



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2016-045  
For Transmission Service  
Requested By:  
KMEA***

***From WR.FR2W.TSA to  
SECI\_KMEA\_GARC***

***For a Reserved Amount Of  
15 MW  
For 12/1/2016 – 11/1/2017***

## **1. Executive Summary**

KMEA has requested a system impact study for monthly firm transmission service from WR.FR2W.TSA to SECI\_KMEA\_GARC. The period of the transaction is from 12/1/2016 00:00 CST to 11/1/2017 00:00 CDT. The request is for reservation 83514062.

The 15 MW transaction from WR has an impact on the following flowgates with no AFC: FPLWODNINBEA, SETSCOHOLXFR, WDRCIMSPRNRW, REDWILLMINGO, REDMINAXTPOS, GENTLMREDWIL, 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**

KMEA has requested a system impact study for transmission service from WR to SECI.

There are 7 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- FPLWODNINBEA: FPL Switch to Woodward 138 kV FTLO Nine Mile to Bearcat 138 kV
- SETSCOHOLXFR: Setab to Scott City 115 kV FTLO Holcomb 345/115 kV Transformer
- WDRCIMSPRNRW: Woodring to Mathewson 345 kV FTLO Northwest to Spring Creek 345 kV
- REDWILLMINGO: Red Willow to Mingo Interface
- REDMINAXTPOS: Red Willow to Mingo 345 kV FTLO Post Rock to Axtell 345 kV
- GENTLMREDWIL: Gentleman to Red Willow Interface
- IATAN\_EASTO: Iatan to Eastowne 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, seven flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity	Impact
5018:FPLWODNINBEA	12/1/2016 - 10/1/2017	3.32%	1
5038:SETSCOHOLXFR	12/1/2016 - 11/1/2017	14.85%	2
5214:WDRCIMSPRNRW	12/1/2016 - 11/1/2017	16.19%	2
5221:REDWILLMINGO	1/1/2017 - 11/1/2017	12.08%	2
5526:REDMINAXTPOS	7/1/2017 - 8/1/2017	10.62%	2
6007:GENTLMREDWIL	1/1/2017 - 10/1/2017	7.00%	1
6104:IATAN_EASTO	1/1/2017 - 10/1/2017	4.14%	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**

5018:FPLWODNINBEA			
Increment	Decrement	Sensitivity	Redispatch MW
Plant X	FPL Wind	46.2%	2
Tolk	FPL Wind	46.2%	2
Plant X	Mooreland Plant	45.6%	2
Tolk	Mooreland Plant	45.6%	2
Plant X	Sleeping Bear Wind	35.6%	3
Tolk	Sleeping Bear Wind	35.6%	3
Plant X	Buffalo Bear Wind	29.4%	3
Tolk	Buffalo Bear Wind	29.4%	3

5038:SETSCOHOLXFR			
Increment	Decrement	Sensitivity	Redispatch MW
Garden City	Central Plains Wind	57.4%	3
Holcomb	Central Plains Wind	53.4%	4
Garden City	Buffalo Dunes	49.7%	4
Garden City	McCook	48.4%	4
Garden City	Cimarron Wind	48.2%	4
Holcomb	Buffalo Dunes	45.7%	4
Holcomb	McCook	44.3%	5
Holcomb	Cimarron Wind	44.2%	5

<b>5214:WDRCIMSPRNRW</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Mustang OKGE	Chisolm View	49.4%	4
SmithCo	Chisolm View	49.1%	4
McClain	Chisolm View	48.7%	4
Mustang OKGE	Grant County	43.6%	5
SmithCo	Grant County	43.3%	5
McClain	Grant County	42.9%	5
Mustang OKGE	Sooner	37.1%	5
SmithCo	Sooner	36.9%	5
McClain	Sooner	36.5%	5

<b>5221:REDWILLMINGO</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Garden City	McCook	55.9%	4
Holcomb	McCook	55.3%	4
Garden City	Gentleman	44.6%	4
Holcomb	Gentleman	44.1%	5
Garden City	Laramie	42.3%	5
Holcomb	Laramie	41.7%	5

<b>5526:REDMINAXTPOS</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Garden City	McCook	61.3%	3
Holcomb	McCook	60.9%	3
Garden City	Gentleman	51.6%	4
Holcomb	Gentleman	51.1%	4
Garden City	Laramie	49.0%	4
Holcomb	Laramie	48.5%	4

<b>6007:GENTLMREDWIL</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
McCook	Gentleman	54.6%	2
McCook	Laramie	49.9%	2
McCook	Broken Bow	41.6%	2
Garden City	Gentleman	39.2%	3
Holcomb	Gentleman	38.8%	3
Garden City	Laramie	34.5%	3
Holcomb	Laramie	34.1%	3
Garden City	Broken Bow	26.2%	4
Holcomb	Broken Bow	25.8%	4

<b>6104:IATAN_EASTO</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>Redispatch MW</b>
Lake Road	Iatan	63.1%	2
Lake Road	Lawrence Energy Center	48.0%	2
Lake Road	Jeffrey Energy Center	47.4%	2
Nebraska City	Iatan	41.3%	2
Cass County	Iatan	40.7%	2
Nebraska City	Lawrence Energy Center	26.2%	4
Cass County	Lawrence Energy Center	25.6%	4
Nebraska City	Jeffrey Energy Center	25.6%	4
Cass County	Jeffrey Energy Center	25.0%	4

## **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.