PENNSYLVANIA PUBLIC UTILITY COMMISSION
HARRISBURG, PENNSYLVANIA 17105

Application of PPL Electric Utilities for Approval to Rebuild the Existing Breinigsville-Alburtis 500 kV Transmission Line in Lower Macungie and Upper Macungie Townships, Lehigh County, Pennsylvania

Public Meeting: July 11, 2019
3007945-TUS
Docket No. A-2019-3007945

STATEMENT OF COMMISSIONER ANDREW G. PLACE

Before the Pennsylvania Public Utility Commission (Commission) is the Application of PPL Electric Utilities Corporation (PPL Electric or Company) filed pursuant to 52 Pa. Code Chapter 57, Subchapter G of the Commission's transmission line siting regulations. PPL Electric requests Commission approval to rebuild the existing six-mile-long single-circuit Breinigsville-Alburtis 500 kV Transmission Line (Breinigsville-Alburtis) in Lower Macungie and Upper Macungie Townships, Lehigh County, and the Petition for Waiver of certain provisions of our regulations for Commission Review of Siting and Construction of Electric Transmission Lines set forth at 52 Pa. Code §57.71 *et seq.*. The Proposed Project will rebuild the current transmission line into a double-circuit transmission line, including the replacement of all existing 27 transmission line structures and the installation of two new structures. PPL Electric states that the total estimated cost for the proposed project is $33 million.

PPL Electric states that the second circuit and switch yard reconfiguration will enable it to resolve an existing North American Electric Reliability Corporation (NERC) standard violation regarding voltage drop on the existing 138 kV and 69 kV systems during a contingency event. PPL Electric further states that the Proposed Project will also enable it to bring its Wescosville Substation up to current design standards. According to the Company, the Proposed Project will improve the reliability of the Breinigsville Substation by providing a third 500 kV source. Currently, there are three power sources feeding the Wescosville and Breinigsville substations, including the Susquehanna-Wescosville 500 kV Transmission Line and the Breinigsville-Alburtis 500 kV line. PPL Electric avers that, during a maintenance scenario when one of these two 500 kV transmission lines is out-of-service, if a fault were to occur on the other transmission 500 kV line, the Breinigsville Substation would experience a voltage drop – i.e. an N-1-1 condition, where two combined system outages happen in close proximity and time. According to the Company, the Breinigsville Substation would experience a 13.8% voltage drop exceeding PPL Electric's transmission criteria of 8% and a minimum voltage of 57.2 kV which is below its limit of 62.1 kV. PPL Electric further states that during this event, the Commission's requirements at 52 Pa. Code §57.14(b) for voltage range and deviation on PPL Electric's distribution systems would be exceeded.

PPL Electric states that the addition of a third 500 kV source will avoid interruptions during maintenance of these 500 kV lines and guard against certain contingency events. The addition of the second 500 kV circuit to the existing Breinigsville-Alburtis transmission line was presented at the PJM Mid-Atlantic Sub-Regional Transmission Expansion Plan committee and

added to PJM's Regional Transmission Expansion Plan (RTEP) as supplemental project number S0864.

PPL Electric states that, while the project is needed to address the NERC standard violation, it will also resolve a violation of the National Electric Safety Code's (NESC) 5 mA Rule. PPL Electric states that 12 of the 28 spans on the Breinigsville-Alburtis transmission line do not meet the 5 mA Rule, which limits the maximum induced current from a transmission line on a large metal object to be 5 mA or less. PPL Electric states that, to address this issue, the Breinigsville-Alburtis #1 & #2 will have increased vertical clearance to ground.

The Commission initiated six sets of data requests regarding this LON. PPL Electric responded in January, April, and July 2018, and June 2019 and submitted the following information:

- The Breinigsville-Alburtis 500 kV Transmission Line is about 37 years old with a useful life expectancy of approximately 80 years.
- There have been no unplanned outages for either the Wescosville-Breinigsville 500 kV Transmission Line or the Breinigsville-Alburtis line over the past five years, other than one momentary outage of approximately 1 minute.
- Approximately 105 MW consisting of 10,000 customers would have to be dropped prior to the second contingency occurring to prevent the violation. The Company later confirmed, that if the N-1-1 condition were to occur prior to completion of the proposed project, PPL Electric would utilize operational steps to prevent the low voltage and voltage drop violation. These operational steps would be an interim solution until the subject project were to be completed. Per the Company, a protection control system such as a "Special Protection Scheme (SPS)" or "Remedial Action Scheme (RAS)" would be required. However, PJM Manual 7 states "SPS/RASs should not be installed as a substitute for good system design or operating practices. Their implementation is generally limited to temporary conditions involving the outage of critical equipment." Consequently, PPL Electric would only utilize an SPS/RAS on a temporary basis and not as a permanent substitute for proper system design.
- The Breinigsville substation primarily feeds industrial load customers on the transmission and distribution systems but there are also residential customers sourced from this substation. There are no critical customers among the 10,000 that would be dropped in the event of the envisioned contingency.
- PPL Electric did not provide any information on the probability of such an N-1-1 condition. However, PPL Electric's responses to subsequent data requests, filed as confidential, provide additional information regarding historical planned and unplanned outages on the relevant sections of line, as well as the unplanned outages of the entire PPL Electric 500 kV line facilities. Upon review of the data submitted, it appears to confirm that it is extremely unlikely that an unplanned and planned outage of both lines would occur at once.
- This project is not being filed as a regional reliability project, but a supplemental transmission project filed by PPL Electric for the main purpose of reliability benefits to its distribution system customers although there are additional potential operational benefits to the transmission system as well.

Under the Commission's siting regulations at 52 Pa. Code §57.71 *et seq.*, the Company must establish a clear need for the project.[1] PPL Electric has not adequately proven the need for this project. Specifically, the Company has not established a reasonable likelihood that the alleged events leading to an outage event are likely to occur, nor has it demonstrated that the proposed solution is an efficient and cost-effective choice relative to other alternatives.[2]

As to addressing NESC violations, existing facilities are generally not required to conform to this updated NESC requirement, as compliance would require the replacement of much of the electric grid. Compliance with the current NESC requirement is applicable to new facilities.

As to addressing the N-1-1 contingency, PPL Electric states that NERC reliability standards do allow the use of load drop as a solution. However, load drop must be automatic and can be accomplished by designing and installing an SPS. As previously stated, PJM Manual 7 states "SPSs should not be installed as a substitute for good system design or operating practices. For that reason, the implementation of SPS schemes are generally limited to temporary conditions involving the outage of critical equipment." These schemes are designed and intended to automatically and instantaneously de-energize transmission facilities in the event of a system contingency. According to PPL Electric, SPS schemes have historically been prone to mis-operation and increased outage risk. If a mis-operation were to occur, the same 10,000 customers would lose service. As to assertions of mis-operation, the Company later noted that it has no SPSs on its Bulk Electric System (BES) facilities, and thus has no actual current experience with the reliability of these systems.

We note that this is not a PJM Interconnection, LLC mandated reliability solution but rather a PPL-driven and self-selected solution. PPL Electric has determined that an SPS is not an acceptable solution, however, it is not dispositive for the establishment of need for the project. PPL Electric itself acknowledges that, according to NERC reliability standards, automatic load drop is an allowable solution to an alleged N-1-1 reliability problem. Additionally, PPL Electric has not clearly established a reasonable likelihood of both lines having an outage in the same timeframe. In fact, PPL Electric states that the subject transmission lines have an average of zero unplanned outages per year and that the two lines have never been out of service at the same time. The Company's confidential data responses have not altered the facts regarding the unlikeliness of a transmission caused outage. Based on the information provided by PPL Electric, I do not believe that PPL Electric has met its burden under our regulations at 52 Pa. Code § 57.72(c)(5).

While cost is not the only factor when examining alternatives to address alleged reliability needs, it is a very important one. In the current case, the transmission cost of service

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[1] 52 Pa. Code §57.72(c)(5) states that an application shall contain a general statement of the need for the proposed HV line in meeting identified present and future demands for service, of how the proposed HV line will meet that need, and of the engineering justifications for the proposed HV line.

[2] *Re Pennsylvania Power And Light Company*, 50 Pa. PUC 480 (January 5, 1977); *Bd. of Sup'rs of Springfield Twp. v. Pennsylvania Pub. Util. Comm'n*, 41 A.3d 142, 147. (Pa. Cmwlth. 2012).

would be on the order of $4 million per year, or over $400 per year per customer, when spread equally over the 10,000 customers. A similar examination of alternative reliability investments in the FirstEnergy Companies' and PPL Electric's Long-Term Infrastructure and Investment Plans (LTIIPs) confirms that LTIIP project measures are much more cost effective than the proposed transmission line in improving reliability by an equivalent magnitude.

Additionally, the operational facts of this case lead me to conclude that approval of this project based on alleged reliability concerns related to distribution service to the Company's customers should be rejected. PPL Electric has alleged that there may be baseline BES reliability violations if this Application is not approved. PJM Interconnect, LLC acknowledges voltage violations in the Wescosville area from a limited August 2018 study using a 2023 study year if the S0864 project was not in service. However, PJM also acknowledged that it has not performed a comprehensive reliability analysis, but will conduct a complete reliability analysis in the absence of the S0864 project during the 2019 RTEP. As PJM has not performed a full reliability analysis, it therefore has not analyzed whether there is a more cost-effective solution that resolves the potential regional reliability violations. PJM also acknowledged that Regional Facilities of 500 kV needed for reliability have their costs allocated 50% based on a load ratio share basis across the PJM region, and 50% based on the solution-based DFAX[3] method. Thus, should PJM identify this solution as a baseline solution eligible for regional cost allocation, the appropriate FERC-approved cost allocation principles would be applied. To the contrary, under PPL Electric's proposal, all project costs of this supplemental transmission project would be allocated 100% to the Company's customers. In short, if PPL Electric is correct that a BES reliability violation must be addressed, the Company has not adequately identified all credible alternatives, including going through the PJM RTEP process to address the BES reliability violations, including the relative costs and allocation factors of each of those alternatives.

This Commission has a responsibility to ensure that substantial investments are prudently made, particularly those filed as supplemental projects. Because this is a supplemental project, no other third party, like PJM, has performed a cost benefit analysis or assessed alternatives.[4] This highlights the need for further scrutiny by all interested parties to ensure the requirements of 52 Pa. Code §57.72(c)(5) and 52. Pa. Code §57.76(a)(1) are met, particularly for supplemental projects, and that electric distribution companies in Pennsylvania must provide sufficient information to justify these expenditures.

Based on the above, I support denial of the proposed Application, given PPL Electric's failure to demonstrate the need for the proposed project and to examine alternative solutions. I believe that the more prudent course of action is for the Company to submit this project as a baseline solution to be examined by PJM and included in the RTEP after all alternatives have

[3] DFAX – Distribution Factor. The term is generally applied to the percentage of power flowing on Element A that will be picked up (or backed down) on Element B as a result of an outage on Element A or a shift on generation.
[4] PJM simply performs a "do not harm" analysis of supplemental projects for purposes of outage planning.

been fully vetted by PJM. I believe that PPL Electric's customers should not bear the full cost burden for the very high voltage regional facilities in this application, when other alternative approaches exist.

Therefore, I support the staff recommendation in this matter.

DATE: July 11, 2019

Andrew G. Place, Commissioner