



***Facility Study for Generation
Interconnection Request
GEN – 2005 – 006***

***SPP Tariff Studies
(#GEN-2005-006)***

March, 2006

Summary

Pursuant to the tariff and at the request of the Southwest Power Pool (SPP), Oklahoma Gas & Electric (OG&E) performed the following Facility Study to satisfy the Facility Study Agreement executed by the requesting customer and SPP for SPP Generation Interconnection request Gen-2005-006. The request for interconnection was placed with SPP in accordance SPP's Open Access Transmission Tariff, which covers new generation interconnections on SPP's transmission system.

Order #661A Compliance

Stability Analysis was originally performed for this request in November, 2005 by SPP. The Study indicated no stability problems existed for the request. However, the original study did not include analysis of the latest FERC Order #661A low voltage ride through specification. Order #661A was released in December, 2005 and requires wind farms to be able to meet low voltage ride through requirements. As long as an Interconnection agreement is signed this year, this request will be subject to the transitional requirements of the order in which the turbines should stay on line for a fault down to 0.15 pu at the point of interconnection for a period of 4-9 cycles.

An additional contingency was simulated using data from the Impact study to confirm Order #661A compliance. A three phase fault was simulated at the Woodward 138kV bus for 5 cycles, followed by a trip of the line to Iodine, followed 20 cycles later by another 5 cycle fault, followed by a lockout of the transmission line.

The results indicate that the Siemens wind turbines can ride through the fault and therefore this request is compliant with Order #661A. A plot of the power output of the Siemens turbines is shown in Figure 1.

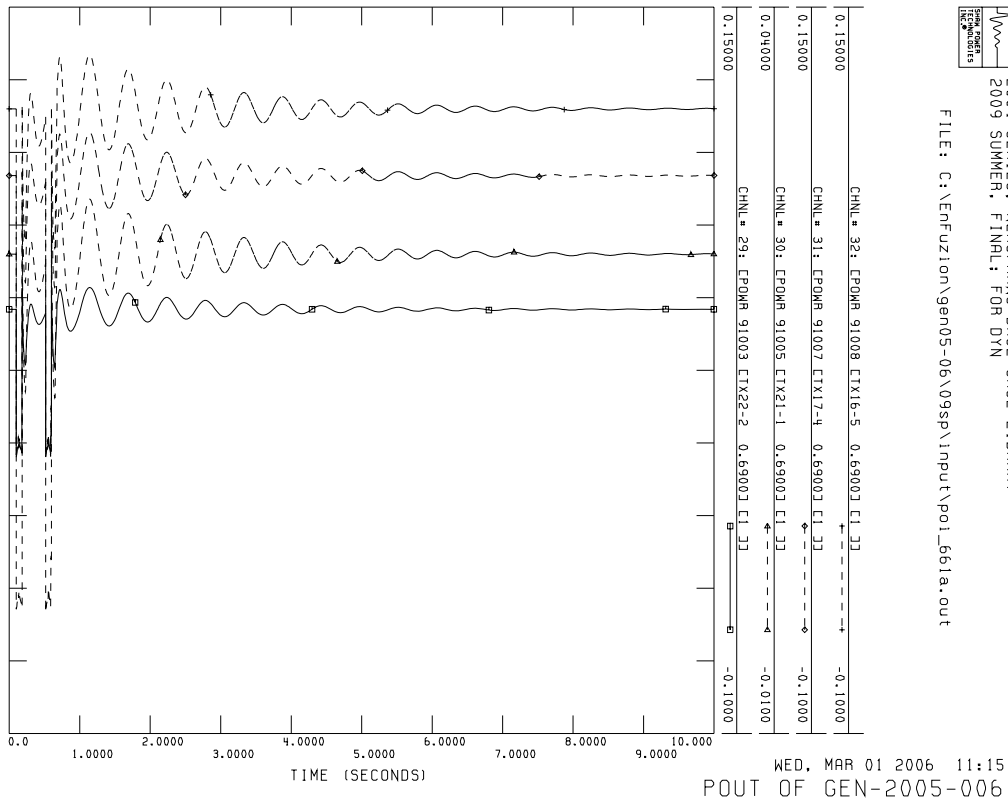


Figure 1. - Output of the Siemens Turbines during an Order #661A Fault Simulation



FACILITY STUDY

for

**FPL Energy LLC.
Ellis County Wind Farm
Generation Interconnection Request 2005-006**

150 MW Wind Generating Facility
Woodward, Oklahoma

February 17, 2006

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Summary

Pursuant to the tariff and at the request of the Southwest Power Pool (SPP), Oklahoma Gas and Electric (OG&E) performed the following Facility Study to satisfy the Facility Study Agreement executed by the requesting customer for SPP Generation Interconnection request Gen-2005-006. The request for interconnection was placed with SPP in accordance SPP's Open Access Transmission Tariff, which covers new generation interconnections on SPP's transmission system. The requirements for interconnection consist of adding a new 138kV breaker and terminal in the existing Woodward District 138-69kV Substation. The total cost for OKGE to add a new 138kV breaker and terminal in the Woodward District substation, the interconnection facility, is estimated at \$440,000.

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Introduction

FPL Energy, LLC (Customer) has requested a Facility Study for the purpose of interconnecting 150MW of wind generation within the service territory of OG&E Electric Services (OKGE) in Ellis County Oklahoma. The proposed 138kV point of interconnection is at the existing Woodward District 138-69kV Substation in Woodward County. This substation is owned by OKGE. The proposed in-service date is December 31, 2006.

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 150MW of generation with transmission system reinforcements within the local transmission system. Given the Point of Interconnection at an existing substation, there are additional requirements for interconnection including bus, breaker, switches, relaying, metering, etc.

The total cost for adding a new 138 terminal to the existing Woodward District Substation, the required interconnection facility, is estimated at \$440,000. Other Network Constraints in the American Electric Power West (AEPW), OKGE and Western Farmers Electric Cooperative (WFEC) systems may be verified with a transmission service request and associated studies.

Interconnection Facilities

The primary objective of this study is to identify attachment facilities. The requirements for interconnection consist of adding a new 138kV terminal in the existing Woodward District 138-69kV Substation. This 138kV addition shall be constructed and maintained by OKGE. The Customer did not propose a route of its 138kV line to serve its 138-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the new OKGE 138kV substation facilities will not be a significant expense.

The total cost for OKGE to add a new 138kV terminal in the Woodward District substation, the interconnection facility, is estimated at \$440,000. This cost does not include building 138kV line from the Customer substation into the existing Woodward District Substation. The Customer is responsible for this 138kV line up to the point of interconnection. This cost does not include the Customer's 138-34.5kV substation and the cost estimate should be determined by the Customer.

This Facility Study does not guarantee the availability of transmission service necessary to deliver the additional generation to any specific point inside or outside the Southwest Power Pool (SPP) transmission system. The transmission network facilities may not be adequate to deliver the additional generation output to the transmission system. If the customer requests firm transmission service under the SPP Open Access Transmission Tariff at a future date, Network Upgrades or other new construction may be required to provide the service requested under the SPP OATT.

The costs of interconnecting the facility to the OKGE transmission system are listed in Table 2.

Short Circuit Fault Duty Evaluation

It is standard practice for OG&E to recommend replacing a circuit breaker when the current through the breaker for a fault exceeds 100% of its interrupting rating with recloser de-rating applied, as determined by the ANSI/IEEE C37.5-1979, C37.010-1979 & C37.04-1979 breaker rating methods.

For this generator interconnection, no breakers were found to exceed their interrupting capability after the addition of the Customer's 150MW generation and related facilities. OG&E found no breakers that exceeded their interrupting capabilities on their system. Therefore, there are no short circuit upgrade costs associated with the Gen-2005-006 interconnection.

Table 2: Required Interconnection Network Upgrade Facilities

Facility	ESTIMATED COST (2005 DOLLARS)
OKGE - Add a single 138kV terminal in the existing Woodward District 138-69kV Substation.	\$440,000
OKGE - Right-of-Way for 138kV terminal addition	No Additional ROW
Total	\$440,000

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February 17, 2006

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One Line Diagram, Woodward District Substation

