



# **SPP** *Southwest Power Pool*

***System Impact Study SPP-2002-238  
For Transmission Service  
Requested By  
ETEC***

***From AEPW To EES***

***For a Reserved Amount Of  
50MW From 1/1/2005 To 1/1/2006***

***SPP Engineering, Tariff Studies***

## **System Impact Study**

ETEC has requested a system impact study for long-term Firm Point-to-Point transmission service from AEPW to EES. The period of the transaction is from 1/1/2005 to 1/1/2006. The request is for OASIS reservation 459016 for an amount of 50 MW.

The principal objective of this study is to identify constraints on the SPP Regional Tariff System and potential facility upgrades that may be necessary to facilitate the additional 50 MW of service requested.

The AEPW to EES transfer 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 that have not gone to facility study were not included in the models. These results are documented in Table 1 of the report. The results given in Table 1 include upgrades that may be assigned to higher priority requests. The results of this study give the customer an estimated cost of facility upgrades that may be required in order to accommodate the 50 MW AEPW to EES transfer.

SPP used four seasonal models to study the AEPW to EES 50 MW transfer for the requested service period. The SPP 2003 Series Cases 2004 Summer Peak, 2004/05 Winter Peak, 2009 Summer Peak and 2009/10 Winter Peak were used to study the impact of the 50 MW transfer on the SPP system during the requested service period of 1/1/2005 to 1/1/2006. The Spring Peak models apply to April and May, the Summer Peak models apply to June through September, the Fall Peak models apply to October and November, and the Winter Peak models apply to December through March. 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.

With only the higher priority requests that have signed Facility Study Agreements included in the models, the study results of the AEPW to EES 50 MW show that limiting constraints exist. Due to the number of limiting constraints identified, the Transmission Service Request cannot be granted. 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. The upgrades and cost 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 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 upgrades identified for the AEPW to EES transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	ATC	Rate B	Outaged Branch Causing Overload	Solution	Estimated Cost
04SP	WERE-WERE	166TH STREET - JARBALO JCT SWI STA 115KV	0	97	MIDLAND JCT - PENTAGON 115kV	May be relieved due to Westar Transmission Operating Directive 1202	Not Available
04SP	GRRD-GRRD	AFTON 161/69KV Transformer	0	49.9	MIAMI - AFTON 161kV	Replace 50 MVA Transformer with 84 MVA unit	\$ 833,000
04SP	AEPW-AEPW	BALDWIN - WOODLAWN 69KV	0	28.4	FLOURNOY 69/138kV Transformer	Solution Undetermined	Not Available
04SP	AEPW-AEPW	BANN - KINGS HIGHWAY 69KV	0	71.8	BANN - REDLICK REC 69KV	Solution Undetermined	Not Available
04SP	AEPW-AEPW	BLOCKER TAP - MARSHALL 69KV	0	79.8	CHEROKEE REC - KNOX LEE 138kV	Solution Undetermined	Not Available
04SP	OKGE-OKGE	BRAMAN - CHIKASKIA TAP 69KV	0	36.5	KILDARE - WHITE EAGLE 138kV	Solution Undetermined	Not Available
04SP	AECI-AECI	BRISTOW 138/69KV Transformer ckt 1	0	54.3	BRISTOW 138/69KV Transformer Ckt 2	Transformer Owned by GRDA - Solution Undetermined	Not Available
04SP	AECI-AECI	BRISTOW 138/69KV Transformer ckt 2	0	54.3	BRISTOW 138/69KV Transformer Ckt 1	Transformer Owned by GRDA - Solution Undetermined	Not Available
04SP	SWPA-ENTR	BULL SHOALS - MIDWAY 161KV	0	161.4	5ISES 1 - 5MORFLD 161kV	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,000
04SP	AEPW-AEPW	CHAMBER SPRINGS - FARMINGTON AECC 161KV	0	334.8	CHAMBER SPRINGS - TONTITOWN 161kV	Replace Farmington switch	\$ 60,000
04SP	AEPW-AEPW	CHAMBER SPRINGS - TONTITOWN 161KV	0	247	FLINT CREEK - TONTITOWN 161kV	Rebuild 12 miles with 2156ACSR	\$ 7,200,000
04SP	AEPW-AEPW	CHEROKEE REC - KNOX LEE 138KV	0	208.8	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR	\$ 981,000
04SP	AEPW-AEPW	CHEROKEE REC - TATUM 138KV	0	209	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR	\$ 1,641,000
04SP	WERE-WERE	CIRCLEVILLE - HOYT HTI SWI JCT 115KV	0	95.7	HOYT - STRANGER CREEK 345kV	Replace 82 structures	\$ 742,000
04SP	GRRD-GRRD	CLAREMORE 161/69KV Transformer ckt 1	0	83.8	CLAREMORE 161/69kV Transformer Ckt 2	Solution Undetermined	Not Available
04SP	GRRD-GRRD	CLAREMORE 161/69KV Transformer ckt 2	0	83.8	CLAREMORE 161/69kV Transformer Ckt 1	Solution Undetermined	Not Available
04SP	OKGE-OKGE	DRAPER LAKE 138/345KV Transformer ckt 1	0	490.1	DRAPER LAKE 138/345kV Transformer Ckt 2	May be relieved due to OKGE Operating Guide	Not Available
04SP	OKGE-OKGE	DRAPER LAKE 138/345KV Transformer ckt 2	0	490.1	DRAPER LAKE 138/345kV Transformer Ckt 1	May be relieved due to OKGE Operating Guide	Not Available
04SP	AEPW-AEPW	EAST CENTERTON - GENTRY REC 161KV	0	352.5	FLINT CREEK - TONTITOWN 161kV	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR	\$ 8,000,000
04SP	SWPS-SWPS	EAST PLANT INTERCHANGE 69/115KV Transformer ckt 1	0	45.9	EAST PLANT INTERCHANGE 69/115kV Transformer Ckt 2	Solution Undetermined	Not Available
04SP	SWPS-SWPS	EAST PLANT INTERCHANGE 69/115KV Transformer ckt 2	0	45.9	COULTER INTERCHANGE 69/115kV Transformer Ckt 1	Solution Undetermined	Not Available
04SP	AEPW-AEPW	FLINT CREEK - GENTRY REC 161KV	0	353.4	FLINT CREEK - TONTITOWN 161kV	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR.	\$ 400,000
04SP	AEPW-AEPW	FLINT CREEK - TONTITOWN 161KV	0	310.6	FLINT CREEK - GENTRY REC 161kV	Replace switch and jumpers	\$ 45,000
04SP	WERE-WERE	GATZ - GOLDEN PLAINS JCT 69KV	0	31.7	HALSTEAD - MUD CREEK JCT 69KV	Local area problem within Newton division	-
04SP	WERE-WERE	GILL ENERGY CENTER EAST - MACARTHUR 69KV	0	67.6	GILL ENERGY CENTER EAST - OATVILLE 69kV	Replace subSta bus and jumpers at MacArthur 69 kV	\$ 22,000
04SP	WERE-WERE	GILL ENERGY CENTER EAST - OATVILLE 69KV	0	71.3	GILL ENERGY CENTER EAST - MACARTHUR 69kV	Replace disconnect switches at Gill 69 kV (use 800 A.), Replace line switch at Oatville 69 kV (use 800 A.)	\$ 45,000
04SP	WERE-WERE	GOLDEN PLAINS JCT - HESSTON 69KV	0	31.7	HALSTEAD - MUD CREEK JCT 69KV	Local area problem within Newton division	-
04SP	WFEC-WFEC	GOLDSBY - OKLAHOMA UNIVERSITY SW 69KV	0	33.8	FRANKLIN SW 69/138kV Transformer	Solution Undetermined	Not Available
04SP	SWPS-SWPS	HASTNGS2 - VAN BUREN 1 TAP 69KV	0	58.9	COULTER INTERCHANGE 69/115kV Transformer	Solution Undetermined	Not Available
04SP	WERE-WERE	JARBALO JCT SWI STA - NORTHWEST LEAVENWORTH 115KV	0	124.6	HALLMARK - JARBALO JCT SWI STA 115kV	May be relieved due to Westar Transmission Operating Directive 1216	Not Available
04SP	AEPW-AEPW	MARSHALL 138/69KV Transformer ckt 1	0	107	MARSHALL 138/69kV Transformer Ckt 2	Replace 755 ACAR Strain Bus	\$ 25,000
04SP	AEPW-AEPW	MARSHALL 138/69KV Transformer ckt 2	0	107	MARSHALL 138/69kV Transformer Ckt 1	Replace 755 ACAR Strain Bus	\$ 25,000
04SP	WERE-WERE	MEADOW - TWR33 2 69KV	0	71.9	CIRCLE - HUTCHINSON GAS TURBINE STA 115kV	Solution Undetermined	Not Available
04SP	OKGE-OKGE	MUSKOGEE 69/161KV Transformer ckt 1	0	41	MUSKOGEE 69/161kV Transformer Ckt 3	Solution Undetermined	Not Available
04SP	OKGE-OKGE	MUSKOGEE 69/161KV Transformer ckt 2	0	41	MUSKOGEE 69/161kV Transformer Ckt 3	Solution Undetermined	Not Available
04SP	AEPW-AEPW	NORTHWEST HENDERSON - POYNTER 69KV	0	71.9	EVENSIDE - NORTHWEST HENDERSON 69kV	Solution Undetermined	Not Available
04SP	SWPS-SWPS	NORTHWEST INTERCHANGE 69/115KV Transformer	0	45.3	HASTNGS2 - VAN BUREN 1 TAP 69KV	See Previous	See Previous
04SP	OKGE-OKGE	OSAGE - CONTINENTAL BLACKS 69KV	0	95.8	KILDARE - WHITE EAGLE 138kV	Rebuild & Reconductor 0.57 Miles, replace Wavetrap, increase CT ratio	\$ 255,000
04SP	OKGE-OKGE	PECAN CREEK 161/345KV Transformer	0	368.1	MUSKOGEE - FT SMITH 345kV	Add 2nd 345/161 kV 369MVA transformer.	\$ 3,000,000
04SP	AEPW-AEPW	ROCK HILL - TATUM 138KV	0	208.9	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	Reconductor 0.81 miles 666MCM to 1272 ACSR - Reconductor other 5.76 miles of 795 ACSR with 1272 ACSR. Reset CTs and relay settings @ Rock Hill	\$ 342,970

**Table 1 -continued** – SPP facility upgrades identified for the AEPW to EES transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	ATC	Rate B	Outaged Branch Causing Overload	Solution	Estimated Cost
04SP	KACP-MIPU	SOUTHTOWN - MARTIN CITY 161KV	0	166	STILWELL - HICKMAN 161kV	Solution Undetermined	Not Available
04SP	SWPA-SPRM	SPRINGFIELD - BROOKLINE 161KV	0	317.1	SOUTHWEST - SOUTHWEST DISPOSAL 161kV	Solution Undetermined	Not Available
04SP	WERE-WERE	TECUMSEH HILL - STULL SWI STA 115KV	0	92	HOYT - STRANGER CREEK 345kV	May be relieved due to Westar Transmission Operating Directive 803	Not Available
04WP	AEPW-AEPW	BLOCKER TAP - MARSHALL 69KV	0	80	CHEROKEE REC - KNOX LEE 138kV	See Previous	See Previous
04WP	AEPW-AEPW	CHAMBER SPRINGS - TONTITOWN 161KV	0	274.8	CHAMBER SPRINGS - FARMINGTON AECC 161kV	See Previous	See Previous
04WP	WERE-WERE	CIRCLEVILLE - HOYT HTI SWI JCT 115KV	0	95.6	HOYT - STRANGER CREEK 345kV	See Previous	See Previous
04WP	WERE-WERE	CIRCLEVILLE - KING HILL N.M. COOP 115KV	0	90.5	HOYT - STRANGER CREEK 345kV	May be relieved due to Westar Transmission Operating Directive 803	Not Available
04WP	WERE-WERE	EL PASO - GILL ENERGY CENTER SOUTH 138KV	0	209.9	EVANS ENERGY CTR NTH - EVANS ENERGY CTR STH 138kV	See Previous	See Previous
04WP	AEPW-AEPW	FLINT CREEK - TONTITOWN 161KV	0	333.4	FLINT CREEK - GENTRY REC 161kV	See Previous	See Previous
04WP	WERE-WERE	KELLY - KING HILL N.M. COOP 115KV	0	89.6	HOYT - STRANGER CREEK 345kV	May be relieved due to Westar Transmission Operating Directive 803	Not Available
04WP	WFEC-WFEC	LEXINGTON - PAOLI 69KV	0	33.5	CANADIAN SW 69/138kV Transformer	Solution Undetermined	Not Available
04WP	SWPA-SWPA	NORFORK 161/69KV Transformer ckt 1	0	25	NORFORK 161/69kV Transformer Ckt 2	Replace Norfolk Transformer by SWPA In-Service Date 6/1/2005	Not Available
04WP	WFEC-WFEC	PAOLI 69/138KV Transformer	0	41.6	CANADIAN SW - NOBLE 69kV	Solution Undetermined	Not Available
09SP	GRRD-GRRD	412SUB - KANSAS TAP 161KV	0	336.1	FLINT CREEK - GRDA1 345kV	Reconductor 9.7 miles with 1590MCM ACSR	\$ 1,488,000
09SP	OKGE-OKGE	5 TRIBES - PECAN CREEK 161KV	0	222.9	AGENCY - PECAN CREEK 161kV	Solution Undetermined	Not Available
09SP	GRRD-GRRD	AFTON 161/69KV Transformer	0	49.9	MIAMI - AFTON 161kV	See Previous	See Previous
09SP	AEPW-AEPW	BALDWIN - KARNACK TAP 69KV	0	28.1	FLOURNOY 69/138kV Transformer	Solution Undetermined	Not Available
09SP	AEPW-AEPW	BALDWIN - WOODLAWN 69KV	0	28.2	FLOURNOY 69/138kV Transformer	See Previous	See Previous
09SP	AEPW-AEPW	BANN - KINGS HIGHWAY 69KV	0	71.9	BANN - REDLICK REC 69kV	See Previous	See Previous
09SP	SWPA-AEPW	BEAVER - EUREKA SPRINGS 161KV	0	263	Multiple Outage Contingency Monett - Brookline 345kV Flint Creek - Monett 345kV	AEPW Reconductor 1.25 miles with 1590ACSR SWPA Reconnect CT's; Replace metering & reset relays	\$ 537,500
09SP	AEPW-AEPW	BLOCKER TAP - MARSHALL 69KV	0	79.6	CHEROKEE REC - KNOX LEE 138kV	See Previous	See Previous
09SP	AEPW-OKGE	BONANZA - BONANZA TAP 161KV	0	177	AES - TARBY 161kV	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR	\$ 50,000
09SP	OKGE-OKGE	BRAMAN - CHIKASKIA TAP 69KV	0	36.1	KILDARE - WHITE EAGLE 138kV	See Previous	See Previous
09SP	AECI-AECI	BRISTOW 138/69KV Transformer ckt 1	0	54.3	BRISTOW 138/69kV Transformer Ckt 2	See Previous	See Previous
09SP	AECI-AECI	BRISTOW 138/69KV Transformer ckt 2	0	54.3	BRISTOW 138/69kV Transformer Ckt 1	See Previous	See Previous
09SP	AEPW-AEPW	BROKEN ARROW NORTH - SOUTH TAP - ONETA 138KV	0	234	TULSA NORTH - NORTHEAST STA 345kV	Rebuild 4.31 miles of 795 ACSR with 1590 ACSR.	\$ 2,370,500
09SP	SWPA-ENTR	BULL SHOALS - MIDWAY 161KV	0	161.5	5ISES 1 - 5MORFLD 161kV	See Previous	See Previous
09SP	AEPW-AEPW	CARSON SOUTH 138/13.8KV Transformer	0	31.8	CARSON TAP - UNION AVENUE 138kV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	CHAMBER SPRINGS - FARMINGTON AECC 161KV	0	335	DYESS - SOUTH SPRINGDALE 161kV	See Previous	See Previous
09SP	AEPW-AEPW	CHAMBER SPRINGS - TONTITOWN 161KV	0	243.7	CHAMBER SPRINGS - FARMINGTON AECC 161kV	See Previous	See Previous
09SP	AEPW-AEPW	CHAMBER SPRINGS 345/161KV Transformer	0	659.4	FLINT CREEK - GRDA1 345kV	Install 2nd 345/161 kV Auto-transformer	\$ 4,000,000
09SP	WERE-WERE	CHASE - WHITE JCT 69KV	19.1R	42.5	WEAVER 138/1881kV Transformer Ckt 0	Solution Undetermined	Not Available
09SP	WERE-WERE	CIRCLEVILLE - HOYT HTI SWI JCT 115KV	0	95.7	HOYT - STRANGER CREEK 345kV	See Previous	See Previous
09SP	GRRD-GRRD	CLAREMORE 161/69KV Transformer ckt 1	0	83.7	CLAREMORE 161/69kV Transformer Ckt 2	See Previous	See Previous
09SP	GRRD-GRRD	CLAREMORE 161/69KV Transformer ckt 2	0	83.7	CLAREMORE 161/69kV Transformer Ckt 1	See Previous	See Previous
09SP	WFEC-WFEC	COMANCHE - WALTERS 69KV	0	37.6	COMANCHE - LAWTON DISPOSAL TAP 69kV	Solution Undetermined	Not Available
09SP	OKGE-OKGE	DRAPER LAKE 138/345KV Transformer ckt 1	0	488.8	DRAPER LAKE 138/345kV Transformer Ckt 2	See Previous	See Previous
09SP	OKGE-OKGE	DRAPER LAKE 138/345KV Transformer ckt 2	0	488.8	DRAPER LAKE 138/345kV Transformer Ckt 1	See Previous	See Previous
09SP	AEPW-AEPW	DYESS - SOUTH SPRINGDALE 161KV	0	312	CHAMBER SPRINGS - FARMINGTON AECC 161kV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	EAST CENTERTON - GENTRY REC 161KV	0	350.2	FLINT CREEK - EAST CENTERTON 345kV	See Previous	See Previous
09SP	AEPW-ENTR	EUREKA SPRINGS - OSAGE 161KV	0	243.9	BULL SHOALS - BULL SHOALS 161kV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	EVENSIDE - NORTHWEST HENDERSON 69KV	0	72	NORTHWEST HENDERSON - POYNTER 69kV	Solution Undetermined	Not Available
09SP	WERE-WERE	FARMER'S CONSUMER CO-OP - WAKARUSA JCT SWI STA 115KV	0	92	SOUTHWEST LAWRENCE - WAKARUSA JCT SWI STA 115kV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	FLINT CREEK - GENTRY REC 161KV	0	349	FLINT CREEK - EAST CENTERTON 345kV	See Previous	See Previous

**Table 1 -continued** – SPP facility upgrades identified for the AEPW to EES transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	ATC	Rate B	Outaged Branch Causing Overload	Solution	Estimated Cost
09SP	AEPW-AEPW	FLINT CREEK - TONTITOWN 161KV	0	306.1	EAST CENTERTON - BENTONVILLE J STREET 161kV	See Previous	See Previous
09SP	AEPW-AEPW	FORBING TAP - SOUTH SHREVEPORT 69KV	0	90	BROADMOOR - FORT HUMBBUG 69KV	Solution Undetermined	Not Available
09SP	WERE-WERE	GATZ - GOLDEN PLAINS JCT 69KV	0	32	HALSTEAD - MUD CREEK JCT 69KV	See Previous	See Previous
09SP	WERE-WERE	GOLDEN PLAINS JCT - HESSTON 69KV	0	32	HALSTEAD - MUD CREEK JCT 69KV	See Previous	See Previous
09SP	WFEC-WFEC	GOLDSBY - OKLAHOMA UNIVERSITY SW 69KV	0	33.9	FRANKLIN SW 69/138KV Transformer	See Previous	See Previous
09SP	AEPW-AEPW	GREGGTON - LAKE LAMOND 69KV	0	107	PERDUE 69/138KV Transformer	Solution Undetermined	Not Available
09SP	AEPW-AEPW	HALLSVILLE - LONGVIEW HEIGHTS 69KV	0	47.2	MARSHALL - MARSHALL AUTO 69KV	Rebuild 7.07 miles of 4/0 ACSR with 795 ACSR	\$ 3,000,000
09SP	WERE-WERE	HYDRALIC JCT NORTH - MACARTHUR 69KV	0	62.9	CANAL - RUTAN 69KV	Solution Undetermined	Not Available
09SP	WERE-WERE	HYDRALIC JCT NORTH - OAKLAWN 69KV	0	62.9	CANAL - RUTAN 69KV	Solution Undetermined	Not Available
09SP	OKGE-OKGE	IMO - CLEVELAND TAP 69KV	0	35.9	SOUTH 4TH ST 69/138KV Transformer	Solution Undetermined	Not Available
09SP	AEPW-AEPW	JACKSONVILLE (SWE-RC-ETEC) - OVERTON 138KV	0	235	CROCKETT - TENASKA RUSK COUNTY 345kV	Reset relays at Jacksonville & Overton	\$ 15,000
09SP	OKGE-OKGE	JONES TAP - HORSESHOE LAKE 138KV	0	287	HORSESHOE LAKE - RENO 138KV	Solution Undetermined	Not Available
09SP	GRRD-GRRD	KERR - 412SUB 161KV	0	336.8	FLINT CREEK - GRDA1 345kV	Reconductor 12.5 miles with 1590MCM ACSR.	\$ 1,918,000
09SP	AEPW-AEPW	KNOX LEE - OAK HILL #2 138KV	0	205.5	KNOX LEE - MONROE CORNERS REC 138KV	Replace wavetrap @ Knoxlee	\$ 20,000
09SP	WERE-WERE	LAWRENCE HILL - WREN 115KV	0	138.8	BISMARCK JCT SWI STA - FARMER'S CONSUMER CO-OP 115kV	May be relieved due to Westar Transmission Operating Directive 1210	Not Available
09SP	WFEC-WFEC	LINDSAY SW - WALLVILLE 69KV	0	26	FLETCHER - MARLOW JCT 69kV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	LONGWOOD - OAK PAN-HARR REC 138KV	0	208.5	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	Rebuild 1.8 miles of 666 ACSR with 1590 ACSR	\$ 750,000
09SP	AEPW-AEPW	MARSHALL - NORTH MARSHALL 69KV	0	71.9	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	Replace 350 CU bus & jumpers @ North Marshall.	\$ 23,300
09SP	AEPW-AEPW	MARSHALL 138/69KV Transformer ckt 1	0	107	MARSHALL 138/69KV Transformer Ckt 2	See Previous	See Previous
09SP	AEPW-AEPW	MARSHALL 138/69KV Transformer ckt 2	0	107	MARSHALL 138/69KV Transformer Ckt 1	See Previous	See Previous
09SP	OKGE-WFEC	MIDWEST TAP - FRANKLIN SW 138KV	0	209.3	ANADARKO - POCASSETT 138KV	Replace 600A metering CTs with 1200A	\$ 55,000
09SP	OKGE-OKGE	MUSKOGEE 69/161KV Transformer ckt 1	0	41	MUSKOGEE 69/161KV Transformer Ckt 3	See Previous	See Previous
09SP	OKGE-OKGE	MUSKOGEE 69/161KV Transformer ckt 2	0	41	MUSKOGEE 69/161KV Transformer Ckt 3	See Previous	See Previous
09SP	SWPA-SWPA	NORFORK 161/69KV Transformer ckt 1	0	25	NORFORK 161/69KV Transformer Ckt 2	See Previous	See Previous
09SP	AEPW-AEPW	NORTH MARSHALL - WOODLAWN 69KV	4	50.4	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	Replace 3/0 CU jumpers @ North Marshall	\$ 15,000
09SP	AEPW-AEPW	NORTHWEST HENDERSON - POYNTER 69KV	0	71.9	EVENSIDE - NORTHWEST HENDERSON 69KV	See Previous	See Previous
09SP	OKGE-OKGE	OSAGE - CONTINENTAL BLACKS 69KV	0	95.7	KILDARE - WHITE EAGLE 138KV	See Previous	See Previous
09SP	OKGE-OKGE	PECAN CREEK 161/345KV Transformer	0	368.5	MUSKOGEE - FT SMITH 345kV	See Previous	See Previous
09SP	AEPW-AEPW	PRYOR JCT 138/69KV Transformer	0	60.1	CATOOSA - 15TH & 273RD EAST AVENUE 138KV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	ROCK HILL - TATUM 138KV	0	219.8	Multiple Outage Contingency Southwest Shreveport - Longwood 345kV Southwest Shreveport to Diana 345kV	See Previous	See Previous
09SP	AEPW-AEPW	SE TEXARKANA - TEXARKANA PLANT 69KV	0	89.7	NORTHWEST TEXARKANA - SUGAR HILL 138KV	Solution Undetermined	Not Available
09SP	MIDW-WEPL	SEWARD 69/115KV Transformer	0	43.7	HEIZER 115/230KV Transformer	Solution Undetermined	Not Available
09SP	AEPW-AEPW	SOUTH FAYETTEVILLE - FARMINGTON AECC 161KV	0	312.7	DYESS - SOUTH SPRINGDALE 161kV	Solution Undetermined	Not Available
09SP	AEPW-AEPW	SOUTH SHREVEPORT - SOUTHWEST SHREVEPORT TAP 138KV	0	209.7	SOUTHWEST SHREVEPORT - WESTERN ELECTRIC T 138kV	Solution Undetermined	Not Available
09SP	WERE-WERE	SOUTHWEST LAWRENCE - WAKARUSA JCT SWI STA 115KV	0	91.9	FARMER'S CONSUMER CO-OP - WAKARUSA JCT SWI STA 115kV	Solution Undetermined	Not Available
09SP	SWPA-SPRM	SPRINGFIELD - BROOKLINE 161KV	0	308.7	SOUTHWEST - SOUTHWEST DISPOSAL 161kV	See Previous	See Previous
09SP	SWPA-SWPA	SPRINGFIELD 161/69KV Transformer ckt 3	0	22	SPRINGFIELD 161/69KV Transformer Ckt 1	Replace 25/25MVA transformer #3 with 80MVA unit to eliminate overload of both 25MVA #3 and 80MVA #1 transformers	\$ 1,300,000
09SP	AECI-AECI	STILWELL - TITANTIC TAP 69KV	0	35.7	SALLISAW - 2BRUSHY 69KV	Line Owned by GRDA - Solution Undetermined	Not Available
09SP	AEPW-AEPW	TONTITOWN - ELM SPRINGS REC 161KV	0	334.7	CHAMBER SPRINGS - FARMINGTON AECC 161kV	Replace Switch and Elm Springs Strain Bus	\$ 100,000
09WP	OKGE-OKGE	5 TRIBES - PECAN CREEK 161KV	0	222.7	AGENCY - PECAN CREEK 161kV	See Previous	See Previous

**Table 1 -continued** – SPP facility upgrades identified for the AEPW to EES transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	ATC	Rate B	Outaged Branch Causing Overload	Solution	Estimated Cost
09WP	WERE-WERE	ATHENS SWI STA - COFFEY COUNTY NO. 4 VERNON 69KV	0	43.1	WOLF CREEK - LACYGNE 345kV	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
09WP	SWPA-AEPW	BEAVER - EUREKA SPRINGS 161KV	0	262.1	FLINT CREEK - SUB 383 - MONETT 345kV	See Previous	See Previous
09WP	AEPW-AEPW	BLOCKER TAP - MARSHALL 69KV	0	80	CHEROKEE REC - KNOX LEE 138kV	See Previous	See Previous
09WP	SWPA-ENTR	BULL SHOALS - MIDWAY 161KV	0	161.2	5ISES 1 - 5MORFLD 161kV	See Previous	See Previous
09WP	AEPW-AEPW	CHAMBER SPRINGS - TONTITOWN 161KV	0	243.9	CHAMBER SPRINGS - FARMINGTON AECC 161kV	See Previous	See Previous
09WP	WERE-WERE	CIRCLEVILLE - HOYT HTI SWI JCT 115KV	0	95.3	HOYT - STRANGER CREEK 345kV	See Previous	See Previous
09WP	WERE-WERE	CIRCLEVILLE - KING HILL N.M. COOP 115KV	0	90.2	HOYT - STRANGER CREEK 345kV	See Previous	See Previous
09WP	WERE-WERE	COFFEY COUNTY NO. 4 VERNON - GREEN 69KV	0	43.3	WOLF CREEK - LACYGNE 345kV	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
09WP	OKGE-OKGE	DRAPER LAKE 138/345KV Transformer ckt 1	0	489.7	DRAPER LAKE 138/345KV Transformer Ckt 2	See Previous	See Previous
09WP	OKGE-OKGE	DRAPER LAKE 138/345KV Transformer ckt 2	0	489.7	DRAPER LAKE 138/345KV Transformer Ckt 1	See Previous	See Previous
09WP	AEPW-AEPW	MARSHALL 138/69KV Transformer ckt 1	0	121	MARSHALL 138/69kV Transformer Ckt 2	See Previous	See Previous
09WP	AEPW-AEPW	MARSHALL 138/69KV Transformer ckt 2	0	121	MARSHALL 138/69kV Transformer Ckt 1	See Previous	See Previous
09WP	SWPA-SWPA	NORFORK 161/69KV Transformer	0	25	NORFORK - WEST PLAINS 161kV	Replace Norfolk Transformer by SWPA In-Service Date 6/1/2005	Not Available
09WP	SWPA-SWPA	NORFORK 161/69KV Transformer ckt 1	0	25	NORFORK 161/69kV Transformer Ckt 2	See Previous	See Previous
09WP	SWPA-SWPA	NORFORK 161/69KV Transformer ckt 2	0	25	NORFORK 161/69kV Transformer Ckt 1	Solution Undetermined	Not Available
09WP	OKGE-OKGE	PECAN CREEK 161/345KV Transformer	0	368.9	CLARKSVILLE - MUSKOGEE 345kV	See Previous	See Previous
09WP	OKGE-OKGE	SHAWNEE - MISSION HILL 69KV	0	50.9	SQUIRL CREEK - FOREST HILL 138kV	Solution Undetermined	Not Available
09WP	SWPA-SPRM	SPRINGFIELD - BROOKLINE 161KV	0	318.4	SOUTHWEST - SOUTHWEST DISPOSAL 161kV	See Previous	See Previous
						Total (Excludes Costs Not Available)	\$ 39,409,270