

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Re: Application Of PPL Electric Utilities :
Corporation Filed Pursuant To 52 Pa. Code :
Chapter 57, Subchapter G, For Approval Of : Docket No. A-2012-_____**
**The Siting And Construction Of The :
Blooming Grove – Jackson and Peckville – :
Jackson 138/69 kV Transmission Line In :
Monroe County, Pennsylvania :**

PPL ELECTRIC UTILITIES CORPORATION

STATEMENT NO. 4

DIRECT TESTIMONY OF DANNY S. JARRAH

DATE: May 15, 2012

1 Q. Please state your name and business address.

2 A. My name is Danny S. Jarrah. My business address is Two North Ninth Street,
3 Allentown, Pennsylvania 18101.

4
5 Q. By whom are you employed and in what capacity?

6 A. I am employed by PPL Electric Utilities Corporation ("PPL Electric") as a Supervising
7 Engineer.

8
9 Q. What is your educational background?

10 A. I received a Bachelor of Science Degree in Electrical Engineering from Pennsylvania
11 State University in 2005.

12
13 Q. Do you hold any professional licenses?

14 A. I have been a licensed Professional Engineer in the Commonwealth of Pennsylvania since
15 September 9, 2010 (# PE-078288).

16
17 Q. Describe your experience and employment history with PPL Electric.

18 A. I have been employed by PPL Electric for more than 6 years. I have been in my current
19 position since January 2011. In this position, I am responsible for coordinating and
20 supervising the daily activities of engineers and technicians in transmission engineering
21 design. I am accountable for formal supervision, coaching, counseling, safety leadership,
22 and technical guidance to assigned staff in support of producing high quality, timely, and
23 cost-effective solutions to technical and business objectives. The position is also

1 accountable for the technical quality of the group's output and is expected to
2 continuously improve capabilities in this area. I have held several positions of increasing
3 responsibilities within the Company, as follows:

- 4 • 2005 – 2007: Engineer in Transmission Design Engineering
- 5 • 2007 – 2008: Support Engineer in Transmission Design Engineering
- 6 • 2009 – 2010: Support Engineer in Transmission Maintenance Engineering
- 7 • 2010 – 2011: Senior Engineer in Transmission Design Engineering
- 8 • 2011 – Present: Supervising Engineer in Transmission Design Engineering

9
10 Q. Have you participated in other transmission line siting projects for PPL Electric?

11 A. Yes. I have worked on more than 10 projects involving transmission lines with voltages
12 greater than 100 kV that have been approved under the Commission's siting regulations
13 at 52 Pa. Code Ch. 57, Subchapter G.

14
15 Q. What are your responsibilities in connection with the Blooming Grove – Jackson and
16 Peckville – Jackson 138/69 kV Transmission Line project?

17 A. I am the responsible for overseeing the Transmission Line design activities. I am also
18 responsible for reviewing and approving the final engineering design of the Blooming
19 Grove – Jackson and Peckville – Jackson 138/69 kV Transmission Line (“the Project”).

20
21 Q. What are the subjects of your direct testimony in this proceeding?

22 A. My testimony addresses several subjects. First, I will explain the major design features
23 of the Project. Second, I will explain the safety features incorporated into the design of

1 the Project. Third, I will explain PPL Electric's Magnetic Field Management Program
2 and how it has been incorporated into the design of the Project.

3
4 Q. Please describe the major design features of the Project.

5 A. The National Electrical Safety Code ("NESC") is a set of rules to safeguard employees,
6 contractors and the public during the installation, operation, and maintenance of electric
7 power lines. Although it is not intended as a design specification, its provisions establish
8 minimum design requirements.

9
10 For this Project, PPL Electric has developed design specifications and safety rules which
11 meet or surpass all requirements specified by the NESC.

12
13 Q. Please describe the major design features that will be used in this Project.

14 A. The Project involves the installation of a new double-circuit 138/69 kV transmission line
15 on new structures. The Project utilizes both tangent structures¹ and angle structures. The
16 tangent structures for the proposed new double-circuit line will consist of single-shaft
17 steel poles equipped with steel upswept arms. Angle structures will be single-pole or
18 two-pole steel structures, depending on the severity of the line angle. Some poles will be
19 installed on concrete foundations while the majority of poles will be direct embedded.
20 Additionally, some angle structures may be guyed. Based on preliminary engineering,
21 this Project requires the installation of approximately 35 structures, ranging from 80 to
22 100 feet in height. The average span length will be approximately 650 feet.

¹ A tangent structure is a pole with no line angle.

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The line will consist of six power conductors and one overhead ground wire. Each conductor will consist of 556.5 kcmil,² 24/7 stranding ACSR.³ The overhead ground wire will be a 48 fiber 0.567-inch-diameter Optical Ground Wire (“OPGW”). The OPGW will provide lightning protection for the proposed line.

Q. Please explain PPL Electric’s Magnetic Field Management Program as it applies to this Project.

A. PPL Electric’s Magnetic Field Management Program is summarized in Attachment 11 and is applied to new and reconstructed line projects. The Company does not believe that current scientific evidence demonstrates that magnetic fields cause any adverse health effects or pose a health or safety danger to the public. Nevertheless, PPL Electric has determined, as a matter of policy, to design its new and rebuilt transmission lines to reduce magnetic fields when that can be done at low or no cost and consistent with functional requirements. PPL Electric’s Magnetic Field Management Program has been developed to implement that policy decision. To reduce magnetic field exposures, the program generally prescribes the use of line design that provides five feet higher ground clearances and reverse phasing of new double-circuit lines where it is feasible to do so at low or no cost. The implementation of additional modifications will be considered, provided those modifications can be made at low or no cost.

² A circular mil is the cross-sectional area of a wire one mil in diameter, where 1 kcmil = 0.5067 mm².
³ Aluminum conductor steel reinforced.

1 Consistent with the program, PPL Electric will construct this Project for increased ground
2 clearance to reduce magnetic field exposures. In addition, PPL Electric will reverse
3 phase the two circuits, thus causing a further reduction of magnetic fields.

4
5 Q. Are you sponsoring any portions of the Siting Application?

6 A. Yes, I am sponsoring Attachment 5, which is the Engineering Description of the
7 proposed Project. It describes the line design, conductor and proposed structure
8 information and specific steps taken to reduce the magnetic fields on and along the rights-
9 of-way.

10
11 I am also sponsoring Attachment 10 and 11. Attachment 10 is PPL Design Criteria and
12 Safety Practices and describes the engineering standards and safety practices adhered to
13 in the design of the Project. It explains PPL Electric's conformance with the NESC
14 loading requirements and safety factors, as well as safety rules and work procedures
15 incorporated for the safety of workers constructing and maintaining the line and the
16 general public.

17
18 Attachment 11 explains what magnetic fields are, what causes them, and what magnetic
19 field management means at PPL Electric. Even though no national or international health
20 agency has determined that magnetic fields pose a health risk, PPL Electric is employing
21 low cost measures such as those described previously in my testimony in order to reduce
22 magnetic fields along its rights-of-ways for new and rebuilt transmission lines.

1 Q. Does this complete your direct testimony?

2 A. Yes, it does

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