



SPP *Southwest Power Pool*

*System Impact Study
For Transmission Service
Requested By
Power Resource Group, Inc.*

From AEPW to Entergy

For a Reserved Amount Of 670MW

From 1/1/03

To 1/1/06

Supplemental Study

SPP Transmission Planning

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SPP-2000-108e Revised December 19, 2001 to include revision of the ATC and Determined Solutions in Tables 1 and 3 of System Impact Study SPP-2000-108e due to AEPW’s line rating changes and the already completed Facility Study.

1. Executive Summary

Power Resource Group, Inc. requested a system impact study for long-term Firm Point-to-Point transmission service from AEPW to Entergy. The period of the transaction is from 1/1/03 to 1/1/06. The request is for one reservation (212202), totaling 670MW. Power Resource Group, Inc. has received System Impact Study SPP-2000-108e and a completed Facility Study.

A revision of the study was done to update Tables 1 and 3 to reflect the changes made to AEPW's line ratings and the Network Facility Upgrades specified in the already completed Facility Study.

The AEPW to EES transfer overloads new facilities as well as impacts facilities that have been identified as limiting constraints for previously studied transfers. Tables 1 and 2 list the new overloads caused by the 670MW transfer. Table 3 lists the previously assigned and identified facilities impacted by the 670MW transfer. Facilities found in Table 3 limit the ATC to zero.

Due to the significant number of facility overloads caused by the 670MW transfer, SPP proposed the addition of a 500kV transmission line from AEPW's Pittsburg 345kV substation to AEPW's NW Texarkana 345kV substation and to Entergy's McNeil 500kV substation. Steady-state analyses were conducted in System Impact Study SPP-2000-108e to determine the facility overloads caused by the line addition and the facility overloads caused by the transfer with the line addition. A preliminary cost evaluation was conducted, and it was determined that the costs associated with the proposed lines is not justified for this request alone.

2. Introduction

Power Resource Group, Inc. requested an impact study for transmission service from AEPW control area with a sink of EES.

The principal objective of this study was to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 670MW and to propose additional transmission projects that will relieve the overloads caused by the transfer.

The impact of the 670MW transfer was studied with and without the proposed Pittsburgh–NW Texarkana–McNeil 500kV line included in the models. The study includes steady-state contingency analyses (PSS/E function ACCC) which considers the impact of the 670MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

A preliminary evaluation of network facility upgrade costs, with and without the proposed line, was included in System Impact Study SPP-2000-108e, using previously received information.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 670MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 670MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits.

The first analysis was to study the steady-state analysis impact of the 670MW transfer on the system. The second step was to determine the Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool (SPP) conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency.

The second analysis was done to determine the impact of the transfer on previously assigned and identified facilities. Any previously assigned and identified facilities further impacted by the transfer are documented in the report.

Looking at the analysis of 670MW transfer request, there are several limiting elements that restrict the AEPW to EES transfer. These overloaded facilities are listed in Tables 1, 2, and 3. Due to the limited number of upgrades that can be made each year because of reliability concerns during outages, the SPP proposed the Pittsburg-NW Texarkana-McNeil 500kV line as a way to relieve some of the identified overloaded facilities.

Three analyses were conducted in System Impact Study SPP-2000-108e to determine the impact of the proposed lines on the SPP transmission system. The first analysis was conducted to identify any new overloads caused by the line addition, and the other two analyses are identical to the two initial analyses except that the proposed line was included in the models.

B. Model Updates

SPP used four seasonal models to study the 670MW request. The SPP 2001 Series Cases 2003 Spring Peak, 2004 Summer Peak, 2004/2005 Winter Peak, and 2006 Summer Peak were used to study the impact of the 670MW transfer on the SPP system during the requested transaction period of 1/1/03 to 1/1/06 and a deferred transaction period ending 10/1/06. The 2003 Spring Peak model is representative of the Spring Seasons throughout the length of the reservation.

The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect future firm transfers during the request period that were not already included in the January 2001 base case series models.

C. Transfer Analysis

Using the created models and the ACCC function of PSS/E, single and select double contingency outages were analyzed. Then full AC solution was used to obtain the most accurate results possible. Any facility overloaded, using MVA ratings, in the transfer case and not overloaded in the base case was flagged. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

A. Study Analysis Results

Tables 1, 2, and 3 contain the analysis results of the System Impact Study. The tables identify the seasonal case in which the event occurred; the emergency rating of the overloaded circuit (Rate B), the contingent loading percentage of circuit with and without the studied transfer, the estimated ATC value using interpolation if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Tables 1 and 2 contain new facility overloads caused by the 670MW transfer. Table 1 contains the facility overloads on SPP Regional Tariff participants' transmission systems. Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems. These tables show the numerous facilities, which must be addressed and relieved in order to provide the capability needed for the 670MW transfer.

Table 3 documents the 670MW transfer impact on previously assigned and identified facilities. The facilities that were previously assigned or identified are further overloaded by the 670MW transaction. Some of these have been overloaded past the new limits provided by the previously assigned upgrades. The facilities must be further upgraded to allow the 670MW transfer from AEPW to EES.

Again due to the limited number of upgrades that can be made each year because of reliability concerns during outages, the SPP proposed the Pittsburg-NW Texarkana-McNeil 500kV line as a way to relieve some of the identified overloaded facilities. Additional analyses were performed to determine the facility overloads caused by the addition of the line and the facility overloads caused by the transfer with the line addition. The results of these analyses are documented in Tables 4, 5, 6, and 7 of System Impact Study SPP-2000-108e.

B. Preliminary Cost Analysis

Preliminary cost analysis was included in System Impact Study SPP-2000-108e to try to justify the proposed 500kV line on a cost basis for the 670MW request alone. Comparing the rough estimates of the two alternatives, the proposed 500kV line did not appear to be justified for the 670MW request alone.

Table 1 – SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Solution	Estimated Cost	New Rating	% Increase In Rating
03G	OKGE-OKGE	DRAPER 345/138KV TRANSFORMER 1 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 1	493	99.9	104.1	DRAPER 345/138KV TRANSFORMER 2 54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT2	12	#1 Add Third Transformer	8,000,000	N/A	N/A
* 03G	OKGE-OKGE	DRAPER 345/138KV TRANSFORMER 2 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 2	493	99.9	104.1	DRAPER 345/138KV TRANSFORMER 1 54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT1	12	See Previous Upgrade #1		N/A	N/A
* 03G	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.4	102.5	IATAN TO ST JOE, 345KV 57982 IATAN 7 345 to 69702 ST JOE 3 345 CKT1	129	#2 Replace 82 Structures by WR	742,000	97	5.4%
03G	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	90.1	102.8	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	525	#3 Add Second Transformer	3,000,000	N/A	N/A
* 03G	WERE-WERE	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT 1	308	98.8	100.1	MIDLAND 230/115KV TRANSFORMER 56855 MIDLAND6 230 to 57252 MIDLAND3 115 CKT1	670	Taken Out by WERE		N/A	N/A
* 04SP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	100.0	103.1	MARATON TO CENTERVILLE, 161KV 56934 MARMTNE5 161 to 58065 CNTRVIL5 161 CKT1	670	AECI third party line. No SPA upgrades required.		N/A	N/A
04SP	AEPW-WFEC	SOUTHWEST STATION TO ANADARKO, 138KV 54140 S.W.S.-4 138 to 55814 ANADARK4 138 CKT 1	203	99.9	102.0	CORNVILLE TO CORN TAP, 138KV 54112 CORNVIL4 138 to 55867 CORN TP4 138 CKT1	18	#4 WFEC: Replace bus, jumpers, switches, supports and foundations at Anadarko Switch Station.	450,000		
* 04SP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.9	102.2	MIDLAND 230/115KV TRANSFORMER 56915 MIDLAND5 161 to 57252 MIDLAND3 115 CKT1	18	See Previous Upgrade #2		97	5.4%
04SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	196	88.1	105.8	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT1	450	New Summer Emergency Rating 196MVA 12.6% Increase #5 Reconductor 7.1 miles of 666 ACSR with 1272 ACSR	2,100,000	235	19.9%
04SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	98.7	111.3	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	68	See Previous Upgrade #3		N/A	N/A
04SP	EMDE-EMDE	MONETT TO AURORA HT, 161KV 59480 MON383 5 161 to 59468 AUR124 5 161 CKT 1	157	99.3	105.8	AURORA HT TO MONETT HT, 69KV 59537 AUR124 269.0 to 59540 MON152 269.0 CKT1	670	Reconductor project in progress by EMDE. To be completed by 12/31/2002.		N/A	N/A
* 04SP	WERE-WERE	COUNTY LINE 230/115/69KV TRANSFORMER 57201 COLINE3X1.00 to 57456 COLINE 269.0 CKT 1	66	99.7	101.7	HOYT TO STRANGER, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	Taken Out by WERE		N/A	N/A
04SP	AEPW-AEPW	LONE STAR SOUTH TO WILKES, 138KV 53276 LSSOUTH4 138 to 53619 WILKES 4 138 CKT 1	316	99.6	100.9	WILKES TO WELSH REC, 138KV 53619 WILKES 4 138 to 53622 WELSHRE4 138 CKT1	195	#6 Reset CTs	2,000	471	49.1%
* 04SP	GRRD-GRRD	PENSACOLA TO GRAY TAP, 69KV 54428 PENZA 269.0 to 54465 GRAY TP269.0 CKT 1	47	99.4	101.5	MIAMI TO AFTON, 161KV 54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1	198	#7 Rebuild 4/0 to 795MCM	730,000	112	138.3%
04SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER DAM, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	274	96.0	108.4	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	218	New AEPW Summer Emergency Rating 311MVA 13.5% Increase #8 SWPA: Reconductor 6 miles & Reset Equipment @ Beaver	1,822,500	305	11.3%
* 04SP	EMDE-AECI	NEOSHO 161/69KV TRANSFORMER 59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	98.4	102.0	BEAVER TO EUREKA SPRINGS, 161KV 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1	670	Third Party Overload.		N/A	N/A
* 04SP	EES-SWPA	MIDWAY TO BULL SHOALS, 161KV 99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	96.9	103.8	SWEET WATER TO FLETCHER, 161KV 31798 SWEETWTR 161 to 96077 5FLETCH 161 CKT1	299	#9 SWPA Replace Wavetrap & Reset CT's @ Bull Shoals	150,000	N/A	N/A

* Facility Not Included In Table 1 of 108c Supplemental Study

Table 1 continued – SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Solution	Estimated Cost	New Rating	% Increase In Rating
* 04SP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	97.8	102.6	MIAMI TO AFTON, 161KV 54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1	670	AECI third party line. No SPA upgrades required.		N/A	N/A
04SP	AEPW-WERE	SOUTH COFFEYVILLE TO DEARING, 138 KV 53972 COFFEYT4 138 to 57002 DEARING4 138 CKT 1	210	96.4	104.0	DELAWARE TO NEOSHO, 345KV 53929 DELWARE7 345 to 56793 NEOSHO 7 345 CKT1	313	#10 Replace WR Wavetrap	20,000	232	10.5%
04SP	EMDE-EMDE	JOPLIN SOUTHWEST 161/69KV TRANSFORMER 59483 JOP389 5 161 to 59592 JOP389 269.0 CKT 1	75	99.7	100.3	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	334	#11 Replace 161/69 KV Transformer with a 150 MVA Transformer.	1,565,000	150	100.0%
* 04SP	EMDE-EMDE	REINMILLER 161/69KV TRANSFORMER 59595 RNM393 269.0 to 59500 RNM393 5 161 CKT 1	75	99.4	100.5	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	377	Upgrade excluded as upgrading Joplin SW 161/69 eliminates this constraint.		N/A	N/A
* 04SP	SWPA-SWPA	GORE TO SALLISAW, 161KV 52752 GORE 5 161 to 52750 SALISAW5 161 CKT 1	167	88.9	108.1	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	388	#12 Increase clearances of approximately ten spans to allow operation of line at 100C.	500,000	223	33.5%
04SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54988 TINKER44 138 to 54990 TINKER24 138 CKT 1	100	97.7	101.7	NE 10TH TO MIDWAY, 138KV 54964 NE10TH 4 138 to 54966 MIDWAY 4 138 CKT1	670	Not a valid Overload.		N/A	N/A
04SP	OKGE-OKGE	MUSKOGEE 161/69KV TRANSFORMER 1 55222 MUSKOGEE5 161 to 55221 MUSKOGEE269.0 CKT 1	41	98.9	100.8	MUSKOGEE 161/69KV TRANSFORMER 3 55221 MUSKOGEE269.0 to 55222 MUSKOGEE5 161 CKT3	670	Transfer load to 161kV system in 2003 at OGE expense.		N/A	N/A
04SP	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	209	91.7	105.3	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase		N/A	N/A
* 04SP	WERE-WERE	GILL ENERGY CENTER EAST TO MACARTHUR, 69KV 57795 GILL E 269.0 to 57813 MACARTH269.0 CKT 1	68	99.8	100.1	MACARTHUR TO OATVILLE, 69KV 57813 MACARTH269.0 to 57825 OATVILL269.0 CKT1	441	#13 Replace substation bus and jumpers at MacArthur 69 kV.	22,000	80	17.6%
04SP	EMDE-EMDE	DIAMOND JCT. TO SARCOXIE SOUTHWEST TAP, 69KV 59538 DIA131 269.0 to 59582 SAR362T269.0 CKT 1	38	97.5	101.3	MONETT 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	447	#14 Reconductor 1/0 Copper with 336 ACSR.	1,230,000	65	71.1%
04SP	SWPA-SWPA	NORFORK 161/69KV TRANSFORMER 52648 NORFORK5 161 to 52650 NORFORK269.0 CKT 1	25	99.2	100.4	NORFORK TO WEST PLAINS, 161KV 52648 NORFORK5 161 to 96123 5WPLAIN 161 CKT1	469	#15 Replace Norfolk Transformer by SPA. Scheduled for 2005.	1,000,000	50	100.0%
04SP	OKGE-OKGE	CHESTNUT TO ENID, 69KV 54726 CHSTNUT269.0 to 54727 ENID 269.0 CKT 1	66	98.9	100.4	CHESTNUT TO SOUTH 4TH ST, 69KV 54726 CHSTNUT269.0 to 54730 SO4TH2 269.0 CKT1	670	Install 138-69KV transformer @NE Enid by OKGE		N/A	N/A
* 04SP	WERE-WERE	SOUTH GAGE TO AUBURN, 115KV CKT 1 57179 S GAGEW3 115 to 57151 AUBURN 3 115 CKT 1	91	99.3	100.2	SOUTH GAGE TO AUBURN, 115KV CKT 2 57151 AUBURN 3 115 to 57179 S GAGEW3 115 CKT2	670	Invalid Contingency		N/A	N/A
04SP	AEPW-AEPW	WILBURTON TO LONE OAK, 69KV 54031 WILBURT269.0 to 54021 LONEOAK269.0 CKT 1	48	95.6	101.3	EUFULA TO STIGLER TAP, 138KV 52774 EUFAULA4 138 to 54050 STIGLRT4 138 CKT1	517	#16 Replace 400A line switch # 4839	60,000	72	50.0%
04SP	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	84.4	100.1	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase		N/A	N/A
* 04WP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	100.0	104.2	MONET 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	670	AECI third party line. No SPA upgrades required.		N/A	N/A
04WP	AEPW-AEPW	FERNDALE LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	91.1	91.9	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	670	Incorrect Rating New Winter Emergency Rating 79MVA 9.7% Increase		N/A	N/A
04WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	229	85.3	100.4	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	653	New Winter Emergency Rating 229MVA 16.2% Increase See Previous Upgrade #5		235	2.6%

* Facility Not Included In Table 1 of 108c Supplemental Study

Table 1 continued – SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Solution	Estimated Cost	New Rating	% Increase In Rating
* 04WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.7	101.8	EAST MANHATTAN TO CONCORD, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	97	See Previous Upgrade #2		97	5.4%
04WP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	93.7	106.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	343	See Previous Upgrade #3		N/A	N/A
04WP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER DAM, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	287	94.3	104.6	MONETT TO BROOKLINE, 345KV 59481 MON383 7 345 to 59984 BRKLINE 7 345 CKT1	370	New AEPW Winter Emergency Rating 335MVA 16.7% Increase See Previous Upgrade #8		320	11.5%
* 04WP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.6	100.9	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	670	AECI third party line. No SPA upgrades required.		N/A	N/A
* 04WP	WERE-WERE	MIDLAND 230/115KV TRANSFORMER 56855 MIDLAND6 230 to 57252 MIDLAND3 115 CKT 1	308	98.8	100.1	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT1	670	Taken Out by WERE		N/A	N/A
04WP	OKGE-OKGE	CHIKASKIA TAP TO BRAMAN, 69KV 54751 CHIKSTP269.0 to 54750 BRAMAN 269.0 CKT 1	54	65.2	70.8	KILDARE TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	670	Incorrect Rating New Winter Emergency Rating 54MVA 42.1% Increase		N/A	N/A
* 06SP	AEPW-AEPW	LELMDALE TO DYESS, 161KV CKT 2 53175 LELMDAL5 161 to 53131 DYESS 5 161 CKT 2	354	100.0	101.6	LELMDALE TO DYESS, 161KV CKT 1 53131 DYESS 5 161 to 53175 LELMDAL5 161 CKT1	0	#17 Rebuild 4 miles of 2-397 ACSR with 2156 ACSR. IN 10 year plan scheduled for 2009.	1,600,000	424	19.8%
06SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	196	88.3	108.1	FORT SMITH TO ANO, 500KV 55305 FTSMITH8 500 to 99486 BANO 500 CKT1	395	New Summer Emergency Rating 196MVA 12.6% Increase See Previous Upgrade #5		235	19.9%
* 06SP	AEPW-AEPW	S FAYETTEVILLE TO GREENLAND, 69KV 53156 SFAYTVL269.0 to 53141 GREENLD269.0 CKT 1	59	99.7	105.8	SILOAM SPRINGS, 161/69KV TRANSFORMER 53158 SILOAM 5 161 to 53204 SILOAM 269.0 CKT1	31	#18 Replace 4/0 CU jumpers @ Greenland	20,000	72	22.0%
* 06SP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	99.7	106.3	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	670	AECI third party line. No SPA upgrades required.		N/A	N/A
06SP	AEPW-AEPW	EAST CENTERTON TO GENTRY REC, 161KV 53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	368	95.7	97.7	LOWELL TO LELMDAL, 161KV 53144 LOWELL 5 161 to 53175 LELMDAL5 161 CKT1	670	New Summer Emergency Rating 368MVA 4.2% Increase		N/A	N/A
06SP	GRRD-GRRD	KERR TO KANSAS TAP, 161KV 54435 KERR GR5 161 to 54514 KANSATP5 161 CKT 1	338	96.7	99.7	FLINT CREEK TO GRDA ONE, 345KV 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT1	670	Incorrect Rating New Summer Emergency Rating 338MVA 3% Increase		N/A	N/A
* 06SP	EES-SWPA	MIDWAY TO BULL SHOALS, 161KV 99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	98.8	107.1	HUBEN TO MORGAN, 345KV 96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	100	See Previous Upgrade #9		N/A	N/A
06SP	AEPW-AEPW	FARMINGTON AECC TO CHAMBER SPRINGS RD, 161KV 53195 FARMGTN5 161 to 53154 CHAMSPR5 161 CKT 1	335	99.6	102.0	CHAMBER SPRINGS RD TO LELMDAL, 345KV 53155 CHAMSPR7 345 to 53176 LELMDAL7 345 CKT1	105	#20 Replace Farmington switch	60,000	368	9.9%
* 06SP	WFEC-SWPA	PHAROAH TO WELEETKA, 138KV 56026 PHAROAH4 138 to 52792 WELEETK4 138 CKT 1	191	99.6	101.1	FRANKLIN TO FRANKLIN SWITCH, 138KV 55913 FRANKLN4 138 to 55917 FRKNLNS4 138 CKT1	183	#21 WFEC: Replace wavetrap at Weleetka and replace jumpers.	75,000		
06SP	WERE-WERE	COUNTY LINE 115/69 KV TRANSFORMER 57456 COLINE 269.0 to 57201 COLINE3X1.00 CKT 1	66	99.8	100.5	ARNOLD TO STRANGER CREEK, 115KV 57211 ARNOLD 3 115 to 57268 STRANGR3 115 CKT1	670	Taken Out by WERE		N/A	N/A
* 06SP	AEPW-AEPW	FERNDALE LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	90.8	91.9	MOBIL-TEXOMA T TO NEW HOPE, 69KV 53282 MOBILTXT269.0 to 53296 NEWHOPE269.0 CKT1	670	Incorrect Rating New Summer Emergency Rating 79MVA 9.7% Increase		N/A	N/A

* Facility Not Included In Table 1 of 108c Supplemental Study

Table 1 continued – SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Solution	Estimated Cost	New Rating	% Increase In Rating
06SP	AEPW-AEPW	GENTRY REC TO FLINT CREEK, 161KV 53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	368	95.3	97.2	ROGERS TO LOWELL REC, 161KV 53152 ROGERS 5 161 to 53200 LOWELLR5 161 CKT1	670	New Summer Emergency Rating 368MVA 4.2% Increase		N/A	N/A
06SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER DAM, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	274	96.1	107.0	FLINT CREEK TO MONETT, 345KV 53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	238	New AEPW Summer Emergency Rating 311MVA 13.5% Increase See Previous Upgrade #8		305	11.3%
06SP	AEPW-AEPW	SNYDER TO FREDERICK JCT, 69KV 54138 SNYDER-269.0 to 54123 FREDJC-269.0 CKT 1	26	99.7	100.5	ANADARKO TO PARADISE, 138KV 55814 ANADARK4 138 to 56024 PARADSE4 138 CKT1	271	#23 Reset Frederick Jct. CTs.	2,000	39	50.0%
* 06SP	SWPA-SWPA	GORE TO SALLISAW, 161KV 52752 GORE 5 161 to 52750 SALLISAW5 161 CKT 1	167	91.9	111.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	285	See Previous Upgrade #12		223	33.5%
06SP	AEPW-AEPW	LELMDAL TO CHAMBER SPRINGS RD, 161KV 53175 LELMDAL5 161 to 53154 CHAMSPR5 161 CKT 1	275	87.4	90.3	CHAMBER SPRINGS RD TO LELMDAL, 345KV 53155 CHAMSPR7 345 to 53176 LELMDAL7 345 CKT1	670	New Summer Emergency Rating 275MVA 12.7% Increase		N/A	N/A
* 06SP	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	209	92.4	106.4	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase		N/A	N/A
06SP	AEPW-AEPW	SCROGNS TO FERNDAL LAKE TAP, 69KV 53316 SCROGNS269.0 to 53531 FERNDTP269.0 CKT 1	96	87.9	89.0	NORTH MINEOLA TO LAKE HAWKINS, 138KV 53581 NMINEOLA4 138 to 53666 LHAWKIN4 138 CKT1	670	New Summer Emergency Rating 96MVA 12.9% Increase		N/A	N/A
06SP	EMDE-SWPA	LARUSSEL TO SPRINGFIELD, 161KV 59479 LAR382 5 161 to 52692 SPRGLD5 161 CKT 1	167	97.3	101.9	LARUSSELL TO MONETT, 161KV 59479 LAR382 5 161 to 59480 MON383 5 161 CKT1	397	#26 SWPA: Replace 3 600A disconnect switches with 1200A at Springfield. Planned to upgrade in 2007 by SWPA.	60,000		
* 06SP	GRRD-GRRD	PENSACOLA TO GRAY TAP, 69KV 54428 PENZA 269.0 to 54465 GRAY TP269.0 CKT 1	47	99.2	100.5	COWSKIN 138/69KV TRANSFORMER 54517 COWSKIN 69.0 to 54519 COWSKIN 138 CKT1	399	See Previous Upgrade #7		112	138.3%
06SP	EMDE-EMDE	MONETT TO AURORA HT, 161KV 59480 MON383 5 161 to 59468 AUR124 5 161 CKT 1	157	96.1	102.1	LARUSSELL TO MONETT, 161KV 59479 LAR382 5 161 to 59480 MON383 5 161 CKT1	670	Reconductor project in progress by EMDE. To be completed by 12/31/2002.		N/A	N/A
* 06SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54990 TINKER24 138 to 54988 TINKER44 138 CKT 1	100	95.9	102.1	OAK CREEK TO GM, 138KV 54960 OAKCRK 4 138 to 54961 GM 4 138 CKT1	670	Not a valid Overload.		N/A	N/A
* 06SP	OKGE-OKGE	HELBERG 161/69KV TRANSFORMER 55325 HELBERG269.0 to 55327 HELBERG5 161 CKT 1	134	96.1	101.8	CLARKSVILLE TO OZARK, 161KV 52714 CLARKSV5 161 to 52716 OZARK H5 161 CKT1	670	Construct 69kV line from Short Mountain to Prairie View in 2005 at OGEs expense.		N/A	N/A
* 06SP	WERE-WERE	GILL ENERGY CENTER EAST TO OATVILLE, 69KV 57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	72	99.7	100.1	CANAL TO RUTAN, 69KV 57784 CANAL 269.0 to 57838 RUTAN 269.0 CKT1	460	#27 Replace disconnect switches at Gill 69 kV (use 800 A.), Replace line switch at Oatville 69 kV (use 800 A.).	45,000	80	11.1%
06SP	AEPW-AEPW	WINNSBORO TO SCROGNS, 69KV 53336 WINNSBO269.0 to 53316 SCROGNS269.0 CKT 1	72	98.3	100.5	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	526	#28 Replace switches, 350 CU jumpers, & reset relays @ Winnsboro	80,000	96	33.3%
* 06SP	WFEC-OKGE	FRANKLIN SWITCH TO MIDWEST TAP, 138KV 55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	215	96.9	100.8	WELEETKA TO PHAROAH, 138KV 52792 WELEETK4 138 to 56026 PHAROAH4 138 CKT1	530	#29 WFEC: Replace 600A metering CTs with 1200A.	55,000	287	33.5%
06SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	94.3	101.3	CLARKSVILLE TO MUSKOGEE, 345KV 53756 CLARKSV7 345 to 55224 MUSKOGEE7 345 CKT1	544	See Previous Upgrade #3		N/A	N/A
* 06SP	OKGE-OKGE	PARK LANE TO SEMINOLE, 138KV 55178 PARKLN 4 138 to 55044 SEMINOL4 138 CKT 1	287	97.5	100.5	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYS4 138 to 55136 SUNNYS4 138 CKT1	552	#30 Replace 1200Ct and 1600 Amp switch with 2000Amp equipment	100,000	478	66.6%

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Table 1 continued – SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Solution	Estimated Cost	New Rating	% Increase In Rating
* 06SP	SWPA-SWPA	MUSKOGEE TAP TO GORE, 161KV 52758 MUSKTAP5 161 to 52752 GORE 5 161 CKT 1	206	87.0	100.9	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	627	#31 Reconductor 16 miles of 477 ACSR line with 795 ACSR	4,000,000	223	8.3%
* 06SP	AEPW-AEPW	S TEXARKANA REC TO TEXARKANA PLANT, 69KV 53189 STXREC269.0 to 53329 TEXARK 269.0 CKT 1	72	78.1	82.2	ATLANTA TO WEST ATLANTA, 69KV 53248 ATLANTA269.0 to 53333 WATLANT269.0 CKT1	670	New Summer Emergency Rating 72MVA 22% Increase		N/A	N/A
06SP	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	84.5	100.7	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase		N/A	N/A
06SP	GRRD-OKGE	TAHLEQUAH TO HIGHWAY 59, 161KV 54455 TAHLQH 5 161 to 55347 HWY59 5 161 CKT 1	167	80.7	100.6	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	650	#33 OKGE: Remove switches #130 and #132 to increase rating from 600A to conductor limit of 662 Amps for Rate B and replace structures.	30,000	184	10.2%
Total Estimated Cost of Solutions									27,520,500		

* Facility Not Included In Table 1 of 108c Supplemental Study

Table 2 – Non SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
03G	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	94.6	104.0	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
03G	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	94.7	103.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
03G	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	94.6	102.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
03G	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	90.8	102.7	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
03G	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	89.2	101.0	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
03G	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	88.2	100.1	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	94.5	106.4	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	92.9	104.8	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	91.9	103.8	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
03G	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.8	109.8	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
03G	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	96.3	108.2	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
03G	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	95.3	107.2	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
03G	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	97.5	108.3	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
03G	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	97.4	108.1	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
03G	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	96.5	107.1	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
04SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	94.9	103.6	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
04SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	97.4	103.3	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
04SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	97.2	103.0	99263 3LEWIS # 115 to 99303 3PATMOS# 115 CKT1
04SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.6	101.3	99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1
04SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.1	100.5	99169 6DANVLL 230 to 99181 6GRAMBL 230 CKT1
04SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.1	100.5	99169 6DANVLL 230 to 99182 3DANVLL 115 CKT1
04SP	EES-EES	97768 4HLYSPG# 138 to 97698 4JASPER 138 CKT 1	112	98.9	105.6	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04SP	EES-EES	97919 6VERDINE 230 to 97917 6NELSN 230 CKT 1	470	99.0	100.5	97917 6NELSN 230 to 97921 6CARLYSS 230 CKT1
04SP	EES-EES	98229 4PT HUD 138 to 98230 2PT.HUD 69.0 CKT 2	100	99.6	100.1	97301 CAJUN2 8 500 to 98430 8WEBRE 500 CKT1
04SP	EES-EES	98273 4OAKGROV 138 to 98283 T300/331 138 CKT 1	135	99.9	102.1	98235 8MCKNT 500 to 15035 8DANIEL 500 CKT1
04SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	97.5	107.3	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
04SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	99.0	103.1	99163 6MTOLIV 230 to 99181 6GRAMBL 230 CKT1
04SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	92.1	101.9	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
04SP	EES-EES	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT 1	120	95.5	103.2	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
04SP	EES-EES	99173 3HAYNVL 115 to 99249 3EMERSN 115 CKT 1	114	99.9	100.5	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
04SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	95.8	109.3	99171 3SPRINGH 115 to 99172 3SAREPT 115 CKT1
04SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	89.2	108.5	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
04SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	89.2	108.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
04SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.4	119.1	53615 WELSH 7 345 to 53620 WILKES 7 345 CKT1
04SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.0	118.9	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1
04SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.2	118.4	50023 CARROLL6 230 to 50046 DOLHILL6 230 CKT1
04SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	99.8	121.6	99396 3ALPINE# 115 to 99397 3BISMRK 115 CKT1
04SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	99.3	119.9	99163 6MTOLIV 230 to 99181 6GRAMBL 230 CKT1
04SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	99.0	119.9	97714 6CHINA 230 to 97716 6SABINE 230 CKT1
04SP	EES-EES	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	95.8	105.1	99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1
04SP	EES-EES	99380 3HOPE E# 115 to 99230 3COUCH 115 CKT 1	120	98.9	100.5	99349 3ARKA-N 115 to 99407 3FRIEND 115 CKT1
04SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	94.5	119.7	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	91.3	116.0	53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1
04SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	88.4	113.4	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1

Table 2 continued – Non SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
04SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.1	104.2	59228 WBURGE 5 161 to 59229 ODESSA 5 161 CKT1
04SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	96.2	101.5	52702 TRUMAN 5 161 to 96555 5GRAVOI 161 CKT1
04SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	99.4	100.5	64102 GENTLMN3 345 to 64282 SWEET W3 345 CKT2
04SP	NPPD-NPPD	64265 ST.LIB 7 115 to 64173 LOUPCTY7 115 CKT 1	92	99.7	100.5	64181 MAXWELL7 115 to 64204 N.PLATT7 115 CKT1
04SP	SJLP-SJLP	69703 ST JOE 5 161 to 69701 MIDWAY 5 161 CKT 1	164	98.5	101.7	96039 7FAIRPT 345 to 96076 5FAIRPT 161 CKT3
04WP	AECI-AECI	96082 5GEORGE 161 to 96531 2GEORGE 69.0 CKT 1	56	99.2	100.1	96057 5BARNET 161 to 96618 2BARNET 69.0 CKT1
04WP	AECI-AECI	96098 5MOCITY 161 to 96153 1MOCTN1 100 CKT 1	34	99.8	101.1	96091 5LATHRP 161 to 96302 2LATHRP 69.0 CKT1
04WP	AECI-AECI	96153 1MOCTN1 100 to 96304 2MOCITY 69.0 CKT 1	34	99.8	101.1	96091 5LATHRP 161 to 96302 2LATHRP 69.0 CKT1
04WP	AECI-AECI	96154 1MOCTN2 100 to 96098 5MOCITY 161 CKT 2	34	99.9	101.1	96091 5LATHRP 161 to 96302 2LATHRP 69.0 CKT1
04WP	AECI-AECI	96154 1MOCTN2 100 to 96304 2MOCITY 69.0 CKT 2	34	99.9	101.1	96091 5LATHRP 161 to 96302 2LATHRP 69.0 CKT1
04WP	AMRN-AECI	31221 MOBERLY 161 to 96120 5THMHIL 161 CKT 1	386	99.5	100.9	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT1
04WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.1	104.7	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
04WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	98.2	103.7	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
04WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	97.9	103.5	99263 3LEWIS # 115 to 99303 3PATMOS# 115 CKT1
04WP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	99.1	103.3	99230 3COUCH 115 to 99264 3MAG-DW 115 CKT1
04WP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.4	101.0	99266 3MAG-ST 115 to 99308 3MAG-E 115 CKT1
04WP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.0	100.6	99266 3MAG-ST 115 to 99288 3KERLIN* 115 CKT1
04WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	97.2	106.7	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
04WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.9	105.2	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
04WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.6	105.0	99263 3LEWIS # 115 to 99303 3PATMOS# 115 CKT1
04WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	81.7	102.2	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
04WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	81.7	102.1	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
04WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	99.7	118.3	99230 3COUCH 115 to 99264 3MAG-DW 115 CKT1
04WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	99.0	118.2	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1
04WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	96.6	117.9	53277 LYDIA 7 345 to 53615 WELSH 7 345 CKT1
04WP	EES-EES	99264 3MAG-DW 115 to 99230 3COUCH 115 CKT 1	108	98.6	100.3	99308 3MAG-E 115 to 99310 3MCNEIL 115 CKT1
04WP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	93.6	105.2	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
04WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	96.9	121.6	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1
04WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	93.9	115.4	99333 8SHERID 500 to 99402 8HSEHV 500 CKT1
04WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	89.0	115.4	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
06SP	AECI-AECI	96120 5THMHIL 161 to 96172 2TMHILL 69.0 CKT 2	84	99.8	101.2	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT1
06SP	AECI-AECI	96153 1MOCTN1 100 to 96304 2MOCITY 69.0 CKT 1	34	99.5	101.1	96154 1MOCTN2 100 to 96304 2MOCITY 69.0 CKT2
06SP	AECI-AECI	96154 1MOCTN2 100 to 96304 2MOCITY 69.0 CKT 2	34	98.6	100.2	96153 1MOCTN1 100 to 96304 2MOCITY 69.0 CKT1
06SP	AMRN-AECI	31221 MOBERLY 161 to 96120 5THMHIL 161 CKT 1	372	100.0	101.5	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT1
06SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	94.2	102.9	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
06SP	EES-CELE	99115 3FISHER 115 to 50057 FISHER 4 138 CKT 1	83	97.1	101.0	99112 3WINFLD 115 to 99113 6WINFLD 230 CKT1
06SP	EES-CELE	99115 3FISHER 115 to 50057 FISHER 4 138 CKT 1	83	97.1	101.0	99113 6WINFLD 230 to 99116 6MONTGY 230 CKT1
06SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.9	102.1	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
06SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.6	101.6	99266 3MAG-ST 115 to 99308 3MAG-E 115 CKT1
06SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	96.7	100.7	99266 3MAG-ST 115 to 99288 3KERLIN* 115 CKT1
06SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	92.2	104.2	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
06SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	89.0	101.0	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
06SP	EES-EES	97618 4NEWTONB 138 to 97768 4HLYSPG# 138 CKT 1	112	98.4	102.0	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
06SP	EES-EES	97618 4NEWTONB 138 to 97768 4HLYSPG# 138 CKT 1	112	98.3	102.0	97690 4CYPRESS 138 to 97691 8CYPRESS 500 CKT1
06SP	EES-EES	97618 4NEWTONB 138 to 97768 4HLYSPG# 138 CKT 1	112	99.7	100.6	97700 4KOUNTZE 138 to 97710 4WARREN 138 CKT1

Table 2 continued – Non SPP Facility Overloads caused by the 670MW AEPW to EES transfer.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
06SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	91.2	100.4	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
06SP	EES-EES	97768 4HLYSPG# 138 to 97698 4JASPER 138 CKT 1	112	96.3	101.8	53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1
06SP	EES-EES	98273 4OAKGROV 138 to 98283 T300/331 138 CKT 1	135	95.0	100.3	98246 8WGLEN 500 to 98539 8WATERFO 500 CKT1
06SP	EES-EES	98273 4OAKGROV 138 to 98283 T300/331 138 CKT 1	135	94.9	100.3	98537 6WATFRD 230 to 98539 8WATERFO 500 CKT1
06SP	EES-EES	98569 6BGATEL 230 to 98259 6CONWY 230 CKT 1	436	99.6	100.7	97333 VIGNES 6 230 to 98544 6SORR 2 230 CKT1
06SP	EES-EES	99122 3ALTO 1 115 to 99123 3SWARTZ 115 CKT 1	114	98.1	100.2	98938 3B.WLSN 115 to 98950 3VKSBS-S 115 CKT1
06SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	99.9	109.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
06SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	92.4	102.3	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
06SP	EES-EES	99168 3SAILES 115 to 99167 3RINGLD 115 CKT 1	115	98.0	102.8	99264 3MAG-DW 115 to 99280 3TAYLOR 115 CKT1
06SP	EES-EES	99168 3SAILES 115 to 99167 3RINGLD 115 CKT 1	115	96.9	101.9	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
06SP	EES-EES	99168 3SAILES 115 to 99167 3RINGLD 115 CKT 1	115	96.7	101.5	99266 3MAG-ST 115 to 99308 3MAG-E 115 CKT1
06SP	EES-EES	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT 1	120	99.8	101.2	99249 3EMERSN 115 to 99288 3KERLIN* 115 CKT1
06SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.1	121.4	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
06SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.9	120.5	53593 PIRKEY 7 345 to 53637 TENRUSK7 345 CKT1
06SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	98.5	120.1	53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT1
06SP	EES-EES	99264 3MAG-DW 115 to 99230 3COUCH 115 CKT 1	108	98.5	107.5	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
06SP	EES-EES	99264 3MAG-DW 115 to 99230 3COUCH 115 CKT 1	108	99.4	102.2	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT1
06SP	EES-EES	99278 3STEPHN 115 to 99302 3CAMD-S# 115 CKT 1	96	97.6	101.0	99293 3ELDEHV 115 to 99295 8ELDEHV 500 CKT1
06SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	99.9	120.4	99170 3MINDEN 115 to 99172 3SAREPT 115 CKT1
06SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	97.5	120.3	53277 LYDIA 7 345 to 53615 WELSH 7 345 CKT1
06SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	99.7	120.0	99379 3EMMET * 115 to 99380 3HOPE E# 115 CKT1
06SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	95.3	123.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
06SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	95.4	123.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
06SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	91.0	116.3	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
06SP	MIPU-AECI	59216 BUTLER 5 161 to 96689 2BUTLER 69.0 CKT 1	56	99.0	100.9	57995 MONTROS5 161 to 96071 5CLINTN 161 CKT1
06SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.8	105.5	59228 WBURGE 5 161 to 59234 WAFB 5 161 CKT1
06SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.9	104.1	96071 5CLINTN 161 to 96108 5OSCEOL 161 CKT1
06SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.8	103.7	96049 7THOMHL 345 to 96120 5THMHIL 161 CKT1
06SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	99.9	101.2	64102 GENTLMN3 345 to 64282 SWEET W3 345 CKT2
06SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	99.3	100.5	64037 C.CREEK4 230 to 64203 N.PLATT4 230 CKT1
06SP	RCEC-RCEC	53549 JACKSNV4 138 to 53588 OVERTON4 138 CKT 1	235	99.6	107.7	53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1

Table 3 – AEPW – EES 670MW transfer impact on previously assigned and identified SPP Facilities.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Assignment	Solution	Estimated Cost	New Rating	%Rating Increase
03G	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	143	87.4	101.9	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	581	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#1 Reconductor 26.35 miles of 336 ACSR with 795 ACSR & Replace Switches @ Lieberman	7,232,000	163	14.0%
04SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	1251	110.2	113.8	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	0	SPP Flowgate	#2 Add Second LaCygne-Stilwell 345kV line and add LaCygne and Stilwell Terminals	17,000,000	N/A	N/A
04SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 to 53473 NORAM 4	265	89.3	93.6	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670		New Summer Emergency Rating 265MVA 13.2% Increase		N/A	N/A
* 04SP	SWPA-SWPA	BUFORD TAP TO BULL SHOALS, 161KV 52661 BUFDRTP5 161 to 52660 BULL SH5 161 CKT 1	167	103.3	114.7	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	0		#3 Replace three 600A switches @ Bull Shoals w/ 1200 A switches. Resag conductor and replace structures as necessary.	150,000	223	33.5%
04SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 to 53439 RAINES 4 1	265	87.9	92.2	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670		New Summer Emergency Rating 265MVA 13.2% Increase		N/A	N/A
04SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	143	92.9	106.1	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	360	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #1		163	14.0%
* 04SP	KACP-KACP	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	1251	98.3	101.5	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	361		See Previous Upgrade #2		N/A	N/A
* 04SP	SWPA-SWPA	NORFORK TO BUFORD TAP, 161KV 52648 NORFORK5 161 to 52661 BUFDRTP5 161 CKT 1	189	90.2	100.3	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	652		#4 Resag conductor and replace structures as necessary.	250,000	223	18.0%

* Facility Not Included In Table 3 of 108c Supplemental Study

Table 3 continued – AEPW – EES 670MW transfer impact on previously assigned and identified SPP Facilities.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Assignment	Solution	Estimated Cost	New Rating	%Rating Increase
04SP	AEPW-AEPW	TATUM TO ROCKHILL, 138KV 53611 TATUM 4 138 to 53598 ROKHILL4 138 CKT 1	235	92.7	99.1	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates			N/A	N/A
04SP	AEPW-AEPW	CHEROKEE REC TO KNOX LEE, 138KV 53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	235	99.5	105.9	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	48	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#5 Reconductor 3.25 miles of 666 ACSR with 1272 ACSR.	981,000		
04SP	AEPW-AEPW	CHEROKEE REC TO TATUM, 138KV 53522 CHEROKE4 138 to 53611 TATUM 4 138 CKT 1	235	94.3	100.7	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	600	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#6 Reconductor 6.25 miles of 666 ACSR with 1272 ACSR.	1,641,000		
04WP	KACP-KACP	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	1315	98.9	102.3	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	216	SPP Flowgate	See Previous Upgrade #2		N/A	N/A
06SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	1251	105.5	109.0	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	0	SPP Flowgate	See Previous Upgrade #2		N/A	N/A
06SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 to 53473 NORAM 4	265	93.0	97.4	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670		New Summer Emergency Rating 265MVA 13.2% Increase		N/A	N/A

* Facility Not Included In Table 3 of 108c Supplemental Study

Table 3 continued – AEPW – EES 670MW transfer impact on previously assigned and identified SPP Facilities.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Assignment	Solution	Estimated Cost	New Rating	%Rating Increase
06SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 to 53439 RAINES 4 1	265	91.6	96.0	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670		New Summer Emergency Rating 265MVA 13.2% Increase		N/A	N/A
* 06SP	SWPA-SWPA	BUFORD TAP TO BULL SHOALS, 161KV 52661 BUFRDTP5 161 to 52660 BULL SH5 161 CKT 1	167	110.9	122.4	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	0		See Previous Upgrade #3		223	33.5%
* 06SP	SWPA-SWPA	NORFORK TO BUFORD TAP, 161KV 52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT 1	189	96.9	107.0	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	205		See Previous Upgrade #4		223	18.0%
06SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	143	95.6	108.9	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	222	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #1		163	14.0%
06SP	AEPW-AEPW	TATUM TO ROCKHILL, 138KV 53611 TATUM 4 138 to 53598 ROKHILL4 138 CKT 1	235	94.3	101.0	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	571	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#7 Reconductor 0.81 miles of 666 ACSR with 1272 ACSR & Reset CTs @ Rock Hill	344,970		
06SP	AEPW-AEPW	CHEROKEE REC TO KNOX LEE, 138KV 53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	235	101.4	108.0	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #5			

* Facility Not Included In Table 3 of 108c Supplemental Study

Table 3 continued – AEPW – EES 670MW transfer impact on previously assigned and identified SPP Facilities.

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	Revised ATC (MW)	Assignment	Solution	Estimated Cost	New Rating	%Rating Increase
06SP	AEPW-AEPW	53522 CHEROKE4 138 to 53611 TATUM 4 138 CKT 1	235	96.0	102.6	<p>Multiple Outage Contingency</p> <p>SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV</p> <p>53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1</p> <p>SOUTHWEST SHREVEPORT TO DIANA, 345KV</p> <p>53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1</p>	404	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #6			
Total Estimated Costs of Known Solutions										27,598,970		

* Facility Not Included In Table 3 of 108c Supplemental Study

5. Conclusion

The AEPW to EES transfer creates many new overloads in the system. In order to relieve some of these overloads, the Pittsburg-NW Texarkana-McNeil 500kV line was proposed in System Impact Study SPP-2000-108e. Although, the proposed line decreases the estimated facilities requiring possible upgrades, preliminary cost analysis showed that the proposed lines are not a cost effective solution for just the AEPW to EES 670MW request alone.

SPP feels that the proposed 500kV line should still be considered a viable solution and may be justified as a solution for future requests.

Therefore, the results show that the 670MW transfer requires the system improvements shown in the revision of Table 1 and 3, which has been already been determined in the completed Facility Study.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:

Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply immediately
4. Solution options - Phase shift adjustment
 - _ Flat start
 - _ Lock DC taps
 - _ Lock switched shunts

ACCC CASES:

Solutions – AC contingency checking (ACCC)

1. MW mismatch tolerance –0.5
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excl'd cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits - Apply automatically
4. Solution options - Phase shift adjustment
 - _ Flat start
 - _ Lock DC taps
 - _ Lock switched shunts