



**SPP** *Southwest  
Power Pool*

***System Impact Study  
SPP-2013-007  
For Transmission Service  
Requested By:  
OGE***

***From CSWS.ONETA to  
OKGE\_OKGE***

***For a Reserved Amount Of  
150 MW  
From 5/1/2013  
To 9/1/2013***

## **1. Executive Summary**

OGE has requested a system impact study for monthly firm transmission service from CSWS.ONETA to OKGE\_OKGE. The period of the transaction is from 5/1/2013 00:00 to 9/1/2013 00:00. The request is for reservation 77894215

The 150 MW transaction from CSWS.ONETA has an impact on the following flowgates with no AFC: REDARCREDARC, WDRCIMSPRNRW, ONEBANNESTUL, OKMHENOKMKEL, WELLYDWELNWT, ONEBANCLKCHA, and LYDIAVALIANT. 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**

OGE has requested a system impact study for transmission service from CSWS.ONETA to OKGE\_OKGE.

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

- REDARCREDARC: Redbud – Arcadia 345 kV ckt. 1 for the loss of the Redbud – Arcadia 345 kV ckt. 2.
- WDRCIMSPRNRW: Woodring – Cimarron 345 kV line for the loss of the Spring Creek – NW Station 345 kV line.
- ONEBANNESTUL: Oneta – Broken Arrow North 138 kV line for the loss of the NW Station – Tulsa North 345 kV line.
- OKMHENOKMKEL: Okmulgee – Henryetta 138 kV line for the loss of the Okmulgee – Kelco 138 kV line.
- WELLYDWELNWT: Welsh – Lydia 345 kV line for the loss of the Welsh – NW Texarkana 345 kV line.
- ONEBANCLKCHA: Oneta – Broken Arrow North 138 kV line for the loss of the Clarksville – Chambers 345 kV line.
- LYDIAVALIANT: Lydia – Valliant 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 2013 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 (%)	Required Relief (MW)
5207 : REDARCREARC	5/1/2013 - 9/1/2013	16.2%	24
5214 : WDRCIMSPNRW	5/1/2013 - 9/1/2013	10.0%	15
5241 : ONEBANNESTUL	5/1/2013 - 9/1/2013	6.6%	10
5242 : OKMHENOKMKEL	5/1/2013 - 6/1/2013	3.4%	5
5320 : WELLYDWELNWT	5/1/2013 - 6/1/2013	4.0%	6
5413 : ONEBANCLKCHA	5/1/2013 - 9/1/2013	6.1%	9
5419 : LYDIAVALIANT	5/1/2013 - 7/1/2013	5.3%	8

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**

5207 : REDARCREARC			
Increment	Decrement	Sensitivity	MW
Spring Creek	Redbud	93.4%	26
Mustang	Redbud	86.9%	28
Horseshoe Lake	Redbud	86.9%	28
Smith	Redbud	86.8%	28
Spring Creek	Muskogee	35.4%	68
Spring Creek	AES	31.8%	76
Mustang	Muskogee	29.0%	83
Horseshoe Lake	Muskogee	28.9%	83
Smith	Muskogee	28.8%	83
Mustang	AES	25.4%	95
Horseshoe Lake	AES	25.3%	95
Smith	AES	25.2%	95

<b>5214 : WDRCIMSPNRW</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
McClain	Sooner	48.2%	31
Mustang	Sooner	47.5%	32
Smith	Sooner	47.3%	32
Seminole	Sooner	46.5%	32
McClain	South 4th St.	41.8%	36
Mustang	South 4th St.	41.1%	36
Smith	South 4th St.	41.0%	37
Seminole	South 4th St.	40.2%	37

<b>5241 : ONEBANNESTUL</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
NE Gas CSWS	Calpine Oneta	22.0%	45
NE Gas CSWS	NE Coal CSWS	18.1%	55
NE Gas CSWS	Riverside Station CSWS	15.4%	65
NE Gas CSWS	Tulsa Power CSWS	14.5%	69
Flint Creek	Calpine Oneta	13.5%	74
NE Gas CSWS	Redbud OKGE	13.0%	77
NE Gas CSWS	Muskogee OKGE	12.9%	78
GRDA17 Unit 1	NE Coal CSWS	12.6%	79
GRDA17 Unit 2	NE Coal CSWS	11.3%	89

<b>5242 : OKMHENOKMKEL</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Weleetka CSWS	Riverside Station CSWS	32.1%	16
Weleetka CSWS	Tulsa Power CSWS	30.9%	16
Weleetka CSWS	Calpine Oneta	29.8%	17
Weleetka CSWS	NE Coal CSWS	28.9%	17
Weleetka CSWS	NE Gas CSWS	28.6%	17
Weleetka CSWS	Muskogee	28.0%	18
Seminole 1	Riverside Station CSWS	11.3%	44
Seminole 1	Tulsa Power CSWS	10.1%	49

<b>5320 : WELLYDWELNWT</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Seminole	AES	15.8%	38
Tinker	AES	13.9%	43
McClain	AES	13.8%	43
Smith	AES	13.4%	45
Seminole	Muskogee	11.9%	50
Tinker	Muskogee	10.0%	60
McClain	Muskogee	9.9%	61
Smith	Muskogee	9.4%	64

<b>5413 : ONEBANCLKCHA</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Tulsa Power CSWS	Calpine Oneta	9.6%	93
Riverside Station CSWS	Calpine Oneta	7.4%	121
Tulsa Power CSWS	NE Coal CSWS	6.8%	133
Weleetka CSWS	Calpine Oneta	5.9%	153
Tulsa Power CSWS	Coffeyville GRDA	5.6%	160
Horseshoe Lake	Calpine Oneta	5.2%	172
Seminole 1	Calpine Oneta	5.1%	176

<b>5419 : LYDIAVALIANT</b>			
<b>Increment</b>	<b>Decrement</b>	<b>Sensitivity</b>	<b>MW</b>
Seminole	AES	20.2%	40
Tinker	AES	17.6%	45
McClain	AES	17.5%	46
Smith	AES	17.0%	47
Seminole	Muskogee	15.2%	52
Tinker	Muskogee	12.7%	63
McClain	Muskogee	12.6%	64
Smith	Muskogee	12.0%	66

## **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.