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June 24, 2019

**VIA HAND DELIVERY**

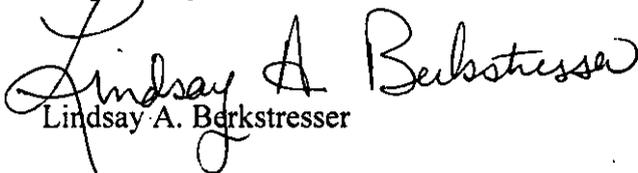
Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building  
400 North Street, 2nd Floor North  
P.O. Box 3265  
Harrisburg, PA 17105-3265

**Re: Application of PPL Electric Utilities Corporation for Approval to Rebuild the Existing Breinigsville-Alburtis 500 kV Transmission Line in Lehigh County, Pennsylvania - Docket No. A-2019-3007945**

Dear Secretary Chiavetta:

Enclosed for filing are PPL Electric Utilities Corporation's responses to the Bureau of Technical Utility Services' Data Requests in the above-referenced proceeding. Responses to A-17, A-19 and A-21 contain **CONFIDENTIAL** information and should not be made available to the public.

Respectfully submitted,

  
Lindsay A. Berkstresser

LAB/jl  
Enclosures

cc: Jordan Van Order

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**PPL Electric Utilities Corporation  
Response to Data Requests of  
Bureau of Technical Utility Services  
Dated June 13, 2019  
Docket No. A-2019-3007945**

Q-8 Reference the Application. If project S0864 is not built, has it been definitely determined, on the record, by PJM, that there will be a BES reliability violation?

A-8 As stated in the response to A-4 and A-5 of Data Request #1 filed on April 9, 2019, PJM has confirmed the existence of a BES reliability violation in the 2023 RTEP case if the Breinigsville-Alburtis line rebuild portion of project S0864 is not built.

Supplemental project S0864 was a two-phase project designed to address aging infrastructure and operational flexibility needs at the Wescosville substation. The first phase of the project was to reconfigure the Wescosville substation from a non-standard to a standard configuration and upgrade an old control house. The second phase of the project was required to address the N-1-1 voltage violations propagated due to the work completed under Phase 1. The first phase of the project has already been completed and placed in service in May 2019. The second phase of the project must be completed to resolve the voltage drop and low voltage violations discussed in the Application.

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Q-9 Reference the Application. If it has been determined that there is or will be a reliability violation, is there a reliability violation based on the PPL FERC Form 715 TO criteria? Is there a violation based on a PJM BES reliability criteria violation?

A-9 The reliability violation identified in the Application occurs on both the BES system and non-BES system. The BES system voltage violation is based on both PPL EU FERC Form 715 TO reliability criteria and PJM regional reliability criteria. The violation on PPL EU's non-BES system (69 kV) is based on the PPL EU FERC Form 715 TO criteria for maintaining voltage drop within acceptable ranges.

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Q-10 Reference the Application. Is an SPS a permitted solution to both the PPL FERC Form 715 TO and PJM BES reliability violations?

A-10 As previously explained in PPL EU's response to data request dated July 13, 2018 (at Docket A-2017-2635709), even though a special protection system "SPS" may be used to temporarily resolve an N-1-1 contingency, neither PJM nor PPL consider SPS's as an acceptable long-term solution. PJM Manual 7 states "SPSs should not be installed as a substitute for good system design or operating practices" and that "the implementation of SPS schemes are generally limited to temporary conditions involving the outage of critical equipment." Additionally, as PPL EU explained in Attachment 1 to its Application, these schemes are designed and intended to automatically and *instantaneously de-energize transmission facilities in the event of a system contingency resulting in load shed and a loss of service to customers. SPS schemes involve complex relaying equipment and logic. Historically, they have been prone to mis-operation and increased outage risk.*<sup>1</sup>

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<sup>1</sup> This is consistent with responses previously provided by PPL EU to Data Requests issued June 7, 2018, June 21, 2018, and July 3, 2018 at Docket A-2017-2635709.

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Q-11 Reference the Application. If it has been determined that there is a reliability violation, has PJM independently verified and vetted the least cost solution that resolves the violation? Or has PJM only approved the project as a supplemental project, under the basic criteria of doing no harm to the BES.

A-11 PJM completed a “no harm” study to evaluate whether the Breinigsville-Alburtis line rebuild “will adversely impact the reliability of the Transmission System . . .” (PJM Manual 14B, § 1.1; see also, PJM Operating Agreement, Schedule 6, § 1.3(d)).

PJM does not approve supplemental projects. However, as discussed in the response to A-8, PJM has confirmed the existence of a BES reliability violation in the 2023 RTEP case if the Breinigsville-Alburtis line rebuild portion of project S0864 is not built. As explained in Attachment 1 to the Application, PPL EU evaluated six possible alternatives to resolve this violation and selected the solution that permanently resolves the reliability violation in the most cost effective manner.

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- Q-12 Reference the Application. If it has been determined that there is a reliability violation, when will that violation occur? Provide in what year it would occur and if it would occur under FERC 715 TO analysis, and/or also occur under PJM analysis (if not the same)?
- A-12 Reliability analysis conducted by PJM and PPL EU confirmed that reliability violations exist in the 2023 RTEP summer peak case if project S0864 is not completed. PPL EU performed additional analysis showing that the reliability violations will also occur in the 2021 RTEP summer peak case. PPL EU also performed a preliminary analysis in the 2023 light load case and found that the violation on BES system will occur during the light load period as well. Good utility practice and mandatory NERC planning standards require that reliability violations be addressed prior to the violation occurring (116 FERC ¶ 61,062).

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Q-13 Reference the Application. How will cost allocation be affected if the project is approved as a (1) supplemental project, (2) baseline FERC Form 715 TO criteria, or (3) PJM BES criteria. What will be the cost allocation if both the FERC Form 715 criteria and PJM BES reliability criteria violations drive a project?

A-13 Cost allocation for transmission projects follows the planning drivers for the project. Supplemental projects are 100% cost allocated to the respective TO zone (PJM OATT, Schedule 12). Similarly, FERC Form 715 TO criteria driven baseline projects are also 100% cost allocated to the respective TO zone (154 FERC ¶ 61,096). Only if the project were planned by PJM to address regional drivers, would it be subject to cost allocation outside the PPL zone. (PJM OATT, Schedule 12).

PPL EU is not aware of a specific tariff provision addressing cost allocation when a project is driven both by FERC Form 715 TO and PJM regional reliability criteria.

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Q-14 Reference the Application. What are the specific reliability criteria differences, as applied to this case, between the PPL TO FERC Form 715 and PJM regional reliability criteria?

A-14 The Table below shows the PPL TO FERC 715 and PJM reliability voltage drop and magnitude criteria for the BES system. PPL EU and PJM have nearly identical criteria except that PPL EU applies a more stringent voltage drop requirement to the 138 kV system.

<b>BES system</b>				
	Voltage level	Voltage drop Criteria (%)	Low Voltage limit Pre-contingency	Low Voltage limit-Post-contingency
PJM	500 kV	5%	500 kV	485 kV
PPL EU	500 kV	5%	500 kV	485 kV
<b>non-BES</b>				
	Voltage level	Voltage drop Criteria (%)	Low Voltage limit Pre-contingency	Low Voltage limit-Post-contingency
PJM	138 kV	10%	131 kV	127 kV
PPL EU	138 kV	8%	131 kV	127 kV
<b>non-BES</b>				
	Voltage level	Voltage drop Criteria (%)	Low Voltage limit Pre-contingency	Low Voltage limit-Post-contingency
PPL EU	69 kV	8%	64	62

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- Q-15 What is the process, if there is one, to reclassify a supplemental project put into the Local Plan before the M-3 process took effect into a baseline project [FERC Form 715 or PJM baseline]? If there isn't an established process, could this be done upon PPL's initiative?
- A-15 PPL EU is not aware of any formal process of reclassifying supplemental projects as baseline projects in the protocols for the PJM Regional Transmission Expansion Plan ("RTEP"). However, PJM and its members are currently developing a process to address when different project types mitigate various needs. For project S0864, it would not be appropriate to reclassify the Breinigsville-Alburtis line rebuild because this project still addresses the supplemental project needs identified at the PJM TEAC on January 7, 2015: "To replace aging infrastructure and to address operational performance issues in the Wescosville area." Furthermore, as noted in PPL EU's response to A-8, a portion of this project (reconfiguration of the Wescosville Substation) is complete and in service.

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- Q-16 Reference A-15 above. How long would the above-referenced process take? Would the project need to be reintroduced at the TEAC/sub-regional TEAC and go through the stakeholder process? If so, how long would that take until the project, which is already in the RTEP, be reclassified? Does the answer change based on whether the need is reliability or TO criteria? If so, please explain.
- A-16 As mentioned above, PPL EU is not aware of any formal process to reclassify projects. Therefore, it is not possible for PPL EU to comment on a time requirement.

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Q-18 Reference the Application. Please provide operational information regarding PPL's SPS operations on PPL BES facilities. How many SPS systems does PPL have? Also, how many times in the last 5 years did PPL activate SPS de-energize events successfully? How many times did PPL's SPS facilities not de-energize when they should have? How many times did the SPS facilities de-energize when they shouldn't have, and when they did, how many times did they cause a loss of load – and for how long?

A-18 PPL EU has no SPSs on its BES facilities.

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Q-20 Reference the Application. What percent of the year [number of violation hours/total hours] will the violations occur, noting that loads vary with time over the BES and affected distribution systems at Wescosville and Breinigsville substations? In other words, if the N-1-1 situation would occur, would there always be a voltage violation, or will it only occur on a peak design hour, and if the latter, quantify the number of hours per year.

A-20 PJM<sup>3</sup> and PPL EU<sup>4</sup> are required to incorporate NERC standards into their planning criteria. These standards require planning for multiple contingencies, including summer normal, summer peak, and light load. If PJM or PPL EU fail to plan the system to meet NERC standards, including N-1-1, for all contingencies, they would be out of compliance and may be subject to civil penalty under FERC's assessment authority (16 U.S. Code § 825o-1(b)). Civil penalties caps are currently set at \$1,269,500 per violation, per day (166 FERC ¶ 61,014). The planning process requires the development of solutions to address contingencies during peak loading conditions regardless of when a violation will occur.

As mentioned in prior responses, the reliability analysis conducted by PJM confirmed that reliability violations exist in the 2023 RTEP summer peak case if project S0864 is not completed. PPL EU performed additional analysis showing that the reliability violations will occur in the 2021 RTEP summer peak case. PPL EU also performed a preliminary analysis in the 2023 light load case and found that the violation on BES system will occur during the light load period as well.

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<sup>3</sup> Refer to PJM manual 14B for more info on PJM transmission planning process <https://www.pjm.com/-/media/documents/manuals/m14b.ashx>

<sup>4</sup> Refer to PPL EU TO FERC form 715 for more info on PPL EU Transmission Planning Process <https://www.pjm.com/-/media/planning/planning-criteria/ppl-planning-criteria.ashx?la=en>

**VERIFICATION**

I, FRANK J. RICHARDSON II, being the PJM & Federal Regulatory Policy Manager at PPL Electric Utilities Corporation, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect PPL Electric Utilities Corporation to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date:

*June 24th, 2019*



Frank J. Richardson II

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**To:** Rosemary Chiavetta, Secretary  
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