

16550103

part 3

Gill

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Mark R. Gill

Title: Consulting Engineer – Electric Transmission Planning Group

Summary:

In order to accommodate an expansion of Northern Virginia Electric Cooperative’s (“NOVEC”) existing Pleasant Valley Delivery Point (“DP”), and to comply with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four structures supporting new double-circuit 230 kV tap lines (“230 kV Tap Lines”) from its existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick Switching Station (“Elklick Station”) (collectively, the “Project”). The Company proposes to cut the existing Line #295 (at “Elklick Junction”) and extend each end for approximately 670 feet on four new line structures (exclusive of two new backbone structures) to terminate at the proposed Elklick Station, creating 230 kV Bull Run-Elklick Line #295 and new Loudoun-Elklick Line #2173.

Company Witness Mark Gill provides an overview of the Company’s transmission system and transmission planning process, and describes the transmission system in the vicinity of the Project, which consists of the existing Pleasant Valley DP that is fed from a NOVEC-owned tap of 230 kV Bull Run-Loudoun Line #295, which runs in a northwest to southwest corridor along with 500 kV Clifton-Loudoun Line #559, 230 kV Dulles-Loudoun Line #2008, and 115 kV Bull Run-Loudoun Line #156.

Mr. Gill also describes the need for the Project, explaining that in order to maintain reliable service to customers of the Company and NOVEC, and to comply with mandatory NERC Reliability Standards, the Company has created its Facility Interconnection Requirements (“FIR”) document to address the interconnection requirements of generation, transmission, and electricity end-user facilities. NOVEC’s expanded Pleasant Valley DP must be interconnected with the Company’s transmission system in accordance with the Company interconnection requirements set forth in the FIR.

Mr. Gill also explains that the estimated in-service date for the Project is December 31, 2017 due to the time needed for engineering, material procurement, and construction permitting.

**DIRECT TESTIMONY
OF
MARK R. GILL
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2016-00056**

1 **Q.** Please state your name, position, and business address with Virginia Electric and
2 Power Company (“Dominion Virginia Power” or the “Company”).

3 **A.** My name is Mark R. Gill, and I am a Consulting Engineer in the Electric Transmission
4 Planning group of the Company. My office is located at One James River Plaza, 701
5 East Cary Street, Richmond, Virginia 23219.

6 **Q.** What is your educational and professional background?

7 **A.** I received a Bachelor of Science degree in Electrical Engineering from the University of
8 Virginia in 1989. I have been licensed as a Professional Engineer in the Commonwealth
9 of Virginia since 1994. I have been employed by the Company for 28 years. My
10 experience with the Company includes Customer Service (1988-1992), Circuit
11 Calculations/System Protection (1992-1999), Distribution Planning (1999-2007) and
12 Transmission Planning (2007-Present).

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

14 **A.** I have responsibility for planning the Company’s electric transmission system in the
15 northern Virginia area for voltages of 69 kV through 500 kV.

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

A. In order to accommodate an expansion of Northern Virginia Electric Cooperative’s (“NOVEC”) existing Pleasant Valley Delivery Point (“DP”) and to comply with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four structures supporting new double-circuit 230 kV tap lines (“230 kV Tap Lines”) from its existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick Switching Station (“Elklick Station”) (collectively, the “Project”). The Company proposes to cut the existing Line #295 (at “Elklick Junction”) and extend each end for approximately 670 feet on four new line structures (exclusive of two new backbone structures) to terminate at the proposed Elklick Station, creating 230 kV Bull Run-Elklick Line #295 and new Loudoun-Elklick Line #2173.

The purpose of my testimony is to discuss the need for, and benefits of, the Project. I am sponsoring Sections I.B, I.C, I.H, and I.I of the Appendix. I am also co-sponsoring Sections I.A, I.E, and I.F of the Appendix with Company Witness Robert J. Shevenock.

Q. Please provide an overview of the Company’s transmission system and transmission planning process.

A. Dominion Virginia Power’s transmission system is responsible for providing transmission service to the Company’s retail customers and also to Appalachian Power Company, Old Dominion Electric Cooperative, Northern Virginia Electric Cooperative, Central Virginia Electric Cooperative, and Virginia Municipal Electric Association for redelivery to their retail customers in Virginia, as well as to North Carolina Electric Membership Corporation and North Carolina Eastern Municipal Power Agency for

1 redelivery to their customers in North Carolina. The Company needs to be able to
2 maintain the overall, long-term reliability of its transmission system, as its customers
3 require more power in the future.

4 Dominion Virginia Power is part of the Eastern Interconnection transmission grid,
5 meaning it is interconnected, directly or indirectly, with all of the other transmission
6 systems in the U.S. and Canada between the Rocky Mountains and the Atlantic coast,
7 except Quebec and most of Texas. All of the transmission systems in the Eastern
8 Interconnection are dependent on each other for support in moving bulk power through
9 the transmission system and for reliability support. Dominion Virginia Power's service
10 to its customers is extremely reliant on a robust and reliable regional transmission system.

11 Dominion Virginia Power also is part of the PJM Interconnection L.L.C. ("PJM")
12 regional transmission organization providing service to a large portion of the eastern
13 United States. PJM is currently responsible for ensuring the reliability and coordinating
14 the movement of electricity through all or parts of Delaware, Illinois, Indiana, Kentucky,
15 Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee,
16 Virginia, West Virginia, and the District of Columbia. This service area has a population
17 of about 60 million and on July 21, 2011, set a record high of 158,450 MW for summer
18 peak demand, of which Dominion Virginia Power's load portion was approximately
19 19,636 MW serving 2.4 million customers. On July 22, 2011, the Company set a record
20 high of 20,061 MW for summer peak demand. On February 20, 2015, the Company set a
21 winter and all-time record demand of 21,651 MW. Dominion Virginia Power's load
22 zone is the third largest area in PJM, behind only the American Electric and Power
23 Company and Commonwealth Edison Zones. Moreover, based on the 2016 PJM Load

1 Forecast, the Dominion Zone is expected to be one of the fastest growing zones in PJM
2 with an average annual summer growth rate of 1.2% over the next 10 years compared to
3 the PJM average of 0.6% over the same period.

4 Federally-mandated NERC Reliability Standards constitute minimum criteria with which
5 all public utilities must comply as components of the interstate electric transmission
6 system. Moreover, the Energy Policy Act of 2005 mandates that electric utilities must
7 follow these NERC Reliability Standards, and utilities could be fined up to \$1 million a
8 day per violation if found to be in noncompliance. NERC has been designated by the
9 Federal Energy Regulatory Commission as the Electric Reliability Organization for the
10 United States.

11 **Q. Please describe the present transmission system in the vicinity of the proposed
12 Project.**

13 A. The existing Pleasant Valley DP is fed from a NOVEC-owned tap of 230 kV Bull Run-
14 Loudoun Line #295, which runs in a northwest to southeast corridor along with 500 kV
15 Clifton-Loudoun Line #559, 230 kV Dulles-Loudoun Line #2008, and 115 kV Bull Run-
16 Loudoun Line #156.

17 **Q. Why do the proposed facilities need to be built at this time?**

18 A. On March 13, 2015, NOVEC submitted a formal DP Change Request (“DP Request”)
19 notifying the Company of increased loading on the Pleasant Valley DP to exceed 100
20 MW. The DP Request is included as Attachment I.B.1 to the Appendix. In order to
21 maintain reliable service to customers of the Company and NOVEC, and to comply with
22 mandatory NERC Reliability Standards, specifically FAC-001, the Company has created

1 its Facility Interconnection Requirements (“FIR”) document to address the
2 interconnection requirements of generation, transmission, and electricity end-user
3 facilities. Since the NOVEC DP Request indicates that the expanded Pleasant Valley DP
4 will result in a total connected load above 100 MW, Section 6.2 of the Company’s FIR
5 specifies that a four-breaker ring bus should be used for the interconnection. The ring
6 bus will be installed in a switching station adjacent to NOVEC’s expanded Pleasant
7 Valley DP. As described in Appendix Section I.A, the proposed Elklick Station will be
8 constructed with a four-breaker 230 kV ring bus to terminate Line #295 and #2173 and to
9 provide two sources to NOVEC’s expanded Pleasant Valley DP.

10 The Project was presented at the PJM Southern Sub-Regional Transmission Expansion
11 Planning process meeting on November 20, 2015, and was subsequently assigned
12 Supplemental project number s1085.

13 **Q. Did the Company consider whether there are feasible alternatives to construction of**
14 **the proposed transmission facilities?**

15 A. NOVEC’s expanded Pleasant Valley DP must be interconnected with the Company’s
16 transmission system in accordance with the Company interconnection requirements set
17 forth in the FIR.

18 At the load level identified in NOVEC’s DP Request, there is no feasible electrical
19 alternative to the Project.

20 **Q. Will any lines or facilities be removed because of this Project?**

21 A. Yes. NOVEC will remove its existing 230 kV radial tap line connecting the Company’s
22 existing 230 kV Line #295 and NOVEC’s Pleasant Valley DP, which consists of two

1 spans and one single circuit 3-pole structure.

2 The two existing Dominion Virginia Power 230 kV line switch structures will be
3 removed at the Pleasant Valley DP tap by Dominion Virginia Power.

4 **Q. What is the desired in-service date of the proposed project and its estimated
5 construction time?**

6 A. The in-service date for the Project is December 31, 2017. The estimated construction
7 time for the Project is 10-12 months. A period of six months will be needed for
8 engineering, material procurement, and construction permitting.

9 **Q. Have you reviewed the demand-side resources incorporated in the Company's
10 planning studies used in support of this application, as directed by the Commission
11 in its Order issued on November 26, 2013 in Case No. PUE-2012-00029?**

12 A. No, not for the Project. The need for this Project is not based on the planning studies of
13 the Company or PJM but rather on the need to accommodate an expansion of NOVEC's
14 existing Pleasant Valley DP and to comply with mandatory NERC Reliability Standards.

15 **Q. Are there any new generating sources or distribution circuits that are planned to be
16 served by the proposed Project?**

17 A. No. There are no new or existing generating facilities or distribution circuits associated
18 with the Project.

19 **Q. Does this conclude your prefiled direct testimony?**

20 A. Yes, it does.

160550103

Shevenock

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Robert J. Shevenock II

Title: Consulting Engineer – Electric Transmission Line Engineering Department

Summary:

In order to accommodate an expansion of Northern Virginia Electric Cooperative's ("NOVEC") existing Pleasant Valley Delivery Point ("DP") and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four structures supporting new double-circuit 230 kV tap lines ("230 kV Tap Lines") from its existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick Switching Station ("Elklick Station") (collectively, the "Project"). The Company proposes to cut the existing Line #295 (at "Elklick Junction") and extend each end for approximately 670 feet on four new line structures (exclusive of two new backbone structures) to terminate at the proposed Elklick Station, creating 230 kV Bull Run-Elklick Line #295 and new Loudoun-Elklick Line #2173.

Company Witness Robert J. Shevenock II provides an overview of the design of the transmission line components of the proposed electric transmission facilities from a transmission line engineering perspective.

Mr. Shevenock explains that the Company proposes to cut the existing Line #295 (at "Elklick Junction") and extend each end for approximately 670 feet on four new line structures (exclusive of two new backbone structures) to terminate at the proposed Elklick Station, creating a revised 230 kV Bull Run-Elklick Line #295 and a new 230 kV Loudoun-Elklick Line #2173. At Elklick Station, four 230 kV breakers and associated equipment will be installed to reliably interconnect the expanded Pleasant Valley DP with the transmission grid, replacing the existing NOVEC-owned single-circuit 230 kV tap from Line #295 that feeds the existing Pleasant Valley DP. NOVEC will remove its existing 230 kV radial tap line connecting the Company's existing 230 kV Line #295 and NOVEC's Pleasant Valley DP, consisting of two spans and one single-circuit 3-pole structure. The two existing Dominion Virginia Power 230 kV line switch structures will be removed at the Pleasant Valley DP tap by Dominion Virginia Power.

Mr. Shevenock states that the estimated cost of the Project is approximately \$8.1 million (2016 dollars), consisting of approximately \$2.1 million for the cost of the transmission work associated with the Project. The initial in-service date specified in NOVEC's DP Request was May 31, 2016. To account for the time needed for permitting and construction, the Company has estimated a revised in-service date of December 31, 2017. The estimated construction time for the Project is 10 to 12 months, and a period of six months will be needed for engineering, material procurement, and construction permitting.

Mr. Shevenock also provides the electric and magnetic field calculations for the Project.

**DIRECT TESTIMONY
OF
ROBERT J. SHEVENOCK II
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2016-00056**

1 Q. Please state your name, position, and business address with Virginia Electric and
2 Power Company (“Dominion Virginia Power” or the “Company”).

3 A. My name is Robert J. Shevenock II, and I am a Consulting Engineer in the Electric
4 Transmission Line Engineering department of the Company. My business address is
5 One James River Plaza, 701 East Cary Street, Richmond, Virginia 23219.

6 Q. What is your educational and professional background?

7 A. I received a Bachelor of Science degree in Electrical Engineering from the
8 Pennsylvania State University in 1985. Since that time, I have held various
9 engineering titles with the Company since 1985 in the Electric Transmission Line
10 Engineering department.

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

12 A. I am responsible for the estimating and conceptual design on high voltage
13 transmission line projects from 69 kV to 500 kV.

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

15 A. In order to accommodate an expansion of Northern Virginia Electric Cooperative’s
16 (“NOVEC”) existing Pleasant Valley Delivery Point (“DP”) and to comply with
17 mandatory North American Electric Reliability Corporation Reliability Standards,

1 Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four
2 structures supporting new double-circuit 230 kV tap lines (“230 kV Tap Lines”) from
3 its existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick
4 Switching Station (“Elklick Station”) (collectively, the “Project”).

5 The purpose of my testimony is to describe the design characteristics of the
6 transmission line proposed in the Application, and I will provide electric and
7 magnetic field (“EMF”) data for the proposed facilities. I am sponsoring Sections
8 I.D, II.A.3, II.B, and IV of the Appendix. I am also co-sponsoring Sections I.A, I.E,
9 and I.F of the Appendix with Company Witness Mark R. Gill and Section I.G. of the
10 Appendix with Company Witness Wilson O. Velazquez.

11 **Q. What are the transmission engineering considerations driving the need for the
12 Project?**

13 A. NOVEC submitted a DP Change Request (“DP Request”) notifying the Company of
14 increased loading at the Pleasant Valley DP. The additional load is associated with
15 the Federal Energy Regulatory Commission-approved expansion of Dominion Cove
16 Point LNG, LP’s existing compressor station adjacent to Pleasant Valley DP.
17 Because the added load will result in a total connected load above 100 MW, the
18 Company’s Facility Interconnection Requirements specify use of a four-breaker ring
19 bus. The design and construction plan for the switching station is discussed in more
20 detail in the testimony of Company Witness Velazquez.

21 The initial in-service date specified in NOVEC’s DP Request was May 31, 2016. To
22 account for the time needed for permitting and construction of the Project, the

1 Company has estimated a revised in-service date of December 31, 2017.

2 **Q. Please describe the design of the transmission lines for the Project.**

3 A. The Company proposes to cut the existing Line #295 (at “Elklick Junction”) and
4 extend each end for approximately 670 feet on four new line structures (exclusive of
5 two new backbone structures) to terminate at the proposed Elklick Station, creating a
6 revised 230 kV Bull Run-Elklick Line #295 and a new 230 kV Loudoun-Elklick Line
7 #2173. At Elklick Station, four 230 kV breakers and associated equipment will be
8 installed to reliably interconnect the expanded Pleasant Valley DP with the
9 transmission grid, replacing the existing NOVEC-owned single-circuit 230 kV tap
10 from Line #295 that feeds the existing Pleasant Valley DP.

11 NOVEC will remove its existing 230 kV radial tap line connecting the Company’s
12 existing 230 kV Line #295 and NOVEC’s Pleasant Valley DP, consisting of two
13 spans and one single-circuit 3-pole structure. The two existing Dominion Virginia
14 Power 230 kV line switch structures will be removed at the Pleasant Valley DP tap by
15 Dominion Virginia Power.

16 **Q. What is the estimated construction cost for the Project?**

17 A. The estimated cost of the Project is \$8.1 million. The cost for the transmission work
18 is estimated to be approximately \$2.1 million. The switching station work is
19 estimated to cost approximately \$6.0 million. These costs are in 2016 dollars.

20 **Q. How long will it take to construct the Project?**

21 A. The estimated construction time for the Project is 10-12 months. A period of six
22 months will be needed for engineering, material procurement, and construction

1 permitting. The in-service date for the Project is December 31, 2017.

2 **Q. Please describe the line design and operational features of the Project.**

3 A. The Project will include looping 230 kV Line #295 in and out of Elklick Station. The
4 existing 230 kV Bull Run-Loudoun Line #295 will be split at Elklick Junction,
5 resulting in: (1) a 230 kV Elklick-Loudoun Line #2173 with a transfer capability of
6 1057 MVA between Elklick Junction and Elklick Station; and (2) a 230 kV Bull Run-
7 Elklick Line #295 with a transfer capability of 1057 MVA between Elklick Junction
8 and Elklick Station.

9 The two 230 kV circuits between Elklick Junction and Elklick Station will each have
10 three 1233.6 ACSS/TW phase and two 3#6 alumoweld shield wires.

11 **Q. Please describe the proposed structures for the 230 kV Tap Lines.**

12 A. The three proposed 3-pole structures will place the proposed 230 kV Tap Lines in a
13 horizontal arrangement. This will allow the installation of the two 230 kV circuits in
14 the existing Company right-of-way and proposed new right-of-way under existing
15 Lines #156 and #2008 and within the Line #295 corridor. The fourth structure, a
16 proposed single shaft steel pole, will minimize the footprint of the transmission line
17 structures and the 230 kV Tap Lines outside the Elklick Station fence.

18 **Q. Have you made calculations of the EMF for the proposed lines?**

19 A. Yes, and they are shown in Section IV.A of the Appendix for various loading
20 conditions expected to occur at the edges of the right-of-way. Magnetic field levels
21 ranging from 24.834 milligauss (“mG”) to 52.940 mG were calculated for the 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.

Q. The information you have provided in Section IV.A of the Appendix shows the calculated maximum EMF at the edge of the rights-of-way. How do the strengths of the expected maximum magnetic fields at the edge of the right-of-way compare to magnetic fields found elsewhere?

A. The field strengths shown in Appendix Section IV.A can be compared to those created by other electrical sources. For example, a hair dryer produces 300 mG or more, a copy machine can produce 90 mG or more, and an electric power saw can produce 40 mG or more, depending on the circumstances and operation of these devices. The strength of the field received by the person operating these devices would, of course, depend on the distance between the device and the person operating it. 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 of the right-of-way.

Q. Does this conclude your prefiled direct testimony?

A. Yes, it does.

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Velazquez

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Wilson O. Velazquez

Title: Consulting Engineer – Electric Transmission Group

Summary:

In order to accommodate an expansion of Northern Virginia Electric Cooperative's ("NOVEC") existing Pleasant Valley Delivery Point ("DP") and to comply with mandatory North American Electric Reliability Corporation ("NERC") Reliability Standards, Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four structures supporting new double-circuit 230 kV tap lines ("230 kV Tap Lines") from its existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick Switching Station ("Elklick Station") (collectively, the "Project"). The Company proposes to cut the existing Line #295 (at "Elklick Junction") and extend each end for approximately 670 feet on four new line structures (exclusive of two new backbone structures) to terminate at the proposed Elklick Station, creating 230 kV Bull Run-Elklick Line #295 and new Loudoun-Elklick Line #2173.

Company Witness Wilson O. Velazquez provides a description of the design and work required for the switching station facilities associated with the Project.

Company Witness Wilson O. Velazquez testifies that NOVEC submitted a DP Change Request ("DP Request") notifying the Company of increased loading at the Pleasant Valley DP. He explains that because the increased load will result in a total connected load above 100 MW, the Company's Facility Interconnection Requirements specify use of a four-breaker ring bus, which will be installed in a switching station adjacent to NOVEC's expanded Pleasant Valley DP. The new Elklick Station will be comprised of four 230 kV breakers in a ring bus configuration, ten 230 kV switches, two 230 kV transmission backbones, and associated equipment.

Mr. Velazquez states that the estimated cost of the Project is approximately \$8.1 million (2016 dollars), with the cost for the switching station work estimated to be approximately \$6.0 million.

**DIRECT TESTIMONY
OF
WILSON O. VELAZQUEZ
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2016-00056**

1 **Q.** Please state your name, position, and business address with Virginia Electric and
2 Power Company (“Dominion Virginia Power” or the “Company”).

3 **A.** My name is Wilson O. Velazquez, and I am a Consulting Engineer in the Substation
4 Engineering section of the Electric Transmission group of the Company. My business
5 address is 2400 Grayland Avenue, Richmond, Virginia 23220.

6 **Q.** What is your educational and professional background?

7 **A.** I graduated in 1995 with a Bachelor’s degree in Electrical Engineering from the
8 Polytechnic University of Puerto Rico. I am a registered Professional Engineer in the
9 states of Florida and Virginia. From 1993 to 2000, I worked for Alfa & Omega Electric,
10 S.E. in Puerto Rico, where I held a position as Electrical Engineer for commercial and
11 industrial projects, and was later promoted to the positions of Project Engineer and
12 Project Manager. From 2001 to 2008, I worked as Project Manager at Terry’s Electric,
13 Inc. in Florida. My responsibilities included the preparation of estimates and the
14 coordination and supervision of the construction or upgrade of new and existing
15 substations. Since 2008, I have been employed at Dominion Virginia Power. From 2008
16 to 2015, I held various engineering titles in the Substation Engineering section. From
17 2015 to the present, I have been working as a Supervisor in the Substation Engineering
18 section.

1 **Q. What are your responsibilities as a Supervisor Substation Engineer?**

2 A. I am responsible for supervising the Conceptual Substation Engineering group and the
3 conceptual design, scope development, and cost estimating for all new high voltage
4 transmission switching stations, transmission substations and distribution substations.

5 **Q. What is the purpose of your direct testimony?**

6 A. In order to accommodate an expansion of Northern Virginia Electric Cooperative's
7 ("NOVEC") existing Pleasant Valley Delivery Point ("DP") and to comply with
8 mandatory North American Electric Reliability Corporation Reliability Standards,
9 Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four
10 structures supporting new double-circuit 230 kV tap lines ("230 kV Tap Lines") from its
11 existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick
12 Switching Station ("Elklick Station") (collectively, the "Project").

13 The purpose of my testimony is to describe the design characteristics of the switching
14 station proposed in the Application. I am sponsoring Sections II.C of the Appendix. I
15 am also co-sponsoring Section I.G with Company Witness Robert J. Shevenock II.

16 **Q. Please describe the work to be done at the Elklick Station.**

17 A. NOVEC submitted a DP Change Request ("DP Request") notifying the Company of
18 increased loading at the Pleasant Valley DP. The additional load is associated with the
19 Federal Energy Regulatory Commission-approved expansion of Dominion Cove Point
20 LNG, LP's existing compressor station adjacent to Pleasant Valley DP. Since the added
21 load will result in a total connected load above 100 MW, the Company's Facility
22 Interconnection Requirements specify use of a four-breaker ring bus. The ring bus will

1 be installed in a switching station adjacent to NOVEC's expanded Pleasant Valley DP.

2 The four-breaker ring bus will terminate Line #295 and Line #2173 and provide two
3 sources to NOVEC's expanded Pleasant Valley DP. The proposed station will be
4 installed to reliably interconnect the expanded Pleasant Valley DP with the transmission
5 grid, replacing the existing NOVEC-owned single-circuit 230 kV tap from Line #295 that
6 feeds the existing Pleasant Valley DP.

7 **Q. Please describe the design of the switching station associated with the Project.**

8 A. Elklick Station will be comprised of four 230 kV breakers in a ring bus configuration, ten
9 230 kV switches, two 230 kV transmission backbones, and associated equipment. Also,
10 a new control enclosure containing the required protective relays and communications
11 equipment will be installed as part of the Project.

12 **Q. What additional station work will be required for the proposed Project?**

13 A. There is minor work at Bull Run and Loudoun transmission stations. At Bull Run, an
14 update on the relay settings associated with Line #295 will be required and at Loudoun,
15 the equipment associated with Line #295 will be re-stenciled and the one line diagram
16 updated to reflect the line number, Line #2173.

17 **Q. What is the estimated construction cost for the Project?**

18 A. The estimated cost of the Project is \$8.1 million. The cost for the transmission work is
19 estimated to be approximately \$2.1 million. The switching station work is estimated to
20 cost approximately \$6.0 million. These costs are in 2016 dollars.

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1 Q. Does this conclude your prefiled direct testimony?

2 A. Yes, it does.

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Brooks

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Stefan R. Brooks

Title: Engineer III – Electric Transmission Sitting & Permitting Department

Summary:

In order to accommodate an expansion of Northern Virginia Electric Cooperative’s (“NOVEC”) existing Pleasant Valley Delivery Point (“DP”) and to comply with mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards, Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four structures supporting new double-circuit 230 kV tap lines (“230 kV Tap Lines”) from its existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick Switching Station (“Elklick Station”) (collectively, the “Project”). The Company proposes to cut the existing Line #295 (at “Elklick Junction”) and extend each end for approximately 670 feet on four new line structures (exclusive of two new backbone structures) to terminate at the proposed Elklick Station, creating 230 kV Bull Run-Elklick Line #295 and new Loudoun-Elklick Line #2173.

Company Witness Stefan R. Brooks supports the routing evaluation undertaken for the proposed Rebuild Project and provides a description of the permitting required for the Project. In addition, Mr. Brooks addresses the Company’s public outreach activities for the Project and sponsors the DEQ Supplement.

Mr. Brooks explains that the 230 kV Tap Lines will be routed from the Company’s Line #295 and into Elklick Station. From Line #295, the 230 kV Tap Lines will run for approximately 170 feet within existing Company right-of-way. The 230 kV Tap Lines will run for approximately 500 feet to Elklick Station on new right-of-way of variable width. The Company will secure easements for this new right-of-way from the underlying property owners, the Fairfax County Park Authority, NOVEC’s customer, and NOVEC. The Company will obtain an easement to build the Elklick Station on property owned by NOVEC and adjacent to NOVEC’s expanded Pleasant Valley DP.

Mr. Brooks also explains that because the existing 230 kV Bull Run-Loudoun Line #295 right-of-way is immediately adjacent to the site proposed for Elklick Station, the Company did not consider any alternate routes for the Project.

Finally, Mr. Brooks details how the Company has consulted with local, state, and federal agencies to evaluate environmental, historical, scenic, cultural, and architectural constraints existing in the vicinity of the Project.

**DIRECT TESTIMONY
OF
STEFAN R. BROOKS
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2016-00056**

1 **Q.** **Please state your name, position, and business address with Virginia Electric and**
2 **Power Company (“Dominion Virginia Power” or the “Company”).**

3 **A.** My name is Stefan R. Brooks, and I am an Engineer III for the Company. My office is
4 located at One James River Plaza, 701 East Cary Street, Richmond, Virginia 23219.

5 **Q.** **What is your educational and professional background?**

6 **A.** I graduated from Old Dominion University in 1997 with a Bachelor of Science degree in
7 Engineering Technology. I also hold an Associate’s Degree in Architectural Engineering
8 Technology from John Tyler Community College, which I received in 1994. While
9 attending John Tyler Community College, I also obtained two Career Studies
10 Certificates, one in Transportation, Location & Design and the other in Surveying. From
11 1997 to 2006, I worked as a Civil Engineer for Timmons Group in Richmond, Virginia.
12 In 2006, I joined McCrone, Inc. where I worked as a Civil Engineer until the Richmond
13 office closed in 2010. I briefly worked for Nyfeler Associates as a Civil Engineer and
14 Project Manager until joining Dominion Virginia Power in 2011 as an Engineer in the
15 Transmission Right-of-Way group.

16 **Q.** **What are your responsibilities as an Engineer III?**

17 **A.** My responsibilities include identification of appropriate routes for transmission lines and
18 sites for substations and obtaining necessary federal, state, and local approvals, and

1 environmental permits for those facilities. I also review in general the site plans prepared
2 for substations to ensure that they are meeting the needs and specifications of the
3 Company. In this position, I work closely with government officials, permitting
4 agencies, property owners, and other interested parties, as well as with other Company
5 personnel, to develop facilities needed by the public so as to reasonably minimize
6 environmental and other impacts on the public in a reliable and cost-effective manner.

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

8 A. In order to accommodate an expansion of Northern Virginia Electric Cooperative's
9 ("NOVEC") existing Pleasant Valley Delivery Point ("DP") and to comply with
10 mandatory North American Electric Reliability Corporation Reliability Standards,
11 Dominion Virginia Power proposes to construct, in Fairfax County, Virginia, four
12 structures supporting new double-circuit 230 kV tap lines ("230 kV Tap Lines") from its
13 existing 230 kV Bull Run-Loudoun Line #295 to a proposed new 230 kV Elklick
14 Switching Station ("Elklick Station") (collectively, the "Project").

15 The purpose of my testimony is to discuss the route for the Project as shown in Appendix
16 Attachment II.A.2. In addition, I am sponsoring Sections II.A.1, 2, 4-9; III and V of the
17 Appendix. I am also sponsoring the Virginia Department of Environmental Quality
18 ("DEQ") Supplement and its attachments.

19 **Q. Please provide a description of the existing right-of-way to be used for the Project.**

20 A. The 230 kV Tap Lines will be routed from the Company's Line #295 and into Elklick
21 Station. From Line #295, the 230 kV Tap Lines will run for approximately 170 feet

1 within existing Company right-of-way. The existing transmission line corridor has been
2 owned by the Company since the mid-1960s.

3 The 230 kV Tap Lines will run for approximately 500 feet to Elklick Station on new
4 right-of-way of variable width. The Company will secure easements for this new right-
5 of-way from the underlying property owners, the Fairfax County Park Authority,
6 NOVEC's customer, DCP, and NOVEC.

7 The property for NOVEC's existing Pleasant Valley DP and the proposed Elklick Station
8 is within approximately 8.4 acres of land, which (as noted in Section II.A.4) has been
9 subdivided from an approximately 30.0 acre parcel. The 8.4 acre area is owned by
10 NOVEC and the residual 21.6 acres is owned by NOVEC's customer. Elklick Station
11 will be built on property adjacent to NOVEC's expanded Pleasant Valley DP. Through
12 an agreement with NOVEC, the Company will secure an easement of approximately 1.3
13 acres inside of NOVEC's 8.4 acre area in which to locate the proposed Elklick Station.

14 The station construction area and new right-of-way was cleared of trees during previous
15 construction activity by NOVEC's customer unrelated to the Project. Erosion control
16 devices will be used on an ongoing basis as necessary during all construction activities
17 associated with the Project.

18 **Q. Please describe the Company's initial outreach on the Project.**

19 A. Dominion Virginia Power has met or spoken with a number of officials to inform them of
20 the Project, including a meeting with a Fairfax County Board of Supervisors
21 representative on April 11, 2016, and a telephone call with Fairfax County Executive,
22 Mr. Edward Long, Jr., on May 9, 2016.

1 Q. **What are the environmental impacts of the Project?**

2 A. The Project is expected to have minimal incremental impact on area resources. The
3 Project is located in the southwest corner of Fairfax County, Virginia, and is within
4 NOVEC's service territory. The general character of the surrounding project area is rural
5 with some forestal and agricultural uses. No recreational uses exist within one mile of
6 the area. The "SYA Sports Park" is located just outside the one-mile radius to the south,
7 along Bull Run Post Office Road.

8 According to United States Geological Survey Topographic maps, there is one
9 intermittent stream on the west line of the Project parcel and confirmed by the wetland
10 delineation. The intermittent stream includes a tributary to Bull Run.

11 No National Historic Landmarks ("NHL"), Civil War Battlefields, or National Register-
12 eligible historic resources were identified in the appropriate study area.

13 A U.S. Fish & Wildlife Service ("USFWS") *Information, Planning, and Conservation*
14 *System (IPAC)* review was also conducted for the study area. The IPAC *Official Species*
15 *List* revealed the presence of one federally threatened species, Northern Long Eared Bat
16 (*Myotis septentrionalis*) within the project area.

17 No scenic byways are crossed by the Project.

18 Q. **Did the Company consider any alternate routes for the Project?**

19 A. Because the existing 230 kV Bull Run-Loudoun Line #295 right-of-way is immediately
20 adjacent to the site proposed for Elklick Station, the Company did not consider any
21 alternate routes for the Project. The 230 kV Tap Lines will run approximately 670 feet

1 from their connection point to Elklick Station. The lines will run approximately 170 feet
2 within the existing Company right-of-way and then will run for approximately 500 feet
3 from the edge of the existing Company right-of-way to Elklick Station.

4 **Q. Please discuss the resources in the Project area and the activities that have been and**
5 **will be undertaken to reasonably minimize adverse impacts of the proposed lines on**
6 **the environment.**

7 A. The entire parcel in which Elklick Station will be located was delineated through a
8 Jurisdictional Determination made in September 2012. As outlined in a 2013 Wetlands
9 Delineation Report shown in Attachment 2.B.1 to the DEQ Supplement, the purpose of
10 the wetland investigation was to identify the location and extent of jurisdictional waters
11 of the United States (“WOUS”), including wetlands, as regulated under Sections 401 and
12 404 of the Clean Water Act. This wetland investigation was conducted in preparation for
13 the planning and construction of NOVEC’s DP and NOVEC’s customer facility
14 expansion. The Project will have minimal impacts on the jurisdictional wetlands and
15 other WOUS.

16 In accordance with the *Guidelines for Assessing Impacts of Proposed Transmission Lines*
17 *and Associated Facilities on Historic Resources in the Commonwealth of Virginia*
18 (*2008*), Dutton+Associates, LLC (“D+A”) prepared a Pre-Application Analysis Report
19 which was filed with the Virginia Department of Historic Resources on April 18, 2016.
20 As part of the analysis, background archival research and field verification of cultural
21 resources within the project study area were conducted by D+A.

1 The study area included a tiered assessment as defined by Virginia Department of
2 Historic Resources. Utilizing the defined tiers, the review found that no NHL are located
3 within 1.5 miles of the Project; and one NRHP-listed battlefield park and two NRHP-
4 eligible Civil War Battlefields are located within 1.0 mile of the project area. Portions of
5 one of these battlefields also extend to within the 0.5 mile tier and crosses directly
6 through a small corner of the project area. Field inspection found that no additional or
7 previously unrecorded historic properties are located directly within the study area. No
8 archeological field survey was completed for the Elklick Station site by D+A; however, a
9 previous Phase I archeological survey study was performed in 2013 by R. Christopher
10 Goodwin and Associates, Inc. titled “Phase I Archaeological Survey for Additional
11 Facilities at the Pleasant Valley Compressor Station for the Proposed Dominion Cove
12 Point Liquefaction Project, Fairfax County, VA,” FX-597 that included much of the
13 project area. That effort did not identify any archeological sites within the footprint of
14 the project area.

15 Field inspection and assessment as part of this Pre-Application Analysis found that the
16 project will not be visible from most locations throughout the three NRHP-listed or
17 eligible historic properties, and therefore none will have more than a minimal impact
18 brought about by the Project. A copy of the complete Pre-Application Analysis Report is
19 included as Attachment 2.H.1 to the DEQ Supplement.

20 Dominion Virginia Power submitted consultation request letters to the USFWS, Virginia
21 Department of Conservation & Recreation (“DCR”), and Virginia Department of Game
22 and Inland Fisheries on April 4, 2016 to obtain information and comment concerning
23 known protected species present within the study area. The Company also submitted a

project review request online to DCR on March 28, 2016. The response found that the Project falls within a conservation site, and DCR requested continued coordination between the Company, DCR and the Fairfax County Park Authority concerning potential impacts as the Project continues its development.

A USFWS IPAC review was also conducted for the study area. The IPAC *Official Species List* revealed the presence of one federally threatened species, Northern Long Eared Bat (*Myotis septentrionalis*) within the project area.

There are no dwellings within 500 feet of the Project.

Q. What activities have been or will be undertaken to reasonably minimize the environmental impact of the proposed line, and describe the environmental permitting process that will follow Commission approval of the Project?

DEQ will conduct an environmental and permitting review of the Company's Application, including the solicitation of comments from relevant agencies. The Company developed the DEQ Supplement attached to this Application based on previous Company coordination with the DEQ. The DEQ Supplement contains, in addition to a brief description of the Project, information on impacts and the status of agency review with respect to the following: air quality; water withdrawals and discharges; wetlands; solid and hazardous waste; natural heritage and endangered species; erosion and sediment control; archeological, historic, scenic, cultural, and architectural resources; use of pesticides and herbicides; geology and mineral resources; wildlife resources; recreation, agricultural, and forest resources; and transportation infrastructure. The Project is located immediately adjacent to an existing transmission right-of-way, so impacts will be

1 reasonably minimized. The appropriate environmental studies will be made of these
2 areas before construction begins. Clearing and maintenance of the right-of-way will be
3 done in such a manner that low buffers of vegetation will be retained as much as possible.

4 The DEQ Supplement also discusses the permits that will be required and comment
5 letters and other materials the Company has obtained regarding the Project from relevant
6 agencies as a result of its own efforts.

7 **Q. When will the Company apply for the required permits?**

8 A. After approval by the State Corporation Commission of Virginia, the Company will
9 survey the right-of-way and then perform the necessary environmental surveys (wetlands,
10 cultural resources, and rare species). After these surveys are complete, applications to the
11 Corps, Virginia Marine Resources Commission, and DEQ.

12 **Q. What contacts has the Company made with impacted localities?**

13 A. As noted previously, Dominion Virginia Power has met or spoken with a number of
14 officials to inform them of the Project in Virginia, including a meeting with a Fairfax
15 County Board of Supervisors' district representative on April 11, 2016, and a telephone
16 call with the Fairfax County Executive on May 9, 2016.

17 Additionally, on May 9, 2016, Dominion Virginia Power sent surrounding property
18 owners an informational mailer (see Attachment III.B.2) about the project and how to
19 contact the Company for further information. Although the project site is directly
20 surrounded by either Fairfax County Park Authority or utility-owned property, letters
21 were sent to more than 20 different property owners within a half mile radius from the
22 existing substation/project location.

1 Additional information is provided to the public through a website dedicated to the
2 Project, searchable on www.dom.com using the search term “Elklick:” The website
3 includes maps, an explanation of need, a description of the Project and its benefits,
4 information on the Commission review process, structure diagrams and answers to
5 frequently asked questions.

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

7 A. Yes, in accordance with Va. Code § 15.2-2202 E, a letter dated May 9, 2016 (included as
8 Attachment III.B.1 to the Appendix) was sent to Mr. Edward L. Long, Jr., Fairfax County
9 Executive advising of the Company’s intention to file this application and inviting the
10 County to consult with the Company about the Project.

11 **Q. Does this conclude your prefiled direct testimony?**

12 A. Yes, it does.