



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2016-037  
For Transmission Service  
Requested By:  
MOWR***

***From KCPL to MPS***

***For a Reserved Amount Of  
18 MW  
For 12/1/2016 – 6/1/2017***

## **1. Executive Summary**

MOWR has requested a system impact study for monthly firm transmission service from KCPL to MPS. The period of the transaction is from 12/1/2016 00:00 CDT to 6/1/2017 00:00 CDT. The request is for reservation 83293296.

The 18 MW transaction from KCPL has an impact on the following flowgates with no AFC: NORCROGRACRO, NASXFRNASHAW, IATSTRSTJHAW, EASXFREASSTJ, and IATAN\_EASTO. 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**

MOWR has requested a system impact study for transmission service from KCPL to MPS.

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

- NORCROGRACRO: Northeast – Crosstown 161kV FTLO Grand Ave - Crosstown 161kV.
- NASXFRNASHAW: Nashua 345/161 Xfmr kV FTLO Nashua to Hawthorne 345kV
- IATSTRSTJHAW: Iatan – Stranger 345kV FTLO Nashua – Hawthorn 345kV
- EASXFREASSTJ: Easttown 345/161kV Xfmr FTLO Easttown – St. Joe 345kV
- IATAN\_EASTO: Iatan – Easttown 345kV PTDF flowgate.

### **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, seven flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity	Impact
5577:NASXFRNASHAW	1/1/2017-4/1/2017	3.29%	1
5228:IATSTRNASHAW	12/1/2016-5/1/2017	5.48%	1
5496:EASXFREASSTJ	12/1/2016-6/1/2017	7.24%	1
5499:NORCROGRACRO	12/1/2016-1/1/2017	4.50%	1
6104:IATAN_EASTO	12/1/2016-6/1/2017	9.69%	2

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**

5499:NORCROGRACRO			
Increment	Decrement	Sensitivity	Redispatch
Osawa CT	Northeast	26.82%	4
S. Harper	Northeast	26.78%	4
West Gardner	Northeast	26.70%	4
Osawa CT	Hawthorne	15.81%	6
S. Harper	Hawthorne	15.76%	6
West Gardner	Hawthorne	15.69%	6
Osawa CT	Blue Valley	12.55%	8
S. Harper	Blue Valley	12.50%	8
West Gardner	Blue Valley	12.43%	8
5577:NASXFRNASHAW			
Increment	Decrement	Sensitivity	Redispatch
Northeast	Lake Road	28.34%	4
Hawthorne	Lake Road	27.49%	4
Sibley	Lake Road	27.45%	4
Northeast	Iatan	25.01%	4
Hawthorne	Iatan	24.16%	4
Sibley	Iatan	24.13%	4
Northeast	Nebraska City	21.57%	5
Hawthorne	Nebraska City	20.73%	5
Sibley	Nebraska City	20.69%	5

<b>5228:IATSTRSTJHAW</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch</b>
LEC	Iatan	61.01%	2
JEC	Iatan	61.01%	2
TEC	Iatan	58.71%	2
LEC	Lake Road	50.11%	2
JEC	Lake Road	50.11%	2
TEC	Lake Road	47.81%	2
LEC	Nebraska City	35.37%	3
JEC	Nebraska City	35.36%	3
TEC	Nebraska City	33.06%	3
<b>5496:EASXFREASSTJ</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch</b>
Lake Road	Iatan	51.78%	2
Nebraska City	Iatan	19.26%	5
Cass County	Iatan	18.87%	5
Lake Road	LEC	45.37%	2
Nebraska City	LEC	12.85%	8
Cass County	LEC	12.46%	8
Lake Road	JEC	45.01%	2
Nebraska City	JEC	12.50%	8
Cass County	JEC	12.11%	8
<b>6104:IATAN_EASTO</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch</b>
Lake Road	Iatan	63.23%	3
Nebraska City	Iatan	44.77%	4
Cass County	Iatan	43.70%	5
Lake Road	LEC	47.41%	4
Nebraska City	LEC	28.96%	7
Cass County	LEC	27.88%	7
Lake Road	JEC	47.40%	4
Nebraska City	JEC	28.95%	7
Cass County	JEC	27.87%	7

## **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.