PJM Generator Interconnection Request
Queue #U2-017
Tazewell-Baileysville 138kV
Feasibility Study

503549

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Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners,

U1-059 Tazewell-Baileysville Feasibility Study Report

General

The Interconnection Customer (IC) proposes to install PJM Project #U2-017, a 200 MW generating facility comprised of 121 - 1.65 MW Vestas V82 wind turbine generators connecting to the American Electric Power (AEP) Tazewell-Baileysville 138kV transmission line. The proposed project will be built on Abbs Valley Ridge and Stoney Ridge in Tazewell County, Virginia (See Exhibit 1). The projected in-service date is scheduled for July 2011.

Attachment Facilities

The proposed generation project will consist of a new in-line switching station located on the Tazewell – Baileysville 138 kV circuit.

The new in-line switching station needed for Tazewell – Baileysville 138 kV circuit (see Exhibit 2) will include three (3) 138 kV circuit breakers configured in a ring-bus and 138 kV metering. AEP will retain ownership of the proposed in-line station facilities. In addition, remote terminal relaying will need to be upgraded at Tazewell, Baileysville and Carswellto facilitate the new station. It is expected that any right-of-way for line extensions, as well as a 200' x 200' (minimum) station site will be provided to AEP by the IC.

It is understood that the IC will be responsible for all costs associated with the construction, as well as facilities associated with connecting 200 MW of generation to the in-line facilities. Note that the IC's station facilities and any facilities outside the new station were not included in the cost estimates. These are assumed to be the IC's responsibility.

The AEP construction scope:

- Construction of a new switching station connecting to the Tazewell – Baileysville 138 kV circuit, including three (3) 138 kV circuit breakers, relays, 138 kV metering, SCADA, and associated equipment.
  Estimated Cost (2008 Dollars): **$4,500,000**

- Replace line relaying with AEP standard package at Carswell station.
  Estimated Cost (2008 Dollars): **$500,000**

- Replace line relaying with AEP standard package and upgrade station RTU at Tazewell station.
  Estimated Cost (2008 Dollars): **$740,000**

- Replace line relaying with AEP standard package and upgrade station RTU at Baileysville station.
  Estimated Cost (2008 Dollars): **$740,000**

Total Attachment Facilities Cost*: **$6,480,000**

*The estimates are preliminary in nature, as they were determined without the benefit of detailed engineering studies. Final estimates will require an on-site review and coordination to determine final construction requirements. It will take approximately 18 months after obtaining the authorization to construct the facilities as outlined above.

Local AEP 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 single contingency performance criteria in accordance with the AEP FERC Form 715. Therefore, this criterion was used to assess the impact of the proposed facility on the AEP System. The JW Great Lakes project was studied as a 200 MW net energy injection (26 MW capacity) consistent with the interconnection application. The results are summarized below.

Normal System (2011 Summer Conditions)

- No problems identified

Single Contingency (2011 Summer Conditions)

- No problems identified

Multiple Contingency (2011 Summer Conditions)

- No problems identified

Short Circuit Analysis

- No problems identified.

Stability Analysis

- Stability studies were not performed as part of this Feasibility Study and are not normally performed as part of a Facility Study effort. The stability assessments are part of the System Impact Study. Based upon the results of this future System Impact Study, the extent of system upgrades could change and the associated costs could be significantly different.

Reactive Requirements

PJM requires a power factor correction to 95% lead/lag at the point of interconnection for wind generating facilities. It is expected that Great Lakes will adhere to this standard.

Network Impacts

The queue project U2-017 was studied as a 200MW (26MW capacity) injection into the AEP system at the Tazewell – Carswell section of the Tazewell-Baileysville 138 kV line. U2-017 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Potential network impacts were as follows:

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

None

Multiple Facility Contingency
(Double Circuit Tower Line, Line with 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)

No problems identified.

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

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