

**REBUTTAL TESTIMONY
OF
MARK S. ALLEN
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2007-00031**

1 **Q. Please state your name and position with Virginia Electric and Power Company**
2 **("Dominion Virginia Power" or the "Company").**

3 A. My name is Mark S. Allen and I am manager, Electric Transmission Line Engineering for
4 the Company.

5 **Q. Did you submit direct testimony in support of the Company's application in this**
6 **proceeding?**

7 A. Yes.

8 **Q. What is the purpose of your rebuttal testimony?**

9 A. I will be commenting on pre-filed testimony concerning certain aspects of the
10 construction and cost of the Company's proposed transmission line.

11 **Q. Do you have any comments on the testimony of Songhoon Yang and Nicolas Puga of**
12 **Bates White, LLC, on page 61, suggesting a double circuit 230kV line be**
13 **constructed as an alternative to the proposed 500kV Meadow Brook – Loudoun**
14 **line?**

15 A. Yes. While we have not prepared detailed estimates of such an alternative, a cursory
16 look at per mile costs for double circuit 230kV construction versus 500kV construction
17 indicates that a double circuit 230kV line from the Appalachian Trail to Loudoun would
18 exceed the cost of a 500kV line. Trans-Allegheny Interstate Line Company ("TrAILCo")
19 would also incur additional costs due to the required installation of a 500kV to 230kV
20 transformation at Meadow Brook Substation. In addition, right-of-way limitations along

1 various portions of the route would require different construction configurations than is
2 presently proposed in the Application. From the Appalachian Trail to Remington,
3 approximately 9.5 miles of this 32 mile section must be constructed on existing right-of-
4 way with no expansion. Double circuit 230kV construction would result in three sets of
5 structures rather than the proposed two sets along sections of a 169 foot right-of-way
6 where a 115kV line currently exists. For most of the approximately 11 mile section from
7 Remington to the Line 569 corridor, again two sets of structures (as opposed to the one
8 set currently proposed) would be required with the addition of 2 – 230kV circuits instead
9 of a single 500kV line because a 115kV line currently exists on this right-of-way. For the
10 22 mile section of line along the Line 569 corridor (from 1.5 miles north of Bristers
11 Substation to Loudoun Substation), the addition of 2 - 230kV circuits instead of a single
12 500kV circuit would require triple circuit 230kV construction adjacent to double circuit
13 500 over 230kV construction to fit all circuits on the existing 240 foot right-of-way. The
14 right-of-way currently has a single 500kV line and 2 – 230kV lines. The Company
15 would be concerned about reliability of the triple circuit construction, since the loss of
16 one structure would take out three circuits. Dominion Virginia Power has triple circuit
17 construction only in three locations on its system. These exist only because of right-of-
18 way limitations in urban settings and are only for short distances.

19 **Q. In Douglas Proctor's testimony concerning the estimated cost of the proposed**
20 **Meadow Brook - Loudoun 500kV Transmission line he compared the cost of this**
21 **proposed line to five similar 500kV projects with similar construction components.**
22 **All comparison projects were on the west coast in California (page 1 & 2). He**
23 **concluded that the per mile costs of all the projects in the comparison group fall**
24 **within plus or minus 20% of the proposed line. All but one of the projects was less**
25 **expensive on a per mile basis than the proposed project (page 13). Do you have any**
26 **comments on this testimony?**

1 A. Yes. The projects used for comparison were all in California which has a different
2 National Electrical Safety Code ("NESC) loading zone for weather conditions than does
3 Virginia. The NESC recognizes three general degrees of district loading due to weather
4 conditions, which are designated as heavy, medium, and light. Northern Virginia, where
5 the line is proposed, falls under the NESC Heavy loading zone which is the most severe
6 of the three for mechanical loading on the wire and structures. Most of California is
7 designated as a light loading zone, with a small portion of northern California designated
8 as a medium zone. The heavy loading zone of northern Virginia could result in heavier
9 structures or shorter span lengths (more towers per mile) than would be found in
10 California. This may be part of the explanation of the higher estimated cost for the
11 proposed line. Another factor that could explain the slightly higher estimated cost is the
12 large amount of removal of existing transmission lines required for this project.
13 Approximately 67 miles of existing transmission line (500kV, 230kV, & 115kV) will be
14 replaced in order to construct the proposed facilities on the route identified. When this is
15 considered, the actual length of new 500 kV line construction is 99 miles along a 65 mile
16 corridor. In addition, 67 miles of lower voltage underbuild is also required, further
17 adding to the cost. Also, the 150 foot right-of-way limitation on 9.5 miles of the corridor
18 from the Appalachian Trail to Remington will require shorter spans and therefore
19 additional structures to construct two 500kV circuits, and thus additional cost. When
20 these factors are considered, it is reasonable to find that the California projects have a
21 lower per mile cost than the Company's proposed line.

22 **Q. Do you have any comment on Staff witness Mr. Proctor's testimony that future**
23 **transmission projects could experience higher material costs due to both national**
24 **and international demand (page 13) and that the cost estimates by Dominion**

1 **Virginia Power may not realistically reflect such demand and may be conservative**
2 **(page 15)?**

3 A. To anticipate this we have used slightly higher prices for both the lattice steel structures
4 and the conductor in the estimate for this proposed line. For lattice steel, the estimate
5 used was 25% higher than the most recent Dominion Virginia Power bid (12/07). The
6 estimated cost for conductor was 10% higher than the most recent Dominion Virginia
7 Power bid (12/07). In addition, we have entered into or are in the process of entering into
8 agreements with major material suppliers to assure that the materials will be available.
9 These agreements will be based on a 2008 price, to be adjusted according to the
10 appropriate price index.

11 **Q. Do you agree with Mr. Proctor's testimony that the permitting process has**
12 **increased the costs associated with 500kV design and construction of transmission**
13 **facilities, and, therefore, it is considered prudent to estimate designs that address**
14 **these mitigation requirements?**

15 A. Yes. Dominion Virginia Power has considered the extra cost associated with permitting
16 of this line in its estimate. Non-lattice tower structures (steel poles or steel H-Frames)
17 must be installed at the Appalachian Trail, in areas where we must install 2 – 500kV lines
18 on the existing 150 foot right-of-way, near a small private air field in Fauquier County,
19 and through Manassas Battlefield Park. The extra costs of material and construction for
20 these special structures and all associated permitting have been included in the estimate.

21 **Q. Do you agree with Mr. Proctor's conclusion that there is sufficient basis to support**
22 **the project cost estimates and that the estimates are consistent with industry**
23 **standards?**

24 A. Yes. Dominion Virginia Power has done conceptual engineering for this project and is
25 confident that the cost estimates accurately reflect costs associated with this type of
26 construction.

1 **Q. Discuss Mr. Simmons' suggestion that the Company should be required to use non-**
2 **reflecting conductors and dulled steel for the line structures in order to minimize**
3 **the visual impact of the line.**

4 A. The steel structures that we propose to construct will be galvanized steel, which has a
5 silver color and is considered to be relatively non-intrusive because of its ability to blend
6 with the sky. The Company does not normally order non-reflective conductor and dulled
7 steel for transmission structures because it is more expensive and because both the
8 aluminum conductor and galvanized steel structures will dull naturally under normal
9 atmospheric conditions.

10 **Q. Are there any responses you would like to make concerning other Respondent**
11 **testimony?**

12 A. Yes. Power-line Landowners Alliance witness Dennis, on page 2 of the Robert T. Dennis
13 Report, Section C, describes the effect of approving the Proposed Route is that Dominion
14 Virginia Power will in fact, if not in law, be using the open space easements as extensions
15 beyond the edge of its right of way. We do not agree with this statement. As proposed,
16 the single pole 500kV structure will provide greater clearance from the conductor to the
17 edge of the right of way than presently exists on our standard 150 foot right of way with a
18 500kV single circuit tower. Dominion Virginia Power does not intend to use any
19 property beyond the edge of the right of way for operation of the transmission line.

20 **Q. Does this conclude your rebuttal testimony?**

21 A. Yes, it does.