Southwest Power Pool

Preliminary System Impact Study SPP-2005-010-1P For Transmission Service Requested By Calpine Energy Services L.P.

From OPPD to ERCOTE

For a Reserved Amount Of 150MW 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 OPPD to ERCOTE for 150 MW. The period of the service requested is from 1/1/2006 to 1/1/2008. The OASIS reservation numbers are 826686, 826687, and 826688. This is a request to redirect previously confirmed OASIS reservations 696694, 696688, and 696691. Oasis Reservations 696694, 696688, and 696691 are 50 MW requests from CLEC 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 OPPD 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 OPPD 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 OPPD 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 OPPD 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 OPPD 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								150		
06G	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	97.9	103.6	4.0140	100.8	2.0490	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	55	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 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	92.5	98.2	4.0160	95.4	2.0520	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	150	See previous upgrade specified for facility	
06SH	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	86.4	92.0	4.0160	89.2	2.0520	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	150	See previous upgrade specified for facility	
06FA	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	111.2	116.8	4.0050	114.0	2.0490	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	0	See previous upgrade specified for facility	
06WP	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	98.5	104.1	4.0050	101.4	2.0500	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	40	See previous upgrade specified for facility	
07SP	MIPU-MIPU	59253 ST JOE 5 161 59258 WOODBIN 5 161 1	202	102.4	104.7	3.0970	102.5	0.1360	59253 ST JOE 5 161 59257 COOK 5 161 1	0	Solution Undetermined	TBD
07SP	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	94.4	100.0	4.0290	97.3	2.0660	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	150	See previous upgrade specified for facility	
07SP	MIPU-MIPU	59254 EAST 5 161 59258 WOODBIN 5 161 1	203	93.1	95.4	3.0970	93.2	0.1360	59253 ST JOE 5 161 59257 COOK 5 161 1	150	Solution Undetermined	TBD
07WP	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	102.2	107.9	4.0160	105.1	2.0640	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	0	See previous upgrade specified for facility	
											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 OPPD 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		NONE IDENTIFIED								150		
06G		NONE IDENTIFIED								150		
06SP	MIPU-MIPU	59253 ST JOE 5 161 59258 WOODBIN 5 161 1	202	103.3	105.6	3.1020	103.4	0.1340	59253 ST JOE 5 161 59257 COOK 5 161 1	0	Solution Undetermined	TBD
06SP	MIPU-MIPU	59254 EAST 5 161 59258 WOODBIN 5 161 1	203	93.9	96.2	3.1020	94.0	0.1340	59253 ST JOE 5 161 59257 COOK 5 161 1	150	Solution Undetermined	TBD
06SH		NONE IDENTIFIED								150		
06FA		NONE IDENTIFIED								150		
06WP		NONE IDENTIFIED								150		
07SP	MIPU-MIPU	59253 ST JOE 5 161 59258 WOODBIN 5 161 1	202	102.4	104.7	3.0970	102.5	0.1360	59253 ST JOE 5 161 59257 COOK 5 161 1	0	Solution Undetermined	TBD
07SP	MIPU-MIPU	59254 EAST 5 161 59258 WOODBIN 5 161 1	203	93.1	95.3	3.0970	93.2	0.1360	59253 ST JOE 5 161 59257 COOK 5 161 1	150	Solution Undetermined	TBD
07SP		NONE IDENTIFIED								150		
07WP		NONE IDENTIFIED								150		
											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 OPPD 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								150		
06G	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	90.4	96.0	4.0140	93.2	2.0490	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	150	See previous upgrade specified for facility in scenario 1	
06SP	MIPU-MIPU	59253 ST JOE 5 161 59258 WOODBIN 5 161 1	201	100.0	102.3	3.1020	100.1	0.1340	59253 ST JOE 5 161 59257 COOK 5 161 1	1	Solution Undetermined	TBD
06SP	MIPU-MIPU	59254 EAST 5 161 59258 WOODBIN 5 161 1	203	90.6	92.9	3.1020	90.7	0.1340	59253 ST JOE 5 161 59257 COOK 5 161 1	150	Solution Undetermined	TBD
06SH		NONE IDENTIFIED								150		
06FA	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	103.5	109.1	4.0050	106.4	2.0490	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	0	See previous upgrade specified for facility in scenario 1	
06WP	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	90.9	96.5	4.0050	93.8	2.0500	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	150	See previous upgrade specified for facility in scenario 1	
07SP	MIPU-MIPU	59253 ST JOE 5 161 59258 WOODBIN 5 161 1	201	99.0	101.3	3.0970	99.1	0.1360	59253 ST JOE 5 161 59257 COOK 5 161 1	63	Solution Undetermined	TBD
07SP	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	87.5	93.1	4.0290	90.4	2.0660	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	150	See previous upgrade specified for facility in scenario 1	
07SP	MIPU-MIPU	59254 EAST 5 161 59258 WOODBIN 5 161 1	203	89.7	91.9	3.0970	89.8	0.1360	59253 ST JOE 5 161 59257 COOK 5 161 1	150	Solution Undetermined	TBD
07WP	AEPW-SWPA	54015 CRAIGJT 4 138 52814 BRKN BW4 138 1	107	95.0	100.7	4.0160	97.9	2.0640	55823 BBDAMTP4 138 56004 MTRIVER 4 138 1	132	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