



SPP *Southwest Power Pool*

***System Impact Study SPP-2001-059
For Transmission Service
Requested By
Aquila Energy Marketing
Corporation***

From CLEC to ERCOTE

***For a Reserved Amount Of 500MW
From 6/1/01
To 6/1/02***

SPP Transmission Planning

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1. Executive Summary

Aquila Energy Marketing Corporation has requested a system impact study for long-term Firm Point-to-Point transmission service from CLEC to ERCOTE. The period of the transaction is from 6/1/01 to 6/1/02. This is a 500MW request for the following OASIS Reservations: 231669 & 231671 – 79.

The principal objective of this study is to identify any constraints that may limit the transfer to less than 500MW. These constraints are the total transfer capability into the East DC tie and any new overloads that occur due to the CLEC to ERCOTE transfer.

The maximum capacity available for transfer into the East DC Tie is equal to 600MW. Due to already confirmed service requests totaling 191MW into ERCOTE, the remaining capacity on the East DC tie is 409MW.

The CLEC to ERCOTE transfer causes new overloads in the system. These overloaded facilities limit the request to a total of 330MW available for transfer.

2. Introduction

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

This study identifies the restraints on the SPP Regional Tariff System that limit the transfer too less than 500MW. This study includes an Available Transfer Capability (ATC) analysis for those facilities that limit the transfer.

The new overloads identified in the study are documented along with any solutions that are available. For those overloads where no solution is available, the ATC is provided.

3. Study Methodology

A. Description

An analysis was first conducted to determine the amount of capacity available for import into ERCOTE. The impact of the 409MW on SPP and Non-SPP facilities was then studied. Any facilities overloaded due to the CLEC to ERCOTE transfer were documented.

B. Model Updates

SPP used five seasonal models to study the 409MW request. The SPP 2001 Series Cases 2001 Summer Peak, 2001 Fall Peak, 2001/2002 Winter Peak, 2002 April Minimum, and 2002 Spring Peak were used to study the impact of the 409MW 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	2001/02 Winter Peak	2001 April	2001 Spring Peak
Abbreviation	01SP	01FA	01WP	02AP	02SR

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

Tables 1 thru 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 determined ATC value if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Table 1 documents the confirmed reservations running during the request time periods that have a sink of ERCOTE. These reservations limit the CLEC to ERCOTE request to 409MW.

Table 2 contains new facility overloads, primarily in the Entergy control area, that are caused by the transfer.

Table 3 documents the overloaded facilities that limit the transfer to less than 409MW. The ATC is provided to determine the maximum amount of transfer that can be approved. The Smackover to Camden-Maguire, 115kV circuit is the most limiting facility found, with an ATC of 330MW. There is no available solution for this constraint. The ATC of 330MW is the maximum amount of transfer allowed for the CLEC to ERCOTE request.

Table 1: Confirmed Reservations Into ERCOTE

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 2: Facilities Overloaded Due to the CLEC – ERCOTE 409MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % I Loading	TC % I Loading	Outaged Branch That Caused Overload	Comments
02G	EES-EES	SMACKOVER TO CAMDEN-MAGUIRE, 115KV 99276 3SMACKO 115 to 99235 3CAMDMG 115 CKT 1	98	97.5	100.6	MCNEIL 500/115KV TR 99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1	No Solution Available
01SP	EES-CELE	MONTGOMERY TO COLFAX, 230KV 99116 6MONTGY 230 to 50033 COLFAX 6 230 CKT 1	414	64.8	100.5	EAST LEESVILLE TO RODEMACHER, 230KV 50050 ELEESV 6 230 to 50177 RODEMR 6 230 CKT1	Upgraded by Summer 2002
01SP	EES-EES	BEAVER CREEK TO JENA, 115KV 99106 3BVRCRK 115 to 99108 3JENA 1 115 CKT 1	120	69.3	103.9	COLFAX TO RODEMACHER, 230KV 50033 COLFAX 6 230 to 50177 RODEMR 6 230 CKT1	Beaver Creek Phase Shifter (Summer 02)
01WP	CELE-CELE	MANSFIELD TO INTERNATIONAL PAPER, 138KV 50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	77.2	102.1	DOLET HILLS TO SW SHREVEPORT, 345KV 50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1	Dolet Hills Operating Guide
01WP	EES-CELE	MONTGOMERY TO COLFAX, 230KV 99116 6MONTGY 230 to 50033 COLFAX 6 230 CKT 1	414	67.9	102.6	MCKNIGHT TO FRANKLIN, 500KV 98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1	Upgraded by Summer 2002
01WP	EES-EES	AMITE TO KENTWOOD, 115KV 98481 3AMITE 115 to 98480 3KENTWD 115 CKT 1	80	96.9	100.5	MCKNIGHT TO FRANKLIN, 500KV 98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1	Proposed Upgraded for 2003
01WP	EES-EES	BEAVER CREEK TO JENA, 115KV 99106 3BVRCRK 115 to 99108 3JENA 1 115 CKT 1	120	68.5	104.4	COLFAX TO RODEMACHER, 230KV 50033 COLFAX 6 230 to 50177 RODEMR 6 230 CKT1	Beaver Creek Phase Shifter (Summer 02)
01WP	EES-EES	JENA TO STANDARD, 115KV 99108 3JENA 1 115 to 99110 3STAND 115 CKT 1	105	64.3	105.3	COLFAX TO RODEMACHER, 230KV 50033 COLFAX 6 230 to 50177 RODEMR 6 230 CKT1	Beaver Creek Phase Shifter (Summer 02)

Table 3: Constraints Limiting the CLEC - ERCOTE 409MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	RATEB	BC % I Loading	TC % I Loading	Outaged Branch That Caused Overload	ATC
02G	EES-EES	SMACKOVER TO CAMDEN-MAGUIRE, 115KV 99276 3SMACKO 115 to 99235 3CAMDMG 115 CKT 1	98	97.5	100.6	MCNEIL 500/115KV TR 99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1	330
01SP	EES-CELE	MONTGOMERY TO COLFAX, 230KV 99116 6MONTGY 230 to 50033 COLFAX 6 230 CKT 1	414	64.8	100.5	EAST LEESVILLE TO RODEMACHER, 230KV 50050 ELEESV 6 230 to 50177 RODEMR 6 230 CKT1	403
01SP	EES-EES	BEAVER CREEK TO JENA, 115KV 99106 3BVRCRK 115 to 99108 3JENA 1 115 CKT 1	120	69.3	103.9	COLFAX TO RODEMACHER, 230KV 50033 COLFAX 6 230 to 50177 RODEMR 6 230 CKT1	363
01WP	CELE-CELE	MANSFIELD TO INTERNATIONAL PAPER, 138KV 50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	77.2	102.1	DOLET HILLS TO SW SHREVEPORT, 345KV 50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1	375
01WP	EES-CELE	MONTGOMERY TO COLFAX, 230KV 99116 6MONTGY 230 to 50033 COLFAX 6 230 CKT 1	414	67.9	102.6	MCKNIGHT TO FRANKLIN, 500KV 98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1	378
01WP	EES-EES	AMITE TO KENTWOOD, 115KV 98481 3AMITE 115 to 98480 3KENTWD 115 CKT 1	80	96.9	100.5	MCKNIGHT TO FRANKLIN, 500KV 98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1	352
01WP	EES-EES	BEAVER CREEK TO JENA, 115KV 99106 3BVRCRK 115 to 99108 3JENA 1 115 CKT 1	120	68.5	104.4	COLFAX TO RODEMACHER, 230KV 50033 COLFAX 6 230 to 50177 RODEMR 6 230 CKT1	359
01WP	EES-EES	JENA TO STANDARD, 115KV 99108 3JENA 1 115 to 99110 3STAND 115 CKT 1	105	64.3	105.3	COLFAX TO RODEMACHER, 230KV 50033 COLFAX 6 230 to 50177 RODEMR 6 230 CKT1	356

5. Conclusion

Initial requests totaling 191MW with a Sink of ERCOTE have been previously been confirmed for service for the time period of this study. The results show that due to the 600MW Total Transfer Capability on the East DC tie, the CLEC to ERCOTE transfer is initially limited to a 409MW transfer.

In addition to the East DC tie limit, the 409MW transfer causes overloads on additional facilities. The Smackover to Camden-Maguire, 115kV circuit is the most limiting constraint on the 409MW transfer. This facility has an ATC of 330MW for the transfer. Due to the impact on this facility, the CLEC to ERCOTE transfer is limited to 330MW.

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