SPP Southwest Power Pool

Preliminary System Impact Study SPP-2005-007-1P For Transmission Service Requested By Calpine Energy Services L.P.

From SPA to ERCOTE

For a Reserved Amount Of 50MW From 1/1/2006 To 1/1/2008

SPP Engineering, Tariff Studies

System Impact Study

Calpine Energy Services L.P. has requested a system impact study for long-term Firm Point-to-Point transmission service from SPA to ERCOTE for 50 MW. The period of the service requested is from 1/1/2006 to 1/1/2008. The OASIS reservation number is 826679. This is a request to redirect previously confirmed OASIS reservation 696710. Oasis Reservation 696710 is a 50 MW request from AEPW to ERCOTE. The principal objective of this study is to identify system constraints on the SPP Regional Tariff System and potential system facility upgrades that may be necessary to provide the requested service.

This study was performed for the SPA to ERCOTE request in order to provide preliminary results identifying facility upgrades that may be required for the requested service. The requested service was modeled as a transfer from the specified source in the SPA Control Area to the ERCOTE HVDC Tie. The preliminary study is performed with only confirmed reservations included in the models. The models do not include any reservations, even those with a higher priority, that are still in study mode. The results of the transfer analyses are documented in Tables 1, 2, and 3 of the report. Table 1 summarizes the results of the Scenario 1 system impact analysis. Table 2 summarizes the results of the Scenario 2 system impact analysis. Table 3 summarizes the results of the Scenario 3 system impact analysis. The primary purpose of this preliminary study is to provide the customer with an estimated cost of the facility upgrades that may be required in order to accommodate the requested service. The preliminary study is performed by monitoring each facility at 90% of its rating.

Eight seasonal models were used to study the SPA to ERCOTE request for the requested service period. The SPP 2005 Series Cases Update 1, 2006 April Minimum (06AP), 2006 Spring Peak (06G), 2006 Summer Peak (06SP), 2006 Summer Shoulder (06SH), 2006 Fall Peak (06FA), 2006/07 Winter Peak (06WP), 2007 Summer Peak (07SP), and 2007/08 Winter Peak (07WP) were used to study the impact of the request on the SPP system during the requested service period of 1/1/2006 to 1/1/2008. The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect firm transfers during the requested service period that were not already included in the January 2005 base case series models. From the eight seasonal models, three system scenarios were developed. Scenario 1 includes confirmed West to East transfers not already included in the January 2005 base case series models, SPS Exporting (including the Lamar HVDC Tie flowing from SPS to Lamar), and ERCOT importing. Scenario 2 includes confirmed East to West transfers not already included in the January 2005 base case series models, SPS Importing (including the Lamar HVDC Tie flowing from Lamar to SPS), and ERCOT importing. Scenario 3 includes confirmed West to East transfers not already included in the January 2005 base case series models, SPS Importing (including the Lamar HVDC Tie flowing from Lamar to SPS), and ERCOT importing.

PTI's MUST First Contingency Incremental Transfer Capability (FCITC) DC analysis was used to study the request. The MUST options chosen to conduct the System Impact Study analysis can be found in Appendix A. The MUST option to convert MVA branch ratings to estimated MW ratings was used to partially compensate for reactive loading.

These study results are preliminary estimates only and are not intended for use in final determination of the granting of service. These results do not include an evaluation of potential constraints in the planning horizon beyond the reservation period that may limit the right to renew service. Also, these results do not include third party constraints in Non-SPP control areas. Any solutions, upgrades, and costs provided in the preliminary System Impact Study are planning estimates only.

SPP will also review the possibility of curtailment of previously confirmed service and/or the redispatch of units as an option for relieving the additional impacts on the SPP facilities caused by the SPA to ERCOTE request. It is the responsibility of the customer to reach an agreement with the applicable party concerning the curtailment of confirmed service and the redispatch of units. The curtailment and redispatch requirements would be called upon prior to implementing NERC TLR Level 5a. These options will be evaluated as part of the Aggregate System Impact Study. Execution of a Facility Study Agreement is not required at this time to maintain queue position. The final upgrade solutions, cost assignments, available redispatch, and curtailment options will be determined upon the completion of the Aggregate System Impact Study and Facility Study. An Aggregate System Impact Study Agreement will be tendered prior to the close of the first open season, June 1, 2005.

Table 1 – SPP facility overloads identified for the SPA to ERCOTE transfer using Scenario 1

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Original %TC Loading	Original %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
06AP		NONE IDENTIFIED								50		
06G	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	95.8	99.3	7.5520	98.1	5.0010	54015 CRAIGJT4 138 56004 MTRIVER4 138 1	50	May be relieved by alternative switching scheme, otherwise rebuild 7.66 miles of 3/0 CW CU with 795 ACSR. E&C lead time is 15 months.	$2,700,000
06SP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	89.5	92.6	6.5100	91.9	4.9970	54015 CRAIGJT4 138 56004 MTRIVER4 138 1	50	See previous upgrade specified for facility in scenario 1	
06SH	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	86.9	90.1	6.8200	89.3	4.9970	55823 BBDAMTP4 138 56004 MTRIVER4 138 1	50	See previous upgrade specified for facility in scenario 1	
06FA	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	108.9	111.5	5.5080	111.3	4.9990	54015 CRAIGJT4 138 56004 MTRIVER4 138 1	0	See previous upgrade specified for facility in scenario 1	
06WP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	96.1	99.6	7.5370	98.4	4.9980	54015 CRAIGJT4 138 56004 MTRIVER4 138 1	50	See previous upgrade specified for facility in scenario 1	
07SP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	91.3	94.3	6.4020	93.7	5.0570	54015 CRAIGJT4 138 56004 MTRIVER4 138 1	50	See previous upgrade specified for facility in scenario 1	
07WP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	99.8	103.2	7.2580	102.2	5.0570	54015 CRAIGJT4 138 56004 MTRIVER4 138 1	3	See previous upgrade specified for facility in scenario 1	
											This cost may be higher due to additional facilities whose solutions will be determined during the Facility Study process	$*
											Total Cost with Facilities Monitored @ 90% Loading	$2,700,000
											Total Cost with Facilities Monitored @ 100% Loading	$2,700,000

Table 2 – SPP facility overloads identified for the SPA to ERCOTE transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Original %TC Loading	Original %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
06AP	SWPA-SWPA	*B252 EUFAULA1 1 52774 EUFAULA4 138 1	105	93.3	95.3	4.1470	93.5	0.2680	52752 GORE 5 161 52790 WELEETK 5 161 1	50	Solution Undertermined	TBD
06G		NONE IDENTIFIED								50		
06SP		NONE IDENTIFIED								50		
06SH		NONE IDENTIFIED								50		
06FA		NONE IDENTIFIED								50		
06WP		NONE IDENTIFIED								50		
07SP		NONE IDENTIFIED								50		
07WP		NONE IDENTIFIED								50		
											This cost may be higher due to additional facilities whose solutions will be determined during the Facility Study process	$*
											Total Cost with Facilities Monitored @ 90% Loading	$-
											Total Cost with Facilities Monitored @ 100% Loading	$-

Table 3 – SPP facility overloads identified for the SPA to ERCOTE transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Original %TC Loading	Original %TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
06AP		NONE IDENTIFIED								50		
06G	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	90.9	94.5	7.5630	93.3	5.0010	55823 BBDAMTP 4 138 56004 MTRIVER 4 138 1	50	See previous upgrade specified for facility in scenario 1	
06SP		NONE IDENTIFIED								50		
06SH		NONE IDENTIFIED								50		
06FA	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	104.1	106.7	5.5110	106.5	4.9990	55823 BBDAMTP 4 138 56004 MTRIVER 4 138 1	0	See previous upgrade specified for facility in scenario 1	
06WP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	91.5	95.0	7.5460	93.8	4.9980	55823 BBDAMTP 4 138 56004 MTRIVER 4 138 1	50	See previous upgrade specified for facility in scenario 1	
07SP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	88.0	91.0	6.4090	90.4	5.0570	55823 BBDAMTP 4 138 56004 MTRIVER 4 138 1	50	See previous upgrade specified for facility in scenario 1	
07WP	AEPW-SWPA	54015 CRAIGJT4 138 52814 BRKN BW4 138 1	107	95.6	99.0	7.2630	98.0	5.0570	55823 BBDAMTP 4 138 56004 MTRIVER 4 138 1	50	See previous upgrade specified for facility in scenario 1	
											This cost may be higher due to additional facilities whose solutions will be determined during the Facility Study process	$*
											Total Cost with Facilities Monitored @ 90% Loading	$-
											Total Cost with Facilities Monitored @ 100% Loading	$-

Appendix A

MUST CHOICES IN RUNNING FCITC DC ANALYSIS

CONSTRAINTS/CONTINGENCY INPUT OPTIONS

1. AC Mismatch Tolerance – 2 MW
2. Base Case Rating – Rate A
3. Base Case % of Rating – 90%
4. Contingency Case Rating – Rate B
5. Contingency Case % of Rating – 90%
6. Base Case Load Flow – Do not solve AC
7. Convert branch ratings to estimated MW ratings – Yes
8. Contingency ID Reporting – Labels
9. Maximum number of contingencies to process - 50000

MUST CALCULATION OPTIONS

1. Phase Shifters Model for DC Linear Analysis – Constant flow for Base Case and Contingencies
2. Report Base Case Violations with FCITC – Yes
3. Maximum number of violations to report in FCITC table - 50000
4. Distribution Factor (OTDF and PTDF) Cutoff – 0.03
5. Maximum times to report the same elements - 10
6. Apply Distribution Factor to Contingency Analysis – Yes
7. Apply Distribution Factor to FCITC Reports – Yes
8. Minimum Contingency Case flow change – 1 MW
9. Minimum Contingency Case Distribution Factor change – 0.0
10. Minimum Distribution Factor for Transfer Sensitivity Analysis – 0.0