Southwest Power Pool

System Impact Study SPP-2017-002 For Transmission Service Requested By: WRGS

From NPPD.GGS.1 to ERCOTN

For a Reserved Amount Of 25 MW For 2/1/2017 – 3/1/2017

1. Executive Summary

WRGS has requested a system impact study for monthly firm transmission service from NPPD.GGS.1 to ERCOTN. The period of the transaction is from 2/1/2017 00:00 CST to 3/1/2017 00:00 CST. The request is for reservation 84062085.

The 25 MW transaction from NPPD has an impact on the following flowgates with no AFC: SPSNORTH_STH, SARELHVALLYD, REDWILLMINGO, IATSTRNASHAW, WELLYDWELNWT, HAWXFRHAWXFR, REDMINAXTPOS, and BUKSPRFINHIT. 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

WRGS has requested a system impact study for transmission service from NPPD.GGS.1 to ERCOTN.

There are 8 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanation follows:

- SPSNORTH_STH: SPS North to South stability interface
- SARELHVALLYD: Sarepta – Longwood 345 kV for the loss of Valliant – Lydia 345 kV
- REDWILLMINGO: Red Willow – Mingo 345 kV
- IATSTRNASHAW: Iatan – Stranger Creek 345 kV for the loss of Nashua – Hawthorn 345 kV
- WELLYDWELNWT: Welsh – Lydia 345 kV for the loss of Welsh – Northwest Texarkana 345 kV
- HAWXFRHAWXFR: Hawthorn 345/161 kV transformer for the loss of Hawthorn 345/161 kV transformer
- REDMINAXTPOS: Red Willow – Mingo 345 kV for the loss of Axtell – Post Rock 345 kV
- BUKSPRFINHIT: Buckner – Spearville 345 kV for the loss of Finney – Hitch 345 kV

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 2017 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, eight flowgates require relief. The flowgates and associated amount of relief follows:

Table 1

Flowgate	Duration	Sensitivity	Impact
5196 : SPSNORTH_STH	2/1/17 - 3/1/2017	15.9%	4
5217 : SARELHVALLYD	2/1/17 - 2/3/2017	4.1%	1
5221 : REDWILLMINGO	2/1/17 - 3/1/2017	19.8%	2
5228 : IATSTRNASHAW	2/2/17 - 2/10/2017	14.4%	4
5320 : WELLYDWELNWT	2/1/17 - 3/1/2017	7.9%	2
5497 : HAWXFRHAWXFR	2/1/17 - 3/1/2017	3.6%	1
5526 : REDMINAXTPOS	2/1/17 - 3/1/2017	25.1%	3
5564 : BUKSPRFINHIT	2/1/17 - 3/1/2017	11.7%	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 MW**
Plant X	Harrington	81.89%	5
Plant X	Nichols	81.85%	5
Tolk	Harrington	80.59%	5
Tolk	Nichols	80.55%	5
Cunningham	Harrington	79.03%	5
Cunningham	Nichols	78.99%	5

5217 : SARELHVALLYD			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Lieberman	Fitzhugh	29.84%	3
Stall	Fitzhugh	29.38%	3
Lieberman	AES	29.32%	3
Arsenal Hill	Fitzhugh	29.28%	3
Stall	AES	28.87%	3
Arsenal Hill	AES	28.77%	3
Wilkes	Fitzhugh	28.55%	4
Wilkes	AES	28.03%	4

5221 : REDWILLMINGO			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Garden City	McCook	55.77%	4
Holcomb	McCook	55.25%	4
Garden City	Gentleman	44.52%	4
Holcomb	Gentleman	44.00%	5

5228 : IATSTRNASHAW			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
LEC	Iatan	65.15%	6
JEC	Iatan	65.08%	6
Emporia	Iatan	59.99%	7
LEC	Lake Road	51.59%	8
JEC	Lake Road	51.52%	8
Emporia	Lake Road	46.43%	9

5320 : WELLYDWELNWT			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Hugo	Welsh	64.53%	3
Turk	Welsh	61.97%	3
Hugo	Wilkes	55.76%	4
Hugo	Pirkey	55.54%	4
Turk	Wilkes	53.21%	4
Turk	Pirkey	52.99%	4

5497 : HAWXFRHAWXFR			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Hawthorn	Lake Road	35.82%	3
Hawthorn	Nebraska City	34.63%	3
Hawthorn	Iatan	34.12%	3
Northeast	Lake Road	27.87%	4
Northeast	Nebraska City	26.68%	4
Northeast	Iatan	26.17%	4

5526 : REDMINAXTPOS			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Garden City	McCook	61.18%	5
Holcomb	McCook	60.72%	5
Garden City	Gentleman	51.41%	6
Holcomb	Gentleman	50.95%	6

5564 : BUKSPRFINHIT			
Increment	**Decrement**	**Sensitivity**	**Redispatch MW**
Judson Large	Holcomb	63.21%	2
Judson Large	Garden City	62.37%	2
Mooreland	Holcomb	61.45%	2
Mooreland	Garden City	60.60%	2

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.