SPP Southwest Power Pool

System Impact Study
SPP-2005-091
For Transmission Service
Requested By:
American Electric Power

From AEPW to AEPW

For a Reserved Amount Of
200 MW
From 07/22/05
To 07/23/05

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 07/22/05 to 07/23/05. The request is for reservation 928811 for the amount of 200 MW.

The 200 MW transaction from AEPW to AEPW has an impact on the following flowgates with no AFC: CRAASHVALLYD, ELDLONVALLYD, HPPVALPITVAL, REDACREDARC, RSSEXGSSPPRA, VALLYDELDLON and RSSTPSTSS116. 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 seven 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

- RSSEXGSSPPRA: Riverside Station to Explorer Glenpool 138 kV line for the loss of Sand Springs to Prattville 138 kV line

- VALLYDELDLON: Valiant to Lydia 345KV line for the loss of Eldorado to Longwood 345KV line.

- RSSTPSRSS116: Riverside Station to Tulsa Power Station 138 kV line for the loss of Riverside Station to 116th Street and Peoria 138 kV line

- CRAASHVALLYD: Craig Junction to Ashdown 138KV line for the loss of Valiant – Lydia 345KV line

- ELDLONVALLYD: Eldorado to Longwood 345KV line for the loss of Valiant to Lydia 345KV line

- REDARCREDARC: Redbud to Arcadia 345/138 xfmr for the loss of Redbud to Arcadia 345/138 xfmr.

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 928811, seven flowgates require relief. The flowgates and associated amount of relief is as follows:

Table 1

Flowgates	Sensitivity (%)	Duration	Required Relief (MW)
HPPVALPITVAL	3.1	July 22	7
RSSEXGSSPPRA	5.1	July 22	11
VALLYDELDLON	12.6	July 22	26
RSSTPSRSS116	8.1	July 22	17
CRAASHVALLYD	3.7	July 22	8
ELDLONVALLYD	10.5	July 22	21
REDARCREDARC	7.1	July 22	14.2

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

Table 2

Source	Sink	HPPVALPITVAL Sensitivity (%)	RSSEXGSSPPRA Sensitivity (%)	VALLYDELDLON Sensitivity (%)	RSSTPSRSS116 Sensitivity (%)
SWS (AEPW)	NES (AEPW)	-	4.8	-	-
NES (AEPW)	SWS (AEPW)	3	-	-	3
SWS (AEPW)	TPS (AEPW)	-	9	-	-
TPS (AEPW)	SWS (AEPW)	3	-	-	19.1
SWS (AEPW)	Wilkes (AEPW)	-	-	-	-
Wilkes (AEPW)	SWS (AEPW)	15	-	53.0	-
Welsh (AEPW)	RSS (AEPW)	-	8.6	51.4	8.5
Welsh (AEPW)	SWS (AEPW)	16.1	-	54.8	-
Welsh (AEPW)	NES (AEPW)	-	-	50.2	-
NES (AEPW)	Welsh (AEPW)	13	3.2	-	-
Wilkes (AEPW)	NES (AEPW)	11.8	3.2	47.4	-
Wilkes (AEPW)	RSS (AEPW)	-	8.6	48.4	8.5
Anadarko (WFEC)	Hugo (WFEC)				

Source	Sink	CRAASHVALLYD Sensitivity (%)	ELDLONVALLYD Sensitivity (%)	REDARCREDARC Sensitivity (%)
SWS (AEPW)	NES (AEPW)	-	-	18.8
NES (AEPW)	SWS (AEPW)	-	-	-
SWS (AEPW)	TPS (AEPW)	-	-	21.2
TPS (AEPW)	SWS (AEPW)	-	-	-
SWS (AEPW)	Wilkes (AEPW)	-	-	-
Wilkes (AEPW)	SWS (AEPW)	16.3	40.6	-
Welsh (AEPW)	RSS (AEPW)	16.8	41.8	23.4
Welsh (AEPW)	SWS (AEPW)	16.6	40.4	-
Welsh (AEPW)	NES (AEPW)	16.8	42.1	-
NES (AEPW)	Welsh (AEPW)	-	-	13.1
Wilkes (AEPW)	NES (AEPW)	16.2	42.4	12.5
Wilkes (AEPW)	RSS (AEPW)	16.2	41.1	22.2
Anadarko (WFEC)	Hugo (WFEC)	-		

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

Table 3

Source	Sink	HPPVALPITVAL Sensitivity (MW)	RSSEXGSSPPRA Sensitivity (MW)	VALLYDELDLON Sensitivity (MW)	RSSTPSRSS116 Sensitivity (MW)
SWS (AEPW)	NES (AEPW)	-	213	-	-
NES (AEPW)	SWS (AEPW)	206	-	-	540
SWS (AEPW)	TPS (AEPW)	-	113	-	-
TPS (AEPW)	SWS (AEPW)	206	-	-	85
SWS (AEPW)	Wilkes (AEPW)	-	-	-	-
Wilkes (AEPW)	SWS (AEPW)	41	-	48	-
Welsh (AEPW)	RSS (AEPW)	-	72	49	190
Welsh (AEPW)	SWS (AEPW)	39	-	54.8	-
Welsh (AEPW)	NES (AEPW)	-	-	46	-
NES (AEPW)	Welsh (AEPW)	48	319	-	-
Wilkes (AEPW)	NES (AEPW)	53	319	53	-
Wilkes (AEPW)	RSS (AEPW)	-	119	52	190
Anadarko (WFEC)	Hugo (WFEC)				

Source	Sink	CRAASHVALLYD Sensitivity (MW)	ELDLONVALLYD Sensitivity (MW)	REDARCREDARC Sensitivity (MW)
SWS (AEPW)	NES (AEPW)	-	-	76
NES (AEPW)	SWS (AEPW)	-	-	-
SWS (AEPW)	TPS (AEPW)	-	-	67
TPS (AEPW)	SWS (AEPW)	-	-	-
SWS (AEPW)	Wilkes (AEPW)	-	-	-
Wilkes (AEPW)	SWS (AEPW)	45	52	-
Welsh (AEPW)	RSS (AEPW)	44	50	61
Welsh (AEPW)	SWS (AEPW)	45	52	-
Welsh (AEPW)	NES (AEPW)	44	50	-
NES (AEPW)	Welsh (AEPW)	-	-	108
Wilkes (AEPW)	NES (AEPW)	46	50	114
Wilkes (AEPW)	RSS (AEPW)	46	51	64
Anadarko (WFEC)	Hugo (WFEC)	-		

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.