INTERCONNECTION FACILITIES STUDY REPORT

American Electric Power Company

Shared Network Upgrade(s)

IFS-2015-002

Published April 2017

By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
4/24/2017	SPP	Initial draft report issued.	

CONTENTS

SUMMARY

INTRODUCTION

The interconnecting Transmission Owner, American Electric Power – Public Service Company of Oklahoma (AEP-PSO), performed a detailed Interconnection Facilities Study (IFS) at the request of SPP for Shared Network Upgrade(s) assigned in the SPP Generator Interconnection Impact Study DISIS-2015-002 and its subsequent restudies. The scope of the IFS is defined in the Generator Interconnection Procedures (GIP) under Attachment V of the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT). The latest restudy iteration of DISIS-2015-002 is DISIS-2015-002-2 which posted on November 29th, 2016. Generator Interconnection Request(s) (GIRs) that have cost allocation responsibilities for assigned Network Upgrade(s) will require the assigned Network Upgrade(s) to be in-service for full Interconnection Service. The request for interconnection was placed with SPP in accordance with SPP's OATT, which covers new generator interconnections on SPP's transmission system. Based on DISIS-2015-002-2 Impact Restudy results, the following Shared Network Upgrade(s) are needed:

- Border – Chisholm Circuit #1 and #2
- Oklaunion Reactive Power Support Incremental Upgrade
- Stateline – Sweetwater 230kV Circuit #1

The primary objective of the IFS is to identify necessary Transmission Owner Interconnection Facilities, Network Upgrade(s), other direct assigned upgrade(s), and associated upgrade lead times needed to grant the requested Interconnection Service at the specified Point of Interconnection (POI).

GENERATOR INTERCONNECTION REQUEST(S)

The GIR(s) assigned the Shared Network Upgrade(s) are listed in the corresponding **Tables 1**.

Table 1: Generator Interconnection Requests for Shared Network Upgrade(s)

GI Request Number	Point of Interconnection (POI)	Capacity (MW)
GEN-2015-020/IFS-2015-002-07	Oasis 115kV	100.00
GEN-2015-031/IFS-2015-002-27	Swisher 230kV	150.50
GEN-2015-056/IFS-2015-002-40	Crossroads 345kV	101.20
GEN-2015-058/IFS-2015-002-42	Atoka 115kV	50.00
GEN-2015-068/IFS-2015-002-34	TUCO Interchange 345kV	300.00
GEN-2015-075/IFS-2015-002-30	Carlisle 69kV	51.50
GEN-2015-079/IFS-2015-002-28	Tap Yoakum – Hobbs 230kV	129.20
GEN-2015-080/IFS-2015-002-29	Tap Yoakum – Hobbs 230kV	129.20

The GIR(s) mentioned above were included in the DISIS-2015-002 Impact Study and its subsequent restudies, the latest being DISIS-2015-002-2.

CREDITS/COMPENSATION FOR AMOUNTS ADVANCED FOR NETWORK UPGRADE(S)

Interconnection Customer shall be entitled to compensation in accordance with Attachment Z2 of the SPP OATT for the cost of SPP Network Upgrades, including any tax gross-up or any other tax-related payments associated with the Network Upgrades, that are not otherwise refunded to the Interconnection Customer. Compensation shall be in the form of either revenue credits or incremental Long Term Congestion Rights (iLTCR).

SHARED NETWORK UPGRADE(S) FACILITIES DESCRIPTIONS AND COSTS

Table 2 lists Shared Network Upgrade(s) description, costs, and provides an estimated lead time for completion of construction. The estimated lead time begins when the Generator Interconnection Agreement has been fully executed.

Shared Network Upgrade(s) Cost Allocation by each GIR(s) responsibility is shown in the **Appendix A**.

Table 2: Shared Network Upgrade(s)

TOIF and Non-Shared Network Upgrades Description	Allocated Cost Estimate ($)	Estimated Lead Time
Border – Chisholm 345kV Circuit #1 and #2: Build eighteen (18) miles of double 345kV circuit from Border (OKGE) – Chisholm (AEP), including Chisholm substation work for installing three (3) 345kV 3000 continuous ampacity breakers, control panels, line relaying, disconnect switches, structures, foundations, conductors, insulators, and all other associated work and materials.	$44,418,000*	24 Months
Oklaunion Capacitive Reactive Power Incremental Upgrade: Build and install 2 x 100Mvar Static Var Compensator devices, step down transformer, new 345kV terminal positions, three (3) 345kV 3000 continuous ampacity breakers, switches, and associated 345kV terminal equipment at Oklaunion.	$40,000,000	30 Months
Wheeler – Sweetwater 230kV Circuit #1: Rebuild approximately five (5) miles of 230kV with 1233ACSR conductor from Sweetwater to Stateline (Wheeler) and upgrade associated substation equipment including work and materials.	$4,215,587	24 Months
Total	**$88,633,587**	

*Estimated costs assume GEN-2015-071 proceeds forward with its interconnection facilities and costs.

All studies have been conducted assuming that higher-queued Interconnection Request(s) and the associated Network Upgrade(s) will be placed into service. If higher-queued Interconnection Request(s) withdraw from the queue, suspend or terminate service, the Interconnection Customer's share of costs may be revised. Restudies, conducted at the customer's expense, will determine the Interconnection Customer's revised allocation of Shared Network Upgrades.

CONCLUSION

The Network Upgrade(s) listed in this Shared Interconnection Facilities Study are required for full Interconnection Service for the GIRs listed in **Table 1**. Interconnection Service will be delayed until the Shared Network Upgrade(s) listed in **Table 2** are constructed. The Shared Network Upgrades is summarized in the table below.

Description	Allocated Cost Estimate ($)
Border – Chisholm 345kV Circuit #1 and #2	$44,418,000
Oklaunion Capacitive Reactive Power Incremental Upgrade	$40,000,000
Stateline – Sweetwater 230kV Circuit #1	$4,215,587
Total	**$88,633,587**

A draft Generator Interconnection Agreement will be provided to the Interconnection Customer consistent with the final results of this IFS report. The Transmission Owner and Interconnection Customer will have 60 days to negotiate the terms of the GIA consistent with the SPP OATT.

APPENDICES

A: TRANSMISSION OWNER'S SHARED NETWORK UPGRADE(S) COST ALLOCATION PER GENERATOR INTERCONNECTION REQUEST

See next page for the Transmission Owner's Shared Network Upgrade(s) Cost Allocation per Generator Interconnection Request.

Appendix A. Cost Allocation by Upgrade

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

Border - Chisholm 345kV CKT 1 & 2 **$44,418,000**

Build approximately 18 miles of double 345kV Border - Chisholm for AEP facilities. Upgrade Chisholm configuration. OKGE to provide its facilitity costs and upgrades

	Allocated Cost	Allocated %
GEN-2015-020	$4,027,201	9.07%
GEN-2015-031	$3,453,827	7.78%
GEN-2015-056	$4,268,248	9.61%
GEN-2015-058	$2,209,941	4.98%
GEN-2015-068	$16,027,610	36.08%
GEN-2015-075	$2,487,594	5.60%
GEN-2015-079	$5,971,790	13.44%
GEN-2015-080	$5,971,790	13.44%
Total Allocated Costs	**$44,418,000**	

Grapevine - Wheeler 230kV CKT 1 **$4,215,587**

Rebuild approximately 5 miles of 230kV with 1233 ACSR conductor

	Allocated Cost	Allocated %
GEN-2015-020	$338,644	8.03%
GEN-2015-031	$442,003	10.48%
GEN-2015-055	$219,284	5.20%
GEN-2015-056	$320,684	7.61%
GEN-2015-058	$146,715	3.48%
GEN-2015-068	$557,329	13.22%
GEN-2015-071	$1,365,770	32.40%
GEN-2015-075	$127,409	3.02%
GEN-2015-079	$348,875	8.28%
GEN-2015-080	$348,875	8.28%
Total Allocated Costs	**$4,215,587**	

Oklaunion 345kV Reactive Power Support Incremental Upgrade **$40,000,000**

Install two (2) +/-100Mvar SVC at Oklaunion

	Allocated Cost	Allocated %
GEN-2015-020	$3,633,341	9.08%
GEN-2015-031	$3,314,795	8.29%
GEN-2015-056	$3,840,752	9.60%
GEN-2015-058	$1,984,765	4.96%
GEN-2015-068	$14,292,427	35.73%
GEN-2015-075	$2,226,744	5.57%
GEN-2015-079	$5,353,588	13.38%
GEN-2015-080	$5,353,588	13.38%
Total Allocated Costs	**$40,000,000**	

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