



**Affected System Facility Study
For
Generator Interconnection
Request
ASGI-2014-014**

***SPP Generator
Interconnection Studies***

(#ASGI-2014-014)

June 2015

Revision History

Date	Author	Change Description
6/23/2015	SPP	Final Facility Study Report Revision 0 Issued

Summary

Grand River Dam Authority (GRDA) performed a detailed Affected Facility Study at the request of Southwest Power Pool (SPP) for Affected System Interconnection request ASGI-2014-014 , a 54.3 MW Summer Peak and 56.4 MW Winter Peak of Reciprocating Internal Combustion Engines located in Payne County, Oklahoma. The ASGI-2014-014 request is for interconnection to a substation owned by Stillwater Electric Utility (SEU). The original proposed in-service date for ASGI-2014-014 was Jun 30, 2016. For completion of Affected System Interconnection Facilities GRDA has proposed June 30, 2017 in-service.

Interconnection Customer Affected System 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 Stillwater Electric Utility (SEU) 69kV bus at Ferguson Substation. Ferguson Substation connects to Grand River Dam Authority (GRDA) transmission lines from North Tap 138kV and Stillwater 69kV.

Affected System Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades

To allow interconnection the Affected System Transmission Owner will need to install revenue metering and communication equipment for acceptance of the Interconnection Customer's Interconnection Facilities. At this time ASGI-2014-014 is responsible for \$223,983 of Transmission Owner Affected System Interconnection Facilities and Non-Shared Network Upgrades. **Table 1** displays the estimated costs for Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades.

Table 1: ASGI-2014-014 Affect System TOIF and Non-Shared Network Upgrades

Affected System Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades Description	Allocated Cost (\$)	Allocated Percent (%)	Total Cost (\$)
Interconnection Substation - Transmission Owner Interconnection Facilities 69kV Substation work for revenue metering and communications	\$223,983	100%	\$223,983
Total	\$223,983	100%	\$223,983

Affected System Previous Network Upgrades

Certain Other Network Upgrades are currently not the cost responsibility of the Customer but will be required for full Interconnection Service. As this time, Other Network Upgrades are assigned to this Interconnection Customer.

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

The Interconnection Customer is responsible for \$223,983 of Affected System Transmission Owner Interconnection Facilities and Non-Shared Network Upgrades. After all Affect System Transmission Owner Interconnection Facilities have been placed into service, Interconnection

Service for 54.3 MW Summer Peak and 56.4 MW Winter Peak as requested by ASGI-2014-014 can be allowed for the Affected System. At this time the total allocation of costs assigned to ASGI-2014-014 for Interconnection Service are estimated at \$223,983.

GRAND River ENERGY Center

A GRDA Power Generating Facility



AFFECTED SYSTEM INTERCONNECTION FACILITY STUDY

Affected System Generation Interconnection
Request ASGI-2014-014, DISIS 2014-002; 56.4
MW Gas Facility in Payne County located in
Stillwater, Oklahoma

Fultz, Joe

6/16/2015

GRDA performed a Affected System Interconnection Facility Study at the request of the Southwest Power Pool to identify the project details and requirements by GRDA of an interconnecting entity to connect to the GRDA system.

Executive Summary

Pursuant to the tariff and at the request of the Southwest Power Pool (SPP), GRDA performed the following Affected System Interconnection Facility Study to satisfy the Affected System Interconnection Facility Study Agreement executed by the requesting customer for SPP Generation Interconnection request ASGI-2014-014 in reference to DISIS-2014-002. This Affected System Interconnection Facility Study is for the purpose of interconnecting a new 56.4MW of generation to the service territory of Grand River Dam Authority (GRDA).

Introduction

The Southwest Power Pool has requested a Affected System Interconnection Facility Study for the purpose of interconnecting (3) 18.76MW gas combustion turbine units for a total of 56.4MW at the city of Stillwater, OK - Ferguson substation within the service territory of Grand River Dam Authority (GRDA) in Payne County, Oklahoma. The proposed 13.8kV point of interconnection is metered into the western part of the GRDA system at the city of Stillwater. The proposed in-service date is June 30, 2016.

Steady State

Power flow analysis has indicated that for the power flow cases studied, it is possible to interconnect the 56.4MW of generation with transmission system reinforcements within the local transmission system. Given the Point of Interconnection (POI) at the existing Stillwater Ferguson 69/13.8kV substation there are additional requirements for interconnection; including bus, breakers, switches, relaying, metering, step-up transformers, etc that the city will be installing.

Short Circuit

It is standard practice for GRDA to recommend replacing a circuit breaker when the current through the breaker for a fault exceeds 100% of its nameplate interrupting rating. For this generator interconnection, no circuit breakers were found to exceed their interrupting capability after the addition of the 56.4MW generators and related facilities. Therefore, there is no short circuit upgrade costs associated with the ASGI-2014-014 interconnection.

Facilities

The primary objective of this study is to identify attachment facilities. These 69kV station upgrades will be constructed and maintained by the city of Stillwater. The property is owned by Stillwater and GRDA won't need any additional land to install the communication facilities that will be owned by GRDA.

The total cost for GRDA to add new 13kV metering and communication equipment at the plant to monitor and control the generators, is estimated at \$223,983.

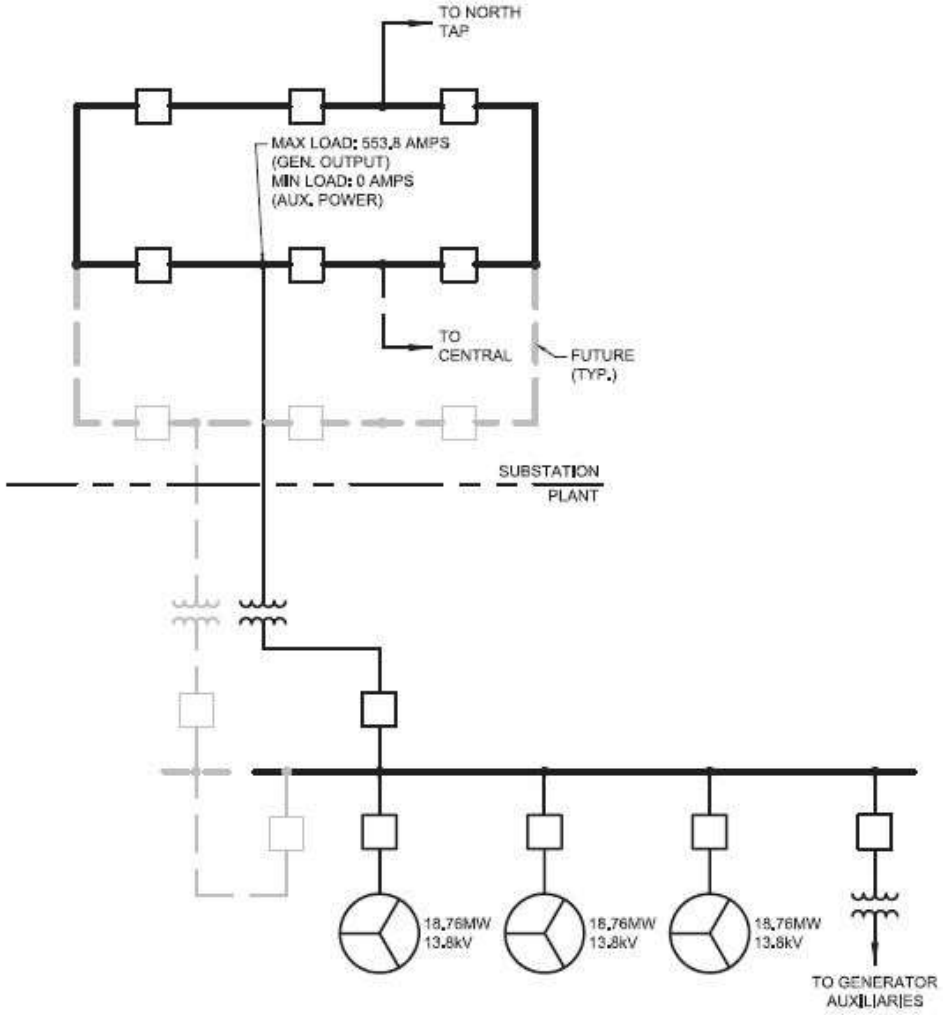
Table 1

Description	Cost
<u>Non-Shared Network Upgrades:</u>	N/A
<u>Affected System Interconnection Facilities:</u> (GRDA) – Install 6 meters, an RTU and fiber communications at Stillwater Plant; connect to Stillwater fiber at Ferguson substation; connect at other end to Stillwater at Northtap substation and run GRDA fiber within sub to GRDA control house RTU. Communications are required to monitor and control the Plant capacity remotely. Stillwater will provide fiber on its transmission line from Ferguson sub to Northtap sub.	\$223,983
<u>Network Upgrades:</u>	N/A
<u>Total:</u>	\$223,983

Schedule

The scheduled in-service date of the facility is for June 30, 2016. No delays are anticipated.

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date 2/23/2015
 designed T. O'BRIEN

**FERGUSON 69kV SUBSTATION
 INTERCONNECTION
 ONE LINE DIAGRAM**

project	75644
contract	-
SK -	EE001

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