



Modification Request Impact Study for Generator Interconnection Request

GEN-2015-013

July 2016

Generator Interconnection

Revision History

| Date | Author | Change Description |
|----------|--------|--|
| 7/8/2016 | SPP | Modification Request Impact Study Report Revision 0 Issued |

Executive Summary

<OMITTED TEXT> (Interconnection Customer) has requested a modification to Generation Interconnection Request GEN 2015-013 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 Material Modification analysis to determine whether a reduction in the size of its Interconnection Request would constitute as Material Modification. Additionally, 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 analysis has determined that no reduction in the size of the Interconnection Request can be accommodated without triggering a Material Modification. The results of the initial analysis indicates that Interconnection Customer request to drop NRIS is not considered a Material Modification.

Stability Analysis was not performed and is not required to be performed for this Interconnection Service type or reduced ERIS 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 2015-013, 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 Material Modification analysis to determine whether a reduction in the size of its Interconnection Request would constitute as Material Modification. Additionally, 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-2015-013 was assigned the following upgrades for ERIS.

- Altus SW – Navajo 69kV circuit #1 rebuild
- Anadarko – Sequoyah 138kV circuit #1 rebuild
- Cornville Tap – Naples Tap 138kV circuit #1 rebuild
- Naples Tap – Payne 138kV circuit #1 rebuild
- Navajo – Snyder 69kV circuit #1 rebuild
- Sequoyah – Cornville Tap 138kV circuit #1 rebuild

In the latest iteration of DISIS-2015-001-2 posted in March 2016, GEN-2015-013 was assigned the following upgrades for NRIS.

- None

The MRIS will determine the reduced ERIS amount that would not require the assigned ERIS upgrades for equally queued or lower queued Interconnection Customer(s). Also, the MRIS will determine if these NRIS upgrades are still required for equally queued or lower queued Interconnection Customer(s) if GEN-2015-013 drops its request for NRIS. Additionally, 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 ERIS Network Upgrade(s) or NRIS Network Upgrade(s) that are currently assigned to GEN-2015-013. 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-2015-013 reduces its ERIS amount or drops its NRIS designation.

If one or 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 modifications 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-2015-013 are used for other Interconnection Requests.

ERIS Upgrade Analysis - The initial study for DISIS-2015-002 indicated several ERIS 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 power flow analysis was performed.

NRIS Upgrade Analysis – No NRIS upgrades are assigned to GEN-2015-013. Therefore, additional analysis is not required for the Material Modification request to withdraw NRIS service type for GEN-2015-013. The request for GEN-2015-013 to drop NRIS is not considered a Material Modification.

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.

The analysis consisted of performing the power flow analysis for all Interconnection Requests in Southwest Oklahoma Area (Group 07) for DISIS-2015-002.

Results

ERIS Upgrade Analysis - ACCC analysis shows that Cornville Tap – Naples Tap 138kV circuit #1 rebuild, Naples Tap – Payne 138kV circuit #1 rebuild, and Sequoyah – Cornville Tap 138kV circuit #1 rebuild Network Upgrade(s) are still needed for system intact condition for Group 7 lowered queued ERIS generators. The results can be seen in **Table 1**.

Table 1: Generator Impacts on Required Network Upgrade(s)

| Source | Season | Group | Constraint | TDF | TC Loading | Contingency |
|---------|--------|-------|--|---------|------------|---------------|
| G15_084 | 20WP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.03129 | 124.6348 | System Intact |
| G15_084 | 16WP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.0312 | 120.9895 | System Intact |
| G15_084 | 20SP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.03187 | 116.194 | System Intact |
| G15_084 | 17SP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.03201 | 115.5962 | System Intact |
| G15_084 | 17G | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.0314 | 102.6428 | System Intact |
| G15_084 | 25SP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.03223 | 100.2054 | System Intact |
| G15_084 | 20WP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.03129 | 121.388 | System Intact |
| G15_084 | 16WP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.0312 | 117.7635 | System Intact |
| G15_084 | 20SP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.03187 | 112.9333 | System Intact |
| G15_084 | 17SP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.03201 | 112.3563 | System Intact |
| G15_084 | 17G | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.0314 | 99.4 | System Intact |
| G15_084 | 25SP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.03223 | 96.9 | System Intact |
| G15_085 | 20WP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.04146 | 124.6348 | System Intact |
| G15_085 | 16WP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.04097 | 120.9895 | System Intact |
| G15_085 | 20SP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.04204 | 116.194 | System Intact |
| G15_085 | 17SP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.04209 | 115.5962 | System Intact |
| G15_085 | 17G | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.04117 | 102.6428 | System Intact |
| G15_085 | 25SP | 07ALL | 'CORN TAP - NAPLESTP 138.00 138KV CKT 1' | 0.0424 | 100.2054 | System Intact |
| G15_085 | 17SP | 07ALL | 'CORN TAP - SEQUOYAHJ4 138.00 138KV CKT 1' | 0.03459 | 106.8338 | System Intact |
| G15_085 | 20SP | 07ALL | 'CORN TAP - SEQUOYAHJ4 138.00 138KV CKT 1' | 0.03452 | 105.0447 | System Intact |
| G15_085 | 25SP | 07ALL | 'CORN TAP - SEQUOYAHJ4 138.00 138KV CKT 1' | 0.0348 | 102.5111 | System Intact |
| G15_085 | 20WP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.04146 | 121.388 | System Intact |
| G15_085 | 16WP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.04097 | 117.7635 | System Intact |
| G15_085 | 20SP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.04204 | 112.9333 | System Intact |
| G15_085 | 17SP | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.04209 | 112.3563 | System Intact |
| G15_085 | 17G | 07ALL | 'NAPLESTP 138.00 - PAYNE 138.00 138KV CKT 1' | 0.04117 | 99.4 | System Intact |

Determination

The results of the Initial Analysis and the Powerflow Analysis indicate that Interconnection Customer request to drop NRIS is not Material Modification. The results for reducing the size of the Interconnection Request indicate request is considered a Material Modification as DISIS-2015-002 Interconnection Requests are impacted by these upgrades.

Stability Analysis

Stability Analysis was not performed for this study.

Conclusion

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