



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

From AEPW to Entergy

***For a Reserved Amount Of 620MW
From 6/1/03 To 6/1/06
Extension of Service Evaluation***

SPP Transmission Planning

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SPP-2002-046r is an extension of SPP-2000-108 to include facility upgrades required for extending service beyond end date of 6/1/2006. SPP-2002-046r is a revision to SPP-2002-046 to replace the parallel 345kV line from La Cygne to Stilwell with the Linn County substation as the option for relieving the La Cygne to Stilwell overload.

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, Oasis reservation 212202. The period of the transaction is from 6/1/03 to 6/1/06 for a total of 620MW. This system impact study is for the extension of service beyond the initial end date of 6/1/2006.

The principal objective of this study is to determine if any additional upgrades are required to extend the service beyond an end date of 6/1/2006.

New overloads caused by the 620MW transfer were identified along with determining the impact of the transfer on any previously assigned and identified facilities.

The AEPW to EES transfer overloads new facilities as well as impacts facilities that have been identified as limiting constraints for previously studied transfers.

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 620MW 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 620MW 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 620MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 620MW 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 620MW 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 620MW request. The SPP 2002 Series Cases 2008 Summer Peak and 2008/2009 Winter Peak were used to study the impact of the 620MW transfer on the SPP system beyond 6/1/2006. The following upgrades have been included in the models for the evaluation of the 620MW transfer:

- * Linn County 345/161kV transformer
- * 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 Norfolk
- * 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 620MW 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 relieved in order to provide the capability needed for the 620MW transfer.

Table 3 documents the 620MW transfer impact on previously assigned and identified facilities. The facilities that were previously assigned or identified are further overloaded by the 620MW 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 620MW transfer from AEPW to EES.

Table 1 – SPP Facility Overloads caused by the 620MW AEPW to EES transfer.

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution
08SP	AEPW-AEPW	PURDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	100.0	101.3	BARTON'S CHAPEL TO WALTON, 138KV 53685 BARTONC4 138 to 53695 WALTON 4 138 CKT1	0	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	AEPW-AEPW	JACKSONVILLE TO OVERTON, 138KV 53549 JACKSNV4 138 to 53588 OVERTON4 138 CKT 1	235	116.4	125.2	CROCKETT TO TENASKA RUSK COUNTY 53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1	0	Reset Relays @ Jacksonville & Overton
08SP	WFEC-WFEC	CYRIL TO ANADARKO, 69KV 55870 CYRIL 269.0 to 55810 ANADARK269.0 CKT 1	61	100.0	100.2	ANADARKO TO GEORGIA, 138KV 55814 ANADARK4 138 to 55923 GEORGIA4 138 CKT1	0	Construction Payne Switch with 70 MVA autotransformer
08SP	SWPA-SWPA	SPRINGFIELD 161/69KV TRANSFORMER 3 52692 SPRGFLD5 161 to 52694 SPRGFLD269.0 CKT 3	25	99.9	104.0	JAMES RIVER TO TWIN OAK, 69KV 59904 JRPS 269.0 to 59933 TWINOAK269.0 CKT1	9	Replace 25/25MVA transformer #3 with 80MVA unit
08SP	SWPA-AECI	WSHBRN 161/69KV TRANSFORMER 52681 5WSHBRN 161 to 96763 2WSHBRN 69.0 CKT 1	56	99.9	104.1	BEAVER TO EUREKA SPRINGS, 161KV 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1	13	No upgrade assigned - 3rd party facility overload
08SP	AEPW-AEPW	PERDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.7	101.3	PITTSBURG TO FERNDAL LAKE TAP, 69KV 53310 PITTSB_269.0 to 53531 FERNDTP269.0 CKT1	117	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	AEPW-AEPW	MARSHALL TO NORTH MARSHALL, 69KV 53570 MARSHAL269.0 to 53579 NMARSHL269.0 CKT 1	72	99.6	101.4	FLOURNOY 138/69KV TRANSFORMER 53404 FLOURNY269.0 to 53405 FLOURNY4 138 CKT1	136	Replace 350 CU bus & jumpers @ North Marshall.
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	137	Reset CT @ Pittsburg.
08SP	AEPW-AEPW	PURDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.6	101.2	SCROGNS TO FERNDAL LAKE TAP, 69KV 53316 SCROGNS269.0 to 53531 FERNDTP269.0 CKT1	165	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	AEPW-AEPW	MARSHALL TO NORTH MARSHALL, 69KV 53570 MARSHAL269.0 to 53579 NMARSHL269.0 CKT 1	72	98.8	103.3	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	170	Replace 350 CU bus & jumpers @ North Marshall.
08SP	AEPW-AEPW	PURDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.2	101.4	SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	220	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	AEPW-AEPW	BROKEN ARROW NORTH TO ONETA, 138KV 53798 BA.N-ST4 138 to 53818 ONETA--4 138 CKT 1	235	97.6	103.6	CHAMBER SPRINGS ROAD 345/161KV 53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT1	248	Rebuild 4.31 miles of 795 ACSR with 1590 ACSR.
08SP	AEPW-AEPW	BROKEN ARROW NORTH TO ONETA, 138KV 53798 BA.N-ST4 138 to 53818 ONETA--4 138 CKT 1	235	97.6	103.6	CHAMBER SPRINGS TO CLARKSVILLE, 345KV 53155 CHAMSPR7 345 to 53756 CLARKSV7 345 CKT1	249	Rebuild 4.31 miles of 795 ACSR with 1590 ACSR.
08SP	AEPW-AEPW	PURDUE TO DIANA, 138KV 53527 DIANA 4 138 to 53590 PERDUE 4 138 CKT 1	237	99.1	101.2	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	263	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	AEPW-AEPW	RAINES TO ARSENAL HILL, 138KV 53439 RAINES 4 138 to 53386 ARSHILL4 138 CKT 1	234	97.8	102.9	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	265	Rebuild 5.32 miles of 2-266 ACSR with 1590 ACSR
08SP	SPRM-AECI	CLAY TO LOGAN, 161KV 59970 CLAY 5 161 to 97161 5LOGAN 161 CKT 1	185	92.7	108.9	HUBEN TO MORGAN, 345KV 96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	279	SPA: Replace transmission line structures to allow operation at 100C. SPRM: None.

Table 1 - continued – SPP Facility Overloads caused by the 620MW AEPW to EES transfer.

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution
08SP	EMDE-EMDE	ORONOGO JCT. TO JOPLIN OAKLAND NORTH, 161KV 59467 ORO110 5 161 to 59494 OAK432 5 161 CKT 1	214	98.6	101.7	TIPTON FORD TO JOPLIN, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	283	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR.
08SP	SWPA-SWPA	GLENCOE TO NORFORK, 161KV 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	97.8	102.3	NEW-IN TO NEWPO, 161KV 99763 5NEW-IN 161 to 99764 5NEWPO 161 CKT1	300	Remove wave trap. Switch relaying channel to fiber optic shield wire.
08SP	AEPW-AEPW	CHAMBER SPRINGS ROAD 345/161KV TRANSFORMER 53155 CHAMSPR7 345 to 53154 CHAMSPR5 161 CKT 1	660	97.0	102.0	FLINT CREEK TO GRDA, 345KV 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT1	372	Install 2nd 345/161 kV Auto-transformer
08SP	AEPW-AEPW	OAK HILL TO KNOX LEE, 138KV 53586 OAK2HIL4 138 to 53557 KNOXLEE4 138 CKT 1	210	99.1	100.6	LEVERETTS CHAPEL TO OVERTON, 138KV 53560 LEVERET4 138 to 53588 OVERTON4 138 CKT1	384	Replace wavetrap @ Knoxlee.
08SP	AEPW-AEPW	MARSHALL TO NORTH MARSHALL, 69KV 53570 MARSHAL269.0 to 53579 NMARSHL269.0 CKT 1	72	97.4	101.5	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	397	Replace 350 CU bus & jumpers @ North Marshall.
08SP	AEPW-AEPW	WINFIELD TO ADORA REC, 69KD 53335 WINFIEL269.0 to 53243 ADORA 269.0 CKT 1	85	97.1	101.2	NORTH MINEOLA TO LAKE HAWKINS, 138KV 53581 NMINEOL4 138 to 53666 LHAWKIN4 138 CKT1	439	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	OKGE-OKGE	HARDEN CITY TO AHLOSO, 69KV 55186 HARDEN 269.0 to 55187 AHLOSTP269.0 CKT 1	52	95.3	101.9	VALLEY VIEW TAP TO VALLEY VIEW, 69KV 55181 VALYVUT269.0 to 55182 VALLYVU269.0 CKT1	441	No upgrade assigned - closing switch at Ahloso alleviates the overload
08SP	AECI-GRRD	TITANTP TO TAHLEQUAH, 69KV 96986 2TITANTP69.0 to 54447 TAHLQH 269.0 CKT 1	47	98.1	100.8	KANSAS TO WATTS, 69KV 54515 KANSAS 269.0 to 96987 2WATTS 69.0 CKT1	445	Reconductor 9.4 miles with 795MCM ACSR.
08SP	SWPA-SWPA	GLENCOE TO NORFORK, 161KV 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	96.4	101.0	NEW-AB TO NEW-IN, 161KV 99762 5NEW-AB 161 to 99763 5NEW-IN 161 CKT1	487	Remove wave trap. Switch relaying channel to fiber optic shield wire.
08SP	SWPA-OKGE	VAN BUREN TO VBI, 161KV 52722 VAN BUR5 161 to 55339 VBI 5 161 CKT 1	335	90.7	102.1	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	503	SPA: Replace metering CTs, disconnect switches, breakers, and bus differential relaying at Van Buren. OKGE: Replace 3 1200Amp, 161kV breakers with 2000Amp, replace 5 pairs 1200Amp L&M switches with 2000A to increase ring bus to 2000Amps.
08SP	OKGE-AEPW	BONANZA TAP TO BONANZA, 161KV 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	98.8	100.2	AES TO TARB, 161KV 55262 AES 5 161 to 55264 TARB 5 161 CKT1	537	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR by AEP.
08SP	AEPW-AEPW	PURDUE TO DIANA, 138KV 53527 DIANA 4 138 to 53590 PERDUE 4 138 CKT 1	237	98.1	100.1	WELSH TO WILKES, 345KV 53615 WELSH 7 345 to 53620 WILKES 7 345 CKT1	597	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08SP	OKGE-AEPW	BONANZA TAP TO BONANZA, 161KV 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	88.8	100.4	FORT SMITH TO ANO, 500KV 55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	599	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR by AEP.
08SP	AEPW-AEPW	PERDUE TO DIANA, 138KV 53527 DIANA 4 138 to 53590 PERDUE 4 138 CKT 1	237	96.5	100.1	DIANA TO PIRKEY, 345KV 53528 DIANA 7 345 to 53593 PIRKEY 7 345 CKT1	600	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08WP	AEPW-AEPW	PERDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	99.7	101.5	DIANA TO SPRING HILL, 138KV 53527 DIANA 4 138 to 53608 SPRHILL4 138 CKT1	109	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08WP	OKGE-OKGE	COAL HILL TO AVEC OZARK, 69KV 55322 COALHIL269.0 to 55324 AVECOZK269.0 CKT 1	72	99.7	100.5	GREAK LAKES CARBON TO ALTUS, 69KV 55323 GLCARBN269.0 to 55330 ALTUS 269.0 CKT1	196	No upgrade assigned - Switch replacement already completed which raises rating to 97/111.
08WP	AEPW-AEPW	MARSHALL 138/69KV TRANSFORMER CKT 1 53571 MARSHL-4 138 to 53623 MARAUTO269.0 CKT 1	121	99.4	100.7	MARSHALL 138/69KV TRANSFORMER CKT 2 53571 MARSHL-4 138 to 53623 MARAUTO269.0 CKT2	283	Replace 755 ACAR Strain Bus
08WP	AEPW-AEPW	MARSHALL 138/69KV TRANSFORMER CKT 2 53571 MARSHL-4 138 to 53623 MARAUTO269.0 CKT 2	121	99.4	100.7	MARSHALL 138/69KV TRANSFORMER CKT 1 53571 MARSHL-4 138 to 53623 MARAUTO269.0 CKT1	283	Replace 755 ACAR Strain Bus
08WP	AEPW-AEPW	HUGO TAP TO VALLIANT, 138KV 54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	95.1	103.6	HUGO POWER PLANT TO VALLIANT, 138KV 55948 HUGO PP4 138 to 56079 VALLANT4 138 CKT1	360	Replace Wavetrap @ Valliant.

Table 1 – Continued - SPP Facility Overloads caused by the 620MW AEPW to EES transfer.

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution
08WP	AEPW-AEPW	PERDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	98.8	100.7	LAKE LAMOND TO SPRING HILL, 138KV 53563 LLAMOND4 138 to 53608 SPRHILL4 138 CKT1	396	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08WP	OKGE-WERE	NEWKIRK TO CRESWELL, 138KV 54759 NEWKIRK4 138 to 56981 CRESWLN4 138 CKT 1	160	89.4	104.3	WOODRING TO WICHITA, 345KV 54715 WOODRNG7 345 to 56796 WICHITA7 345 CKT1	440	No upgrade assigned - Review of line reveals that line can be operated at 100 degrees C Rating = 194/222 SP and 249/270 WP
08WP	SPRM-SWPA	CLAY TO SPRINGFIELD, 161KV 59970 CLAY 5 161 to 52692 SPRGFLD5 161 CKT 1	167	95.7	101.7	JAMES RIVER TO MENTOR, 161KV 59961 JRPS 5 161 to 59963 MENTOR 5 161 CKT1	448	SPA: Replace disconnect switches at Springfield. SPRM: None.
08WP	AEPW-AEPW	HUGO TAP TO VALLIANT, 138KV 54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	93.7	102.2	IDABEL TO VALLANT, 138KV 55953 IDABEL 4 138 to 56079 VALLANT4 138 CKT1	463	Replace Wavetrapp @ Valliant.
08WP	AEPW-AEPW	PERDUE TO DIANA, 138KV 53590 PERDUE 4 138 to 53527 DIANA 4 138 CKT 1	237	98.8	100.3	KNOX LEE TO PIRKEY, 138KV 53557 KNOXLEE4 138 to 53592 PIRKEY 4 138 CKT1	493	No Upgrade Assigned - AEP Winnsboro Project In-Service Date 05SP
08WP	AEPW-AEPW	LONDON TO FRIARS WEST, 138KV 53566 LONDON 4 138 to 53533 FRIARSW4 138 CKT 1	143	98.0	100.1	KNOX LEE TO MONROE CORNERS REC, 138KV 53557 KNOXLEE4 138 to 53574 MONROCR4 138 CKT1	579	No upgrade assigned - ratings updated

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

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload
08SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	97.6	105.8	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	97.5	105.5	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.6	103.4	56793 NEOSHO 7 345 to 57981 LACYGNE7 345 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.7	103.2	59536 ASH121 269.0 to 59586 WIL445 269.0 CKT1
08SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	99.0	103.1	59473 RDS295 5 161 to 59492 RDS424 5 161 CKT1
08SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.8	104.1	56772 STRANGR7 345 to 57982 IATAN 7 345 CKT1
08SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	100.0	104.1	58063 SWAVRLY5 161 to 58064 NORTON-5 161 CKT1
08SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.8	104.1	98937 8B.WLSN 500 to 99203 8PERYVIL 500 CKT1
08SP	MIPU-MIPU	59286 GRDWST 269.0 to 59287 MARTCTY269.0 CKT 1	61	99.9	100.2	59224 LNGVW 5 161 to 59282 LNGVW 2 69.0 CKT1
08SP	AECI-AECI	96081 5GAINES 161 to 97090 2GNSVL2 69.0 CKT 1	56	98.5	101.0	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1
08SP	AECI-AECI	96127 5CLEVER 161 to 96665 2CLEVER 69.0 CKT 1	56	99.3	100.5	59604 BHJ415 269.0 to 96673 2JAMESV 69.0 CKT1
08SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	93.7	103.8	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	91.7	101.8	97480 L558T485 138 to 97487 4MT.ZION 138 CKT1
08SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	92.1	104.2	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	89.2	101.3	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	98.8	110.8	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	95.9	107.9	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	94.1	106.1	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
08SP	EES-EES	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT 1	525	99.2	107.7	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT2
08SP	EES-EES	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT 2	525	99.2	107.7	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	98.7	108.7	97480 L558T485 138 to 97487 4MT.ZION 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.5	109.4	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	96.6	108.5	97459 4CONROE 138 to 97539 4WDHAVN 138 CKT1
08SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	96.3	107.1	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT1
08SP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	98.1	105.3	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
08SP	EES-EES	97698 4JASPER 138 to 97704 4RAYBURN 138 CKT 1	112	94.6	102.1	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
08SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.4	106.6	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
08SP	EES-EES	97920 6PPG 23 230 to 98051 2PPC NO 69.0 CKT 1	160	94.6	100.3	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	100.5	97920 6PPG 23 230 to 98051 2PPC NO 69.0 CKT1
08SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	93.5	102.9	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	93.4	102.8	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	EES-EES	99230 3COUCH 115 to 99280 3TAYLOR 115 CKT 99	108	92.3	102.4	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
08SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	92.7	107.0	99230 3COUCH 115 to 99280 3TAYLOR 115 CKT99
08SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	89.9	104.1	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
08SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	86.8	103.2	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	98.8	122.2	54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1
08SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	99.5	120.8	54033 PITTSB-7 345 to 55136 SUNNYS7 345 CKT1
08SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	99.9	120.8	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT1
08SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	98.2	121.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT1
08SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	96.2	117.9	53301 NWTXARK7 345 to 53615 WELSH 7 345 CKT1
08SP	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	99.6	124.2	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08SP	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	97.6	120.2	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
08SP	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	94.3	116.9	53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1
08SP	EES-EES	99825 5MIDWAY# 161 to 99827 5MT HOM 161 CKT 1	162	92.6	104.0	52660 BULL SH5 161 to 52661 BUFRDTP5 161 CKT1
08SP	EES-EES	99825 5MIDWAY# 161 to 99827 5MT HOM 161 CKT 1	162	91.5	103.0	52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT1

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

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload
08SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	97.2	103.2	52660 BULL SH5 161 to 96081 5GAINES 161 CKT1
08SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	97.2	103.1	52660 BULL SH5 161 to 99802 5BULLSH* 161 CKT1
08WP	AMRN-AMRN	31408 OVERTON 345 to 31409 OVERTON 161 CKT 1	300	99.4	100.1	31221 MOBERLY 161 to 31409 OVERTON 161 CKT1
08WP	CELE-CELE	50031 COCODR 6 230 to 50039 COUGH 4 138 CKT 1	386	99.5	104.0	50303 BONIN 6 230 to 50310 PMOUTON6 230 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	99.7	102.2	59207 ARCHIE 5 161 to 59240 ADRIAN 5 161 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	98.9	101.5	57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	98.9	101.4	59216 BUTLER_5 161 to 59240 ADRIAN 5 161 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	100.0	103.6	59604 BHJ415 269.0 to 96673 2JAMESV 69.0 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.7	103.5	52681 5WSHBRN 161 to 52686 NEO SPA5 161 CKT1
08WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.6	103.4	59540 MON152 269.0 to 59591 MON383 269.0 CKT1
08WP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	131	97.9	100.9	58062 SALSBRYS 161 to 58064 NORTON-5 161 CKT1
08WP	EES-EES	97453 4DOBBIN 138 to 97457 4LONGMIR 138 CKT 1	112	90.8	101.8	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.9	108.1	97507 4COLSTTA 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.8	108.0	97506 4BRYAN 138 to 97507 4COLSTTA 138 CKT1
08WP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.3	106.2	97476 4JACINTO 138 to 97534 4SPLENDR 138 CKT1
08WP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	99.3	107.2	97484 4HUNTSVL 138 to 97519 4GEORGIA 138 CKT1
08WP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	99.1	107.0	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97469 4APRIL 138 to 97470 4LFOREST 138 CKT 1	206	97.9	106.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08WP	EES-EES	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT 1	206	97.3	106.9	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1
08WP	EES-EES	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT 1	206	98.4	106.7	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1
08WP	EES-EES	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT 1	206	97.2	105.5	97508 4NAVSOTA 138 to 97522 4TUBULAR 138 CKT1
08WP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.6	110.5	97507 4COLSTTA 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.4	110.3	97506 4BRYAN 138 to 97507 4COLSTTA 138 CKT1
08WP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	98.8	109.1	97508 4NAVSOTA 138 to 97522 4TUBULAR 138 CKT1
08WP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.7	109.9	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	97.6	109.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08WP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	97.6	109.6	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97510 4SOTA 1 138 to 97508 4NAVSOTA 138 CKT 1	206	97.3	103.4	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97510 4SOTA 1 138 to 97508 4NAVSOTA 138 CKT 1	206	96.3	102.3	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08WP	EES-EES	97510 4SOTA 1 138 to 97508 4NAVSOTA 138 CKT 1	206	95.7	102.2	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.8	107.2	50023 CARROLL6 230 to 50046 DOLHILL6 230 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.9	107.1	97684 6BEVIL 230 to 97713 6CYPRESS 230 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.8	107.1	97461 4LEWIS 138 to 97483 4GOREE 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	98.5	107.2	97478 6JACINTO 230 to 97714 6CHINA 230 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	98.4	107.2	97476 4JACINTO 138 to 97478 6JACINTO 230 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	96.2	106.7	97482 4CINCINT 138 to 97530 4WALKER 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT 1	206	99.0	105.1	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT 1	206	98.0	104.1	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08WP	EES-EES	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT 1	206	97.5	104.0	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97526 4MAG AND 138 to 97510 4SOTA 1 138 CKT 1	206	98.4	104.5	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97526 4MAG AND 138 to 97510 4SOTA 1 138 CKT 1	206	97.4	103.5	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
08WP	EES-EES	97526 4MAG AND 138 to 97510 4SOTA 1 138 CKT 1	206	96.8	103.3	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
08WP	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	96.2	105.8	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1
08WP	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	97.2	105.5	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1
08WP	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	96.0	104.3	97508 4NAVSOTA 138 to 97522 4TUBULAR 138 CKT1
08WP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	97.7	106.6	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	96.4	106.3	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	96.3	106.2	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08WP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	98.4	107.3	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1

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

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload
08WP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	97.1	107.0	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	97.1	107.0	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08WP	EES-EES	97920 6PPG 23 230 to 97919 6VERDINE 230 CKT 1	470	99.4	101.9	97917 6NLSON 230 to 97921 6CARLYSS 230 CKT1
08WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.7	124.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
08WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.8	124.7	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
08WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	91.8	115.4	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1
08WP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	95.0	117.7	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1
08WP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	87.8	111.1	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1
08WP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	88.6	110.6	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1
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
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

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

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Assignment	Solution
08SP	OKGE-OKGE	PECAN CREEK TO MUSKOGEE, 345KV 55235 PECANCK7 345 to 55224 MUSKOG7 345 CKT 1	478	100.0	110.8	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	Previously Identified	Change CT Ratio @ Pecan Creek
08SP	GRRD-GRRD	KERR TO 412SUB, 161KV 54435 KERR GR5 161 to 54437 412SUB 5 161 CKT 1	338	103.1	106.6	FLINT CREEK TO GRDA1, 345KV 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT1	0	Previously Identified	Reconductor 12.5 miles with 1590MCM ACSR.
08SP	GRRD-GRRD	412SUB TO KANSAS TAP, 161KV 54437 412SUB 5 161 to 54514 KANSATP5 161 CKT 1	338	102.4	105.8	FLINT CREEK TO GRDA1, 345KV 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT1	0	Previously Identified	Reconductor 9.7 miles with 1590MCM ACSR.
08SP	SWPA-SWPA	SPRINGFIELD 161/69KV TRANSFORMER 1 52692 SPRGFLD5 161 to 52694 SPRGFLD269.0 CKT 1	80	100.7	102.1	NICHOLS 161/69KV TRANSFORMER 59925 NICHOLS269.0 to 59956 NICHOLS5 161 CKT1	0	Previously Identified	Replace 25/25MVA transformer #3 with 80MVA unit to eliminate overload of 80MVA transformer #1.
08SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	97.3	115.9	LONGWOOD TO ELDEHV, 345KV 53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	92	Upgrade Modeled Assigned to SPP-2000-108	No upgrade assigned - 3rd party facility overload
08SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	97.2	115.7	ELDEHV 500/345KV TRANSFORMER 99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	93	Upgrade Modeled Assigned to SPP-2000-108	No upgrade assigned - 3rd party facility overload
08SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	96.9	114.1	CROCKETT TO GRIMES, 345KV 53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1	112	Upgrade Modeled Assigned to SPP-2000-108	No upgrade assigned - 3rd party facility overload
08SP	AEPW-AEPW	NORTHWEST HENDERSON TO OAK HILL, 138KV 53584 NWHENDR4 138 to 53585 OAK1HIL4 138 CKT 1	210	99.6	101.1	KILGORE REC TO MONROE CORNERS REC, 138KV 53555 KILGORR4 138 to 53574 MONROCR4 138 CKT1	179	Previously Identified	Replace wavetrap @ NW Henderson.
08SP	AEPW-AEPW	OAK PAN-HARR REC TO LONGWOOD, 138KV 53457 OAKPH 4 138 to 53423 LONGWD 4 138 CKT 1	209	96.2	103.6	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	320	Previously Identified	Rebuild 1.8 miles of 666 ACSR with 1590 ACSR.
08SP	AEPW-AEPW	FERNDALE LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	99.4	100.4	HOPEWELL REC TO WINFIELD, 69KV 53262 HOPEWEL269.0 to 53335 WINFIEL269.0 CKT1	367	SPP-2000-108 New Rating By AEPW Modeled	Reset CTs @ Pittsburg.
08SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 138 to 53473 NORAM 4 138 CKT 1	265	96.8	101.5	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	423	Previously Identified	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR & replace jumpers.

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

Study Year	From Area - To Area	Branch Overl 100 % Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Assignment	Solution
08SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	163	92.2	103.0	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	447	Upgrade Modeled Assigned to SPP-2000-108	Reconductor 0.65 miles 397MCM to 795MCM and Reset Relays @ Jefferson IPC (6 months lead time).
08SP	EMDE-EMDE	REINMILLER 161/69/12.5KV TRANSFORMER 59595 RNM393 269.0 to 59500 RNM393 5 161 CKT 1	75	98.2	100.6	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	503	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.
08SP	OKGE-OKGE	OSAGE TO CONTINENTAL BLACKS, 69KV 54742 OSAGE 269.0 to 54763 CONBLKS269.0 CKT 1	111	95.7	100.4	KILDARE TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	570	Previously Identified	Rebuild & Reconductor 0.57 Miles, replace Wavetrap and increase CT ratio.
08SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 138 to 53439 RAINES 4 138 CKT 1	265	95.7	100.3	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	577	Previously Identified	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR.
08SP	SWPA-SWPA	MUSKOGEE TAP TO GORE, 161KV 52758 MUSKTAP5 161 to 52752 GORE 5 161 CKT 1	223	87.4	100.2	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	608	Upgrade Modeled Assigned to SPP-2000-108	Replace wavetrap and change CT ratios at Gore.
08WP	AEPW-EES	CROCKETT TO GRIMES, 345KV 53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	96.1	103.4	RICHARD TO WEBER, 500KV 98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1	334	Previously Identified	Reset CTs
08WP	AEPW-EES	CROCKETT TO GRIMES, 345KV 53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	95.2	103.7	HARTBURG TO MT. OLIVE, 500KV 97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1	348	Previously Identified	Reset CTs
08WP	AEPW-AEPW	SOUTHWEST SHREVEPORT TO WALLACE LAKE, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	91.7	104.8	DOLET HILLS 345/230KV TR 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	394	Previously Identified	No upgrade assigned due to Dolet Hills Operating Guide - monitor line at 260MVA 19%
08WP	AEPW-EES	CROCKETT TO GRIMES, 345KV 53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	93.4	100.7	CYPRESS TO HARTBURG, 500KV 97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1	561	Previously Identified	Reset CTs

5. Conclusion

The AEPW to EES transfer creates many new overloads in the system. The 620MW 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, upgrades must be completed for those facilities given in Tables 1 and 3 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.

All available base models were used to study the 620MW throughout the requested time period. Due to the SPP planning horizon for model development, no study cases are available beyond the 2008/2009 Winter Peak. SPP limits the rollover rights of this service due to the insufficient amount of data needed to study this service beyond the 2008/2009 Winter Peak.

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