PJM Generator Interconnection Request
Queue # N40
Champion 345 kV
Feasibility Study Report

August 2005
333210

Preface

The intent of the feasibility study is to determine a plan, with order of magnitude 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.

Champion Feasibility Study

PJM Queue N-40

General

The interconnection customer (IC) has proposed installation of a 272 MW net (300 MW gross) waste coal generation project to be constructed in Robinson Township, Washington County, Pennsylvania. The proposed in-service date for the generation is May 1, 2009.

This Generation Interconnection Feasibility Study assesses the practicality and cost of incorporating the proposed 272 MW net waste coal generation unit into the Duquesne Light Company (DLCO) system. In accordance with the process set forth in PJM's Manual 14B, *Generation and Transmission Interconnection Planning*, the study was limited to short-circuit analyses as well as load flow analyses of probable contingencies. DLCO has provided preliminary estimates of the type, scope, cost, and lead time for construction of facilities. If the IC elects to pursue the System Impact Study, a more comprehensive analysis will be performed.

Direct Connection

The proposed generation project will be connected to the DLCO transmission system via a new 345 KV three-breaker, three-line ring bus switching station to be built near the Clinton – Collier 345 kV line. See Figure #1 for proposed interconnection Site 1 and Figure #2 for proposed interconnection Site 2. A new 4.5 mile (or 4.2 mile for alternative site) 345 kV transmission line will need to be built from the generation site to the site of the new substation. The new line is the responsibility of the interconnection customer.

The scope of work and estimated cost by project segment are listed below:

- A site for the interconnection switching station at a location adjacent to the Clinton – Collier line is to be acquired and prepared flat graded by the interconnection customer at no cost to the transmission owner. The estimated cost for DLCO to build an interconnection switching station on a site near the Clinton – Collier 345 kV line with a three-breaker, three line, 345 kV ring bus configuration is **$ 6,540,000** in 2009 dollars. The new facility will be the interconnection point for the proposed generation facility to be installed. Major equipment at the new switching station would include, three line dead-end structures, seven 345 kV air-break disconnect/grounding switches, three 345 kV circuit breakers, six 345 kV relaying potential devices, and facilities for the 345 kV interconnection metering. This station would also include a control building to house all protective relaying, metering, SCADA (RTU), and communications equipment required to accommodate these electrical facilities. For estimating

purposes the station is assumed to be located within a single span of the line, the right of way for this span must be acquired by the developer.

- DLCO will specify the protection requirements and relays to be employed on the interconnection breaker terminal at the generation site. The design will be reviewed for coordination with the interconnection site. This is to assure that the protective relaying equipment will be compatible with that installed on the interconnection breaker terminal at the new switching station. The estimated cost for this engineering process is **$ 6,000** in 2009 dollars. Purchase and installation of protective relaying and related communications equipment at the generation site is not included in this scope of work. This is the responsibility of the developer.

- Adding the proposed new generation switching station will require that protective relaying coordination in the entire area be reviewed and changes will likely be required at one or more substations. The cost to complete the coordination review, develop new settings, and implement the necessary changes assuming existing protection equipment is adequate, is included in the switching substation estimate.

This estimate does not include tax gross up.

This estimate does not include the cost to construct a 4.2 to 4.5 mile 345 kV line required to interconnect the customer's proposed new generating facilities with the transmission system grid at the new substation. The new line is the responsibility of the interconnection customer.

The total cost for the direct connection work is estimated to be **$ 6,546,000** in 2009 dollars.

System Upgrades

No system upgrades were identified during the course of this feasibility study.

No breaker replacements were identified during the short circuit analysis.

Normal System (ECAR Standard 1)
No problems were identified.

Multiple Facility Contingency – Tower line Outages (ECAR Standard 3)
No identified problems

Single Contingency (ECAR Standard 2)
No new overload conditions were identified.

Short Circuit Study
No identified problems.

Construction Lead Time

This project will require 24 months to complete from the date of receipt of a signed Interconnection Service Agreement (ISA). Delays could be based on weather, equipment lead-time, developer's procurement of right of ways, developer's site preparation, and availability of outages to perform the work.