PJM Generator Interconnection Request
Queue #V4-016
Valley (Cass County) 138kV
Feasibility Study Report

July 2010
#605001

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, the costs may be included in the study.

V4-016 Valley (Cass County) 138kV Feasibility Study

General

The Interconnection Customer (IC) has proposed installing a 200 MW wind project, consisting of 80 2.5 MW wind turbines, in Cass County, Michigan approximately 5 miles south of the Valley 138kV station. The project will be interconnected to the transmission system via a radial 138kV line to be built by the IC that will run from the project site to Valley Station. The in-service date for the project is December 31, 2012.

Direct Connection

The IC has requested a direction connection to AEP's Valley 138 kV station in Decatur, MI. The attachment facilities will consist of a new 138 kV circuit breaker and line exit arrangements required to interconnect the generation project. It is assumed that the IC will be responsible for engineering and construction of the new 138 kV line extending from the IC's collector station to AEP's Valley Station. AEP will retain ownership of the proposed facilities at Valley Station including the circuit breaker and associated line exit equipment as shown in Exhibit 2.

The feasibility of the configuration shown in Exhibit 2 has been assessed without the benefit of detailed engineering. It is possible that certain facilities within AEP Valley 138 kV station may require relocation to accommodate the proposed configuration. Furthermore, the station may require expansion. It is assumed that the IC will be responsible for any additional costs associated with the relocation or expansion of facilities. The cost below does not include any contingency for such expansions.

The AEP design and construction scope for the attachment facilities:

- Install a new 138 kV circuit breaker, relaying and facilities to accommodate termination of a new 138 kV line from V4-016 collector station. Also, install 138 kV metering at AEP Valley 138 kV station.
  Estimated Cost (2010 Dollars)*: **$850,000**

The standard time required for construction is 12 to 18 months after signing an interconnection agreement.

*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 one year after obtaining the authorization to construct the facilities as outlined above.

Local AEP Impacts

The impact of the proposed generating facility on the AEP transmission system was assessed according to applicable reliability criteria and AEP planning criteria. The transmission system must meet contingency performance in accordance with AEP FERC Form 715 criteria. The project was studied as a 200 MW net energy injection. The results are summarized below.

Normal System – Capacity Output (2014 Summer Conditions)

- No problems identified.

Single Contingency – Capacity Output (2014 Summer Conditions)

- No problems identified.

Multiple Contingency – Full Output (2014 Summer Conditions)

- No problems identified.

Short Circuit Analysis

- No problems identified.

Stability Analysis

- No completed as part of the Feasibility assessment.

Network Upgrades

- None required.

Contributions to Previously Identified Network Limitations

- No problems identified.

Additional Limitations of Concern – Full Output

- No problems identified.

Network Impacts

The queue V4-016 project was studied as a 200MW (26MW of which was capacity) injection into AEP's system at the Valley 138kV substations. Project V4-016 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

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

No problems identified

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

No problems identified

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

No problems identified

Stability

Stability analysis will be completed in the Impact Study

System Reinforcements

None.

Potential Congestion due to Local Energy Deliverability

(PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection Request. Note: Only the most severely overloaded conditions are listed below. There is no guarantee of full deliverability for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the identified overloaded element(s). As a result of the aggregate energy resources in the area, the following violations were identified:

No problems identified