



**Facility Study
For
Generation Interconnection
Request
GEN-2012-033**

*SPP Generation
Interconnection Studies*

(#GEN-2012-033)

July 2013

Revision History

Date	Author	Change Description
7/11/2013	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-2012-033 (98.8 MW/Wind) located in Garfield County, Oklahoma. The originally proposed in-service date for GEN-2012-033 was December 31, 2014. SPP has proposed the in-service date will be after the assigned Interconnection Facilities and Non-Shared network upgrades are completed. 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) 138kV substation. The new 138kV substation will tap and tie in the South 4th – Bunch Creek 138kV and Enid Tap – Fairmont 138kV transmission lines. The new 138kV substation will be owned and operated by Oklahoma Gas and Electric (OKGE). 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 to construct a new 138kV substation with a new 138kV three breaker ring bus and associated terminal equipment for acceptance of the Interconnection Customer's Interconnection Facilities. OKGE has proposed an in-service date for these Interconnection Facilities estimated at September 2014. At this time GEN-2012-033 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-2012-002 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	

Conclusion

Interconnection Service for GEN-2012-033 will be delayed until the Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades are constructed. The Interconnection Customer is responsible for \$3,033,890.00 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 98.8 MW, as requested by GEN-2012-033, can be allowed. At this time the total allocation of costs assigned to GEN-2012-033 for Interconnection Service are estimated at \$3,033,890.00.



FACILITY STUDY

for

Generation Interconnection Request 2012-033

99 MW Wind Generating Facility
In Garfield County
Near
Breckenridge, Oklahoma

May 22, 2013

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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-2012-033. 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 building a new substation with three new 138kV breakers a terminal for the wind farm line. The total cost for OKGE to build the new substation with three new 138kV breakers and a terminal in a new substation, the interconnection facility is estimated at \$3,033,890. In addition, OKGE will add two more 138kV line terminals to the new substation to tie into the Osage(Bunch Creek) - South 4th St 138kV transmission line to alleviate potential protective relay issues in the area of the interconnection request.

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Introduction

The Southwest Power Pool has requested a Facility Study for the purpose of interconnecting 99MW of wind generation within the service territory of OG&E Electric Services (OKGE) in Garfield County Oklahoma. The proposed 138kV point of interconnection is at a new substation in Garfield County. This substation will be owned by OKGE. The proposed in-service date is September, 2014.

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 99MW 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, breaker, switches, relaying, metering, etc.

The cost for adding a new 138kV terminal to a new 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 a new substation. This 138kV addition shall be constructed and maintained by OKGE. The cost for obtaining all necessary right-of-way for the new OKGE 138kV substation facilities is included in the cost estimate.

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

In addition, OKGE will add two more 138kV line terminals to the new substation to tie into the Osage(Bunch Creek) - South 4th St 138kV line to alleviate potential protective relay issues in the area of the interconnection.

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 99 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-2012-033 interconnection.

Table 1: Required Interconnection Network Upgrade Facilities

Facility	ESTIMATED COST (2013 DOLLARS)
OKGE – Interconnection Facilities - Add a single 138kV line terminal to a new substation. Dead end structure, line switch, line relaying, revenue metering including CTs and PTs	\$410,000
OKGE – Network Upgrades at the new sub, 3-138kV breakers, line relaying, disconnect switches, and associated equipment	\$2,223,890
OKGE - Property for new 138kV substation site	\$400,000
OKGE – at the new sub, add two additional 138kV line terminals (two 138kV circuit breakers) to mitigate potential protective relay issues in the area of the Interconnection	Cost by OKGE
Total	\$3,033,890

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May 22, 2013

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New 138kV Substation to Gen-2012-033

