Facility Study For Generation Interconnection Request GEN-2008-003

SPP Tariff Studies

(#GEN-2008-003)

February 2010

Summary

Oklahoma Gas and Electric performed the following Study at the request of the Southwest Power Pool (SPP) for Generation Interconnection request Gen-2008-003. 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.

Pursuant to the tariff, Oklahoma Gas and Electric was asked to perform a detailed Facility Study of the generation interconnection request to satisfy the Facility Study Agreement executed by the requesting customer and SPP.

Interconnection Customer Interconnection Facilities

The Interconnection Customer will be responsible for the 138kV transmission line from the point of interconnection to its 138/13.8kV substation that will contain its 138/13.8kV transformer(s) and combustible turbine collector feeders. In addition, the Customer will be required to maintain a +/- 99% leading/lagging power factor at the point of interconnection (OG&E Woodward 138kV substation).

The Customer has requested and is planning to install Siemens 2.3 MW wind turbines at the GEN-2008-003 facility. Due to the limitations of the Siemens wind turbines to provide reactive power at voltages greater than or less than 1.0 pu (690V) at the generator terminals, the Interconnection Customer may be required to install additional capacitor banks as discussed in the Impact Study in order to meet this requirement. The size of the capacitor banks will need to be determined by the Customer as part of its detailed collector system design for its facility.

Transmission Owner Interconnection Facilities and Non Shared Network Upgrades

Per the following Facility Study, the Interconnection Customer is responsible for $410,000 of Transmission Owner Interconnection Facilities and $660,000 of non shared Network Upgrades.

Shared Network Upgrades

The GEN-2008-003 Interconnection Customer is included in the 1st Cluster Study approved in FERC Docket #ER09-262. The Interconnection Customer's shared upgrade costs are $8,120,847. This cost is subject to change depending upon the Facility Study for the shared network upgrades. This cost is also subject to change for restudies conducted by the Transmission Provider in response to the higher queued customers or other customers in the 1st Cluster that withdraw their interconnection request or suspend, terminate, or request unexecuted filings of their LGIAs.

FACILITY STUDY

for

Generation Interconnection Request 2008-003

101 MW Wind Generating Facility
In Woodward County
Near
Woodward, Oklahoma

January 6, 2010

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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-2008-003. 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 138kV breaker and a terminal in the existing Woodward District EHV Substation. The total cost for OKGE to add one new 138kV breaker and a terminal in the Woodward District EHV substation, the interconnection facility, is estimated at $1,070,000.

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Introduction

The Southwest Power Pool has requested a Facility Study for the purpose of interconnecting 101MW of wind generation within the service territory of OG&E Electric Services (OKGE) in Woodward County Oklahoma. The proposed 138kV point of interconnection is at the existing Woodward District EHV Substation in Woodward County. This substation is owned by OKGE. The proposed in-service date is April 01, 2010.

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 101MW 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 Woodward District EHV 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 Woodward District EHV 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 Woodward District EHV substation, the interconnection facility, is estimated at $410,000. This cost does not include building 138kV line from the Customer substation into the existing Woodward District EHV 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 101MW 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-2008-003 interconnection.

Table 1: Required Interconnection Network Upgrade Facilities

Facility	ESTIMATED COST (2005 DOLLARS)
OKGE – **Interconnection Facilities**- Add a single 138kV line terminal to existing Woodward District EHV Substation. Dead end structure, line relaying, revenue metering including CTs and PTs	**$410,000**
OKGE – **Network Upgrades** at Woodward District EHV sub, 1-138kV breaker, line relaying, disconnect switches, and associated equipment	**$660,000**
OKGE - Right-of-Way for 138kV terminal addition	No Additional ROW
Total	**$1,070,000**

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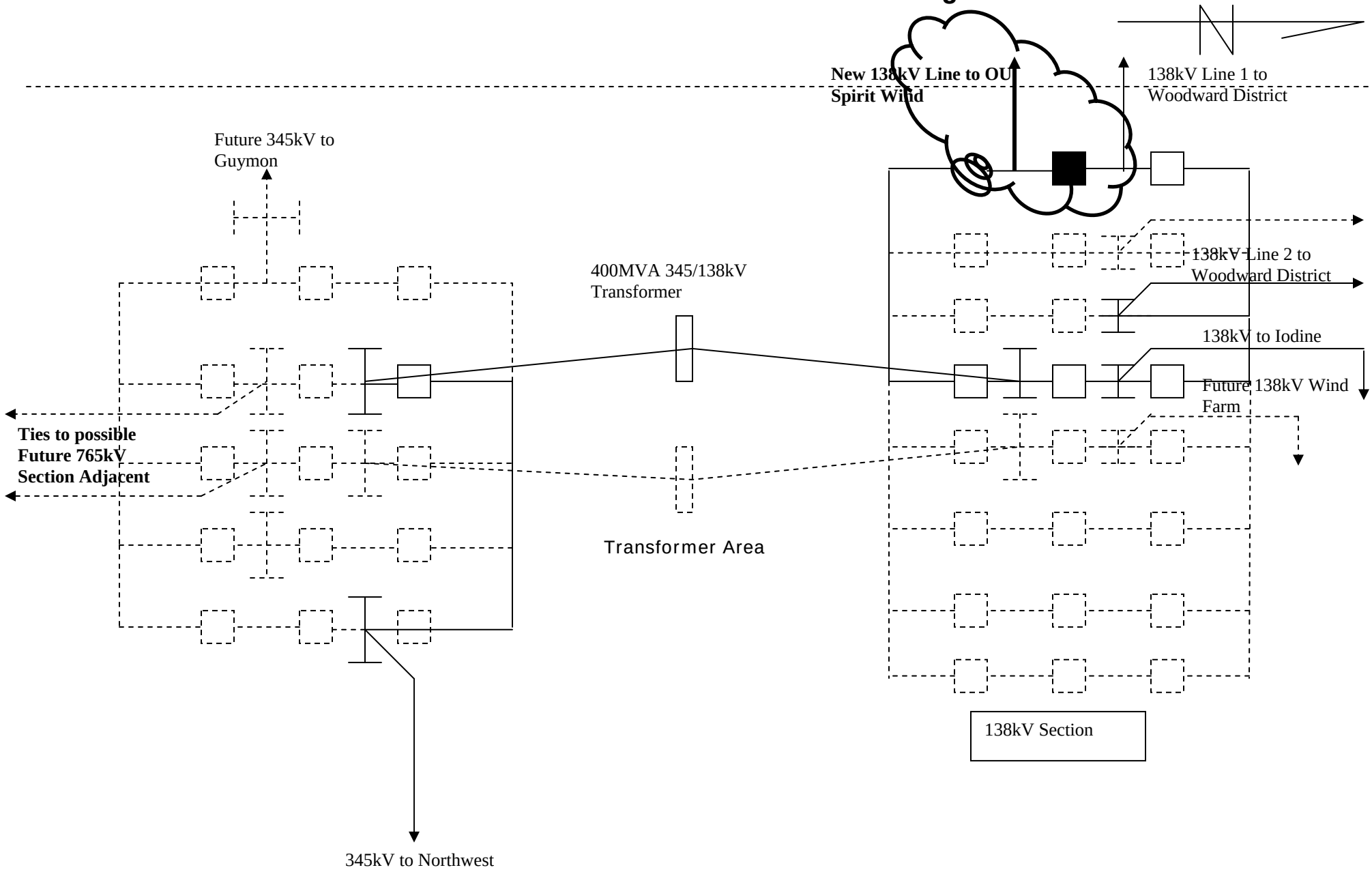
Reviewed by:
Philip L Crissup 1/11/2010

Philip L. Crissup
Director, Regional Transmission Affairs

New Woodward District EHV Substation Configuration



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One-line Diagram