SPP Southwest Power Pool

System Impact Study
SPP-2014-002
For Transmission Service
Requested By:
TNSK

From WFEC to ERCOTN

For a Reserved Amount Of
25 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 79265664.

The 25 MW transaction from WFEC has an impact on the following flowgates with no AFC: SPSNORTH_STH, ANACORSWSNOR, 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 4 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

- ANACORSWSNOR: Anadarko – Corn Tap 138 kV line for the loss of the Southwestern Station – Norge 138 kV line

- 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, four 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	17.2%	4
5358 : ANACORSWSNOR	5/1/2014 - 9/1/2014	5.1%	1
5420 : POTXFRHITXFR	5/1/2014 - 9/1/2014	3.7%	1
5421 : GRAXFRGRANIC	5/1/2014 - 9/1/2014	4.8%	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**	**Impact**
Plant X SPS	Harrington SPS	81.6%	5
Plant X SPS	Nichols SPS	81.6%	5
Tolk SPS	Harrington SPS	80.4%	5
Tolk SPS	Nichols SPS	80.3%	5
Cunningham SPS	Harrington SPS	78.8%	5
Plant X SPS	Blackhawk SPS	78.8%	5
Cunningham SPS	Nichols SPS	78.8%	5
Hobbs SPS	Harrington SPS	78.7%	5
Hobbs SPS	Nichols SPS	78.7%	5
Tolk SPS	Blackhawk SPS	77.5%	5
Cunningham SPS	Blackhawk SPS	75.9%	5
Hobbs SPS	Blackhawk SPS	75.8%	5

5358 : ANACORSWSNOR			
Increment	**Decrement**	**Sensitivity**	**Impact**
Seminole OKGE	Anadarko WFEC	13.0%	8
Seminole OKGE	Genco WFEC	13.0%	8
Seminole OKGE	Orme WFEC	13.0%	8
Weleetka AEP	Anadarko WFEC	12.9%	8
Weleetka AEP	Genco WFEC	12.9%	8
Weleetka AEP	Orme WFEC	12.9%	8
Hugo WFEC	Anadarko WFEC	12.7%	8
Hugo WFEC	Genco WFEC	12.7%	8
Hugo WFEC	Orme WFEC	12.7%	8
Mustang OKGE	Anadarko WFEC	12.7%	8
Mustang OKGE	Genco WFEC	12.7%	8
Mustang OKGE	Orme WFEC	12.7%	8
Horseshoe Lake OKGE	Anadarko WFEC	12.6%	8
Horseshoe Lake OKGE	Genco WFEC	12.6%	8
Horseshoe Lake OKGE	Orme WFEC	12.6%	8

5420 : POTXFRHITXFR			
Increment	**Decrement**	**Sensitivity**	**Impact**
Harrington SPS	Holcomb SECI	35.7%	3
Harrington SPS	Garden City SECI	35.7%	3
Nichols SPS	Holcomb SECI	35.5%	3
Nichols SPS	Garden City SECI	35.5%	3
Harrington SPS	Judson Large SECI	33.9%	3
Nichols SPS	Judson Large SECI	33.8%	3
Blackhawk SPS	Holcomb SECI	29.9%	3
Blackhawk SPS	Garden City SECI	29.8%	3
Plant X SPS	Holcomb SECI	28.8%	3
Plant X SPS	Garden City SECI	28.8%	3
Tolk SPS	Holcomb SECI	28.3%	4
Tolk SPS	Garden City SECI	28.2%	4
Blackhawk SPS	Judson Large SECI	28.1%	4
Plant X SPS	Judson Large SECI	27.1%	4
Tolk SPS	Judson Large SECI	26.5%	4

5421 : GRAXFRGRANIC			
Increment	**Decrement**	**Sensitivity**	**Impact**
Nichols SPS	Southwester Power Station AEP	9.8%	10
Nichols SPS	Anadarko WFEC	9.5%	10
Nichols SPS	Genco WFEC	9.5%	10
Nichols SPS	Orme WFEC	9.5%	10
Blackhawk SPS	Southwester Power Station AEP	9.1%	11
Blackhawk SPS	Anadarko WFEC	8.8%	11
Blackhawk SPS	Genco WFEC	8.8%	11
Blackhawk SPS	Orme WFEC	8.8%	11
Harrington SPS	Southwester Power Station AEP	8.4%	12
Harrington SPS	Anadarko WFEC	8.2%	12
Harrington SPS	Genco WFEC	8.2%	12
Harrington SPS	Orme WFEC	8.2%	12
Plant X SPS	Southwester Power Station AEP	6.5%	15
Plant X SPS	Anadarko WFEC	6.3%	16
Plant X SPS	Genco WFEC	6.3%	16
Plant X SPS	Orme WFEC	6.3%	16

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.