



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2014-022  
For Transmission Service  
Requested By:  
KMEA***

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

***For a Reserved Amount Of  
5 MW  
For 1/1/2015 – 12/30/2015***

## **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 1/1/2015 00:00 CST to 12/30/2015 00:00 CST. The request is for reservation 80487791.

The 5 MW transaction from WR.FR2W.TSA has an impact on the following flowgates with no AFC: WDRCIMSPRNRW, SPEJUDHOLPLY, MEDSUNSPEXFR, and GENTLMREDWIL. 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.FR2W.TSA to SECI\_KMEA\_GARC.

There are 4 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- WDRCIMSPRNRW: Woodring – Cimarron 345 kV line for the loss of the Spring Creek – NW Station 345 kV line
- SPEJUDHOLPLY: Spearville – Judson Large 115 kV line for the loss of the Holcomb – Plymell 115 kV line
- MEDSUNSPEXFR: Medicine Lodge – Sun City 138 kV line for the loss of the Spearville 230/115 kV transformer
- GENTLMREDWIL: Gentleman – Red Willow 345 kV line

### **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 2014 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, four flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

Flowgate	Duration	Sensitivity %	Impact MW
5214 : WDRCIMSPRNRW	2/1/2015 - 9/1/2015	13.6%	1
5436 : SPEJUDHOLPLY	1/1/2015 - 1/1/2016	16.6%	1
5558 : MEDSUNSPEXFR	2/1/2015 - 1/1/2016	16.6%	1
6007 : GENTLMREDWIL	1/1/2015 - 1/1/2016	10.2%	1

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**

5214 : WDRCIMSPRNRW			
Increment	Decrement	Sensitivity (%)	Redispatch Amount (MW)
Mustang OKGE	Chisholm Wind	48.2%	2
McClain	Chisholm Wind	48.1%	2
Smith Center	Chisholm Wind	48.0%	2
Anadarko	Chisholm Wind	47.9%	2
Mustang OKGE	Sooner	33.0%	3
Mustang OKGE	Spring Creek	32.9%	3
McClain	Sooner	32.9%	3
McClain	Spring Creek	32.9%	3
Smith Center	Sooner	32.8%	3
Smith Center	Spring Creek	32.7%	3
Anadarko	Sooner	32.7%	3
Anadarko	Spring Creek	32.7%	3

5436 : SPEJUDHOLPLY			
Increment	Decrement	Sensitivity (%)	Redispatch Amount (MW)
Fort Dodge	Goodman	67.7%	1
Fort Dodge	Whelan Energy Center	66.9%	1
Cimarron Plant	Goodman	34.0%	3
Cimarron Plant	Whelan Energy Center	33.2%	3

<b>5558 : MEDSUNSPEXFR</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity (%)</b>	<b>Redispatch Amount (MW)</b>
Fort Dodge	Flat Ridge Wind	53.1%	2
Fort Dodge	Murray Gill EC	51.4%	2
Fort Dodge	Gordon Evans EC	51.3%	2
Cimarron Plant	Flat Ridge Wind	23.6%	4
Cimarron Plant	Murray Gill EC	21.9%	5
Cimarron Plant	Gordon Evans EC	21.8%	5
Holcomb	Flat Ridge Wind	6.2%	16
Holcomb	Murray Gill EC	4.5%	22
Holcomb	Gordon Evans EC	4.4%	23

<b>6007 : GENTLMREDWIL</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity (%)</b>	<b>Redispatch Amount (MW)</b>
McCook	Gentleman	54.7%	2
Garden City	Gentleman	39.3%	3
McCook	Whelan Energy Center	38.9%	3
Holcomb	Gentleman	38.9%	3
Garden City	Whelan Energy Center	23.5%	4
Holcomb	Whelan Energy Center	23.1%	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.