



SPP *Southwest
Power Pool*

*System Impact Study
SPP-2003-087-1
For Transmission Service
Requested By
Cargill - Alliant*

From AEPW To ERCOTN

*For a Reserved Amount Of
200 MW From 1/1/2005 To 1/1/2006*

SPP Engineering, Tariff Studies

System Impact Study

Cargill – Alliant has requested a system impact study for Point-to-Point transmission service from AEPW to ERCOTN for 200 MW. The period of the service requested is from 1/1/2005 to 1/1/2006. The OASIS reservation numbers are 495383 and 495384. 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.

The AEPW to ERCOTN request was studied to determine the facility upgrades required based on the actual queue position of the request with only those higher priority requests in Facility Study mode included in the models. Higher priority requests still in study mode that have not gone to facility study mode were not included in the models. 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. The results of this study gives the customer an estimated cost of the facility upgrades that may be required in order to accommodate the AEPW to ERCOTN 200 MW request.

Seven seasonal models were used to study the AEPW to ERCOTN 200 MW request for the requested service period. The SPP 2003 Series Cases 2004 April Min (04AP), 2004 Spring Peak (04G), 2004 Summer Peak (04SP), 2004 Fall Peak (04FA), 2004/05 Winter Peak (04WP), 2009 Summer Peak (09SP), and 2009/10 Winter Peak (09WP) were used to study the impact of the 200 MW request on the SPP system during a the requested service period of 1/1/2005 to 1/1/2006. 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 2003 base case series models.

PTI's MUST First Contingency Incremental Transfer Capability (FCITC) DC analysis was used to study the request. The MUST option to convert MVA branch ratings to estimated MW ratings was used to partially compensate for reactive loading.

With only the higher priority requests that have signed Facility Study Agreements included in the models, the study results of the AEPW to ERCOTN 200 MW 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 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. Execution of a Facility Study Agreement is now required to maintain queue position. The final upgrade solutions and cost assignments will be determined upon the completion of the facility study.

Table 1 – SPP facility overloads identified for the AEPW to ERCOTN transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
04AP	WFEC-WFEC	55802 ACME 2 69 55916 FRNKLNS2 69 1	34	55841 CANADNS2 69 55842 CANADNS4 138 1	0	Acme Jct to Acme Sub: Upgrade From 3/0 To 795MCM.	\$ 857,820
04AP	WFEC-WFEC	55802 ACME 2 69 56095 WNORMAN2 69 1	38	55841 CANADNS2 69 55842 CANADNS4 138 1	0	Acme Sub > West Norman: Upgrade from 3/0 to 795 ACSR	\$ 525,000
04AP	AEPW-AEPW	54023 OKMULGE4 138 54049 EC.HEN-4 138 1	103	54023 OKMULGE4 138 54057 KELCO 4 138 1	46	Replace Okmulgee Wavetrap	\$ 40,000
04AP	AEPW-AEPW	54028 WELETK4 138 54049 EC.HEN-4 138 1	103	54023 OKMULGE4 138 54057 KELCO 4 138 1	101	Replace Weleetka Wavetrap	\$ 40,000
04FA	WERE-WERE	57342 WJCCY3 3 115 57343 WJCCYE3 115 1	141	56873 SUMMIT 6 230 *B168 SUMMIT1X 1 1	0	May be relieved due to WERE Operating Directive 617, Outage of Summit 345/230/14.4KV Transformer	\$ -
04G	WFEC-WFEC	55802 ACME 2 69 55916 FRNKLNS2 69 1	34	55841 CANADNS2 69 55924 GOLDSBY2 69 1	0	See Previous	\$ -
04G	AEPW-AEPW	54023 OKMULGE4 138 54049 EC.HEN-4 138 1	103	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
04G	AEPW-AEPW	54028 WELETK4 138 54049 EC.HEN-4 138 1	103	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
04G	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	210	57040 EVANS N4 138 57041 EVANS S4 138 1	0	Solution Undetermined	N/A
04SP	WFEC-WFEC	55802 ACME 2 69 56095 WNORMAN2 69 1	38	55841 CANADNS2 69 55924 GOLDSBY2 69 1	0	See Previous	\$ -
04SP	OKGE-OKGE	55237 TIBBENS2 69 55246 BEELINE2 69 1	66	55241 BLUEBEL2 69 55242 BLUEBEL4 138 1	0	OKGE Planned Upgrade for 2008. Possible expediting of in-service date.	N/A
04SP	SWPS-SWPS	51014 OSAGE--3 115 51080 CANYNE3 115 1	99	50993 BUSHLND6 230 51111 DFSMTH6 230 1	151	Rebuild 13 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	\$ 1,910,000
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	247	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	Rebuild 12 miles with 2156MCM ACSR. Replace Chamber Springs wavetrap & reset relays.	\$ 7,200,000
04SP	AEPW-AEPW	54023 OKMULGE4 138 54049 EC.HEN-4 138 1	104	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
04SP	AEPW-AEPW	54028 WELETK4 138 54049 EC.HEN-4 138 1	104	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
04SP	OKGE-WFEC	54946 MIDWEST4 138 55917 FRNKLNS4 138 1	187	55869 CROMWEL4 138 56084 WETUMKA4 138 1	0	Replace 800 amp wavetrap with 2000 amp wavetrap at Franklin Switch and 795ACSR jumpers with 1590ACSR, connectors	\$ 24,000
04SP	OKGE-OKGE	54941 HSL 4 138 54973 RENO 4 138 1	287	54941 HSL 4 138 54966 MIDWAY 4 138 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense.	\$ -
04SP	OKGE-OKGE	54852 SLVRLAK4 138 54854 PANTHER4 138 1	286	54873 LONEOAK4 138 54879 NORTWST4 138 1	0	Upgrade completed by OKGE. Rate A/B = 478/478MVA	\$ -
04FA	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	210	57040 EVANS N4 138 57041 EVANS S4 138 1	0	Solution Undetermined	N/A
04FA	OKGE-OKGE	54852 SLVRLAK4 138 54854 PANTHER4 138 1	286	54873 LONEOAK4 138 54879 NORTWST4 138 1	0	Upgrade completed by OKGE. Rate A/B = 478/478MVA	\$ -
04WP	OKGE-OKGE	55035 BRISTOW4 138 55242 BLUEBEL4 138 1	141	53794 R.S.S.-7 345 54909 REDBUD 7 345 1	130	Solution Undetermined	N/A
04WP	AEPW-AEPW	54023 OKMULGE4 138 54049 EC.HEN-4 138 1	105	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
04WP	AEPW-AEPW	54028 WELETK4 138 54049 EC.HEN-4 138 1	104	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
04WP	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	210	57040 EVANS N4 138 57041 EVANS S4 138 1	0	Solution Undetermined	N/A
04WP	OKGE-OKGE	54852 SLVRLAK4 138 54854 PANTHER4 138 1	286	54873 LONEOAK4 138 54879 NORTWST4 138 1	0	Upgrade completed by OKGE. Rate A/B = 478/478MVA	\$ -
09SP	AEPW-AEPW	53781 BA101-N4 138 53818 ONETA--4 138 1	235	53785 RSSAUTO4 138 53795 R.S.S.-4 138 1	0	Rebuild 6.05 miles of 795 ACSR with 1590 ACSR. Replace jumper @ Oneta	\$ 3,600,000
09SP	SWPS-SWPS	51014 OSAGE--3 115 51080 CANYNE3 115 1	99	50993 BUSHLND6 230 51111 DFSMTH6 230 1	0	See Previous	\$ -
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	335	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	Replace Farmington switch 8839	\$ 60,000
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	See Previous	\$ -
09SP	OKGE-OKGE	54933 DRAPER 4 138 54934 DRAPER 7 345 1	489	54933 DRAPER 4 138 54934 DRAPER 7 345 2	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008.	\$ -
09SP	OKGE-OKGE	54933 DRAPER 4 138 54934 DRAPER 7 345 2	489	54933 DRAPER 4 138 54934 DRAPER 7 345 1	0	Add third 345 - 138 kV transformer at Draper in 2008 at OKGE expense and use the operating directive until 2008.	\$ -
09SP	AEPW-AEPW	53157 SFAYTVL5 161 53195 FARMGTN5 161 1	313	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	Replace Farmington switch 5894 and replace South Fayetteville wavetrap jumpers	\$ 50,000
09SP	AEPW-AEPW	53139 FLINTCR5 161 53170 TONTITN5 161 1	306	53756 CLARKSV7 345 53819 ONETA--7 345 1	0	Rebuild 16.3 miles of 2-297 ACSR with 2156 ACSR. Replace Flint Creek wavetrap & jumpers. Replace Flint Creek switch # 1K75	\$ 8,200,000
09SP	OKGE-WFEC	54946 MIDWEST4 138 55917 FRNKLNS4 138 1	186	54948 CEDARLN4 138 54949 SOONRTP4 138 1	0	See Previous	\$ -
09SP	OKGE-OKGE	54941 HSL 4 138 54966 MIDWAY 4 138 1	286	54941 HSL 4 138 54973 RENO 4 138 1	0	Solution Undetermined	N/A
09SP	OKGE-OKGE	54941 HSL 4 138 54973 RENO 4 138 1	287	54839 BRYANT 4 138 54840 JONESTP4 138 1	0	Replace switches & ct's at Horseshoe Lake in 2004 at OKGE expense.	\$ -
09SP	SWPS-SWPS	51020 RANDALL3 115 51082 PALODU 3 115 1	99	51041 AMARLS6 230 51321 SWISHER6 230 1	78	Rebuild 9 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	\$ 1,170,000
09WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	See Previous	\$ -
09WP	AEPW-AEPW	54023 OKMULGE4 138 54049 EC.HEN-4 138 1	105	54017 HENRYET4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
09WP	AEPW-AEPW	54028 WELETK4 138 54049 EC.HEN-4 138 1	104	54023 OKMULGE4 138 54057 KELCO 4 138 1	0	See Previous	\$ -
09WP	WERE-WERE	57342 WJCCY3 3 115 57343 WJCCYE3 115 1	141	56873 SUMMIT 6 230 *B171 SUMMIT1X 1 1	0	May be relieved due to WERE Operating Directive 617, Outage of Summit 345/230/14.4KV Transformer	\$ -
Total Estimated Cost							\$ 23,676,820