



**Facility Study  
For  
Generator Interconnection  
Request  
GEN-2013-007**

*SPP Generator  
Interconnection Studies*

*(#GEN-2013-007)*

**October 2013**

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## Revision History

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Date	Author	Change Description
10/16/2013	SPP	Facility Study Report Issued

## **Summary**

Oklahoma Gas and Electric (OKGE) performed a detailed Facility Study at the request of Southwest Power Pool (SPP) for Generation Interconnection request GEN-2013-007 (100.0 MW/Wind) located in Murray County, Oklahoma. SPP has proposed the in-service date will be after the assigned Interconnection Facilities and Non-Shared Network Upgrades are constructed are completed. Full Interconnection Service will require the Network Upgrades listed in the “Other Network Upgrades” section. 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.

## **Phases of Interconnection Service**

It is not expected that interconnection service will require phases however, interconnection service will not be available until all interconnection facilities and network upgrades can be placed in service.

## **Interconnection Customer Interconnection Facilities**

The Interconnection Customer will be responsible for all of the transmission facilities connecting the customer owned substation to the Point of Interconnection (POI), at a new Oklahoma Gas and Electric (OKGE) owned 138kV substation. The new OKGE 138kV substation will be a tap on the Jollyville – Chickasaw 138kV circuit. The Interconnection Customer will also be responsible for any equipment located at the Customer substation necessary to maintain a power factor of 0.95 lagging to 0.95 leading at the POI.

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

To allow interconnection the Transmission Owner will need construct a three breaker ring bus along with associated terminal equipment that is acceptable for the addition of the Interconnection Customer’s Interconnection Facilities. OKGE has proposed a lead time of fourteen (14) months for the completion of the Interconnection Facilities and Non-Shared Network Upgrades. At this time GEN-2013-007 is responsible for \$3,033,890.00 of Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades.

## **Shared Network Upgrades**

The Interconnection Customer was studied within the DISIS-2013-001 Impact Study. At this time, the Interconnection Customer is allocated \$0.00 for 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. At this time, the Interconnection Customer is allocated the following cost for Shared Network Upgrade:

Share Network Upgrade Description	Allocated Cost	Total Cost
None	\$0.00	\$0.00
Total	\$0.00	

**Other Network Upgrades**

Certain Other Network Upgrades are currently not the cost responsibility of the Customer but will be required for full Interconnection Service. Currently, no Other Network Upgrades are required.

Depending upon the status of higher or equally queued customers, the Interconnection Customer’s in-service date is at risk of being delayed or their Interconnection Service is at risk of being reduced until the in-service date of these Other Network Upgrades.

**Conclusion**

Interconnection Service for GEN-2013-007 will be delayed until the Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades are constructed. The Interconnection Customer is responsible for \$0.00 of Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades. At this time, the Interconnection Customer is allocated \$0.00 for Shared Network Upgrades. After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 100.0 MW, as requested by GEN-2013-007, can be allowed. At this time the total allocation of costs assigned to GEN-2013-007 for Interconnection Service are estimated at \$3,033,890.00.



## **FACILITY STUDY**

**for**

### **Generation Interconnection Request 2013-007**

100 MW Wind Generating Facility  
In Murray County  
Near  
Davis, Oklahoma

June 19, 2013

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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-2013-007. 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 a new Substation. This will require the addition of a new substation site with three new breakers. The total cost for OKGE to add three new 138kV breakers and a terminal for the wind farm interconnection in the new substation, the interconnection facility, is estimated at \$3,033,890.

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## **Introduction**

The Southwest Power Pool has requested a Facility Study for the purpose of interconnecting 100MW of wind generation within the service territory of OG&E Electric Services (OKGE) in Murray County Oklahoma. The proposed 138kV point of interconnection will be at a new 138kV substation on the Jollyville to Chickasaw 138kV transmission line in Murray County Oklahoma. This substation will be owned by OKGE. The proposed in-service date is August 06, 2014.

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 100MW of generation with transmission system reinforcements within the local transmission system. Given the Point of Interconnection at a new substation, there are additional requirements for interconnection including bus, breakers, switches, relaying, metering, etc.

The cost for adding a new line terminal in a new 138kV 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 three breaker ring in a new 138kV Substation. This 138kV substation 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.

The total cost for OKGE to add a new 138kV line terminal in a new 138kV substation, the interconnection facility, is estimated at \$410,000. This cost does not include building the 138kV line from the Customer substation into the new 138kV 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 100MW 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-2013-007 interconnection.

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

Facility	ESTIMATED COST (2013 DOLLARS)
OKGE – <b>Interconnection Facilities</b> - Add a single 138kV line terminal to a new 138kV Substation. Dead end structure, line relaying, revenue metering including CTs and PTs	<b>\$410,000</b>
OKGE – <b>Network Upgrades</b> at a new 138kV sub site, property, 3-138kV 2000A breakers, line relaying, disconnect switches, and associated equipment	<b>\$2,223,890</b>
OKGE - Property for new 138kV substation site	<b>\$400,000</b>
<b>Total</b>	<b>\$3,033,890</b>

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June 19, 2013

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# New 138kV Substation to Serve Gen-2013-007

