



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2006-030  
For Transmission Service  
Requested By:  
American Electric Power***

***From AEPW to AEPW***

***For a Reserved Amount Of  
175 MW  
From 03/22/06  
To 03/23/06***

# ***SPP Transmission Planning***

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## **1. Executive Summary**

American Electric Power has requested a system impact study for daily firm transmission service from AEPW to AEPW. The period of the transaction is from 03/22/06 to 03/23/06. The request is for reservation 1054256 for the amount of 175 MW.

The 175 MW transaction from AEPW to AEPW has an impact on the following flowgates with no AFC: CRAASHVALLYD, ELDLONVALLYD, HPPVALPITVAL, VALLYDELDLON, and PECXFRMUSCLA. To provide the AFC necessary for this transfer, the impact on these flowgates must be relieved.

After studying many scenarios using curtailment of reservations and 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 AEPW to AEPW.

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

- CRAASHVALLYD: Craig Junction to Ashdown West 138 kV line for the loss of Valliant to Lydia 345 kV line
- ELDLONVALLYD: Eldorado to Longwood 345 kV line for the loss of Valliant to Lydia 345 kV line
- HPPVALPITVAL: Hugo Power Plant to Valliant 138 kV for the loss of Pittsburg to Valliant 345 kV
- VALLYDELDLON: Valliant to Lydia 345 kV line for the loss of Eldorado to Longwood 345 kV line
- PECXFRMUSCLA: Pecan 345/161 kV XFR for the loss of Muskogee to Clarksville 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 2005 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 requests 1054256, five flowgates require relief. The flowgates and associated amount of relief is as follows:

**Table 1**

<b>Flowgates</b>	<b>Sensitivity (%)</b>	<b>Duration</b>	<b>Required Relief (MW)</b>
CRAASHVALLYD	4.8	March 22	8
ELDLONVALLYD	13.2	March 22	23
HPPVALPITVAL	3.9	March 22	7
VALLYDELDLON	17.0	March 22	30
PECXFRMUSCLA	4.1	March 22	7

Table 2 displays a list of generator pairs that are possible relief options for the flowgates in question.

**Table 2**

<b>Source</b>	<b>Sink</b>	<b>CRAASHVALLYD Sensitivity (%)</b>	<b>ELDLONVALLYD Sensitivity (%)</b>	<b>HPPVALPITVAL Sensitivity (%)</b>	<b>VALLYDELDLON Sensitivity (%)</b>
Wilkes (AEPW)	SWS (AEPW)	16.5	37.8	14.9	52.7
Welsh (AEPW)	SWS (AEPW)	16.7	37.9	16	55.7
Welsh (AEPW)	NES (AEPW)	14.1	39.3	13.1	50.1
Wilkes (AEPW)	NES (AEPW)	13.9	40.2	11.9	47.2
Wilkes (AEPW)	RSS (AEPW)	14.5	39.9	12.4	9

<b>Source</b>	<b>Sink</b>	<b>PECXFRMUSCLA Sensitivity (%)</b>
NES (AEPW)	Welsh (AEPW)	4.0
NES (AEPW)	Wilkes (AEPW)	3.9
RSS (AEPW)	Wilkes (AEPW)	2.5
RSS (AEPW)	Welsh (AEPW)	2.5
NES (AEPW)	Knox Lee(AEPW)	3.8

Table 3 displays the amount of redispatch capacity necessary for each generator pair.

**Table 3**

Source	Sink	CRAASHVALLYD Relief Amount (MW)	ELDLONVALLYD Relief Amount (MW)	HPPVALPITVAL Relief Amount (MW)	VALLYDELDLON Relief Amount (MW)
Wilkes (AEPW)	SWS (AEPW)	48	61	47	57
Welsh (AEPW)	SWS (AEPW)	48	61	44	54
Welsh (AEPW)	NES (AEPW)	57	59	53	60
Wilkes (AEPW)	NES (AEPW)	58	57	59	64
Wilkes (AEPW)	RSS (AEPW)	55	58	56	333

Source	Sink	PECXFRMUSCLA Relief Amount (MW)
NES (AEPW)	Welsh (AEPW)	175
NES (AEPW)	Wilkes (AEPW)	179
RSS (AEPW)	Wilkes (AEPW)	280
RSS (AEPW)	Welsh (AEPW)	280
NES (AEPW)	Knox Lee(AEPW)	184

## **5. Conclusion**

Reservation curtailment and generation redispatch options were studied in order to relieve the necessary constraint. 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.