



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2012-006  
For Transmission Service  
Requested By:  
EXGN***

***From OKGE.MCCLAIN to ERCOTN***

***For a Reserved Amount Of  
120 MW  
From 7/1/2012  
To 9/1/2012***

## **1. Executive Summary**

EXGN has requested a system impact study for monthly firm transmission service from OKGE.MCCLAIN to ERCOTN. The period of the transaction is from 6/30/2012 23:00 CST to 8/31/2012 23:00 CST. The request is for reservations 77055628 and 77055648.

The 120 MW transaction from OKGE.MCCLAIN has an impact on the following flowgates with no AFC: MIDFRNPHAWET, SEMXFRSEMFR, PITVALELDLON, CEDCANMIDFRA, TUTCORGRALAW, POTXFRHITXFR, 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**

EXGN has requested a system impact study for transmission service from OKGE.MCCLAIN to ERCOTN.

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

- MIDFRNPHAWET: Midwest – Franklin Switch 138 kV line for the loss of the Pharoah – Wetumka 138 kV line.
- SEMXFRSEMFR: Seminole 345/138 kV transformer for the loss of the Seminole 345/138 kV transformer.
- PITVALELDLON: Pittsburg – Valliant 345 kV line for the loss of the Sarepta – Longwood 345 kV line.
- CEDCANMIDFRA: Cedar Lane – Canadian 138 kV line for the loss of the Midwest – Franklin 138 kV line.
- TUTCORGRALAW: Tuttle - Cornville 138 kV line for the loss of the Gracemont – Lawson East 345 kV line.
- POTXFRHITXFR: Potter 345/230 kV transformer for the loss of the Hitchland 345/230 kV transformer.
- GENTLMREDWIL: Gentleman – Red Willow 345 kV line.

### **3. Study Methodology**

#### **A. Description**

Southwest Power Pool used Managing and Utilizing System Transmission (MUST) to obtain possible unit pairings that would relieve the constraint. MUST 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 2012 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 Managing and Utilizing System Transmission (MUST), 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 MUST 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)
5096:MIDFRNPHAWET	7/1/2012 - 9/1/2012	4.9%	6
5324:CEDCANMIDFRA	7/1/2012 - 9/1/2012	12.8%	15
6007:GENTLMREDWIL	7/1/2012 - 9/1/2012	3.1%	1
5101:SEMFRSEMFR	7/1/2012 - 9/1/2012	3.0%	3
5262:PITVALELDLON	7/1/2012 - 9/1/2012	3.5%	4
5414:TUTCORGRALAW	7/1/2012 - 9/1/2012	13.5%	15
5420:POTXFRHITXFR	7/1/2012 - 9/1/2012	7.7%	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**

5096 MIDFRNPHAWET			
Increment	Decrement	Sensitivity	MW
WFEC Anadarko/Genco/ORME	OKGE McClain	14%	43.1
WFEC Anadarko/Genco/ORME	OKGE Horseshoe Lake	14%	43.5
WFEC Anadarko/Genco/ORME	OKGE Seminole	14%	44.4
CSWS Southwestern Station	OKGE McClain	10%	58.8
CSWS Southwestern Station	OKGE Horseshoe Lake	10%	59.5
CSWS Southwestern Station	OKGE Seminole	10%	61.3
CSWS Comanche	OKGE McClain	7%	86.9
CSWS Comanche	OKGE Horseshoe Lake	7%	88.6
CSWS Comanche	OKGE Seminole	6%	92.6

5101 SEMFRSEMFR			
Increment	Decrement	Sensitivity	MW
OKGE Seminole 1	OKGE Seminole 2 & 3	65%	4.6
OKGE Seminole 1	OKGE Redbud	55%	5.5
OKGE Seminole 1	OKGE Sooner	53%	5.7
CSWS Weleetka	OKGE Seminole 2 & 3	22%	13.9
CSWS Weleetka	OKGE Redbud	11%	27.1
CSWS Weleetka	OKGE Sooner	9%	31.7
OKGE Horseshoe Lake	OKGE Seminole 2 & 3	17%	17.8
OKGE Horseshoe Lake	OKGE Redbud	6%	47.7
OKGE Horseshoe Lake	OKGE Sooner	5%	64.0

<b>5262 PITVALELDLON</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
CSWS Welsh	OKGE Seminole	38%	10.7
CSWS Welsh	OKGE Redbud	34%	11.6
CSWS Welsh	OKGE McClain	34%	11.6
CSWS Wilkes	OKGE Seminole	36%	11.0
CSWS Wilkes	OKGE Redbud	33%	12.1
CSWS Wilkes	OKGE McClain	33%	12.1
CSWS Pirkey	OKGE Seminole	35%	11.3
CSWS Pirkey	OKGE Redbud	32%	12.4
CSWS Pirkey	OKGE McClain	32%	12.4

<b>5324 CEDCANMIDFRA</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
WFEC Anadarko/GENCO/ORME	OKGE McClain	20%	75.8
WFEC Anadarko/GENCO/ORME	OKGE Smith Center	15%	101.9
WFEC Anadarko/GENCO/ORME	OKGE Mustang	14%	105.8
CSWS Southwestern Station	OKGE McClain	16%	91.6
CSWS Southwestern Station	OKGE Smith Center	11%	132.6
CSWS Southwestern Station	OKGE Mustang	11%	139.2
OKGE Weleetka	OKGE McClain	16%	92.1
OKGE Weleetka	OKGE Smith Center	11%	133.8
OKGE Weleetka	OKGE Mustang	11%	140.5

<b>5414 TUTCORGRALAW</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
CSWS Southwestern Station	OKGE Mustang	13%	111.8
CSWS Southwestern Station	OKGE Smith Center	13%	113.7
CSWS Southwestern Station	OKGE McClain	13%	118.9
WFEC Anadarko/GENCO/ORME	OKGE Mustang	13%	114.2
WFEC Anadarko/GENCO/ORME	OKGE Smith Center	13%	116.2
WFEC Anadarko/GENCO/ORME	OKGE McClain	12%	121.6
CSWS Comanche	OKGE Mustang	9%	169.2
CSWS Comanche	OKGE Smith Center	9%	173.5
CSWS Comanche	OKGE McClain	8%	185.9

<b>5420 POTXFRHITXFR</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
SPS Harrington	SECI Holcomb	40%	7.5
SPS Harrington	SECI Garden City	40%	7.5
SPS Harrington	SECI Colby	36%	8.2
SPS Nichols	SECI Holcomb	39%	7.8
SPS Nichols	SECI Garden City	38%	7.8
SPS Nichols	SECI Colby	35%	8.6
SPS Plant X	SECI Holcomb	37%	8.1
SPS Plant X	SECI Garden City	37%	8.1
SPS Plant X	SECI Colby	34%	9.0

<b>GENTLMREDWIL</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
NPPD McCook	NPPD Gentleman	57%	1.8
NPPD McCook	NPPD Canaday	42%	2.4
NPPD McCook	NPPD Sheldon	40%	2.5
SECI Garden City	NPPD Gentleman	50%	2.0
SECI Garden City	NPPD Canaday	35%	2.9
SECI Garden City	NPPD Sheldon	33%	3.1
SECI Holcomb	NPPD Gentleman	50%	2.0
SECI Holcomb	NPPD Canaday	35%	2.9
SECI Holcomb	NPPD Sheldon	32%	3.1

## **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, 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.