



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2007-006  
For Transmission Service  
Requested By:  
American Electric Power***

***From OKGE to AEPW***

***For a Reserved Amount Of  
100 MW  
From 05/15/07  
To 10/15/07***

## **1. Executive Summary**

American Electric Power has requested a system impact study for monthly firm transmission service from OKGE to AEPW. The period of the transaction is from 05/15/2007 to 10/15/2007. The request is for reservation 1219649.

The 100 MW transaction from OKGE to AEPW has an impact on the following flowgates with no AFC: MANIPMDOLSWS, CRAASHVALLYD, HPPVALPITVAL, KILCREWOOWIC, LONSARPITVAL, VALHUGVALLYD, and WEBRERICHARD. 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**

American Electric Power has requested a system impact study for transmission service from OKGE to AEPW.

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

- MANIPMDOLSWS: Mansfield to International Paper 138 kV line for the loss of Dolet Hills to S.W. Shreveport 345 kV line
- CRAASHVALLYD: Craig Junction to Ashdown West 138 kV line for the loss of Valliant to Lydia 345 kV line
- HPPVALPITVAL: Hugo to Valiant 138kV line for the loss of Pittsburg to Valiant 345kV line
- KILCREWOOWIC: Kildare to Creswell 138 kV line for the loss of Woodring to Wichita 345 KV line

LONSARPITVAL: Lone Oak to Sardis 138 kV line for the loss of Pittsburg to Valliant 345 kV line

VALHUGVALLYD: Valliant to Hugo-Tap 138 kV line for the loss of Valliant to Lydia 345 kV line

WEBRERICHARD: Webre to Richard 500 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 2006 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, seven flowgates require relief. The flowgates and associated amount of relief are as follows:

**Table 1**

<b>Flowgates</b>	<b>Sensitivity (%)</b>	<b>Duration</b>	<b>Required Relief (MW)</b>
MANIPMDOLSWS	3.3	May – Oct 2007	3
CRAASHVALLYD	9.8	May – Oct 2007	10
HPPVALPITVAL	8.8	May – Oct 2007	9
KILCREWOOWIC	3.2	May – Oct 2007	3
LONSARPITVAL	4.5	May – Oct 2007	5
VALHUGVALLYD	6.8	May – Oct 2007	7
*WEBRERICHARD	5.3	May – Oct 2007	5

\* WEBRERICHARD is an ENTERGY owned flowgate. The required relief for this constraint must be agreed upon by AEPW and Entergy, and coordinated with SPP. Proof of the agreement between AEPW and Entergy must be presented to SPP.

Tables 2 and 3 in conjunction display a list of generator pairs that are possible relief options for the flowgates in question.

**Table 2**

Source	Sink	MANIPMDOLSWS Sensitivity (%)	CRAASHVALLYD Sensitivity (%)	HPPVALPITVAL Sensitivity (%)
Wilkes (AEPW)	SWS (AEPW)	6.3	17.0	16.7
Welsh (AEPW)	SWS (AEPW)	5.7	17.2	17.0
Welsh (AEPW)	NES (AEPW)	6.7	14.5	14.0
Wilkes (AEPW)	NES (AEPW)	7.3	14.3	13.6
Wilkes (AEPW)	RSS (AEPW)	7.1	14.9	14.1

**Table 3**

Source	Sink	LONSARPITVAL Sensitivity (%)	VALHUGVALLYD Sensitivity (%)	KILCREWOOWIC Sensitivity (%)
Wilkes (AEPW)	SWS (AEPW)	7.4	10.2	-
Welsh (AEPW)	SWS (AEPW)	7.6	10.3	-
Welsh (AEPW)	NES (AEPW)	7.5	9.0	-
Wilkes (AEPW)	NES (AEPW)	7.2	8.8	-
Wilkes (AEPW)	RSS (AEPW)	7.7	8.9	-
Winfld 2 (WR)	LEC (WR)	-	-	33.0
Winfld 2(WR)	TEC (WR)	-	-	33.0
Winfld 2(WR)	JEC (WR)	-	-	33.0
Winfld 2(WR)	HEC (WR)	-	-	33.0
Redbud (OKGE)	CONTEMPG (OKGE)			14.0

Tables 4 and 5 in conjunction display the amount of redispatch capacity necessary for each generator pair.

**Table 4**

Source	Sink	MANIPMDOLSWS Relief (MW)	CRAASHVALLYD Relief (MW)	HPPVALPITVAL Relief (MW)
Wilkes (AEPW)	SWS (AEPW)	48	59	54
Welsh (AEPW)	SWS (AEPW)	53	59	53
Welsh (AEPW)	NES (AEPW)	45	67	64
Wilkes (AEPW)	NES (AEPW)	41	67	66
Wilkes (AEPW)	RSS (AEPW)	42	67	64

**Table 5**

Source	Sink	LONSARPITVAL Relief (MW)	VALHUGVALLYD Relief (MW)	KILCREWOOWIC Relief (MW)
Wilkes (AEPW)	SWS (AEPW)	68	68	-
Welsh (AEPW)	SWS (AEPW)	66	68	-
Welsh (AEPW)	NES (AEPW)	67	78	-
Wilkes (AEPW)	NES (AEPW)	69	80	-
Wilkes (AEPW)	RSS (AEPW)	65	79	-
Winfld 2 (WR)	LEC (WR)	-	-	9
Winfld 2(WR)	TEC (WR)	-	-	9
Winfld 2(WR)	JEC (WR)	-	-	9
Winfld 2(WR)	HEC (WR)	-	-	9
Redbud (OKGE)	CONTEMPG (OKGE)	-	-	21

## **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 including relief options made with Entergy for the WEBRERICHARD flowgate must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.