SPP Southwest Power Pool

System Impact Study
SPP-2005-186
For Transmission Service
Requested By:
American Electric Power

From AEPW to AEPW

For a Reserved Amount Of
225 MW
From 09/23/05
To 09/24/05

SPP Transmission Planning

1. Executive Summary

American Electric Power has requested a system impact study for monthly firm transmission service from AEPW to AEPW. The period of the transaction is from 09/23/05 to 09/24/05. The request is for reservation 969979 for the amount of 225 MW.

The 225 MW transaction from AEPW to AEPW has an impact on the following flowgate with no AFC: CRAASHVALLYD, HPPVALPITVAL, MUSCLAMUSRSS, and FTSXFR500345. 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 four constrained flowgate that requires relief in order for this reservation to be accepted. The flowgates and explanations is as follows:

- CRAASHVALLYD: Craig to Ashdown West 138 kV line for the loss of Valliant to Lydia 345 kV line

- HPPVALPITVAL: Hugo Power Plant to Valliant 138 kV line for the loss of Pittsburg to Valliant 345 kV line

- MUSCLAMUSRSS: Muskogee to Clarksville 345 kV line for the loss of Muskogee to Riverside Station 345 kV line.

- FTSXFR500345: Fort Smith 500/161 kV XFR for the loss of Fort Smith 500/345 kV XFR

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 969979, four flowgates require relief. The flowgates and associated amount of relief are as follows:

Table 1

Flowgates	Sensitivity (%)	Duration	Required Relief (MW)
CRAASHVALLYD	4.0	September 23	9
HPPVALPITVAL	3.5	September 23	8
MUSCLAMUSRSS	9.3	September 23	21
FTSXFR500345	7.0	September 23	16

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

Table 2

Source	Sink	CRAASHVALLYD Sensitivity (%)	HPPVALPITVAL Sensitivity (%)	MUSCLAMUSRSS Sensitivity (%)	FTSXFR500345 Sensitivity (%)
SWS (AEPW)	Wilkes (AEPW)	-	-	7	6.6
Wilkes (AEPW)	SWS (AEPW)	16.6	15.1	-	
SWS (AEPW)	Welsh (AEPW)	-	-	7.2	6.1
Welsh (AEPW)	SWS (AEPW)	16.9	13.6	-	
RSS (AEPW)	Welsh (AEPW)	-	-	24.2	7.8
NES (AEPW)	Welsh (AEPW)	-	-	21.6	7.2
Welsh (AEPW)	NES (AEPW)	14.4	13.2	-	
NES (AEPW)	Wilkes (AEPW)	-	-	21.4	7.7
Wilkes (AEPW)	NES (AEPW)	14	12.0	-	
RSS (AEPW)	Wilkes (AEPW)	-	-	24	8.3
Wilkes (AEPW)	RSS (AEPW)	14.5	12.5	-	
Welsh (AEPW)	RSS (AEPW)	14.8	13.6	-	

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

Table 3

Source	Sink	CRAASHVALLYD Sensitivity (%)	HPPVALPITVAL Sensitivity (%)	MUSCLAMUSRSS Sensitivity (%)	FTSXFR500345 Sensitivity (%)
SWS (AEPW)	Wilkes (AEPW)	-	-	300	242
Wilkes (AEPW)	SWS (AEPW)	54	52	-	
SWS (AEPW)	Welsh (AEPW)	-	-	291	262
Welsh (AEPW)	SWS (AEPW)	53	58	-	
RSS (AEPW)	Welsh (AEPW)	-	-	86	205
NES (AEPW)	Welsh (AEPW)	-	-	97	222
Welsh (AEPW)	NES (AEPW)	62	60	-	
NES (AEPW)	Wilkes (AEPW)	-	-	98	207
Wilkes (AEPW)	NES (AEPW)	64	66	-	
RSS (AEPW)	Wilkes (AEPW)	-	-	87	192
Wilkes (AEPW)	RSS (AEPW)	62	64	-	
Welsh (AEPW)	RSS (AEPW)	60	58	-	

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.