



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2016-055  
For Transmission Service  
Requested By:  
WRGS***

***From NPPD.GGS.1 to MEC***

***For a Reserved Amount Of  
50 MW***

***For 12/12/2016 – 4/1/2017***

## **1. Executive Summary**

WRGS has requested a system impact study for monthly firm transmission service from NPPD.GGS.1 to MEC. The period of the transaction is from 12/12/2017 00:00 CST to 4/1/2016 00:00 CDT. The request is for reservations 83856642, 83856659, 83856684, 83856692, and 83856711.

The 50 MW transaction from NPPD has an impact on the following flowgates with no AFC: NEBS56S40S55, SWEGRISWEEXT, FTCRAUSHCHOS, STEGALLXFMR, and GRIS\_LNC. 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 MEC.

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

- NEBS56S40S55: Nebraska City – Sub 3456 345 kV ftlo Sub 3740 – Sub 3455 345 kV
- SWEGRISWEEXT: Sweetwater – Grand Island 345 kV ftlo Sweetwater - Axtell 345 kV
- FTCRAUSHCHOS: Fort Calhoun - Raun 345 kV ftlo Shell Creek - Hoskins 345 kV
- STEGALLXFMR: Stegall 345 kV Transformer
- GRIS\_LNC: Grand Island – Lincoln Interface

### **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, five flowgates require relief. The flowgates and associated amount of relief follows:

**Table 1**

Flowgate	Duration	Avg. Sensitivity	Highest Impact
5508:NEBS56S40S55	12/12/2016 - 4/1/2017	12.42%	6
5530:SWEGRISWEAXT	12/12/2016 - 4/1/2017	19.47%	3
5531:FTCRAUSHCHOS	12/16/2016 - 4/1/2017	8.79%	4
5569:STEGALLXFMR	1/3/2017 - 4/1/2017	4.00%	1
6008:GRIS_LNC	12/12/2016 - 4/1/2017	23.62%	6

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**

5508:NEBS56S40S55			
Increment	Decrement	Sensitivity	Redispatch MW
Sarpy	Nebraska City	47.5%	13
North Omaha	Nebraska City	47.2%	13
Sarpy	Lake Road	26.3%	23
North Omaha	Lake Road	26.0%	23
Sarpy	Iatan	25.2%	24
North Omaha	Iatan	24.9%	24

5530:SWEGRISWEAXT			
Increment	Decrement	Sensitivity	Redispatch MW
Grand Island	GGs	48.1%	6
Whelan Energy Center	GGs	45.7%	7
Grand Island	Laramie	40.2%	7
Whelan Energy Center	Laramie	37.8%	8
Grand Island	McCook	35.5%	8
Whelan Energy Center	McCook	33.1%	9

<b>5531:FTCRAUSHCHOS</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Gavins	North Omaha	31.4%	13
Wisdom	North Omaha	30.9%	13
Gavins	Sarpy	30.6%	13
Wisdom	Sarpy	30.1%	13
Gavins	Nebraska City	27.3%	15
Wisdom	Nebraska City	26.8%	15

<b>5569:STEGALLXFMR</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Oahe	Laramie	31.3%	3
Ft. Peck	Laramie	29.1%	3
Oahe	GGs	15.4%	6
Oahe	McCook	14.0%	7
Ft. Peck	GGs	13.2%	8
Ft. Peck	McCook	11.8%	9

<b>6008:GRIS_LNC</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Sheldon	Grand Island	58.3%	10
Rokeby	Grand Island	58.2%	10
Sheldon	Canaday	56.8%	11
Rokeby	Canaday	56.8%	11
Sheldon	Whelan Energy Center	55.9%	11
Rokeby	Whelan Energy Center	55.8%	11
Nebraska City	Grand Island	55.1%	11
Nebraska City	Canaday	53.7%	11
Nebraska City	Whelan Energy Center	52.7%	11

## **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.