PJM Generator Interconnection Request
Queue Z1-051
Feasibility Study Report

February 2014
#783445v1

AEP Feasibility Study Analysis

General

Interconnection Customer (IC) proposes to increase the generation into the Cook 26 kV substation by 102 MWE and 83 MWC.

The requested in service date is November 1, 2016.

The objective of this Feasibility study is to determine budgetary cost estimates and approximate construction timelines for identified transmission facilities required to connect the proposed generating facilities to the AEP transmission system. These reinforcements include the Attachment Facilities, Local Upgrades, and Network Upgrades required to maintain the reliability of the AEP transmission system. Stability analysis is not included as part of this study.

Attachment Facilities

Station Cost:

- No work is required.

Protection and Relaying Cost:

- No work is required.

Local and Network Impacts

The impact of the proposed generating facility on the AEP System was assessed for adherence with applicable reliability criteria. AEP planning criteria require that the transmission system meet performance parameters prescribed in the AEP FERC Form 715 and Connection Requirements for AEP Transmission System. Therefore, these criteria were used to assess the impact of the proposed facility on the AEP System. The PJM project Z1-051 was studied as a 1,192 (1,148 MW Capacity) Cook 26 kV Substation consistent with the interconnection application. Project #Z1-051 was evaluated for compliance with reliability criteria for summer peak conditions in 2017.

Potential network impacts were as follows:

Normal System (2017 Summer Conditions Capacity Output)

- No problems identified

Single Contingency (2017 Summer Conditions Capacity Output)

- No problems identified

Multiple Contingency (2017 Summer Conditions Capacity Output)

- No problems identified

Contribution to Previously Identified Overloads (2017 Summer Conditions Capacity Output)

- No problems identified

Normal System (2017 Summer Conditions Full Output)

- No problems identified

Single Contingency (2017 Summer Conditions Full Output)

- No problems identified

Multiple Contingency (2017 Summer Conditions Full Output)

- No problems identified

Contribution to Previously Identified Overloads (2017 Summer Conditions Full Output)

- No problems identified

Short Circuit Analysis

- The proposed generation upgrade work will not affect Short Circuit conditions

Stability Analysis

- Stability studies were not performed as part of this Feasibility Study. The stability assessments will be performed during the System Impact Study.

Voltage Variations

- No problems identified.

Additional Limitations of Concern

- No known additional limitations of concern.

Local/Network Upgrades

- No problems identified.

Conclusion

Based upon the results of this Feasibility Study, the injection of an additional 102 MW (83 MW Capacity) Cook 26 kV Substation (PJM Project #Z1-051) will not require additional interconnection charges at this phase of the study.

PJM Feasibility Analysis

Network Impacts

The Queue Project #Z1-051 was studied as a 102.0 MW (Capacity 83.0 MW) injection at Cook 26 kV substation in the AEP area. Project #Z1-051 was evaluated for compliance with reliability criteria for summer peak conditions in 2017. Potential network impacts were as follows:

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Light Load Analysis

Light Load Studies to be conducted during later study phases (applicable to wind, coal, nuclear, and pumped storage projects).

Multiple Facility Contingency

(Double Circuit Tower Line, Failed Breaker and Bus Fault contingencies for the full energy output)

None

Short Circuit

(Summary form of Cost allocation for breakers will be inserted here if any)

To be determined

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Steady-State Voltage Requirements

(Results of the steady-state voltage studies should be inserted here)

To be determined

Stability and Reactive Power Requirement

(Results of the dynamic studies should be inserted here)

To be determined during the Impact Study

New System Reinforcements
(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements
(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

None

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

Not Applicable