



SPP *Southwest Power Pool*

*Preliminary
System Impact Study
SPP-2004-005-1P
For Transmission Service
Requested By
Southwestern Public Service
Company*

From SPS to KACY

*For a Redirected Amount Of 21MW
From 6/1/2004
To 6/1/2005*

SPP Engineering, Tariff Studies

System Impact Study

Southwestern Public Service Company has requested a system impact study for long-term Firm Point-to-Point transmission service from SPS to KACY for 21 MW. The period of the service requested is from 6/1/2004 to 6/1/2005. The OASIS reservation number is 635315. This is a request to redirect the previously confirmed OASIS reservation 297076. Oasis Reservation 297076 is a 21 MW transfer from SPS to AMRN. 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 SPS to KACY 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. The results given in Table 1 include upgrades that may be assigned to higher priority requests. If a facility identified for the SPS to KACY 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 SPS to KACY 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.

Six seasonal models were used to study the SPS to KACY request for the requested service period. The SPP 2004 Series Cases 2004 Summer Peak (04SP), Summer Shoulder (04SH), 2004 Fall Peak (04FA), 2004/05 Winter Peak (04WP), 2005 April Minimum (05AP), and 2005 Spring (05G) were used to study the impact of the request on the SPP system during the requested service period of 6/1/2004 to 6/1/2005. 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 Exporting, and the Lamar HVDC Tie flowing from SPS to Lamar.

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 SPS to KACY 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 as an option for relieving the additional impacts on the SPP facilities caused by the SPS to KACY redirect. An example of curtailment of previously confirmed service is given in Table 2. It is the responsibility of the customer to reach an agreement with the applicable party concerning the curtailment of confirmed service. The curtailment 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 curtailment options will be determined upon the completion of the facility study.

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.

Table 1 – SPP facility overloads identified for the SPS to KACY transfer as a redirect of SPS to AMRN service

Study Case	From Area - From Area	Branch Overload	ATC <MW>	Pre Transfer Loading	Rating <MW>	SPS to KACY %TDF	SPS to AMRN %TDF	Outaged Branch Causing Overload	Solution	Estimated Cost
04SP	WERE-WERE	57795 GILL E 2 69 57825 OATVILL2 69 1	0	78	71	0.3310	0.2820	57795 GILL E 2 69 57813 MACARTH2 69 1	Replace disconnect switches at Gill 69 kV (use 800 A.), Replace line switch at Oatville 69 kV (use 800 A.).	\$ 57,000
04SP	WERE-WERE	57795 GILL E 2 69 57813 MACARTH2 69 1	0	68	67	0.2870	0.2460	57795 GILL E 2 69 57825 OATVILL2 69 1	Replace substation bus and jumpers at MacArthur 69 kV.	\$ 98,000
04SP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	0	636	565	4.3410	3.0950	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	TBD
04SP	WERE-WERE	57182 TECHILE3 115 57270 STULL T3 115 1	0	96	92	2.9540	1.3180	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
04SP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	0	100	97	3.2430	0.5190	57252 MIDLAND3 115 57261 PENTAGN3 115 1	May be relieved due to Westar Operating Procedure 1202 - Overload of the Jarbalo to Jaggard 115kV Line	TBD
04SH	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	0	595	565	4.3670	3.1220	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	TBD
04FA	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	0	580	565	4.4300	3.0140	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	TBD
04FA	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	41	36	0.4890	N/A	54731 SO4TH4 4 138 *B449 SO4TH 1 1 1	Invalid Contingency	TBD
04WP	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	0	578	565	4.4260	2.9860	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	TBD
04WP	WERE-WERE	57182 TECHILE3 115 57270 STULL T3 115 1	0	93	92	2.8390	1.3090	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	TBD
04WP	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	45	36	0.4890	0.4540	54731 SO4TH4 4 138 *B450 SO4TH 1 1 1	Invalid Contingency	TBD
05G	WERE-WERE	56851 AUBURN 6 230 56852 JEC 6 230 1	7	565	565	4.4040	2.9780	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	TBD
This cost may be significantly higher due to additional facilities whose solutions will be determined during the Facility Study process										\$*
Total Estimated Cost of Know Solutions										\$ 155,000

N/A = Original request path has negative impact on facility. No credit for positive impact removed can be given to the redirected path for this facility.

Table 2 – Example of Curtailment of Previously Confirmed Service as an Option to Relieving Impact on an Identified Facility

Monitored Branch Over 100% Rate B	Outaged Branch Causing Overload	Date Curtailment Needed	SPS to KACY% Response	SPS to AMRN % Response	*ATC (MW) Needed	**Amount of Previously Confirmed SPS to AMRN Service Needed for Curtailment
57795 GILL E 2 69 57825 OATVILL2 69 1	57795 GILL E 2 69 57813 MACARTH2 69 1	6/1/2004 - 10/1/2004	0.3310	0.2820	3	3
57795 GILL E 2 69 57813 MACARTH2 69 1	57795 GILL E 2 69 57825 OATVILL2 69 1	6/1/2004 - 10/1/2004	0.2870	0.2460	3	3

N/A = Original request path has negative impact on facility. No credit for positive impact removed can be given to the redirected path for this facility.

* ATC (MW) Needed = Study Amount (MW) - (ATC (MW) from Table 1 + ATC (MW) Credit Given to the Redirected Path for Positive Impact Removed by the Original Path)

ATC (MW) Credit = Redirect Amount (MW) * (%Response of Redirect Path) / (%Response Original Path)

** Amount (MW) Needed for Curtailment = ATC (MW) Needed * (%Response Original Path) / (%Response of Redirect Path)

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