



**SPP**

*Southwest  
Power Pool*

***System Impact Study  
SPP-2004-119  
For Transmission Service  
Requested By:  
Western Resources***

***From WR to EES***

***For a Total Reserved Amount Of  
100 MW  
From 11/1/04  
To 01/1/05***

# ***SPP Transmission Planning***

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## **1. Executive Summary**

Western Resources (WERE,WR) has requested a system impact study for monthly firm transmission service from WERE to EES (ENTR). The period of the transaction is from 11/01/04 to 01/01/05. The request is for reservation 720110 and 720111 for the amount of 50 MW per reservation.

The 50 MW transactions from WERE to ENTR has an impact on the following flowgates with no ATC: HPPVALPITVAL and SPHWMCEMCSUM. To provide the ATC 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

Western Resources has requested a system impact study for transmission service from WERE to ENTR.

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

- HPPVALPITVAL: Hugo Power Plant to Valiant 138 kV line for the loss of Pittsburg to Valiant 345 KV line
- SPHWMCEMCSUM: South Phillips to West McPherson 115 kV line for the loss of East McPherson to Summit 230 KV line

### **3. Study Methodology**

#### **A. Description**

Southwest Power Pool used the NERC Generator Sensitivity Factor (GSF) Viewer to obtain possible unit pairings that would relieve the constraint. The GSF viewer calculates impacts on monitored facilities for all units above 20MW in the Eastern Interconnection. The SPP ATC Calculator is used to determine response factors for the time period of the reservation.

#### **B. Model Updates**

The 2004 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 the NERC Generator Sensitivity Factor (GSF) Viewer, 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 the Viewer is the amount of redispatch necessary to relieve the impact on the affected flowgate.

## **4. Study Results**

After studying the impact of requests 720110 and 720111, two flowgates require relief. The flowgates, duration, and associated amount of relief is as follows:

**Table 1**

<b>Flowgates</b>	<b>Sensitivity (%)</b>	<b>Duration</b>	<b>Required Relief (MW)</b>
HPPVALPITVAL	5.1	November – January	5
SPHWMCEMCSUM	3.3	December – January	3

Table 2 displays a list of reservation paths that offer relief for the flowgates in question and their associated relief sensitivity (TDF).

**Table 2**

<b>Transactions Path</b>	<b>HPPVALPITVAL Sensitivity (%)</b>	<b>SPHWMCEMCSUM Sensitivity (%)</b>
AMRN – SPS	-	8.2
CLECO – ERCOTE	5.9	-
CSWS – ERCOTE	9.1	-
OKGE – ENTR	7.7	-
SPS – AMRN	3.3	-
SPS – AEPW	4.5	-
WERE- ENTR	5.1	3.3

Table 3 displays the amount of capacity required for each reservation path to relieve the flowgates in question. Note: The reservations, when curtailed, will offer the necessary relief.

**Table 3**

<b>Transactions Path</b>	<b>HPPVALPITVAL (MW)</b>	<b>SPHWMCEMCSUM (MW)</b>
AMRN – SPS	-	37
CLECO – ERCOTE	85	-
CSWS – ERCOTE	55	-
OKGE – ENTR	65	-
SPS – AMRN	152	-
SPS – AEPW	112	-
WERE- ENTR	100	100

Table 4 displays a list of generator pairs that are possible relief options for the flowgates in question and their associated relief sensitivity (GSF)

**Table 4**

Source	Sink	HPPVALPITVAL Sensitivity (%)	SPHWMCEMCSUM Sensitivity (%)
Hutchinson 4 (WERE)	Lawrence 3 (WERE)	-	19
Hutchinson 4 (WERE)	Lawrence 4 (WERE)	-	22
Hutchinson 4 (WERE)	Lawrence 5 (WERE)	-	22
Hutchinson 4 (WERE)	Tecumseh 7 (WERE)	-	19
Hutchinson 4 (WERE)	Tecumseh 8 (WERE)	-	22
Hutchinson 4 (WERE)	Tecumseh GT (WERE)	-	19
Hutchinson 4 (WERE)	Evans 2 (WERE)	-	21

Table 5 displays the amount of redispatch capacity necessary for each generator pair. Note: In the event of a Pre-TLR 5 situation, the source unit will be required to ramp up by the given amount below as the sink generator will be required to ramp down by the given amount below.

**Table 5**

Source	Sink	HPPVALPITVAL (MW)	SPHWMCEMCSUM (MW)
Hutchinson 4 (WERE)	Lawrence 3 (WERE)	-	16
Hutchinson 4 (WERE)	Lawrence 4 (WERE)	-	14
Hutchinson 4 (WERE)	Lawrence 5 (WERE)	-	14
Hutchinson 4 (WERE)	Tecumseh 7 (WERE)	-	16
Hutchinson 4 (WERE)	Tecumseh 8 (WERE)	-	14
Hutchinson 4 (WERE)	Tecumseh GT (WERE)	-	16
Hutchinson 4 (WERE)	Evans 2 (WERE)	-	15



## **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 one of these relief options must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.