



SPP *Southwest Power Pool*

*System Impact Study
For Transmission Service
Requested By
Cargill-Alliant, LLC*

From KCPL to ERCOTE

*For a Reserved Amount Of 50MW
From 1/1/02
To 1/1/03*

SPP Transmission Planning

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1. Executive Summary

Cargill-Alliant, LLC has requested a system impact study for long-term Firm Point-to-Point transmission service from KCPL to ERCOTE. The period of the transaction is from 1/1/02 to 1/1/03. The request is for reservation 231391 for the amount of 50MW.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 50MW transfer while maintaining system reliability.

Using updated models, a study was performed to determine the impact of the 50MW transfer on all SPP and Non-SPP facilities.

2. Introduction

Cargill-Alliant, LLC has requested an impact study for transmission service from KCPL control area with a sink of 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 50MW. New overloads caused by the 200MW transfer are documented.

The 50MW transaction from KCPL to ERCOTE has a positive response on the Webre – Richard, 500kV circuit. For the spring and summer months of 2002, the flow on this line exceeds the 1250MW that the facility is monitored at to ensure system reliability. Any transactions that impact the Webre-Richard facility will have zero ATC during the spring and summer months.

3. Study Methodology

A. Description

The 50MW transfer request was studied to determine the impact of the transfer on the transmission system. Transfers in the KCPL to ERCOTE transfer direction create a positive response on the Webre – Richard flowgate. This circuit was monitored in this study and the response of the 50MW transfer was documented.

An analyses was also conducted to determine if any additional SPP or Non – SPP facilities are overloaded by the 50MW transfer.

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.

B. Model Updates

SPP used five seasonal models to study the 50MW request. The SPP 2001 Series Cases 2002 April (Spring Minimum), 2002 Spring Peak, 2002 Summer Peak, 2002 Fall Peak, and 2002/03 Winter Peak were used to study the impact of the 300MW transfer on the SPP system during the transaction period of 1/1/02 to 1/2/03.

Seasonal Case	2002 April	2002 Spring Peak	2002 Summer Peak	2002 Fall Peak	2002 Winter Peak
Abbreviation	02AP	02G	02SP	02FA	02WP

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 2001 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

Table 1 documents the impact of the 50MW transfer on the Webre – Richard, 500kV line. The 50MW transfer increases the loading on this flowgate. As shown in the table, this flowgate is already overloaded past the flowgate rating of 1250MW during the 2002 spring and summer months.

Table 1 – Impact on Webre - Richard by the KCPL To ERCOTE 50MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % I Loading	TC % I Loading	Outaged Branch That Caused Overload	Initial Limit, Available Solution and Cost, or Previous Assignment
02G	EES - EES	Webre to Richard, 500kV 98430 WEBRE 500 to 98107 RICHARD 500 CKT 1	1250	105.7	106.2	Non - Contingent Overload	Undetermined
02SP	EES - EES	Webre to Richard, 500kV 98430 WEBRE 500 to 98107 RICHARD 500 CKT 1	1250	108.7	109.2	Non - Contingent Overload	Undetermined

5. Conclusion

Though the KCPL – ERCOTE transfer does not cause new overloads on the transmission system, this transfer does impact the Webre – Richard flowgate.

It has been determined that the ATC is zero for the 2002 spring and summer months over the Webre – Richard flowgate. Due to the impact of this transfer on Webre – Richard during the spring and summer months, there is no available capacity for the 50MW request during this time period.

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 immediately
4. Solution options - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts

ACCC CASES:

Solutions – AC contingency checking (ACCC)

1. MW mismatch tolerance –1.0
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excl'd 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 - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts