Southwest Power Pool

Facility Study
For
Generation Interconnection Request
GEN-2012-002

SPP Generation Interconnection Studies

(#GEN-2012-002)

February 2013

Summary

Sunflower Electric Power Corporation (SUNC) performed a detailed Facility Study at the request of Southwest Power Pool (SPP) for Generation Interconnection request GEN-2012-002 (101.2MW/Wind) located in Scott County in Kansas. The originally proposed in-service date for GEN-2012-002 was January 1, 2014, however SPP has proposed a new in-service date that will be after the assigned Interconnection Facilities Upgrades and 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 the new SUNC 115kV substation. The SUNC 115kV substation will be a tap on the Pile – Scott City 115kV line. 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 construct a new 115kV substation with a new 115kV three-breaker ring bus and associated equipment for acceptance of the Interconnection Customer's Interconnection Facilities. The SUNC 115kV substation will be a tap on the Pile – Scott City 115kV line. The new SUNC 115kV substation will be owned and operated by Sunflower Electric Power Corporation (SUNC). The estimated in-service date for these Interconnection Facilities is unknown but should be after the new Point of Interconnection (POI) substation is built. At this time GEN-2012-002 is responsible for $3,616,410 of Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades.

Shared Network Upgrades

The interconnection customer was studied within the DIS-2012-001 Impact Study. At this time, the Interconnection Customer is allocated $4,185,853.35 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:

Upgrade Description	Allocated Cost	Total Cost
Holcomb 345/115/13.8kV transformer circuit #2	$4,185,853.35	$15,000,000.00
Total	$4,185,853.35	

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

1. Beaver County – Buckner 345kV circuit 1, assigned to DISIS-2011-001 Customers
2. Hitchland – Woodward 345kV double circuit, scheduled for 6/30/2014 in-service
3. Hitchland 345/230kV Autotransformer circuit #2, scheduled for 6/30/2014 in-service
4. Beaver County Tap on Hitchland – Woodward 345kV circuit #1, assigned to GEN-2008-047
5. Beaver County Expansion – Tap and Tie Hitchland 345kV circuit #2, assigned to DISIS-2011-001 Customers
6. Spearville – Clark County – Thistle – Wichita 345kV double circuit, scheduled for 12/31/2014 in-service
7. Spearville – Mullergren – Reno 345kV double circuit, assigned to DISIS-2011-001 Customers

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-2012-002 will be delayed until the Transmission Owner Interconnection Facilities Shared Network Upgrades are constructed. The Customer is responsible for $3,616,410 of Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades. At this time, the Interconnection Customer is allocated $4,185,853.35 for Shared Network Upgrades. After all Interconnection Facilities and Network Upgrades have been placed into service, Interconnection Service for 101.2 MW, as requested by GEN-2012-002, can be allowed. At this time the total allocation of costs of Interconnection Service for GEN-2012-002 are estimated at $7,802,263.35.

1. Introduction

<OMITTED TEXT> (Customer) has requested a Facility Study under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnecting a 101.2 MW wind powered generation facility in Scott County, Kansas to the transmission system of Sunflower Electric Power Corporation (SUNC). The gas powered generation facility studied is comprised of forty-four (44) Siemens 108 meter 2.3 MW wind turbines. The wind powered generation facility will interconnect into a new Scott County 115kV Substation. The new SUNC 115kV substation will be a tap on the Pile – Scott City 115kV line.

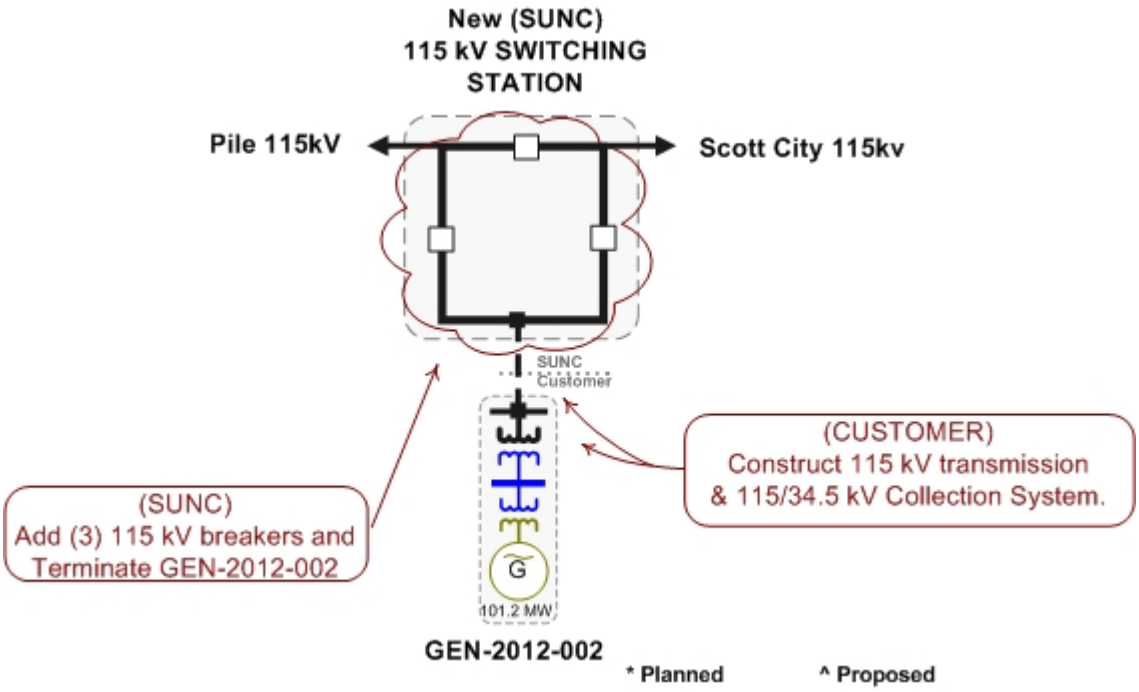
2. Interconnection Facilities and Network Upgrades

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 – Build 3 breaker ring bus at new SUNC 115kV substation, along with switches, CTs, PTs, and control panels.	$3,616,410
	Total:	**$3,616,410**

Figure 1: Interconnection Configuration for GEN-2012-002



2.1. **Customer Facilities** – The Customer will be responsible for its Generating Facility and its 115/34.5 kV transformer along with the 34.5/.69kV GSU transformers that will connect to the forty-four (44) Siemens 108 meter 2.3 MW wind turbines. In addition, the Customer will be required to install the following equipment in its facilities.

2.1.1. **Reactive Power Equipment** – 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. Conclusion

The Interconnection Customer's interconnection facilities are estimated at $3,616,410.