



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2017-047  
For Transmission Service  
Requested By:  
TEA***

***From NPPD.GGS.2 to MEC***

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

***From 01/01/2018  
To 12/01/2018***

## **1. Executive Summary**

TEA has requested a system impact study for monthly firm transmission service from NPPD.GGS.2 to MEC. The period of the transaction is from 01/01/2018 00:00 to 12/01/2018 00:00. The request is for reservation 85795223.

The 50 MW transaction from NPPD.GGS.2 has an impact on the following flowgates with no AFC: NEBS56S40S55, SWEGRISWEEXT, 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**

TEA has requested a system impact study for transmission service from NPPD.GGS.2 to MEC.

There are 3 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- NEBS56S40S55: Nebraska City – Sub 3456 345 kV for the loss of Sub 3740 – Sub 3455 345 kV
- SWEGRISWEEXT: Grand Island – Sweetwater 345 kV for the loss of Sweetwater – Axtell 345 kV
- 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 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, two flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity (%)	Required Relief (MW)
5508:NEBS56S40S55	1/1/2018 00:00 - 12/1/2018 00:00	11.43%	6
5530:SWEGRISWEEXT	1/1/2018 00:00 - 9/1/2018 00:00	18.22%	2
6008:GRIS_LNC	1/1/2018 00:00 - 12/1/2018 00:00	21.89%	5

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**

5508:NEBS56S40S55			
Increment	Decrement	Sensitivity	MW
Sarpy	Nebraska City	46.38%	13
Sarpy	Case County	46.38%	13
North Omaha	Nebraska City	46.06%	13
North Omaha	Case County	46.06%	13
Jones	Nebraska City	45.89%	13
Jones	Case County	45.89%	13
Sarpy	Lake Road	28.42%	21
North Omaha	Lake Road	28.10%	21
Jones	Lake Road	27.94%	21

5530:SWEGRISWEEXT			
Increment	Decrement	Sensitivity	MW
Cogen	Gentleman	44.84%	4
Sheldon	Gentleman	44.58%	4
Rokeby	Gentleman	44.51%	4
Cogen	Laramie	36.96%	5
Sheldon	Laramie	36.70%	5
Rokeby	Laramie	36.63%	5
Cogen	Canaday	16.63%	12
Sheldon	Canaday	16.37%	12
Rokeby	Canaday	16.30%	12

<b>6008:GRIS_LNC</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Rokeby	Canaday	57.22%	9
Sheldon	Canaday	57.17%	9
Cogen	Canaday	53.90%	9
Rokeby	Gentleman	53.84%	9
Sheldon	Gentleman	53.80%	9
Cogen	Gentleman	50.52%	10
Rokeby	Laramie	48.81%	10
Sheldon	Laramie	48.76%	10
Cogen	Laramie	45.49%	11

## **5. Conclusion**

Generation redispatch (and reservation curtailment) 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.