



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2014-001  
For Transmission Service  
Requested By:  
TNSK***

***From WFEK to ERCOTN***

***For a Reserved Amount Of  
13 MW***

***For 5/1/2014 – 9/1/2014***

## **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 5/1/2014 00:00 to 9/1/2014 00:00. The request is for reservation 79259613.

The 13 MW transaction from WFEC has an impact on the following flowgates with no AFC: SPSNORTH\_STH, POTXFRHITXFR, and GRAXFRGRANIC. 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 3 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
- POTXFRHITXFR: Potter County 345/230 kV transformer for the loss of the Hitchland 345/230 kV transformer
- GRAXFRGRANIC: Grapevine 230/115 kV transformer for the loss of the Grapevine – Nichols 230 kV line

### **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 2014 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, three flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity(%)	Required Relief (MW)
5196 : SPSNORTH_STH	5/1/2014 - 9/1/2014	15.8%	2
5420 : POTXFRHITXFR	5/1/2014 - 9/1/2014	4.4%	1
5421 : GRAXFRGRANIC	5/1/2014 - 9/1/2014	6.0%	1

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

**Table 2**

5196 : SPSNORTH_STH			
Increment	Decrement	Sensitivity	MW
Plant X - SPS	Nichols - SPS	65.8%	3
Plant X - SPS	Harrington - SPS	65.2%	3
Plant X - SPS	Blackhawk - SPS	63.9%	3
Jones - SPS	Nichols - SPS	63.4%	3
Cunningham - SPS	Nichols - SPS	63.1%	3
Hobbs - SPS	Nichols - SPS	63.1%	3
Maddox - SPS	Nichols - SPS	63.1%	3
Jones - SPS	Harrington - SPS	62.9%	3
Cunningham - SPS	Harrington - SPS	62.6%	3
Hobbs - SPS	Harrington - SPS	62.6%	3
Maddox - SPS	Harrington - SPS	62.6%	3
Jones - SPS	Blackhawk - SPS	61.6%	3
Cunningham - SPS	Blackhawk - SPS	61.3%	3
Hobbs - SPS	Blackhawk - SPS	61.3%	3
Maddox - SPS	Blackhawk - SPS	61.3%	3

<b>5420 : POTXFRHITXFR</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Harrington - SPS	Holcomb - SECI	49.0%	2
Harrington - SPS	Garden City - SECI	48.9%	2
Nichols - SPS	Holcomb - SECI	48.2%	2
Nichols - SPS	Garden City - SECI	48.1%	2
Blackhawk - SPS	Holcomb - SECI	47.7%	2
Blackhawk - SPS	Garden City - SECI	47.6%	2
Harrington - SPS	Rubar - SECI	44.2%	2
Plant X - SPS	Holcomb - SECI	43.9%	2
Plant X - SPS	Garden City - SECI	43.9%	2
Tolk - SPS	Holcomb - SECI	43.7%	2
Tolk - SPS	Garden City - SECI	43.7%	2
Nichols - SPS	Rubar - SECI	43.4%	2
Cunningham - SPS	Holcomb - SECI	43.0%	2
Hobbs - SPS	Holcomb - SECI	43.0%	2
Blackhawk - SPS	Rubar - SECI	43.0%	2

<b>5421 : GRAXFRGRANIC</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Nichols - SPS	Mooreland Plant - WFEC	13.8%	7
Blackhawk - SPS	Mooreland Plant - WFEC	13.0%	8
Nichols - SPS	SW Station - AEPW	12.8%	8
Nichols - SPS	Anadarko - WFEC	12.7%	8
Harrington - SPS	Mooreland Plant - WFEC	12.4%	8
Blackhawk - SPS	SW Station - AEPW	12.1%	8
Blackhawk - SPS	Anadarko - WFEC	11.9%	8
Harrington - SPS	SW Station - AEPW	11.4%	9
Harrington - SPS	Anadarko - WFEC	11.3%	9
Plant X - SPS	Mooreland Plant - WFEC	10.3%	10
Tolk - SPS	Mooreland Plant - WFEC	10.2%	10
Cunningham - SPS	Mooreland Plant - WFEC	10.0%	10
Hobbs - SPS	Mooreland Plant - WFEC	10.0%	10
Maddox - SPS	Mooreland Plant - WFEC	10.0%	10

## **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, proof of the necessary relief options must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.