Modification Request Impact Study for Generation Interconnection Request

GEN-2011-054

April, 2013
Generator Interconnection

SPP Southwest Power Pool

Executive Summary

<OMITTED TEXT> (Customer) has requested a modification to its Generation Interconnection Request, GEN-2011-054, in accordance with Section 4.4 of the Generation Interconnection Procedures (GIP) of the Southwest Power Pool Open Access Transmission Tariff (OATT). GEN-2011-054 is a request for interconnection of 300 MW of wind generation within the balancing authority of Oklahoma Gas and Electric (OKGE) in Canadian County, Oklahoma. Customer has requested to drop its request for Network Resource Interconnection Service (NRIS) and to be designated as Energy Resource Interconnection Service (ERIS) only. SPP has undertaken this Modification Request Impact Study (MRIS) to determine the impacts to the transmission system of accommodating the modification request.

A power flow analysis shows that with ERIS Network Upgrades identified in DISIS-2011-002, the Customer's request to drop its request for NRIS will not affect the cost of NRIS Network upgrades for other Interconnection Customers. Powerflow analysis was based on both summer and winter peak conditions and light loading cases.

The Stability Analysis was not performed as no major transmission configuration was necessary as a result of this restudy. Previous Impact Studies for DISIS-2011-002 should be consulted for power factor requirements and stability analysis results.

The request of the Customer to be designated as Energy Resource Interconnection Service only is not considered a Material Modification under GIP 4.4.

Nothing in this study should be construed as a guarantee of transmission service. If the customer wishes to sell power from the facility, a separate request for transmission service shall be requested on Southwest Power Pool's OASIS by the Customer.

This study fulfills SPP's requirements in accordance with GIP 4.4.3 to evaluate the Customer's modification. In accordance, with GIP 4.4.2, the Customer may choose to withdraw its request for modification.

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Introduction

<OMITTED TEXT> (Customer) has requested a modification to its Generation Interconnection Request, Gen 2011-054, in accordance with Section 4.4 of the Generation Interconnection Procedures (GIP) of the Southwest Power Pool Open Access Transmission Tariff (OATT). GEN-2011-054 is a request for interconnection of 299 MW of wind generation within the Oklahoma Gas and Electric (OKGE) in Canadian County, Oklahoma. Customer has requested to drop its request for Network Resource Interconnection Service (NRIS) and to designated as Energy Resource Interconnection Service (ERIS) only. SPP has undertaken this Modification Request Impact Study (MRIS) to determine the impacts to the transmission system of accommodating the modification request.

Purpose

The purpose of this Modification Request Impact Study (MRIS) is to evaluate the impact of the proposed interconnection on the reliability of the Transmission System. The MRIS considers the Base Case as well as all Generating Facilities (and with respect to (b) below, any identified Network Upgrades associated with such higher queued interconnection) that, on the date the MRIS is commenced:

a) are directly interconnected to the Transmission System;
b) are interconnected to Affected Systems and may have an impact on the Interconnection Request;
c) have a pending higher queued Interconnection Request to interconnect to the Transmission System; or
d) have no Queue Position but have executed an LGIA or requested that an unexecuted LGIA be filed with FERC.

Nothing in this System Impact Study constitutes a request for transmission service or confers upon the Interconnection Customer any right to receive transmission service.

Facilities

Generating Facility

The project was modeled as an equivalent wind turbine generator with a total of 299 MW output. The wind turbines are connected to equivalent 0.69/34.5KV generator step units (GSU). The high side of each GSU is connected to a 34.5/345kV substation transformer. A 345kV transmission line connects the Customer's substation transformer to the POI.

Interconnection Facility

GEN-2011-054 will be tapped off of the generator lead for GEN-2010-040. The Point of Interconnection will be at the Cimarron 345kV switching station. Figure 1 shows a one-line illustration of the interconnection configuration.

Cost to interconnect is estimated at $10,000. The construction lead time to construct the interconnection substation will be determined by the Transmission Owner during the Facility Study. Any proposed in service date will be contingent upon the completion of the Interconnection Substation.

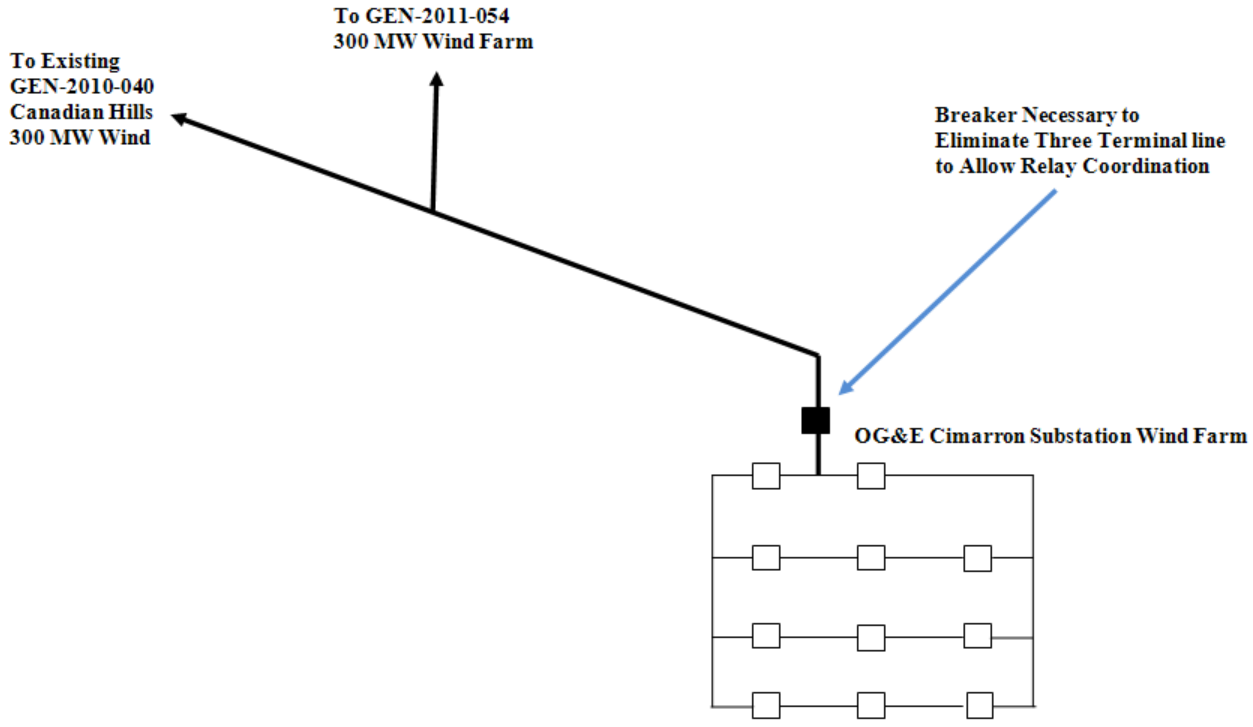

Figure 1: *Gen 2011-054 Facility and Proposed Interconnection Configuration*

Stability Analysis

Powerflow Analysis

A powerflow analysis was conducted for the Interconnection Customer's facility using a modified version of the 2013 spring, 2013 summer, 2013 winter, 2018 summer, 2018 winter, and 2023 summer seasonal models. The output of the Interconnection Customer's facility was offset in the model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource (ERIS) Interconnection Request. This analysis was conducted assuming that previous queued requests listed in DISIS-2011-002 were in-service.

The ACCC function of PSS/E was used to simulate single contingencies in portions of or all of the control area of NPPD and other control areas within SPP and the resulting data analyzed. This satisfies the "more probable" contingency testing criteria mandated by NERC and the SPP criteria.

The analysis consisted of performing the powerflow analysis for all remaining NRIS interconnection requests in the northern Oklahoma area for DISIS-2011-002, DISIS-2012-001, and DISIS-2012-002. These NRIS requests included in the analysis are listed below.

Table 1. NRIS Request included in the Analysis

Request	MW	Point of Interconnection
GEN-2011-051	104.4	Tap Woodward - Tatonga 345kV
GEN-2012-040	76.5	Chilocco 138kV

The ACCC analysis indicates that with the ER Network Upgrades identified in DISIS-2011-002, the customer can withdraw its request for NIRS without affecting the costs of other Interconnection Customer's NRIS upgrades.

Table 2. Constraints on assigned NRIS upgrades for other NRIS requests

Source	Season	Group	Constraint	TDF	Contingency
GEN-2011-051			None		
GEN-2012-040			None		

Stability Analysis

Stability Analysis

The Stability Analysis was not performed as no major transmission configuration was necessary as a result of this restudy. Previous Impact Studies for DISIS-2011-002 should be consulted for power factor requirements and stability analysis results.

Conclusion

<OMITTED TEXT> (Customer) has requested a modification to its Generation Interconnection Request, Gen 2011-054, in accordance with Section 4.4 of the Generation Interconnection Procedures (GIP) of the Southwest Power Pool Open Access Transmission Tariff (OATT). Gen 2011-054 is a request for interconnection of 299.0 MW of wind generation within the balancing authority of Oklahoma Gas and Electric (OKGE) in Canadian County, Oklahoma. Customer has requested to withdraw its request to be studied for NRIS and to only be studied for ERIS.

Power flow analysis showed that with the Network Upgrades identified in DISIS-2011-002, the Customer can be designated with ERIS only. The Customer's request for modification is not considered Material. The construction lead time to construct the interconnection substation will be determined by the Transmission Owner during the Facility Study. Any proposed in service date will be contingent upon the completion of the Interconnection Substation.

The Stability Analysis was not performed as no major transmission configuration was necessary as a result of this restudy. Previous Impact Studies for DISIS-2011-002 should be consulted for power factor requirements and stability analysis results.

The estimates do not include any costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer requests transmission service through Southwest Power Pool's OASIS. It should be noted that the models used for simulation do not contain all SPP transmission service.

This study fulfills SPP's requirements in accordance with GIP 4.4.3 to evaluate the Customer's modification. In accordance, with GIP 4.4.2, the Customer may choose to withdraw its request for modification