



SPP *Southwest Power Pool*

***System Impact Study SPP-2002-019
For Transmission Service
Requested By
Aquila Energy Marketing
Corporation***

From CLEC To ERCOTE

***For a Reserved Amount Of 150 MW
From 6/1/02
To 6/1/03***

SPP Coordinated Planning

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1. Executive Summary

Aquila Energy Marketing Corporation (AEMC) 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 6/1/02 to 6/1/03. The request is for OASIS reservation 338091, 338092, and 338094 totaling 150 MW. OASIS reservation 338091, 338092, and 338094 are the renewals of OASIS reservation 316425, 316424, and 316422 respectively.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 150 MW transfer while maintaining system reliability.

New overloads caused by the 150 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 CLEC to ERCOTE 150 MW transfer; therefore the reservations will be accepted.

2. Introduction

Aquila Energy Marketing Corporation (AEMC) has requested an impact study for transmission service from CLEC to ERCOTE.

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 150 MW. 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 150 MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 150 MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 150 MW 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 150 MW 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 CLEC to ERCOTE 150 MW transfer. The SPP 2002 Series Cases: 2002 Summer Peak, 2002 Fall Peak, 2002/03 Winter Peak, 2003 April Minimum, and 2003 Spring Peak were used to study the impact of the 150 MW transfer on the SPP system during the transaction period of 6/1/02 to 6/1/03.

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 SPP facility overloads caused by the 150 MW transfer. Available solutions are given in the table.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 150 MW transfer.

Table 3 documents the 150 MW transfer impact on previously assigned and identified SPP facilities. Available solutions are given in the table.

Table 1 – SPP Facility Overloads caused by the CLEC to ERCOTE 150 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	Solution
02SP	CELE-AEPW	INTERNATIONAL PAPER TO WALLACE LAKE, 138KV 50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	96.7	108.0	DOLET HILLS TO SOUTHWEST SHREVEPORT, 345KV 50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1	200	Dolet Hills Operating Guide Monitor Line At 260 MVA 24.4% Rating Increase
02FA		NONE					200	
02WP		NONE					200	
03AP		NONE					200	
03G		NONE					200	

Table 2 – Non - SPP Facility Overloads caused by the CLEC to ERCOTE 150 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
02SP	CELE-CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	97.2	107.5	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1
02SP	CELE-CELE	50120 MANY 4 138 to 50057 FISHER 4 138 CKT 1	148	98.2	102.3	50023 CARROLL6 230 to 50024 CARROLL4 138 CKT1
02SP	EES-EES	99027 8FRKLIN 500 to 98235 8MCKNT 500 CKT 1	1732	98.6	100.5	97717 8HARTBRG 500 to 97916 8NELSON 500 CKT1
02SP	EES-EES	99750 5HRSBRG* 161 to 99782 5TRUMAN 161 CKT 1	148	99.8	100.2	99763 5NEW-IN 161 to 99764 5NEWPO 161 CKT1
02FA	CELE-CELE	50023 CARROLL6 230 to 50024 CARROLL4 138 CKT 1	336	97.2	103.5	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1
02FA	CELE-CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	92.8	103.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1
02WP	CELE-CELE	50023 CARROLL6 230 to 50024 CARROLL4 138 CKT 1	336	97.8	104.0	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1
02WP	CELE-CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	97.0	107.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1
03AP		NONE				
03G	EES-EES	99066 3DEXTER* 115 to 98489 3BOGLSA 115 CKT 1	80	99.9	100.4	99028 3FRKLIN 115 to 99036 3BROKHV 115 CKT99
03G	EES-EES	99066 3DEXTER* 115 to 98489 3BOGLSA 115 CKT 1	80	99.5	100.1	98497 6ADMSCRK 230 to 15030 6HATBG S 230 CKT1

Table 3 – Previously Assigned and Identified SPP Facilities Impacted by the CLEC to ERCOTE 150 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	Assignment	Solution
02SP	GRRD-AEPW	CATOOSA 161/138KV TRANSFORMER #2 54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	110.2	110.9	CATOOSA 161/138KV TRANSFORMER #1 54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT1	200	SPP Flowgate	Chouteau Operating Guide Open Either Maid to Catoosa 161 kV line
02FA		NONE					200		
02WP		NONE					200		
03AP		NONE					200		
03G		NONE					200		

5. Conclusion

The requested 150 MW of firm point-to-point transmission service was studied for the time period of the request (6/1/02-6/1/03).

No facilities in SPP restrict the requested CLEC to ERCOTE 150 MW transfer; therefore the reservations 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 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 – 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. 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