SPP Southwest Power Pool

Facility Study For Generation Interconnection Request GEN-2010-009

SPP Tariff Studies

(#GEN-2010-009)

March 2011

Summary

Southwest Power Pool performed the following Study for Generation Interconnection request GEN-2010-009. 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.

Pursuant to the tariff, SPP performed this 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 345 kV transmission line from the point of interconnection, a previously proposed switching station currently assigned to the GEN-2007-040 Interconnection Customer on the Spearville to Holcomb 345kV transmission line, to its 345/34.5 kV substation that will contain its 345/34.5 kV transformer(s) and wind turbine collector feeders. 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.

Transmission Owner Interconnection Facilities and Non Shared Network Upgrades

Per the following Facility Study, the Interconnection Customer is responsible for **$5,014,906** of Transmission Owner Interconnection Facilities and non-shared network upgrades.

If the GEN-2007-040 Interconnection Customer withdraws from the interconnection queue, suspends construction of its Network Upgrades in accordance with its Interconnection Agreement or is otherwise delayed for any reason, then the Interconnection Customer will be responsible for the initial three breaker ring bus necessary to interconnect the Generating Facility. The cost of the three breaker ring bus substation is estimated at **$10,404,019**. Depending upon the status of GEN-2007-040, the Interconnection Customer may receive reimbursement for the difference between the cost of the three breaker ring bus substation and the cost of the terminal addition.

Shared Network Upgrades

The interconnection customer was studied within the DISIS-2010-001-1 Impact Restudy. At this time, the Interconnection Customer is allocated the following cost for shared network upgrades:

Upgrade	Allocated Cost
Post Rock 345/230/13.8kV Transformer Ckt 2 DISIS-2010-001 Restudy	$686,955
TOTAL	**$686,955**

If higher queued interconnection customers withdraw from the queue, suspend or terminate their LGIA, restudies will have to be conducted to determine the Interconnection Customer's 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 not the cost responsibility of the Customer are required for Interconnection. These Network Upgrades include:

1. Axtel - Post Rock 345kV transmission line,
2. Comanche - Medicine Lodge double circuit 345kV transmission line,
3. Spearville - Comanche double circuit 345kV transmission line, and
4. Medicine Lodge – Wichita double circuit 345kV transmission line.

The complete set of network upgrades is not scheduled to be in service until December 31, 2014. Depending upon the status of higher or equally queued customers, the Interconnection Customer's in service date may be delayed until the in service date of these Network Upgrades.

Executive Summary

<OMITTED TEXT> (Customer) has requested a Facility Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnecting a 165.6 MW wind powered generation facility in Gray County, Kansas to the transmission system of Sunflower Electric Power Corporation (SUNC). The wind powered generation facility studied is comprised of seventy-two (72) SIEMENS 2.3 MW wind turbines. The wind powered generation facility will interconnect into a yet to be constructed 345kV switching station on the Spearville to Holcomb 345kV transmission line.

SUNC will add a 345kV breaker and half leg to the new switching station on the Spearville to Holcomb 345kV transmission line and terminate the GEN-2010-009 wind farm. No reactor is included. The cost of the new switching station has been assigned to a prior queued generation interconnection project (GEN-2007-040). The Interconnection Customer's non shared network upgrades and interconnection facilities are estimated at $5,014,906, depending upon the status of GEN-2007-040.

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.

1. Introduction

<OMITTED TEXT> (Customer) has requested a Facility Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnecting a 165.6 MW wind powered generation facility in Gray County, Kansas to the transmission system of Sunflower Electric Power Corporation (SUNC). The wind powered generation facility studied is comprised of seventy-two (72) SIEMENS 2.3 MW wind turbines. The wind powered generation facility will interconnect into a yet to be constructed switching station on the Spearville to Holcomb 345kV transmission line. The new switching station is the point of interconnection of a prior queued generation interconnection project (GEN-2007-040). The cost of the new switching station has been assigned to the prior queued generation interconnection project, but may change depending upon the status of GEN-2007-040.

2. Interconnection Facilities and Network Upgrades

The cost for the Interconnection Facilities and Network Upgrades is listed below in Table 1. The one-line diagram is shown in Figure 1.

Table 1: Required Interconnection Facilities and Non Shared Network Upgrades

Project	Description	Estimated Cost
1	SUNC-add 345kV breaker and half leg to a yet to be constructed switching station on the Spearville to Holcomb 345kV line, and terminate GEN-2010-009 wind farm. No reactor included.	$5,014,906
	Total:	**$5,014,906**

If the GEN-2007-040 Interconnection Customer withdraws from the interconnection queue, suspends construction of its Network Upgrades in accordance with its Interconnection Agreement or is otherwise delayed for any reason, then the Interconnection Customer will be responsible for the initial three breaker ring bus necessary to interconnect the Generating Facility. The cost of the three breaker ring bus substation is estimated at **$10,404,019**. Depending upon the status of GEN-2007-040, the Interconnection Customer may receive reimbursement for the difference between the cost of the three breaker ring bus substation and the cost of the terminal addition.

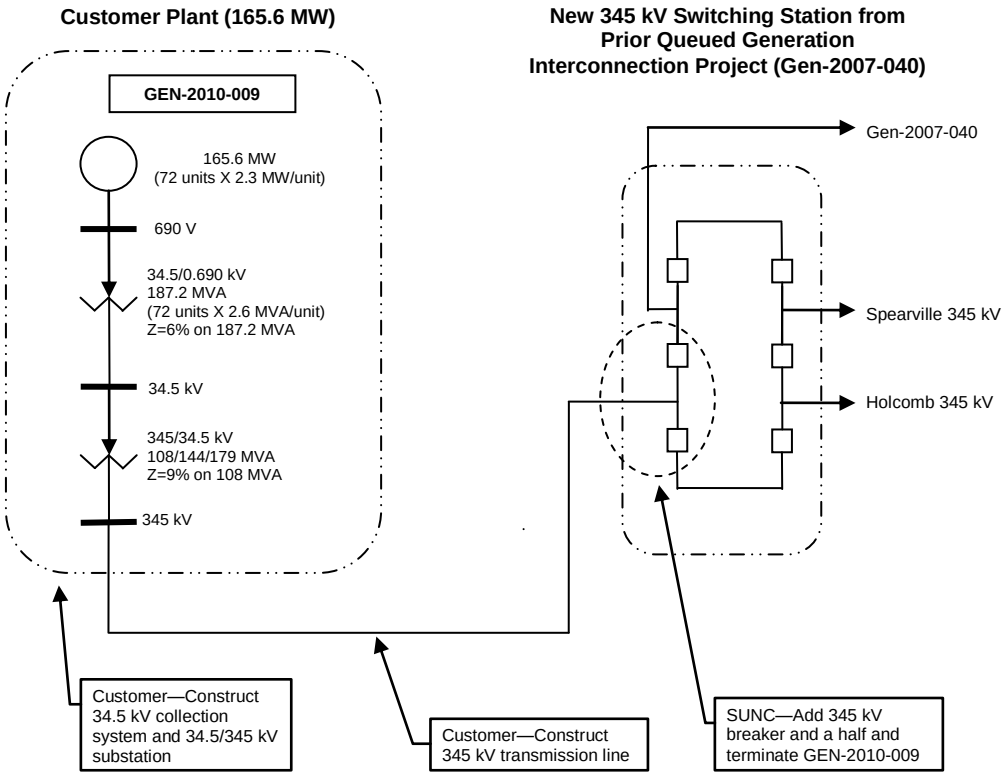

Figure 1. Interconnection Configuration for GEN-2010-009

2.1. **<u>Customer Facilities</u>** – The Customer will be responsible for its Generating Facility and its 345/34.5 kV substation that will contain its 345/34.5 kV transformer(s) and wind turbine collector feeders. In addition, the Customer will be required to install the following equipment in its facilities.

2.1.1. **<u>Reactive Power Equipment</u>** – 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. Any capacitor banks installed by the Interconnection Customer shall not cause voltage distortion in accordance with Article 9.7.4 of the standard SPP Generation Interconnection Agreement.

3. <u>Conclusion</u>

The Interconnection Customer's interconnection facilities are estimated at $5,014,906.