount of new right-of-way (11.24 acres). Alternative Route 2A would affect the second largest amount of forestland (3.99 acres). The route would affect 1.40 acres of wetlands of which, only 0.22 acre would be forested wetlands. This route would affect the third largest amount of wetlands of all the routes considered. In addition, this route would cross two waterbodies (Broad Run and a tributary to Broad Run) and an SCU associated with Broad Run. Alternative Route 2A is collocated with or overlaps 0.43 mile of existing rights-of-way. Finally, the County has communicated to the Company that DTCI and DPZ recommend Option 2, Route 2A. See DEQ Supplement Attachment 2.N.1.

Option 2, Alternative Route 2B

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.41 mile northeast of the Shellhorn Substation

Alternative Route 2B contains a variation to Alternative Route 2A that avoids crossing an undeveloped parcel owned by the USPS. The variation was developed so that in the event that the Company was unable to secure an easement to cross property managed by the USPS, this route could still be constructed. The estimated conceptual cost of Alternative Route 2B is approximately $15.4 million (2019 dollars).

The length of the corridor for Alternative Route 2B is approximately 0.65 mile. The portion of Alternative Route 2B that is different from Alternative Route 2A is a 0.17-mile-long section that begins at the point where Alternative Route 2A heads north of the proposed Lockridge Substation. From this location, Alternative Route 2B turns west for about 0.06 mile, crossing Lockridge Road and onto an undeveloped parcel owned by SDC Ashburn I, LLC. Alternative Route 2B then continues north for about 0.11 mile where it crosses the planned Shellhorn Road Extension. After crossing a Columbia Gas natural gas pipeline right-of-way, the route heads west for 0.27 mile along an undeveloped parcel

owned by SDC Ashburn I, LLC. The route runs parallel with and overlaps the pipeline right-of-way, then crosses Broad Run, a tributary to Broad Run and a sanitary sewer easement. Alternative Route 2B then veers north and northwest for 0.16 mile, crossing a tributary to Broad Run and continuing along a parcel owned by Vizsla Ventures, LLC, to a tap point location at Line #2188.

Alternative Route 2B reduces the length of Alternative Route 2A by 0.01 mile making it the third longest route (0.65 mile). It would require slightly less new right-of-way than Alternative Route 2A (11.15 acres). , which is the third lowest amount of the routes considered. Alternative Route 2B would affect 4.78 acres of forestland, which is the largest amount of all routes. Alternative Route 2B would affect 1.43 acres of wetlands, of which only 0.22 acre would be forested wetlands. This route would affect the second largest amount of wetlands of all the routes considered. This route would cross two waterbodies (Broad Run and a tributary to Broad Run) and an SCU associated with Broad Run. Alternative Route 2B is collocated or overlaps 0.27 mile of existing rights-of-way, which is the least among the routes considered. Finally, Alternative Route 2B would have a greater impact on the building envelope of another planned data center development that makes up the majority of the Project study area. In particular, in order to avoid crossing USPS managed lands, Alternative Route 2B would need to cross a portion of this planned data center building envelope south of the Columbia Gas natural gas pipeline right-of-way.

In the event that the Company is not able to obtain an easement to cross property managed by USPS and construct the Proposed Route (Route 1A) or any of the other Option 1 Alternative Routes (Routes 1B and 1C) or Option 2 Alternative Route 2A, then Alternative Route 2B would serve as the Proposed Route.

REJECTED ROUTES

The Company investigated and subsequently rejected three additional routes associated with Option 1 (Routes 1D, 1E, and 1F). Following a detailed routing analysis, these three routes were rejected by the Company due to the impacts of two of these routes (Routes 1D and 1E) on a planned development (the Prentice Drive Extension) and the Company's ability to secure easements for one these routes (Route 1F).

Option 1, Route 1D

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.21 mile east of the Roundtable Substation

Route 1D would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Buttermilk-Roundtable Line #2214 located 0.21 mile east of the Roundtable Substation.

The length of the corridor for Route 1D is approximately 0.76 mile. Beginning at

the proposed Lockridge Substation, the route heads west from the substation for 0.05 mile before turning north for 0.1 mile along the east side of Lockridge Road, parallel to and overlapping an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way, as well as along the western edge of an undeveloped parcel owned by the USPS. After crossing a Columbia Gas natural gas pipeline right-of-way, the route heads west for 0.2 mile across an undeveloped parcel owned by SDC Ashburn I, LLC, crossing Lockridge Road and running parallel to and overlapping the existing pipeline right-of-way. Route 1D then turns north across the SDC Ashburn I, LLC parcel for 0.4 mile, crossing a sanitary sewer easement and terminates at a tap point location along future Line #2214.

Route 1D was rejected as infeasible following consultations with Loudoun County DTCI. The DTCI informed the Company that as part of the planned Prentice Drive Extension, a bridge would be constructed at the crossing of Broad Run. Routes 1D and 1E cross Broad Run at the location of this planned bridge. Based on the construction schedules for the bridge and the Project, the Company's transmission line would be installed prior to the bridge. This would pose a significant challenge to the construction of the bridge. In particular, the bridge spans will be of such extreme length (145 feet between piers) that large-scale equipment and cranes will be required to construct the bridge. These construction activities for the bridge would be constrained by the presence of the overhead transmission lines. In addition, the presence of the transmission lines over the bridge could limit the flexibility of the contractor in the event that changes need to be made at the time of construction to either the construction methods or design of the bridge. In addition, the construction of the bridge would not only require that the transmission lines have a high vertical clearance to the bridge deck, but the transmission lines also would need to be de-energized during construction. While the Lockridge Substation will be fed from two circuits, both of the circuits cross at the location where the planned bridge will be constructed, meaning that that an outage of these two lines would result in an outage of Lockridge Station. The Company determined that once operational, the Lockridge Substation could not take an outage for the construction of the bridge. Given the significant concerns that the County raised regarding the conflicts the route would introduce to the construction of the Prentice Drive Extension bridge, the Company rejected the development of Route 1D.

Option 1, Route 1E

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.21 mile east of the Roundtable Substation

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Buttermilk-Roundtable Line #2214 located 0.21 mile east of the Roundtable Substation.

The length of the corridor for Route 1E is approximately 0.88 mile. Beginning at the proposed Lockridge Substation, Route 1E heads west from the substation for 0.05 mile, before heading north for 0.1 mile along the east side of Lockridge Road, parallel to and overlapping an existing Dominion Energy Virginia overhead and underground electric distribution line right-of-way way as well as the western edge of undeveloped parcel owned by the USPS. After crossing a Columbia Gas natural gas pipeline right-of-way, the route heads west for 0.34 mile along an undeveloped parcel owned by SDC Ashburn I, LLC, crossing Lockridge Road and running parallel to and overlapping the existing pipeline right-of-way and crossing Broad Run. Route 1E then heads north for 0.13 mile parallel to a sanitary sewer easement and a tributary to Broad Run. Route 1E then heads northeast for 0.19 mile, crossing Broad Run a second time, and continuing parallel to the sanitary sewer easement. Route 1E then heads north adjacent to the sanitary sewer easement for 0.09 mile to a tap point location to future Line #2214.

Route 1E was rejected as infeasible following consultations with Loudoun County DTCI. Route 1E was rejected as infeasible for the same reasons as Route 1D described above. Both routes would cross the bridge associated with the Prentice Drive Extension in the same location. In addition, the construction of Route 1E would also require two crossings of Broad Run and the alignment of the route would overlap the route of a tributary to Broad Run for over 500 feet. Given the significant concerns that the County raised regarding the conflicts the route would introduce to the construction of the Prentice Drive Extension bridge, as well as the impacts of the route to Broad Run and tributary to Broad Run, the Company rejected the development of Route 1E.

Option 1, Route 1F

Construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction located 0.28 mile east of the Roundtable Substation

This route would construct an overhead double circuit 230 kV line from the proposed Lockridge Substation to a proposed junction along future Buttermilk-Roundtable Line #2214 located 0.28 mile east of the Roundtable Substation.

The length of the corridor for Route 1F is approximately 0.78 mile. Beginning at the proposed Lockridge Substation. Route 1F heads east from the substation for 0.05 mile before turning north for about 0.46 mile, crossing a section of undeveloped land and a paved parking lot owned by the USPS. The route continues north crossing Prentice Drive, the eastern portion of an undeveloped lot (owned by Boston Properties), and across the eastern parking lot of Life Time Athletic Club. Route 1F then heads northwest for 0.11 mile, crossing an undeveloped parcel owned by Digital Loudoun IV, LLC, then turns west for 0.16 mile crossing a sanitary sewer easement, the northern undeveloped tip of the Life Time Athletic property, an undeveloped parcel owned by SDC Ashburn I, LLC, and a sanitary sewer easement until reaching the tap location with future Line

#2214.

Route 1F was rejected as infeasible following initial consultations with between the Company and the USPS. The route would bisect the Dulles Post Office Property, crossing just west of a covered pedestrian connection between the Post Office parking lot and Post office facilities. The USPS informed the Company that it would not grant an easement for this route due to the significant impact it would have to the USPS property. In addition, Route 1F would cross the parking lot of Life Time Athletic facility, would be within 100 feet of a children's outdoor playground associated with the facility, and would conflict with planned development on the parcel located north of the Life Time Athletic Facility. Given the objection to the development of this route by the USPS as well as impacts it would have on the Life Time Athletic facility and the planned development to the north of this facility, the Company rejected the development of Route 1F.

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: Assuming a final order from the Commission by November 30, 2020, construction of the new Project will commence around October 4, 2021. The Company plans to construct the Lockridge Loop in a manner that minimizes outage time on future Buttermilk-Roundtable Line #2214. Assuming construction commences around October 4, 2021, the cut-in of the lines going to Lockridge Substation should start around spring 2022. The cut-in process will require a PJM outage eDart ticket on future Line #2214. The line cut-in should only require a 30-day outage.

The Company has not yet requested this outage from PJM, as it is customary for PJM not to grant approval of outages until shortly before the outages are expected to occur.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

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

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

The Company utilized Guideline #1 (existing rights-of-way should be given priority when adding additional facilities) by siting much of the Proposed Route and Alternative Routes adjacent to and/or overlapping with existing road, electric distribution line, and pipeline rights-of-way as discussed in Sections II.A.9 and III.D.

In accordance with Guideline #2, the Proposed Route does not impact any national historic places listed in the National Register of Historic Places ("NRHP") and natural landmarks listed in the National Register of Natural Landmarks maintained by the Secretary of the Interior and parks, scenic, wildlife and recreational lands, officially designated by duly constituted public authorities. See Section III.A for a description of the cultural resources identified in the Stage I Pre-Application Analysis prepared by Dutton Associates ("Dutton") on behalf of the Company, which is included as Appendix F of the Environmental Routing Study.

The Proposed Route is not located in an area of high scenic value in conformance with Guideline #3. As discussed in Section III.E, the area in the vicinity of the Proposed Route, north of Washington Dulles International Airport, is expected to continue to be a key location for industrial uses, airport-related businesses, and data center development.

The Proposed Route would cross lands managed by the USPS. The Company has communicated with the USPS prior to filing this application consistent with Guideline #4 (where government land is involved the Company should contact the agencies early in the planning process). See Section III.J of this Appendix for a summary of the Company's communications with the USPS.

The Company will follow the construction methods listed in the Guidelines on a site-specific (Guidelines #8, 10, 11, 15, 16, 18 and 22).

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

II. DESCRIPTION OF THE PROPOSED PROJECT

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

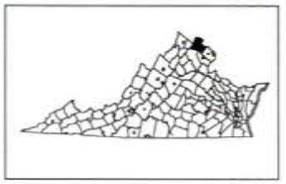
12. a. Detail counties and localities through which the line will pass. If any portion of the line will be located outside of the Applicant's certificated service area: (1) identify each electric utility affected; (2) state whether any affected electric utility objects to such construction; and (3) identify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

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

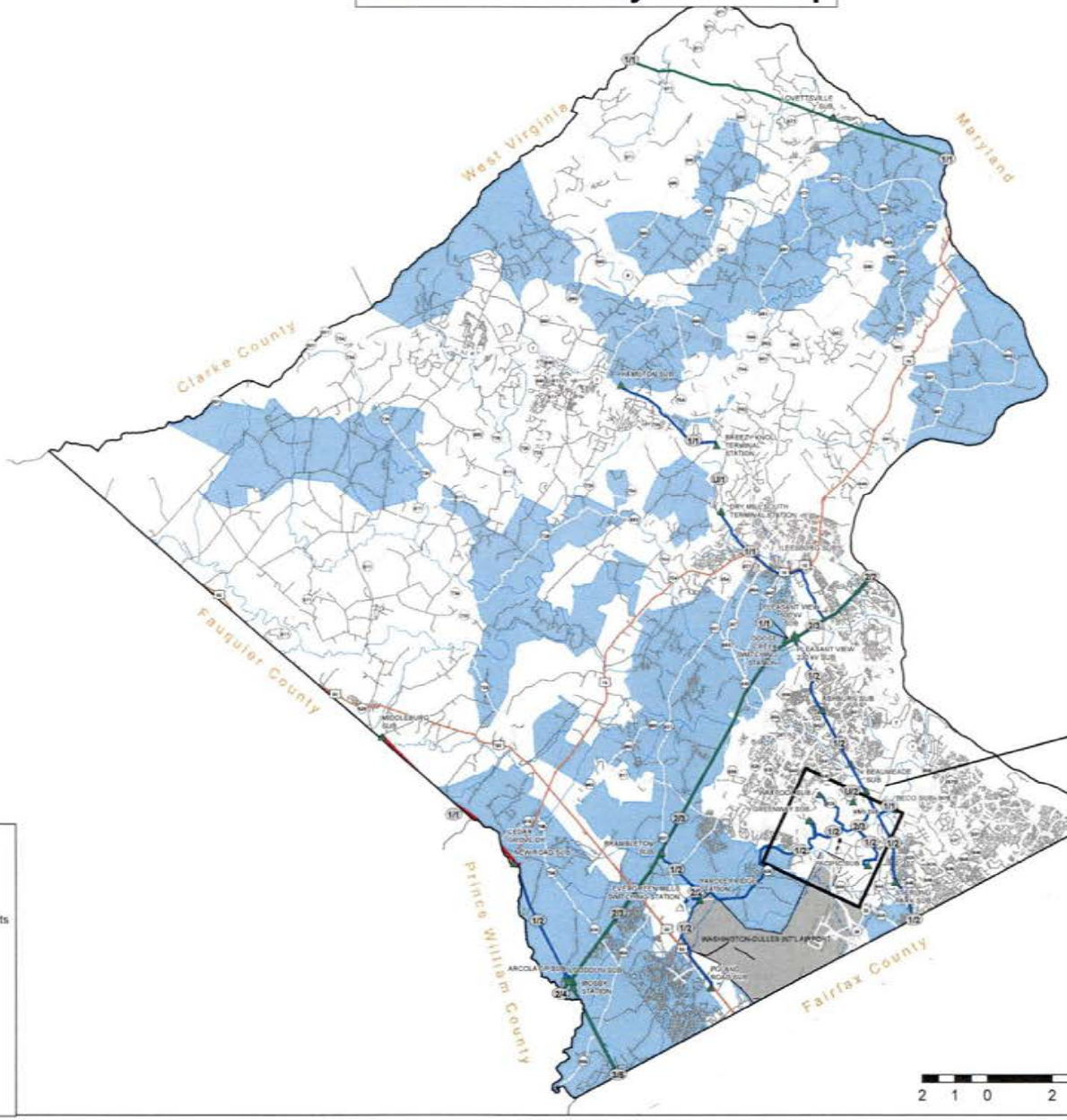
Response: a. The proposed Project traverses Loudoun County for a total of 0.62 mile and is located entirely within Dominion Energy Virginia's service territory.

b. Three copies of the map of the Virginia Department of Transportation ("VDOT") "General Highway Map" for Loudoun County have been marked as required and filed with the Application. Reduced copies of the map are 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 12/5/19. Other Company facilities previously authorized by the SCC may be depicted on prior SCC approved county maps.



Legend

- Proposed Project
- Currently Under Consideration by SCC
- (xx) 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

Attachment II.A.12.b

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: The proposed Project will be designed and operated at 230 kV with no anticipated voltage upgrade. Each line segment will have a transfer capability of 1572 MVA.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

Response: Each proposed segment of the two transmission lines will be 3-phase twin-bundled 768.2 ACSS/TW type conductor and a fiber optic shield wire arranged as shown in Attachment II.B.3.a. There will be no coating on this conductor. The twin-bundled 768.2 ACSS/TW conductors are a Company standard for new 230 kV construction.

II. DESCRIPTION OF THE PROPOSED PROJECT

B. Line Design and Operational Features

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

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

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

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

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

e. the foundation material;

f. the average width at cross arms;

g. the average width at the base;

h. the maximum, minimum and average structure heights;

i. the average span length; and

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

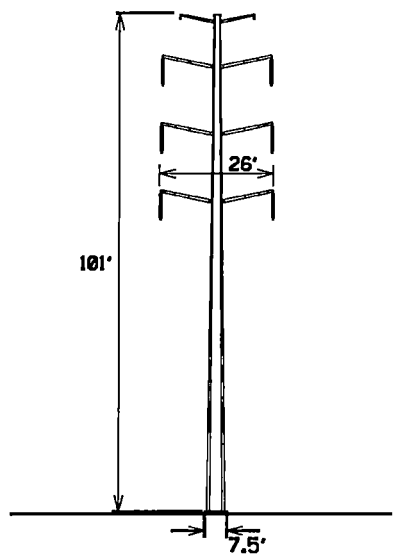
Response: (a) See Attachment I.F.1.

(b)-(j) See Attachment II.B.3.a for the requested information along the Proposed Route (Route 1A).

PROPOSED STRUCTURES - ROUTE 1A

2205 LINE 2214 LINE

PRELIMINARY



PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD LOCKRIDGE

A: MAPPING OF PREFERRED ROUTE:	SEE ATTACHMENT I.F.1
B: RATIONALE FOR STRUCTURE TYPE :	VERTICAL PROFILE MINIMIZES REQUIRED ROW, RESEMBLES THE STRUCTURE TYPES IN THAT VICINITY
C: LENGTH OF R/W (STRUCTURE QTY.)	0.62 MI (8 STRUCTURES)
D: STRUCTURE MATERIAL :	GALVANIZED STEEL
RATIONALE FOR STRUCTURE MATERIAL :	TO MATCH THE STRUCTURE MATERIAL OF THE ADJACENT TRANSMISSION LINES IN THE VICINITY
E: FOUNDATION/FOUNDATION MATERIAL :	DRILLED PIER/CONCRETE
AVERAGE FOUNDATION REVEAL :	1.5 FEET, SEE NOTE 4
F: AVERAGE WIDTH AT CROSSARM :	26 FEET
G: AVERAGE WIDTH AT BASE :	7.5 FEET
H: MINIMUM STRUCTURE HEIGHT :	90 FEET
MAXIMUM STRUCTURE HEIGHT :	115 FEET
AVERAGE STRUCTURE HEIGHT :	101 FEET
I: AVERAGE SPAN LENGTH :	408 FEET
J: MINIMUM GROUND CLEARANCE AT MOT:	22.5 FEET

NOTES:
1. INFORMATION ON DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING FINAL ENGINEERING
2. INDIVIDUAL POLE HEIGHTS ABOVE GROUND MAY VARY SUBJECT TO FINAL LOCATION AND TERRAIN
3. STRUCTURE HEIGHTS ARE MEASURED FROM CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL
4. MINIMUM FOUNDATION REVEAL SHALL BE 1.5', MAX REVEAL SUBJECT TO FINAL LOCATION AND TERRAIN

$DGNSPEC$

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: See the table below for the approximate maximum, minimum and average structure heights for each of the Alternative Routes, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Alternative Route	No. of Structures	Min. Structure Height (feet)	Max. Structure Height (feet)	Avg. Structure Height (feet)
Route 1B	8	90	115	103
Route 1C	9	90	115	102
Route 2A	8	95	110	101
Route 2B	7	95	115	105

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

Response: [1] There are no existing structures proposed for removal pursuant to the Project.

[2] See Attachment II.B.6.b for a representative photograph of the proposed structures.

[3] Visual simulations showing the appearance of the proposed transmission structures at identified historic locations within 1.0 mile of the proposed Project centerline of the Proposed Route (Route 1A) are provided. See Attachment II.B.6.c for a map of the simulation locations, the existing views at the historic property, and simulated proposed views. These simulations were created using GIS modeling to depict whether the proposed structures will be visible from historic property. The historic property evaluated is listed below. See also the Stage I Pre-Application Analysis Report contained in Appendix E of the Environmental Routing Study.

Broad Run Ford

See Attachments III.B.4 and III.B.5 in Section III.B of this Appendix for visual simulations of key locations evaluated, including a map showing the photo viewpoint locations. These simulations, which include the proposed structures from Life Time Fitness, are also discussed in Section 4.3 of the Environmental Routing Study.

Double circuit galvanized steel pole (suspension)

Dominion Energy Virginia: Lockridge 230 kV Line Loop Broad Run Ford Proposed Line Loop: Option 1A

Photo simulations prepared by:
GTTE LLC
email:
info@gttellc.com

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design.

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Lockridge 230 kV Line Broad Run Ford Current View

Photo simulations prepared by:
GTTE LLC
email:
info@gttellc.com

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design.

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

Lockridge 230 kV Line Loop Broad Run Ford Proposed View Option 1A

Photo simulations prepared by:
GTTE LLC
email:
info@gttellc.com

Photo simulations and diagrams represent approximate heights for electric transmission structures from conceptual design used for the proposed Project. These illustrations do not necessarily depict exact structure design or location. The approximate heights include foundation reveal (minimum of 18 inches) and are also subject to change based on final design.

0 1" 2" 3" 4"

This simulation is designed for viewing on a computer monitor. To achieve the correct scale the image should be increased or decreased in size until the scale above measures 4". When viewed with the eye at 20 inches from the screen the image will have the same scale as if the viewer were standing at the camera location.

II. DESCRIPTION OF THE PROPOSED PROJECT

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

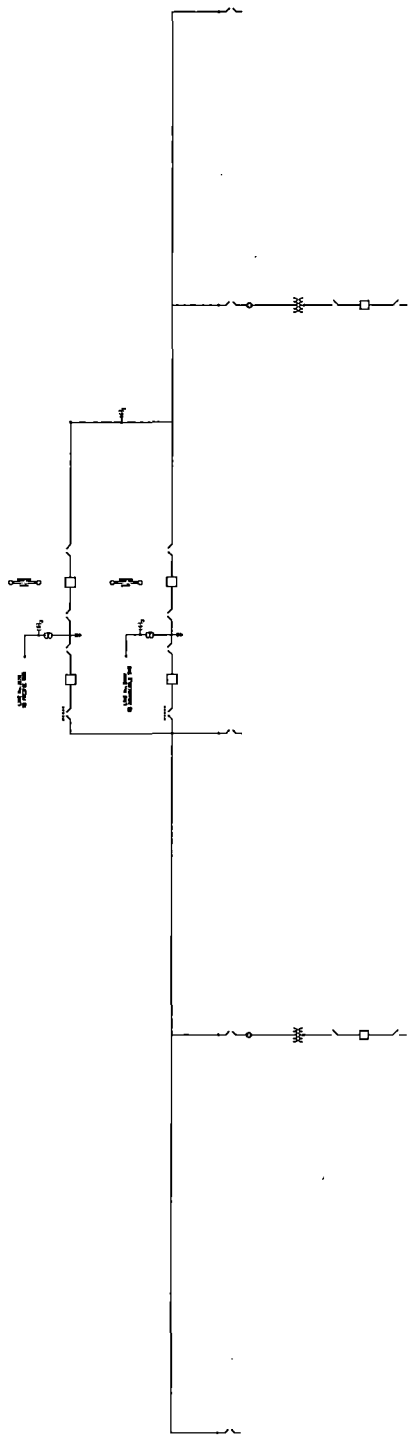
Response: The proposed Project requires construction of the new 230-34.5 kV Lockridge Substation in Loudoun County, Virginia.

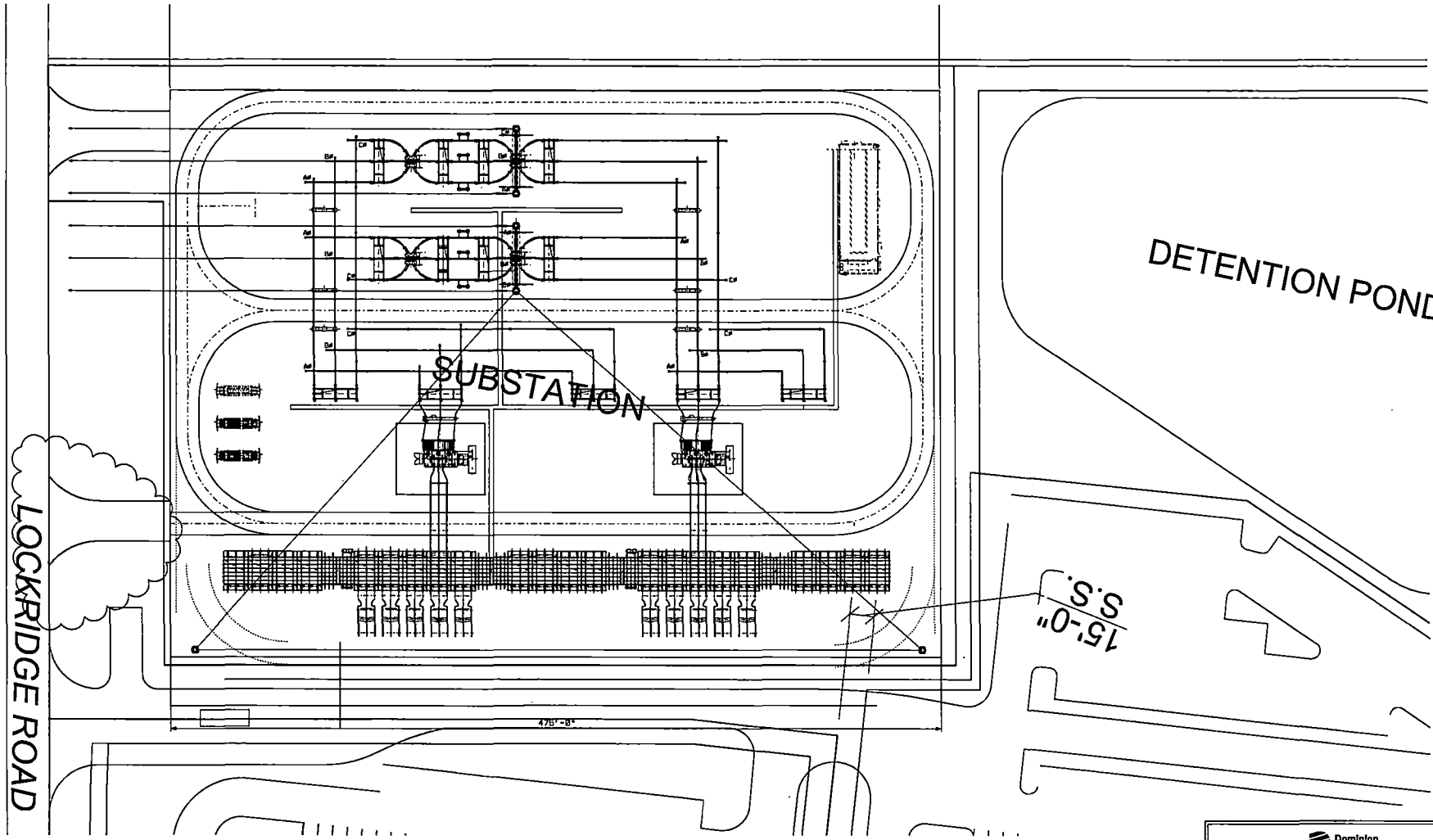
The proposed arrangement will install two 230 kV terminals including: four 230 kV 4000A breakers; two 230 kV 1200A Circuit Switchers for Transformer #1 and Transformer #2; thirteen 230 kV 4000A switches; two 230 kV 4000A wave traps; six arresters; and two 230-34.5 kV transformers. In total, the Lockridge Substation will be designed to accommodate future growth in the area with a build-out of six 230 kV breakers in a ring bus arrangement, five 84 MVA, 230-34.5 kV transformers, and up to twenty-five 34.5 kV distribution circuits.

A new control house will also be installed to accommodate the communications and protective relays for the proposed and future equipment.

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

Attachment II.C.1





Attachment II.C.2

Dominion Energy

LOCKRIDGE SUBSTATION
ASHBURN, VA

	Name	Date	Project No.	Sheet No.
Designed by:	XXXXXX	XX-XX-XX	XXXXXX	1 of 1
Approvals	XXXXXX		Scale	
Approvals			1"=20'	
			B/M No.	Revisions
			XXXX	
Cad File Name: XXXXXXXe.dgn			Drawing No.	
PLOTTED:			XXXX-001	

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Revisions

No.	Date	By	Description	Project Number	B/M

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

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

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

Response: **Proposed Route (Route 1A)**

The Proposed Route traverses approximately 0.62 mile through Loudoun County in an area that is largely characterized by undeveloped forest planned for data center development and is surrounded by existing data centers, scattered light industrial and other business/commercial land use.

According to the Loudoun County GIS parcel and zoning data and aerial photo analysis, there are no dwellings located within 500 feet, 250 feet, or 100 feet of the centerline or within the right-of-way of the Proposed Route.

According to Natural Resources Conservation Service Data ("NRCS"), there is no agricultural land within or near the right-of-way of the Proposed Route, and no farmland of statewide importance is crossed. The Proposed Route overlaps an existing right-of-way for a Dominion Energy Virginia electric distribution line for about 0.4 mile that is regularly maintained to keep vegetation at the emergent and scrub-shrub level for the safe operation of the existing facilities. About 2.86 acres of existing forestland will be impacted by the construction of the Proposed Route.

Based on an analysis of the U.S. Geological Survey ("USGS") 7.5-minute current (2014-2017) and historic (1988-2012) topographic mapping, USGS National Hydrography Dataset ("NHD"), Loudoun County Hydrology (water feature lines) and Hydrology (water feature polygons) Datasets (Loudoun County Streams), and Loudoun County Wetlands (wetland feature polygons) Dataset (Loudoun County Wetlands), the Proposed Route does not cross perennial or intermittent waterbodies. Approximately 0.83 acre of emergent wetlands and 0.15 acre of forested wetlands occur within the right-of-way of the Proposed Route.

Alternative Route 1B

Alternative Route 1B traverses approximately 0.64 mile through Loudoun County in an area that is largely characterized by undeveloped forest planned for data center development and is surrounded by existing data centers, scattered light industrial and other business/commercial land use.

According to the Loudoun County GIS parcel and zoning data and aerial photo analysis, there are no dwellings located within 500 feet, 250 feet, or 100 feet of the centerline or within the right-of-way for Alternative Route 1B.

According to NRCS, there is no agricultural land within or near the right-of-way, and no farmland of statewide importance is crossed by the route. Alternative Route 1B overlaps an existing Dominion Energy Virginia electric distribution right-of-way for about 0.47 mile that is regularly maintained to keep vegetation at the emergent and scrub-shrub level for the safe operation of the existing facilities. About 2.77 acres of existing forestland will be impacted by Alternative Route 1B.

Based on an analysis of the USGS 7.5-minute current (2014-2017) and historic (1988-2012) topographic mapping, USGS NHD, Loudoun County Hydrology (water feature lines) and Hydrology (water feature polygons) Datasets (Loudoun County Streams), and Loudoun County Wetlands (wetland feature polygons) Dataset (Loudoun County Wetlands), Alternative Route 1B does not cross perennial or intermittent waterbodies. Approximately 0.83 acre of acre of emergent wetlands and 0.63 acre of forested wetlands occur within the right-of-way of this route.

Alternative Route 1C

Alternative Route 1C traverses approximately 0.68 mile through Loudoun County in an area that is largely characterized by undeveloped forest planned for data center development and is surrounded by existing data centers and scattered light industrial and other business/commercial land use.

According to the Loudoun County GIS parcel and zoning data and aerial photo analysis, there are no dwellings located within 500 feet, 250 feet, or 100 feet or within the right-of-way of Alternative Route 1C.

According to NRCS, there is no agricultural land within or near the right-of-way for Alternative Route 1C, and no farmland of statewide importance is crossed. Alternative Route 1C overlaps an existing Dominion Energy Virginia electric distribution line right-of-way for about 0.40 mile that is regularly maintained to keep vegetation at the emergent and scrub-shrub level for the safe operation of the existing facilities. About 3.35 acres of existing forestland will be impacted by the route.

Based on an analysis of the USGS 7.5-minute current (2014-2017) and historic (1988-2012) topographic mapping, USGS NHD, Loudoun County Hydrology (water feature lines) and Hydrology (water feature polygons) Datasets (Loudoun County Streams), and Loudoun County Wetlands (wetland feature polygons) Dataset (Loudoun County Wetlands), Alternative Route 1C does not cross or intermittent waterbodies. Approximately 0.83 acre of emergent wetlands, 0.11 acre of forested wetlands, and 0.01 acre of scrub-shrub wetlands occurs within the right-of-way of this route.

Alternative Route 2A

Alternative Route 2A traverses approximately 0.66 mile through Loudoun County in an area that is largely characterized by undeveloped forest planned for data

center development and is surrounded by existing data centers and scattered light industrial and other business/commercial land use.

According to the Loudoun County GIS parcel and zoning data and aerial photo analysis, there are no dwellings located within 500 feet, 250 feet, or 100 feet or within the right-of-way of Alternative Route 2A.

According to NRCS, there is no agricultural land within or near the right-of-way, and no farmland of statewide importance is crossed. Alternative Route 2A overlaps two existing rights-of-way (Dominion Energy Virginia and Columbia Gas) for about 0.43 mile that are regularly maintained to keep vegetation at the emergent and scrub-shrub level for the safe operation of the existing facilities. About 3.99 acres of existing forestland will be impacted.

Based on an analysis of the USGS 7.5-minute current (2014-2017) and historic (1988-2012) topographic mapping, USGS NHD, Loudoun County Hydrology (water feature lines) and Hydrology (water feature polygons) Datasets (Loudoun County Streams), and Loudoun County Wetlands (wetland feature polygons) Dataset (Loudoun County Wetlands), Alternative Route 2A crosses Broad Run and an unnamed tributary to Broad Run. Approximately 1.18 acres of emergent wetlands and 0.22 acre of forested wetland occur within the right-of-way.

Alternative Route 2B

Alternative Route 2B traverses approximately 0.65 mile through Loudoun County in an area that is largely characterized by undeveloped forest planned for data center development and is surrounded by existing data centers and scattered light industrial and other business/commercial land use.

According to the Loudoun County GIS parcel and zoning data and aerial photo analysis, there are no dwellings located within 500 feet, 250 feet, or 100 feet or within the right-of-way of Alternative Route 2B.

According to NRCS, there is no agricultural land within or near the right-of-way, and no farmland of statewide importance is crossed. Alternative Route 2B overlaps one existing right-of-way (Columbia Gas) for about 0.27 mile that is regularly maintained to keep vegetation at the emergent and scrub-shrub level for the safe operation of the existing facilities. About 4.78 acres of existing forestland will be impacted.

Based on an analysis of the USGS 7.5-minute current (2014-2017) and historic (1988-2012) topographic mapping, USGS NHD, Loudoun County Hydrology (water feature lines) and Hydrology (water feature polygons) Datasets (Loudoun County Streams), and Loudoun County Wetlands (wetland feature polygons) Dataset (Loudoun County Wetlands), Alternative Route 2B crosses Broad Run and an unnamed tributary to Broad Run. Approximately 1.21 acres of emergent wetlands and 0.22 acre of forested wetland occur within the right-of-way.

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

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

Response: In accordance with § 15.2-2202 E of the Code of Virginia, letters dated October 18, 2019, were delivered to Alaina Ray, Director of Planning and Zoning, Tim Hemstreet, County Administrator, Thom Lipinski, Director of Planning and Engineering for Loudoun Water, and Joe Kroboth, Director of Transportation and Capital Infrastructure of Loudoun County, Virginia, advising of the Company's intention to file this Application and inviting the County to consult with the Company about the proposed Project. These letters are included as Attachment V.D.1.

On September 25, 2019, the Company launched an internet website dedicated to the proposed Lockridge Project: https://www.dominionenergy.com/lockridge. The website includes a description of the proposed Lockridge Project and its benefits, an explanation of need, route maps, photo simulations, and information on the Commission review process.

On September 30, 2019, the Company sent project announcement mailers to 17 property owners within 500 feet of the furthest extent of the study routes. Each mailer included a postcard designed with an overview map. The postcard provided a brief overview of the respective proposed Lockridge Project and advised of anticipated community open house the Company would be holding in the coming months. Copies of the postcard with the map are included as Attachment III.B.1.

Newspaper advertisements for the open house, included as Attachment III.B.2, were also placed in the Loudoun Now and Loudoun Times Mirror in both hardcopy and online editions. In addition, digital advertisements and online page views for the open house, included as Attachment III.B.3, targeting residents in Loudoun County made 151,956 impressions on desktop and mobile devices.

One community open house was held:

- October 17, 2019 from 5:00 pm-7:00 pm at Spring Hill Suites in Loudoun County, Virginia. One person attended to learn more about this Project. Visitors included Evan McCarthy, a field representative for Piedmont Environmental Council.

A variety of graphics were presented to the public at the open house, including overview maps, sample existing and proposed structure graphics and photos, and simulations of the proposed Virginia Rebuild Project from key locations. These open house materials are included as Attachment III.B.4. Note that the Route 1A

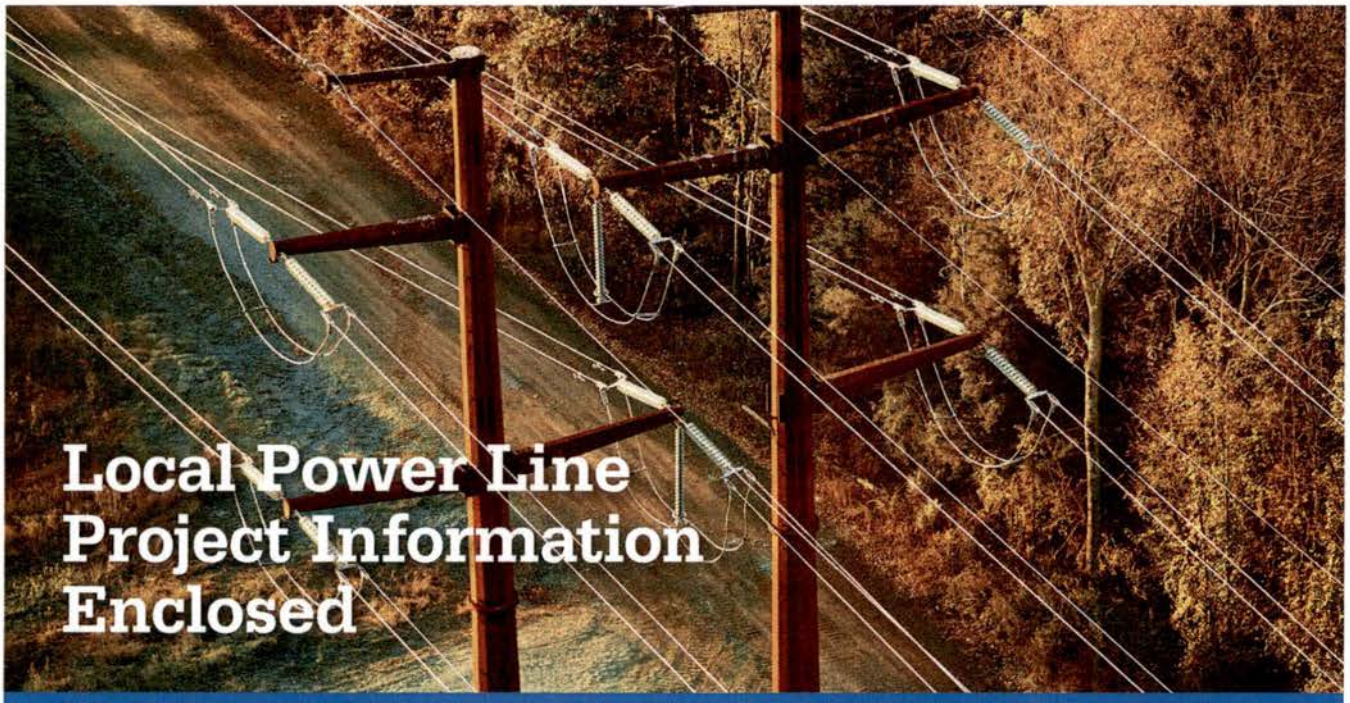
materials provided in Attachment III.B.4 are actually a reference to Route 1F. This route was later renamed as Route 1F after rejected by the Company.

Following the public open house and meetings with county officials, the Company determined there was a need for additional simulations from key locations along Lockridge Road. Two key location simulations are included as Attachment III.B.5.

Electric Transmission
P.O. Box 26666
Richmond, VA 23261

Dominion Energy®

Investing in Our Communities



Dominion Energy image. Not project specific.

Dominion Energy®

IMPORTANT

Local Power Line Project Information

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

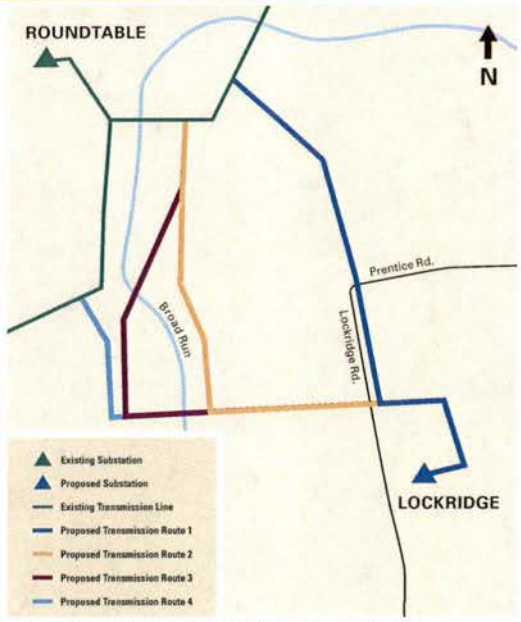
Lockridge Project

AT DOMINION ENERGY, we are committed to working safely and courteously in your neighborhood. You are receiving this postcard because your property is located near a new substation planned for construction near Lockridge Road in eastern Loudoun County. The substation, along with new transmission infrastructure, is needed to accommodate load growth and to maintain reliable electric service in the area.

We would like to invite you to attend an informational meeting to learn more about the construction process. There will not be a formal presentation at this meeting, but our electric transmission construction experts will be on hand to answer any questions you may have about the project.

Your electric service will not be interrupted as a result of this project. Thank you for your understanding and patience throughout this process.

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



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

WHAT:

The newly proposed substation planned for construction near Lockridge Road will connect a transmission line to the station. Beginning in spring 2021, we will start to clear new right of way to build transmission structures that include galvanized steel monopoles, averaging 105 feet tall. Construction is expected to be completed in September 2021.

WHY:

The substation, along with new transmission infrastructure, is needed to accommodate load growth and to maintain reliable electric service in the area.

WHERE:

This new proposed right of way is about a half-mile long and is located in Loudoun County, near Lockridge Road.

Typical Monopole Structure

MATERIAL:
Galvanized steel

AVERAGE HEIGHT:
105 feet

This rendering is for illustrative purposes only. Actual structure heights will vary.

OPEN HOUSE

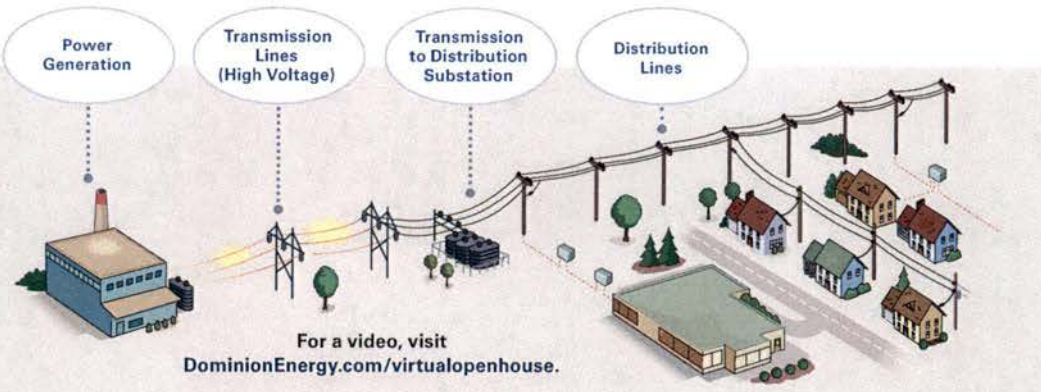
Thursday
Oct. 17, 2019
5 – 7 p.m.

SpringHill Suites Marriott
22595 Shaw Road
Dulles, Virginia 20166

(drop by anytime during these hours)

Delivering Clean, Safe, Affordable and Sustainable Energy

Transmission lines are the tall, high-voltage lines that carry electricity over long distances from power generation facilities to substations.



For a video, visit DominionEnergy.com/virtualopenhouse.

[TOWN NOTES]

« FROM 18

reception from 4-7 p.m. next Saturday, Oct. 5.

The exhibit celebrates artist Gerald Hennesy's latest oil on canvas landscapes of verdant pastures, woodland views and the beauty of the Loudoun and Fauquier countryside, with a 72-by-48-inch painting of the Blue Ridge meadows as the centerpiece. The month-long exhibit will be open to the public from 11 a.m. to 5 p.m. Wednesday-Saturday, 12-5 p.m. on Sunday and by appointment on Mondays and Tuesdays.

Hennesy, 98, paints in an impressionistic style, working both in plein air and in studio. He paints rapidly and attempts to achieve a freshness of color and expressiveness in his brushwork. His work has been exhibited in commercial and museum galleries like the Smithsonian Museum and is also a part of private, corporate and public collections like the U. S. House of Representatives and the State Department.

For more information, call the gallery at 540-687-6986.

PURCELLVILLE

Police to Host 2 Coffees with a Cop Next Wednesday

The Purcellville Police Department will host its National Coffee with a Cop Day events on Wednesday Oct. 2 7:30-10 a.m. at the Sweet Rose Bakeshop off North 23rd Street and from 5-7:30 p.m. at Market Street Coffee off Main Street.

The event will bring the town's police officers and residents together with conversation and coffee. Residents are invited to attend to ask questions and learn more about the police department's work in town.

"Coffee with a cop provides our officers and residents with the opportunity to engage one on one in a constructive informal environment," said Police Chief Cynthia McAlister. "It is my hope that the community always feels comfortable enough to ask us questions, share their concerns or simply get to know our officers."

For more information, call the police department at 540.338.7422 or email Administrative Assistant Christa Kermode at ckermode@purcellvilleva.gov.

Middle Schooler Organizes Special Wiffle Ball Game

Harmony Middle School student Ithan Rubin has organized an adaptive wiffle ball game for the area's special education youth that will be played at 2 p.m. this Saturday, Sept. 28 at Scott Jenkins Memorial Park near Hamilton.

In addition to the game, there will be a 50/50 raffle. All proceeds will benefit the special education programming and the buddies club at Harmony Middle School.

ROUND HILL

Town Asks VDOT for Nearly $1 Million Grant for Trail Project

The Round Hill Town Council last Thursday voted to authorize staff to apply for a VDOT Transportation Alternatives Program Grant to help fund phase three of the Round Hill Greenway Trail project.

The estimated $982,292 project will include the installation of a raised crosswalk along Airmont Road about 500 feet south of Loudoun Street; a 5-foot-wide sidewalk 1,000 feet along the eastern side of New Cut Road from the crosswalk to Yatton Road/Hayman Lane intersection; crosswalks on the north and west legs of the intersection; a 10-foot multiuse path to tie in with the existing trail; streetlights; and warning signage alerting vehicular traffic to pedestrians.

If VDOT approves the town's grant application, the town will be required to match 20 percent of the total amount.

Planner Applicants Sought Following Runyan's Departure

The Town of Round Hill is seeking applicants for the position of town planner, following Lauren Runyan's departure earlier this month.

The town planner works under the direction of the town administrator and leads the planning, coordinating and facilitating of town projects and programs. The planner routinely interacts with town leadership and attends high-level meetings to support the town administrator and mayor.

Candidates should hold a bachelor's degree in planning, public administration, political science, business or community development and should have at least one year of related work experience.

The planner is one of six town staff members and will be required to work from 8:30 a.m. to 4:30 p.m. each day and attend Planning Commission meetings at 7 p.m. the first or second Tuesday of each month and possibly Town Council meetings the third Thursday of each month at 7:30 p.m. The selected candidate will be paid $40,000 to $45,000 depending on qualifications.

To apply, send an application, letter of interest, resume, two recommendation letters, two applicable writing samples and contact information from at least three work- or education-related references to: Melissa Hynes, Town Administrator, Town of Round Hill, P.O. Box 36, Round Hill, VA, 20142. Applications can also be hand delivered to the town office or emailed to Hynes at mhynes@roundhillva.org.

The submission deadline is 4:30 p.m. on Oct. 4. For more information, go to roundhillva.org or email Hynes.

Hydrant Flushing Next Week

The Town of Round Hill Utilities Department will be flushing fire hydrants from 8 a.m. to 3 p.m. all next week, Monday-Friday, Sept. 30 to Oct. 3.

Residents' water is safe to drink and use during the flushing, but it might result in some discoloration and sediment deposits. If either becomes apparent, residents might want to avoid doing laundry. The flushing might also introduce air into the water lines, which can temporarily cause erratic flow.

For more information, call the town's utility department at 540-338-4772.

VARSITY FOOTBALL SCOREBOARD

Times-Mirror/Pete Felber

Sophomore Jimmy Kibble runs through a tackle attempt into the end zone for a 25-yard touchdown reception in the fourth quarter of Loudoun County's 17-7 win over Dulles District rival Loudoun Valley. **Story and more photos at Loudountimes.com.**

WEEK 4 SCORES

■ **Friday, Sept. 20**

Loudoun County 17, Loudoun Valley 7
Briar Woods 38, Rock Ridge 8
John Champe 35, Potomac Falls 7
Woodgrove 39, Dominion 7
Tuscarora 35, Musselman (W.Va.) 0
Riverside 31, Independence 27
Fauquier 14, Heritage 13
Bishop Ireton 49, Park View 0

RECORDS

■ **Class 6**
John Champe (3-1)

■ **Class 5**
Stone Bridge (3-0)
Riverside (3-1)
Woodgrove (3-1)
Briar Woods (2-1)
Freedom (1-2)
Potomac Falls (1-3)
Rock Ridge (1-3)

■ **Class 4**
Broad Run (3-0)
Loudoun County (3-1)
Tuscarora (3-1)
Loudoun Valley (2-2)
Heritage (1-3)
Park View (0-3)
Dominion (0-4)

■ **Class 3**
Independence (0-4)

WEEK 5 SCHEDULE

■ **Friday, Sept. 27**

Tuscarora at Briar Woods, 7 p.m.
Freedom at Stone Bridge, 7 p.m.
Riverside at Potomac Falls, 7 p.m.
Warren Co. at Loudoun County, 7 p.m.
Rock Ridge at Dominion, 7 p.m.
Osbourn Park at John Champe, 7 p.m.
Jefferson (W.Va.) at Heritage, 7 p.m.
Woodgrove at Musselman, 7 p.m.
Loudoun Valley at Brentsville, 7 p.m.
Independence at Osbourn, 7 p.m.
Park View at Washington (W.Va.), 7 p.m.

■ **Saturday, Sept. 28**

Urbana (Md.) at Broad Run, 1 p.m.

SPORTS IN BRIEF

Stone Bridge aces golf test

Stone Bridge High School closed the regular season with a 170 to 172 victory over Broad Run in a nine-hole golf match Sept. 19 at Belmont Country Club. Kieran Modhera (39), Sean Vanderstelt (43), Paul Thoppil (44) and Michael Miranda (44) scored for Stone Bridge (4-4-1). Broad Run's Hannah Jonely shot an even par 36 to earn low medalist honors.

Youth wrestling registration

Eastern Loudoun Wrestling Club is accepting registrations for the 2019-2020 season. Open to kids in kindergarten through eighth grade. Register at easternloudounwrestling.org.

Big weekend for Bulldog volleyball

Two days after rallying for a thrilling five-set victory over Briar Woods, the Stone Bridge Bulldogs defeated Brooke Point, Grafton, Albemarle and Patrick Henry to win the Albemarle Showcase Volleyball Tournament on Sept. 21. Mahala Esser and Peyton Yamagata of Stone Bridge were named to the all-tournament team.

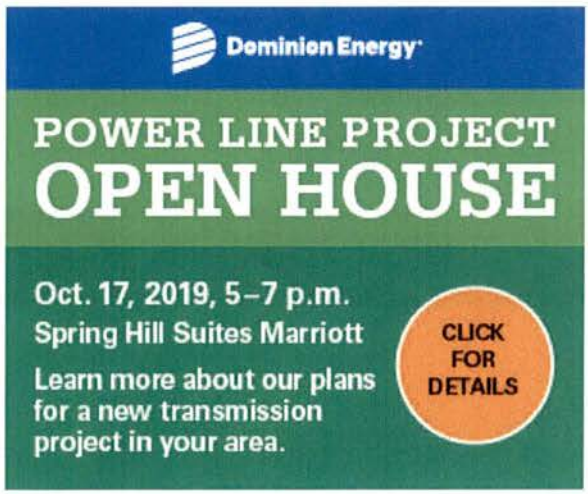
October Saves Goalie Challenge

The October Saves Goalie Challenge — supporting breast and pediatric cancer research — calls on youth, amateur and professional ice hockey goalies to raise money through gathering pledges per save they make during the month of October. With more than 90,000 saves logged since its inception, October Saves has raised $800,000. Log on to octobersaves.org to register or for more details.

— Carl Lukat


Dominion Energy
POWER LINE PROJECT
OPEN HOUSE
CLICK FOR DETAILS
Thursday
Oct. 17, 2019
Spring Hill Suites Marriott
Learn more about our plans for a new transmission project in your area.


Dominion Energy
POWER LINE PROJECT OPEN HOUSE
Oct. 17, 2019
Learn more about our plans for a new transmission project in your area.


Dominion Energy
POWER LINE PROJECT
OPEN HOUSE
Oct. 17, 2019, 5–7 p.m.
Spring Hill Suites Marriott
Learn more about our plans for a new transmission project in your area.
CLICK FOR DETAILS


Dominion Energy
POWER LINE PROJECT OPEN HOUSE
Oct. 17, 2019
5–7 p.m.
Spring Hill Suites Marriott
CLICK FOR DETAILS


Dominion Energy
POWER LINE PROJECT OPEN HOUSE
Oct. 17, 2019
5–7 p.m.
Spring Hill Suites Marriott
Learn more about our plans for a new transmission project in your area.
CLICK FOR DETAILS

Attachment III.B.4


LOCKRIDGE RD
SUBSTATION & 230 kV TRANSMISSION PROJECT
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING & DISTRIBUTION CENTER
LOCKRIDGE RD
Dominion Energy
EXISTING CONDITIONS
THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.


LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1A
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING &
DISTRIBUTION CENTER
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
Dominion
Energy
PROPOSED
CONDITIONS
THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.


LOCKRIDGE RD
SUBSTATION & 230 kV TRANSMISSION PROJECT
ROUTE 1B
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING & DISTRIBUTION CENTER
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
Dominion Energy
PROPOSED CONDITIONS
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1C
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING &
DISTRIBUTION CENTER
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
Dominion
Energy
PROPOSED
CONDITIONS
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1D
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING &
DISTRIBUTION CENTER
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
Dominion
Energy
PROPOSED
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1E
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING &
DISTRIBUTION CENTER
LOCKRIDGE
SUBSTATION
Dominion
Energy
PROPOSED
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 2A
ROUNDTABLE
SUBSTATION
LIFETIME
ATHLETIC
PRENTICE DR
USPS
PROCESSING &
DISTRIBUTION CENTER
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
Dominion
Energy
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LOCKRIDGE RD

SUBSTATION &
230 kV TRANSMISSION
PROJECT

EXISTING CONDITIONS

LOCKRIDGE RD

PRENTICE DR

USPS
PROCESSING &
DISTRIBUTION CENTER

LIFETIME
ATHLETIC

Dominion Energy

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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1A
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
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PROCESSING &
DISTRIBUTION CENTER
PRENTICE DR
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1B
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
USPS
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DISTRIBUTION CENTER
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LIFETIME
ATHLETIC
Dominion
Energy
PROPOSED
CONDITIONS
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1C
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
USPS
PROCESSING &
DISTRIBUTION CENTER
PRENTICE DR
LIFETIME
ATHLETIC
Dominion
Energy
PROPOSED
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LOCKRIDGE RD
SUBSTATION &
230 kV TRANSMISSION
PROJECT
ROUTE 1D
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
USPS
PROCESSING &
DISTRIBUTION CENTER
PRENTICE DR
LIFETIME
ATHLETIC
Dominion
Energy
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LOCKRIDGE RD
SUBSTATION & 230 kV TRANSMISSION PROJECT
ROUTE 1E
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
USPS
PROCESSING & DISTRIBUTION CENTER
PRENTICE DR
LIFETIME
ATHLETIC
Dominion Energy
PROPOSED CONDITIONS
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LOCKRIDGE RD
SUBSTATION &
230-kV TRANSMISSION
PROJECT
ROUTE 2A
LOCKRIDGE
SUBSTATION
LOCKRIDGE RD
USPS
PROCESSING &
DISTRIBUTION CENTER
PRENTICE DR
LIFETIME
ATHLETIC
Dominion
Energy
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Attachment III.B.5


LOCKRIDGE
230 kV LINE LOOP AND LOCKRIDGE SUBSTATION
VIEWPOINT 1
FROM LIFE TIME ATHLETIC PROPERTY
DATE:
10/17/2019
TIME:
12:15 PM
DIRECTION:
SOUTHWEST
EXISTING CONDITIONS
EXISTING ROUTE
PROPOSED CONDITIONS
OPTION 1 - ROUTE 1A
THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.
Dominion Energy

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 1

FROM LIFE TIME ATHLETIC PROPERTY

DATE:
10/17/2019

TIME:
12:15 PM

DIRECTION:
SOUTHWEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1S

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 1

FROM LIFE TIME ATHLETIC PROPERTY

DATE: 10/17/2019

TIME: 12:15 PM

DIRECTION: SOUTHWEST

EXISTING CONDITIONS

EXISTING ROUTE

PROPOSED CONDITIONS

OPTION 1 - ROUTE 1C

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 2

FROM LIFE TIME ATHLETIC PARKING LOT

DATE:
10/17/2019

TIME:
12:27 PM

DIRECTION:
WEST

EXISTING CONDITIONS
EXISTING ROUTE

PROPOSED CONDITIONS
OPTION 1 - ROUTE 1A

Dominion Energy

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

VIEWPOINT 2

FROM LIFE TIME ATHLETIC PARKING LOT

DATE: 10/17/2019

TIME: 12:27 PM

DIRECTION: WEST

EXISTING CONDITIONS

EXISTING ROUTE

PROPOSED CONDITIONS

OPTION 1 - ROUTE 1B

Dominion Energy®

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

LOCKRIDGE

230 kV LINE LOOP AND LOCKRIDGE SUBSTATION

THIS IMAGE IS INTENDED TO SERVE AS A REPRESENTATION OF THE PROJECT AREA AND IS NOT INTENDED FOR DETAILED ENGINEERING PURPOSES.

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

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

Response: No buildings would have to be demolished or relocated to construct the proposed Project along the Proposed Route or any of the Alternative Routes proposed for Notice.

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

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

Response: The Proposed Route would overlap and parallel an existing Dominion Energy Virginia overhead/underground electric distribution line right-of-way for about 0.4 mile. This right-of-way currently is maintained cleared of large trees for its entire length. There is some landscaping along the portion of the Dominion Energy Virginia right-of-way that borders a parking lot associated with the USPS Dulles Station. The Proposed Route also parallels Lockridge Road, a 28-foot-wide paved, rural undivided two-lane road for approximately 0.34 mile.

Alternative Route 1B would overlap and parallel an existing Dominion Energy Virginia overhead/underground electric distribution line for about 0.47 mile. This right-of-way is maintained cleared of large trees for its length. There is some landscaping along the portion of the Dominion Energy Virginia right-of-way that borders a parking lot associated with the USPS Dulles Station. Alternative Route 1B also parallels Lockridge Road, a 28-foot-wide paved, rural undivided two-lane road, for approximately 0.34 mile.

Alternative Route 1C would overlap and parallel an existing Dominion Energy Virginia overhead/underground electric distribution line for about 0.4 mile. This right-of-way is maintained cleared of large trees for its entire length. There is some landscaping along the portion of the Dominion Energy Virginia right-of-way that borders a parking lot associated with the USPS Dulles Station. Alternative Route 1C also parallels Lockridge Road, a 28-foot-wide paved, rural undivided two-lane road, for approximately 0.34 mile.

Alternative Route 2A would overlap an existing Dominion Energy Virginia overhead/underground distribution line right-of-way for about 0.08 mile. This right-of-way is maintained cleared of large trees for its entire length. Alternative Route 2A also parallels Lockridge Road, a 28-foot-wide paved, rural undivided two-lane road, for approximately 0.10 mile. In addition, Route 2A partially overlaps a Columbia Gas natural gas pipeline right-of-way for 0.35 mile. The pipeline right-of-way is 80 feet wide and consists of low shrubs and grasses surrounded by forested land to the north and south.

Alternative Route 2B partially overlaps a Columbia Gas natural gas pipeline right-of-way for 0.27 mile. The pipeline right-of-way is 80 feet wide and consists of low shrubs and grasses surrounded by forested land to the north and south.

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

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

Response: The Loudoun County 2019 General Plan ("General Plan")[9] and the Loudoun County 2019 Countywide Transportation Plan ("2019 CTP")[10] were reviewed to evaluate the potential effect the Proposed Route could have on future development. The General Plan and 2019 CTP do not address electric transmission lines within their land use policies and strategies explicitly; however, the General Plan recognizes that the area in proximity to the Proposed Route north of Washington Dulles International Airport is expected to continue to be a key location for industrial uses, airport-related businesses, and data center development. Future demand for data centers will need to be accommodated in places that have access to utilities, including electricity. The General Plan acknowledges that electrical demand in the County has grown dramatically in recent years with the development of data centers in eastern Loudoun County. Demand is expected to continue to grow with new data center construction, the operation of the Silver Line Metrorail, and other land development near the proposed route.

The 2019 CTP also was reviewed to determine the impact of the Proposed Route on future road projects. Two road projects were identified near the Proposed Route: the Shellhorn Road and the Prentice Drive Extensions. The Prentice Drive Extension would parallel a portion of the Proposed Route for approximately 0.3 mile. Because of the potential for the Proposed Route to affect this road extension, the Company consulted with the Loudoun County DTCI to ensure that the routes developed for the Company's proposed Project would not conflict with the County's road development plans. DTCI Staff reviewed both the Proposed and Alternative Routes and offered the Company guidance on the alignment of these routes and the placement of the transmission projects in order to avoid and mitigate risk and conflict with the Prentice Drive right-of-way acquisition and construction. Finally, while Alternative Route 2B would cross the proposed Shellhorn Road Extension, the route would not impact the development of the road. See Appendix Section II.A.9, Section 3.1.4 of the Environmental Routing Study, and DEQ Supplement Attachment 2.N.1.

[9] *See* https://www.loudoun.gov/DocumentCenter/View/152285/General-Plan---Combined-with-small-maps-bookmarked.

[10] *See* https://www.loudoun.gov/DocumentCenter/View/152287/CTP---Combined-with-small-maps-bookmarked.

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

F. Government Bodies

1. Indicate if the Applicant determined from the governing bodies of each county, city and town in which the proposed facilities will be located whether those bodies have designated the important farmlands within their jurisdictions, as required by § 3.2-205 B of the Code.

2. If so, and if any portion of the proposed facilities will be located on any such important farmland:

a. Include maps and other evidence showing the nature and extent of the impact on such farmlands;

b. Describe what alternatives exist to locating the proposed facilities on the affected farmlands, and why those alternatives are not suitable; and

c. Describe the Applicant's proposals to minimize the impact of the facilities on the affected farmland.

Response: (1) Coordination with Loudoun County has concluded that no land is designated as important farmlands within the study area.

(2) Not applicable.

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

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

1. **Any district, site, building, structure, or other object included in the National Register of Historic Places maintained by the U.S. Secretary of the Interior;**

2. **Any historic architectural, archeological, and cultural resources, such as historic landmarks, battlefields, sites, buildings, structures, districts or objects listed or determined eligible by the Virginia Department of Historic Resources ("DHR");**

3. **Any historic district designated by the governing body of any city or county;**

4. **Any state archaeological site or zone designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body;**

5. **Any underwater historic assets designated by the DHR, or predecessor agency or board;**

6. **Any National Natural Landmark designated by the U.S. Secretary of the Interior;**

7. **Any area or feature included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation ("DCR");**

8. **Any area accepted by the Director of the DCR for the Virginia Natural Area Preserves System;**

9. **Any conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code (or a comparable prior or subsequent provision of the Code);**

10. **Any state scenic river;**

11. **Any lands owned by a municipality or school district; and**

12. **Any federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facility. Features, sites, and the like listed in 1 through 11 above need not be identified again.**

Response: 1. None

2. Virginia Department of Historic Resources ("VDHR") # 053-6416: Broad Run Ford – Potentially NRHP-Eligible

3. None

4. None

5. None

6. None

7. None

8. None

9. None

10. None

11. None

12. None

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

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

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

The Company has reviewed the FAA's website[11] to identify airports within ten miles of the proposed Project. Based on this review, the following FAA-restricted airports are located within ten miles of the Project:

- Dulles International Airport, approximately 1.7 miles south of the Project

Structures associated with the Proposed Route would be located within the federally-defined airspace of Dulles International Airport. Notification letters were sent to the FAA and the Virginia Department of Aviation ("DOAv"). A referral response from S. Scott Denny, Senior Aviation Planner at the Virginia DOAv, was received in a letter dated October 22, 2019. See DEQ Supplement Attachment 2.N.3. Mr. Denny stated that the Virginia DOAv reviewed the proposed layouts of the Proposed and Alternative Routes and noted that the proximity of the Proposed Route to Dulles International Airport requires a 7460 form be submitted to the FAA for review. Additionally, the letter indicated that the DOAv Staff would not object to the Proposed Route provided (1) the Proposed Route will not result in a "Determination of Hazard" by the FAA, and (2) the Proposed Route will not result in the increase to instrument approach minimums to Dulles International Airport.

The Company also notified MWAA regarding the Project, including the Proposed and Alternative Routes. In a letter dated December 9, 2019, MWAA informed the Company that it did not object to any of the routes provided they do not exceed 410 feet Above Mean Sea Level ("AMSL") and expressed a preference for Alternative Route 1B. The Company's proposed structure heights along any of the Proposed or Alternative Routes do not exceed MWAA's limit of 410 feet AMSL, based on preliminary conceptual design and subject to change based on final engineering design. See DEQ Supplement Attachment 2.N.2.

[11] *See* https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

The Company will coordinate with MWAA, DOAv and the FAA as necessary to obtain all appropriate permits. See Section 2.N of the DEQ Supplement and related attachments for correspondence with MWAA, DOAv and the FAA.

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

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

Response: No scenic byways are in close proximity to the study area.

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

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

Response: Below is a list of coordination that has occurred to date with municipal, state, and federal agencies:

- Contact with Loudoun County (see DEQ Supplement Attachment 2.N.1 for copies of correspondence):
  - On September 24, 2019, Dominion Energy Virginia representatives met with the Loudoun County Attorney to discuss the proposed routes.
  - On September 24, 2019, Dominion Energy Virginia representatives participated in a pre-application conference with Loudoun County DPZ representatives. Individuals representing the Building and Development department and the DTCI were also in attendance.
  - On October 17, 2019, Dominion Energy Virginia representatives met with the Loudoun County DTCI again to review the routes and discuss the County's planned transportation projects in the vicinity of the Project.
  - On November 7, 2019, DPZ sent a response to Dominion Energy Virginia transmitting their initial comments on the routes.
  - On November 18, 2019, DTCI sent an initial response to Dominion Energy Virginia transmitting their comments on the routes.
  - On November 20, 2019, Dominion Energy Virginia sent a letter to DPZ and DTCI responding to the comments of these agencies on the routes.
  - On December 11, 2019, DTCI and DPZ sent Dominion a second, joint response letter transmitting their revised comments on the routes.
- Contact with the USPS (see Attachment III.J.1 for copies of correspondence):
  - On September 3, 2019, Dominion Energy Virginia sent an email to Asif Ansari of the USPS giving him a brief overview of the proposed Project and contact information at the Company.
  - On September 4, 2019, Dominion Energy Virginia received an email from Jim Ruffing, who handles right of way requests for the USPS. He provided an Easement Request Form and a letter stating what documentation the Company will need to provide in order to request an easement from the USPS.

- On September 5, 2019, Dominion Energy Virginia contacted Jim Ruffing of the USPS to discuss the easement requirements and documentation, as well as to provide additional information regarding the Project and routes. The Company followed up this discussion with an email and a visual of the proposed route options previously discussed.

- On September 6, 2019, Dominion Energy Virginia spoke with Jim Ruffing and requested that the USPS provide the Company a written letter with comments on each route. The Company also provided additional information regarding the potential routes for the proposed Project.

- On October 9, 2019, Chimel Chittams of the USPS sent Dominion Energy Virginia an email providing a status update on its review of the Project.

- As part of the proposed Project, the Company solicited comments via letter from several federally-recognized Native American tribes, including:

  Cheroenhaka (Nottoway) Indian Tribe
  Chickahominy Indian Tribe
  Chickahominy Indian Tribe Eastern Division
  Mattaponi Tribe
  Monacan Indian Nation
  Nansemond Indian Nation
  Nottoway Indian Tribe
  Pamunkey Indian Tribe
  Patawomeck Indian Tribe of Virginia
  Rappahannock Tribe
  Upper Mattaponi Indian Tribe

The same letter was sent to property owners. A copy of the letter template is included as Attachment III.J.2.

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

From: Philip W Benninghove <philip.w.benninghove@dominionenergy.com>
Sent: Tuesday, September 03, 2019 8:01 AM
To: 'asif.a.ansari@usps.gov'
Cc: Dane Jonas; Laura P Meadows
Subject: Dominion Energy Virginia- New Transmission Line in Loudoun County, VA

Good Morning Asif,

I hope you are doing well. My name is Phil Benninghove and I work in the Real Estate group at Virginia Electric & Power Company ("Dominion Energy Virginia" or "Dominion"). Dominion is currently in the process of developing transmission line routes to support a proposed substation project located on a property adjacent to the Dulles Post Office at 44715 Prentice Drive, Dulles, VA 20101. This project will require a 230 kV electric transmission line along with an 100 foot right of way to get electric service to the proposed substation to be located at 22426 Lockridge Road, Sterling VA 20166.

Dominion's routing team has compiled multiple options for the route of the proposed 230 kV electric transmission line. Some of these options include crossing portions of the Dulles Post Office property. Could you please contact me at your earliest convenience to discuss this further.

Thanks,

Phil Benninghove

Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

From: Ruffing, James M - Washington, DC <James.M.Ruffing@usps.gov>
Sent: Thursday, September 05, 2019 2:25 PM
To: Philip W Benninghove
Subject: [External] RE: Potential Easement on USPS Property in Dulles, VA

Perfect.

Give me a week or two to get back to you.

Thank you,
Jim Ruffing

United States Postal Service Headquarters
475 L'Enfant Plaza, SW, Room 6670
Washington, DC 20260-1862

Phone: (202) 268-5921

From: Philip W Benninghove [mailto:philip.w.benninghove@dominionenergy.com]
Sent: Thursday, September 5, 2019 3:22 PM
To: Ruffing, James M - Washington, DC <James.M.Ruffing@usps.gov>
Subject: [EXTERNAL] RE: Potential Easement on USPS Property in Dulles, VA

Hey Jim,

Thank you for speaking with me over the phone regarding the proposed transmission line routes that may cross the Dulles Post Office property.

I have attached an image showing the proposed routes with the structure locations on them (Red circles). The pink route would have three structures while the yellow alternate would only have two structures located on the Post Office property. Typically, Dominion does not install protection around its transmission structures unless they are in heavy traffic areas such as a parking lot or if they happen to be very close to a road. Dominion also does not typically fence in its transmission right of way. I am being told by engineering that the structures being used for this project will be poles (See attachment for what a typical one looks like) and that they are trying to design the line so none of poles would fall within the Post Office parking lot or fenced in area. If by chance a pole were to end up having to be installed within the parking lot Dominion would place a VDOT grade guard rail around the pole to protect it.

A standard Dominion transmission easement agreement does not allow the property owner to install structures (Houses, sheds, buildings.... Etc.) within the right of way and also limits other improvements such as water, sewer, telephone, electric, gas, cable or other utilities. These other improvements can be installed within the right of way but would need to be reviewed/approved by Dominion to make sure they comply with the Company's standards and regulations. If the improvement does comply with Dominion's standards, the Company would issue a Letter of Consent allowing it to be installed within the right of way. The existing parking lot and fence would not be an issue according to the Company's standards and regulations. Dominion can even reference them both in the proposed easement as approved.

Please let me know if you happen to have any additional questions.

Thanks again!

Phil Benninghove
Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

From: Ruffing, James M - Washington, DC [mailto:James.M.Ruffing@usps.gov]
Sent: Thursday, September 05, 2019 10:33 AM
To: Philip W Benninghove (PowerDelivery - 6)
Subject: [External] RE: Potential Easement on USPS Property in Dulles, VA

Additional questions I would have are: 1) How many "towers" would need to be installed in the pink and yellow route and 2) what types of protection would be placed around them?

Thanks,
Jim Ruffing

United States Postal Service Headquarters
475 L'Enfant Plaza, SW, Room 6670
Washington, DC 20260-1862

Phone: (202) 268-5921

From: Ruffing, James M - Washington, DC
Sent: Thursday, September 5, 2019 10:28 AM
To: 'Philip W Benninghove' <philip.w.benninghove@dominionenergy.com>
Subject: RE: Potential Easement on USPS Property in Dulles, VA

Phil,

Thank you for the quick response.

A couple of questions I have regarding the impact to and future use the easement area after the installation of these electric line.

As these lines appear to be the heavy duty, high voltage tower variety: 1) what are the limitations for use of the land under these lines and does any limitation extend for the full 100 feet or could parts of the area be used for say parking?

Or, 2) would this area need to be fenced off and need to be treated as a fee simple sale?

Thanks,
Jim Ruffing

United States Postal Service Headquarters
475 L'Enfant Plaza, SW, Room 6670
Washington, DC 20260-1862

Phone: (202) 268-5921

From: Philip W Benninghove [mailto:philip.w.benninghove@dominionenergy.com]
Sent: Thursday, September 5, 2019 10:02 AM
To: Ruffing, James M - Washington, DC <James.M.Ruffing@usps.gov>
Subject: [EXTERNAL] RE: Potential Easement on USPS Property in Dulles, VA

Good Morning Mr. Ruffing,

Thank you for reaching out to me and also providing me with the USPS easement request documentation.

Dominion is currently examining a variety of different routes for a proposed 230 kV transmission line in the area of the Dulles Post Office. Three of the proposed routes would impact the Dulles Post Office property. I have attached an image showing those three proposed routes for your review. All three routes have various levels of impact to the Post Office property.

The pink route would have the most impact to the property as the proposed 230 kV transmission line and 100 foot right of way would run South along the Eastern edge of Lockridge Road and cross the property just to the North of the Columbia Gas Pipeline easement (Shown in orange). This route also has an alternative that is shown in yellow. The alternative route would have the proposed 230 kV transmission line and 100 foot right of way continue along the Eastern edge of Lockridge Road until it would enter into the Dominion substation. Both of these options would require the clearing of numerous trees and transmission structures on the Post Office property.

The teal route would have a very minimal impact on the property. As it would not require any transmission structures to be installed on the property and very few trees to be cleared.

When the USPS is reviewing proposed easement options like the ones provided are they more likely to approve the ones that impact the property the least? This information could greatly assist Dominion with its route submittal to the State Corporation Commission.

Please let me know if you happen to have any questions regarding the route options or the information provided in this email.

Thanks again!

Phil Benninghove

Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

Dominion Energy

From: Ruffing, James M - Washington, DC [mailto:James.M.Ruffing@usps.gov]
Sent: Wednesday, September 04, 2019 3:38 PM
To: Philip W Benninghove (PowerDelivery - 6)
Cc: Ansari, Asif A - Duluth, GA
Subject: [External] Potential Easement on USPS Property in Dulles, VA

Mr. Benninghove,

Good afternoon. Your contact information was forwarded to me from one of my colleagues.

I handle Easement and Right of Way requests for USPS properties. As such, I am attaching our standard letter that identifies the documents and information to be submitted for requests for easements and right of ways along with a form that should be completed and submitted with the documents.

Please submit all information to me as I will be your USPS point of contact for the process and am available to answer questions and assist you.

Please let me know you received this email so I may start a file.

Thank you,
James M. Ruffing
Real Estate Specialist
United States Postal Service Headquarters
475 L'Enfant Plaza, SW, Room 6670
Washington, DC 20260-1862

Phone: (202) 268-5921

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From: Chittams, Chimel - Washington, DC <Chimel.Chittams@usps.gov>
Sent: Friday, November 08, 2019 10:40 AM
To: Philip W Benninghove
Subject: [External] RE: Potential Easement on USPS Property in Dulles, VA

Good Morning Philip,

After going through multiple channels, the request has now been submitted to our Planning Division. Once they have made their recommendation, I can then proceed with the letter of recommendation. I hope it to be soon. I will follow up with you by the end of next week, hopefully with the letter of recommendation in hand. Thanks!

V/R,

Ms. Chimel Chittams
Real Estate Specialist
202.268.3410 *(Office)*
Chimel.Chittams@usps.gov

From: Philip W Benninghove [mailto:philip.w.benninghove@dominionenergy.com]
Sent: Friday, November 8, 2019 8:36 AM
To: Chittams, Chimel - Washington, DC <Chimel.Chittams@usps.gov>
Subject: [EXTERNAL] RE: Potential Easement on USPS Property in Dulles, VA

Good Morning Chimel,

I hope you are doing well. I just wanted to reach out to you to see if I could get an update on where we stand regarding the letter of recommendation?

Thanks,

Phil Benninghove
Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

Dominion Energy

From: Philip W Benninghove (PowerDelivery - 6)
Sent: Wednesday, October 9, 2019 2:45 PM

To: Chittams, Chimel - Washington, DC <Chimel.Chittams@usps.gov>
Subject: RE: Potential Easement on USPS Property in Dulles, VA

Good Afternoon Chimel,

I really appreciate the update and look forward to receiving the letter once authorized.

Thank you.

Phil Benninghove

Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

Dominion Energy

From: Chittams, Chimel - Washington, DC <Chimel.Chittams@usps.gov>
Sent: Wednesday, October 9, 2019 12:05 PM
To: Philip W Benninghove (PowerDelivery - 6) <philip.w.benninghove@dominionenergy.com>
Subject: [External] RE: Potential Easement on USPS Property in Dulles, VA

Good Afternoon,

I just wanted to give you a quick status update. We should have our recommendation letter pretty soon. Still waiting on one final authorization to proceed. Thanks

V/R,

Ms. Chimel Chittams
Real Estate Specialist
202.268.3410 *(Office)*
Chimel.Chittams@usps.gov

From: Philip W Benninghove [mailto:philip.w.benninghove@dominionenergy.com]
Sent: Friday, September 6, 2019 11:30 AM
To: Ruffing, James M - Washington, DC <James.M.Ruffing@usps.gov>; Chittams, Chimel - Washington, DC <Chimel.Chittams@usps.gov>
Subject: [EXTERNAL] RE: Potential Easement on USPS Property in Dulles, VA

Jim,

I appreciate all of the time you have spent on this. Thank you.

Chimel,

I look forward to working with you on this project. Please do not hesitate to reach out to me if you have any questions.

Thanks,

Phil Benninghove
Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

Dominion Energy

From: Ruffing, James M - Washington, DC [mailto:James.M.Ruffing@usps.gov]
Sent: Friday, September 06, 2019 10:56 AM
To: Chittams, Chimel - Washington, DC
Cc: Philip W Benninghove (PowerDelivery - 6)
Subject: [External] FW: Potential Easement on USPS Property in Dulles, VA

Chimel,

Attached is an additional route that will need to be reviewed by USPS for the proposed electric service lines to be run through USPS property.

Also, Phillip Benninghove is the point of contact for Dominion Power. He has asked USPS to provide a letter of support for the decision made as to which routes we support and don't support.

Phillip,

Please submit all future correspondences to Chimel Chittams as she will assist you with this request going forward.

Thank you,
Jim Ruffing

United States Postal Service Headquarters
475 L'Enfant Plaza, SW, Room 6670
Washington, DC 20260-1862

Phone: (202) 268-5921

From: Philip W Benninghove [mailto:philip.w.benninghove@dominionenergy.com]
Sent: Friday, September 6, 2019 10:40 AM
To: Ruffing, James M - Washington, DC <James.M.Ruffing@usps.gov>
Subject: [EXTERNAL] Potential Easement on USPS Property in Dulles, VA

Good Morning Jim,

Thank you for speaking with me regarding the United States Postal Service providing a written letter with comments about the proposed routes. I have included an image which shows the route I briefly mentioned over the phone. It is shown in orange and is located to the East of the routes we had previously discussed. This route would be the most impactful to the Dulles Post Office property and is not a preferred route from a Dominion standpoint.

Please let me know if you happen to have any questions.

Thanks,

Phil Benninghove

Senior Real Estate Specialist
Electric Transmission Project Support
Dominion Technical Solutions, Inc.
Highwoods One - 4th floor
10900 Nuckols Road, Glen Allen, VA 23060
Phone: (804)771-6072
Email: philip.w.benninghove@dominionenergy.com

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Dominion Energy Virginia Dominion Energy North Carolina
Electric Transmission
600 E. Canal Street (HW1), Richmond, VA 23219
DominionEnergy.com

Dominion Energy®

Oct. 8, 2019

<<NAME>>
<<ADDRESS>>

Proposed Lockridge Substation and New Electric Transmission Infrastructure

Dear <<NAME>>

At Dominion Energy, we are dedicated to finding the best solution for our long-term needs in the communities we serve. As a valued stakeholder with a vested interest in the community, we invite you to participate in the development of a new substation in eastern Loudoun County. The station, along with new transmission infrastructure, is needed to accommodate load growth and to maintain reliable electric service in the area.

For this project, we are planning to build a new substation on private property near Lockridge Road. In addition to the substation, we will build new transmission lines which are estimated to be less than a mile long. The lines will bring electricity to the station and a new data center being built in the area.

The project will include steel monopole structures averaging 105 feet tall. Galvanized steel structures were chosen because they are similar in framework and appearance to the existing structures found nearby today. Our plan is to build the substation and associated infrastructure in a manner that:

- Provides long-term reliability and durability without excessive maintenance
- Delivers operational system flexibility to meet future needs
- Complies with mandatory standards to ensure safety and reliability
- Minimizes impact to the local area and environment

We are currently in the conceptual phase and are seeking input prior to submitting an application with the Virginia State Corporation Commission (SCC) in November 2019. Doing so allows us to hear any concerns you may have as we work to meet the project's needs. Attached is a project overview view map to help in your review. Please feel free to notify other relevant organizations that may have an interest in the project area. For reference, other recipients of this letter include countywide and statewide historic, cultural, and scenic organizations, as well as Native American tribes.

We also invite you to attend our open house. There will be no formal presentation, but you will have the opportunity to speak with our electric transmission experts about the project. Please feel free to drop by at your convenience.

Dominion Energy Virginia Dominion Energy North Carolina
Electric Transmission
600 E. Canal Street (HW1), Richmond, VA 23219
DominionEnergy.com

Oct. 17, 2019
5-7 p.m.

SpringHill Suites Marriott
22595 Shaw Road
Dulles, Virginia 20166

If you have any questions or concerns or would like to set up a meeting to discuss the project in greater detail, please contact me by sending an email to Robert.E.Richardson@DominionEnergy.com or calling 804-771-6705.

For additional information and project updates, please visit DominionEnergy.com/lockridge.

Sincerely,

Robert E. Richardson

Rob Richardson
The Electric Transmission Project Team

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

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

Response: Details on the proposed Project with an invitation to provide feedback were sent to the non-governmental organizations and private citizen groups identified below. A copy of the letter template is included as Attachment III.J.2.

Name	Organization
Ms. Elizabeth S. Kostelny	Preservation Virginia
Mr. Thomas Gilmore	Civil War Trust
Mr. Jim Campi	Civil War Trust
Mr. Adam Gillenwater	Civil War Trust
Ms. Kym Hall	Colonial National Historical Park
Mr. Jack Gary	Council of Virginia Archaeologists
Ms. Leighton Powell	Scenic Virginia
Mr. Alexander Macaulay	Macaulay & Jameson
Sharee Williamson	National Trust for Historic Preservation
Dan Holmes	Piedmont Environmental Council
Dr. Newby-Alexander	Norfolk State University
Ms. Ashley Atkins Spivey	Pamunkey Indian Museum and Cultural Center
Mr. Roger Kirchen	VDHR
Ms. Adrienne Birge-Wilson	VDHR
Mr. Dave Dutton	Dutton + Associates, LLC

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

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

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

Activity	Potential Permit	Agency/Organization
Impacts to wetlands and other waters of the U.S.	Nationwide Permit 12	U.S. Army Corps of Engineers
Impacts to wetlands and other waters of the U.S.	Virginia Water Protection Permit	Virginia Department of Environmental Quality
Work within, over or under state subaqueous bottom	Subaqueous Bottom Permit	Virginia Marine Resources Commission
Discharge of stormwater from construction	Construction General Permit	Virginia Department of Environmental Quality
Work within VDOT rights-of-way	Land Use Permit	Virginia Department of Transportation
Airspace obstruction evaluation	FAA 7460-1	Dulles International Airport

IV. HEALTH ASPECTS OF EMF

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

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

This section describes the levels of EMF associated with the existing and proposed transmission lines. EMF levels are provided for the future (2024) annual average and maximum (peak) loading conditions.

Proposed Project – Projected average loading in 2024

EMF levels were calculated for the Project at the ***projected average*** load condition (341 amps for Line #2214, 445 amps for Line #2205) and at an operating voltage of 241.5 kV when supported on the proposed Project structures – see Attachment II.A.5.a.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a projected average load operating temperature and at a clearance to ground of 29.65 feet for Line #2214, and 29.84 feet for Line #2205.

EMF levels at the edge of the rights-of-way for the Project at projected average loading:

	Western/Southern Edge		Eastern/Northern Edge	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
Attachment II.A.5.a	0.293	11.394	0.294	12.053

Proposed Project – Peak loading in 2024

EMF levels were calculated for the Project at the ***projected peak*** load condition (569 amps for Line #2214, 742 amps for Line #2205) and at an operating voltage of 241.5 kV when supported on the Project structures – see Attachment II.A.5.a.

These field levels were calculated at mid-span where the conductors are closest to the ground and the conductors are at a projected peak load operating temperature and at a clearance to ground of 29.48 feet for Line #2214, and 29.10 feet for Line #2205.

EMF levels at the edge of the rights-of-way for the Project at projected peak loading:

	Western/Southern Edge		**Eastern/Northern Edge**	
	Electric Field (kV/m)	Magnetic Field (mG)	Electric Field (kV/m)	Magnetic Field (mG)
Attachment II.A.5.a	0.297	19.067	0.300	20.193

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

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

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

The most recent major reviews on this topic include the report of the Scientific Committee on Emerging and Newly Identified Health Risks ("SCENIHR") of the European Commission, which was published in 2015. The SCENIHR report, similar to previous reviews, found that the scientific evidence does not confirm the existence of any adverse health effects of environmental or community exposures. This conclusion is consistent with conclusions of previous reviews conducted for other agencies, including the European Health Risk Assessment Network on Electromagnetic Fields Exposure ("EFHRAN"), the International Commission on Non-Ionizing Radiation Protection ("ICNIRP"), the World Health Organization ("WHO"), and the International Committee on Electromagnetic Safety ("ICES") (EFHRAN, 2010, 2012; ICNIRP, 2010; WHO, 2007; ICES, 2002).

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

The general scientific consensus of the health agencies that have reviewed this research is that the scientific evidence does not show that common sources of EMF in the environment, including transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects. The WHO, for example, states on their website: "Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not

confirm the existence of any health consequences from exposure to low level electromagnetic fields" (WHO, 2018).

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

References

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

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

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

International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 3 kHz. Piscataway, NJ: IEEE, 2002; Reaffirmed 2007.

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

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

World Health Organization (WHO). Electromagnetic fields (EMF). World Health Organization, 2018.

http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html (last accessed May 10, 2018).

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

C. Describe and cite any research studies on EMF the Applicant is aware of that meet the following criteria:

1. Became available for consideration since the completion of the Virginia Department of Health's most recent review of studies on EMF and its subsequent report to the Virginia General Assembly in compliance with 1985 Senate Joint Resolution No. 126;

2. Include findings regarding EMF that have not been reported previously and/or provide substantial additional insight into findings; and

3. Have been subjected to peer review.

Response: The Virginia Department of Health ("VDH") conducted its most recent review and issued its report on the scientific evidence on potential health effects of extremely low frequency ("ELF") EMF in 2000: "[T]he Virginia Department of Health is of the opinion that there is no conclusive and convincing evidence that exposure to extremely low frequency EMF emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans."[12]

The continuing scientific research on EMF exposure and health has resulted in a number of peer-reviewed publications since 2000. The accumulating research results have been regularly and repeatedly reviewed and evaluated by national and international health, scientific, and government agencies. One of the most comprehensive and detailed reviews of the relevant scientific peer-reviewed literature was published by the WHO in 2007. The conclusion of the WHO, as currently expressed on its website, is consistent with the earlier VDH conclusions: "Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."[13]

Research published in the peer-reviewed literature subsequent to the WHO report has been reviewed by several scientific organizations, including most notably:

- SCENIHR, a committee of the European Commission, that published its assessments in 2009 and 2015;

- The Swedish Radiation Safety Authority ("SSM"), formerly the Swedish Radiation Protection Authority ("SSI"), that has published annual reviews of the relevant peer-reviewed scientific literature since 2003, with its most recent

[12] *See* http://www.vdh.virginia.gov/content/uploads/sites/12/2016/02/highfinal.pdf.
[13] See http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html.

review published in 2016; and,

- EFHRAN, that published its reviews in 2010 and 2012.

The above reviews provide detailed analyses and summaries of relevant recent peer-reviewed scientific publications. The conclusions of these reviews that the evidence overall does not confirm the existence of any adverse health effects due to exposure to EMF are consistent with the conclusions of the VDH and the WHO reports. With respect to the statistical association observed in some of the childhood leukemia epidemiologic studies, the most recent comprehensive review of the literature by SCENIHR, published in 2015, concluded that "no mechanisms have been identified and no support is existing [sic] from experimental studies that could explain these findings, which, together with shortcomings of the epidemiological studies prevent a causal interpretation" (SCENIHR, 2015, p. 16).

While research is continuing on various aspects of EMF exposure and health, many of the recent publications have focused on an epidemiologic assessment of EMF exposure and childhood leukemia and neurodegenerative diseases. Of these, the following recent publications provided additional evidence and contributed to clarification of previous findings. Overall, new research results have not provided evidence to alter the previous conclusions of scientific and health organizations.

Recent epidemiologic studies of EMF and childhood leukemia:

- Sermage-Faure et al. (2013) used geocoded information on residential addresses and power line locations in France to evaluate distance of residence to high-voltage power lines and the risk of childhood leukemia. The study included 2,779 cases of childhood leukemia diagnosed between 2002 and 2007, and 30,000 control children. Overall, no statistically significant associations were reported between childhood leukemia risk and residential distance to high-voltage power lines.

- Bunch et al. (2014) included over 53,000 childhood cancer cases, diagnosed between 1962 and 2008, and over 66,000 healthy children as controls, in their case-control epidemiologic study in the United Kingdom. The study provided an update and extension of an earlier study (Draper et al., 2005). The update extended the study period by 13 years, included Scotland in addition to England and Wales, and included 132-kilovolt (kV) transmission lines in addition to 275-kV and 400-kV transmission lines. Unlike the earlier study (Draper et al., 2005) that relied on a smaller sample, the updated study by Bunch et al. (2014) reported no overall association between residential proximity to power lines and childhood cancer development. Data were also analyzed from the same case-control study in the United Kingdom to assess the potential association between residential proximity to high-voltage underground cables and childhood cancer development (Bunch et al., 2015). No statistically significant associations or trends were reported with either distance to underground cables or calculated magnetic fields from

underground cables for any type of childhood cancers.

- Pedersen et al. (2014, 2015) published two case-control studies that investigated the potential association between residential proximity to power lines and childhood cancer in Denmark. One of the studies included 1,698 childhood leukemia cases and twice as many controls; no statistical association with residential distance to power lines was reported (Pedersen et al., 2014). The other study included all cases of leukemia (n=1,536), central nervous system tumor, and malignant lymphoma (n=417) diagnosed before the age of 15 between 1968 and 2003 in Denmark, along with 9,129 healthy control children matched on sex and year of birth (Pedersen et al., 2015). Considering the entire study period, no statistically significant increases were reported for any of the childhood cancer types.

- Salvan et al. (2015) compared measured magnetic-field levels in the bedroom for 412 cases of childhood leukemia under the age of 10 and 587 healthy control children in Italy. Although the statistical power of the study was limited because of the small number of highly exposed subjects, no consistent statistical associations or trends were reported between measured magnetic-field levels and the occurrence of leukemia among children in the study.

- Crespi et al. (2016) conducted a case-control epidemiologic study of childhood cancers and residential proximity to high-voltage power lines (60 kV to 500 kV) in California. Childhood cancer cases, including 5,788 cases of leukemia and 3,308 cases of brain tumor, diagnosed under the age of 16 between 1986 and 2008, were identified from the California Cancer Registry. Controls, matched on age and sex, were selected from the California Birth Registry. Overall, no consistent statistically significant associations were reported for leukemia or brain tumor with residential distance to power lines.

Recent epidemiologic studies of EMF and neurodegenerative diseases:

- Seelen et al. (2014) conducted a population-based case-control study in the Netherlands and included 1,139 cases diagnosed with amyotrophic lateral sclerosis (ALS) between 2006 and 2013 and 2,864 frequency-matched controls. The shortest distance from the cases' and controls' residence to the nearest high-voltage power line (50 kV to 380 kV) was determined by geocoding. No statistically significant associations between residential proximity to power lines with voltages of either 50 to 150 kV or 220 to 380 kV and ALS were reported.

- Sorahan and Mohammed (2014) analyzed mortality from neurodegenerative diseases in a cohort of approximately 73,000 electricity supply workers in the United Kingdom. Cumulative occupational exposure to magnetic-fields was calculated for each worker in the cohort based on their job titles and job locations. Death certificates were used to identify deaths from neurodegenerative diseases. No associations or trends for any of the included

neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, and ALS) were observed with various measures of calculated magnetic fields.

- Koeman et al. (2015, 2017) analyzed data from the Netherlands Cohort Study of approximately 120,000 men and women who were enrolled in the cohort in 1986 and followed up until 2003. Lifetime occupational history, obtained through questionnaires, and job-exposure matrices on ELF magnetic fields and other occupational exposures were used to assign exposure to study subjects. Based on 1,552 deaths from vascular dementia, the researchers reported a statistically not significant association of vascular dementia with estimated exposure to metals, chlorinated solvents, and ELF magnetic fields. However, because no exposure-response relationship for cumulative exposure was observed and because magnetic fields and solvent exposures were highly correlated with exposure to metals, the authors attributed the association with ELF magnetic fields and solvents to confounding by exposure to metals (Koeman et al., 2015). Based on a total of 136 deaths from ALS among the cohort members, the authors reported a statistically significant, approximately two-fold association with ELF magnetic fields in the highest exposure category. This association, however, was no longer statistically significant when adjusted for exposure to insecticides (Koeman et al., 2017).

- Fischer et al. (2015) conducted a population-based case-control study that included 4,709 cases of ALS diagnosed between 1990 and 2010 in Sweden and 23,335 controls matched to cases on year of birth and sex. The study subjects' occupational exposures to ELF magnetic fields and electric shocks were classified based on their occupations, as recorded in the censuses and corresponding job-exposure matrices. Overall, neither magnetic fields nor electric shocks were related to ALS.

- Vergara et al. (2015) conducted a mortality case-control study of occupational exposure to electric shock and magnetic fields and ALS. They analyzed data on 5,886 deaths due to ALS and over 58,000 deaths from other causes in the United States between 1991 and 1999. Information on occupation was obtained from death certificates and job exposure matrices were used to categorize exposure to electric shocks and magnetic fields. Occupations classified as "electric occupations" were moderately associated with ALS. The authors reported no consistent associations for ALS, however, with either electric shocks or magnetic fields, and they concluded that their findings did not support the hypothesis that exposure to either electric shocks or magnetic fields explained the observed association of ALS with "electric occupations."

- Pedersen et al. (2017) investigated the occurrence of central nervous system diseases among approximately 32,000 male Danish electric power company workers. Cases were identified through the national patient registry between 1982 and 2010. Exposure to ELF magnetic fields was determined for each worker based on their job titles and area of work. A statistically significant increase was reported for dementia in the high exposure category when

compared to the general population, but no exposure-response pattern was identified, and no similar increase was reported in the internal comparisons among the workers. No other statistically significant increases among workers were reported for the incidence of Alzheimer's disease, Parkinson's disease, motor neuron disease, multiple sclerosis, or epilepsy, when compared to the general population, or when incidence among workers was analyzed across estimated exposure levels.

References

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Koeman T, Slottje P, Schouten LJ, Peters S, Huss A, Veldink JH, Kromhout H, van den Brandt PA, Vermeulen R. Occupational exposure and amyotrophic lateral sclerosis in a prospective cohort. Occup Environ Med 74: 578-585, 2017 [Epub ahead of print].

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electric shocks and magnetic fields and mortality from amyotrophic lateral sclerosis in the US, 1991-1999. J Expo Sci Environ Epidemiol 25: 65-71, 2015.

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V. NOTICE

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

Response: A map showing the Proposed and Alternative Routes for the proposed Lockridge 230 kV Line Loop and Lockridge Substation is provided as Attachment V.A. A written description of the Proposed and Alternative Routes is as follows:

The Proposed Route (Route 1A) is approximately 0.62 mile long. Beginning at the proposed Lockridge Substation, the Proposed Route would head west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road, parallel and overlapping an existing Dominion Energy Virginia electric distribution line right-of-way. After crossing the existing Prentice Drive, the route continues north along the Dominion Energy Virginia right-of-way for about 0.09 mile, then veers slightly northwest for 0.14 mile, and onto an undeveloped parcel. The Proposed Route continues west for 0.07 mile until reaching the tie-in location with future Buttermilk-Roundtable Line #2214. Along the Proposed Route (Route 1A), eight double circuit, single-shaft galvanized steel poles would be installed with a minimum structure height of approximately 90 feet, a maximum structure height of approximately 115 feet, and an average proposed structure height of approximately 101 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

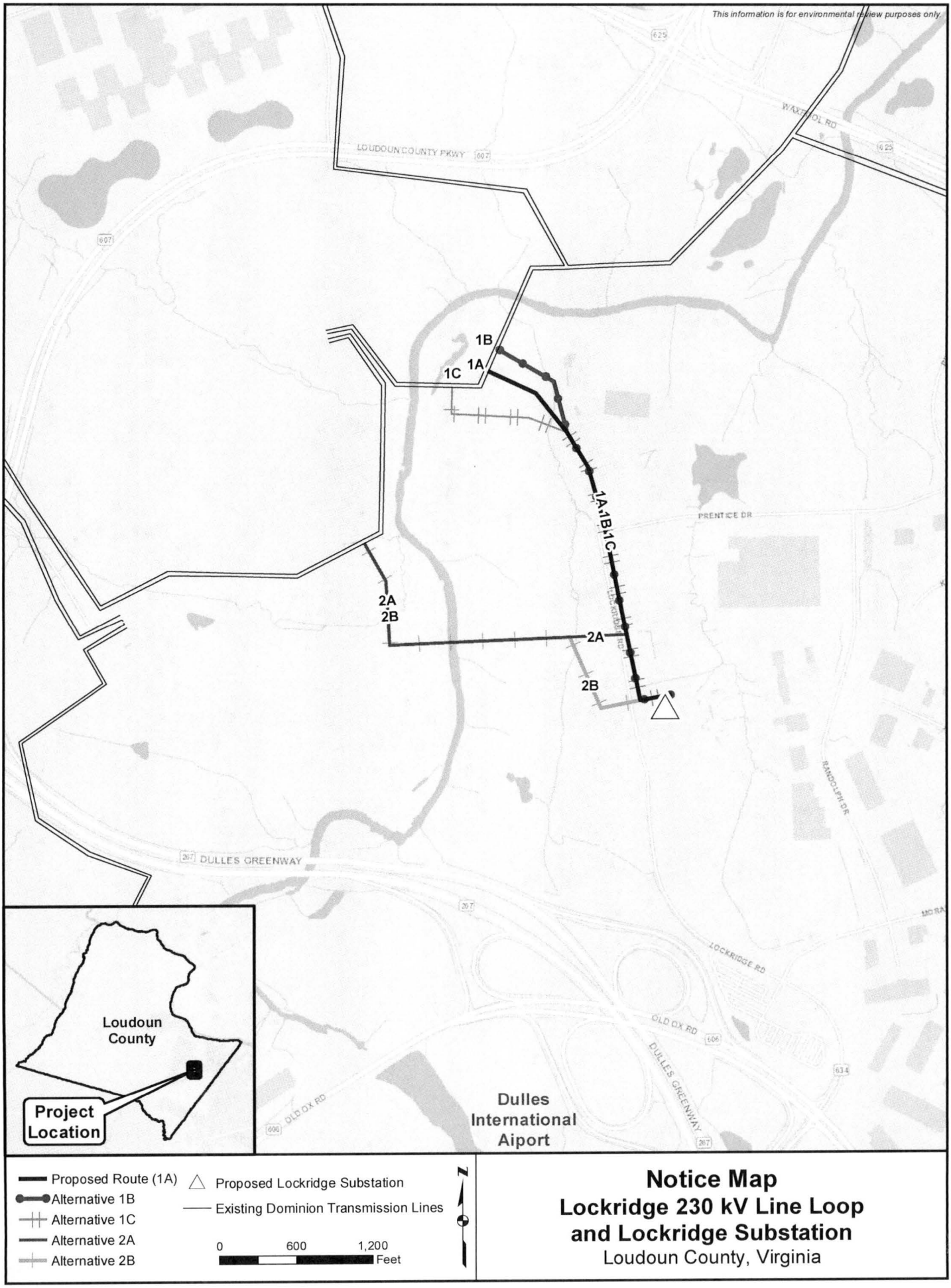
Alternative Route 1B is approximately 0.64 mile long. Beginning at the proposed Lockridge Substation, Alternative Route 1B would head west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road, parallel and overlapping an existing Dominion Energy Virginia electric distribution line right-of-way. After crossing the existing Prentice Drive, the route continues north for about 0.09 mile, then veers slightly northwest for 0.06 mile, onto an undeveloped parcel, and continues north then west for 0.17 mile until reaching the tie-in location with future Buttermilk-Roundtable Line #2214. Along Alternative Route 1B, eight double circuit, single-shaft galvanized steel poles would be installed with a minimum structure height of approximately 90 feet, a maximum structure height of approximately 115 feet, and an average proposed structure height of approximately 103 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Alternative Route 1C approximately 0.68 mile long beginning at the proposed Lockridge Substation. Alternative Route 1C would head west from the substation for 0.05 mile before heading north for 0.27 mile along the east side of Lockridge Road, parallel and overlapping an existing Dominion Energy Virginia electric distribution line right-of-way. After crossing the existing Prentice Drive, the

route continues north for about 0.09 mile, then veers slightly northwest for 0.06 mile onto an undeveloped parcel. The route and continues west for 0.17 mile running parallel to and north of the planned Prentice Drive Extension and before heading north for 0.04 mile to a tie-in location with future Buttermilk-Roundtable Line #2214. Along Alternative Route 1C, nine double circuit, single-shaft galvanized steel poles would be installed with a minimum structure height of approximately 90 feet, a maximum structure height of approximately 115 feet, and an average proposed structure height of approximately 102 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Alternative Route 2A is approximately 0.66 mile long. Beginning at the proposed Lockridge Substation, Alternative Route 2A would head west from the substation for 0.05 mile before heading north for 0.1 mile along the east side of Lockridge Road, parallel and overlapping an existing Dominion Energy Virginia electric distribution line right-of-way. After crossing Lockridge Road, Alternative Route 2A heads west for 0.35 mile running parallel with and overlapping an existing TC Energy-owned Columbia Gas Transmission natural gas pipeline right-of-way, crossing Broad Run. Route 2A would then veer north and northwest for 0.16 mile crossing a tributary to Broad Run where it would tie in to Line #2188. Along Alternative Route 2A, eight double circuit, single-shaft galvanized steel poles would be installed with a minimum structure height of approximately 95 feet, a maximum structure height of approximately 110 feet, and an average proposed structure height of approximately 101 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.

Alternative Route 2B, which is a variation to Alternative Route 2A, is approximately 0.65 mile long. The portion of Alternative Route 2B that is different from Alternative Route 2A is a 0.17-mile-long section that begins at the point where Alternative Route 2A heads north of the proposed Lockridge Substation. From this location, Alternative Route 2B turns west for about 0.06 mile, crossing Lockridge Road and onto an undeveloped parcel owned by SDC Ashburn I, LLC. Alternative Route 2B then continues north for about 0.11 mile where it crosses the planned Shellhorn Road Extension. After crossing a the planned Shellhorn Road Extension, Route 2B heads west for 0.27 mile running parallel with and overlapping an existing TC Energy-owned Columbia Gas Transmission natural gas pipeline right-of-way, crossing Broad Run. Route 2B would then veer north and northwest for 0.16 mile crossing a tributary to Broad Run where it would tie in to Line #2188. Along Alternative Route 2B, seven double circuit, single-shaft galvanized steel poles would be installed with a minimum structure height of approximately 95 feet, a maximum structure height of approximately 115 feet, and an average proposed structure height of approximately 105 feet, based on preliminary conceptual design, not including foundation reveal and subject to change based on final engineering design.



Notice Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

V. NOTICE

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

Response: The application is available at the following locations:

Dominion Energy Virginia
10900 Nuckols Road, S
Glen Allen, Virginia 23060
Attn: Laura Meadows

Dominion Energy Virginia
Lincoln Park II
3072 Centreville Road
Herndon, Virginia 20171
Attn: Tim Sargeant

Loudoun County
Planning Department
1 Harrison Street, S.E.,
Leesburg, Virginia 20175
Attn: Alaina Ray, Director

https://www.dominionenergy.com/lockridge

V. NOTICE

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

Response: The federal, state, and local agencies and/or officials that the Company has consulted regarding the Project are listed below:

Ms. Theresita Crockett-Augustine
U.S. Army Corps of Engineers - Norfolk District
Northern Virginia Field Office
18139 Triangle Plaza, Suite 213
Dumfries, Virginia 22026

Ms. Valerie Fulcher, Executive Secretary Senior
Office of Environmental Impact Review
Department of Environmental Quality
629 East Main Street, 6th Floor
Richmond, Virginia 23219

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

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

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

Ms. Amy M. Ewing
Virginia Department of Games and Inland Fisheries
7870 Villa Park, Suite 400
Henrico, Virginia 23228

Mr. Keith Tignor
Endangered Species Coordinator
Virginia Department of Agriculture and Consumer Services
102 Governor Street
Richmond, Virginia 23219

Ms. Trisha Beasley
Virginia Department of Environmental Quality
Wetlands Protection Program
13901 Crown Court
Woodbridge, Virginia 22193

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

Mr. Tony Watkinson
Habitat Management Division
Virginia Marine Resources Commission
2600 Washington Avenue, 3rd Floor
Newport News, Virginia 23607

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

Mr. Jeff Steers
Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060

Mr. Robert Alexander
Obstruction Evaluation Specialist
Federal Aviation Administration
FAA Eastern Regional Office
159-30 Rockaway Blvd
Jamaica, New York 11434

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

Mr. Erik Schwenke
Metropolitan Washington Airports Authority
Office of Engineering
45045 Aviation Drive, Suite 300
Dulles, Virginia 20166

Mr. James Betz
Loudoun District Administrator
Northern Virginia District
Virginia Department of Transportation
4975 Alliance Drive
Fairfax, Virginia 22030

Mr. Thomas Crone, Manager Adjacent Construction
Washington Metropolitan Area Transit Authority
Office of Joint Development & Adjacent Construction
3500 Pennsy Drive, Bldg. C, Room C106
Landover, Maryland 20785

Mr. Joe Kroboth, Director
Loudoun County Transportation and Capital Infrastructure
PO Box 7500
Leesburg, Virginia 20177

Mr. Thom Lipinski, Director, Planning and Engineering
Loudoun Water
44865 Loudoun Water Way
PO Box 4000
Ashburn, Virginia 20147

Mr. Emanuel D. Briggs, Manager, Community Outreach
District of Columbia Water and Sewer Authority
1385 Canal Street, SE
Washington, DC 20003

V. NOTICE

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

Response: In accordance with Va. Code § 15.2-2202 E, letters dated October 18, 2019, were delivered to Alaina Ray, Director of Planning and Zoning, and Tim Hemstreet, County Administrator, Thom Lipinski, Director of Planning and Engineering for Loudoun Water, and Joe Kroboth, Director of Transportation and Capital Infrastructure of Loudoun County, Virginia, where the Project is located. The letters stated the Company's intention to file this Application and invited the County to consult with the Company about the proposed Project. Copies of these letters are included as Attachment V.D.1.

Dominion Energy Virginia
10900 Nuckols Rd, 4th Floor
Glen Allen, VA 23060
DominionEnergy.com

Dominion Energy®

October 18, 2019

Ms. Alaina Ray, Director
Loudoun County Planning and Zoning
1 Harrison St, SE 3rd Floor
PO Box 7000
Leesburg, VA 20177

Reference: Dominion Energy Virginia's Proposed Lockridge Road 230kV Transmission Line Extension Loop - Loudoun County, Virginia

Dear Ms. Ray,

Dominion Energy Virginia (the "Company") is proposing to build a new 230 kV transmission line loop in the Sterling area of Loudoun County, Virginia, in order to meet customer needs in the area ("Project"). The Project requires the acquisition of new transmission line right-of-way at a width of 100 feet and approximately 0.80 miles long. The proposed Project is beginning from existing Dominion Energy 230kV transmission lines near our Roundtable and Shellhorn Substations and will connect to a new switching station located approximately 0.80 miles southeast.

The Company is in the process of preparing an application for a certificate of public convenience and necessity from the State Corporation Commission ("SCC"), which may be necessary for the Project. At this time, in advance of an SCC filing, the Company respectfully requests that you submit any comments or additional information that would have bearing on the proposed project within 30 days of the date of this letter. If you would like to receive a GIS shapefile of the transmission line routes to assist in the project review or if there are any questions, please do not hesitate to contact me at (804) 775-5279 or laura.p.meadows@dominionenergy.com.

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

Regards,

Laura Meadows
Sr. Siting and Permitting Specialist

Enclosure: Project Overview Map

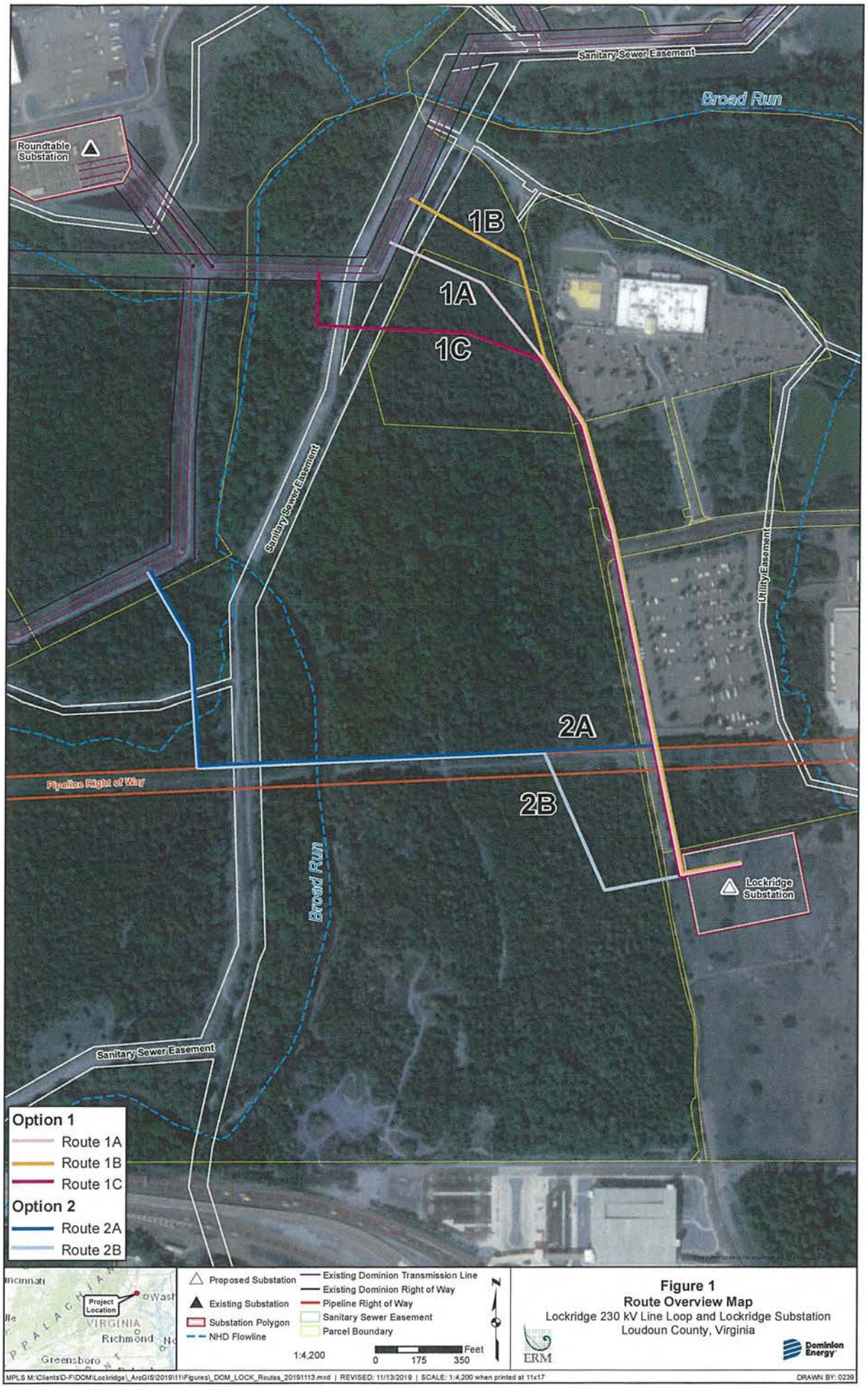


Figure 1
Route Overview Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

Dominion Energy Virginia
10900 Nuckols Rd, 4th Floor
Glen Allen, VA 23060
DominionEnergy.com

October 18, 2019

Mr. Tim Hemstreet
County Administrator
1 Harrison St, SE 5th Floor
PO Box 7000
Leesburg, VA 20177

Reference: Dominion Energy Virginia's Proposed Lockridge Road 230kV Transmission Line Extension Loop - Loudoun County, Virginia

Dear Mr. Hemstreet,

Dominion Energy Virginia (the "Company") is proposing to build a new 230 kV transmission line loop in the Sterling area of Loudoun County, Virginia, in order to meet customer needs in the area ("Project"). The Project requires the acquisition of new transmission line right-of-way at a width of 100 feet and approximately 0.80 miles long. The proposed Project is beginning from existing Dominion Energy 230kV transmission lines near our Roundtable and Shellhorn Substations and will connect to a new switching station located approximately 0.80 miles southeast.

The Company is in the process of preparing an application for a certificate of public convenience and necessity from the State Corporation Commission ("SCC"), which may be necessary for the Project. At this time, in advance of an SCC filing, the Company respectfully requests that you submit any comments or additional information that would have bearing on the proposed project within 30 days of the date of this letter. If you would like to receive a GIS shapefile of the transmission line routes to assist in the project review or if there are any questions, please do not hesitate to contact me at (804) 775-5279 or laura.p.meadows@dominionenergy.com.

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

Regards,

Laura Meadows
Sr. Siting and Permitting Specialist

Enclosure: Project Overview Map

Figure 1
Route Overview Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

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Dominion Energy Virginia
10900 Nuckols Rd, 4th Floor
Glen Allen, VA 23060
DominionEnergy.com

October 18, 2019

Mr. Thom Lipinski, Director, Planning and Engineering
Loudoun Water
44865 Loudoun Water Way
PO Box 4000
Ashburn, VA 20147

Reference: Dominion Energy Virginia's Proposed Lockridge Road 230kV Transmission Line Extension Loop - Loudoun County, Virginia

Dear Mr. Lipinski,

Dominion Energy Virginia (the "Company") is proposing to build a new 230 kV transmission line loop in the Sterling area of Loudoun County, Virginia, in order to meet customer needs in the area ("Project"). The Project requires the acquisition of new transmission line right-of-way at a width of 100 feet and approximately 0.80 miles long. The proposed Project is beginning from existing Dominion Energy 230kV transmission lines near our Roundtable and Shellhorn Substations and will connect to a new switching station located approximately 0.80 miles southeast.

The Company is in the process of preparing an application for a certificate of public convenience and necessity from the State Corporation Commission ("SCC"), which may be necessary for the Project. At this time, in advance of an SCC filing, the Company respectfully requests that you submit any comments or additional information that would have bearing on the proposed project within 30 days of the date of this letter. If you would like to receive a GIS shapefile of the transmission line routes to assist in the project review or if there are any questions, please do not hesitate to contact me at (804) 775-5279 or laura.p.meadows@dominionenergy.com.

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

Regards,

Laura Meadows
Sr. Siting and Permitting Specialist

Enclosure: Project Overview Map

Figure 1
Route Overview Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

Dominion Energy Virginia
10900 Nuckols Rd, 4th Floor
Glen Allen, VA 23060
DominionEnergy.com

October 18, 2019

Mr. Joe Kroboth, Director
Loudoun County Transportation and Capital Infrastructure
PO Box 7500
Leesburg, VA 20177

Reference: Dominion Energy Virginia's Proposed Lockridge Road 230kV Transmission Line Extension Loop - Loudoun County, Virginia

Dear Mr. Kroboth,

Dominion Energy Virginia (the "Company") is proposing to build a new 230 kV transmission line loop in the Sterling area of Loudoun County, Virginia, in order to meet customer needs in the area ("Project"). The Project requires the acquisition of new transmission line right-of-way at a width of 100 feet and approximately 0.80 miles long. The proposed Project is beginning from existing Dominion Energy 230kV transmission lines near our Roundtable and Shellhorn Substations and will connect to a new switching station located approximately 0.80 miles southeast.

The Company is in the process of preparing an application for a certificate of public convenience and necessity from the State Corporation Commission ("SCC"), which may be necessary for the Project. At this time, in advance of an SCC filing, the Company respectfully requests that you submit any comments or additional information that would have bearing on the proposed project within 30 days of the date of this letter. If you would like to receive a GIS shapefile of the transmission line routes to assist in the project review or if there are any questions, please do not hesitate to contact me at (804) 775-5279 or laura.p.meadows@dominionenergy.com.

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

Regards,

Laura Meadows

Laura Meadows
Sr. Siting and Permitting Specialist

Enclosure: Project Overview Map

Figure 1
Route Overview Map
Lockridge 230 kV Line Loop and Lockridge Substation
Loudoun County, Virginia

Direct Testimony

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	Case No. PUR-2019-00215
	)	
For approval and certification of electric transmission facilities: Lockridge 230 kV Line Loop and Lockridge Substation	)	

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

Harrison S. Potter

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

David M. Burnam

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

Tyler G. Hock

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

Mohammad M. Othman

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

Laura P. Meadows

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

Jon M. Berkin, PhD

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Harrison S. Potter

Title: Engineer III – Electric Transmission Planning

Summary:

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

- Section I.J: This section provides information about the project if approved by the RTO.
- Section I.K: Although not applicable to the proposed project, this section, when applicable, provides outage history and maintenance history for existing transmission lines if the proposed project is a rebuild and is due in part to reliability issues.
- Section I.L: Although not applicable to the proposed project, this section, when applicable, provides details on the deterioration of structures and associated equipment.
- Section I.M: Although not applicable to the proposed project, this section, when applicable, contains information for transmission lines interconnecting a non-utility generator.
- Section II.A.3: This section provides color maps of existing or proposed rights-of-way in the vicinity of the proposed project.
- Section II.A.10: This section provides details of the construction plans for the proposed project, including requested line outage schedules.

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

- Section I.A (co-sponsored with Company Witness David M. Burnam): This section details the primary justifications for the proposed project.
- Section I.B (co-sponsored with Company Witness David M. Burnam): This section details the engineering justifications for the proposed project.
- Section I.C (co-sponsored with Company Witness David M. Burnam): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.
- Section I.D (co-sponsored with Company Witness David M. Burnam): Although not applicable to the proposed project, this section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.
- Section I.E (co-sponsored with Company Witness David M. Burnam): This section explains feasible project alternatives.
- Section I.G (co-sponsored with Company Witness David M. Burnam): This section provides a system map for the affected area.
- Section I.H (co-sponsored with Company Witness David M. Burnam): This section provides the desired in-service date of the proposed project and the estimated construction time.
- Section I.I. (co-sponsored with Company Witnesses Tyler G. Hock and Mohammad M. Othman): This section provides the estimated total cost of the proposed project.
- Section I.N (co-sponsored with Company Witness David M. Burnam): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

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

DIRECT TESTIMONY
OF
HARRISON S. POTTER
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00215

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

A. My name is Harrison S. Potter, and I am an Engineer III in Electric Transmission Planning for the Company. My business address is 10900 Nuckols Road, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for planning the Company's electric transmission system for voltages of 69 kilovolt ("kV") through 500 kV.

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

A. In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214

approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

The purpose of my testimony is to describe the Company's electric transmission system and the need for, and benefits of, the proposed Project. I am sponsoring Sections I.J, I.K, I.L, I.M, II.A.3, and II.A.10 of the Appendix. Additionally, I co-sponsor Sections I.A, I.B, I.C, I.D, I.E, I.G, I.H, and I.N with Company Witness David M. Burnam, and Section I.I with Company Witnesses Tyler G. Hock and Mohammad M. Othman.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF HARRISON S. POTTER

Harrison Potter is a 2012 graduate from Virginia Commonwealth University with a Masters in Business Administration and a 2005 graduate from Virginia Polytechnic Institute and State University with a Bachelor of Science in Mechanical Engineering. Mr. Potter has been employed by the Company for 15 years. His experience with the Company includes distribution planning (11 years), distribution design (two years), and GIS services (two years). Mr. Potter was promoted to his current role in transmission planning in 2019.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: David M. Burnam

Title: Consulting Engineer – Distribution Planning

Summary:

Company Witness David M. Burnam co-sponsors those portions of the Appendix describing the Company's electric distribution system and the need for, and benefits of, the proposed Project, as follows:

- Section I.A (co-sponsored with Company Witness Harrison S. Potter): This section details the primary justifications for the proposed project.

- Section I.B (co-sponsored with Company Witness Harrison S. Potter): This section details the engineering justifications for the proposed project.

- Section I.C (co-sponsored with Company Witness Harrison S. Potter): This section describes the present system and details how the proposed project will effectively satisfy present and projected future load demand requirements.

- Section I.D (co-sponsored with Company Witness Harrison S. Potter): Although not applicable to the proposed project, this section, when applicable, describes critical contingencies and associated violations due to the inadequacy of the existing system.

- Section I.E (co-sponsored with Company Witness Harrison S. Potter): This section explains feasible project alternatives.

- Section I.G (co-sponsored with Company Witness Harrison S. Potter): This section provides a system map for the affected area.

- Section I.H (co-sponsored with Company Witness Harrison S. Potter): This section provides the desired in-service date of the proposed project and the estimated construction time.

- Section I.N (co-sponsored with Company Witness Harrison S. Potter): This section provides the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations, and other ground facilities associated with the proposed project.

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

DIRECT TESTIMONY
OF
DAVID M. BURNAM
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00215

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

A. My name is David M. Burnam, and I am a Consulting Engineer – Distribution Planning for the Company. My business address is 600 E. Canal Street, Richmond, Virginia 23219. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for planning the Company's electric distribution system that serves data centers, primarily in the Company's Northern Virginia offices, for voltage under 69 kV.

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

A. In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214 approximately 0.29 mile east of the Company's existing Roundtable Substation to a new

230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

The purpose of my testimony is to describe the Company's electric distribution system and the need for, and benefits of, the proposed Project. I am co-sponsoring Sections I.A, I.B, I.C, I.D, I.E, I.G, I.H, and I.N of the Appendix with Company Witness Harrison S. Potter.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF DAVID M. BURNAM

David M. Burnam received a Bachelor of Science degree in Electrical Engineering from the Virginia Polytechnic Institute and State University in 1985. He is licensed as a Professional Engineer in the Commonwealth of Virginia. He has been employed by the Company since 1990. Mr. Burnam's experience with the Company includes distribution planning (21 years), energy efficiency (four years), and nuclear engineering and nuclear training (four years). Prior to working for the Company, Mr. Burnam worked as a plant engineer and consulting engineer for five years.

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Tyler G. Hock

Title: Engineer III – Electric Transmission Line Engineering

Summary:

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

- Section I.F: This section describes any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed project.

- Section II.A.5: This section provides drawings of the right-of-way cross section showing typical transmission lines structure placements.

- Section II.B.1 to II.B.5: These sections provide the line design and operational features of the proposed project, as applicable.

- Section IV: This section provides analysis on the health aspects of electric and magnetic field levels.

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

- Section I.I. (co-sponsored with Company Witnesses Harrison S. Potter and Mohammad M. Othman): This section provides the estimated total cost of the proposed project.

- Section II.B.6 (co-sponsored with Company Witness Laura P. Meadows): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.

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

DIRECT TESTIMONY
OF
TYLER G. HOCK
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00215

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

A. My name is Tyler G. Hock, and I am an Engineer III in the Electric Transmission Line Engineering Department of the Company. My business address is 10900 Nuckols Road, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

A. I am responsible for the estimating and conceptual design on high voltage transmission line projects from 69 kilovolt ("kV") to 500 kV.

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

A. In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214

approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

The purpose of my testimony is to describe the design characteristics of the transmission facilities for the proposed Project, and also to discuss electric and magnetic field ("EMF") levels. I am sponsoring Sections I.F, II.A.5, II.B.1 to II.B.5, and IV of the Appendix. I am co-sponsoring Section I.I with Company Witnesses Harrison S. Potter and Mohammad M. Othman; and Section II.B.6 of the Appendix with Company Witness Laura P. Meadows.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF TYLER G. HOCK

Tyler Hock received a Bachelor of Science degree in Civil and Environmental Engineering from Virginia Polytechnic Institute and State University in 2009. He joined the Company in 2014 and has been with the Electric Transmission Line Engineering group since then. Prior to working for the Company, Mr. Hock worked as a plant manager for four and a half years.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Mohammad M. Othman

Title: Engineer III – Substation Engineering

Summary:

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

- Section I.I (co-sponsored with Company Witnesses Harrison S. Potter and Tyler G. Hock): This section provides the estimated total cost of the proposed project.

- Section II.C: This section describes and furnishes a one-line diagram of the substation associated with the proposed project.

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

DIRECT TESTIMONY
OF
MOHAMMAD M. OTHMAN
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00215

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

A. My name is Mohammad M. Othman, and I am an Engineer III in the Substation Engineering section of the Electric Transmission group of the Company. My business address is 2400 Grayland Avenue, Richmond, Virginia 23220. A statement of my qualifications and background is provided as Appendix A.

Q. What are your responsibilities as an Engineer III?

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

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

A. In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from

a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214 approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

The purpose of my testimony is to describe the work to be performed as part of the Project at the Lockridge Substation. As it pertains to station work, I am sponsoring Section II.C of the Appendix and co-sponsoring Section I.I of the Appendix with Company Witnesses Harrison S. Potter and Tyler G. Hock.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF MOHAMMAD M. OTHMAN

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

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

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Laura P. Meadows

Title: Siting and Permitting Specialist

Summary:

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

- Section II.A.12: This section identifies the counties and localities through which the proposed project will pass and provides General Highway Maps for these localities.
- Section V: This section provides information related to public notice of the proposed project.

Additionally, Ms. Meadows co-sponsors the following portion of the Appendix:

- Section II.A.1 (co-sponsored with Company Witness Jon M. Berkin): This section provides the length of the proposed corridor and viable alternatives to the proposed project.
- Section II.A.2 (co-sponsored with Company Witness Jon M. Berkin): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.
- Section II.A.4 (co-sponsored with Company Witness Jon M. Berkin): This section explains why the existing right-of-way is not adequate to serve the need.
- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Jon M. Berkin): These sections provide detail regarding the right-of-way for the proposed project.
- Section II.A.9 (co-sponsored with Company Witness Jon M. Berkin): This section describes the proposed route selection procedures and details alternative routes considered.
- Section II.A.11 (co-sponsored with Company Witness Jon M. Berkin): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.
- Section II.B.6 (co-sponsored with Company Witness Tyler G. Hock): This section provides photographs of existing facilities, representations of proposed facilities, and visual simulations.
- Section III (co-sponsored with Company Witness Jon M. Berkin): This section details the impact of the proposed project on scenic, environmental, and historic features.

Finally, Ms. Meadows co-sponsors with Company Witness Jon M. Berkin the DEQ Supplement filed with the Application.

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

DIRECT TESTIMONY
OF
LAURA P. MEADOWS
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00215

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

A. My name is Laura P. Meadows, and I am a Siting and Permitting Specialist for Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"). My business address is 10900 Nuckols Road, Glen Allen, Virginia 23060. A statement of my qualifications and background is provided as Appendix A.

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

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

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

A. In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun

County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214 approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

The purpose of my testimony is to provide an overview of the route and permitting for the proposed Project. I sponsor Sections II.A.12 and V of the Appendix. I also co-sponsor Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.8, II.A.9, II.A.11, and III of the Appendix with Company Witness Jon M. Berkin; and co-sponsor Section II.B.6 of the Appendix with Company Witness Tyler G. Hock. Lastly, I co-sponsor the DEQ Supplement with Company Witness Jon M. Berkin.

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

A. Yes. In accordance with Va. Code § 15.2-2202 E, letters dated October 18, 2019, were delivered to Alaina Ray, Director of Planning and Zoning, and Tim Hemstreet, County Administrator, Thom Lipinski, Director of Planning and Engineering for Loudoun Water, and Joe Kroboth, Director of Transportation and Capital Infrastructure of Loudoun County, Virginia, where the Project is located. The letters stated the Company's intention to file this Application and invited the County to consult with the Company

about the proposed Project. Copies of these letters are included as Appendix Attachment V.D.1.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF LAURA P. MEADOWS

Ms. Laura P. Meadows earned her Bachelor of Arts in History from Longwood University in 2012 and her Master of Arts in Museum Studies from Johns Hopkins University in 2014. In 2013, she began working as an Environmental Specialist and Transportation Planner, coordinating technical NEPA review for linear transportation projects. Ms. Meadows joined the Company in 2017 as a Siting and Permitting Specialist to secure permits for electric transmission and substation projects.

Ms. Meadows has previously submitted pre-filed testimony to the Virginia State Corporation Commission.

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Jon M. Berkin, PhD

Title: Partner, Environmental Resource Management

Summary:

Company Witness Jon M. Berkin sponsors the Environmental Routing Study provided as part of the Company's Application.

Additionally, Mr. Berkin co-sponsors the following portion of the Appendix:

- Section II.A.1 (co-sponsored with Company Witness Laura P. Meadows): This section provides the length of the proposed corridor and viable alternatives to the proposed project.

- Section II.A.2 (co-sponsored with Company Witness Laura P. Meadows): This section provides a map showing the route of the proposed project in relation to notable points close to the proposed project.

- Section II.A.4 (co-sponsored with Company Witness Laura P. Meadows): This section explains why the existing right-of-way is not adequate to serve the need.

- Sections II.A.6 to II.A.8 (co-sponsored with Company Witness Laura P. Meadows): These sections provide detail regarding the right-of-way for the proposed project.

- Section II.A.9 (co-sponsored with Company Witness Laura P. Meadows): This section describes the proposed route selection procedures and details alternative routes considered.

- Section II.A.11 (co-sponsored with Company Witness Laura P. Meadows): This section details how the construction of the proposed project follows the provisions discussed in Attachment 1 of the Transmission Appendix Guidelines.

- Section III (co-sponsored with Company Witness Laura P. Meadows): This section details the impact of the proposed project on scenic, environmental, and historic features.

Finally, Mr. Berkin co-sponsors with Company Witness Laura P. Meadows the DEQ Supplement filed with this Application.

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

DIRECT TESTIMONY
OF
JON M. BERKIN, PhD
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00215

Q. Please state your name, position and place of employment and business address.

A. My name is Jon M. Berkin. I am employed as a Partner with Environmental Resource Management ("ERM"). My business address is 1000 IDS Center, 80 South Eighth Street, Minneapolis, Minnesota 55402. A statement of my qualifications and background is provided as Appendix A.

Q. What professional experience does ERM have with the routing of linear energy transportation facilities?

A. ERM has extensive experience in the routing, feasibility assessments, and permitting of energy infrastructure projects. It has assisted its clients in the identification, evaluation and development of linear energy facilities for the past 28 years. During this time it has developed a consistent approach for linear facility routing and route selection based on the identification, mapping and comparative evaluation of routing constraints and opportunities within defined study areas. ERM uses data-intensive Geographic Information System spatial and dimensional analysis and the most current and refined data layers and aerial photography resources available for the identification, evaluation and selection of transmission line routes. In addition to Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), its clients include some of the largest energy companies in the United States, Canada and the world, including ExxonMobil, TC Energy, Shell, NextEra Energy, Phillips 66, Kinder Morgan, British

Petroleum, Enbridge Energy and others. ERM also routinely assists the staff of the Federal Energy Regulatory Commission and the U.S. Forest Service in the identification and/or evaluation of linear energy routes to support federal National Environmental Policy Act evaluations. ERM works on both small and large energy projects and has assisted in or conducted the routing and route evaluation of some of the largest electric transmission line and pipeline facilities in North America.

In Virginia, we served as routing consultant to Dominion Energy Virginia for its Cannon Branch-Cloverhill 230 kV transmission line project in the City of Manassas and Prince William County, approved by the Commission in Case No. PUE-2011-00011. We similarly served as the routing consultant for the Company's Dahlgren 230 kV double circuit transmission line project in King George County, approved by the Commission in Case No. PUE-2011-00113. ERM also served as the routing consultant for the Company's Surry-Skiffes Creek-Whealton 500 and 230 kV transmission lines in Case No. PUE-2012-00029; for the Company's Remington CT-Warrenton 230 kV Double Circuit transmission line, approved by the Commission in Case No. PUE-2014-00025; for the Haymarket 230 kV Line and Substation Project in Case No. PUE-2015-00107; for the Remington-Gordonsville Electric Transmission Project, approved by the Commission in Case No. PUE-2015-00117; for the Norris Bridge project approved by the Commission in Case No. PUE-2016-00021; and most recently for the Company's Idylwood-Tysons 230 kV single circuit underground transmission line, Tysons Substation rebuild and related transmission facilities, approved by the Commission in Case No. PUR-2017-00143.

ERM's role as routing consultant for each of these transmission line projects included preparation of an Environmental Routing Study for the project and submission of testimony sponsoring it.

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

A. In order to provide service requested by a retail electric service customer (the "Customer"); to maintain reliable service for the overall growth in the area; and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Energy Virginia proposes to construct in Loudoun County, Virginia: (i) a new approximately 0.6-mile 230 kV double circuit transmission line loop on new right-of-way, supported by eight double circuit, single-shaft galvanized steel poles and utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor, from a tap point junction located on future 230 kV Buttermilk-Roundtable Line #2214 approximately 0.29 mile east of the Company's existing Roundtable Substation to a new 230-34.5 kV Lockridge Substation (the "Lockridge Loop"); and, (ii) a new 230-34.5 kV substation located on land owned by the Customer along Lockridge Road in Loudoun County, Virginia ("Lockridge Substation"). The Lockridge Loop and Lockridge Substation are collectively referred to as the "Project."

ERM was engaged on behalf of the Company to assist it in the identification and evaluation of route alternatives to resolve the identified electrical need that would meet the applicable criteria of Virginia law and the Company's operating needs.

The purpose of my testimony is to introduce and sponsor the Environmental Routing Study, which is included in part of the Application filed by the Company in this

proceeding. I also co-sponsor Sections II.A.1, II.A.2, II.A.4, II.A.6 to II.A.8, II.A.9, II.A.11, and III of the Appendix with Company Witness Laura P. Meadows. Lastly, I am co-sponsoring with Company Witness Laura P. Meadows with the DEQ Supplement.

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

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF JON M. BERKIN

Jon M. Berkin earned a Bachelor of Arts degree from Boston University and a Master of Arts and a Doctoral degree from Bryn Mawr College. He has 26 years of experience working in the energy-related consulting field specializing in the siting and regulatory permitting of major linear energy facilities, including both interstate and intrastate electric transmission lines and gas and oil pipelines throughout the United States. During this time he was employed for 5 years with R. Christopher Goodwin and Associates, Inc. and 21 years with ERM, a privately-owned consulting company specializing in the siting, licensing and environmental construction compliance of large, multi-state energy transportation facilities.

Mr. Berkin's professional experience related to electric transmission line projects includes the direct management of field studies, impact assessments and agency consultations associated with the routing and licensing of multiple transmission line projects in the mid-Atlantic region, including the management and/or supervision of the routing and permitting. Work on these projects included studies to identify and delineate routing constraints and options; identification and evaluation of route alternatives; and the direction of field studies to inventory wetlands, stream crossings, cultural resources and sensitive habitats and land uses. Within the last several years he has managed or directed the identification and evaluation of over 120 miles of 230 and 500 kV transmission line route alternatives in the Commonwealth for Virginia Electric and Power Company.

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