



SPP

*Southwest
Power Pool*

***System Impact Study
SPP-2008-004
For Transmission Service
Requested By:
American Electric Power***

From LEBRCK to CSWS

***For a Reserved Amount Of
50 MW
From 01/01/09
To 03/01/09***

SPP Transmission Planning

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1. Executive Summary

American Electric Power (AEP) has requested a system impact study for monthly firm transmission service from LEBRCK to CSWS. The period of the transaction is from 01/01/09 to 03/01/09. The request is for reservation 1533021 for the amount of 50 MW.

The 50 MW transaction from LEBRCK to CSWS has an impact on the following flowgates with no AFC: FLCXFRFLCXFR, NWTPATLYDVAL, PITSEMPITSUN, RUSDARANOFTS, and WELLYDWELNWT. 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 LEBRCK to CSWS.

There are 5 constrained flowgates that require relief in order for this reservation to be accepted. The flowgates and the explanations are as follows:

- FLCXFRFLCXFR: FLINTCREEK 345/161 kV TRANSFORMER for the loss of FLINTCREEK 345/161 kV TRANSFORMER
- NWTPATLYDVAL: N.W. TEXARKANA to PATTERSON 138 kV line for the loss of LYDIA to VALLIANT 345 KV line
- PITSEMPITSUN: PITTSBURG to SEMINOLE 345 kV line for the loss of PITTSBURG to SUNNYSIDE 345 KV line
- RUSDARANOFTS: RUSSELLVILLE to DARDANELLE 161 kV line for the loss of ARKANSAS NUCLEAR ONE to FT. SMITH 500 KV line
- WELLYDWELNWT: WELSH to LYDIA 345 kV line for the loss of WELSH to N.W. TEXARKANA 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 2008 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 1533021, 5 flowgates require relief. The flowgates and associated amount of relief is as follows:

Table 1

Flowgates	Sensitivity (%)	Duration	Required Relief (MW)
FLCXFRFLCXFR	3.3	Jan. 1 – March 1	1.65
NWTPATLYDVAL	5.4	Jan. 1 – March 1	2.7
PITSEMPITSUN	7.3	Jan. 1 – March 1	3.65
RUSDARANOFTS	3.8	Jan. 1 – March 1	1.9
WELLYDWELNWT	14.6	Jan. 1 – March 1	7.3

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

Table 2

Source	Sink	FLCXFRFLCXFR Sensitivity (%)	NWTPATLYDVAL Sensitivity (%)	PITSEMPITSUN Sensitivity (%)
Flint Creek (AEP)	Arsenal Hill (AEP)	39.58	12.18	14.31
Flint Creek (AEP)	Lieberman1 (AEP)	39.57	12.4	14.53
Flint Creek (AEP)	Lebrock (AEP)	39.54	13.63	15.57
Flint Creek (AEP)	Wilkes (AEP)	39.52	13.56	15.9
Narrows (AEP)	Welsh (AEP)	-	37.44	-
Narrows (AEP)	Lonestar (AEP)	-	36.01	-
Narrows (AEP)	Lebrock (AEP)	-	35.56	-
Com (AEP)	Welsh (AEP)	-	17.16	35.35
SWS (AEP)	Welsh (AEP)	-	17.18	35.25
Com (AEP)	Knox Lee (AEP)	-	15.13	33.67
Fitz (AEP)	FultonU (AEP)	-	-	8.59
Fitz (AEP)	Arsenal Hill (AEP)	-	11.21	11.35

Table 3

Source	Sink	RUSDARANOFTS Sensitivity (%)	WELLYDWELNWT Sensitivity (%)
Flint Creek (AEP)	Arsenal Hill (AEP)	9.34	32.49
Flint Creek (AEP)	Lieberman1 (AEP)	9.25	32.52
Flint Creek (AEP)	Lebrock (AEP)	8.77	37.81
Flint Creek (AEP)	Wilkes (AEP)	8.6	30.77
Narrows (AEP)	Welsh (AEP)	-	56.28
Narrows (AEP)	Lonestar (AEP)	-	40.6
Narrows (AEP)	Lebrock (AEP)	-	48.84
Com (AEP)	Welsh (AEP)	6.55	52
SWS (AEP)	Welsh (AEP)	6.62	51.75
Com (AEP)	Knox Lee (AEP)	7.24	43.31
Fitz (AEP)	FultonU (AEP)	31.24	4.73
Fitz (AEP)	Arsenal Hill (AEP)	30.6	28.23

Table 4 and Table 5 display the amount of redispatch capacity necessary for each generator pair.

Table 4

Source	Sink	FLCXFRFLCXFR Relief (MW)	NWTPATLYDVAL Relief (MW)	PITSEMPITSUN Relief (MW)
Flint Creek (AEP)	Arsenal Hill (AEP)	5	23	26
Flint Creek (AEP)	Lieberman1 (AEP)	5	22	26
Flint Creek (AEP)	Lebrock (AEP)	5	20	24
Flint Creek (AEP)	Wilkes (AEP)	5	20	23
Narrows (AEP)	Welsh (AEP)	-	8	-
Narrows (AEP)	Lonestar (AEP)	-	8	-
Narrows (AEP)	Lebrock (AEP)	-	8	-
Com (AEP)	Welsh (AEP)	-	16	11
SWS (AEP)	Welsh (AEP)	-	16	11
Com (AEP)	Knox Lee (AEP)	-	18	11
Fitz (AEP)	FultonU (AEP)	-	-	43
Fitz (AEP)	Arsenal Hill (AEP)	-	25	33

Table 5

Source	Sink	RUSDARANOFTS Relief (MW)	WELLYDWELNWT Relief (MW)
Flint Creek (AEP)	Arsenal Hill (AEP)	21	23
Flint Creek (AEP)	Lieberman1 (AEP)	21	23
Flint Creek (AEP)	Lebrock (AEP)	22	20
Flint Creek (AEP)	Wilkes (AEP)	23	24
Narrows (AEP)	Welsh (AEP)	-	13
Narrows (AEP)	Lonestar (AEP)	-	18
Narrows (AEP)	Lebrock (AEP)	-	15
Com (AEP)	Welsh (AEP)	29	14
SWS (AEP)	Welsh (AEP)	29	15
Com (AEP)	Knox Lee (AEP)	27	17
Fitz (AEP)	FultonU (AEP)	7	155
Fitz (AEP)	Arsenal Hill (AEP)	7	26

5. Conclusion

Generation redispatch options were studied in order to relieve the necessary constraints. The results of this study show 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.