



Modification Request Impact Study for Generator Interconnection Request

GEN-2014-074

June 2016

Generator Interconnection

Revision History

Date	Author	Change Description
6/10/2016	SPP	Modification Request Impact Study Report Revision 0 Issued

Executive Summary

<OMITTED TEXT> (Interconnection Customer) has requested a modification to Generation Interconnection Request GEN 2014-074 in accordance with Section 4.4 of the Generator Interconnection Procedures (GIP) of the Southwest Power Pool Open Access Transmission Tariff (OATT). Interconnection Customer has requested to drop its service type request for Network Resource Interconnection Service (NRIS) and to be designated as Energy Resource Interconnection Service (ERIS) only. SPP has evaluated this Modification Request Impact Study (MRIS) to determine the impacts on other Interconnection Requests for accommodating the modification request.

The results of the initial analysis and Power flow Analysis indicate that Interconnection Customer request to drop NRIS is constituted as Material Modification. The results of this analysis indicate that if the Interconnection Customer continues to agree to fund the Potter County Interchange 345/230/13kV Transformer circuit #2 build, Crawfish Draw 345/230 substation, and Crawfish Draw 345/230/13kV transformer Network Upgrade(s) as part of its ERIS upgrades, then its request to drop NRIS will not be considered a Material Modification.

Stability Analysis was not performed and is not required to be performed for this Interconnection Service type MRIS study.

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> (Interconnection Customer) has requested a modification to Generation Interconnection Request, GEN 2014-074, in accordance with Section 4.4 of the Generator Interconnection Procedures (GIP) of the Southwest Power Pool Open Access Transmission Tariff (OATT). The Interconnection 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.

In the latest iteration of DISIS-2015-001-2 posted in March 2016, GEN-2014-074 was assigned the following upgrades for NRIS.

- Bushland-Potter 230kV line traps
- Carlisle-LP Doud -115kV line traps
- Carlisle 230/115kV transformer replacement
- Crawfish Draw 230/115kV transformer addition
- Kress – Swisher 115kV 2nd circuit
- Potter County 345/115kV 2nd transformer
- Sundown 230/115kV transformer replacement
- Crawfish Draw 345/230kV transformer
- TUCO - Jones 230kV line traps
- Wolfforth-Terry County terminal equipment
- Wolfforth 230/115kV transformer replacement

The MRIS will determine if these upgrades are still required for equally queued or lower queued Interconnection Customers if GEN-2014-074 drops its request for NRIS. If the equally or lower queued Interconnection Requests have their costs go up or are determined to need the upgrades, the request will be considered a Material Modification.

The analysis consists of two parts. The first part (Initial Analysis) determines if lower or equally queued Interconnection Requests are using depending upon the NRIS Network Upgrades that are currently assigned to GEN-2014-074. If it is determined that there are equally or lower queued Interconnection Requests that are dependent upon the upgrades, a second analysis for power flow (Power flow Analysis) will be performed to determine if the upgrades are required if GEN-2014-074 drops its NRIS designation.

If both analyses determine that equally or lower queued Interconnection Requests are impacted by the modification request, the request will be considered a Material Modification

Purpose

The purpose of this Modification Request Impact Study (MRIS) is to evaluate the impact of the proposed modification to other interconnection customers. 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.
- e) Lower queued interconnection customers that may be impacted.

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

Initial Analysis

The Initial Analysis consists of an evaluation of whether the Network Upgrades assigned to GEN-2014-074 are used for other Interconnection Requests. The initial study for DISIS-2015-002 indicated several NRIS upgrades were required by lower queued Interconnection Requests. It was determined that a pending restudy of DISIS-2015-002 for withdrawals should be performed for a better determination of impact. Therefore, the powerflow analysis was performed.

Power Flow Analysis

A power flow analysis was conducted for the Interconnection Customer's facility using a modified version of the 2015 series Integrated Transmission Planning models (used in the 2016 ITPNT) including the 2016 winter peak (16WP) season, the 2017 spring (17G) and 2017 summer peak (17SP) seasons, the 2020 light load (20L), summer (20SP) and winter peak (20WP) seasons, and the 2025 summer peak (25SP) season 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.

Network constraints are found by using PSS/E AC Contingency Calculation (ACCC) analysis with PSS/E MUST First Contingency Incremental Transfer Capability (FCITC) analysis on the entire cluster grouping dispatched at the various levels previously mentioned. This satisfies the "more probable" contingency testing criteria mandated by NERC and the SPP criteria.

For Energy Resource Interconnection Service (ERIS), thermal overloads are determined for system intact (n-0) (greater than 100% of Rate A - normal) and for contingency (n-1) (greater than 100% of Rate B – emergency) conditions.

The overloads are then screened to determine which of generator interconnection requests have at least

- 3% Distribution Factor (DF) for system intact conditions (n-0),
- 20% DF upon outage based conditions (n-1),
- or 3% DF on contingent elements that resulted in a non-converged solution.

Considerations for Analysis

Impact on DISIS-2015-001 Interconnection Requests – SPP is currently analyzing a request for GEN-2015-022 to drop its NRIS designation. This determination was based on GEN-2015-022 also dropping its NRIS designation. If GEN-2015-022 chooses to move forward with NRIS, this determination will need to be revisited.

Impact on DISIS-2015-002 Interconnection Requests – DISIS-2015-002 Interconnection Requests were recently required to state their intent to move into the Interconnection Facilities Study Queue. Some Interconnection Requests have chosen not to move forward into the Interconnection Facilities Study Queue. It has been determined that no remaining Group 6 Interconnection Requests in DISIS-2015-002 went into the Interconnection Facilities Study with an NRIS designation. Therefore, no DISIS-2015-002 NRIS Interconnection Requests are found to use the GEN-2014-074 upgrades for NRIS. An ERIS analysis will be performed to determine if DISIS-2015-002 Interconnection Requests could potentially depend on some of the GEN-2014-074 Network Upgrades for NRIS service.

Therefore, a restudy of Power flow Analysis for DISIS-2015-002 for withdrawals is required to determine if the GEN-2014-074 upgrades are still required for ERIS. The initial results from the DISIS-2015-002-1 study were used for this analysis.

The analysis consisted of performing the power flow analysis for all Interconnection Requests in Hitchland (Group 02) and Texas/New Mexico (Group 06) groups for DISIS-2015-002.

Results

Initial ACCC analysis shows that Potter County Interchange 345/230/13kV Transformer circuit #2 build, Crawfish Draw 345/230 substation, and Crawfish Draw 345/230/13kV transformer Network Upgrade(s) are still needed for Group 6 ERIS generators. Final determination can be made following the posting of the DISIS-2015-002-1 Impact Study. The results can be seen in **Table 1**.

Table 1: GEN-2014-074 Assigned Network Upgrades Impacted by DISIS-2015-002 Interconnection Requests

Constraint	TC Loading	Contingency
TUCO 345/230kV transformer#1	118.1025	TUCO 345/230kV transformer #2
TUCO 345/230kV transformer#2	108.6543	TUCO 345/230kV transformer #1
Potter 345/230kV transformer #1	100.1587	System Intact

Stability Analysis

Stability Analysis was not performed for this study.

Conclusion

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