SPP Southwest Power Pool

System Impact Study
SPP-2015-001
For Transmission Service
Requested By:
REMC

From WFEC to ERCOTN

For a Reserved Amount Of
221 MW
For 6/1/2015 – 9/1/2015

1. Executive Summary

REMC has requested a system impact study for monthly firm transmission service from WFEC to ERCOTN. The period of the transaction is from 6/1/2015 00:00 CDT to 9/1/2015 00:00 CDT. The request is for reservation 80771824.

The 221 MW transaction from WFEC has an impact on the following flowgates with no AFC: PITSEMPITJHN, SPSNORTH_STH, ANACORSWSNOR, POTXFRHITXFR, and HARRANNICAMA. 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

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

There are 5 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- PITSEMPITJHN: Pittsburg - Seminole 345 kV line for the loss of the Pittsburg – Johnston County 345 kV line

- SPSNORTH_STH: SPS North to South interface

- ANACORSWSNOR: Anadarko - Sequoyah 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

- HARRANNICAMA: Harrington Sub - Randall 230 kV line for the loss of the Nichols – Amarillo South 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 2015 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, five flowgates require relief. The flowgates and associated amount of relief are as follows:

Table 1

Flowgate	Duration	Sensitivity %	Impact MW
5099 : PITSEMPITJHN	7/1/2015 - 9/1/2015	3.6%	8
5196 : SPSNORTH_STH	6/1/2015 - 9/1/2015	13.7%	30
5358 : ANACORSWSNOR	6/1/2015 - 9/1/2015	3.6%	8
5420 : POTXFRHITXFR	6/1/2015 - 9/1/2015	5.0%	11
5534 : HARRANNICAMA	6/1/2015 - 9/1/2015	3.7%	8

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

5099 : PITSEMPITJHN			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Seminole	Hugo	35.8%	22
Seminole	Turk	33.5%	24
Seminole	Welsh	33.1%	24
Seminole	Wilkes	32.2%	25
McClain	Hugo	29.0%	28
Smith Center	Hugo	27.1%	30
Horseshoe Lake	Hugo	27.1%	30
Mustang OKGE	Hugo	26.9%	30
Redbud	Hugo	26.7%	30
McClain	Turk	26.6%	30
McClain	Welsh	26.3%	30
McClain	Wilkes	25.4%	32
Smith Center	Turk	24.8%	32
Horseshoe Lake	Turk	24.7%	32

5196 : SPSNORTH_STH			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Plant X	Harrington	81.4%	37
Plant X	Nichols	81.4%	37
Tolk	Harrington	80.1%	37
Tolk	Nichols	80.1%	37
Plant X	Blackhawk	78.6%	38
Cunningham	Harrington	78.6%	38
Cunningham	Nichols	78.5%	38
Hobbs	Harrington	78.5%	38
Hobbs	Nichols	78.5%	38
Tolk	Blackhawk	77.3%	39
Cunningham	Blackhawk	75.7%	40
Hobbs	Blackhawk	75.7%	40

5358 : ANACORSWSNOR			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Seminole	Anadarko	13.0%	61
Weleetka	Anadarko	13.0%	62
Hugo	Anadarko	12.7%	63
Mustang OKGE	Anadarko	12.7%	63

5420 : POTXFRHITXFR			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Harrington	Holcomb	35.6%	31
Harrington	Garden City	35.6%	31
Nichols	Holcomb	35.4%	31
Nichols	Garden City	35.4%	31
Blackhawk	Holcomb	29.8%	37
Blackhawk	Garden City	29.7%	37
Plant X	Holcomb	28.7%	38
Plant X	Garden City	28.6%	38

5534 : HARRANNICAMA			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Plant X	Harrington	23.7%	34
Cooke	Harrington	23.3%	34
Massengale	Harrington	23.3%	34
Jones	Harrington	23.3%	34
Plant X	Nichols	23.2%	35
Mustang SPS	Harrington	23.0%	35
Cooke	Nichols	22.8%	35
Massengale	Nichols	22.8%	35
Jones	Nichols	22.8%	35
Mustang SPS	Nichols	22.5%	36
Plant X	Blackhawk	18.4%	44
Cooke	Blackhawk	18.0%	45
Massengale	Blackhawk	18.0%	45
Jones	Blackhawk	18.0%	45
Mustang SPS	Blackhawk	17.7%	45

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.