COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF	**)**	
	)	
TRANS-ALLEGHENY INTERSTATE LINE COMPANY	**)**	**Case No. PUE-2007-000____**
	)	
For approval and certification of electric transmission facilities under Va. Code § 56-46.1 and the Utility Facilities Act, Va. Code § 56-265.1 *et seq.*	**)**	

APPLICATION OF TRANS-ALLEGHENY INTERSTATE LINE COMPANY FOR APPROVAL AND CERTIFICATION OF ELECTRIC FACILITIES FOR THE CONSTRUCTION OF 500 kV TRANSMISSION LINE

DIRECT TESTIMONY OF JACK HALPERN

April 19, 2007

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jack Halpern, and my business address is 4511 South Ocean Boulevard, Suite 507, Highland Beach, Florida 33487.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by The Louis Berger Group, Inc. ("Berger"), a leading infrastructure engineering, environmental science and economic development firm with over 140 offices across the United States and throughout the world. Berger was retained as a consultant on behalf of Trans-Allegheny Interstate Line Company ("TrAILCo") to perform route selection for the West Virginia Segments, the Prexy Segment, the Prexy 138 kV Lines, the Pennsylvania 502 Junction Segment and the Virginia state line to Meadow Brook segment of the Trans-Allegheny Interstate Line ("TrAIL"). I am the project director for Berger for this evaluation.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE AND EDUCATIONAL BACKGROUND.

A. I have a Bachelor's degree in Mining Engineering from the University of Missouri at Rolla and a Masters Degree in Geotechnical Engineering from Columbia University. I had completed the work, including a dissertation, for a Ph.D. in Geotechnical Engineering from the University of Missouri at Rolla when I was called up for military service. I later received an honorary degree from the University of Missouri at Rolla. I have had advance training at the Westinghouse International School for Environmental Management. I have consulted for the power industry on siting, permitting, geotechnical engineering and construction of

generation and transmission facilities for the last forty years. I have participated or directed over one hundred siting or routing projects throughout the United States and in other countries. I have specifically worked on over 5,000 miles of transmission line projects, from route selection to permitting to foundation design to construction support. I have been chosen to represent the United States in development of the first international guideline for siting nuclear facilities. I have taught courses on siting and environmental issues from one day to eight weeks in length. I have specific experience in the PJM Interconnection, L.L.C. ("PJM") grid working on a number of transmission projects, including Atlantic City Electric's New Freedom to Cardiff Line and Jersey Central Power & Light's Seashore Loop.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.

A. The purpose of my testimony is to sponsor and explain the report that describes what route has been recommended for TrAIL for the portion of the line beginning at the Virginia/West Virginia state line to the Meadow Brook Substation ("State Line to Meadow Brook Segment") and why that particular route has been selected.

Q. WILL THE USE OF VARIOUS TERMS IN YOUR TESTIMONY BE CONSISTENT WITH THE DEFINITIONS ASSIGNED TO THOSE TERMS IN THE TABLE OF NOMENCLATURE ATTACHED TO THE APPLICATION AS EXHIBIT 2?

A. Yes.

Q. ARE YOU SPONSORING ANY EXHIBITS IN THIS CASE?

A. Yes. Attached to my testimony as Exhibit JH-1 is the Route Evaluation Report and Environmental Report (line route evaluation, or "LRE") for the State Line to Meadow Brook Segment prepared by the Berger Team under my direction and the supervision of TrAILCo witness Alan Fleissner.

Q. PLEASE BRIEFLY EXPLAIN BERGER'S ROLE IN STUDYING POSSIBLE ROUTES FOR THE STATE LINE TO MEADOW BROOK SEGMENT OF TRAIL.

A. Berger, in an alliance with Commonwealth Associates, Inc. (collectively the "Berger Team") was retained on behalf of TrAILCo to perform route selection studies and assess the potential environmental impacts of the routes selected for each of six transmission line segments of TrAIL, including the State Line to Meadow Brook Segment that is the subject of this testimony. The Berger Team's route selection studies and analysis of potential impacts included the study of Geology and Soils, Surface Water Resources and Aquatic Species/Habitats, Wetlands, Vegetation, Wildlife and Sensitive Species, Land Use, Recreation Lands and Designated Natural Scenic Resources, Cultural Resources, and Aesthetics. Additionally, the Berger Team assisted TrAILCo in conducting public outreach by providing documents, maps and displays for public scoping meetings, attending these meetings to assist in gathering public input and summarizing public comments received at the Open Houses. Ultimately, the Berger Team's efforts on

the route evaluation study and environmental assessment resulted in the final route recommendation presented in the LRE.

Q. PLEASE DESCRIBE THE ROUTE THAT THE BERGER TEAM HAS RECOMMENDED.

A. As set forth in the LRE, TrAILCo proposed the construction of a 500-kilovolt (kV) transmission line connecting: (1) the proposed Prexy Substation in Washington County, Pennsylvania; (2) the proposed 502 Junction Substation in Greene County, Pennsylvania; (3) the existing Mt. Storm Substation in Grant County, West Virginia; (4) the existing Meadow Brook Substation in Frederick County, Virginia; and (5) the Virginia portion of the Allegheny Power transmission zone of PJM; to (6) the western boundary of the Appalachian National Scenic Trail property ("Appalachian Trail"). Dominion Virginia Power ("Dominion") will be responsible for the routing, design and construction of the line east of the western boundary of the Appalachian Trail to the Loudoun Substation in Loudoun County, Virginia. The length of the line to be constructed by TrAILCo was initially estimated at 210 miles.

Q. WHAT IS THE APPROXIMATE LENGTH OF TRAIL AND ITS VARIOUS LINE COMPONENTS BASED ON THE PROPOSED ROUTE?

A. The preferred route for the entire 500 kV line is approximately 180 miles in length. Three additional segments of 138 kV transmission lines in the Prexy area (the "Prexy 138 kV Lines") are also part of TrAIL. The preferred routes for these lines as identified in the LRE are for an additional combined total of 15 miles. Thus

from Prexy Substation in Pennsylvania to the TrAIL End Point in Virginia, the entire TrAIL will be approximately 195 miles in length, with approximately five miles for each of the additional 138 kV lines in Pennsylvania. The West Virginia Segments will be approximately 114 miles. The Prexy Segment in Pennsylvania will be approximately 37 miles, the Pennsylvania 502 Junction Segment is approximately 1.2 miles and the Virginia Segments are approximately 28 miles. The preferred route for the State Line to Meadow Brook Segment of TrAIL as identified in the LRE, is approximately 12.3 miles in length.

Q. WHERE IS THE ROUTE FOR THE STATE LINE TO MEADOW BROOK SEGMENT SET OUT IN THE LRE?

A. As required by Va. Code § 56-265.3, the LRE includes a detailed description of the State Line to Meadow Brook Segment and accompanying maps of the proposed right-of-way. The detailed textual description of the line is presented in Chapter 3.2 (Description of the Preferred Route), along with maps. Chapter 4 (Environmental Analysis of the Preferred Route) of the LRE also provides maps showing the locations, where information was publicly available, of incorporated communities; public or private recreational areas, parks, forests, hunting or fishing areas, or similar facilities; historic scenic areas or places; rivers, lakes, streams, reservoirs and similar bodies of water within five miles of either side of the center line of the proposed right-of-way.

Q. DID THE BERGER TEAM ASSESS THE POTENTIAL ENVIRONMENTAL IMPACTS OF THE CONSTRUCTION OF THE STATE LINE TO MEADOW BROOK SEGMENT ALONG THE PROPOSED ROUTE?

A. Yes. As required by Va. Code 56-46.1, Chapter 4 of the LRE (Environmental Analysis of the Preferred Route) presents information on the potential for environmental impacts associated with the construction of the State Line to Meadow Brook Segment. This includes analysis of potential impacts on geology and soils, surface water and aquatic species/habitats, wetlands, vegetation, wildlife and sensitive species, land use, recreation lands and designated natural scenic resources, cultural resources and aesthetics. For the approximately 12 miles of the State Line to Meadow Brook Segment, less than one mile of the proposed line route would be on steep soils (greater than 20 degree slopes), there would be no large river and 21 small stream crossings, a very small amount of wetlands (approximately 200 feet) crossed, one recorded state sensitive species observation location would be within 1,000 feet of the route centerline, 152 acres of forest would be cleared for the right-of-way, 4 residences would be within 250 feet of the route centerline, 15 residences would be within 500 feet of the centerline, 11 historic architectural sites are within ¼ mile of the route, none of which are listed on the National Register of Historic Places, and no recreation trails or formally designated Scenic Byways are crossed. Together with the information provided in the direct testimony of TrAILCo witness John Bodenschatz, the information in Chapter 4 of the LRE is responsive to the requirements of Va. Code § 56-259 and

§ 56-46.1 B. As I discuss in more detail below, these impacts are less than those from the other possible routes that were examined.

Q. DID YOU SPECIFICALLY CONSIDER THE HABITAT AND TYPE OF WILDLIFE, BOTH LAND AND AQUATIC, THAT MAY BE IN THE STATE LINE TO MEADOW BROOK RIGHT-OF-WAY OR ADJOINING AREAS, AND ANY KNOWN EFFECT THAT TRAIL MAY HAVE UPON THEM, INCLUDING FEEDING AND BREEDING HABITS?

A. Yes. Section 4.5 of the LRE (Wildlife and Sensitive Species) presents descriptions of habitat and wildlife within or adjoining the right-of-way. Specifically, Section 4.5.2 (Impacts on Wildlife and Sensitive Species/Habitats) describes possible impacts on habitat and type of wildlife that may be in the right-of-way or adjoining areas. This section also describes any known effect the line may have upon feeding or breeding habits. This information is responsive to the requirements of Va. Code § 56-46.1.

The majority of the proposed route would require forest clearing for right-of-way construction. As a general rule, when a right-of-way would go through large relatively undisturbed tracks of forest, the right-of-way clearing would fragment the forest and create edge habitat. However, the proposed route recommended in the LRE, minimizes forest fragmentation by paralleling an existing 500 kV transmission line for all 12 miles. When paralleling an existing right-of-way, no new edge is created and habitat fragmentation is minimized. The existing edge species in the area of clearing would continue to have suitable habitat

following right-of-way construction. The implementation of Class III clearing within 100 feet of streams -- see section 4.4.2 (Impacts on Vegetation) -- would also minimize impacts to riparian wildlife species because Class III clearing allows some shrubby/woody vegetation to remain in the right-of-way.

Q. WILL THE CONSTRUCTION OF TRAIL HAVE ANY MATERIAL ADVERSE EFFECTS UPON HUMAN AND DOMESTIC ANIMAL LIFE LOCATED ALONG THE RIGHT-OF-WAY?

A. Domestic animal life could potentially be affected by vegetation maintenance, including herbicide/pesticide application and mechanical methods such as cutting and mowing. Selective herbicide use is the preferred method of eliminating unwanted woody vegetation, while allowing grasses, weeds, and ferns to continue to grow. Herbicide application would abide by all applicable federal, state, and local laws and regulations, including U.S. Department of Agriculture, Virginia Department of Agriculture and Consumer Services, and EPA. TrAILCo would maintain herbicide-free buffer zones around: houses and barns (50 feet); ponds, lakes, and year-round flowing water (25 feet); gardens, farm crops, grape arbors, ornamental trees, flower gardens, and cultivated fruit and nut trees (100 feet), and tobacco farms (500 feet) so there would be no effect on domestic animals.

Human life would primarily be affected by visual intrusion. The transmission line structures, conductors, and the cleared right-of-way will be visible in varying degrees to area residents. The visual accessibility of the line will be influenced by a multitude of factors, such as the amount of screening, the

amount of natural light present, the distance from the viewpoint to the line, the amount of other human disturbance in the viewshed, background terrain and colors, the sensitivity of the viewer, and many other variables. Because the project area is almost three-quarter forested, an extensive amount of screening is present which should limit to a large degree direct visual access to the proposed line. See Section 4.9.2 (Impact on Visual Resources) for further details.

Hence vegetation management should not materially affect domestic animals, and visual intrusion should not materially affect human life. Other possible effects are discussed in the testimony of TrAILCo witnesses William Bailey and Gary Johnson.

Q. PLEASE DESCRIBE THE PUBLIC OUTREACH CONDUCTED WITH RESPECT TO THE ROUTE SELECTION AND THE PUBLIC INPUT RECEIVED.

A. TrAILCo conducted ten public open house meetings, including 2 that were held in Front Royal and Middletown, on the 4th and 6th of December 2006, respectively, in areas near where the line would be built. These meetings were conducted to provide general information to the public about TrAIL, present preliminary results of the routing effort, and gather information from the public for use in the routing study. The public was informed about time requirements of the transmission line planning and approval process. TrAILCo specifically initiated the open house meetings to involve the public in the planning process through encouraging public comment on the project, its purpose and need, and some preliminary results. The

public was informed that the open house meetings were supplementary to those that would later be mandated as part of the state regulatory process. Staff from TrAILCo and the Berger Team facilitated these meetings and worked together to provide information to meeting participants.

During and following the public open house meetings, individuals were encouraged to provide comments on the project through five methods: registration cards, questionnaires, handwritten comments on maps, letters, and emails. All of these comments were reviewed. Overall, the most common themes noted in public comments related to visual and aesthetic impacts of the proposed line, the proximity of the line to individual residences and/or property, and the impact of line construction and operation on the study area environment.

Q. DID THE BERGER TEAM EXAMINE OTHER POTENTIAL ROUTES?

A. Yes. The LRE shows that TrAILCo and the Berger Team applied a rigorous and systematic approach to the assessment of available alternatives and, using a number of factors (including public feedback), identified the best route for the State Line to Meadow Brook Segment. The description of this process, which appears generally in Chapters 2 and 3 of the LRE, anticipates the Commission's discretion in accordance with Va. Code § 56-46.1 E**.**

Potential Routes, as defined in the LRE, were first identified and studied by the routing team. Where the routes intersected, *Links*, also as defined in the LRE, were formed as the segment of the route between intersections. The *Links* were numbered for identification. The *Link* numbers changed as the study progressed

and new *Links* were added or deleted. Eventually the better *Links* were assembled into the best routes for quantitative analysis. Following the open houses and review of attendee comments, a series of alternative routes were developed from the potential route network by the routing team. Section 2.11 of the LRE (Analysis of Alternate Routes) presents details of the alternatives identified as well as maps for each possible alternative.

Following this review, the remaining *Links* were renumbered and appear as the alternative route networks shown for the State Line to Meadow Brook segments in Figure 2-2. From this network, four unique alternative routes, Routes A through E (alternative routes B and C are actually identical for the Virginia portion of their alignment and therefore only count as one route) were identified between the State Line and Meadow Brook, as shown in Figures 2-3.

Q. WHAT ROUTE WAS SELECTED AND WHY?

The Routing Team ultimately recommended Alternative Route A to TrAILCo as the Preferred Route for the State Line to Meadow Brook Segment for the following reasons:

1. Route A parallels Allegheny Power's existing Mt. Storm-Meadow Brook 500 kV line, reducing impacts compared to a completely new alignment;
2. Route A follows the north side of the existing line from the state border to Little North Mountain and then the south side for the remaining distance to the Meadow Brook Substation, resulting in less land-use conflict than a route entirely on the north side or entirely on the south side;

3. Route A has the least number of residences within 250 feet of the route centerline;

4. Route A is moderate in its impacts to forests, wetlands, and other resources; and

5. Route A would allow for a direct entrance into the area designated for expansion at the Meadow Brook Substation.

Q. BASED UPON YOUR EXPERIENCE AND EXPERTISE, DOES THE LRE CONSTITUTE A REASONABLE, THOROUGH STUDY CONSISTENT WITH CURRENT SITING METHODS?

A. Yes. The LRE represents a study consistent with current siting methods. Over a study period of five months, numerous potential routes were developed by the routing team and analyzed using existing aerial photography and maps, from information gained from field inspections and public meetings, from governmental agency contacts, and from numerous computerized data sources. The study conducted by the Berger Team utilized the latest technologies available for data acquisition and manipulation. Ultimately, five Alternative Routes (Routes A through E) between the Mt. Storm Substation and Meadow Brook Substation were considered. Two of the route alternatives had identical alignments for the State Line to Meadow Brook Segment (the only difference between these two alternatives was in West Virginia). These routes were analyzed using a wide range of environmental and cultural factors to determine the best alignment for the

transmission line in terms of minimizing impacts to the natural and cultural environment.

Q. PLEASE EXPLAIN HOW THE CONSTRUCTION OF THIS TRANSMISSION LINE ALONG THE ROUTE RECOMMENDED WOULD COMPLY WITH THE FERC "GUIDELINES FOR THE PROTECTION OF NATURAL, HISTORIC, SCENIC, AND RECREATIONAL VALUES IN THE DESIGN AND LOCATION OF RIGHTS-OF-WAY AND TRANSMISSION FACILITIES" REFERENCED IN THE COMMISSION'S GUIDELINES FOR TRANSMISSION LINES AT II.A.8.

A. FERC Guidelines for the Protection of Natural, Historic, Scenic and Recreational Values in the design and location of transmission facilities refers to transmission projects built in conjunction with hydro electric projects. However, we reviewed these Guidelines with respect to their applicability of the proposed TrAIL Project. Guideline 1 refers to use of existing right-of-ways, which the State Line to Meadow Brook Segment maximizes. All 12 miles would parallel the existing 500 kV line. Guideline 2 refers to not crossing National Register Historic Sites. There are no National Register Historic sites within ¼ mile of the proposed State Line to Meadow Brook Segment. Guideline 3 refers to steep soils and scenic vistas. The proposed line crosses less than a mile of soils steeper than 20 degrees slope and no formally designated scenic vistas were crossed. Guideline 4 refers to coordination with other government agencies, which we list in the LRE in Section 2.5, Environmental Data Collection. Other Guidelines refer to Right-of-way clearing

and construction methods. These are discussed in a number of places in the LRE and by other TrAILCo witnesses.

Q. IN YOUR EXPERT OPINION, IS THE ROUTE RECOMMENDED IN THE LRE THE APPROPRIATE ROUTE FOR TRAIL?

Yes, as detailed above, the Berger Team ultimately recommended Alternative Route A to TrAILCo as the Preferred Route for the State Line to Meadow Brook Segment for the following reasons:

1. Route A parallels Allegheny Power's existing Mt. Storm-Meadow Brook 500 kV line, reducing impacts compared to a completely new alignment;
2. Route A follows the north side of the existing line from the state border to Little North Mountain and then the south side for the remaining distance to the Meadow Brook Substation, resulting in less land use conflict than a route entirely on the north side or entirely on the south side;
3. Route A has the least number of residences within 250 feet of the route centerline;
4. Route A is moderate in its impacts to forests, wetlands, and other resources; and
5. Route A would allow for a direct entrance into the area designated for expansion at the Meadow Brook Substation.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.