



**SPP** *Southwest  
Power Pool*

**Facility Study  
For  
Generation Interconnection  
Request  
GEN-2011-054**

***SPP Tariff Studies***

***(#GEN-2011-054)***

**June 2012**

## **Summary**

OG&E Electric Services (OKGE) performed a detailed Facility Study at the request of Southwest Power Pool (SPP) for Generation Interconnection request GEN-2011-054 (300 MW/Wind). The originally proposed in-service date was November 30, 2013, however due to upgrades required for interconnection SPP has proposed a new in-service date of December 31, 2014. 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. Subsequent to the Definitive Interconnection System Impact Study (DISIS-2011-002) study, a request for a Limited Operation Interconnection Service (LOIS) study was performed by SPP and posted May 2012. Through the LOIS analysis, a new in-service date of September 1, 2013, has been proposed by the customer.

## **Phases of Interconnection Service**

It is not expected that interconnection service will require phases however, the LOIS analysis shows that the full amount of the request can be interconnected on a Limited Operation basis beginning on September 1, 2013.

## **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), a 345kV tap on the existing generator lead between GEN-2010-040 and Cimarron. Additionally, Interconnection Customer will have to install a breaker to eliminate a three terminal line and allow for relay coordination with the interconnection substation, OKGE's Cimarron, and the generator lead of GEN-2010-040. Finally, the 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 to ensure that relay settings at Cimarron are adequate for the additional injection of GEN-2011-054 on the existing generator lead for GEN-2010-040. The estimated in-service date for these Interconnection Facilities is unknown but not expected to delay the newly proposed in-service date of September 1, 2013. At this time the Customer is responsible for \$10,000 of Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades.

## **Shared Network Upgrades**

The interconnection customer was studied within the DIS-2011-002 Impact Study. At this time, the Interconnection Customer is allocated \$804,208.92 for Shared Network Upgrades, as listed below:

1. Cimarron – Draper 345kV, Replace Line Traps (NRIS only)

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.

## **Other Network Upgrades**

Certain Other Network Upgrades are currently not the cost responsibility of the Customer but will be required for full Interconnection Service. These Network Upgrades include:

1. Beaver – Woodward 345kV double circuit, scheduled for 6/30/2014 in-service
2. Beaver County – Gray County (Buckner) 345kV, assigned to DIS-2011-001 Customers
3. Woodward – Border - TUCO 345kV, scheduled for 5/19/2014 in-service
4. Hitchland – GEN-2011-021 – Beaver 345kV double circuit, scheduled for 6/30/2014 in-service
5. Hitchland 345/230 transformer circuit 2, scheduled for 6/30/2014 in-service
6. Thistle - Woodward 345kV double circuit, scheduled for 12/31/2014 in-service

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-2011-054 will be delayed until the Transmission Owner Interconnection Facilities and Network Upgrades are constructed, estimated at September 1, 2013. The Customer is responsible for \$10,000 of Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades. At this time, the Interconnection Customer is also allocated \$804,208.92 for Shared Network Upgrades. After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 300 MW, as requested by GEN-2011-054, can be allowed. At this time the total allocation of costs of Interconnection Service for GEN-2011-054 are estimated at \$814,208.92.



## **FACILITY STUDY**

**for**

### **Generation Interconnection Request 2011-054**

300 MW Wind Generating Facility  
In Canadian County  
Near  
Yukon, Oklahoma

May 16, 2012

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**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-2011-054. 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 request is for adding 300 MW to an existing generator lead established under GEN-2010-040. The requirements for the addition of 300 MW to the existing generator lead are for relay settings only. The cost for checking and verifying relay settings is \$10,000. No new or additional facilities are necessary to accommodate the additional generation. The generator will have to install a breaker to eliminate a three terminal line and allow for relay coordination with the interconnection substation and the generator lead.

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## **Introduction**

The Southwest Power Pool has requested a Facility Study for the purpose of interconnecting an additional 300 MW of wind generation to an existing Point of Interconnection within the service territory of OG&E Electric Services (OKGE) in Canadian County Oklahoma. The proposed 345kV point of interconnection is at a point on an existing generator lead approximately 12.7 miles from the existing point of interconnection at OG&E Cimarron substation. The existing generator lead is approximately 20 miles in length. The proposed in-service date is September 01, 2013.

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. There are no requirements for additional Transmission Owner Interconnection Facilities at the existing Cimarron Substation. Additionally, the only Customer Attachment Facilities required will be to install a breaker at the tap on the existing generator lead of GEN-2010-040 to eliminate a three terminal line and allow for relay coordination with the Cimarron Substation and the generator lead.

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 300 MW 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-2011-054 interconnection.

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

Facility	ESTIMATED COST (2012 DOLLARS)
Customer – <b>Interconnection Facilities</b> - install a breaker at the tap on the existing generator lead of GEN-2010-040 to eliminate a three terminal line and allow for relay coordination with the Cimarron Substation and the generator lead.	<b>Customer Cost</b>
OKGE – <b>Network Upgrades</b> No new network upgrades necessary	<b>\$0</b>
OKGE – Relay settings verification	\$10,000
<b>Total</b>	<b>\$10,000</b>

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May 16, 2012

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# Proposed Tap on Existing Generator Lead

