



SPP *Southwest Power Pool*

*Preliminary
System Impact Study
SPP-2004-193-1P
For Transmission Service
Requested By
Aquila Network Services*

From EES to MPS

*For a Reserved Amount Of 300MW
From 6/1/2007
To 6/1/2008*

SPP Engineering, Tariff Studies

System Impact Study

Aquila Network Services has requested a system impact study for long-term Firm Point-to-Point transmission service from EES to MPS for 300 MW. The period of the service requested is from 6/1/2007 to 6/1/2008. The OASIS reservation numbers are 807123, 807124, 807125, and 807126. 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 EES to MPS 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 EES Control Area to marginally dispatched units in the MPS Control Area. 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.

Six seasonal models were used to study the EES to MPS request for the requested service period. The SPP 2004 Series Cases Update 2, 2005 April Minimum (05AP), 2005 Spring Peak (05G), 2005 Summer Shoulder (05SH), 2005 Fall Peak (05FA), 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 6/1/2007 to 6/1/2008. 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 2004 base case series models. From the six seasonal models, three system scenarios were developed. Scenario 1 includes confirmed West to East transfers not already included in the January 2004 base case series models, SPS Exporting (including the Lamar HVDC Tie flowing from SPS to Lamar), and ERCOT exporting. Scenario 2 includes confirmed East to West transfers not already included in the January 2004 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 2004 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 EES to MPS 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 EES to MPS transfer using Scenario 1

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05AP		None Identified						300		
05G		None Identified						300		
05SH	KACP-KACP	57969 STILWEL5 161 58053 REDEL 5 161 1	329	86.3	98.0	12.8230	57968 STILWEL7 345 59200 PHILL 7 345 1	300	Solution Undetermined	TBD
05SH	KACP-KACP	57969 STILWEL5 161 58053 REDEL 5 161 1	329	75.5	90.4	16.4100	3Wnd: OPEN *B0 13 1	300	Solution Undetermined	TBD
05FA		None Identified						300		
07SP	KACP-KACP	57968 STILWEL7 345 *B448 STLWL 11 1 11	593	89.3	91.2	3.8050	3Wnd: OPEN *B4 49 S TLWL 22 22	300	May be relieved due to KACP Stilwell 345/161 kV Transformer Operating Procedure	TBD
07SP	KACP-KACP	57969 STILWEL5 161 *B448 STLWL 11 1 11	598	88.5	90.4	3.8050	3Wnd: OPEN *B4 49 S TLWL 22 22	300	May be relieved due to KACP Stilwell 345/161 kV Transformer Operating Procedure	TBD
07SP	KACP-KACP	57969 STILWEL5 161 58053 REDEL 5 161 1	325	84.7	95.4	11.5210	57968 STILWEL7 345 59200 PHILL 7 345 1	300	Solution Undetermined	TBD
07WP		None Identified						300		
									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 2 – SPP facility overloads identified for the EES to MPS transfer using Scenario 2

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05AP	SWPA-ENTR	52648 NORFORK5 161 99803 5CALCR 161 1	143	84.3	91.2	3.3210	99742 8DELL 5 500 99818 8ISES 5 500 1	300	Solution Undetermined	TBD
05G		None Identified						300		
05SH	KACP-AECI	58062 SALSBRYS 161 96120 5THMHIL 161 1	334	88.2	91.3	3.4480	96120 5THMHIL 161 96126 5MOBTAP 161 1	300	May be relieved due to AECI Operating Procedure for Thomas Hill	TBD
05SH	KACP-AECI	58062 SALSBRYS 161 96120 5THMHIL 161 1	334	86.9	90.3	3.7770	96120 5Thmhil 161 96126 Moberly 161 1 96126 Moberly 161 96499 5Hinton 161 1	300	May be relieved due to AECI Operating Procedure for Thomas Hill	TBD
05FA	SWPA-ENTR	52648 NORFORK5 161 99803 5CALCR 161 1	147	90.1	97.0	3.3400	99742 8DELL 5 500 99818 8ISES 5 500 1	300	Solution Undetermined	TBD
07SP	SWPA-ENTR	52648 NORFORK5 161 99803 5CALCR 161 1	148	86.1	92.9	3.3650	99742 8DELL 5 500 99818 8ISES 5 500 1	300	Solution Undetermined	TBD
07SP	KACP-AECI	58062 SALSBRYS 161 96120 5THMHIL 161 1	334	89.1	92.0	3.2470	96120 5THMHIL 161 96126 5MOBTAP 161 1	300	May be relieved due to AECI Operating Procedure for Thomas Hill	TBD
07SP	KACP-AECI	58062 SALSBRYS 161 96120 5THMHIL 161 1	334	87.2	90.4	3.5770	96120 5Thmhil 161 96126 Moberly 161 1 96126 Moberly 161 96499 5Hinton 161 1	300	May be relieved due to AECI Operating Procedure for Thomas Hill	TBD
07WP		None Identified						300		
									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 EES to MPS transfer using Scenario 3

Study Case	From Area - To Area	Branch Overload	Rating <MW>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
05AP		None Identified						300		
05G		None Identified						300		
05SH	KACP-KACP	57969 STILWEL5 161 58053 REDEL 5 161 1	328	81.6	93.3	12.8230	57968 STILWEL7 345 59200 PHILL 7 345 1	300	Solution Undetermined	TBD
05FA		None Identified						300		
07SP	KACP-KACP	57969 STILWEL5 161 58053 REDEL 5 161 1	325	79.7	90.4	11.5210	57968 STILWEL7 345 59200 PHILL 7 345 1	300	Solution Undetermined	TBD
07WP		None Identified						300		
									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