



SPP *Southwest Power Pool*

***System Impact Study SPP-2001-062
For Transmission Service
Requested By
Aquila Energy Marketing
Corporation***

From AEPW to ERCOTE

***For a Reserved Amount Of 250MW
From 6/1/01
To 6/1/02***

SPP Transmission Planning

Table of Contents

1. EXECUTIVE SUMMARY	1
2. INTRODUCTION	2
3. STUDY METHODOLOGY	3
A. DESCRIPTION.....	3
B. MODEL UPDATES.....	3
C. TRANSFER ANALYSIS.....	3
4. STUDY RESULTS	4
A. STUDY ANALYSIS RESULTS.....	4
TABLE 1 – CONFIRMED RESERVATIONS INTO ERCOTE FOR THE TIME PERIOD REQUESTED.....	5
APPENDIX A	7

1. Executive Summary

Aquila Energy Marketing Corporation 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 6/1/01 to 6/1/02. The request is for reservations 231680-231684 totaling 250MW.

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 250MW.

SPP previously studied a service request for queued reservations 231669 and 231670-231679 from CLEC to ERCOTE totaling 409MW. The request was initially for 500MW of service, however, due to confirmed reservations into the East DC tie totaling 191MW, there remains only 409MW available for transfer. Due to additional constraints on the SPP system, this transfer was limited to the smallest ATC of 330MW.

The amount of capacity available for the AEPW to ERCOTE transfer is dependant on the previously discussed 330MW transfer from CLEC to ERCOTE. If this transfer occurs, there remains only 79MW available for transfer from AEPW to ERCOTE. The 79MW transfer from AEPW to ERCOTE can be accepted with no additional limitations.

The withdrawal or curtailment of at least 171MW of the 330MW transfer from CLEC to ERCOTE will result in the capacity available on the East DC tie for the full 250MW of service from AEPW to ERCOTE.

The AEPW to ERCOTE transfer was studied for the full 250MW of transfer. The 250MW transfer causes an overload of the Craig Junction to Broken Bow, 138kV line. This overload results in an ATC of 143MW for the AEPW to ERCOTE transfer. Any acceptance over the 143MW requires upgrades on this facility.

2. Introduction

Aquila Energy Marketing Corporation has requested an impact study for transmission service from AEPW control area with a sink of ERCOTE.

This study is performed to determine what existing constraints may limit the 250MW request, as well as to identify any new facilities overloaded by the 250MW transfer.

The amount of capacity available for the AEPW to ERCOTE transfer depends on the final status of the previously accepted 330MW CLEC to ERCOTE transfer. This study shows the capacity available for the AEPW to ERCOTE transfer with and without the 330MW transfer from CLEC to ERCOTE.

3. Study Methodology

A. Description

The 250MW transfer request was studied to determine the impact of the transfer on the transmission system. An analysis was conducted to determine if any SPP or Non-SPP facilities are overloaded by the 250MW transfer.

This transfer was studied for both the confirmation of the 330MW transfer from CLEC to ERCOTE and the withdrawal or curtailment of the 330MW transfer. The status of the CLEC to ERCOTE transfer determines the amount of capacity on ERCOTE that is available for the 250MW request from AEPW to ERCOTE.

B. Model Updates

SPP used five seasonal models to study the 250MW request. The SPP 2001 Series Cases 2001 Summer Peak, 2001 Fall Peak, 2001/02 Winter Peak, 2002 April, and 2002 Spring Peak, were used to study the impact of the 250MW transfer on the SPP system during the transaction period of 6/1/01 to 6/1/02.

Seasonal Case	2001 Summer Peak	2001 Fall Peak	2001 Winter Peak	2002 April	2002 Spring Peak
Abbreviation	01SP	01FA	01WP	02AP	02G

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 previously confirmed reservations into ERCOTE totaling 191MW. These reservations limit the available capacity into ERCOTE to 409MW.

Table 2 documents the overloads of SPP facilities caused by the 250MW transfer from AEPW to ERCOTE. This 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 determined ATC value, and the solution received from the transmission owner.

Table 1 – Confirmed Reservations Into ERCOTE for the Time Period Requested

Oasis Reservation Number	From Area	To Area	Begin Date	End Date	Amount (MW)
213499	CLEC	ERCOTE	6/1/01	6/1/02	50
223924	AEPW	ERCOTE	1/1/01	1/1/02	41
231124	AEPW	ERCOTE	2/5/01	1/20/02	50
231125	AEPW	ERCOTE	2/5/01	1/20/02	50
				Total	191

Table 1 – Overloads Caused by 250MW AEPW to ERCOTE Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % I Loading	TC % I Loading	Outaged Branch Causing Overload	ATC	Initial Limit, Available Solution and Cost, or Previous Assignment
02G	AEPW-SWPA	CRAIG JUNCTION TO BROKEN BOW, 138KV 54015 CRAIGJT4 138 to 52814 BRKN BW4 138 CKT 1	95.6	96.3	103.3	BB DAM TAP TO MOUNTAIN RIVER, 138KV 55823 BBDAMTP4 138 to 56004 MTRIVER4 138 CKT1	143MW	Replace 400Amp CT \$1,000 Lead Time - 6 months

5. Conclusion

The acceptance of the AEPW to ERCOTE transfer is dependant on the following conditions:

- ?? If the previously accepted 330MW transfer from CLEC to ERCOTE remains, the AEPW to ERCOTE transfer can be accepted for only 79MW due to the limit on ERCOTE.
- ?? If the previously accepted 330MW transfer from CLEC to ERCOTE is withdrawn or curtailed up to 171MW, there will be capacity available on the East DC tie up to the 250MW requested. The facility upgrade required for the Craig Junction to Broken Bow line must be completed to allow a transfer above 143MW.

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