SPP Southwest Power Pool

System Impact Study
SPP-2007-012
For Transmission Service
Requested By:
American Electric Power

From AEPW to AEPW

For a Reserved Amount Of
100 MW
From 06/01/07
To 10/01/07

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 06/01/2007 to 10/01/2007. The request is for reservation 1236971.

The 100 MW transaction from AEPW to AEPW has an impact on the following flowgates with no AFC: CRAASHVALLYD, HPPVALPITVAL, ONEBANNESTUL, PECXFRMUSFTS, TAHH59MUSFTS, and VALHUGVALLYD. To provide the AFC necessary for this transfer, the impact on these flowgates must be relieved.

After studying many scenarios using 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 six constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

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

- HPPVALPITVAL: Hugo to Valiant 138kV line for the loss of Pittsburg to Valiant 345kV line

- ONEBANNESTUL: Oneta to Broken Arrow 138 kV line for the loss of Northeast Station to Tulsa 345 kV line

- PECXFRMUSFTS: Pecan 345/161 kV XFR for the loss of Muskogee to Fort Smith 345 kV line

- TAHH59MUSFTS: Talequah to Hwy 59 161kV line for the loss of Muskogee to Ft. Smith 345kV line

  VALHUGVALLYD: Valliant to Hugo-Tap 138 kV line for the loss of Valliant to Lydia 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 2006 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 the request, six flowgates require relief. The flowgates and associated amount of relief are as follows:

Table 1

Flowgates	Sensitivity (%)	Duration	Required Relief (MW)
CRAASHVALLYD	4.9	June 1 – Oct 1	5
HPPVALPITVAL	4.2	June 1 – Oct 1	4
ONEBANNESTUL	7.8	June 1 – Oct 1	8
PECXFRMUSFTS	4.6	June 1 – Oct 1	5
TAHH59MUSFTS	3.0	June 1 – Oct 1	3
VALHUGVALLYD	3.3	June 1 – Oct 1	3

Tables 2 and 3 in conjunction display a list of generator pairs that are possible relief options for the flowgates in question.

Table 2

Source	Sink	CRAASHVALLYD Sensitivity (%)	HPPVALPITVAL Sensitivity (%)	ONEBANNESTUL Sensitivity (%)
Wilkes (AEPW)	SWS (AEPW)	17.0	16.7	-
Welsh (AEPW)	SWS (AEPW)	17.2	17.0	-
Welsh (AEPW)	NES (AEPW)	14.5	14.0	3.1
Wilkes (AEPW)	NES (AEPW)	14.3	13.6	3.1
Wilkes (AEPW)	RSS (AEPW)	14.9	14.1	-
TPS (AEPW)	Lieberman (AEPW)	-	-	8.3
TPS (AEPW)	Arsenal Hill (AEPW)	-	-	8.3
TPS (AEPW)	Pirkey (AEPW)	-	-	8.3
TPS (AEPW)	Welsh (AEPW)	-	-	8.3
TPS (AEPW)	Commanche (AEPW)	-	2.6	7.8
TPS (AEPW)	NES (AEPW)	-	-	11.3
RSS (AEPW)	Arsenal Hill (AEPW)	-	-	6.4
RSS (AEPW)	Pirkey (AEPW)	-	-	6.3
RSS (AEPW)	Knox Lee (AEPW)	-	-	6.3
RSS (AEPW)	Wilkes (AEPW)	-	-	6.3
RSS (AEPW)	NES (AEPW)	-	-	9.4
Weleetka (AEPW)	NES (AEPW)	-	-	5.5
Weleetka (AEPW)	RSS (AEPW)	-	-	-
Weleetka (AEPW)	SWS (AEPW)	-	-	-
Weleetka (AEPW)	TPS (AEPW)	-	-	-

Table 3

Source	Sink	PECXFRMUSCLA Sensitivity (%)	TAHH59MUSFTS Sensitivity (%)	VALHUGVALLYD Sensitivity (%)
Wilkes (AEPW)	SWS (AEPW)	-	3.1	10.2
Welsh (AEPW)	SWS (AEPW)	-	3.0	10.3
Welsh (AEPW)	NES (AEPW)	-	4.4	9.0
Wilkes (AEPW)	NES (AEPW)	-	4.5	8.8
Wilkes (AEPW)	RSS (AEPW)	-	4.6	8.9
TPS (AEPW)	Lieberman (AEPW)	2.5	-	-
TPS (AEPW)	Arsenal Hill (AEPW)	2.5	-	-
TPS (AEPW)	Pirkey (AEPW)	2.7	-	-
TPS (AEPW)	Welsh (AEPW)	2.9	-	-
TPS (AEPW)	Commanche (AEPW)	2.7	-	-
TPS (AEPW)	NES (AEPW)	-	-	-
RSS (AEPW)	Arsenal Hill (AEPW)	2.1	-	-
RSS (AEPW)	Pirkey (AEPW)	2.3	-	-
RSS (AEPW)	Knox Lee (AEPW)	2.3	-	-
RSS (AEPW)	Wilkes (AEPW)	2.5	-	-
RSS (AEPW)	NES (AEPW)	-	-	-
Weleetka (AEPW)	NES (AEPW)	2.1	1.7	-
Weleetka (AEPW)	RSS (AEPW)	2.1	1.9	-
Weleetka (AEPW)	SWS (AEPW)	4.2	-	-
Weleetka (AEPW)	TPS (AEPW)	1.8	1.9	-

Tables 4 and 5 in conjunction display the amount of redispatch capacity necessary for each generator pair.

Table 4

Source	Sink	CRAASHVALLYD Relief (MW)	HPPVALPITVAL Relief (MW)	ONEBANNESTUL Relief (MW)
Wilkes (AEPW)	SWS (AEPW)	29	24	-
Welsh (AEPW)	SWS (AEPW)	29	24	-
Welsh (AEPW)	NES (AEPW)	34	29	258
Wilkes (AEPW)	NES (AEPW)	35	29	258
Wilkes (AEPW)	RSS (AEPW)	34	28	-
TPS (AEPW)	Lieberman (AEPW)	-	-	96
TPS (AEPW)	Arsenal Hill (AEPW)	-	-	96
TPS (AEPW)	Pirkey (AEPW)	-	-	96
TPS (AEPW)	Welsh (AEPW)	-	-	96
TPS (AEPW)	Commanche (AEPW)	-	154	103
TPS (AEPW)	NES (AEPW)	-	-	71
RSS (AEPW)	Arsenal Hill (AEPW)	-	-	125
RSS (AEPW)	Pirkey (AEPW)	-	-	125
RSS (AEPW)	Knox Lee (AEPW)	-	-	125
RSS (AEPW)	Wilkes (AEPW)	-	-	125
RSS (AEPW)	NES (AEPW)	-	-	85
Weleetka (AEPW)	NES (AEPW)	-	-	145
Weleetka (AEPW)	RSS (AEPW)	-	-	-
Weleetka (AEPW)	SWS (AEPW)	-	-	-
Weleetka (AEPW)	TPS (AEPW)	-	-	-

Table 5

Source	Sink	PECXFRMUSCLA Relief (MW)	TAHH59MUSFTS Relief (MW)	VALHUGVALLYD Relief (MW)
Wilkes (AEPW)	SWS (AEPW)	-	97	29
Welsh (AEPW)	SWS (AEPW)	-	97	29
Welsh (AEPW)	NES (AEPW)	-	68	33
Wilkes (AEPW)	NES (AEPW)	-	67	34
Wilkes (AEPW)	RSS (AEPW)	-	65	34
TPS (AEPW)	Lieberman (AEPW)	200	-	-
TPS (AEPW)	Arsenal Hill (AEPW)	200	-	-
TPS (AEPW)	Pirkey (AEPW)	185	-	-
TPS (AEPW)	Welsh (AEPW)	172	-	-
TPS (AEPW)	Commanche (AEPW)	185	-	-
TPS (AEPW)	NES (AEPW)	-	-	-
RSS (AEPW)	Arsenal Hill (AEPW)	238	-	-
RSS (AEPW)	Pirkey (AEPW)	217	-	-
RSS (AEPW)	Knox Lee (AEPW)	217	-	-
RSS (AEPW)	Wilkes (AEPW)	200	-	-
RSS (AEPW)	NES (AEPW)	-	-	-
Weleetka (AEPW)	NES (AEPW)	238	176	-
Weleetka (AEPW)	RSS (AEPW)	238	158	-
Weleetka (AEPW)	SWS (AEPW)	119	-	-
Weleetka (AEPW)	TPS (AEPW)	277	158	-

5. Conclusion

Generation redispatch options were studied in order to relieve the necessary constraints. 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 the necessary relief options must be presented to Southwest Power Pool. Noncompliance with this guideline will result in the refusal of the reservation.