

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Petition of PPL Electric Utilities :
Corporation for a Finding that a Building to :
Shelter Control Equipment at the West :
Pocono 230-69 kV Substation in Buck : Docket No. P-2012-_____
Township, Luzerne County, Pennsylvania is :
Reasonably Necessary for the Convenience :
or Welfare of the Public :

PPL ELECTRIC UTILITIES CORPORATION

STATEMENT NO. WP-1

DIRECT TESTIMONY OF

LISA R. KRIZENOSKAS

1 Q. Please state your full name and business address.

2 A. My name is Lisa R. Krizenoskas. 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
7 Supervising Engineer in the Transmission Planning Department.

8

9 Q. What is your educational background?

10 A. I have a Bachelor of Science in Electrical Engineering from Villanova University.

11

12 Q. Do you hold any professional licenses?

13 A. Yes, I am a Licensed Professional Engineer in the Commonwealth of Pennsylvania
14 since 2003. My License No. is PE-062297.

15

16 Q. Please describe your background and employment history with PPL Electric.

17 A. I have worked for PPL Electric for more than 20 years. Presently, I am the
18 Supervising Engineer in the Transmission Planning Department. I have six years of
19 Regional Transmission Planning experience. Prior to my current position, I had
20 experience as the Manager of Transmission Regulatory Affairs, Senior Engineer,
21 Customer Support Engineer, Substation Design Engineer, Project Manager, Account
22 Manager and a Distribution Planning Engineer at PPL Electric Utilities.

23

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

2 A. Yes. I have completed Necessity Statements for approximately ten Pennsylvania
3 Public Utility Commission (“PUC” or “Commission”) filings for lines varying in
4 voltage levels from 69 kV to 230 kV. I was also the witness on need issues in the
5 Coopersburg #1 & #2 138/69 kV Tap Reconstruction hearings in 2008 and the
6 Richfield-Dalmatia 69 kV line in 2012.

7
8 Q. What is the purpose of your testimony?

9 A. The purpose of my testimony is to explain the necessity for the West Pocono 230-69
10 kV Substation, which is being planned in conjunction with the proposed Northeast-
11 Pocono Reliability Project. My testimony supports the petition filed by PPL Electric
12 requesting a finding that the building to shelter control equipment at the proposed
13 West Pocono 230-69 kV Substation in Buck Township, Luzerne County is
14 reasonably necessary for the convenience or welfare of the public and, therefore,
15 exempt from any local zoning ordinance pursuant to 52 Pa. Code § 5.41 and 53 P.S.
16 § 10619.

17
18 In summary, the Northeast-Pocono Reliability Project and the West Pocono
19 Substation are required as integral parts of a regional transmission project to resolve
20 reliability and planning violations and to ensure reliable long-term service to
21 customers in the Northeast Pocono area. Currently, the only sources of supply to the
22 Northeast Pocono area are provided by 138/69 kV transmission lines. The current
23 configuration of PPL Electric’s transmission system in the Northeast Pocono Area

1 consists of long transmission line lengths between regional substations. When
2 service is interrupted on a long, heavily-loaded transmission line, the ability to
3 restore the interrupted load from an alternate source is limited. This limitation is due
4 to unacceptable low voltages that result at particular distribution substations when
5 customer load on the interrupted circuit is transferred to an adjacent circuit through
6 abnormal sectionalizing. PPL Electric's system studies of the area that revealed that,
7 starting in 2014, outages of certain facilities would result in violations of PPL
8 Electric's RP&P guidelines.

9
10 Q. What transmission conditions, if not resolved, would jeopardize the reliability of
11 service to customers in the future?

12 A. As set forth in detail in Statements Nos. 2 and 3 in support of the Northeast-Pocono
13 Siting Application, PPL Electric's transmission planning studies projects that the
14 following contingencies would result in violations of the maximum allowable load
15 that can be interrupted for the loss of a transmission facility as set forth in the PPL
16 Electric's "Reliability Principles & Practices" ("RP&P") if the system serving the
17 Northeast Pocono area is not reinforced: (1) an outage of the double-circuit
18 Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Line; (2) a
19 single-circuit outage of the Peckville-Jackson 138/69 kV circuit on the double-circuit
20 Blooming Grove-Jackson and Peckville-Jackson 138/69 kV Transmission Line; (3) a
21 single-circuit outage of the Blooming Grove-Jackson 138/69 kV circuit on the
22 double-circuit Blooming Grove-Jackson and Peckville-Jackson 138/69 kV
23 Transmission Line; (4) an outage of the double-circuit East Palmerton-Wagners #1 &

1 #2 138/69 kV Transmission Line; and (5) a single-circuit outage of the East
2 Palmerton-Wagners #2 138/69 kV circuit on the double-circuit East Palmerton-
3 Wagners #1 & #2 138/69 kV Transmission Line.

4
5 PPL Electric's transmission studies further project that, by the winter of 2015-2016,
6 the normal line loading on the Blooming Grove-Jackson and Peckville-Jackson
7 138/69 kV circuits will violate PPL Electric's RP&P guidelines for normal line
8 loading. This is a concern because it limits the ability for PPL Electric to restore
9 load from the interruption of a neighboring circuit.

10
11 PPL Electric projects that each of these violations, and the amount of load
12 interrupted as a result therefrom, will increase in magnitude due to the forecasted
13 load growth in the Northeast Pocono area. These violations are evidence that the
14 138/69 kV systems serving the Northeast Pocono area need to be reinforced.

15
16 Q. Please describe how the new West Pocono 230-69 kV Substation will help to address
17 these concerns?

18 A. The installation of the West Pocono 230-69 kV Substation is an integral part of the
19 preferred regional transmission project to resolve the violations of the RP&P
20 guidelines and to reinforce the existing 138/69 kV systems serving the Northeast
21 Pocono area by bringing a new 230 kV supply source closer to the growing load
22 centers. To accomplish this, PPL Electric proposes to locate the new West Pocono
23 and North Pocono 230-69 kV Substations central to the load they will serve. The

1 West Pocono 230-69 kV Substation is the subject of this Zoning Petition. PPL
2 Electric's selection of the substation site for the West Pocono 230-69 kV Substation
3 is summarized by Mr. Haupt in PPL Electric Statement No. WP-2.

4
5 The new West Pocono 230-69 kV Substation will be constructed and located
6 centrally between the East Palmerton 230-69 kV Substation and the Jackson 138-69
7 kV Substation. The West Pocono 230-69 kV Substation will tie into the East
8 Palmerton-Wagners #1 & #2 and Jackson-Wagners #1 & #2 139/69 kV Transmission
9 Lines, which will (1) allow for the reduction in 138/69 kV circuit length through re-
10 sectionalizing the existing transmission facilities (changing the normally open point),
11 and (2) allow for a reduction in the number of customers normally served from each
12 138/69 kV transmission circuit. The West Pocono 230-69 kV Substation also will
13 provide a backup source to the East Palmerton 230-69 kV and Jackson 138-69 kV
14 Substations using interconnected 69 kV lines.

15
16 The Northeast-Pocono Project, including the new West Pocono Substation and
17 associated new transmission lines, will enable PPL Electric to shorten the length of
18 the existing 69 kV circuits, which will reduce the distance between the supply of
19 power and the homes and businesses that use the electricity. This proposed
20 arrangement also will provide an alternate supply of power to the Northeast Pocono
21 area in the event that the normal sources are interrupted, which will improve power
22 restoration times and provide operating flexibility and improved reliability for
23 customers in the area. The Northeast-Pocono Reliability Project will reduce the

1 number of customers affected by a single facility outage, as well as the duration of
2 the outage.

3
4 Q. Would PPL Electric be able to meet the goals and purposes of the PPL Electric's
5 regional system planning process without the West Pocono 230-69 kV Substation?

6 A. No, without the proposed West Pocono 230-69 kV Substation, the 69 kV systems
7 serving the Northeast Pocono area will not comply with PPL Electric's RP&P for
8 allowable load loss and normal line loading limits. The regional transmission system
9 is planned so that it can be operated at all projected load levels and during normal
10 scheduled outages. The system is also planned to withstand specific unscheduled
11 contingencies (unexpected facility outages) without exceeding the equipment
12 capability, causing system instability or cascade tripping, exceeding voltage
13 tolerances, or causing large-scale, long term or frequent interruptions to customers.
14 The transmission system is required to have adequate capability so that it can meet
15 the planning objectives. Without the Northeast-Pocono Reliability Project, including
16 the West Pocono 230-69 kV Substation, the 69 kV system serving the Northeast
17 Pocono area will not meet these goals.

18
19 Q. Please describe the goals and purposes of the regional system planning process.

20 A. The planning process assures that the regional power transmission system can supply
21 electricity to all customer loads in a reliable and economic manner. The process is
22 designed to ensure that the regional power transmission system can sustain probable
23 contingencies and disturbances with minimal customer interruptions and adequately

1 serve each customer's needs with regard to capacity, voltage and reliability. PPL
2 Electric's RP&P and regional planning process have been developed and refined
3 over the years using industry wide experience and historical performance
4 benchmarks to ensure acceptable and appropriate levels of service that remain
5 consistent with good utility practice.

6
7 To meet the goals of the system planning process, the capacity of the regional power
8 transmission system must be expanded or reinforced from time to time to meet
9 increasing demand. In developing and implementing capacity expansions, a proper
10 balance must be maintained between service reliability and the cost of providing
11 service. In addition, the societal cost of large scale, long-term or frequent
12 interruptions of electric service – and in particular, the potential for such
13 interruptions to create hazards to the public – must also be recognized and
14 considered.

15
16 Q. Please explain how the regional planning process is performed.

17 A. The planning process begins with extensive computer modeling of the system as it is
18 actually constituted including any planned modifications that are expected to be in
19 service during the prospective study horizon. When the model is complete, power
20 flow simulations are performed to determine the ability of the system to comply with
21 NERC, PJM, and PPL Electric's RP&P criteria. Such modeling will identify any
22 and all conditions where the electrical system is not in compliance with the NERC,
23 PJM, and RP&P criteria.

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Functional reinforcement alternatives required to bring the transmission system into compliance are analyzed, with estimated costs and implementation schedules being carefully considered. Computer simulations of the system, applying the identified functional reinforcement alternatives, are then completed to produce the best overall reinforcement plan that will meet the future needs of the area in a reliable and economically acceptable manner.

A further description of PPL Electric’s system planning process and RP&P is provided in Attachment 2 and PPL Electric Statement Nos. 2 and 3 to the Siting Application.

Q. Where will the West Pocono 230-69 kV Substation be located?

A. The proposed West Pocono 230-69 kV Substation will be located in Buck Township, Luzerne County, Pennsylvania. The fenced area for the West Pocono 230-69 kV Substation will occupy approximately 7.55 acres. The location of the proposed Substation is advantageous because it would in close proximity to the existing 138/69 kV network, which will minimize the length of transmission lines needed to connect the Substation to the electric grid, as well as minimize the costs and environmental impacts of the connecting the associated lines to the Substation. Provided as Appendix A to the West Pocono Substation Zoning Petition is an exhibit showing the location of the tract of land on which the proposed West Pocono 230-69 kV Substation, together with the Control Equipment Building, will be constructed.

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2 Q. Will the West Pocono 230-69 kV Substation also include a Control Equipment
3 Building?

4 A. Yes. Substations must include critical control equipment - - primarily switches,
5 relay and control equipment, communication devices, batteries, and SCADA
6 (Supervisory Control and Data Acquisition) to control the flow of electricity into,
7 within and out of the substation. In order to function properly, most of this
8 equipment must be protected from the elements. The purpose of the proposed
9 Control Equipment Building at the West Pocono Substation is to protect critical
10 control equipment from the elements so that the line equipment, and the entire
11 substation, can function properly.

12

13 Q. Please describe the Control Equipment Building in more detail.

14 A. The Control Equipment Building will be approximately 40 feet by 70 feet. It will be
15 constructed on a concrete slab. The exterior walls will be constructed of corrugated
16 aluminum. There will be minimal space heating and cooling equipment for the
17 building. Such equipment will be installed solely for the purpose of keeping the
18 temperature inside the building within limits tolerated by the control equipment. The
19 building will not be intended for human occupancy; there will be no supply of water
20 and no sanitary facilities. The substation will be surrounded by a high fence to
21 prevent entry by unauthorized persons. The fenced area for the West Pocono
22 Substation will be approximately 900 feet by 450 feet. Access to the substation,
23 including the Control Equipment Building, must be limited because the high voltage

1 at which the substation will operate presents dangers to untrained persons. The
2 Control Equipment Building will be contained within the fenced perimeter of the
3 substation.

4
5 Q. Is the Control Equipment Building an essential component of the substation?

6 A. Yes. The Control Equipment Building is required for proper protection and
7 operation of the electrical equipment at the West Pocono Substation. Public safety is
8 compromised if the control equipment is not functional. System damage can occur
9 due to un-cleared system disturbances. If a fault occurs on a line and the protection
10 equipment fails to clear the fault, the line could potentially burn down causing a
11 public hazard. Nonfunctional protective control equipment can also result in
12 excessive and longer term interruptions to customers. PPL Electric cannot place a
13 line in service without the proper relay protection applied.

14
15 Q. Please summarize your conclusions regarding the Control Equipment Building.

16 A. The Control Equipment Building is reasonably necessary for the convenience or
17 welfare of the public because it is a necessary component of the West Pocono 230-69
18 kV Substation. Further, the West Pocono Substation is an integral part of the
19 Northeast-Pocono Reliability Project, which is necessary to resolve violations of PPL
20 Electric's RP&P guidelines and reinforce the existing 138/69 kV transmission
21 systems in Monroe, Carbon, Wayne, Lackawanna, Luzerne, and Pike Counties by
22 bringing a new 230 kV supply into the area through a new 230 kV transmission line
23 and 230-69 kV substations.

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2 Q. Does this conclude your direct testimony at this time?

3 A. Yes, it does.