



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2018-001  
For Transmission Service  
Requested By:  
DCT***

***From KCPL to AECL***

***For a Reserved Amount Of  
50 MW  
From 01/07/2018  
To 01/14/2018***

## **1. Executive Summary**

DCT has requested a system impact study for weekly firm transmission service from KCPL to AECL. The period of the transaction is from 01/07/2018 00:00 to 01/14/2018 00:00. The request is for reservation 86112807.

The 50 MW transaction from KCPL has an impact on the following flowgates with no AFC: EASXFREASSTJ, NEBS56S40S55, STMDSJFAFACO. 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**

DCT has requested a system impact study for transmission service from KCPL to AECI.

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

- EASXFREASSTJ: East Town XFR 345/161 kV for the loss of the East Town – St. Joe 345 kV.
- NEBS56S40S55: Nebraska City – Sub 3456 345 kV for the loss of Sub 3740 – Sub 3455 345 kV
- STMDSJFAFACO: St Joe – Avenue City 161 kV for the loss of Fairport – St Joe – Cooper 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, three flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity (%)	Required Relief (MW)
5496:EASXFREASSTJ	1/8/2018 00:00 - 1/12/2018 00:00	10.91%	5
5508:NEBS56S40S55	1/7/2018 00:00 - 1/14/2018 00:00	3.38%	1
6152:STMDSJFAFACO	1/8/2018 00:00 - 1/11/2018 00:00	6.69%	3

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**

5496:EASXFREASSTJ			
Increment	Decrement	Sensitivity	MW
Lake Road	latan	49.77%	10
Lake Road	Lawrence Energy Center	43.67%	11
Lake Road	Emporia Energy Center	42.60%	12
Cass County	latan	16.21%	31
Sarpy	latan	16.16%	31
Cass County	Lawrence Energy Center	10.11%	49
Sarpy	Lawrence Energy Center	10.06%	50
Cass County	Emporia Energy Center	9.04%	55
Sarpy	Emporia Energy Center	8.99%	56

5508:NEBS56S40S55			
Increment	Decrement	Sensitivity	MW
Sarpy	Cass County	46.28%	2
North Omaha	Cass County	45.95%	2
Jones	Cass County	45.79%	2
Sarpy	Lake Road	28.31%	4
North Omaha	Lake Road	27.98%	4
Sarpy	latan	27.93%	4
Jones	Lake Road	27.83%	4
North Omaha	latan	27.61%	4
Jones	latan	27.45%	4

<b>6152:STMDSJFAFACO</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Exirawa	Lake Road	16.99%	18
North Omaha	Lake Road	11.61%	26
Sarpy	Lake Road	11.54%	26
Exirawa	latan	11.01%	27
Exirawa	Lawrence Energy Center	9.40%	32
North Omaha	latan	5.62%	53
Sarpy	latan	5.55%	54
North Omaha	Lawrence Energy Center	4.02%	75
Sarpy	Lawrence Energy Center	3.95%	76

## **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.