



**SPP**

*Southwest  
Power Pool*

***System Impact Study***

***SPP-2005-048***

***For Transmission Service***

***Requested By:***

***Calpine Energy Services L.P.***

***From AEPW to OKGE***

***For a Reserved Amount Of***

***110 MW***

***From 06/01/05***

***To 10/01/05***

# ***SPP Transmission Planning***

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## 1. Executive Summary

Calpine Energy Services L.P. has requested a system impact study for monthly firm transmission service from AEPW to OKGE. The period of the transaction is from 06/01/05 to 10/01/05. The request is for reservations for the amount of 880387, 880406, 880411, and 882011 for the amount of 110, 110, 110, 50 MW respectively.

The transactions from AEPW to OKGE have an impact on the following flowgates with no AFC: LLAMAYNESONE, and PITSEMPITSUN. 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

Calpine Entergy Services L.P. has requested a system impact study for transmission service from AEPW to OKGE.

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

- LLAMAYNESONE: Lynn Lan East Tap to Mayo Road 138 kV line for the loss of Northeastern to Oneta 345 kV line
- PITSEMPITSUN: Pittsburg to Seminole 345 kV line for the loss of Pittsburg to Sunnyside 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 impact of requests 878944, 880406, 880411, and 882011 two 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>
LLAMAYNESONE	14.2	June 15 – October 1	15.62
PITSEMPITSUN	11.8	June 15 – October 1	12.98

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>LLAMAYNESONE Sensitivity (%)</b>	<b>PITSEMPITSUN Sensitivity (%)</b>
Weleetka (AEPW)	Fitzhugh (AEPW)	4.1	10.9
Weleetka (AEPW)	Flint Creek (AEPW)	7	7.5
Weleetka (AEPW)	Riverside (AEPW)	-	5.2
Riverside (AEPW)	Weleetka (AEPW)	5.2	-
Tulsa Power (AEPW)	Weleetka (AEPW)	7.3	-
Weleetka (AEPW)	Tulsa Power (AEPW)	-	5.3
Weleetka (AEPW)	Northeast (AEPW)	15.5	5.6

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

**Table 3**

<b>Source</b>	<b>Sink</b>	<b>LLAMAYNESONE (MW)</b>	<b>PITSEMPITSUN (MW)</b>
Weleetka (AEPW)	Fitzhugh (AEPW)	381	119
Weleetka (AEPW)	Flint Creek (AEPW)	223	173
Weleetka (AEPW)	Riverside (AEPW)	-	250
Riverside (AEPW)	Weleetka (AEPW)	300	-
Tulsa Power (AEPW)	Weleetka (AEPW)	214	
Weleetka (AEPW)	Tulsa Power (AEPW)	-	241
Weleetka (AEPW)	Northeast (AEPW)	103	232

## **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.