



***Facility Study for Generation  
Interconnection Request  
GEN-2007-006***

***SPP Tariff Studies  
(#GEN-2007-006)***

**August 2008**

## **Summary**

Pursuant to the tariff and at the request of the Southwest Power Pool (SPP), Oklahoma Gas & Electric Company (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-2007-006. 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.

## **Customer Facilities**

The Impact Study posted in May, 2008 indicated the Customer could lower the queue position to 160MW without having to construct any new transmission line facilities. The Customer has chosen to lower this queue position to 160MW.

To meet FERC Order #661A low voltage ride through provisions and power factor requirements, the customer will be required to install two (2) 34.5kV, 14 Mvar capacitor banks and two (2) 34.5kV, +/-8 MVA STATCOM devices in the Customer facility.

## **Delivery Implications**

Customer's interconnection request has been studied for Energy Resource Interconnection Service. Analysis has indicated that very little if any "as available" transmission capacity on the local transmission system with all previous queued projects in service. The Customer should be aware that without a transmission service reservation, the generation facility may be curtailed to such point as no energy may be produced into the transmission system.



## **FACILITY STUDY**

**for**

### **Generation Interconnection Request 2007-006**

200 MW Wind Generating Facility  
In Blaine County  
Near  
Watonga, Oklahoma

May 23, 2008

Steve M. Hardebeck, PE  
Lead Engineer  
Transmission Planning  
**OG&E Electric Services**

## **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-2007-006. 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 three new 138kV breakers and a terminal in the existing Roman Nose 138kV Substation. The total cost for OKGE to add three new 138kV breakers and a terminal in the Roman Nose substation, the interconnection facility, is estimated at \$2,013,000.

## Table of Contents

Table of Contents	3
Introduction	4
Interconnection Facilities	5
Interconnection Costs	6
Overview of Roman Nose Substation	7
One-Line diagram of Interconnection	8

## **Introduction**

The Southwest Power Pool has requested a Facility Study for the purpose of interconnecting 200MW of wind generation within the service territory of OG&E Electric Services (OKGE) in Blaine County Oklahoma. The proposed 138kV point of interconnection is at the existing Roman Nose 138kV Substation in Blaine County. This substation is owned by OKGE. The proposed in-service date is December 31, 2009.

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 160MW 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 cost for adding a new 138kV terminal to the existing Roman Nose Substation, the required interconnection facility, is estimated at \$410,000. 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 Roman Nose 138kV 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 Roman Nose substation, the interconnection facility, is estimated at \$410,000. This cost does not include building 138kV line from the Customer substation into the existing Roman Nose 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 1.

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 160MW generation and related facilities. OG&E found no breakers that exceeded their interrupting capabilities on their system. Therefore, there is no short circuit upgrade costs associated with the Gen-2007-006 interconnection.

**Table 1: Required Interconnection Network Upgrade Facilities**

Facility	ESTIMATED COST (2005 DOLLARS)
OKGE – <b>Interconnection Facilities</b> - Add a single 138kV line terminal to existing Roman Nose 138kV Substation. Dead end structure, line relaying, revenue metering including CTs and PTs	<b>\$410,000</b>
OKGE – <b>Network Upgrades</b> at Roman Nose sub, 3-138kV breakers, line relaying, disconnect switches, and associated equipment	<b>\$1,660,000</b>
OKGE - Right-of-Way for 138kV terminal addition	No Additional ROW
<b>Total</b>	<b>\$2,070,000</b>

Prepared by Steve M. Hardebeck, PE  
Lead Engineer, Transmission Planning  
OG&E Electric Services

May 23, 2008

Reviewed by:

Philip L. Crissup  
Director, Regional Transmission Affairs

June 12, 2008



**Overview Roman Nose Substation**  
**One Line Diagram, Roman Nose Substation**

