Southwest Power Pool

Shared Network Upgrade(s) Transmission Facilities Study for Oklahoma Gas and Electric (OKGE)

SPP Generator Interconnection Studies

(#DFS-2011-001)

December 2015

Revision History

Date	Author	Change Description
12/18/2015	SPP	Final Shared Network Upgrade(s) Facilities Study Report Revision 0 Issued

Summary

Oklahoma Gas and Electric (OKGE) a performed a detailed Shared Network Facilities Study at the request of Southwest Power Pool (SPP) for Shared Network Upgrade(s) assigned in SPP Generator Interconnection (GI) impact restudies DISIS-2011-001-8. Interconnection Request(s) that have cost allocation responsibilities for assigned network upgrades will require the assigned network upgrades to be in-service for full Interconnection Service. The request for interconnection was placed with SPP in accordance with SPP's Open Access Transmission Tariff, which covers new generator interconnections on SPP's transmission system. Based on DISIS-2011-001-8 Impact Restudy results, the following Shared Network Upgrade(s) are needed:

- Woodward EHV 138kV Phase Shifting Transformer circuit #1
    - Cost Estimate: $7,100,000

Generator Interconnection Request(s)

The Interconnection Request(s) assigned the Shared Network Upgrade(s) are listed in **Table 1**.

Table 1: Generator Interconnection Requests for Woodward 138kV Phase Shifting Transformer

GI Request Number	Point of Interconnection (POI)	Capacity (MW)
GEN-2011-019	Woodward 345kV	299
GEN-2011-020	Woodward 345kV	299
GEN-2011-022	Hitchland 345kV	299

The Interconnection Request(s) mentioned above were included in the DISIS-2011-001-8 Impact Restudy in which the studies identified the required Shared Network Upgrade(s) for each Interconnection Request in order to interconnect to the SPP transmission system. Updated cost allocations were included in the DISIS-2011-001-8 Impact Restudy.

Shared Network Upgrade(s) Facilities Descriptions and Costs

Shared Network Upgrade(s) description and total costs are shown in **Table 5Error! Reference source not found.**. The Network Upgrades are described below.

- Woodward EHV 138kV Phase Shifting Transformer
    - Install one (1) 138kV phase shifting transformer along with upgrading relay, protective, and metering equipment, and all associated and miscellaneous materials.
    - Current estimated Engineering and Construction (E&C) lead time is approximately eighteen (18) months after fully executed Generator Interconnection Agreements (GIAs).

Table 2: Shared Network Upgrade(s) Facilities Costs

Network Upgrade(s)	Total Cost
Woodward District EHV 138kV Phase Shifting Transformer circuit #1	$7,100,000
Total	**$7,100,000**

If higher or equally queued Interconnection Requests(s) withdraw from the SPP GI Queue, suspend or terminate their Generator Interconnection Agreement (GIA), restudies will have to be conducted to determine the need for Network Upgrades and if applicable the Interconnection Requests' 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 and upgrades being placed in service.

Shared Network Upgrade(s) Cost Allocation by Request(s)

Shared Network Upgrade(s) Cost Allocation by each Interconnection Request(s) responsibility is shown in the **Appendix A**. **Error! Reference source not found.**

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Other Mitigations Required for Interconnection

In addition to the construction of the phase shifting transformer at Woodward District EHV, an additional mitigation is required to alleviate the constraint identified in the DISIS-2011-001-8 Impact Study. The second step of the mitigation is to model the second 138kV circuit from Woodward District EHV to Woodward District in an open configuration. If the first circuit, or phase shifter, is out of service this circuit can be closed as needed.

Conclusion

The Network Upgrades listed in this Shared Interconnection Facilities Study are required for Interconnection Service for the Interconnection Request(s) listed in **Table 1**.
Interconnection Service will be delayed until the Shared Network Upgrades listed in **Table 2** are constructed. Currently, The Interconnection Customer(s) are responsible for $7,100,000 of Shared Network Upgrade(s).

Appendix A

Appendix A. Cost Allocation by Upgrade

(Does Not Include Interconnection Costs or Previously Allocated Network Upgrades)

Woodward EHV Phase Shifting Transformer		**$7,100,000**
NRIS Install one phase shifting transformer at Woodward		
GEN-2011-019	$3,132,537	
GEN-2011-020	$3,132,537	
GEN-2011-022	$834,925	
Total Allocated Costs	**$7,100,000**	

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs