



# **SPP** *Southwest Power Pool*

*System Impact Study  
SPP-2003-191-1  
(Updated)  
For Network Service  
Requested By  
Grand River Dam Authority*

*From GRDA To WFECA*

*For a Reserved Amount Of  
10 to 15 MW From 1/1/2004 To 1/1/2014*

*SPP Engineering, Tariff Studies*

Table 1.1 - SPP Facility Overloads  
Caused or Impacted by Transfer (Scenario 1)

Study Case	From Area	To Area	Branch Overload	Rating <MVA>	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
03WP	EMDE	EMDE	59591 MON383 2 69 to 59540 MON152 2 69 CKT 1	52	100.6	100.8	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	0	Rebuild 1.28 mile 69 kV line and rebuild 69 kV Bus at Monett H.T	\$ 1,050,000
04AP			NONE IDENTIFIED							
04G			NONE IDENTIFIED							
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	133.2	133.3	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	Rebuild 16.3 miles of 2-297 ACSR with 2156 ACSR. Replace Flint Creek wavetrap & jumpers. Replace Flint Creek switch # 1K75	\$ 8,200,000
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	131.9	132.0	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	115.1	115.2	53154 CHAMSPR5 161 to 53170 TONTITN5 161 CKT 1	0	"	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	107.6	107.7	53154 CHAMSPR5 161 to 53195 FARMGTN5 161 CKT 1	0	"	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	268	102.1	102.2	Base Case	0	"	
04SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	110.7	110.8	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR.	\$ 400,000
04SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	107.3	107.4	53249 BANN 2 69 to 53312 REDLICK2 69 CKT 1	0	Replace switch 8965 @ Kings Highway	\$ 60,000
04SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	103.5	103.6	53312 REDLICK2 69 to 53315 RICHMND2 69 CKT 1	0	See Previous Upgrade Specified for Facility	
04SP	OKGE	OKGE	55187 AHLOSTP2 69 to 55177 PARKLN 2 69 CKT 1	72	107.0	107.2	55177 PARKLN 2 69 to 55182 VALLYVU2 69 CKT 1	0	Solution Undetermined	
04SP	EMDE	EMDE	59467 ORO110 5 161 to 59494 OAK432 5 161 CKT 1	214	101.3	101.8	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	0	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$ 800,000
04SP	AEPW	AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	261	108.7	108.8	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1	10	Invalid Contingency	
04SP	AEPW	AEPW	53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	261	102.9	103.0	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1	10	Invalid Contingency	
04FA	SPS	SPS	52094 ROSWIN3 115 to 52093 ROSWIN2 69 CKT 1	40	157.0	157.2	52154 ARTESIA3 115 to 52162 NAVAJ33 115 CKT 1	0	Taken From 2002 Mitigation Plan - Close N.O. between Capitan Tap (52085) & Capitan (52087). Open between Capitan Tap (52085) & Roswell Int. (52093). Mitigation Plan No Longer Valid, Solution Undetermined	
04FA	EMDE	SWPA	59466 ATL109 5 161 to 52688 CARTHAG5 161 CKT 1	167	100.9	101.8	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	0	Replace 600 Amp disconnect switches	\$ 60,000
04WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	102.5	102.7	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
04WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	101.8	102.0	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	"	
09SP	SPS	SPS	51688 LUBE3 115 to 51687 LUBE2 69 CKT 1	50.6	109.9	110.0	51679 LUBS2 69 to 51680 LUBS3 115 CKT 1	0	Taken From 2002 Mitigation Plan - Close N.O. between Slaton (51773) & SP-Slaton (51775). Open between Lubbock East (51687) & Lewters (51769). Shed approximately 0.5MW at Slaton (51773) or SP-Slaton (51775). Mitigation Plan No Longer Valid, Solution Undete	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	132.2	132.3	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR	\$ 8,000,000
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	305	120.5	120.6	Base Case	0	See Previous Upgrade Specified for Facility	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	116.5	116.6	53154 CHAMSPR5 161 to 53195 FARMGTN5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	113.0	113.1	53157 SFAYTVL5 161 to 53195 FARMGTN5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	112.4	112.5	53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	165.6	165.7	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	163.1	163.3	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	138.9	139.0	53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	138.9	139.0	53155 CHAMSPR7 345 to 53756 CLARKSV7 345 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	268	121.1	121.2	Base Case	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	135.0	135.1	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	119.4	119.5	53154 CHAMSPR5 161 to 53195 FARMGTN5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	115.9	116.0	53157 SFAYTVL5 161 to 53195 FARMGTN5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	115.4	115.5	53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT 1	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	115.4	115.5	53155 CHAMSPR7 345 to 53756 CLARKSV7 345 CKT 1	0	"	
09SP	AEPW	AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	261	108.8	108.9	Multiple Outage Contingency: 53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1 53299 NWT-BNT4138 to 53298 NNBOSTN4138 CKT 1 53299 NWT-BNT4138 to 53250 BANN 4138 CKT 1	0	Rebuild 1.68 miles of 1024 ACAR with 2156 ACSR, Replace wavetrap jumpers with 2156 ACSR	\$ 840,000
09SP	AEPW	AEPW	53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	261	102.7	102.8	Multiple Outage Contingency: 53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1 53299 NWT-BNT4138 to 53298 NNBOSTN4138 CKT 1 53299 NWT-BNT4138 to 53250 BANN 4138 CKT 1	0	Replace six (6) 138 kV switches, five at Bann & one at Alumax Tap. Rebuild 0.67 miles of 1024 ACAR with 2156 ACSR. Replace wavetrap jumpers @ Bann. Replace breaker 3300 @ Bann.	\$ 630,000

Table 1.1 - SPP Facility Overloads  
Caused or Impacted by Transfer (Scenario 1)

09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	116.3	116.6	53249 BANN 2 69 to 53312 REDLICK2 69 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	112.0	112.2	53312 REDLICK2 69 to 53315 RICHMND2 69 CKT 1	0	"	
09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	103.5	103.7	53250 BANN 4 138 to 53320 SETEXAR4 138 CKT 1	0	"	
09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	103.5	103.7	53319 SETEXAR2 69 to 53329 TEXARK 2 69 CKT 1	0	"	
09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	103.5	103.7	53319 SETEXAR2 69 to 53320 SETEXAR4 138 CKT 1	0	"	
09SP	AEPW	AEPW	53304 PATTERS2 69 to 53260 FOREMAN2 69 CKT 1	48	101.0	101.4	53258 DEQUEEN4 138 to 54015 CRAIGJT4 138 CKT 1	0	Rebuild 15.9 miles of 4/0 ACSR with 795 ACSR.	\$ 6,400,000
09SP	AEPW	AEPW	53304 PATTERS2 69 to 53260 FOREMAN2 69 CKT 1	48	101.0	101.4	53257 DEQUEEN2 69 to 53258 DEQUEEN4 138 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	AEPW	AEPW	53321 SNASHVL4 138 to 53306 PATTERS4 138 CKT 1	118	112.0	112.2	99397 3BISM RK 115 to 99403 3HSEHVW 115 CKT 1	0	Rebuild 17.72 miles of 4/0 CU with 795 ACSR	\$ 4,400,000
09SP	AEPW	AEPW	53329 TEXARK 2 69 to 53319 SETEXAR2 69 CKT 1	90	107.9	108.1	53300 NWTXARK4 138 to 53323 SUGARHL4 138 CKT 1	0	Solution Undetermined	
09SP	AEPW	AEPW	53329 TEXARK 2 69 to 53319 SETEXAR2 69 CKT 1	90	105.0	105.2	53322 SUGARHL2 69 to 53323 SUGARHL4 138 CKT 1	0	"	
09SP	GRRD	GRRD	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 1	50	106.2	106.5	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined	
09SP	GRRD	GRRD	54455 TAHLQH 5 161 to 54447 TAHLQH 2 69 CKT 1	78	115.7	115.8	54447 TAHLQH 2 69 to 54455 TAHLQH 5 161 CKT 2	0	Add 3rd 161/69 KV Transformer	\$ 1,400,000
09SP	GRRD	GRRD	54455 TAHLQH 5 161 to 54447 TAHLQH 2 69 CKT 2	78	116.4	116.5	54447 TAHLQH 2 69 to 54455 TAHLQH 5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	OKGE	OKGE	55187 AHLOSTP2 69 to 55177 PARKLN 2 69 CKT 1	72	123.6	124.0	55177 PARKLN 2 69 to 55182 VALLYVU2 69 CKT 1	0	Solution Undetermined	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	122.6	122.7	55814 ANADARK4 138 to 56031 POCASET4 138 CKT 1	0	Replace 800 amp wavetrapp with 2000 amp wavetrapp at Franklin Switch and 795ACSR jumpers with 1590ACSR, connectors	\$ 24,000
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	113.3	113.4	55869 CROMWEL4 138 to 56084 WETUMKA4 138 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	113.1	113.2	56026 PHAROAH4 138 to 56084 WETUMKA4 138 CKT 1	0	"	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	110.2	110.3	55869 CROMWEL4 138 to 56094 WEWOKA 4 138 CKT 1	0	"	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	107.6	107.7	54933 DRAPER 4 138 to 54949 SOONRTP4 138 CKT 1	0	"	
09SP	WFEC	SWPA	56026 PHAROAH4 138 to 52792 WELEETK4 138 CKT 1	191	106.6	106.7	55913 FRANKLN4 138 to 55917 FRNKLSN4 138 CKT 1	0	Replace wavetrapp at Weleetka and replace jumpers	
09SP	OMPA	AEPW	56204 OMDUNCN4 138 to 54157 COMMTAP4 138 CKT 1	117	115.2	115.3	54154 RUSHSP4 138 to 54155 RUSHNGT4 138 CKT 1	0	Replace metering CT's at Weleetka..	\$ 135,000
09SP	OMPA	AEPW	56204 OMDUNCN4 138 to 54157 COMMTAP4 138 CKT 1	117	108.2	108.3	54154 RUSHSP4 138 to 56207 OMMARLO4 138 CKT 1	0	Solution Undetermined	
09SP	EMDE	EMDE	59483*JOP389 5 161 WND 1 JOPLINSW 1	75	103.4	103.6	59472 TIP292 5 161 59483 JOP389 5 161 1	0	Replace 161/69 KV Transformer with a 150 MVA Transformer.	\$ 1,565,000
09SP	EMDE	EMDE	59494 OAK432 5 161 to 59467 ORO110 5 161 CKT 1	214	100.8	101.0	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	EMDE	EMDE	59500*RNM393 5 161 WND 1 REINMILL 1	75	100.1	100.3	59472 TIP292 5 161 59483 JOP389 5 161 1	0	Replace 161/69 KV Transformer with a 150 MVA Transformer.	\$ 1,730,000
09SP	EMDE	EMDE	59592*JOP389 269.0 WND 2 JOPLINSW 1	75	103.2	103.4	59472 TIP292 5 161 59483 JOP389 5 161 1	0	See Previous Upgrade Specified for Facility	
09SP	AECI	AECI	96986 2TITANTP 69 to 96983 2STILWEL 69 CKT 1	36	102.0	102.2	54515 KANSAS 2 69 to 96987 2WATTS 69 CKT 1	0	Rebuild 9.2 miles with 795MCM ACSR	\$ 1,518,000
09SP	ENTR	SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	117.2	117.3	99817 5ISES 1 161 to 99826 5MORFLD 161 CKT 1	0	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,000
09SP	ENTR	SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	110.5	110.6	99798 5BATEVL 161 to 99826 5MORFLD 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	110.8	110.9	52660 BULL SH5 161 to 99802 5BULLSH* 161 CKT 1	0	Rebuild 5.34 miles of 666 ACSR with 1590 ACSR.	
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	109.3	109.4	99802 5BULLSH* 161 to 99809 5FLIPN 161 CKT 1	0	Replace wavetrapp jumpers @ Eureka Springs	\$ 2,400,000
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	106.0	106.2	99809 5FLIPN 161 to 99837 5SUMMIT 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	102.7	102.8	99519 5QUITMN 161 to 99799 5BEE BR 161 CKT 1	0	"	
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	210	101.1	101.2	Base Case	0	"	
09SP	AEPW	AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	261	119.5	119.6	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1	15	Invalid Contingency	
09SP	AEPW	AEPW	53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	261	113.4	113.6	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1	15	Invalid Contingency	
09SP	WERE	WERE	57735 GOLDPLJ2 69 to 57733 GATZ 2 69 CKT 1	32	114.1	114.2	57741 MID AMJ2 69 to 57744 MUDCRKJ2 69 CKT 1	15	Local area problem within Newton divisor	
09SP	EMDE	SWPA	59497 RVS438 5 161 to 52672 TABLE R5 161 CKT 1	268	103.2	103.4	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT 1	15	Contingency is Invalid, Contingency Causes Voltage to Collapse at Osage, With Load removed at Osage, Facility Not Overloaded	
09SP	ENTR	AEPW	99389 4MURFRE 138 to 53321 SNASHVL4 138 CKT 1	105	104.0	104.2	99397 3BISM RK 115 to 99403 3HSEHVW 115 CKT 1	15	In-house project scheduled for 11/1/03 completion. New limits will be 4/0 CU line conductor.	
09SP	ENTR	EMDE	99831 5OMAHA * 161 to 59474 OZD312 5 161 CKT 1	162	124.0	124.1	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT 1	15	Contingency is Invalid, Contingency Causes Voltage to Collapse at Osage, With Load removed at Osage, Facility Not Overloaded	
09WP	SWPA	SWPA	52648 NORFORK5 161 to 52650 NORFORK2 69 CKT 2	25	110.2	110.7	52648 NORFORK5 161 to 52650 NORFORK2 69 CKT 1	0	Replace Norfork Transformer	\$ 1,300,000
09WP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	368	110.0	110.1	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	125.2	125.4	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	124.1	124.3	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	"	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	107.1	107.2	53154 CHAMSPR5 161 to 53170 TONTITN5 161 CKT 1	0	"	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	104.7	104.8	53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT 1	0	"	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	104.7	104.8	53155 CHAMSPR7 345 to 53756 CLARKSV7 345 CKT 1	0	"	
09WP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	368	111.9	112.0	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility	

SPP-2003-191

Table 1.1 - SPP Facility Overloads  
 Caused or Impacted by Transfer (Scenario 1)

Southwest Power Pool  
 System Impact Study

09WP	AEPW	AEPW	54024 MCALEST2 69 to 54029 WELEETK2 69 CKT 1	53	103.6	103.7	54022 LONEOAK4 138 to 54032 SMCALTP4 138 CKT 1	0	Rebuild 0.74 miles of 211.3 ACSR with 795 ACSR. Replace wavetraps at both ends	\$ 350,000
09WP	EMDE	SWPA	59466 ATL109 5 161 to 52688 CARTHAG5 161 CKT 1	207	100.2	100.4	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	0	See Previous Upgrade Specified for Facility	
									Total Estimated Cost	\$ 39,762,000

Table 2.1 - Non-SPP Facility Overloads  
Caused or Impacted by Transfer (Scenario 1)

Southwest Power Pool  
System Impact Study

Study Case	From Area	To Area	Branch Overload	Rating <MVA>	BC % Loading	TC % Loading	Outaged Branch Causing Overload	Comments
03WP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	43	99.9	100.1	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
04AP			NONE IDENTIFIED					
04G			NONE IDENTIFIED					
04SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	110.3	110.5	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
04SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	108.1	108.3	52690 CARTHG 2 69 to 96649 2JASPER 69 CKT 1	
04SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	104.0	104.2	59479 LAR382 5 161 to 59480 MON383 5 161 CKT 1	
04SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	102.8	103.0	96649 2JASPER 69 to 96651 2LAMAR 69 CKT 1	
04SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	100.9	101.1	59537 AUR124 2 69 to 59578 AUR355 2 69 CKT 1	
04SP	AECI	AECI	96751 2REEDS 69 to 96659 2BOWRML 69 CKT 1	36	103.8	104.1	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
04SP	AECI	AECI	96751 2REEDS 69 to 96659 2BOWRML 69 CKT 1	36	101.7	102.0	52690 CARTHG 2 69 to 96649 2JASPER 69 CKT 1	
04FA			NONE IDENTIFIED					
04WP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	43	101.3	101.6	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
09SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	112.2	112.6	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
09SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	108.8	109.1	59479 LAR382 5 161 to 59480 MON383 5 161 CKT 1	
09SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	108.7	109.1	52690 CARTHG 2 69 to 96649 2JASPER 69 CKT 1	
09SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	102.6	102.9	96649 2JASPER 69 to 96651 2LAMAR 69 CKT 1	
09SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	102.0	102.3	59537 AUR124 2 69 to 59578 AUR355 2 69 CKT 1	
09SP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	36	99.9	100.2	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	
09SP	AECI	SWPA	96649 2JASPER 69 to 52690 CARTHG 2 69 CKT 1	47	102.3	102.4	96654 2MILO 69 to 96802 2CLARK 69 CKT 1	
09SP	AECI	AECI	96651 2LAMAR 69 to 96649 2JASPER 69 CKT 1	36	106.5	106.6	96654 2MILO 69 to 96802 2CLARK 69 CKT 1	
09SP	AECI	AECI	96751 2REEDS 69 to 96659 2BOWRML 69 CKT 1	36	104.6	105.0	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
09SP	AECI	AECI	96751 2REEDS 69 to 96659 2BOWRML 69 CKT 1	36	101.2	101.5	52690 CARTHG 2 69 to 96649 2JASPER 69 CKT 1	
09SP	AECI	AECI	96751 2REEDS 69 to 96659 2BOWRML 69 CKT 1	36	101.2	101.5	59479 LAR382 5 161 to 59480 MON383 5 161 CKT 1	
09SP	AECI	AECI	96986 2TITANTP 69 to 96983 2STILWEL 69 CKT 1	36	102.0	102.2	54515 KANSAS 2 69 to 96987 2WATTS 69 CKT 1	
09SP	ENTR	AEPW	99389 4MURFRE 138 to 53321 SNASHVL4 138 CKT 1	105	104.0	104.2	99397 3BISMRK 115 to 99403 3HSEHVW 115 CKT 1	TDF Less Than Entergy's 3% Criteria
09SP	ENTR	SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	117.2	117.3	99817 5ISES 1 161 to 99826 5MORFLD 161 CKT 1	TDF Less Than Entergy's 3% Criteria
09SP	ENTR	SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	110.5	110.6	99798 5BATEVL 161 to 99826 5MORFLD 161 CKT 1	"
09SP	ENTR	EMDE	99831 5OMAHA * 161 to 59474 OZD312 5 161 CKT 1	162	124.0	124.1	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT 1	Contingency is Invalid, Contingency Causes Voltage to Collapse at Osage, With Load removed at Osage, Facility Not Overloaded
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	110.8	110.9	52660 BULL SH5 161 to 99802 5BULLSH* 161 CKT 1	TDF Less Than Entergy's 3% Criteria
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	109.3	109.4	99802 5BULLSH* 161 to 99809 5FLIPN 161 CKT 1	"
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	106.0	106.2	99809 5FLIPN 161 to 99837 5SUMMIT 161 CKT 1	"
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	102.7	102.8	99519 5QUITMN 161 to 99799 5BEE BR 161 CKT 1	"
09SP	ENTR	AEPW	99832 5OSAGE # 161 to 53136 EUREKA 5 161 CKT 1	244	102.1	102.2	99811 5HARR-E 161 to 99837 5SUMMIT 161 CKT 1	"
09WP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	43	108.1	108.4	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	
09WP	SWPA	AECI	52690 CARTHG 2 69 to 96751 2REEDS 69 CKT 1	43	104.0	104.3	52690 CARTHG 2 69 to 96649 2JASPER 69 CKT 1	
09WP	AECI	AECI	96751 2REEDS 69 to 96659 2BOWRML 69 CKT 1	43	102.4	102.7	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	

Table 1.2 - SPP Facility Overloads  
Caused or Impacted by Transfer (Scenario 1)

Southwest Power Pool  
System Impact Study

Study Case	From Area	To Area	Branch Overload	Rating <MVA>	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
03WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	100.9	101.7	52790 WELEETK5 161 52792 WELEETK4 138 1	0	Replace Eufaula Transformer	\$ 2,000,000
03WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	100.9	101.2	52752 GORE 5 161 52790 WELEETK5 161 1	0	See Previous Upgrade Specified for Facility	
04AP			NONE IDENTIFIED							
04G	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	110.4	110.6	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide	
04SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	102.9	103.0	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	130.4	130.5	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	129.1	129.2	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	*	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	110.3	110.4	53154 CHAMSPR5 161 to 53170 TONTITN5 161 CKT 1	0	*	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	108.2	108.4	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	*	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	268	102.6	102.7	Base Case	0	*	
04SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	105.0	105.1	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
04SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	101.3	101.4	53249 BANN 2 69 to 53312 REDLICK2 69 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
04SP	AEPW	AEPW	53869 VERDIGS4 138 to 53849 TERNITP4 138 CKT 1	151	103.8	103.9	53857 OWASSOS4 138 to 53945 N.E.S.-4 138 CKT 1	0	Solution Undetermined	
04SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	110.4	111.0	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	Replace Okmulgee Wavetrap	\$ 40,000
04SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	103.1	103.7	54017 HENRYET4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous Upgrade Specified for Facility	
04SP	AEPW	AEPW	54049 EC.HEN-4 138 to 54028 WELETK4 138 CKT 1	105	106.1	106.7	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	Replace Weleetka Wavetrap	\$ 40,000
04SP	GRRD	GRRD	54455 TAHLOH 5 161 to 54447 TAHLOH 2 69 CKT 1	78	107.0	108.0	54447 TAHLOH 2 69 to 54455 TAHLOH 5 161 CKT 2	0	See Previous Upgrade Specified for Facility in Table 1.1	
04SP	GRRD	GRRD	54455 TAHLOH 5 161 to 54447 TAHLOH 2 69 CKT 2	78	108.5	108.6	54447 TAHLOH 2 69 to 54455 TAHLOH 5 161 CKT 1	0	*	
04SP	GRRD	GRRD	54476 COLNSGR2 69 to 54427 COLINS 5 161 CKT 1	50	105.9	106.1	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined	
04SP	OKGE	OKGE	55187 AHLSTP2 69 to 55177 PARKLN 2 69 CKT 1	72	107.9	108.2	55177 PARKLN 2 69 to 55182 VALLYU2 69 CKT 1	0	Solution Undetermined	
04SP	OKGE	OKGE	55246 BEELINE2 69 to 55237 TIBBENS2 69 CKT 1	66	106.9	107.0	55241 BLUEBEL2 69 to 55242 BLUEBEL4 138 CKT 1	0	Construct new Tibbens Road 138/12.5kV Substation.	\$ 2,500,000
04SP	WERE	WERE	57604 WEAVER 2 69 to 57837 RH JCT 2 69 CKT 1	43	102.3	102.4	57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT 1	0	Move Rose Hill Jct. 69 kV load to Rose Hill 345/138 kV substation. Requires new transformer bay and a new 25 MVA 138-12 kV transformer.	\$ 1,400,000
04SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	123.0	123.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide	
04SP	SPS	SPS	51176 CURRY3 115 to 51175 CURRY2 69 CKT 2	46	102.9	103.0	51175 CURRY2 69 to 51176 CURRY3 115 CKT 1	10	Taken From 2002 Mitigation Plan - Close N.O. line between Farwell (51183) & DS-#10 (51185).	
04SP	SPS	SPS	51402 HALECO3 115 to 51401 HALECO2 69 CKT 1	46	136.5	136.7	51401 HALECO2 69 to 51402 HALECO3 115 CKT 2	10	Taken From 2002 Mitigation Plan - Close N.O. Lines between Plainview City Sub (51341) & North Plainview (51337) and Plainview City Sub (51341) & West Plainview (51339).	
04SP	SPS	SPS	51960 DNVNR3 115 to 51959 DENVRC2 69 CKT 1	40	129.5	129.7	51959 DENVRC2 69 to 51962 DNVRS3 115 CKT 2	10	Taken From 2002 Mitigation Plan - Close N.O. between Tokio Tap (51905) & Moss (50987).	
04SP	SPS	SPS	51962 DNVRS3 115 to 51959 DENVRC2 69 CKT 2	44	117.7	117.9	51959 DENVRC2 69 to 51960 DNVNR3 115 CKT 1	10	Taken From 2002 Mitigation Plan - Close N.O. between Tokio Tap (51905) & Moss (50987).	
04SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 1	150	106.2	106.9	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	10	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed.	
04SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	106.5	107.2	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	10	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed.	
04FA	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	116.1	116.3	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide	
04FA	AEPW	AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	100.5	100.6	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide	
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	112.1	112.6	52790 WELEETK5 161 52792 WELEETK4 138 1	0	See Previous Upgrade Specified for Facility	
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	111.6	112.1	52752 GORE 5 161 52790 WELEETK5 161 1	0	*	
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	102.8	103.2	54003 WISTER-269.0 to 55259 HOWEIN 269.0 CKT 1	0	*	
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	102.2	102.7	54033 PITTSB-7345 to 55224 MUSKOGE7345 CKT 1	0	*	
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	101.3	101.8	54003 WISTER-269.0 to 54026 REDOAK-269.0 CKT 1	0	*	
04WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	100.4	100.6	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
04WP	GRRD	GRRD	54476 COLNSGR2 69 to 54427 COLINS 5 161 CKT 1	50	102.8	103.2	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined	
04WP	AEPW	GRRD	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	150	108.3	109.3	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	15	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed.	
04WP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	108.6	109.6	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	15	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed.	

Table 1.2 - SPP Facility Overloads  
Caused or Impacted by Transfer (Scenario 1)

09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	125.2	125.3	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	106.9	107.0	53144 LOWELL 5 161 to 53152 ROGERS 5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	105.2	105.3	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	102.7	102.8	52681 WSHBRN 5 161 to 52686 NEO SPA5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	102.0	102.1	52680 BEAVER 5 161 to 52681 WSHBRN 5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53142 HUNTING2 69 to 53202 MIDLREA2 69 CKT 1	36	105.7	105.8	55262 AES 5 161 to 55264 TARBY 5 161 CKT 1	0	Solution Undetermined	
09SP	AEPW	AEPW	53142 HUNTING2 69 to 53202 MIDLREA2 69 CKT 1	36	102.8	103.0	55263 TARBY 2 69 to 55274 CAVANAL2 69 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	160.9	161.0	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	158.5	158.6	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	129.4	129.5	53154 CHAMSPR5 161 to 53195 FARMGTN5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	126.2	126.4	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	268	120.8	120.9	Base Case	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	128.0	128.1	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	109.8	109.9	53144 LOWELL 5 161 to 53152 ROGERS 5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	108.1	108.2	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	105.6	105.7	52681 WSHBRN 5 161 to 52686 NEO SPA5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	104.9	105.0	52680 BEAVER 5 161 to 52681 WSHBRN 5 161 CKT 1	0	"	
09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	110.4	110.6	53249 BANN 2 69 to 53312 REDLICK2 69 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	106.0	106.2	53312 REDLICK2 69 to 53315 RICHMND2 69 CKT 1	0	"	
09SP	AEPW	AEPW	53303 OKAY 3 115 to 53302 OKAY 2 69 CKT 1	66	103.5	104.7	53231 LOCKESB4 138 to 53306 PATTERS4 138 CKT 1	0	Replace with 84MVA transformer.	\$ 1,340,000
09SP	AEPW	AEPW	53303 OKAY 3 115 to 53302 OKAY 2 69 CKT 1	66	100.4	100.9	53258 DEQUEEN4 138 to 54015 CRAIGJT4 138 CKT 1	0	See Previous Upgrade Specified for Facility	
09SP	AEPW	AEPW	53303 OKAY 3 115 to 53302 OKAY 2 69 CKT 1	66	100.3	100.8	53257 DEQUEEN2 69 to 53258 DEQUEEN4 138 CKT 1	0	"	
09SP	AEPW	AEPW	53321 SNASHVL4 138 to 53306 PATTERS4 138 CKT 1	118	111.2	111.4	99397 3BISMCK 115 to 99403 3HSEHVW 115 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	53374 FULTON 3 115 to 53383 HOPE 3 115 CKT 1	150	102.9	103.6	Base Case	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	53689 COFFEE 4 138 to 53549 JACKSNV4 138 CKT 1	235	115.5	115.6	53687 CANTONT4 138 to 53691 GLENPIN4 138 CKT 1	0	Solution Undetermined	
09SP	AEPW	AEPW	53869 VERDIGS4 138 to 53849 TERNITP4 138 CKT 1	151	105.1	105.3	53857 OWASSOS4 138 to 53945 N.E.S.-4 138 CKT 1	0	Solution Undetermined	
09SP	AEPW	AEPW	53869 VERDIGS4 138 to 53849 TERNITP4 138 CKT 1	151	100.3	100.4	53855 PCATSAT4 138 to 53857 OWASSOS4 138 CKT 1	0	"	
09SP	AEPW	AEPW	54024 MCALEST2 69 to 54029 WELEETK2 69 CKT 1	52	146.6	146.7	54022 LONEOAK4 138 to 54032 SMCALTP4 138 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	AEPW	AEPW	54124 FT.SILL2 69 to 54136 PO.HILL2 69 CKT 1	72	114.6	114.7	54129 L.E.S.-2 69 to 54132 LGORE-N2 69 CKT 1	0	Possible Invalid Contingency	
09SP	AEPW	AEPW	54136 PO.HILL2 69 to 54150 ELGINJT2 69 CKT 1	72	124.2	124.3	54129 L.E.S.-2 69 to 54132 LGORE-N2 69 CKT 1	0	Possible Invalid Contingency	
09SP	GRRD	GRRD	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 1	50	118.0	118.3	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined	
09SP	GRRD	GRRD	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	56	105.3	105.6	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 1	0	Solution Undetermined	
09SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	102.8	103.9	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	0	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed	
09SP	GRRD	GRRD	54455 TAHLQH 5 161 to 54447 TAHLQH 2 69 CKT 2	78	116.3	116.4	54447 TAHLQH 2 69 to 54455 TAHLQH 5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	OKGE	OKGE	55187 AHLOSTP2 69 to 55177 PARKLN 2 69 CKT 1	72	114.8	115.1	55177 PARKLN 2 69 to 55182 VALLYVU2 69 CKT 1	0	Solution Undetermined	
09SP	OKGE	OKGE	55275 POTEAU 2 69 to 55274 CAVANAL2 69 CKT 1	72	101.9	102.0	53126 BONANZA5 161 to 55261 BONANZT5 161 CKT 1	0	Replace Poteau Substation due to inability to upgrade old equipment	\$ 2,000,000
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	124.4	124.5	55869 CROMWEL4 138 to 56084 WETUMKA4 138 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	124.3	124.4	56026 PHAROAH4 138 to 56084 WETUMKA4 138 CKT 1	0	"	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	109.4	109.5	56031 POCASET4 138 to 56072 TUTTLE 4 138 CKT 1	0	"	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	107.3	107.4	52792 WELEETK4 138 to 56026 PHAROAH4 138 CKT 1	0	"	
09SP	WFEC	OKGE	55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	191	104.5	104.6	54933 DRAPER 4 138 to 54949 SOONRTP4 138 CKT 1	0	"	
09SP	WFEC	SWPA	56026 PHAROAH4 138 to 52792 WELEETK4 138 CKT 1	191	102.7	102.8	55913 FRANKLN4 138 to 55917 FRNKLSN4 138 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	WERE	WERE	57796 GILL W 2 69 to 57830 PECK 2 69 CKT 1	37	107.8	107.9	57039 ELPASO 4 138 to 57042 FARBBER 4 138 CKT 1	0	Repole 10.1 miles and keep existing conductor.	\$ 3,100,000
09SP	EMDE	EMDE	59483 JOP389 5 161 WND 1 JOPLINSW 1	75	101.4	101.5	59472 TIP292 5 161 59483 JOP389 5 161 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	EMDE	EMDE	59592 JOP389 269.0 WND 2 JOPLINSW 1	75	101.2	101.3	59472 TIP292 5 161 59483 JOP389 5 161 1	0	"	
09SP	ENR	SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	100.1	100.2	99817 5ISES 1 161 to 99826 5MORFLD 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	121.8	122.0	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	15	Dolet Hills Operating Guide	
09SP	AEPW	GRRD	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	150	102.5	103.6	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	15	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed	

09SP	WERE	WERE	57735 GOLDPLJ2 69 to 57733 GATZ 2 69 CKT 1	32	112.1	112.2	57741 MID AMJ2 69 to 57744 MUDCRKJ2 69 CKT 1	15	Local area problem within Newton division	
09SP	WERE	WERE	57735 GOLDPLJ2 69 to 57733 GATZ 2 69 CKT 1	32	111.2	111.3	57741 MID AMJ2 69 to 57745 NEWTON 2 69 CKT 1	15	Local area problem within Newton division	
09SP	ENTR	AEPW	99389 4MURFRE 138 to 53321 SNASHVL4 138 CKT 1	105	103.2	103.5	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	15	In-house project scheduled for 11/1/03 completion. New limits will be 4/0 CU line conductor.	
09SP	ENTR	EMDE	99831 5OMAHA * 161 to 59474 OZD312 5 161 CKT 1	162	109.4	109.5	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT 1	15	Contingency is Invalid, Contingency Causes Voltage to Collapse at Osage, With Load removed at Osage, Facility Not Overloaded	
09WP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	368	103.9	104.0	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	122.3	122.4	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	121.2	121.3	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09WP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	368	105.8	105.9	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	*	\$ 400,000
09WP	AEPW	AEPW	54024 MCALEST2 69 to 54029 WELEETK2 69 CKT 1	53	106.3	106.4	54022 LONEOAK4 138 to 54032 SMCALTP4 138 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1	
09WP	GRRD	GRRD	54476 COLNSGR2 69 to 54427 COLINS 5 161 CKT 1	50	103.8	104.1	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined	
09WP	WERE	WERE	57328 FT JCT 3 115 to 57335 MCDOWEL3 115 CKT 1	68	103.0	103.2	56773 SUMMIT 7345 to 56873 SUMMIT 6230 to 56813 SUMMIT 114.4 CKT 1	0	May be relieved due to Westar Transmission Operating Directive 617 Outage of the Summit 345/230kV Transformer	
09WP	WERE	WERE	57328 FT JCT 3 115 to 57343 WJCCTYE3 115 CKT 1	68	109.7	110.0	56773 SUMMIT 7345 to 56873 SUMMIT 6230 to 56813 SUMMIT 114.4 CKT 1	0	May be relieved due to Westar Transmission Operating Directive 617 Outage of the Summit 345/230kV Transformer	
09WP	WERE	WERE	57342 WJCCTY 3 115 to 57343 WJCCTYE3 115 CKT 1	141	115.5	115.8	56773 SUMMIT 7345 to 56873 SUMMIT 6230 to 56813 SUMMIT 114.4 CKT 1	0	May be relieved due to Westar Transmission Operating Directive 617 Outage of the Summit 345/230kV Transformer	
09WP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	118.0	118.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	15	Dolet Hills Operating Guide	
09WP	AEPW	AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	99.8	100.0	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	15	Dolet Hills Operating Guide	
									Total Estimated Cost	\$ 12,820,000



Study Case	From Area	To Area	Branch Overload	Rating <MVA>	BC % Loading	TC % Loading	Outaged Branch Causing Overload	Comment
03WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	101.5	101.9	99403 3HSEHVW 115 to 99407 3FRIEND 115 CKT 1	
03WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	100.3	100.6	99349 3ARKA-N 115 to 99407 3FRIEND 115 CKT 1	
04AP	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	151.3	152.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT 1	
04AP	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	151.3	152.5	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT 1	
04AP	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	134.2	135.4	53232 MCNAB 3 115 to 53383 HOPE 3 115 CKT 1	
04AP	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	133.8	135.0	53232 MCNAB 3 115 to 53303 OKAY 3 115 CKT 1	
04AP	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	130.8	131.8	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1	
04G	CELE	CELE	50023 CARROLL6 230 to 50024 CARROLL4 138 CKT 1	336	110.7	110.8	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04G	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	110.4	110.6	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04G	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	122.3	122.5	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04G	ENTR	ENTR	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	107.5	107.8	99403 3HSEHVW 115 to 99407 3FRIEND 115 CKT 1	
04G	ENTR	ENTR	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	105.8	106.1	99349 3ARKA-N 115 to 99407 3FRIEND 115 CKT 1	
04G	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	110.4	111.4	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04G	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	102.2	103.4	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT 1	
04G	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	102.2	103.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT 1	
04G	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	100.8	101.9	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1	
04G	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	99.7	100.8	54033 PITTSB-7 345 to 55224 MUSKOGEE7 345 CKT 1	
04SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	123.0	123.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04SP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	120.4	120.6	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04SP	AECI	AECI	96095 5MANSFD 161 to 97168 2MANSFL 69 CKT 2	56	100.1	100.2	96095 5MANSFD 161 to 97168 2MANSFL 69 CKT 1	
04SP	AECI	AECI	96834 2CARNEY 69 to 96833 2AGRA 69 CKT 1	36	99.9	100.0	96143 4VALLEY 138 to 96844 4RAMSEY 138 CKT 1	
04SP	ENTR	ENTR	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	98	105.6	106.2	53374 FULTON 3 115 to 53383 HOPE 3 115 CKT 1	
04SP	ENTR	ENTR	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	98	101.9	102.3	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1	
04SP	ENTR	ENTR	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	98	101.4	101.9	55305 FTSMITH8 500 to 99486 BANO 50 500 CKT 1	
04SP	ENTR	ENTR	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	98	100.6	101.2	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT 1	
04SP	ENTR	ENTR	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	98	100.6	101.2	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT 1	
04FA	CELE	CELE	50023 CARROLL6 230 to 50024 CARROLL4 138 CKT 1	336	114.1	114.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04FA	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	116.1	116.3	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04FA	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	128.1	128.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04FA	ENTR	ENTR	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	113.9	114.3	99403 3HSEHVW 115 to 99407 3FRIEND 115 CKT 1	
04FA	ENTR	ENTR	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	112.2	112.6	99349 3ARKA-N 115 to 99407 3FRIEND 115 CKT 1	
04FA	ENTR	ENTR	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	104.4	104.7	99349 3ARKA-N 115 to 99377 3RICHWD# 115 CKT 1	
04FA	ENTR	ENTR	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	101.1	101.4	99308 3MAG-E 115 to 99310 3MCNEIL 115 CKT 1	
04FA	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	110.1	111.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04FA	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	102.7	103.9	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT 1	
04FA	ENTR	ENTR	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	36	102.7	103.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT 1	
04WP	CELE	CELE	50024 CARROLL4 138 to 50023 CARROLL6 230 CKT 1	336	107.3	107.4	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04WP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	111.0	111.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
04WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	126.4	126.7	99403 3HSEHVW 115 to 99407 3FRIEND 115 CKT 1	
04WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	125.1	125.4	99349 3ARKA-N 115 to 99407 3FRIEND 115 CKT 1	
04WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	116.3	116.9	99349 3ARKA-N 115 to 99377 3RICHWD# 115 CKT 1	
04WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	111.7	112.1	99308 3MAG-E 115 to 99310 3MCNEIL 115 CKT 1	
04WP	ENTR	ENTR	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	109.1	109.6	99377 3RICHWD# 115 to 99405 3GURD-N# 115 CKT 1	
09SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	121.8	122.0	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
09SP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	119.3	119.5	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
09SP	AECI	AECI	96833 2AGRA 69 to 96836 2CUSHING 69 CKT 1	44	108.9	109.0	96143 4VALLEY 138 to 96850 2VALLEY 69 CKT 1	
09SP	AECI	AECI	96909 2SALYBRN 69 to 96905 2MUSK-SW 69 CKT 1	51	101.0	101.1	96893 2CHECDST 69 to 96895 2CHECOTA 69 CKT 1	
09SP	AECI	AECI	96943 2SILVCTY 69 to 96945 2YALE 69 CKT 1	35	124.3	124.4	96138 4CLEVLND 138 to 96141 4STILWTR 138 CKT 1	
09SP	AECI	AECI	96943 2SILVCTY 69 to 96945 2YALE 69 CKT 1	35	105.6	105.7	96890 2BRISTW 69 to 96903 2KWKIKSET 69 CKT 1	
09SP	AECI	AECI	96945 2YALE 69 to 96943 2SILVCTY 69 CKT 1	35	104.3	104.6	96143 4VALLEY 138 to 96850 2VALLEY 69 CKT 1	
09SP	AECI	AECI	96984 2TENKILR 69 to 96879 2VIAN 69 CKT 1	36	117.3	117.5	54447 TAHLQH 2 69 to 96961 2PARK 69 CKT 1	
09SP	ENTR	AEPW	99389 4MURFRE 138 to 53321 SNASHVL4 138 CKT 1	105	103.2	103.5	99397 3BISMURK 115 to 99403 3HSEHVW 115 CKT 1	TDF Less Than Entergy's 3% Criteria
09SP	ENTR	ENTR	99396 3ALPINE# 115 to 99347 3AMITY * 115 CKT 1	98	101.3	102.2	53374 FULTON 3 115 to 53383 HOPE 3 115 CKT 1	

Table 2.2 - Non-SPP Facility Overloads  
 Caused or Impacted by Transfer (Scenario 1)

Southwest Power Pool  
 System Impact Study

09SP	ENTR	ENTR	99397 3BISMRK 115 to 99396 3ALPINE# 115 CKT 1	98	106.9	107.7	53374 FULTON 3 115 to 53383 HOPE 3 115 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99396 3ALPINE# 115 CKT 1	98	101.4	102.1	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99396 3ALPINE# 115 CKT 1	98	100.7	101.4	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99403 3HSEHVW 115 CKT 1	98	120.2	121.1	53374 FULTON 3 115 to 53383 HOPE 3 115 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99403 3HSEHVW 115 CKT 1	98	113.9	114.6	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99403 3HSEHVW 115 CKT 1	98	112.3	113.2	53232 MCNAB 3 115 to 53383 HOPE 3 115 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99403 3HSEHVW 115 CKT 1	98	111.7	112.5	53232 MCNAB 3 115 to 53303 OKAY 3 115 CKT 1	
09SP	ENTR	ENTR	99397 3BISMRK 115 to 99403 3HSEHVW 115 CKT 1	98	109.8	110.8	53300 NWTXARK4 138 to 53306 PATTERS4 138 CKT 1	
09SP	ENTR	ENTR	99403 3HSEHVW 115 to 99351 3ARKLA 115 CKT 1	266	110.2	110.4	99351 3ARKLA 115 to 99355 3CARPE 115 CKT 1	
09SP	ENTR	ENTR	99403 3HSEHVW 115 to 99351 3ARKLA 115 CKT 1	266	99.8	100.1	99402 8HSEHV 500 to 99403 3HSEHVW 115 CKT 1	
09SP	ENTR	SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	100.1	100.2	99817 5ISES 1 161 to 99826 5MORFLD 161 CKT 1	TDF Less Than Entergy's 3% Criteria
09SP	ENTR	EMDE	99831 5OMAHA * 161 to 59474 OZD312 5 161 CKT 1	162	109.4	109.5	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT 1	Contingency is Invalid, Contingency Causes Voltage to Collapse at Osage, With Load removed at Osage, Facility Not Overloaded
09WP	CELE	CELE	50024 CARROLL4 138 to 50023 CARROLL6 230 CKT 1	336	119.2	119.3	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
09WP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	118.0	118.2	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	
09WP	CELE	CELE	50113 MANSFLD4 138 to 50090 IPAPER 4 138 CKT 1	232	130.1	130.4	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	

Study Case	From Area	To Area	Branch Overload	Rating <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost	Lead Time	Mitigation Option	ATC Needed	Curtailment Response	Curtailment Amount	Comments
03WP	EMDE	EMDE	59591 MON383 2 69 to 59540 MON152 2 69 CKT 1	52	100.6	100.8	1.378	59468 AUR124 5 161 to 59480 MON383 5 161 CKT 1	0	Rebuild 1.28 mile 69 kV line and rebuild 69 kV Bus at Monett H.T	\$ 1,050,000		Curtailment of SPS-AMRN, CSWS-EES, AMRN, OGE-EES, or EMDE Redispatch Riverton 789 to LaRussell	10		23,19,15,24,7	
04AP			NONE IDENTIFIED														
04G			NONE IDENTIFIED														
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	133.2	133.3	3.154	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	Rebuild 16.3 miles of 2-297 ACSR with 2156 ACSR. Replace Flint Creek wavetrap & jumpers. Replace Flint Creek switch # 1K75	\$ 8,200,000		GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.02008	16	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	131.9	132.0	3.657	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.02008	18	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	115.1	115.2	1.997	53154 CHAMSPR5 161 to 53170 TONTITN5 161 CKT 1	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01468	14	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	107.6	107.7	2.490	53154 CHAMSPR5 161 to 53195 FARMGTN5 161 CKT 1	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01446	17	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	268	102.1	102.2	2.388	Base Case	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01398	17	
04SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	110.7	110.8	1.912	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR.	\$ 400,000		GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01829	10	
04SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	107.3	107.4	0.899	53249 BANN 2 69 to 53312 REDLICK2 69 CKT 1	0	Replace switch 8965 @ Kings Highway	\$ 60,000	9	Possible Expedite, Curtailment of Gateway-EES, ERCOTE-EES,AEPW Redispatch Lieberman & Arsenal Hills to Wilkes	10		50,56,33	

04SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	103.5	103.6	0.882	53312 REDLICK2 69 to 53315 RICHMND2 69 CKT 1	0	See Previous Upgrade Specified for Facility		9	Possible Expedite, Curtailment of Gateway-EES, ERCOTE-EES, AEPW Redispatch Lieberman & Arsenal Hills to Wilkes	10	50,56,33	
04SP	OKGE	OKGE	55187 AHLSTP2 69 to 55177 PARKLN 2 69 CKT 1	72	107.0	107.2	1.742	55177 PARKLN 2 69 to 55182 VALLYVU2 69 CKT 1	0	Solution Undetermined			Expedite, SPS-AMRN	10	0.0043	41
04SP	EMDE	EMDE	59467 ORO110 5 161 to 59494 OAK432 5 161 CKT 1	214	101.3	101.8	9.964	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	0	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$ 800,000		Curtailment of SPS-AMRN, CSWS-EES, AMRN, OGE-EES, or EMDE Redispatch LaRussell to Riverton			GRDA Redispatch Opposite NW Arkansas
04SP	AEPW	AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	261	108.7	108.8	2.359	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1	10	Invalid Contingency						
04SP	AEPW	AEPW	53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	261	102.9	103.0	2.323	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT 1	10	Invalid Contingency						
04FA	EMDE	SWPA	59466 ATL109 5 161 to 52688 CARTHAG5 161 CKT 1	167	100.9	101.8	14.587	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT 1	0	Replace 600 Amp disconnect switches	\$ 60,000	12	Expedite, GRDA Redispatch GRDA 345 to Pensa, SPS-AMRN, CSWS-EES, AMRN, OGE-EES, EMDE Redispatch LaRussell to Stateline or Riverton			35,35,35,30,39,3
04FA	SPS	SPS	52094 ROSWIN3 115 to 52093 ROSWIN2 69 CKT 1	40	157.0	157.2	0.855	52154 ARTESIA3 115 to 52162 NAVAJ33 115 CKT 1	10	Taken From 2002 Mitigation Plan - Close N.O. between ARTW2 (52173) & ARTCC2 (52175).						
04WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	102.5	102.7	3.352	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01995	17
04WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	101.8	102.0	3.294	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01995	17

Study Case	From Area	To Area	Branch Overload	Rating <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost	Lead Time	Mitigation Option	ATC Needed	Curtailment Response	Curtailment Amount	Comments
03WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	100.9	101.7	7.620	52790 WELEETK5 161 52792 WELEETK4 138 1	0	Replace Eufaula Transformer	\$ 2,000,000	15	Curtailment of AMRN to SPS, SWPA Redispatch Eufaula 23 to Eufaula 1, GRDA Redispatch GRDA 345 to GRDA 161	10		40,1,225	
03WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	100.9	101.2	3.109	52752 GORE 5 161 52790 WELEETK5 161 1	0	See Previous Upgrade Specified for Facility			Curtailment of AMRN to SPS, SWPA Redispatch Eufaula 23 to Eufaula 1, GRDA Redispatch GRDA 345 to GRDA 161	10		16,1,90	
04AP			NONE IDENTIFIED														
04G	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	110.4	110.6	3.646	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide							
04SP	AEPW	AEPW	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	353	102.9	103.0	2.323	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.0183	13	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	130.4	130.5	3.042	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.02008	15	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	129.1	129.2	4.271	53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.02008	21	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	110.3	110.4	1.560	53154 CHAMSPR5 161 to 53170 TONTITN5 161 CKT 1	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01468	11	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	312	108.2	108.4	4.814	53139 FLINTCR5 161 to 53154 CHAMSPR5 161 CKT 1	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01957	25	
04SP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	268	102.6	102.7	2.216	Base Case	0	"			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.01398	16	
04SP	AEPW	AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	354	105.0	105.1	2.368	53139 FLINTCR5 161 to 53170 TONTITN5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1			GRDA Redispatch Pensa 161 or 69 to GRDA 345	10	0.0183	13	

04SP	AEPW	AEPW	53269 KINGHWY2 69 to 53249 BANN 2 69 CKT 1	72	101.3	101.4	0.932	53249 BANN 2 69 to 53312 REDLICK2 69 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1		Possible Expedite, Curtailment of Gateway-EES, ERCOTE-EES, AEPW Redispatch Lieberman & Arsenal Hills to Wilkes	10	51,31,29	
04SP	AEPW	AEPW	53869 VERDIGS4 138 to 53849 TERNITP4 138 CKT 1	151	103.8	103.9	1.466	53857 OWASSOS4 138 to 53945 N.E.S.-4 138 CKT 1	0	Limit is 4.31 miles of 397 ACSR Conductor		GRDA Redispatch Salina or Kerr to Pensa 161 or 69, Curtailment of AMRN-SPS, WR-EES, WR-TVA, AEPW Redispatch TPS3 123 to NES1 AB	10	14,45,21,27,1	GRDA RedispatchO pposite NW Arkansas
04SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	110.4	111.0	6.141	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	Replace Okmulgee Wavetrap	\$ 40,000	Possible Expedite, Curtailment of AMRN-SPS, AEPW-AMRN, AEPW-EES, AEPW Redispatch Wilkes to NES1 AB	10	35,20,16,15	
04SP	AEPW	AEPW	54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	103.1	103.7	6.243	54017 HENRYET4 138 to 54057 KELCO 4 138 CKT 1	0	See Previous Upgrade Specified for Facility		Possible Expedite, Curtailment of AMRN-SPS, AEPW-AMRN, AEPW-EES, AEPW Redispatch Wilkes to NES1 AB	10	35,20,16,15	
04SP	AEPW	AEPW	54049 EC.HEN-4 138 to 54028 WELETK4 138 CKT 1	105	106.1	106.7	6.140	54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT 1	0	Replace Weleetka Wavetrap	\$ 40,000	Possible Expedite, Curtailment of AMRN-SPS, AEPW-AMRN, AEPW-EES, AEPW Redispatch Wilkes to NES1 AB	10	35,20,16,15	

04SP	GRRD	GRRD	54455 TAHLQH 5 161 to 54447 TAHLQH 2 69 CKT 1	78	107.0	108.0	7.363	54447 TAHLQH 2 69 to 54455 TAHLQH 5 161 CKT 2	0	See Previous Upgrade Specified for Facility in Table 1.1			GRDA Redispach Ineffective	10		
04SP	GRRD	GRRD	54455 TAHLQH 5 161 to 54447 TAHLQH 2 69 CKT 2	78	108.5	108.6	0.398	54447 TAHLQH 2 69 to 54455 TAHLQH 5 161 CKT 1	0	*			GRDA Redispach Ineffective	10		
04SP	GRRD	GRRD	54476 COLNSGR2 69 to 54427 COLINS 5 161 CKT 1	50	105.9	106.1	1.131	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined			Curtailment of AMRN-SPS, GRDA Redispach, GRDA 345 to GRDA 161		42.32	
04SP	OKGE	OKGE	55187 AHLOSTP2 69 to 55177 PARKLN 2 69 CKT 1	72	107.9	108.2	1.661	55177 PARKLN 2 69 to 55182 VALLYVU2 69 CKT 1	0	To raise the limit to 800amps or 95.6MVA will require changing a transmission switch out on the line at Aholoso Tap, change out a breaker disconnect switch at Park Lane Sub.	\$ 300,000	9	Possible Expedite, SPS-AMRN, CSWS-EES, AMRN, OKGE Redispach Muskogee 3 to Seminole	10	41,51,95,6	
04SP	WERE	WERE	57604 WEAVER 2 69 to 57837 RH JCT 2 69 CKT 1	43	102.3	102.4	0.249	57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT 1	0	Move Rose Hill Jct. 69 kV load to Rose Hill 345/138 kV substation. Requires new transformer bay and a new 25 MVA 138-12 kV transformer.	\$ 1,400,000	8	Curtailment of AMRN-SPS,WR-EES,WR-TVA,WR-AECI,WR-KCPL, WR Redispach HEC to GEC	10	4,3,4,7,6,5	
04SP	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	209	123.0	123.1	3.584	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide						
04SP	SPS	SPS	51176 CURRY3 115 to 51175 CURRY2 69 CKT 2	46	102.9	103.0	0.235	51175 CURRY2 69 to 51176 CURRY3 115 CKT 1	10	Taken From 2002 Mitigation Plan - Close N.O. line between Farwell (51183) & DS-#10 (51185).						
04SP	SPS	SPS	51402 HALECO3 115 to 51401 HALECO2 69 CKT 1	46	136.5	136.7	0.834	51401 HALECO2 69 to 51402 HALECO3 115 CKT 2	10	Taken From 2002 Mitigation Plan - Close N.O. Lines between Plainview City Sub (51341) & North Plainview (51337) and Plainview City Sub (51341) & West Plainview (51339).						
04SP	SPS	SPS	51960 DNVRN3 115 to 51959 DENVRC2 69 CKT 1	40	129.5	129.7	0.613	51959 DENVRC2 69 to 51962 DNVRS3 115 CKT 2	10	Taken From 2002 Mitigation Plan - Close N.O. between Tokio Tap (51905) & Moss (50987).						
04SP	SPS	SPS	51962 DNVRS3 115 to 51959 DENVRC2 69 CKT 2	44	117.7	117.9	0.711	51959 DENVRC2 69 to 51960 DNVRN3 115 CKT 1	10	Taken From 2002 Mitigation Plan - Close N.O. between Tokio Tap (51905) & Moss (50987).						
04SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 1	150	106.2	106.9	10.146	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	10	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed						
04SP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	106.5	107.2	10.188	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	10	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed						
04SP	OKGE	OKGE	55246 BEELINE2 69 to 55237 TIBBENS2 69 CKT 1	66	106.9	107.0	0.393	55241 BLUEBEL2 69 to 55242 BLUEBEL4 138 CKT 1	10	Incorrect Rating, Revised Rating 96 MVA						
04FA	CELE	AEPW	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT 1	236	116.1	116.3	3.665	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide						
04FA	AEPW	AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	100.5	100.6	3.158	50045 DOLHILL7 345 to 53454 SW SHV 7 345 CKT 1	10	Dolet Hills Operating Guide						
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	112.1	112.6	4.912	52790 WELEETK5 161 52792 WELEETK4 138 1	0	See Previous Upgrade Specified for Facility			SWPA Redispach	10		
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	111.6	112.1	5.313	52752 GORE 5 161 52790 WELEETK5 161 1	0	"			SWPA Redispach	10		
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	102.8	103.2	4.200	54003 WISTER-269.0 to 55259 HOWEIN 269.0 CKT 1	0	"			SWPA Redispach	10		
04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	102.2	102.7	5.250	54033 PITTSB-7345 to 55224 MUSKOGEE7345 CKT 1	0	"			SWPA Redispach	10		

04WP	SWPA	SWPA	52774*EUFAULA4 138 WND 2 EUFAULA1 1	105	101.3	101.8	5.250	54003 WISTER-269.0 to 54026 REDOAK-269.0 CKT 1	0	"		SWPA Redispatch	10		
04WP	AEPW	AEPW	53170 TONTITN5 161 to 53139 FLINTCR5 161 CKT 1	335	100.4	100.6	5.048	53139 FLINTCR5 161 to 53187 GENTRYR5 161 CKT 1	0	See Previous Upgrade Specified for Facility in Table 1.1		GRDA Redispatch	10		
04WP	GRRD	GRRD	54476 COLNSGR2 69 to 54427 COLINS 5 161 CKT 1	50	102.8	103.2	1.763	54427 COLINS 5 161 to 54476 COLNSGR2 69 CKT 2	0	Solution Undetermined		Curtaiment of AMRN- SPS, GRDA Redispatch, GRDA 345 to GRDA 161	10		
04WP	AEPW	GRRD	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	150	108.3	109.3	15.630	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 2	15	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed					
04WP	GRRD	AEPW	54438 CATSAGR5 161 to 53802 CATOOSA4 138 CKT 2	150	108.6	109.6	15.675	53802 CATOOSA4 138 to 54438 CATSAGR5 161 CKT 1	15	GRDA has mitigation plan for outage of Catoosa 161/138kV Ckts 1 or 2; 3rd Transformer in place if needed					