

***PJM Generator Interconnection Request
Queue #R60
Robison Park-Convoy 345kV
Feasibility Study***

432576
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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, the costs may be included in the study.

General

Community Energy (Interconnection Customer) proposes to install a 350 MW wind generating facility (PJM Project #R60) to the American Electric Power (AEP) transmission system. These facilities will connect via a new 345 kV switching station in the Convoy-Robison Park 345 kV AEP line in 2009. The connection request specifies that 70 MW of the project is to be a Capacity Resource, with the balance to be an Energy Resource.

Attachment Facilities

The proposed connection involves the construction of a new 345 kV in-line switching station in the Convoy-Robison Park 345 kV line. This new station is to consist of three (3) 345 kV circuit breakers in a ring bus arrangement with 345 kV metering (See Exhibit 1). AEP will retain ownership of the proposed substation facilities. The Interconnection Customer will be responsible for all costs associated with this construction. Note that the new generating plant switching station and the 345 kV line from the new 345 kV switching station to the generating station were not included in the cost estimate. These are assumed to be the Interconnection Customer's responsibility.

Minor 345 kV line work will be required to provide connection from the existing tower line in and out of the new station. Since the exact station location is not known at this time, 0.25 miles of additional line was assumed. Additionally, it is expected that any right-of-way for the line extension as well as a station site (approximately 400' x 400') will be provided by the Interconnection Customer.

The AEP construction scope includes:

- Construction of a new switching station connecting to the Convoy-Robison Park 345 kV line, including 3-345 kV circuit breakers, relays (including required circuit terminal relays), 345 kV metering, SCADA, and associated equipment.

Estimated Cost (2007 Dollars)*: **\$4,500,000**

- Construction of 0.25 miles of 345 kV line facilities to loop in and out of the new switching station from the Convoy-Robison Park 345 kV line.

Estimated Cost (2007 Dollars)*: **\$600,000**

*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 with the Interconnection Customer to determine final construction requirements. It will take approximately one year after obtaining the authorization to construct the facilities as outlined above.

Local 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 criteria in accordance with the AEP FERC Form 715. Table 1 from that document is provided below for reference. These criteria were used to assess the impact of the proposed facility on the AEP System.

Table 1 AEP Transmission Planning Criteria (Steady State System Performance)			
Transmission System Condition	Maximum Facility Loading (Rating)	Minimum Bus Voltage	
		EHV	138 kV
All facilities in service	Normal	95%	95%
One facility out of service	Emergency (1)	90%	92%
	Normal (2)		
	Emergency (3)		
Two facilities out of service	Emergency	90%	92%
(1) Operational planning criteria before operating procedure implemented. (2) Facility planning criteria (EHV facilities). (3) Facility planning criteria (138 kV facilities).			

Additional generation projects have also been proposed in the region. Since the status of many of these projects is unknown at this time, this Feasibility Study addresses only the impact of the #R60 generation on the system as projected in 2009. The effect of other generation projects on the #R60 connection will be addressed in the System Impact Study as needed. Additionally, stability studies were not performed as part of this Feasibility Study and are not normally performed as part of a Feasibility 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.

Network Impacts

The #R60 project was studied as a 350 MW (70 MW of Capacity) interconnection at the Robison Park – Convoy 345 kV line in the AEP system. Project #R60 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

Generator Deliverability

No problems were identified

Multiple Facility Contingency

No problems were identified

Short Circuit

No problems identified

Contribution to Previously Identified Overloads

No problems were identified

New System Reinforcements

None

Contribution to Previously Identified System Reinforcements

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.

As a result of the aggregate energy resources in the area, the following violations were identified:

1. The Kammer 765/500 kV transformer is overloaded at 105% of its emergency rating (2094 MVA) for the outage of Kammer – South Canton 765 kV line (Cont. AEP380). The R60 project contributes approximately 34 MW to this overload.

The replacement of the Kammer transformer is estimated to cost \$18,000,000.

Coordination with MISO

Evaluation of whether the installation of this project impacts any facilities in the MISO system will be done in the Impact Study.

Exhibit 1: Simplified connection diagram

R60 Wind Generation Facility

