

**SUPPLEMENTAL DIRECT TESTIMONY
OF STEPHEN G. THORNHILL
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUE-2007-00020**

1 **Q. Please state your name.**

2 A. My name is Stephen G. Thornhill.

3 **Q. Did you prefile Direct Testimony and exhibits on May 4, 2007 in this proceeding.**

4 A. Yes.

5 **Q. Do you have any revisions and if so why?**

6 A. Attached is Exhibit No. SGT Supplemental-1 which revised Table 5-1 of the
7 Environmental Assessment that I sponsored as part of my prefiled Direct Testimony in
8 this proceeding. In summary, the changes in the information presented for the Proposed
9 and Alternate Routes included in the table were a result of various revisions made to the
10 alignments of those routes. Company witness Elizabeth Harper in her Supplemental
11 Direct Testimony discusses the reasons for realignment, while my comments explain the
12 corresponding changes in Table 5-1 of the Environmental Assessment.

13 **Proposed Route Changes**

14 **Q. Please explain the reason for each change on Table 5-1 of the Environmental**
15 **Assessment as they relate to the Proposed Route.**

16 A. As noted previously, there were revisions to the alignment of the Proposed Route. These
17 revisions resulted in changes to the resources crossed or encountered along the Proposed
18 Route. Each of the resources experiencing a change due to the route revisions are address
19 below.

1 **Q. Why did the total length change from 314,697 feet to 317,042 feet?**

2 A. The shortest distance between two points is a straight line. The revisions to the Proposed
3 Route to address the issues and concerns noted required the route alignment to deviate
4 from a straight line, generally creating two sides of a triangle rather than the shorter
5 hypotenuse of the original alignment.

6 **Q. Why did “Angles >30°” change from 16 to 20?**

7 A. Additional turns, or angles, in the Proposed Route were required to facilitate the
8 necessary realignments. Efforts were made to minimize these angles during the
9 realignment process, but four additional heavy angles could not be reduced further
10 without increasing other environmental concerns such as proximity to homes.

11 **Q. Why did the length not along existing T-line change from 201,859 feet to 192,748**
12 **feet?**

13 A. In developing revisions to the Proposed Route in response to various environmental
14 concerns, it was determined reasonable to parallel existing transmission lines, particularly
15 Dominion’s existing 115-kV line, for greater distances. In these cases, the original
16 Proposed Route had discontinued paralleling the existing 115-kV line to avoid extending
17 through towns and requiring the acquisition of numerous residences. Paralleling
18 additional areas in closer proximity to the towns had not previously been considered
19 reasonable due to the angles required to turn back to the existing 115-kV and avoid
20 residential development. During revisions to the Proposed Route, additional angles were
21 added, or existing angles were relocated that enabled additional portions of the existing
22 115-kV line to be paralleled. In one area, the original alignment passed through an
23 extensive wetland area identified during helicopter reconnaissance. It was determined

1 paralleling the existing 115-kV line in this area would reduce the potential wetland
2 impacts. Therefore, an angle was added and additional length of the existing line was
3 paralleled.

4 **Q. Why did the number of primary road crossings change from 10 to 7?**

5 A In revising the Proposed Route, several areas were identified where the alignment would
6 cross two roads within a short distance. Adjusting the alignment slightly would move the
7 crossing to a section of road beyond the point where the two roads intersected, requiring
8 only one road crossing.

9 **Q. Why did the number of secondary road crossings change from 36 to 42?**

10 A. As opposed to primary roads, in several instances, the alignment of the Proposed Route
11 was adjusted such that it no longer crossed a road beyond an intersection, but before the
12 intersection, requiring additional roadways to be crossed.

13 **Q. Why did the number of residences within 101-500 feet change from 88 to 81?**

14 A. One of the primary reasons for revisions to the Proposed Route was to maximize distance
15 from residences. In developing the revisions and adding the angles necessary for them,
16 we were successful at moving the line further from residences, thereby reducing the
17 number of residences within 500 feet of the line.

18 **Q. Why did the visibility rating score change from 319,028 to 488,418?**

19 A. The key factor in the visibility rating score is the length of the line through non-wooded
20 areas. In moving the alignment further from nearby homes and historic resources and
21 working to maximize the distance of woodland between the route and the resource,

1 substantial sections of the alignment were shifted into open areas from woodland.
2 Placing the Proposed Route in open areas increased its visibility to surrounding homes.

3 **Q. Why did the number of public facilities within 0-500 feet change from 4 to 2?**

4 A. As with residences, revisions were developed to maximize the distance from public
5 facilities. In revising the alignment, it was possible to increase the distance from two
6 such facilities beyond 500 feet, reducing the number within that from 4 to 2.

7 **Q. Why did “Length Through Ag. Land” change from 46,355 to 67,884?**

8 A. As noted previously, substantial portions of the Proposed Route were shifted from
9 wooded areas to open agricultural land in order to maximize the distance from homes and
10 other structures and provide greater woodland screening for nearby homes and historic
11 resources.

12 **Q. Why did the number of historical/archeological sites within one mile change from 11**
13 **to 12?**

14 A. Realignment of the Proposed Route moved the alignment to approximately 5,000 from an
15 additional historic resource which had previously been beyond one mile from the
16 alignment.

17 **Q. Why did the acres of wetlands within ROW change from 159.4 to 153.9?**

18 A. In developing revisions to the Proposed Route, other environmental resources were
19 considered. Therefore, as throughout the routing process, when developing a route
20 alignment to maximize distance from homes, minimizing wetlands with the right-of-way
21 was also considered. Adjustments to the Proposed Route for homes and historic
22 structures also enabled wetland areas to be avoided or minimized, resulting in an overall
23 reduction in the amount of wetland within the right-of-way for the Proposed Route.

1 **Q. Why did the acres of woodland within ROW change from 698.4 to 698.7?**

2 A. Revisions to the Proposed Route resulted in increased overall length and a shift of
3 portions of the route from woodland to agricultural land in some areas and a shift from
4 open areas to woodland in others. Sections of the route previously along existing rights-
5 of-way through wooded areas were reduced right-of-way width, and associated clearing,
6 were moved away from existing rights-of-way, requiring more clearing. Finally, in some
7 areas, as noted previously, additional sections of existing rights-of-way were paralleled,
8 requiring less clearing than along the previous alignment. The sum total of these changes
9 resulted in only a minor change in the acres of woodland within the ROW.

10 **Q. Why did the number of streams crossed change from 42 to 40?**

11 A. In several instances, the alignment of the Proposed Route was adjusted such that it
12 crossed a stream downstream of its tributaries, requiring fewer stream crossings. In some
13 cases, realignments resulted in a stream being crossed fewer times.

14 **Alternate Route**

15 **Q. Please explain the reason for each change on Table 5-1 of the Environmental**
16 **Assessment as they relate to the Alternate Route.**

17 A. As noted previously, there were revisions to the alignment of the Alternate Route. These
18 revisions resulted in changes to the resources crossed or encountered along the Alternate
19 Route. Each of the resources experiencing a change due to the route revisions are address
20 below.

21 **Q. Why did the total length change from 313,569 feet to 315,552 feet?**

22 A. The shortest distance between two points is a straight line. The revisions to the Alternate
23 Route to address the issues and concerns noted required the route alignment deviate from

1 a straight line, generally creating two sides of a triangle rather than the shorter
2 hypotenuse of the original alignment.

3 **Q. Why did “Angles >30°” change from 9 to 14?**

4 A. Additional turns, or angles, in the Alternate Route were required to facilitate the
5 necessary realignments. Efforts were made to minimize these angles during the
6 realignment process, but five additional heavy angles could not be reduced further
7 without increasing other environmental concerns such as proximity to homes.

8 **Q. Why did the length not along existing T-line change from 311,215 to 287,371 feet?**

9 A. In developing revisions to the Alternate Route in response to various environmental
10 concerns, it was determined reasonable to parallel existing transmission lines, particularly
11 Dominion’s existing 500-kV line in the vicinity of the Cherry Orchard Bog Natural Area,
12 for a greater distance. The original Alternative Route had discontinued paralleling the
13 existing 500-kV line to avoid extending through the Natural Area. During revisions to
14 the Alternate Route, additional angles were added, or existing angles were relocated that
15 enabled additional portions of the existing 500-kV line to be paralleled.

16 **Q. Why did the number of primary road crossings change from 10 to 7?**

17 A. In revising the Alternate Route, several areas were identified where the alignment would
18 cross two roads within a short distance. Adjusting the alignment slightly would move the
19 crossing to a section of road beyond the point the two roads intersected, requiring only
20 one road crossing.

21

22

1 **Q. Why did the number of secondary road crossings change from 29 to 34?**

2 A. As opposed to primary roads, in several instances, the alignment of the Alternate Route
3 was adjusted such that it no longer crossed a road beyond an intersection, but before the
4 intersection, requiring additional roadways to be crossed.

5 **Q. Why did the number of residences within 101-500 feet change from 56 to 53?**

6 A. One of the primary reasons for revisions to the Alternate Route was to maximize distance
7 from residences. In developing the revisions, we were successful at moving the line
8 further from residences, thereby reducing the number of residences within 500 of the line.

9 **Q. Why did the visibility rating score change from 202,389 to 572,752?**

10 A. The key factor in the visibility rating score is the length of the line through non-wooded
11 areas. In moving the alignment further from nearby homes and historic resources and
12 working to maximize the distance of woodland between the route and the resource,
13 substantial sections of the alignment were shifted into open areas from woodland.
14 Placing the Alternate Route in open areas increased its visibility to surrounding homes.

15 **Q. Why did the number of public facilities within 0-500 feet change from 3 to 2?**

16 A. As with residences, revisions were developed to maximize the distance from public
17 facilities. In revising the alignment, it was possible to increase the distance from one
18 such facility beyond 500 feet, reducing the number within that from 3 to 2.

19 **Q. Why did “Length Through Ag. Land” change from 37,153 to 61,578?**

20 A. As noted previously, substantial portions of the Alternate Route were shifted from
21 wooded areas to open agricultural land in order to maximize the distance from homes and

1 other structures and provide greater woodland screening for nearby homes and historic
2 resources.

3 **Q. Why did the acres of wetlands within ROW change from 142.4 to 139.9?**

4 A. In developing revisions to the Alternate Route, other environmental resources were
5 considered. Therefore, as throughout the routing process, when developing a route
6 alignment to maximize distance from homes, minimizing wetlands with the right-of-way
7 was also considered. Adjustments to the Alternate Route for homes and historic
8 structures also enabled wetland areas to be avoided or minimized, resulting in an overall
9 reduction in the amount of wetland within the right-of-way for the Alternate Route.

10 **Q. Why did the acres of woodland within ROW change from 797.3 to 785.5?**

11 A. Revisions to the Alternate Route resulted in increased overall length and a shift of
12 portions of the route from woodland to agricultural land in some areas and a shift from
13 open areas to woodland in others. Sections of the route previously along existing rights-
14 of-way through wooded areas where reduced right-of-way width, and associated clearing,
15 were moved away from existing rights-of-way, requiring more clearing. Finally, in some
16 areas, as noted previously, additional sections of existing rights-of-way were paralleled,
17 requiring less clearing than along the previous alignment. The sum total of these changes
18 resulted in a reduction to the amount of woodland clearing that would be required.

19 **Q. Why did the number of streams crossed change from 35 to 32?**

20 A. In several instances, the alignment of the Alternate Route was adjusted such that it no
21 longer crossed a stream upstream of connections with its tributaries, requiring both the
22 stream and tributaries to be crossed, but downstream of the tributary connections. Such

1 alignment required only the stream to be crossed, not the tributary. In some cases,
2 realignments resulted in a stream being crossed fewer times.

3 **Q. Do the revisions you discuss in regard to Table 5-1 impact other parts of the**
4 **Environmental Assessment that you previously sponsored?**

5 A. Yes, they do. For ease of use I have created an index of the changes of the text in the
6 Environmental Assessment that should be made because of the realignment as described
7 in Table 5-1. This index is attached as Exhibit No. SGT Supplemental-2.

8 **Maps**

9 **Q. Have you submitted revised aerial maps marking the revised Proposed and**
10 **Alternate Routes?**

11 A. Yes. At the direction of Elizabeth Harper, certain aerial maps originally included in
12 Appendix E to the Environmental Assessment were revised. Attached as Exhibit No.
13 SGT Supplemental-3 are revised maps.

14 **Q. Are there any other changes or issues you would like to comment upon?**

15 A. No, not that I am aware of at this time.