# Southwest Power Pool

# System Impact Study
# SPP-2016-003
# For Transmission Service
# Requested By:
# TNSK

# From WFEC to ERCOTN

# For a Reserved Amount Of
# 20 MW
# For 7/1/2016 – 9/1/2016

# 1. Executive Summary

TNSK has requested a system impact study for monthly firm transmission service from WFEC to ERCOTN. The period of the transaction is from 7/1/2016 00:00 CDT to 9/1/2016 00:00 CDT. The request is for reservation 82357403.

The 20 MW transaction from WFEC has an impact on the following flowgates with no AFC: SPSNORTH_STH and POTXFRHITXFR. To provide the AFC necessary for this transfer, the impact on these flowgates must be relieved.

After studying many scenarios using generation redispatch, there are several feasible scenarios that will relieve the flowgate(s) in question.

## 2. Introduction

TNSK has requested a system impact study for transmission service from WFEC to ERCOTN.

There are 2 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- SPSNORTH_STH: SPS North to South interface stability limit.

- POTXFRHITXFR: Potter County 345/230 Xfmr FTLO Hitchland 345/230 Xfmr

# 3. Study Methodology

## A. Description

Southwest Power Pool used Transmission Adequacy & Reliability Assessment (TARA) to obtain possible unit pairings that would relieve the constraint. TARA calculates impacts on monitored facilities for all units within the Southwest Power Pool Footprint. The SPP ATC Calculator is used to determine response factors for the time period of the reservation.

## B. Model Updates

The 2016 Southwest Power Pool model was used for the study. This model was updated to reflect the most current information available.

## C. Transfer Analysis

Using the short-term calculator, the limiting constraints for the transfer are identified. The response factor of the transfer on each constraint is also determined.

The product of the transfer amount and the response factor is the impact of a transfer on a limiting flowgate that must be relieved. With multiple flowgates affected by a transfer, relief of the largest impact may also provide relief of smaller impacts.

Using Transmission Adequacy & Reliability Assessment (TARA), specific generator pairs are chosen to reflect the units available for redispatch. The quotient of the amount of impact that must be relieved and the generation sensitivity factor calculated by TARA is the amount of redispatch necessary to relieve the impact on the affected flowgate.

# 4. Study Results

After studying the impacts of the request, two flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

| Flowgate | Duration | Sensitivity | Impact |
|---|---|---|---|
| 5196:SETSCOHOLXFR | 7/1/2016-9/1/2016 | 13.98% | 3 |
| 5420:POTXFRHITXFR | 7/1/2016-9/1/2016 | 4.11% | 1 |

Table 2 displays a list of generator pairs that are possible relief options for each flowgate in question and the amount of redispatch capacity needed.

**Table 2**

| 5196:SPSNORTH_STH | | | |
|---|---|---|---|
| **Increment** | **Decrement** | **Sensitivity** | **Redispatch** |
| Plant X | Harrington | 81.45% | 4 |
| Tolk | Harrington | 80.16% | 4 |
| Cunningham | Harrington | 78.58% | 4 |
| Plant X | Nichols | 81.45% | 4 |
| Tolk | Nichols | 80.16% | 4 |
| Cunningham | Nichols | 78.58% | 4 |
| Plant X | Blackhawk | 78.62% | 4 |
| Tolk | Blackhawk | 77.34% | 4 |
| Cunningham | Blackhawk | 75.76% | 4 |
| | | | |
| **5420:POTXFRHITXFR** | | | |
| **Increment** | **Decrement** | **Sensitivity** | **Redispatch** |
| Harrington | Holcomb | 35.29% | 3 |
| Nichols | Holcomb | 35.10% | 3 |
| Blackhawk | Holcomb | 29.46% | 3 |
| Harrington | S2 | 35.24% | 3 |
| Nichols | S2 | 35.06% | 3 |
| Blackhawk | S2 | 29.41% | 3 |
| Harrington | Rubart | 34.98% | 3 |
| Nichols | Rubart | 34.79% | 3 |
| Blackhawk | Rubart | 29.15% | 3 |
| | | | |

## 5. Conclusion

Generation redispatch options were studied in order to relieve the necessary constraints. The results of this study shows that the constraints on the flowgates in question could be relieved by executing one or more of the options described in the Study Results section of this document. Before the Transmission Provider accepts the reservations, agreement to the redispatch costs must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.