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STATE CORPORATION COMMISSION

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APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

CASE NO. PUE-2014-00086

For approval and certification of electric transmission facilities for the Brambleton-Mosby 500 kV Transmission Line #546 pursuant to §§ 56-46.1 and 56-265.1 *et seq.* of the Code of Virginia

REPORT OF HOWARD P. ANDERSON, JR., HEARING EXAMINER

May 1, 2015

This case involves the request of Virginia Electric and Power Company d/b/a Dominion Virginia Power ("Dominion Virginia Power" or "Company") for approval of certain electric transmission facilities in Loudoun County. The record of this case supports approval of the facilities proposed by the Company.

HISTORY OF THE CASE

On August 22, 2014, the Company filed with the State Corporation Commission ("Commission") an application and supporting documents ("Application") for approval and certification of electric transmission facilities pursuant to §§ 56-46.1 and 56-265.1 *et seq.* of the Code of Virginia ("Code") to build, entirely within existing rights-of-way, a second 500 kilovolt ("kV") Brambleton-Mosby Transmission Line #546 ("Line #546") in Loudoun County, and to perform associated work at the existing Mosby Switching Station and Brambleton Station (collectively, the "Project").¹

On October 2, 2014, the Commission issued an Order for Notice and Comment which, among other things, docketed the case; established a procedural schedule for the publication of public notice; provided for the filing of written comments, notices of participation and requests for hearing; and appointed a Hearing Examiner to rule on any discovery matters arising during the course of the proceeding.

On December 1, 2014, Mark Trostle, president of the Willowsford Homeowners Association ("HOA"), filed a letter requesting a hearing on the Application, stating that "the residents in the Willowsford Community, with homes immediately adjacent to the Brambleton Station, have serious concerns about the health, safety and visual impacts of the proposed project."

On December 22, 2014, the Commission issued an Order Assigning Hearing Examiner and Scheduling Local Hearing ("Order"). The Order scheduled a local hearing for January 27, 2015, in Leesburg, Virginia, to receive public comments. The Commission further ordered the Company to publish notice of the public hearing, assigned a Hearing Examiner to conduct all further proceedings

¹ Application at 2.

in this matter, and extended the dates for certain filings. Specifically, under the modified procedural schedule:

1. The Staff Report was due to be filed by February 10, 2015;
2. The Company's response to the Staff Report and to comments from interested persons was due to be filed by February 24, 2015; and
3. The Company, Staff, and any Respondents were directed to make a filing addressing any additional procedures in this docket on or before February 27, 2015.

On January 27, 2015, Staff filed a Motion for Extension of Filing Dates and Request for Expedited Consideration ("Motion for Extension") stating that Staff needed additional time to evaluate the results of the Company's updated load flow studies. Staff requested a two-week extension of the filing deadline for the Staff Report and a corresponding extension of the remaining filing dates.

By Ruling dated February 6, 2015, Staff's Motion for Extension was granted with certain modifications:

- The Company was directed to file, on or before February 17, 2015, supplemental testimony addressing the comments made by public witnesses at the January 27, 2015, hearing in Leesburg;
- Staff was directed to file, on or before March 3, 2015, its report addressing comments made by public witnesses at the hearing in Leesburg;
- The Company was directed to file, on or before March 17, 2015, a response to the Staff's report; and
- Staff and the Company were directed to make a filing, on or before March 20, 2015, addressing any additional procedures deemed necessary and appropriate in this docket.

On March 20, 2015, Staff and the Company filed a Joint Filing Addressing Additional Procedures ("Joint Filing") as directed in the Commission's Order and later modified by Hearing Examiner's Ruling of February 6, 2015. In the Joint Filing, the Company and Staff agreed to the scope and component of the proposed facilities for which the Company seeks approval and further agreed that no additional hearing or procedures were necessary in advance of a Hearing Examiner's Report in this docket. Further, the Company and Staff agreed to the submission into the record without cross-examination, of the Application, proof of notice, and supporting exhibits.

By Ruling dated March 30, 2015, the description of the proposed Project was clarified and the Application, prefiled testimony, DEQ Report, and the Company's Proofs of Notice were marked as exhibits and made a part of the record of this proceeding.

On January 27, 2015, the hearing in Leesburg, Virginia, was convened as scheduled. Kristian Dahl, Esquire, and Charlotte McAfee, Esquire, appeared on behalf of the Company.

Ashley Macko, Esquire, appeared on behalf of Staff. The transcript of the hearing was filed on February 10, 2015. No written public comments were filed in this case.

On January 28, 2015, I met with Company officials, Staff, and homeowners at the Brambleton Station (or “Station”) and toured the right-of-way from Mosby Substation to Brambleton Station. The facilities proposed for the Brambleton Station in this proceeding are limited to terminal equipment for the new 500 kV line from Mosby Switching Station to Brambleton Station. The “sawhorse” structure referenced by public witnesses already exists at Brambleton Station. Willowsford residents request a berm with trees to screen the overall view of the Brambleton Station and the “sawhorse”. The terminals proposed in this proceeding are located at the opposite end of Brambleton Station from the “sawhorse” structure.

SUMMARY OF THE HEARING RECORD

Eleven public witnesses testified at the hearing. Their comments are summarized below.

Mark Trostle testified that the Willowsford HOA opposes the Company’s continuing expansion plans and requested that the Application, as currently presented, be denied. Mr. Trostle requested that the Commission fully consider the health risks of prolonged exposure to high levels of EMF and the lack of any substantive setbacks between the residences and the transmission facilities.²

Mr. Trostle further requested that the Commission consider the declining residential resale and new home values due to the visual and aural impacts of the Company’s electric facilities. Mr. Trostle stated that the view from the residences would be permanently marred by the unsightly, unnecessary, and poorly designed transmission structures.³

Mr. Trostle requested that the Company take the following mitigation measures in the event that the Commission approves the Application:

- Revise the current plan to shift the transmission lines as far away from the residences as possible;
- Create an earthen berm ten feet high relative to the adjacent Willowsford open space property. The berm would extend the entire length of the border between Lots 9 through 18 that adjoin the Brambleton Station;
- The berm would be topped with evergreen trees at least fourteen (14) feet in height;
- Construct at a minimum a twenty-foot high acoustic wall;
- Revisit and revise the 500 kV tower design to ensure that the least obtrusive tower design is chosen;
- Redesign the gas-insulated substation (“GIS”) enclosure structure to incorporate architectural details such as multiple roof lines, a roof overhang, a board and batten

² Tr. 7.

³ *Id.* at 7, 8.

type siding and choose a color that will facilitate the blending of the building into the surrounding landscape; and

- Engage a landscape designer “to develop and implement comprehensive landscape plans to incorporate natural elements and enhance the property’s exterior in a cohesive attempt to reduce the visual impacts of this entire complex.”⁴

Mr. Trostle explained that the existing berm provided by the Company offers no visual relief to the homeowners. The trees are very small and are planted on the side of the berm rather than on the top of the berm where they would screen the view of the electrical infrastructure.⁵

Janet Clarke, Loudoun County Supervisor representing the Blue Ridge District in which the proposed facilities are located, pointed out that the many upgrades currently being undertaken by Dominion Virginia Power in Loudoun County are tremendously impactful to neighboring subdivisions such as Willowsford. Ms. Clarke acknowledged that there are multiple layers of zoning in Loudoun County that are often confusing and do not meet residents’ needs. Ms. Clarke described the mitigation measures currently being taken by the Company at the Brambleton Station as insufficient and inadequate. Ms. Clarke stated that neither the berm between the Brambleton Station and the residents of Willowsford nor the existing trees are tall enough to provide adequate screening. Ms. Clarke concluded that the Company needs to provide more information, specifically visual information, regarding the options available for the proposed Project.⁶

Joseph Giampa, chairperson of the neighborhood advisory committee with the Willowsford HOA, explained that Willowsford is an agricultural neighborhood and one of the first farm-to-table communities in Northern Virginia. Mr. Giampa stated that residents are very connected to the 2,000 acres that are set aside in conservancy, the 300-acre working farm, and the more than 40 miles of walking trails that make Willowsford unique. Mr. Giampa noted that while it is true the Brambleton Station preceded Willowsford, the Station has undergone significant expansion after 2012 when the homes in Willowsford were largely developed. This expansion has exceeded residents’ expectations. In particular, Mr. Giampa noted the addition of a large backbone structure that residents refer to as the “sawhorse structure.” Mr. Giampa maintained that the Brambleton Station has become visually and aurally intrusive to the environmentally inspired lifestyle enjoyed by Willowsford residents.⁷

Mr. Giampa also raised concerns about EMF and noted that the fields diminish with distance. In that regard, Mr. Giampa stated that moving the proposed lines even a short distance from homes could make a difference in the EMF levels. Mr. Giampa expressed his deepest concern about having these electrical structures so close to their homes and children.⁸ He presented photographs of the electrical facilities located adjacent to and near the Willowsford Subdivision.⁹

⁴ *Id.* at 8-11.

⁵ *Id.* at 9.

⁶ *Id.* at 83-96.

⁷ *Id.* at 15-19.

⁸ *Id.* at 21-22.

⁹ *Id.* at 22-24, 26. The photographs were passed to the file. Tr. 23-29.

In conclusion, Mr. Giampa testified that the Willowsford community strongly opposes any expansion at Brambleton Station and requests that the Commission deny the Company's Application.¹⁰

Darryl Reed, a resident of Willowsford, acknowledged that a small substation was adjacent to his property when he purchased it; however, no information was provided regarding the potential for future expansion. Mr. Reed noted that while the proposed expansion is within existing rights-of-way, the impacts occur outside the right-of-way and the current screening is "nonexistent and completely ineffective."¹¹

Mr. Reed was also concerned about EMF and requested that Virginia be proactive and regulate EMF. Mr. Reed noted that while a hairdryer can be switched off thereby eliminating EMF, there is no way to turn off a transmission line.¹²

Michael Kush, a twenty-seven-year Army veteran and resident of Willowsford, described the attraction of the rolling landscape and pastoral setting that convinced Mr. Kush and his wife to buy a home in Willowsford. The only distraction was this "little substation in our back yard" that was offset by the "Currier and Ives" landscape.¹³ Mr. Kush testified that, the first time they saw the addition of the "sawhorse" to the Station, "they thought they must be lost."¹⁴ Mr. Kush stated that he and his wife now have concerns about the resale value of their home because the bucolic landscape has been disrupted and the Station has become an eyesore. Although Mr. Kush felt that the berm and landscaping would help mitigate the view, he remains concerned about future expansion of the Brambleton Station. Mr. Kush requested that expansion of the Brambleton Station be controlled and mitigation applied so they can regain at least some of their bucolic landscape.¹⁵

Scott Vrablik described the first time he and his wife visited the home in Willowsford they eventually purchased and how they loved the home, but struggled with the presence of the Station next door. Mr. Vrablik stated that his primary concern relates to the EMF generated by the power lines. Mr. Vrablik pointed out that some states have adopted guidelines and established their own EMF regulations. Mr. Vrablik stated that it only stands to reason that every time a new transmission line is energized, the EMF will increase. Mr. Vrablik explained that residents of Willowsford accepted the Station next door before the "massive, reckless expansion" took place.¹⁶ Mr. Vrablik concluded that further expansion of Brambleton Station would be detrimental to Willowsford residents' health and welfare and to the County's bucolic landscape.¹⁷

Gene Loughran testified that his home is directly adjacent to Brambleton Station; he researched the past development and plans for future development of the Station before he purchased his home in 2012. When Mr. Loughran initially purchased his home, he could listen to the sounds of nature at night. However, Mr. Loughran stated that the visual, aural, electromagnetic

¹⁰ *Id.* at 19.

¹¹ *Id.* at 34.

¹² *Id.* at 41, 45.

¹³ *Id.* at 50.

¹⁴ *Id.* at 50-51.

¹⁵ *Id.* at 52-54.

¹⁶ *Id.* at 58, 59.

¹⁷ *Id.* at 61.

and financial impact of the subsequent expansion of the Station has robbed him of the bucolic setting. Mr. Loughran specifically noted the increased noise created by the Station, but stated that Loudoun County has no quantitative noise code applicable to the situation. Mr. Loughran opines that additional load placed on the Substation will undoubtedly increase the noise level. Mr. Loughran would like to see Dominion Virginia Power use this opportunity to develop an engineering approach that will successfully mitigate by either deflecting, reflecting, or muting the sounds created by the Station.¹⁸

Dave Pitzely stated that Dominion Virginia Power had explained to the Willowsford residents that with the current expansion, Brambleton Station will be one of the largest electrical stations in the United States and as such is classified as a potential terrorist target. Mr. Pitzely also noted that residents' efforts to work reasonably with Dominion Virginia Power to mitigate the noise levels are not yielding great results.¹⁹

Joshua Kutrieb, a resident of Willowsford who lives next to Brambleton Station, acknowledged the Station existed when the Willowsford homes were constructed; however, he does not appreciate how the Station has grown significantly through piecemeal approvals with no apparent consideration for balancing quality of life with the area's power needs. While Mr. Kutrieb understands that Loudoun County is rapidly growing, he believes that concrete, workable mitigation measures can be implemented to protect Willowsford residents.²⁰

Adam Daniels testified that he and his family live in Emerald Ridge, a development that is across the street from Willowsford but is nonetheless impacted by Brambleton Station and its proposed expansion. He described the expansion as secretive and underhanded. Mr. Daniels is concerned about increased levels of EMF and its effects on children²¹ and he is concerned for the health and welfare of his one-year old daughter.

Darren Dodd, also a resident of Emerald Ridge subdivision, focused his remarks on the anticipated rise in EMF levels created by the increased voltage of the larger 500 kV lines. Mr. Dodd requested that the Commission recognize how significant the effects of the proposed expansion will be on neighboring families and especially children. To that end, Mr. Dodd asked that the Commission block further expansion of the power lines or, in the alternative, ensure that the Company is taking all necessary steps to mitigate the risks of the power lines to neighboring residents.²²

The Department of Environmental Quality Coordinated Review

As directed by the General Assembly and pursuant to its Memorandum of Agreement Regarding Coordination of Reviews of the Environmental Impacts of Proposed Electric Generating Plants (August 2002), the Virginia Department of Environmental Quality ("DEQ") coordinated a

¹⁸ *Id.* at 61-67.

¹⁹ *Id.* at 69-72.

²⁰ *Id.* at 73-76.

²¹ *Id.* at 77-79.

²² *Id.* at 81, 82.

review of the Project by a number of governmental agencies and prepared the DEQ Report.²³ In the DEQ Report, DEQ indicated that the following entities either joined in the review or were invited to provide comments:

- DEQ;
- Department of Game and Inland Fisheries;
- Department of Conservation and Recreation;
- Marine Resources Commission;
- Department of Historic Resources;
- Department of Forestry;
- Department of Aviation;
- Department of Agriculture and Consumer Services;
- Department of Mines, Minerals and Energy;
- Northern Virginia Regional Commission;
- Loudoun County; and
- Virginia Department of Transportation.

At the beginning of its Report, DEQ also listed the permits or approvals that “are likely necessary” in connection with the Project and made various recommendations associated with the Project which were based on the information and analyses submitted by the reviewing agencies. Specifically, DEQ recommended that the Company engage in the following activities relative to the Project:

- Conduct an on-site delineation of wetlands and streams within the project area with verification by the U.S. Army Corps of Engineers, using accepted methods and procedures, and follow DEQ’s recommendation to avoid and minimize impacts to wetlands and streams;
- Follow DEQ’s recommendations regarding air quality protection, as applicable;
- Obtain additional information on Resource Conservation and Recovery Act (“RCRA”) hazardous waste facilities identified in the Project area;
- Research DEQ’s Petroleum Contamination case files to identify petroleum releases to establish the location, nature, and extent of any petroleum releases;
- Reduce solid waste at the source, reuse it, and recycle it to the maximum extent practicable, and follow DEQ’s recommendations to manage waste, as applicable;
- Coordinate with the Department of Conservation and Recreation for updates to the Biotics Data System database (if the scope of the Project changes or six months passes before the Project is implemented);
- Coordinate with the Department of Historic Resources regarding recommendations to complete the *Pre-Application Analysis*; to evaluate identified resources for listing in the Virginia Landmarks Register (“VLR”) and National Register of Historic Places (“NRHP”), and to avoid, minimize, or mitigate for adverse impacts to VLR-and NRHP-eligible resources;

²³ Ex. No. 8.

- Coordinate with the Federal Aviation Administration as recommended by the Virginia Department of Aviation to prevent potential hazards to aviation and impacts to airport development;
- Follow the principles and practices of pollution prevention to the extent practicable; and
- Limit the use of pesticides and herbicides to the extent practicable.²⁴

The Company's Direct Evidence

The Company presented the direct testimony of Peter Nedwick, consulting engineer in electric transmission planning for Dominion Virginia Power; Robert J. Shevenock II, consulting engineer in the electric transmission line engineering department of Dominion Virginia Power; Chris A. Lybolt, engineer III in the substation engineering section of the electric transmission group of Dominion Virginia Power; and Stefan R. Brooks, engineer II for Dominion Virginia Power.

Mr. Nedwick discussed the need for and benefits of the proposed Project. He testified that the proposed Project is needed to maintain the reliability and structural integrity of the Company's transmission system and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards. Mr. Nedwick explained that the Company considered and rejected four alternatives because they (1) included technical challenges to implement, (2) had greater impacts, (3) represented higher estimated costs, and/or (4) did not provide the same benefits as the proposed Project.²⁵

Mr. Nedwick noted that, in compliance with the Commission's Order of November 26, 2013, in Case Number PUE-2012-00029, demand-side resources are incorporated into PJM's Regional Transmission Expansion Planning Process ("RTEP"), specifically as part of the Load Deliverability study process for a given study year. The Load Deliverability study examines the actual summer peaks for a load delivery area ("LDA") for a given period.²⁶

Mr. Nedwick explained that in order to determine what might happen if demand-side resources within the DOM Zone are unavailable to PJM and the Company, a power flow case was developed for the summer of 2018 based on the DOM Zone at a projected 90/10 load. Mr. Nedwick stated that the study showed that the DOM Zone's projected summer 2018 peak based on PJM's 2014 Load Forecast is 22,156 MW (50/50), and the projected 90/10 summer 2018 peak value is 22,788 MW. The resulting projected system loading increase is 632 MW. This projected load increase for the summer of 2018 revealed six NERC contingency violations.²⁷ Mr. Nedwick stated that the proposed Project resolves all identified NERC reliability criteria violations even if anticipated demand-side management resources are unavailable to the Company and PJM during the summer of 2018.²⁸

²⁴ DEQ Report at 6-7.

²⁵ These alternatives are described in Section I.C of the Appendix to the Application.

²⁶ For Dominion Virginia Power, the LDA is the Dominion Zone ("DOM Zone").

²⁷ Ex. No. 3, at 6; Attachment PN-1.

²⁸ Ex. No. 3, at 6.

Robert J. Shevenock II described the design characteristics of the proposed transmission line and provided EMF data for the proposed facilities. Mr. Shevenock stated that the proposed Project would be built with galvanized steel towers entirely within the existing right-of-way using triple 1351.5 ACSR conductors providing a new transfer capability of at least 4330 MVA. Mr. Shevenock placed the cost of the Project at \$27.3 million (\$17.4 million for transmission line construction and \$9.9 million for station work). The Gas Insulated Substation (“GIS”) building at the Brambleton Substation, which will accommodate the Project, has been approved by PJM and is estimated to cost approximately \$16.3 million. Mr. Shevenock reported that the estimated construction time for the Project is 17 months.²⁹

With regard to EMF, Mr. Shevenock stated that the existing facilities produce magnetic field levels ranging from 18.431 milligauss (“mG”) to 79.881 mG at the edge of the right-of-way based on historical average and peak loading. In comparison, Mr. Shevenock testified that magnetic field levels ranging from 18.351 mG to 71.390 mG were calculated for the proposed Project at the edges of the right-of-way based on average and peak loading expected to occur in 2018 with the Project in service.³⁰

Mr. Shevenock explained that magnetic field strength diminishes rapidly as distance from the source increases. The decrease is proportional to the inverse square of the distance. For example, a hypothetical magnetic field strength of 10 mG at the edge of the right-of-way (defined as 50 feet from the centerline) would decrease to 2.5 mG at a point 50 feet outside the right-of-way.³¹

Chris Lybolt testified that the proposed work at Brambleton Substation involves the addition of one new 500 kV terminal, which will include the addition of two 500 kV, 4000A GIS circuit breakers, five 500 kV, 4000A GIS disconnect switches; six 500 kV, 4000A, GIS ground switches; three 500 kV Coupling Capacitor Voltage Transformers (CCVTs”), and three lightning arresters.

Mr. Lybolt stated that the proposed work at Mosby Switching Station includes the addition of one new 500 kV terminal; one 500 kV, 4000A circuit breaker; two 500 kV, 4000A switches; and three 500 kV CCVTs. According to Mr. Lybolt, there will be additional work at the existing stations outside the scope of the Project, including the installation of four 500 kV breakers at Brambleton Substation, in addition to the two included in the Project, and one new 500 kV breaker at Mosby Switching Station. This is in addition to the GIS building the Company plans to add within the fence at Brambleton Substation in December of 2015.

Mr. Lybolt reported that the estimated cost of work at the stations is approximately \$9.9 million. The GIS building at Brambleton Substation is estimated to cost approximately \$16.3 million.³²

²⁹ Ex. No. 4, at 2, 3.

³⁰ *Id.* at 3.

³¹ *Id.* at 4.

³² Ex. No. 5, at 3.

Stefan Brooks testified that the proposed 5.2-mile (approximate) transmission line would be located entirely within existing right-of-way; therefore, the impacts of the Project would be incremental and reasonably minimized. Mr. Brooks stated that the character of the area around the existing right-of-way ranges between suburban and rural land uses. The Loudoun County General Plan identifies the area as transitional, with higher density developments encouraged to the east of the Project corridor and lower density agricultural uses encouraged to the west. Mr. Brooks pointed out that the existing transmission right-of-way crosses no sites listed on the National Register of Historic Places or any scenic byways. Mr. Brooks noted that the DEQ conducted an environmental and permitting review of the Company's Application including the solicitation of comments from relevant agencies.³³

Mr. Brooks testified that the Company hosted a public open house for the Project at John Champe High School in Loudoun County on August 12, 2014. In total, over fifteen (15) people attended the open house. Further, Mr. Brooks stated that in addition to the statutorily required public notice, the Company sent informational letters to approximately 520 area property owners of all parcels within 500 feet of the right-of-way and all homeowner association and developer contacts provided by Loudoun County.³⁴

Supplemental Testimony

On February 18, 2015, the Company filed the supplemental testimony of **Wade Briggs**, project manager for the proposed Project. Mr. Briggs' testimony addressed the concerns raised by public witnesses at the local hearing in Leesburg. Mr. Briggs pointed out that some of the public comments related to other development projects within or near the existing Brambleton Station, and are beyond the scope of the proposed Project. The other projects include: (1) the rebuild of the existing 500 kV Loudoun-Pleasant View Line #558 approved by Final Order of the Commission issued on April 28, 2014, in Case No. PUE-2013-00110;³⁵ (2) construction of a GIS structure at Brambleton Station; (3) construction of a station security fence; and (4) construction by Northern Virginia Electric Cooperative, the owner of the Brambleton Station property, of a new customer service center near the Brambleton Station site. Mr. Briggs noted that the station work associated with this proposed Project is primarily limited to the terminals for the new 500 kV line at Mosby Switching Station and Brambleton Station.³⁶

In response to concerns regarding EMF, Mr. Briggs testified that the Company is sensitive to public concern that has been raised by some studies, and that the Company continually monitors EMF research. Mr. Briggs stated that the Company has previously provided calculations to the Willowsford residents for the average EMF levels for the corridor adjacent to the subdivision. According to Mr. Briggs, the EMF levels after the proposed Project is completed will be the same as or less than current levels. Mr. Briggs further explained that the GIS enclosure at the Brambleton

³³ Ex. No. 6, at 2-5.

³⁴ *Id.* at 6.

³⁵ *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities for the Loudoun-Pleasant View 500 kV Transmission Line #558 Rebuild pursuant to §§ 56-46.1 and 56-265.1 et seq. of the Code of Virginia, Case No. PUE-2013-00110, Final Order (April 28, 2014).*

³⁶ Ex. No. 7, at 2.

demonstrated a need for the Project and that the Company considered four alternative solutions that were rejected because of technical challenges to implementation, greater impacts, higher estimated costs, or failure to provide the same benefits as the proposed Project. Based on its review of the Project, Staff has determined that the Company’s analysis is reasonable. Staff does not oppose the Company’s request that the Commission issue the necessary certificate of public convenience and necessity for the proposed Project.⁴²

Company Comments

On March 16, 2015, the Company filed the Comments of Virginia Electric and Power Company on Staff Report and DEQ Report (“Comments”) stating that it supports the recommendations set forth in the Staff Report concerning the need for the proposed Project. In addition, the Company provided two clarifications to the Staff Report:

- (1) The description of the transmission line work included in the proposed Project appearing at page 6 of the Staff Report specifies the following components: (1) The replacement of 24 existing COR-TEN® lattice towers, erected in 1969, with 29 new 500/230 kV double circuit galvanized steel lattice towers; (2) The installation of proposed 500 kV Line #546 with triple bundled 1351.5 thousand circular mil (“kcmil”) aluminum conductor steel reinforced (“ACSR”) phase conductors; and (3) The installation of 230 kV Line #2094, underbuilt on the new structures, with triple bundled 636 kcmil ACSR phase conductors.

The Company clarified that the proposed Project is limited to construction of a new 500 kV Line #546 and limited station work associated therewith. Accordingly, the second of the three components identified by Staff wholly describes the transmission line work included in the Project.⁴³

- (2) The Company deems the installation of the existing 230 kV line on the structures proposed for the Project as an “ordinary extension or improvement” for which § 56-265.2 A of the Code does not require Commission approval. Further, the Company maintains that Commission approval is not required because the rearrangement does not construct new 230 kV lines or expand or extend the existing 230 kV lines as the termination points of the two energized 230 kV lines will remain unchanged.⁴⁴

The Company pointed out that, as stated in its comments in Case No. PUE-2013-00110:⁴⁵

The Company deems this rearrangement of the existing 230 kV circuits within the existing corridor to be included within the category of “ordinary extensions or

⁴² Ex. No. 9, at 1-21.

⁴³ Ex. No. 10, at 2.

⁴⁴ *Id.* at 3.

⁴⁵ *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities for the Loudoun-Pleasant View 500 kV Transmission Line #558 Rebuild pursuant to §§ 56-46.1 and 56-265.1 et seq. of the Code of Virginia, Case No. PUE-2013-00110, Final Order (April 28, 2014).*

improvements in the usual course of business” for which Va. Code § 56-265.2 A does not require Commission approval. The rearrangement does not construct new 230 kV lines or expand or extend the existing 230 kV lines. ... The termination points of the two energized 230 kV lines also will be unchanged by the Rebuild Project.

Commission approval is not required under such circumstances. *Kricorian v. The Chesapeake and Potomac Tel. Co. of Va.*, 271 Va. 283, 227 S. E. 2d 725 (1976).⁴⁶

The Company stated that it has no objections to the DEQ Report’s Summary of Recommendations with the exception of the recommendation to adopt one of the Office of Wetlands and Water Protection (“OWWP”) 1 (c) Agency Recommendations regarding time-of-year restrictions on construction to accommodate wildlife breeding seasons. The Company emphasized that it will coordinate with relevant agencies as appropriate regarding time-of-year restrictions; however, it cannot agree to adhere to unidentified time-of-year restrictions that may be imposed by agencies for the Project. OWWP recommends field delineation of wetlands prior to work on the Project and presents 13 additional recommendations. The Company objects only to recommendation (10) which states as follows:

Activities should be conducted in accordance with any Time-of-Year restriction(s) as recommended by the Department of Game and Inland Fisheries, the Department of Conservation and Recreation, or the Virginia Marine Resources Commission. The permittee should retain a copy of the agency correspondence concerning the Time-of-Year restriction(s), or the lack thereof, for the duration of the construction phase of the project.⁴⁷

The Company stated that it cannot agree in advance to conduct its Project activities in accordance with time-of-year restrictions that have not been provided, but will coordinate with the identified agencies as appropriate. Further, the Company stated that it will accommodate time-of-year restrictions for clearing and construction activities in those areas where threatened and endangered species are found.⁴⁸

DISCUSSION

Applicable Statutory Provisions

Section 56-265.2 of the Code provides that “it shall be unlawful for any public utility to construct . . . facilities for use in public utility service . . . without first having obtained a certificate from the Commission that the public convenience and necessity require the exercise of such right or privilege.” Furthermore, § 56-46.1 A of the Code states in part as follows:

Whenever the Commission is required to approve the construction of any electrical utility facility, it shall give consideration to the effect of that facility on the environment and establish such conditions as may be desirable or necessary to

⁴⁶ Ex. No. 10, at 3.
⁴⁷ *Id.* at 4.
⁴⁸ *Id.* at 5.

minimize adverse environmental impact . . . In every proceeding under this subsection, the Commission shall receive and give consideration to all reports that relate to the proposed facility by state agencies concerned with environmental protection; and if requested by any county or municipality in which the facility is proposed to be built, to local comprehensive plans that have been adopted pursuant to Article 3 (§ 15.2-2223 *et seq.*) of Chapter 22 of Title 15.2. Additionally, the Commission (a) shall consider the effect of the proposed facility on economic development within the Commonwealth . . . and (b) shall consider any improvements in service reliability that may result from the construction of such facility.

Specifically applicable to transmission lines, § 56-46.1 B of the Code requires the Commission to “determine that the line is needed and that the corridor or route the line is to follow will reasonably minimize adverse impact on the scenic assets, historic districts and environment of the area concerned” as a condition of approval.

Need

Based on the record of this proceeding, I find the Company has sustained its burden of proof that the proposed Project is required by the public convenience and necessity and that existing right-of-way should be utilized for the Project. Specifically, the evidence supports a finding that the proposed Project will address load growth in the region, reduce projected heavy contingency loading, reinforce the existing network, and improve operational flexibility. Staff has reviewed the information provided by the Company, verified its power flow studies, and concluded that the Company has sufficiently demonstrated the need for the proposed Project.⁴⁹

Use of Existing Right-of-Way

Federal and state guidelines and Virginia Code § 56-259 state a preference for the use of existing right-of-way wherever possible. The existing right-of-way is currently cleared and maintained for transmission operation. Further, this is a rebuild project and the terminal points will not change; therefore, the Company correctly did not consider alternative routes for the proposed Project.

House Bill 1319

Pursuant to Chapter 799 of the 2008 Acts of Assembly (also referred to herein as “HB 1319”)⁵⁰ the Virginia General Assembly established a pilot program for the underground construction of four qualifying transmission lines of 230 kV or less. For a transmission line to be included in the underground pilot program, the following criteria must be met:

1. An engineering analysis must demonstrate that it is technically feasible to place the proposed line, in whole or in part, underground;

⁴⁹ Staff Report at 21.

⁵⁰ See also 2011 Va. Acts ch. 244 (extending the pilot program until July 1, 2014).

2. The estimated additional cost of placing the proposed line, in whole or in part, underground may not exceed 2.5 times the cost of placing the same line overhead, assuming accepted industry standards for undergrounding to ensure safety and reliability. If the public utility, the affected localities, and the Commission agree, a proposed underground line whose cost exceeds 2.5 times the cost of placing the line overhead may also be accepted into the pilot program; and
3. The governing body of each locality in which a portion of the proposed line will be placed underground must indicate, by resolution, general community support for the line to be placed underground.

Section 10 of HB 1319 also requires those building overhead transmission lines to “seek to implement low-cost and effective means to improve the aesthetics of new overhead transmission lines and towers.”

I find the evidence demonstrates that the proposed Project does not meet the criteria set forth in HB 1319 for inclusion as a pilot program. Further, I find the Company’s efforts and measures to improve the aesthetics of the Project will reasonably mitigate the visual impact of the proposed Project as required by Section 10 of HB 1319.

Economic Development

I find the proposed Project will have a positive impact on economic development in the Loudoun County area. I also find the Project will have a positive impact on Virginia’s economy by facilitating reliable electric service. As Staff pointed out, the proposed Project serves an area that is rapidly growing, and includes infrastructure that is essential to the economic welfare of the Commonwealth. This region is known as a high-tech hub for the World-Wide Web, and routes up to 70% of the world’s Internet traffic.

Scenic Assets and Historic Districts

I find that the proposed Project will have minimal, if any, impact on scenic assets and historic districts consistent with § 56-46.1 B of the Code.

Environmental Impact

Finally, I find that the recommendations in the DEQ Report are, with the exception of OWWE section (10), reasonable and should be implemented by the Company. The Company should not be required to adhere to undefined time-of-year restrictions on its construction.

EMF

From August 15, 1984, to October 31, 2000, the Virginia Department of Health (“VDH”) monitored the ongoing research on the possible health effects of EMF and ultimately concluded there was no causal connection between EMF and cancer in humans. Specifically, on October 31, 2000, the VDH reported:

... 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. Even if it is assumed that there is an increased risk of cancer as implied in some epidemiologic studies, the empirical relative risk appears to be fairly small in magnitude and the observed association appears to be tenuous. The studies published in the literature lack clear demonstration of a cause and effect relationship as well as a definitive dose-response gradient. A two- to three-fold increase in relative risk of certain cancers observed in some studies is within the range where experimental bias or confounding factors cannot be completely ruled out.

Evidence from the laboratory studies has thus far failed to confirm that exposure to EMF causes cancer in experimental animals. Laboratory experiments have also failed to show how EMF could initiate or promote the growth of cancer. The results of both *in vivo* and *in vitro* experimental studies conducted so far do not lend support to an association between exposure to EMF and cancer.

Furthermore, scientific proof of a causal association is established using multiple criteria, only one of which is epidemiologic association. Other important criteria in confirming causality (including strength of association, consistency and specificity of observations, appropriate temporal relationship, dose-response relationship, biological plausibility, and experimental verification) have not been satisfied for the implicit adverse effects of power-line frequency EMF.⁵¹

Expert panels formed by national and international scientific agencies have evaluated the scientific research related to health and power-frequency EMF and provided conclusions that form the basis of guidance to governments and industries. It is the general scientific consensus of the health agencies reviewing this research that at levels associated with the operation of the proposed transmission line, or other common sources of EMF in the environment, the research does not support the conclusion that EMF causes any long-term, adverse health effects.⁵²

In its Application⁵³, the Company provided historical and projected EMF readings at the edge of the right-of-way:

Existing Lines – average historical loading			
Western Edge		Eastern Edge	
<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
2.162	20.448	0.081	18.431

⁵¹ Virginia Department of Health, *Monitoring of Ongoing Research on the Health Effects of High Voltage Transmission Lines*, Final Report at 20 (Oct. 31, 2000).

⁵² Major reviews on this topic, in order of their most recent publication, include those published by the European Health Risk Assessment Network on Electromagnetic Fields Exposure, the International Commission on Non-Ionizing Radiation Protection, the Scientific Committee on Emerging and Newly Identified Health Risks, the World Health Organization, and the International Committee on Electromagnetic Safety. Application, App. IV, page 91.

⁵³ Application, App. IV; pages 88-90.

Existing Lines – peak historical loading⁵⁴

Western Edge		Eastern Edge	
<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
2.232	79.881	0.079	69.517

Projected Average Loading in 2018

Western Edge		Eastern Edge	
<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
2.206	18.351	2.207	18.715

Projected Peak Loading in 2018

Western Edge		Eastern Edge	
<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)	<u>Electric Field</u> (kV/m)	<u>Magnetic Field</u> (mG)
2.254	68.183	2.257	71.390

As evident from the chart above, the Project will result in little change and, in some instances, a reduction in EMF. Further, Company witness Briggs testified that the replacement of the existing 500 kV Air Insulation Substation equipment with a GIS enclosure will reduce the electric field levels with the 500 kV portion of the Station to zero and reduce the magnetic fields to 5-10% of the existing conductors' levels. Mr. Briggs also noted that, upon request, the Company will take EMF readings at residents' homes and in the immediate vicinity.⁵⁵

FINDINGS AND RECOMMENDATIONS

Based on the evidence and for the reasons set forth above, I find that:

1. The Project is justified by the public convenience and necessity;
2. The proposed Project will maximize the use of existing rights-of-way;
3. The Commission should approve the use of existing rights-of-way for the proposed Project;
4. The recommendations contained in the DEQ Report are, with one exception noted below, reasonable and should be adopted by the Commission as conditions of approval;
5. The Company should not be required to adhere to undefined time-of-year restrictions on its construction;

⁵⁴ Maximum (peak) values are less relevant as they may occur for only a few minutes or hours each year.

⁵⁵ Ex. No. 7, at 3.

6. The proposed Project is essential to support ongoing economic development in Loudoun County;

7. The proposed Project is not suitable for underground construction; and

8. The proposed Project with its use of existing rights-of-way and its tower design reasonably mitigates the Project's overall impact and generally improves the aesthetics of the proposed Project as required by Section 10 of HB 1319.

In accordance with the above findings, **I RECOMMEND** the Commission enter an order that:

1. **ADOPTS** the findings in this Report;

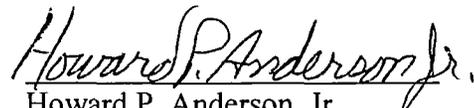
2. **GRANTS** the Company's Application to construct the proposed transmission line and station improvements; and

3. **DISMISSES** this case from the Commission's docket of active cases.

COMMENTS

The parties are advised that any comments (Section 12.1-31 of the Code of Virginia and Commission Rule 5 VAC 5-20-120 C) to this Report must be filed with the Clerk of the Commission in writing, in an original and fifteen (15) copies, within twenty-one (21) days from the date hereof. The mailing address to which any such filing must be sent is Document Control Center, P.O. Box 2118, Richmond, Virginia 23218. Any party filing such comments shall attach a certificate to the foot of such document certifying that copies have been mailed or delivered to all counsel of record and any such party not represented by counsel.

Respectfully submitted,


Howard P. Anderson, Jr.
Hearing Examiner

Document Control Center is requested to mail a copy of the above Report to Lisa S. Booth, Esquire, and Charlotte P. McAfee, Esquire, Dominion Resources Services, Inc., 120 Tredegar Street, Richmond, VA 23219; Kristian M. Dahl, Esquire, McGuireWoods LLP, One James Center, 901 East Cary Street, Richmond, VA 23219; and C. Meade Browder, Jr., Senior Assistant Attorney General, Division of Consumer Counsel, Office of Attorney General, 900 East Main Street, 2nd Fl., Richmond, VA 23219.