



SPP *Southwest Power Pool*

*System Impact Study
SPP-2003-289-1
For Transmission Service
Requested By
Aquila Network Services
Utilicorp United (UCU)*

From SPA to MPS

*For an Amount Of 50 MW From
6/1/2005
To 6/1/2006*

SPP Engineering, Tariff Studies

System Impact Study

UCU has requested a system impact study for long-term Firm Point-to-Point transmission service from SPA to MPS for 50 MW. The period of the service requested is from 6/1/2005 to 6/1/2006. The OASIS reservation number is 628026. 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 MPS request in order to provide preliminary results identifying facility upgrades that may be required for the requested service. 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 analysis are documented in Table 1 of the report. The results given in Table 1 include upgrades that may be assigned to higher priority requests. If a facility identified for the SPA to MPS study is also identified for a study with higher priority, the facility will be assigned to the request with the highest priority. If the higher priority customer does not take service, the facility would then be assigned to the SPA to MPS request. 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.

Five seasonal models were used to study the SPA to MPS request for the requested service period. The SPP 2004 Series Cases 2005 Summer Shoulder (05SH), 2005 Summer Peak (05SP), 2005 Fall Peak (05FA), 2005/2006 Winter Peak (05WP), and 2007 Summer Peak (07SP) were used to study the impact of the request on the SPP system during the requested service period of 6/1/2005 to 6/1/2006. 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. The scenario studied includes confirmed West to East transfers not already included in the January 2004 base case series models, SPS Importing, and the Lamar HVDC Tie flowing from Lamar to SPS.

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.

The study results of the SPA to MPS transfer show that limiting constraints exist. Due to the limiting constraints identified, the Transmission Service Request cannot be granted. Any solutions, upgrades, and costs provided in the preliminary System Impact Study are planning estimates only. The final ATC and upgrades required may vary from these results due to the status of higher priority requests, unknown facility upgrades and proposed transmission plans that will be identified during the facility study process, and the final results of the full AC analysis.

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 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 Facility Study. Execution of a Facility Study Agreement is now required to maintain queue position. The final upgrade solutions, cost assignments and available redispatch and curtailment options will be determined upon the completion of the facility study.

Table 1 – SPP facility overloads identified for the SPA to MPS transfer.

Study Case	From Area - From Area	Branch Overload	Rating <MW>	Pre Transfer Loading	%TDF	Outaged Branch Causing Overload	Solution	Estimated Cost
05FA	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	210	242	0.3450	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
05SH	SWPA-SWPA	52640 DONIPH5 161 97201 2DONIPH 69 1	16	18	0.0330	52640 DONIPH5 161 97201 2DONIPH 69 2	Solution Undetermined	
05SH	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	565	571	1.0920	56765 HOYT 7 345 56766 JEC N 7 345 1	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	
05SH	AEPW-AEPW	54023 OKMULGE4 138 54049 EC.HEN-4 138 1	104	124	0.4830	54023 OKMULGE4 138 54057 KELCO 4 138 1	Replace Okmulgee Wavetrap	\$ 40,000
05SH	AEPW-AEPW	54028 WELETK4 138 54049 EC.HEN-4 138 1	104	120	0.4830	54023 OKMULGE4 138 54057 KELCO 4 138 1	Replace Weleetka Wavetrap	\$ 40,000
05SP	SWPA-SWPA	52640 DONIPH5 161 97201 2DONIPH 69 1	15	21	0.0320	52640 DONIPH5 161 97201 2DONIPH 69 2	Solution Undetermined	
05SP	AEPW-AEPW	54125 HEADRIK2 69 54138 SNYDER-2 69 1	53	58	0.0790	54126 HOB-JCT4 138 54158 TAMARTP4 138 1	Replace Snyder wavetrap	\$ 40,000
05SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	565	610	1.0890	56765 HOYT 7 345 56766 JEC N 7 345 1	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	
05SP	SWPA-SWPA	52660 BULL SH5 161 99825 5MIDWAY# 161 1	162	162	1.9430	99817 5ISES 1 161 99826 5MORFLD 161 1	Replace disconnect switches, metering CTs and wave trap at Bull Shoals.	\$ 150,000
05WP	SWPA-SWPA	52640 DONIPH5 161 97201 2DONIPH 69 1	17	20	0.0330	52640 DONIPH5 161 97201 2DONIPH 69 2	Solution Undetermined	
05WP	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	210	216	0.3420	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
05WP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	565	579	1.1710	56765 HOYT 7 345 56766 JEC N 7 345 1	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	
07SP	GRRD-GRRD	54427 COLINS 5 161 54476 COLNSGR2 69 1	50	50	0.1930	54427 COLINS 5 161 54476 COLNSGR2 69 2	Solution Undetermined	
07SP	SWPA-SWPA	52640 DONIPH5 161 97201 2DONIPH 69 1	15	22	0.0320	52640 DONIPH5 161 97201 2DONIPH 69 2	Solution Undetermined	
07SP	WERE-WERE	57361 AEC 3 115 57365 EABILEN3 115 1	68	69	0.0990	56861 EMANHAT6 230 *B239 EMANHT3X 1 1	May be relieved due to Westar Operating Procedure 0633 - Outage of the East Manhattan 230-115kV Transformer	
07SP	AEPW-AEPW	54125 HEADRIK2 69 54138 SNYDER-2 69 1	53	60	0.0790	54126 HOB-JCT4 138 54158 TAMARTP4 138 1	See Previously Specified Upgrades	
07SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	564	617	1.0910	56765 HOYT 7 345 56766 JEC N 7 345 1	May be relieved due to Westar Operating Procedure 400 - Outage of the Jeffrey Energy Center to Hoyt 345kV Line	
07SP	SWPA-SWPA	52660 BULL SH5 161 99825 5MIDWAY# 161 1	162	168	1.9270	99817 5ISES 1 161 99826 5MORFLD 161 1	See Previously Specified Upgrades	
07SP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	97	99	0.5620	57252 MIDLAND3 115 57261 PENTAGN3 115 1	May be relieved due to Westar Operating Procedure 1202 - Overload of the Jarbalo to Jaggard 115kV Line	
							Solution Undetermined	\$ 270,000

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 – 100%
4. Contingency Case Rating – Rate B
5. Contingency Case % of Rating – 100%
6. Base Case Load Flow – PSS/E
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 – 0.0
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