



**SPP**

*Southwest  
Power Pool*

***System Impact Study***

***SPP-2005-050***

***For Transmission Service***

***Requested By:***

***Southwestern Public Service  
Company***

***From AEPW to SWPS***

***For a Reserved Amount Of  
100 MW***

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

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

# ***SPP Transmission Planning***

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## 1. Executive Summary

Southwester Public Service Company has requested a system impact study for monthly firm transmission service from AEPW to SWPS. The period of the transaction is from 06/01/05 to 10/01/05. The request is for reservation 883652 and 883655 for the amount of 50 MW each.

The 50 MW transactions from AEPW to SWPS have an impact on the following flowgates with no AFC: BVSNBVNESDEL, MIDFRNPHAWET, and SCODEADELNEO. 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

Southwestern Public Service Company has requested a system impact study for transmission service from AEPW to SWPS.

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

- BVSNBVNESDEL: Bartlesville SE to North Bartlesville 138 kV line for the loss of Northeastern to Delaware 345 kV line
- MIDFRNPHAWET: Midwest to Franklin 138 kV line for the loss of Pharaoh to Wetumka 138 KV line
- SCODEADELNEO: South Coffeyville to Dearing 138 kV line for the loss of Delaware to Neosho 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 request 883652 and 883655, three flowgates require relief. The flowgates and associated amount of relief is as follows:

**Table 1**

Flowgates	Sensitivity Redirect (%)	Sensitivity Original (%)	Duration	Required Relief (MW)
BVSNBVNESDEL	4.1	-	July 1 – September 1	4
MIDFRNPHAWET	3.6	3.2	July 1 – September 1	1
SCODEADELNEO	4.9	-	July 1 – October 1	5

Table 2 displays a list of reservation paths that offer relief for the flowgates in question.

**Table 2**

Transactions Path	BVSNBVNESDEL Sensitivity (%)	MIDFRNPHAWET Sensitivity (%)	SCODEADELNEO Sensitivity (%)
AMRN – SWPS	-	3.2	-
SWPS – MPS	4.1	-	4.2

Table 3 displays the amount of capacity required for each reservation path to relieve the flowgates in question.

**Table 3**

Transactions Path	BVSNBVNESDEL Sensitivity (MW)	MIDFRNPHAWET Sensitivity (MW)	SCODEADELNEO Sensitivity (MW)
AMRN – SPS	-	13	-
SWPS – MPS	100	-	117

Table 4 displays a list of generator pairs that are possible relief options for the flowgates in question.

**Table 4**

Source	Sink	BVSNBVNESDEL Sensitivity (%)	MIDFRNPHAWET Sensitivity (%)	SCODEADELNEO Sensitivity (%)
Welsh (AEPW)	NES (AEPW)	9.9	-	7.5
Knox Lee (AEPW)	NES (AEPW)	10	-	7.7
Wilkes (AEPW)	NES (AEPW)	10	-	7.7

Table 5 displays the amount of redispatch capacity necessary for each generator pair.

**Table 5**

Source	Sink	[Flowgate 1] Sensitivity (MW)	[Flowgate 2] Sensitivity (MW)	[Flowgate 3] Sensitivity (MW)
Welsh (AEPW)	NES (AEPW)	41	-	66
Knox Lee (AEPW)	NES (AEPW)	41	-	64
Wilkes (AEPW)	NES (AEPW)	41	-	64

## **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.