



**SPP**

*Southwest  
Power Pool*

***Facility Study  
For  
Generation Interconnection  
Request  
GEN-2010-040***

***SPP Tariff Studies***

***(#GEN-2010-040)***

***August 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-2010-040 (300 MW). The proposed in-service date is November 30, 2011. 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 existing Cimarron 345 kV substation located in Canadian County, Oklahoma. In addition, the customer will be responsible for reactive power compensation equipment to maintain 95% lagging (providing vars) and 95% leading (absorbing vars) power factor at the point of interconnection. The Customer has chosen to be studied as both an Energy Resource (ERIS) and Network Resource (NRIS). All of the costs listed in the "Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades" and "Shared Network Upgrades" sections associated with interconnection are allocated under the ER Interconnection Service. To be interconnected as a Network Resource, the upgrades listed in the "Other Network Upgrades" section must be in service prior to the request's in-service date.

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

Per the following Facility Study, the Interconnection Customer is responsible for **\$8,046,756** of Transmission Owner Interconnection Facilities and non-shared network upgrades.

## Shared Network Upgrades

The interconnection customer was studied within the DISIS-2010-002 Impact Study. At this time, the Interconnection Customer is allocated **\$0** 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.

## Other Network Upgrades

Certain Network Upgrades that are currently not the cost responsibility of the Customer are required before Network Resource Interconnection Service is allowed. These Network Upgrades include:

- a. Northwest 345/138/13.8 Autotransformer - Being constructed through SPP Notification to Construct (NTC) #SPP-NTC-20137.

This network upgrades is not schedule to be in service until June 30, 2015. Network Resource Interconnection Service cannot be accomodated until this date. Energy Resource Interconnection Service will be available before the in service date of this network upgrade.



## **FACILITY STUDY**

**for**

### **Generation Interconnection Request GEN-2010-040**

Wind Generating Facility  
In Canadian County  
Oklahoma

May 17, 2011

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-2010-040. 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 converting the existing six breaker ring bus to a breaker and a half configuration by adding five breakers and a line terminal to the existing Cimarron substation. The total cost for OKGE to add five breakers and a terminal in the Cimarron substation, the interconnection facility, is estimated at \$8,046,756.

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## **Introduction**

The Southwest Power Pool has requested a Facility Study for the purpose of interconnecting a wind generating facility within the service territory of OG&E Electric Services (OKGE) in Canadian County Oklahoma. The proposed 345kV point of interconnection is at the existing EHV Substation, Cimarron Substation, near Yukon Oklahoma in Canadian County. This substation is owned by OKGE.

The cost for adding a new 345kV terminal to the substation, the required interconnection facility, is estimated at \$1,099,958.

Other Network Constraints in the Southwest Public Service (SPS), 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 Cimarron 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 345kV facilities. It is assumed that obtaining all necessary right-of-way for the line into the new OKGE 345kV substation facilities will not be a significant expense.

The total cost for OKGE to add a new 345kV terminal in the existing Cimarron 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 Cimarron 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 re-closer 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 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-2010-040 interconnection.

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

Facility	ESTIMATED COST (2011 DOLLARS)
OKGE – <b>Interconnection Facilities</b> - Add a single 345kV line terminal to Cimarron 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 Cimarron sub, 5-345kV breakers, line relaying, disconnect switches, and associated equipment	<b>\$6,946,798</b>
OKGE - Right-of-Way for 345kV terminal addition	No Additional ROW
<b>Total</b>	<b>\$8,046,756</b>

Prepared by Steve M. Hardebeck, PE

May 17, 2011

Lead Engineer, Transmission Planning  
OG&E Electric Services

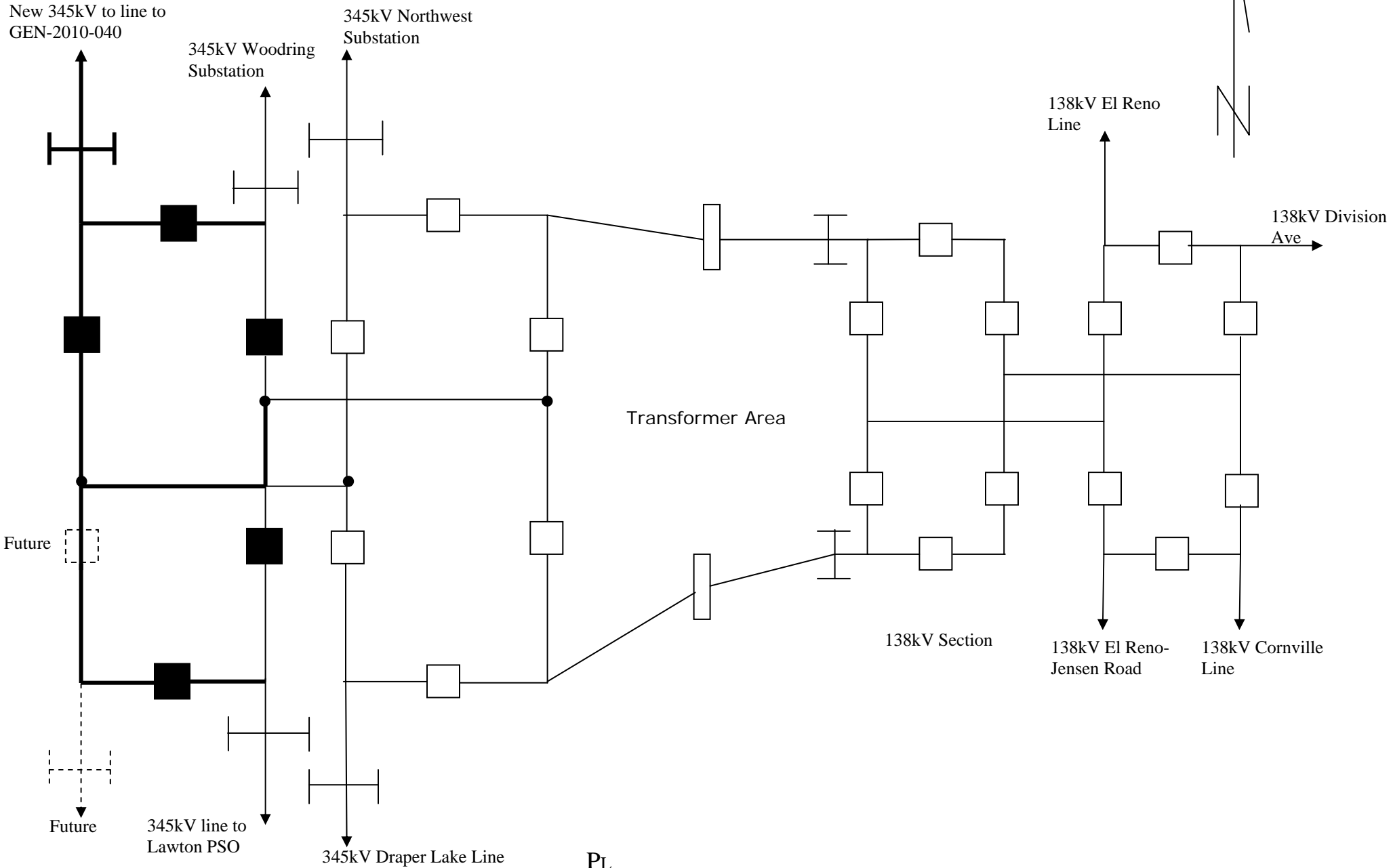
Reviewed by:

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*June 1, 2011*



# Cimarron Substation



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