



***Facility Study  
For  
Generation Interconnection  
Request  
GEN-2008-046***

***SPP Tariff Studies***

***(#GEN-2008-046)***

***January 2011***

## **Summary**

Oklahoma Gas & Electric (OG&E) performed a detailed Facility Study at the request of Southwest Power Pool (SPP) for Generation Interconnection request GEN-2008-046. The request for interconnection was placed with SPP in accordance with SPP's Open Access Transmission Tariff, which covers new generation interconnections on SPP's transmission system.

## **Interconnection Customer Interconnection Facilities**

The Interconnection Customer will be responsible for the 345 kV transmission line from the Wind turbine Collector Substation to the Point of Interconnection (POI), the Sunnyside 345 kV Substation near Ardmore, Ok. In addition, the customer will be responsible for maintaining +0.95/- 0.95 power factor at the POI.

## **Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades**

Per the following Facility Study, the Interconnection Customer is responsible for **\$3,073,333** of Transmission Owner Interconnection Facilities and non-shared network upgrades.

## **Shared Network Upgrades**

The interconnection customer was studied within the DISIS-2010-001 Impact Study. At this time, the Interconnection Customer is allocated **\$0** of shared network upgrades. If higher queued interconnection customers withdraw from the queue, suspend or terminate their GIA, restudies will have to be conducted to determine the Interconnection Customers' allocation of shared network upgrades. All studies have been conducted on the basis of higher queued interconnection requests and the upgrades associated with those higher queued interconnection requests being placed in service.



## **FACILITY STUDY**

**for**

### **Generation Interconnection Request 2008-046**

200 MW Wind Generating Facility  
In Carter County  
Near  
Ardmore, Oklahoma

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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-2008-046. 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 one new 345kV breaker and a terminal in the existing Sunnyside Substation. The total cost for OKGE to add one new 345kV breaker and a terminal in the Sunnyside substation, the interconnection facility, is estimated at **\$3,073,333**.

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## **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 Carter County Oklahoma. The proposed 345kV point of interconnection is at the existing Sunnyside Substation in Carter County. This substation is owned by OKGE. The proposed in-service date is December 01, 2012.

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 200MW 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 345kV terminal to the existing Sunnyside Substation, the required interconnection facility, is estimated at **\$1,099,958**. 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 345kV terminal in the existing Sunnyside Substation. This 345kV addition shall be constructed and maintained by OKGE. The Customer did not propose a route of its 345kV line to serve its 345-34.5kV facilities.

The total cost for OKGE to add a new 345kV terminal in the Sunnyside substation, the interconnection facility, is estimated at **\$1,099,958**. This cost does not include building the 345kV line from the Customer substation into the existing Sunnyside Substation. The Customer is responsible for this 345kV line up to the point of interconnection. This cost does not include the Customer's 345-34.5kV 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 200MW 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-2008-046 interconnection.

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

Facility	ESTIMATED COST (2010 DOLLARS)
OKGE – <b>Interconnection Facilities</b> - Add a single 345kV line terminal to existing Sunnyside Substation. Dead end structure, line switch, line relaying, revenue metering including CTs and PTs	<b>\$1,099,958</b>
OKGE – <b>Network Upgrades</b> at Sunnyside sub, 1-345kV breaker, line relaying, disconnect switches, and associated equipment	<b>\$1,973,375</b>
OKGE - Right-of-Way for 345kV terminal addition	No Additional ROW
<b>Total</b>	<b>\$3,073,333</b>

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December 06, 2010

Reviewed by:

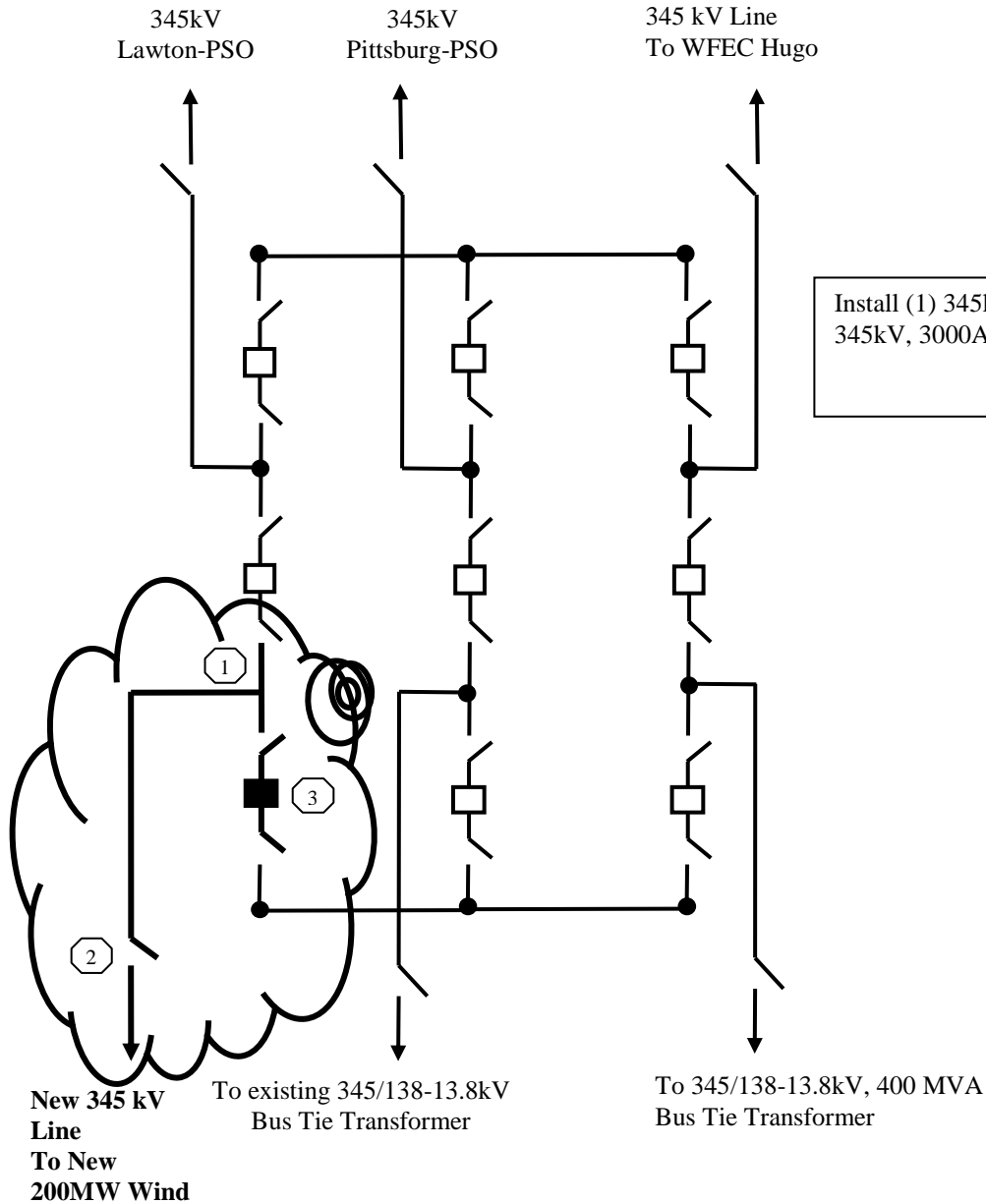
*Philip L Crissup*

*12/14/10*

Philip L. Crissup  
Director, Regional Transmission Affairs



OG&E Sunnyside Substation  
 One-Line Diagram 345 kV Section  
 NW Sec 30 T04SN R01Ei



- ① Install 345kV line terminal and Metering to Wind Farm
- ② Install 345kV, 3000A Horn Gap Switch with a 3- phase Grounding Switch on line side
- ③ Install 345kV, 3000A, 63kA Breaker with disconnect switches

Install (1) 345kV line terminal to Wind Farm and (1) 345kV, 3000A, 63kA breaker