



***System Impact Study SPP-2002-203
For Transmission Service
Requested By
Rainbow Energy Marketing Corp.***

From CSWS To ERCOTN

***For a Reserved Amount Of 50 MW
From 12/1/02
To 1/1/05***

SPP Coordinated Planning

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1. Executive Summary

Rainbow Energy Marketing Corp. (REMC) has requested a system impact study for long-term Firm Point-to-Point transmission service from CSWS to ERCOTN. The period of the transaction is from 12/1/02 to 1/1/05. The request is for OASIS reservation 427480 for an amount of 50 MW.

This study was performed to identify constraints on the SPP Regional Tariff Transmission System that result in zero ATC for the 50 MW transfer. The CSWS to ERCOTN 50 MW transfer impacts the La Cygne to Stilwell 345 kV line loading for the outage of the La Cygne to West Gardner 345 kV line. The Southwest Power Pool determined that the ATC is limited to zero due to the loading of this facility in the 2003 Summer Peak and 2005 Summer Peak models. An abbreviated analysis was conducted for the requested service period from 12/1/02 to 1/1/05 and no analysis was conducted for the remaining planning horizon from 1/1/05 to 4/1/09 to save on time and cost of conducting a full study resulting in the same conclusion.

The Kansas City Power & Light La Cygne to Stilwell 345 kV line loading for the outage of the La Cygne to West Gardner 345 kV line limits the ATC to zero during the 2003 and 2004 Summer months. The facility cannot be relieved through system upgrades in the time period available; therefore, the requests will be refused.

2. Introduction

Rainbow Energy Marketing Corp. (REMC) has requested a system impact study for long-term Firm Point-to-Point transmission service from CSWS to ERCOTN.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 50 MW. This study includes an abbreviated steady-state contingency analysis using PSS/E and Available Transfer Capability (ATC) analysis for the requested service period.

The abbreviated steady-state analysis considers the impact of the 50 MW transfer on the La Cygne to Stilwell 345 kV line loading for the outage of the La Cygne to West Gardner 345 kV line.

3. Study Methodology

A. Description

An abbreviated analysis was done to determine available capacity on previously identified circuits. The analysis was done to determine the impact of the transfer on the La Cygne to Stilwell 345 kV line for the outage of the La Cygne to West Gardner 345 kV line

B. Model Updates

SPP used two seasonal models to study the CSWS to ERCOTN 50 MW transfer for the requested service period. The SPP 2002 Series Cases 2003 Summer Peak and 2005 Summer Peak were used to study the impact of a 50 MW transfer on the SPP system during the requested service period of 12/1/02 to 1/1/05. The 2005 Summer Peak model was used to provide an approximation for the 2004 Summer Peak. The Summer Peak models apply to the months of June through September.

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 requested service period that were not already included in the January 2002 base case series models.

C. Transfer Analysis

Using the created models, the La Cygne to Stilwell 345 kV line loading was determined for the outage of the La Cygne to West Gardner 345 kV line. 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 contains the analysis results of the System Impact Study. The table identifies 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 loading of the La Cygne to Stilwell 345 kV line for the outage of the La Cygne to West Gardner 345 kV line. Available solutions are given in the table.

Table 1a of Appendix B documents the modeling representation of the events identified in Table 1 to include bus numbers and bus names.

Table 1 – La Cygne to Stilwell 345kV line loading for the Outage of the La Cygne to West Gardner 345 kV line Impacted by the CSWS to ERCOTN 50 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
03SP	KACP-KACP	LaCygne - Stilwell 345KV	1251	120.4	120.5	West Gardner - LaCygne 345KV	0	Build new substation with 345/161kV 400 Mva transformer. Tap Wolf Creek to LaCygne 345kV line and Centerville to Paola 161kV line. 24 Month Lead Time
05SP	KACP-KACP	LaCygne - Stilwell 345KV	1251	119.1	119.2	West Gardner - LaCygne 345KV	0	Build new substation with 345/161kV 400 Mva transformer. Tap Wolf Creek to LaCygne 345kV line and Centerville to Paola 161kV line. 24 Month Lead Time

5. Conclusion

The Kansas City Power & Light La Cygne to Stilwell 345 kV line loading for the outage of the La Cygne to West Gardner 345 kV line limits the ATC to zero during the 2003 and 2004 Summer months. The facility cannot be relieved through system upgrades in the time period available; therefore, the requests will be refused.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM

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

Appendix B

Table 1a – Model Data for La Cygne to Stilwell 345kV line loading for the Outage of the La Cygne to West Gardner 345 kV line Impacted by the CSWS to ERCOTN 50 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
03SP	KACP-KACP	57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1251	120.4	120.5	57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	0	Build new substation with 345/161kV 400 Mva transformer. Tap Wolf Creek to LaCygne 345kV line and Centerville to Paola 161kV line. 24 Month Lead Time
03SP	KACP-KACP	57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1251	119.1	119.2	57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	0	Build new substation with 345/161kV 400 Mva transformer. Tap Wolf Creek to LaCygne 345kV line and Centerville to Paola 161kV line. 24 Month Lead Time