Project Proposal #2

Solution to Address High Voltages at Light Load on 230 kV buses at Mercer, Kuser and Trenton

PJM RTEP – 2014 Project Proposal Window #2

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Executive Summary

PJM is seeking solution alternatives to resolve potential light load reliability criteria violations identified as part of the 2014 RTEP study. PECO Energy Company is proposing a solution that would alleviate a subset of these problems, specifically identified as flowgates LL-V6 to LL-V13 for the L_A-2201 contingency event. These are high voltages on the 230 kV buses at Mercer, Kuser and Trenton caused by an outage of the Mercer-Kuser-Lawrence 230 kV line. The project proposal is to build a new 230 kV line [REDACTED] The new line would be attached to existing buses at each substation through a new circuit breaker. The estimated cost of the project is $[REDACTED] in addition to right-of-way acquisition and permitting costs. The estimated time needed for construction of the required facilities is [REDACTED] with actual project completion time dependent on the time needed for right-of-way acquisition and permitting. PECO has a right-of-way that could be used for a significant portion of the proposed line, but some new right-of-way would likely need to be obtained to complete the project. However, the area in which new right-of-way would be needed is sparsely populated, mainly industrial, with significant amounts of undeveloped land. In addition, two transmission lines [REDACTED] in the same vicinity, and could potentially be upgraded or reconfigured to accommodate a new line. PECO has partial ownership of these facilities. Thus, there are multiple alternatives for routing the portion of the proposed line that would be built outside PECO's existing right-of-way.

PECO Energy Company is requesting Designated Entity status for the project. PECO is an affiliate of Exelon Corporation. Exelon has submitted designated entity pre-qualification materials to PJM on behalf of its affiliates (PJM ID 13-04).

Company Evaluation

PECO Energy Company is headquartered in Philadelphia, PA. PECO is an affiliate of Exelon Corporation. Exelon's headquarters are located in Chicago, IL. For details regarding the qualifications, experience and financial standing of PECO Energy Company, please see the designated entity pre-qualification materials submitted by Exelon on behalf of its affiliates (PJM ID 13-04). These materials are posted on PJM's website.

Proposed Project Constructability

1. Component Scope

    a. Greenfield Transmission Line Description

    The proposed project would include construction of a new 230 kV AC transmission line. The line would be built [REDACTED] A potential route for the new line is shown on diagram 1. The line would be aerial with a total length of approximately [REDACTED] miles and consist of lattice or pole type structures carrying 1590 kcmil ACSR conductor. The estimated ratings of the new facility would be 731 MVA normal and 885 MVA emergency.

    PECO has right-of-way for the portion of the line that would be built [REDACTED] This portion of the line would be approximately [REDACTED] miles in length and run alongside [REDACTED]. New right-of-way would need to be acquired to complete the line from the point [REDACTED] This portion of the line would be approximately [REDACTED] miles in length, some of which would [REDACTED]. However, the area is sparsely populated, mainly industrial, with significant amounts of open space. Therefore, there are multiple potential routes for this portion of the new line. Further, the new line would [REDACTED]. In addition, there are two transmission lines that presently [REDACTED]. PECO has partial ownership of these facilities. It is possible that these facilities may be able to be upgraded or reconfigured to achieve the same connection between [REDACTED] substations. This could reduce the amount of new right-of-way required to implement the project.

    The new transmission line would be connected to an existing 230 kV bus [REDACTED] substation. A new line position and circuit breaker would be installed at the substation through which the new transmission line would be connected to the bus.

A single line diagram of the proposed connection at [REDACTED] substation is shown on diagram 2.

b. Greenfield Substation Description

The proposed project could be implemented without constructing a new substation.

c. Transmission Facilities to be Constructed by Others

The proposed new transmission line would connect to an existing 230 kV ring bus at [REDACTED] There are generating units as well as 230 kV transmission lines presently connected at the substation. The proposed new transmission line would be connected to the ring bus [REDACTED] through a new circuit breaker that would be installed at the substation. Alternatively, it may be preferable to add the circuit breaker directly to the bus, creating an additional bus section for the new line to be connected. A single line diagram of the proposed connection at [REDACTED] substation is shown in diagram 3.

d. Environmental, Permitting and Land Acquisition

PECO Energy Company will consult with all applicable regulatory agencies as required when constructing new transmission facilities. PECO will ensure that necessary documentation is supplied and procedures are followed throughout the duration of the project. This would include studies and permitting for constructability and construction methods, site access and equipment staging, river crossing, environmental impacts, and development of mitigation plans to address any impacts if determined to be necessary. Specific environmental studies will be needed to identify the presence of wetlands and any endangered plant, fish or animal species. Any construction that impacts wetlands would require a permit from the U.S. Army Corps of Engineers and possibly the U.S. Coast Guard.

The proposed project would require the acquisition of some right-of-way on which to construct a portion of the new transmission line. However, the area in which the right-of-way would need to be acquired is mainly industrial and has significant amounts of undeveloped land. In addition, there are existing transmission facilities [REDACTED] PECO has partial ownership of these facilities. It is possible these facilities could be upgraded or reconfigured to complete a portion of the line. This could reduce the new right-of-way requirements needed to implement the project.

Diagram 1

Diagram 2

Diagram 3

2. Project Component Cost Estimates

An itemized cost estimate for the proposed project is as follows:

Build new 230 kV transmission line	$[REDACTED]
Attach new transmission line [REDACTED]	$[REDACTED]
Attach new transmission line [REDACTED]	$[REDACTED]
Total	$[REDACTED]

The new transmission line would be a single circuit on either pole or lattice type structures. The length of the line would be approximately [REDACTED] miles and the conductor would be 1590 kcmil ACSR type with ratings of 731 MVA normal and 885 MVA emergency. The new transmission line would be attached to the 230 kV buses at [REDACTED] substation through a new circuit breaker.

The estimate includes engineering and design, material and labor. The cost of land acquisition for the portion of the line on which right-of-way would need to be obtained is not included. The cost of permitting is also not included.

3. Schedule

The proposed project would include construction of a new 230 kV transmission line connecting [REDACTED] An estimate for the time required to construct the transmission line is [REDACTED]. The proposed project would also include work necessary to connect the new transmission line to both [REDACTED]. It is estimated that this work would be done concurrently with construction of the new line. Therefore, an estimate for the total time required to construct the facilities included in the proposed project is [REDACTED]. This includes engineering and design, but does not include the time required for right-of-way acquisition and permitting.

4. On-going Transmission Facility Items

a. Operational Plan

PECO Energy Company is a registered member of Reliability First Corporation and a transmission owner within the PJM Regional Transmission Organization. PECO operates a control center within its territory 24/7 with system operators who maintain both PJM and NERC certification. A state-of-the-art Energy Management System provides SCADA control and monitoring of all of PECO's transmission facilities. PECO also maintains a fully functional back-up control center in the event the primary location must be evacuated.

b. Maintenance Plan

PECO Energy Company owns and maintains over 1,100 miles of transmission lines and over 90 transmission substations throughout its territory. Maintenance on these facilities is performed by both experienced in-house crews and experienced contract crews operating under the direction of in-house personnel. PECO implements a comprehensive preventive maintenance program that meets all regulatory and industry standards. This includes a maintenance template for all transmission facilities that documents necessary program tasks and frequencies. PECO has in-house equipment and personnel and also maintains relationships with outside vendors and other utilities to enable quick restoration in the event of an outage.

5. Assumptions

The proposed project includes a new 230 kV transmission line. The estimates provided for cost and construction time are based on generic facilities and typical projects. However, each project is unique and actual cost and construction times may vary from the estimates. In addition, right-of-way acquisition and permitting have not been included in the estimates.

Although diagram 1 shows one potential route for the new transmission line for the portion of the new line that would [REDACTED] there are other potential routes that could be chosen as alternatives. There are two transmission lines that presently [REDACTED] PECO has partial ownership of these facilities. It is possible that these facilities may be able to be upgraded or reconfigured to achieve the same connection between [REDACTED] substations. This could reduce the amount of new right-of-way required to implement the project. Final determination of a route for the new facilities can be made after the proposed project is selected as a solution to the identified problems.