SPP Southwest Power Pool

System Impact Study SPP-2002-046
For Transmission Service
Requested By
Power Resource Group, Inc.

From AEPW to Entergy

For a Reserved Amount Of 670MW
Initial request From 1/1/03 To 1/1/06
Extension of Service Evaluation

SPP Transmission Planning

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SPP-2002-046 is an extension of SPP-2000-108 to include facility upgrades required for extending service beyond deferred end date of 10/1/2007.

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.

The AEPW to EES request has been deferred from 1/1/03 until 10/1/2004 through 10/1/2007 due to the estimated in-service dates of required upgrades needed to accommodate the 670MW transfer.

This study determines any additional upgrades required to extend the service beyond the deferred end date of 10/1/2007.

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 extension of the 670MW transfer. Table 3 lists the previously assigned and identified facilities impacted by the 670MW transfer.

This study was performed at 670 MW of transfer as requested in the initial request. The customer can determine upgrades required for a lesser amount of service by reviewing the column labeled ATC in Table 1 and Table 3. For example, if the customer desires to take 620MW of service then only facilities with an ATC less than that value are required to be upgraded.

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 too less than 670MW and to propose additional transmission projects that will relieve the overloads caused by the transfer.

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.

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.

B. Model Updates

SPP used two seasonal models to study the extension of the 670MW request. The SPP 2002 Series Cases 2008 Summer Peak and 2008/2009 Winter Peak were used to study the impact of the 670MW transfer on the SPP system beyond 10/1/2007. The following upgrades have been included in the models for the evaluation of the 670MW transfer:

- Parallel 345kV line added from La Cygne to Stilwell
- 69kV line added from Short Mountain to Prairie View
- 138/69kV transformer added at NE Enid
- 2nd 345/161kV transformer added at Pecan Creek
- Replaced 161/69kV transformer at Joplin Southwest
- Replaced 161/69kV transformer at Norfork
- Reconductored Cherokee REC to Knox Lee 138kV line
- Reconductored Cherokee REC to Tatum 138kV line
- Reconductored Tatum to Rock Hill 138kV line
- Reconductored Eureka Springs to Beaver Dam 161kV line
- Reconductored Fulton to Patmos 115kV line
- Reconductored Lake Elmdale to Dyess 161kV line
- Reconductored Pensacola to Gray Tap 69kV line
- Reconductored Diamond Junction to Sarcoxie Southwest Tap 69kV line
- Reconductored IPC Jefferson to Lieberman 138kV line
- Replaced switch at Lieberman 138kV bus
- Replaced switch at Gentry 161kV bus

- ?? Replaced switch at Farmington AECC 161kV bus
- ?? Replaced switch - Wilburton to Lone Oak 69kV line
- ?? Replaced switches, metering CT's and wave trap at Bull Shoals 161kV bus
- ?? Replaced switches and 350 CU jumpers and reset relays at Winnsboro 69kV bus
- ?? Replaced disconnect switches at Springfield 161kV bus
- ?? Replaced disconnect switches at Gill 69kV bus
- ?? Replaced line switch at Oatville 69kV bus
- ?? Replaced wave trap and jumpers at Weleetka 138kV bus
- ?? Replaced wave trap at Dearing 138kV bus
- ?? Replaced substation bus and jumpers at MacArthur 69kV bus
- ?? Replaced jumpers at Greenland 69kV bus
- ?? Replaced breaker and switch at East Centerton 161kV bus
- ?? Reset CT's at Frederick Junction 69kV bus
- ?? Reset CT's - Lone Star to Wilkes 138kV line
- ?? Replaced CT's at Franklin Switch 138kV Bus
- ?? Removed switches and replaced structures at Tahlequah to HWY 59 161kV line
- ?? Replaced bus, jumpers, switches, supports and foundations at Anadarko Switch Station 138kV bus
- ?? Replaced 1200 CT and 1600Amp switch with 2000Amp equipment - Park Lane to Seminole 138kV line

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 2002 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.

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	ATC	Solution	Estimated Cost
08SP	SWPA-SWPA	**GLENCOE TO NORFORK, 161KV** 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	99.6	104.5	**NEW-IN TO NEWPO, 161KV** 99763 5NEW-IN 161 to 99764 5NEWPO 161 CKT1	57	Undetermined #1	
08SP	SWPA-AECI	**WSHBRN 161/69KV TRANSFORMER** 52681 5WSHBRN 161 to 96763 2WSHBRN 69.0 CKT 1	56	99.6	104.0	**BEAVER TO EUREKA SPRINGS, 161KV** 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1	65	Undetermi ned #2	
08SP	AEPW-AEPW	**PURDUE TO DIANA, 138KV** 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.8	101.6	**PITTSBURG TO FERNDALE LAKE TAP, 69KC** 53310 PITTSB_269.0 to 53531 FERNDTP269.0 CKT1	72	Undetermined #3	
08SP	SWPA-SWPA	**SPRINGFIELD 161/69KV TRANSFORMER** 52692 SPRGFLD5 161 to 52694 SPRGFLD269.0 CKT 1	80	99.5	102.5	**NICHOLS 161/69KV TRANSFORMER** 59925 NICHOLS269.0 to 59956 NICHOLS5 161 CKT1	103	Undetermined #4	
08SP	AEPW-AEPW	**PURDUE TO DIANA, 138KV** 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.7	101.5	**SCROGNS TO FERNDALE LAKE TAP, 69KV** 53316 SCROGNS269.0 to 53531 FERNDTP269.0 CKT1	119	Undetermined #3	
08SP	AEPW-AEPW	**NORTHWEST HENDERSON TO OAK HILL, 138KV** 53584 NWHENDR4 138 to 53585 OAK1HIL4 138 CKT 1	210	99.6	101.4	**KILGORE REC TO MONROE CORNERS REC, 138KV** 53555 KILGORR4 138 to 53574 MONROCR4 138 CKT1	137	Undetermined #5	
08SP	AECI-SPRM	**LOGAN TO CLAY, 161KV** 97161 5LOGAN 161 to 59970 CLAY 5 161 CKT 1	185	97.6	107.0	**HUBEN 345/161KV TRANSFORMER** 96042 7HUBEN 345 to 96088 5HUBEN 161 CKT1	170	Undetermined #6	
08SP	AEPW-AEPW	**PITTSBURG TO LONE STAR SOUTH, 138KV** 53311 PITTSB_4 138 to 53276 LSSOUTH4 138 CKT 1	197	99.9	100.3	**PETTY TO CHAPEL HILL REC, 138KV** 53308 PETTY 4 138 to 53521 CHAPELH4 138 CKT1	182	Undetermined #7	
08SP	AEPW-AEPW	**PURDUE TO DIANA, 138KV** 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.3	101.7	**SOUTHWEST SHREVEPORT TO DIANA, 345KV** 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	194	Undetermined #3	
08SP	AECI-GRRD	**TITANTP TO TAHLEQUAH, 69KV** 96986 2TITANTP69.0 to 54447 TAHLQH 269.0 CKT 1	47	99.2	101.8	**KANSAS TO WATTS, 69KV** 54515 KANSAS 269.0 to 96987 2WATTS 69.0 CKT1	212	Undetermined 8	
08SP	AEPW-AEPW	**MARSHALL TO NORTH MARSHALL, 69KV** 53570 MARSHAL269.0 to 53579 NMARSHL269.0 CKT 1	72	98.4	103.4	**Multiple Outage Contingency** **SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV** 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 **SOUTHWEST SHREVEPORT TO DIANA, 345KV** 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	214	Undetermined #9	
08SP	AEPW-AEPW	**MARSHALL TO NORTH MARSHALL, 69KV** 53570 MARSHAL269.0 to 53579 NMARSHL269.0 CKT 1	72	99.3	101.3	**FLOURNOY 138/69KV TRANSFORMER** 53404 FLOURNY269.0 to 53405 FLOURNY4 138 CKT1	224	Undetermined #9	
08SP	SWPA-SWPA	**GLENCOE TO NORFORK, 161KV** 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	98.2	103.1	**NEW-AB TO NEW -IN, 161KV** 99762 5NEW-AB 161 to 99763 5NEW-IN 161 CKT1	248	Undetermined #1	
08SP	AEPW-AEPW	**WINFIELD TO ADORA REC, 69KD** 53335 WINFIEL269.0 to 53243 ADORA 269.0 CKT 1	85	97.4	103.1	**NORTH MINEOLA TO LAKE HAWKINS, 138KV** 53581 NMINEOL4 138 to 53666 LHAWKIN4 138 CKT1	307	Undetermined #10	
08SP	AEPW-AEPW	**OAK HILL TO KNOX LEE, 138KV** 53586 OAK2HIL4 138 to 53557 KNOXLEE4 138 CKT 1	210	99.1	100.9	**LEVERETTS CHAPEL TO OVERTON, 138KV** 53560 LEVERET4 138 to 53588 OVERTON4 138 CKT1	336	Undetermined #11	
08SP	AEPW-AEPW	**BROKEN ARROW NORTH TO ONETA, 138KV** 53798 BA.N-ST4 138 to 53818 ONETA--4 138 CKT 1	235	95.9	102.5	**CHAMBER SPRINGS ROAD 345/161KV** 53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT1	418	Undetermined #12	
08SP	AEPW-AEPW	**BROKEN ARROW NORTH TO ONETA, 138KV** 53798 BA.N-ST4 138 to 53818 ONETA--4 138 CKT 1	235	95.9	102.4	**CHAMBER SPRINGS TO CLARKSVILLE, 345KV** 53155 CHAMSPR7 345 to 53756 CLARKSV7 345 CKT1	419	Undetermined #12	
08SP	AEPW-AEPW	**MARSHALL TO NORTH MARSHALL, 69KV** 53570 MARSHAL269.0 to 53579 NMARSHL269.0 CKT 1	72	97.0	101.5	**LONGWOOD TO WILKES, 345KV** 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	448	Undetermined #9	
08SP	SWPA-OKGE	**VAN BUREN TO VBI, 161KV** 52722 VAN BUR5 161 to 55339 VBI 5 161 CKT 1	335	91.8	104.0	**MUSKOGEE TO FORT SMITH, 345KV** 55224 MUSKOGE7 345 to 55302 FTSMITH7 345 CKT1	451	Undetermined #13	
08SP	AEPW-AEPW	**BROKEN ARROW 101ST NORTH TO BROKEN ARRON 81ST, 138KV** 53781 BA101-N4 138 to 53758 BA81---4 138 CKT 1	235	99.5	100.2	**RIVERSIDE STATION AUTO 345/138KV** 53785 RSSAUTO4 138 to 53794 R.S.S.-7 345 CKT1	464	Undetermined #14	
08SP	AEPW-AEPW	**CHAMBER SPRINGS ROAD 345/161KV TRANSFORMER** 53155 CHAMSPR7 345 to 53154 CHAMSPR5 161 CKT 1	660	96.0	101.4	**FLINT CREEK TO GRDA, 345KV** 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT1	496	Undetermined #15	
08SP	OKGE-AEPW	**BONANZA TAP TO BONANZA, 161KV** 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	98.8	100.4	**AES TO TARBY, 161KV** 55262 AES 5 161 to 55264 TARBY 5 161 CKT1	498	Undetermined #16	
08SP	OKGE-AEPW	**BONANZA TAP TO BONANZA, 161KV** 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	89.8	102.2	**FORT SMITH TO ANO, 500KV** 55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	550	Undetermined #16	

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	ATC	Solution	Estimated Cost
		BILLINGS NORTHEAST TO CLEVER, 69KV				**BLACKHAWK JCT, TO JAMESV, 69KV**			
08SP	EMDE-AECI	59546 BIL221 269.0 to 96665 2CLEVER 69.0 CKT 1	36	98.0	100.4	59604 BHJ415 269.0 to 96673 2JAMESV 69.0 CKT1	567	Undetermined #17	
		HARDEN CITY TO AHLOSO, 69KV				**VALLEY VIEW TAP TO VALLEY VIEW, 69KV**			
08SP	OKGE-OKGE	55186 HARDEN 269.0 to 55187 AHLOSTP269.0 CKT 1	52	93.7	100.8	55181 VALYVUT269.0 to 55182 VALLYVU269.0 CKT1	597	Undetermined #18	
		CONTINENTAL BLACKS TO CHEROKEE PL TAP, 69KV				**KILDARE TO WHITE EAGLE, 138KV**			
08SP	OKGE-OKGE	54763 CONBLKS269.0 to 54745 CHERPLT269.0 CKT 1	111	95.5	100.5	54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	602	Undetermined #19	
		GLENCOE TO NORFORK, 161KV				**CASH TO JONES, 161KV**			
08SP	SWPA-SWPA	52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	95.5	100.5	99736 5CASH 1 161 to 99755 5JONES 161 CKT1	608	Undetermined #1	
		CHILOCCO TO CHIKASKIA TAP, 69KV				**KILDARE TO WHITE EAGLE, 138KV**			
08SP	OKGE-OKGE	54744 CHILOCO269.0 to 54751 CHIKSTP269.0 CKT 1	57	95.0	100.3	54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	633	Undetermined #20	
		FORT SMITH 345/161KV TRANSFORMER				**FORT SMITH 500/345KV TRANSFORMER**			
08SP	OKGE-OKGE	55302 FTSMITH7 345 to 55300 FTSMITH5 161 CKT 1	493	85.4	100.4	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT1	650	Undetermined #21	
		PERDUE TO DIANA, 138KV				**KNOX LEE TO PIRKEY, 138KV**			
08WP	AEPW-AEPW	53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.5	101.2	53557 KNOXLEE4 138 to 53592 PIRKEY 4 138 CKT1	189	Undetermined #3	
		CARTHAGE 161/69 KV TRANSFORMER CKT 1				**CARTHAGE 161/69KV TRANSFORMER CKT 2**			
08WP	SWPA-SWPA	52688 CARTHAG5 161 to 52690 CARTHG 269.0 CKT 1	84	99.0	101.4	52688 CARTHAG5 161 to 52690 CARTHG 269.0 CKT2	269	Undetermined #22	
		PERDUE TO DIANA, 138KV				**DIANA TO PIRKEY, 345KV**			
08WP	AEPW-AEPW	53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	98.0	101.7	53528 DIANA 7 345 to 53593 PIRKEY 7 345 CKT1	366	Undetermined #3	
		CARTHAGE 161/69KV TRANSFORMER CKT 2				**CARTHAGE 161/69 KV TRANSFORMER CKT 1**			
08WP	SWPA-SWPA	52688 CARTHAG5 161 to 52690 CARTHG 269.0 CKT 2	84	98.5	100.9	52688 CARTHAG5 161 to 52690 CARTHG 269.0 CKT1	415	Undetermined #22	
		HUGO TAP TO VALLIANT, 138KV				**HUGO POWER PLANT TO VALLIANT, 138KV**			
08WP	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	93.8	103.0	55948 HUGO PP4 138 to 56079 VALLANT4 138 CKT1	453	Undetermined #23	
		NEWKIRK TO CRESWELL, 138KV				**WOODRING TO WICHITA, 345KV**			
08WP	OKGE-WERE	54759 NEWKIRK4 138 to 56981 CRESWLN4 138 CKT 1	160	88.0	104.2	54715 WOODRNG7 345 to 56796 WICHITA7 345 CKT1	497	Undetermined #24	
		HUGO TAP TO VALLIANT, 138KV				**IDABEL TO VALLANT, 138KV**			
08WP	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	92.4	101.6	55953 IDABEL 4 138 to 56079 VALLANT4 138 CKT1	555	Undetermined #23	
		CLAY TO SPRINGFIELD, 161KV				**JAMES RIVER TO MENTOR, 161KV**			
08WP	SPRM-SWPA	59970 CLAY 5 161 to 52692 SPRGFLD5 161 CKT 1	167	94.6	101.1	59961 JRPS 5 161 to 59963 MENTOR 5 161 CKT1	558	Undetermined #25	
		LONDON TO FRIARS WEST, 138KV				**KNOX LEE TO MONROE CORNERS REC, 138KV**			
08WP	AEPW-AEPW	53566 LONDON 4 138 to 53533 FRIARSW4 138 CKT 1	143	98.0	100.4	53557 KNOXLEE4 138 to 53574 MONROCR4 138 CKT1	563	Undetermined #26	

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 Causing Overload
08SP	SUNC-SUNC	56391 PIONEER3 115 to 56390 PIONEER269.0 CKT 1	50	99.6	100.2	56437 SYRACUS3 115 to 56440 WILLIAM3 115 CKT1
08SP	SUNC-SUNC	56393 PLYMELL3 115 to 56392 PIONTAP3 115 CKT 1	143	99.8	100.2	56400 PK_GOAB3 115 to 56420 FLETCHR3 115 CKT1
08SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	100.0	104.6	64064 BONDRNT3 345 to 64095 MNTZUMA3 345 CKT1
08SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.9	104.4	96068 5CHILLI 161 to 96087 5HICKCK 161 CKT1
08SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.8	104.3	56772 STRANGR7 345 to 57982 IATAN 7 345 CKT1
08SP	MIPU-MIPU	59239 HSNVL 5 161 to 59295 HSNVL 2 69.0 CKT 1	63	100.0	100.3	59284 GRDVWTP269.0 to 59288 RGAFB 2 69.0 CKT1
08SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.8	105.0	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	AECI-AECI	96081 5GAINES 161 to 97090 2GNSVL2 69.0 CKT 1	56	99.2	101.8	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1
08SP	AECI-AECI	96081 5GAINES 161 to 97090 2GNSVL2 69.0 CKT 1	56	99.2	100.4	96095 5MANSFD 161 to 97168 2MANSFL 69.0 CKT2
08SP	AECI-AECI	96081 5GAINES 161 to 97090 2GNSVL2 69.0 CKT 1	56	99.1	100.3	96095 5MANSFD 161 to 97168 2MANSFL 69.0 CKT1
08SP	AECI-AECI	96127 5CLEVER 161 to 96665 2CLEVER 69.0 CKT 1	56	97.5	100.8	59604 BHJ415 269.0 to 96673 2JAMESV 69.0 CKT1
08SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	93.2	104.5	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	91.2	102.5	97480 L558T485 138 to 97487 4MT.ZION 138 CKT1
08SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	88.9	100.2	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT1
08SP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	89.0	100.4	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	91.5	105.1	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	88.6	102.2	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	86.9	100.4	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	98.2	111.7	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	95.3	108.7	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	93.5	106.9	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08SP	EES-EES	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT 1	525	98.4	107.8	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT2
08SP	EES-EES	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT 2	525	98.4	107.8	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	98.2	109.4	97480 L558T485 138 to 97487 4MT.ZION 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	95.9	107.0	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	94.7	104.2	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	99.4	112.8	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	96.9	110.2	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	96.0	109.3	97459 4CONROE 138 to 97539 4WDHAVN 138 CKT1
08SP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	98.2	106.4	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
08SP	EES-EES	97698 4JASPER 138 to 97704 4RAYBURN 138 CKT 1	112	94.4	102.9	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
08SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.5	107.7	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
08SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	93.2	100.7	97690 4CYPRESS 138 to 97700 4KOUNTZE 138 CKT1
08SP	EES-EES	97920 6PPG 23 230 to 98051 2PPC NO 69.0 CKT 1	160	94.6	101.3	97920 6PPG 23 230 to 98052 2PPC SO 69.0 CKT1
08SP	EES-EES	97920 6PPG 23 230 to 98052 2PPC SO 69.0 CKT 1	160	94.7	101.5	97920 6PPG 23 230 to 98051 2PPC NO 69.0 CKT1
08SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	96.9	105.3	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	92.7	102.5	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	92.6	102.4	53424 LONGWD 7 345 to 99294 7ELDEHV 345 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 Causing Overload
08SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	91.7	106.9	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
08SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	88.1	105.7	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	88.1	105.6	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08SP	EES-EES	99303 3PATMOS# 115 to 99230 3COUCH 115 CKT 99	159	98.9	125.3	54033 PITTSB-7 345 to 55224 MUSKOGE7 345 CKT1
08SP	EES-EES	99303 3PATMOS# 115 to 99230 3COUCH 115 CKT 99	159	99.0	121.0	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
08SP	EES-EES	99303 3PATMOS# 115 to 99230 3COUCH 115 CKT 99	159	96.5	121.0	53277 LYDIA 7 345 to 53615 WELSH 7 345 CKT1
08SP	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	98.5	124.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	96.6	120.7	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
08SP	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	88.5	112.5	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
08SP	EES-EES	99825 5MIDWAY# 161 to 99827 5MT HOM 161 CKT 1	162	96.0	108.4	52660 BULL SH5 161 to 52661 BUFRDTP5 161 CKT1
08SP	EES-EES	99825 5MIDWAY# 161 to 99827 5MT HOM 161 CKT 1	162	95.0	107.3	52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	99.6	104.2	59485 CAR395 5 161 to 59491 PUR421 5 161 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	99.0	103.5	59552 LAW260 269.0 to 59573 HTC338 269.0 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.8	103.5	59476 ASB349 5 161 to 59491 PUR421 5 161 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	98.7	101.6	59208 NEVADA 5 161 to 59216 BUTLER_5 161 CKT1
08SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	99.1	105.6	52660 BULL SH5 161 to 96081 5GAINES 161 CKT1
08SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	98.5	105.5	31798 SWEETWTR 161 to 96122 5WILSPG 161 CKT1
08SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	99.2	106.2	31798 SWEETWTR 161 to 96077 5FLETCH 161 CKT1
08WP	AMRN-AMRN	31408 OVERTON 345 to 31409 OVERTON 161 CKT 1	300	99.3	100.1	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT1
08WP	CELE-CELE	50039 COUGH 4 138 to 50031 COCODR 6 230 CKT 1	386	99.4	104.4	50303 BONIN 6 230 to 50310 PMOUTON6 230 CKT1
08WP	AECI-AMRN	96096 5MARIES 161 to 31024 MARIES 138 CKT 1	100	100.0	101.0	96552 2EDMONS 161 to 96555 5GRAVOI 161 CKT1
08WP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.7	109.3	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1
08WP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.1	108.1	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.2	107.7	97484 4HUNTSVL 138 to 97519 4GEORGIA 138 CKT1
08WP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	97.4	106.9	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1
08WP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	98.9	106.3	97458 4CONAIR 138 to 97461 4LEWIS 138 CKT1
08WP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	97.7	106.1	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
08WP	EES-EES	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT 1	206	95.0	105.6	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1
08WP	EES-EES	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT 1	206	96.1	105.2	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1
08WP	EES-EES	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT 1	206	94.4	103.5	97508 4NAVSOTA 138 to 97522 4TUBULAR 138 CKT1
08WP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	98.0	111.6	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1
08WP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.2	110.5	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1
08WP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	96.2	108.1	97507 4COLSTTA 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.9	111.7	97507 4COLSTTA 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.7	111.5	97506 4BRYAN 138 to 97507 4COLSTTA 138 CKT1
08WP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.1	110.7	97508 4NAVSOTA 138 to 97522 4TUBULAR 138 CKT1
08WP	EES-EES	97510 4SOTA 1 138 to 97508 4NAVSOTA 138 CKT 1	206	95.4	102.7	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97510 4SOTA 1 138 to 97508 4NAVSOTA 138 CKT 1	206	94.4	101.6	97454 4WALDEN 138 to 97469 4APRIL 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 Causing Overload
08WP	EES-EES	97510 4SOTA 1 138 to 97508 4NAVSOTA 138 CKT 1	206	93.8	101.0	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.3	107.7	97506 4BRYAN 138 to 97512 4PEE DEE 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	98.8	106.7	97689 6AMELIA 230 to 97714 6CHINA 230 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	97.9	106.2	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.6	110.3	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.6	110.2	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	99.6	109.9	97916 8NELSON 500 to 98107 8RICHARD 500 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT 1	206	97.1	104.4	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT 1	206	96.1	103.3	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT 1	206	95.5	102.7	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08WP	EES-EES	97522 4TUBULAR 138 to 97453 4DOBBIN 138 CKT 1	112	99.9	112.0	97480 L558T485 138 to 97487 4MT.ZION 138 CKT1
08WP	EES-EES	97522 4TUBULAR 138 to 97453 4DOBBIN 138 CKT 1	112	99.5	111.6	97459 4CONROE 138 to 97539 4WDHAVN 138 CKT1
08WP	EES-EES	97522 4TUBULAR 138 to 97453 4DOBBIN 138 CKT 1	112	98.2	110.3	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT1
08WP	EES-EES	97526 4MAG AND 138 to 97510 4SOTA 1 138 CKT 1	206	96.5	103.8	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97526 4MAG AND 138 to 97510 4SOTA 1 138 CKT 1	206	95.5	102.7	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08WP	EES-EES	97526 4MAG AND 138 to 97510 4SOTA 1 138 CKT 1	206	94.9	102.1	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08WP	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	93.8	104.4	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1
08WP	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	94.9	104.0	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1
08WP	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	93.2	102.3	97508 4NAVSOTA 138 to 97522 4TUBULAR 138 CKT1
08WP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	97.5	107.4	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	96.6	106.4	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1
08WP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	95.5	106.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	98.2	108.2	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	97.3	107.2	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1
08WP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	96.2	107.1	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97920 6PPG 23 230 to 97919 6VERDINE 230 CKT 1	470	99.7	102.6	97917 6NLSON 230 to 97921 6CARLYSS 230 CKT1
08WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	86.8	101.2	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
08WP	EES-EES	99303 3PATMOS# 115 to 99230 3COUCH 115 CKT 99	159	98.2	122.8	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1
08WP	EES-EES	99303 3PATMOS# 115 to 99230 3COUCH 115 CKT 99	159	90.8	115.8	55224 MUSKOGE7 345 to 55302 FTSMITH7 345 CKT1
08WP	EES-EES	99303 3PATMOS# 115 to 99230 3COUCH 115 CKT 99	159	91.1	114.7	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	99.0	102.0	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.6	100.3	59207 ARCHIE 5 161 to 59240 ADRIAN 5 161 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.6	103.3	56932 LITCH 5 161 to 59476 ASB349 5 161 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	98.9	102.7	59969 BRKLNE 5 161 to 96101 5MORGAN 161 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	98.6	102.5	59478 DAD368 5 161 to 59493 BOL431 5 161 CKT1
08WP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	131	97.5	100.9	58062 SALSBRY5 161 to 58064 NORTON-5 161 CKT1
08WP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	131	95.5	100.4	52702 TRUMAN 5 161 to 96552 2EDMONS 161 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	ATC	Assignment	Solution	Estimated Cost
08SP	OKGE-OKGE	**OSAGE TO CONTINENTAL BLACKS, 69KV** 54742 OSAGE 269.0 to 54763 CONBLKS269.0 CKT 1	111	100.9	106.1	**KILDARE TO WHITE EAGLE, 138KV** 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	0	Unassigned	Rebuild and Reconductor 0.57 miles	230,000
08SP	OKGE-OKGE	**PECAN CREEK TO MUSKOGEE, 345KV** 55235 PECANCK7 345 to 55224 MUSKOGE7 345 CKT 1	478	100.0	111.6	**MUSKOGEE TO FORT SMITH, 345KV** 55224 MUSKOGE7 345 to 55302 FTSMITH7 345 CKT1	0	Unassigned	Change CT Ratio @ Pecan Creek	2,500
08SP	GRDA-GRDA	**KERR TO 412SUB, 161KV** 54435 KERR GR5 161 to 54437 412SUB 161 CKT 1	338	102.5	106.2	**FLINT CREEK TO GRDA1, 345KV** 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT 1	0	Unassigned	Undetermined #2	
08SP	GRDA-GRDA	**412SUB TO KANSAS TAP, 161KV** 54437 412SUB 161 to 54514 KANSATP5 161 CKT 1	338	101.7	105.5	**FLINT CREEK TO GRDA1, 345KV** 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT 1	0	Unassigned	Undetermined #3	
08SP	AEPW-EES	**FULTON TO PATMOS, 115KV** 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	96.5	116.4	**LONGWOOD TO ELDEHV, 345KV** 53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	117	Upgrade Modeled Assigned to SPP-2000- 108	Undetermined #4	
08SP	AEPW-EES	**FULTON TO PATMOS, 115KV** 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	96.5	116.2	**ELDEHV 500/345KV TRANSFORMER** 99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	119	"	"	
08SP	AEPW-EES	**FULTON TO PATMOS, 115KV** 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	96.2	114.6	**CROCKETT TO GRIMES, 345KV** 53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1	139	"	"	
08SP	SWPA-SWPA	**MUSKOGEE TAP TO GORE, 161KV** 52758 MUSKTAP5 161 to 52752 GORE 5 161 CKT 1	206	95.9	110.5	**MUSKOGEE TO FORT SMITH, 345KV** 55224 MUSKOGE7 345 to 55302 FTSMITH7 345 CKT1	189	Unassigned if SPP-2000-108 Takes 620 MW of Service	Reconductor 16 miles of 477 ACSR line with 795 ACSR	4,000,000
08SP	EMDE-EMDE	**REINMILLER 161/69/12.5KV TRANSFORMER** 59595 RNM393 269.0 to 59500 RNM393 5 161 CKT 1	75	99.7	100.6	**TIPTON FORD TO JOPLIN SOUTHWEST, 161KV** 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	223	Upgrade excluded From SPP-2000-108 as upgrading Joplin SW 161/69kV eliminated this constraint.	Replace 161/69 KV Transformer with a 150 MVA Transformer.	1,565,000
08SP	AEPW-AEPW	**FERNDALE LAKE TAP TO PITTSBURG, 69KV** 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	99.5	100.6	**HOPEWELL REC TO WINFIELD, 69KV** 53262 HOPEWEL269.0 to 53335 WINFIEL269.0 CKT1	321	SPP-2000- 108 New Rating By AEPW Modeled	Undetermined #5	

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	ATC	Assignment	Solution	Estimated Cost
08SP	AEPW-AEPW	**LONGWOOD TO NORAM, 138KV** 53423 LONGWD 4 to 53473 NORAM 4	265	96.8	102.0	**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	414	SPP-2000-108 New Rating By AEPW Modeled	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR	1,333,000
08SP	AEPW-AEPW	**IPC JEFFERSON TO LIEBERMAN, 138KV** 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	163	91.6	103.5	**LONGWOOD TO WILKES, 345KV** 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	474	Upgrade Modeled Assigned to SPP-2000-108	Undetermined #6	
08SP	AEPW-AEPW	**SCROGNS TO FERNDALE LAKE TAP, 69KV** 53316 SCROGNS269.0 to 53531 FERNDTP269.0 CKT 1	96	95.7	101.6	**NORTH MINEOLA TO LAKE HAWKINS, 138KV** 53581 NMINEOL4 138 to 53666 LHAWKIN4 138 CKT1	485	SPP-2000-108 New Rating By AEPW Modeled	Undetermined #7	
08SP	AEPW-AEPW	**NORAM TO RAINES, 138KV** 53473 NORAM 4 to 53439 RAINES 4 1	265	95.6	100.8	**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	562	SPP-2000-108 New Rating By AEPW Modeled	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR	1,596,000
08WP	AEPW-AEPW	**SOUTHWEST SHREVEPORT TO WALLACE LAKE, 138KV** 53446 S SHV 4 138 to 53461 WALLAKE4 138 CKT 1	210	89.3	104.0	**DOLET HILLS 345/230KV TR** 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	488	Dolet Hills Operating Guide Monitor Line a 260 MVA 19.0% Increase		

5. Conclusion

The AEPW to EES transfer creates many new overloads in the system. The 670MW transfer also increases the loading on previously identified facilities, as well as overloading previously assigned facilities beyond their new ratings.

To extend the AEPW to EES transfer beyond the deferred end date of 10/1/2007 upgrades must be completed for those facilities that limit the ATC to less than 670MW.

The final cost assignment of facilities and ATC to Power Resource Group, Inc. will be determined upon the completion of a 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 - X 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. Excld 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 - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts