SPP Southwest Power Pool

System Impact Study SPP-2001-290-292
For Transmission Service Requested By
Tex-La Cooperative of Texas, Inc.

From AEPW to ERCOTE

For a Reserved Amount Of 4/9MW
From 1/1/02
To 1/1/07

SPP Transmission Planning

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1. Executive Summary

Tex-La Cooperative of Texas, Inc. has requested a system impact study for long-term Firm Point-to-Point transmission service from AEPW to ERCOTE. The period of the transaction is from 1/1/02 to 1/1/07. The request is for OASIS reservations 297321 and 297324 for a profiled total of 4/9MW.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 4/9MW transfer while maintaining system reliability.

New overloads caused by the 4/9 MW transfer were identified along with determining the impact of the transfer on any previously assigned and identified facilities.

No facilities in SPP restrict the requested AEPW to ERCOTE 4/9 MW transfer; therefore the reservations will be accepted.

2. Introduction

Tex-La Cooperative of Texas, Inc. has requested an impact study for transmission service from AEPW to ERCOTE.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer too less than 4/9MW. This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses.

The steady-state analyses consider the impact of the 4/9MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

ATC analyses shows the amount of First Contingency Incremental Transfer Capabilities (FCITC) between the given study systems and what the limitations are, if any, for transferring up to 4/9MW.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 4/9MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 4/9MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits.

The first analysis was to study the steady-state analysis impact of the 4/9MW transfer on the SPP system. The second step was to study Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool (SPP) conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency.

The second analysis was done to determine the impact of the transfer on previously assigned and identified facilities.

B. Model Updates

SPP used five seasonal models to study the 4/9MW request. The SPP 2002 Series Cases 2002 Summer Peak, 2002 Fall Peak, 2002/03 Winter Peak, 2003 April Minimum, 2003 Spring, 2003 Summer Peak, 2003 Fall Peak, 2003/04 Winter Peak, 2004 Spring, 2005 Summer Peak, and 2005 Winter Peak were used to study the impact of the 4/9MW transfer on the SPP system during the transaction period of 1/1/02 to 1/1/07.

The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect future firm transfers during the request period that were not already included in the January 2002 base case series models.

C. Transfer Analysis

Using the created models and the ACCC function of PSS\E, single and select double contingency outages were analyzed. Then full AC solution was used to obtain the most accurate results possible. Any facility overloaded, using MVA ratings, in the transfer case and not overloaded in the base case was flagged. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

A. Study Analysis Results

Tables 1, 2, and 3 contain the analysis results of the System Impact Study. The tables identify the seasonal case in which the event occurred; the emergency rating of the overloaded circuit (Rate B), the contingent loading percentage of circuit with and without the studied transfer, the estimated ATC value using interpolation if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Table 1 shows the new facility overloads caused by the 4/9MW transfer. These new valid overloads can be directly assigned to the AEPW to ERCOTE 4/9MW transfer.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 4/9MW transfer.

Table 3 documents the 4/9MW transfer impact on previously assigned and identified facilities. Any available estimated in-service dates for the completion of the upgrades are given in the table.

Table 1 – SPP Facility Overloads caused by the AEPW to ERCOTE 4/9MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)
02SP		NONE				NONE	4
02FA		NONE				NONE	4
02WP		NONE				NONE	6
03AP		NONE				NONE	6
03G		NONE				NONE	6
03SP		NONE				NONE	6
03FA		NONE				NONE	6
03WP		NONE				NONE	6
04G		NONE				NONE	7
05SP		NONE				NONE	8
05WP		NONE				NONE	9

Table 2 – Non - SPP Facility Overloads caused by the AEPW to ERCOTE 4/9MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % Loading	TC % Loading	Outaged Branch Causing Overload
02SP		NONE				NONE
02FA		NONE				NONE
02WP		NONE				NONE
03AP		NONE				NONE
03G		NONE				NONE
03SP		NONE				NONE
03FA		NONE				NONE
03WP		NONE				NONE
04G		NONE				NONE
05SP		NONE				NONE
05WP		NONE				NONE

Table 3 – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to ERCOTE 4/9MW Transfer.

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)
02SP		NONE				NONE	4
02FA		NONE				NONE	4
02WP		NONE				NONE	6
03AP		NONE				NONE	6
03G		NONE				NONE	6
03SP		NONE				NONE	6
03FA		NONE				NONE	6
03WP		NONE				NONE	6
04G		NONE				NONE	7
05SP		NONE				NONE	8
05WP		NONE				NONE	9

5. Conclusion

The requested 4/9 MW of firm point-to-point transmission service was studied through the end of the SPP planning horizon (2008/2009 Winter Peak).

We found no facilities in SPP to restrict the requested 4/9MW reservation; therefore, it will be accepted.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:
Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)
1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply automatically
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

ACCC CASES:
Solutions – AC contingency checking (ACCC)
1. MW mismatch tolerance –0.5
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excld cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:
1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits - Apply automatically
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts