



SPP *Southwest Power Pool*

*System Impact Study
SPP-2003-278-1
For Transmission Service
Requested By
Exelon Generation Company, LLC*

From AEPW to EES

*For a Redirected Amount Of 150MW
From 5/1/2004
To 1/1/2006*

SPP Engineering, Tariff Studies

System Impact Study

Exelon Generation Company, LLC has requested a system impact study for long-term Firm Point-to-Point transmission service from AEPW to EES for 150 MW. The period of the service requested is from 5/1/2004 to 1/1/2006. The OASIS reservation numbers are 625492, 625494 and 625495. This is a request to redirect the previously confirmed OASIS reservations 547034, 547037 and 547092. Oasis Reservations 547034, 547037 and 547092 are each a 50 MW transfer from ERCOTE to EES. The principal objective of this study is to identify system constraints on the SPP Regional Tariff System and potential system facility upgrades that may be necessary to provide the requested service.

This study was performed for the AEPW to EES request in order to provide preliminary results identifying facility upgrades that may be required for the requested service. The preliminary study is performed with only confirmed reservations included in the models. The models do not include any reservations, even those with a higher priority, that are still in study mode. The results of the transfer analysis are documented in Table 1. The results given in Table 1 include upgrades that may be assigned to higher priority requests. If a facility identified for the AEPW to EES study is also identified for a study with higher priority, the facility will be assigned to the request with the highest priority. If the higher priority customer does not take service, the facility would then be assigned to the AEPW to EES request. The primary purpose of this preliminary study is to provide the customer with an estimated cost of the facility upgrades that may be required in order to accommodate the requested service.

Eleven seasonal models were used to study the AEPW to EES request for the requested service period. The SPP 2004 Series Cases 2004 Spring (04G), 2004 Summer Shoulder (04SH), 2004 Summer Peak (04SP), 2004 Fall Peak (04FA), 2004/05 Winter Peak (04WP), 2005 April Minimum (05AP), 2005 Spring (05G), 2005 Summer Shoulder (05SH), 2005 Summer Peak (05SP), 2005 Fall Peak (05FA) and 2005/06 Winter Peak (05WP) were used to study the impact of the request on the SPP system during the requested service period of 5/1/2004 to 1/1/2006. The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect firm transfers during the requested service period that were not already included in the January 2004 base case series models.

PTI's MUST First Contingency Incremental Transfer Capability (FCITC) DC analysis was used to study the request. The MUST options chosen to conduct the System Impact Study analysis can be found in Appendix A. The MUST option to convert MVA branch ratings to estimated MW ratings was used to partially compensate for reactive loading.

The study results of the AEPW to EES transfer show that limiting constraints exist. Due to the limiting constraints identified, the Transmission Service Request cannot be granted. Any solutions, upgrades, and costs provided in the preliminary System Impact Study are planning estimates only. The final ATC and upgrades required may vary from these results due to the status of higher priority requests, unknown facility upgrades and proposed transmission plans that will be identified during the facility study process, and the final results of the full AC analysis.

SPP will also review the possibility of curtailment of previously confirmed service and/or the redispatch of units as an option for relieving the additional impacts on the SPP facilities caused by the AEPW to EES redirect. An example of curtailment of previously confirmed service is given in Table 2. An example of a redispatch of units to relieve the impact on a facility is given in Table 3. It is the responsibility of the customer to reach an agreement with the applicable party concerning the

curtailment of confirmed service and the redispatch of units. The curtailment and redispatch requirements would be called upon prior to implementing NERC TLR Level 5a. These options will be evaluated as part of the Facility Study. Execution of a Facility Study Agreement is now required to maintain queue position. The final upgrade solutions, cost assignments and available redispatch and curtailment options will be determined upon the completion of the facility study.

Table 1 – SPP facility overloads identified for the AEPW to EES transfer as a redirect of ERCOTE to EES service

Study Case	From Area - From Area	Branch Overload	ATC <MW>	Pre Transfer Loading	Rating <MW>	AEPW to EES %TDF	ERCOTE to EES %TDF	Outaged Branch Causing Overload	Solution	Estimated Cost
04G	AEPW-AEPW	53130 DYESS 2 69 53160 SPRDALE2 69 1	0	85	85	0.33	0.1370	53130 DYESS 2 69 53161 SPRDALT2 69 1	Reset relays @ Springdale.	\$ 10,000
04G	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	40	36	0.04	N/A	54731 SO4TH4 4 138 54790 IMO TAP4 138 1	Solution Undetermined	
04G	WFEC-WFEC	55802 ACME 2 69 55916 FRNKLNS2 69 1	0	37	34	0.097	N/A	55841 CANADNS2 69 55842 CANADNS4 138 1	Acme Jct to Acme Sub: Upgrade From 3/0 To 795MCM. WFEC Current Work Plan.	
04G	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	150	246	210	0.198	N/A	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
04G	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	0	102	90	0.425	0.3180	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
04G	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	0	97	89	0.425	0.3180	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
04G	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	49	95	95	0.457	0.2510	57982 IATAN 7 345 59199 ST JOE 3 345 1	Rebuild 15.50-mile line (1192.5 kcmil 45/7 ACSR, 223 MVA, 245 MVA), Replace CTs and Wave Trap (2000 A.)	\$ 5,800,000
04SH	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	265	244	3.352	1.2800	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	Rebuild 12 miles with 2156MCM ACSR. Replace Chamber Springs wavetrp & reset relays.	\$ 7,200,000
04SH	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	50	36	0.054	N/A	54731 SO4TH4 4 138 54790 IMO TAP4 138 1	Solution Undetermined	
04SP	SWPA-SWPA	52648 NORFORK5 161 *B389 NFK X1 1 1	0	25	25	0.027	0.0080	52648 NORFORK5 161 *B390 NFK X2 1 1	Replace Norfork Transformer	\$ 1,300,000
04SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	0	364	352	1.096	0.6600	53139 FLINTCR5 161 53170 TONTITN5 161 1	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR. Replace East Centeron Wavetrp & jumpers	\$ 8,000,000
04SP	WFEC-WFEC	55917 FRNKLNS4 138 54946 MIDWEST4 138 1	0	191	187	0.471	N/A	56026 PHAROAH4 138 56084 WETUMKA4 138 1	Replace 800 amp wavetrp with 2000 amp wavetrp at Franklin Switch and 795ACSR jumpers with 1590ACSR, connectors	\$ 24,000
04SP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	100	96	0.4	0.3050	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	75	242	244	2.789	N/A	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	See Previous Upgrade Specified for Facility	
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	105	334	335	0.856	N/A	53131 DYESS 5 161 53159 SOSPRDL5 161 1	Replace Farmington switch 8839	\$ 60,000
04SP	SWPA-SWPA	52660 BULL SH5 161 99825 5MIDWAY# 161 1	114	157	162	4.091	N/A	Multiple Outage Contingency 52660 BULL SH5161 52661 BUFRDTP5161 1 52648 NORFORK5161 52661 BUFRDTP5161 1	Replace disconnect switches, metering CTs and wave trap at Bull Shoals.	\$ 150,000
04SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	122	352	354	1.767	N/A	53144 LOWELL 5 161 53170 TONTITN5 161 1	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR. Replace Flint Creek wavetrp & jumpers	\$ 450,000
04FA	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	43	36	0.051	N/A	54731 SO4TH4 4 138 54790 IMO TAP4 138 1	Solution Undetermined	
04FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	114	95	0.437	0.3230	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
04FA	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	0	104	90	0.437	0.3230	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
04FA	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	0	99	89	0.437	0.3230	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
04WP	SWPA-SWPA	52648 NORFORK5 161 *B390 NFK X1 1 1	0	28	25	0.023	0.0040	52648 NORFORK5 161 *B391 NFK X2 1 1	See Previous Upgrade Specified for Facility	
04WP	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	150	222	210	0.198	N/A	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
04WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	102	95	0.465	0.2580	57982 IATAN 7 345 59199 ST JOE 3 345 1	See Previous Upgrade Specified for Facility	
04WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	0	92	90	0.465	0.2580	57982 IATAN 7 345 59199 ST JOE 3 345 1	Rebuild 15.15 mile line with 1192.5 kcmil ACSR.	\$ 3,200,000

Table 1 - continued – SPP facility overloads identified for the AEPW to EES transfer as a redirect of ERCOTE to EES service

Study Case	From Area - From Area	Branch Overload	ATC <MW>	Pre Transfer Loading	Rating <MW>	AEPW to EES %TDF	ERCOTE to EES %TDF	Outaged Branch Causing Overload	Solution	Estimated Cost
04WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	0	108	89	0.434	0.3210	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05G	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	41	36	0.05	N/A	54731 SO4TH4 4 138 54790 IMO TAP4 138 1	Solution Undetermined	
05G	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	150	259	210	0.198	N/A	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
05G	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	113	95	0.436	0.3220	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05G	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	0	102	90	0.436	0.3220	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05G	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	0	98	89	0.436	0.3220	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05SH	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	280	244	3.377	1.2930	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	See Previous Upgrade Specified for Facility	
05SH	OKGE-OKGE	55177 PARKLN 2 69 55182 VALLYVU2 69 1	0	76	72	0.363	0.2340	55177 PARKLN 2 69 55187 AHLOSTP2 69 1	Solution Undetermined	
05SH	OKGE-OKGE	55177 PARKLN 2 69 55187 AHLOSTP2 69 1	0	77	72	0.377	0.2430	55177 PARKLN 2 69 55182 VALLYVU2 69 1	Solution Undetermined	
05SH	OKGE-OKGE	55235 PECANCK7 345 *B423 PECANCK1 1 1	0	374	368	8.895	3.6060	55224 MUSKOGEE7 345 55302 FTSMITH7 345 1	Add 2nd 345/161 kV 369MVA transformer.	\$ 3,000,000
05SH	WFEC-WFEC	55802 ACME 2 69 56095 WNORMAN2 69 1	0	47	38	0.105	N/A	55841 CANADNS2 69 55842 CANADNS4 138 1	Acme Sub > West Norman: Upgrade from 3/0 to 795 ACSR. WFEC Current Work Plan.	
05SH	WERE-WERE	57301 EAST ST3 115 57309 WEMPOR13 115 1	0	100	92	0.057	N/A	56863 MORRIS 6 230 *B370 MORRIS2X 1 1	May be relieved due to Westar Operating Procedure 625 - Outage of the Morris 230/115kV Transformer	
05SH	OKGE-OKGE	55228 5TRIBES5 161 55234 PECANCK5 161 1	62	220	223	4.255	1.8300	55230 AGENCY 5 161 55234 PECANCK5 161 1	May be able to increase CTR (if relays will coordinate) at Five Tribes sub.	\$ 5,000
05SP	SWPA-SWPA	52648 NORFORK5 161 *B397 NFK X1 1 1	0	26	25	0.025	0.0070	52648 NORFORK5 161 *B398 NFK X2 1 1	See Previous Upgrade Specified for Facility	
05SP	SWPA-SWPA	52660 BULL SH5 161 99825 5MIDWAY# 161 1	0	169	162	1.67	0.9930	99817 5ISES 1 161 99826 5MORFLD 161 1	See Previous Upgrade Specified for Facility	
05SP	AEPW-AEPW	53131 DYESS 5 161 53159 SOSPRDL5 161 1	0	313	312	0.358	0.1720	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	Rebuild 3.95 miles of 1272 AAC with 2156 ACSR. Replace South Springdale Circuit Switcher & Jumpers	\$ 2,200,000
05SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	0	371	352	1.092	0.6560	53139 FLINTCR5 161 53170 TONTITN5 161 1	See Previous Upgrade Specified for Facility	
05SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	328	244	3.383	1.2990	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	See Previous Upgrade Specified for Facility	
05SP	GRRD-GRRD	54451 CLARMR 5 161 54479 CLARMR 2 69 1	0	86	84	0.244	0.1140	54451 CLARMR 5 161 54479 CLARMR 2 69 2	Add 3rd 161/69 KV Transformer	\$ 1,250,000
05SP	OKGE-OKGE	55177 PARKLN 2 69 55182 VALLYVU2 69 1	0	84	72	0.363	0.2340	55177 PARKLN 2 69 55187 AHLOSTP2 69 1	Solution Undetermined	
05SP	OKGE-OKGE	55177 PARKLN 2 69 55187 AHLOSTP2 69 1	0	86	72	0.377	0.2430	55177 PARKLN 2 69 55182 VALLYVU2 69 1	Solution Undetermined	
05SP	WERE-WERE	56851 AUBURN 6 230 *B162 AUBRN77X 1 1	0	311	305	0.127	0.0300	56861 EMANHAT6 230 *B238 EMANH73X 1 1	May be relieved due to Westar Operating Procedure 633 - Outage of the East Manhattan 230/115kV Transformer	
05SP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	99	96	0.398	0.3060	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05SP	WERE-WERE	57301 EAST ST3 115 57309 WEMPOR13 115 1	0	93	91	0.058	N/A	56863 MORRIS 6 230 *B370 MORRIS2X 1 1	May be relieved due to Westar Operating Procedure 625 - Outage of the Morris 230/115kV Transformer	
05SP	EMDE-EMDE	59467 ORO110 5 161 59494 OAK432 5 161 1	100	213	214	1.283	N/A	59472 TIP292 5 161 59483 JOP389 5 161 1	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR.	\$ 800,000
05SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	101	351	353	1.766	N/A	53144 LOWELL 5 161 53152 ROGERS 5 161 1	See Previous Upgrade Specified for Facility	
05SP	AEPW-AEPW	53139 FLINTCR5 161 53170 TONTITN5 161 1	134	352	353	0.748	N/A	53154 CHAMSPR5 161 53170 TONTITN5 161 1	Rebuild 16.3 miles of 2-297 ACSR with 2156 ACSR	\$ 8,200,000

Table 1 - continued – SPP facility overloads identified for the AEPW to EES transfer as a redirect of ERCOTE to EES service

Study Case	From Area - From Area	Branch Overload	ATC <MW>	Pre Transfer Loading	Rating <MW>	AEPW to EES %TDF	ERCOTE to EES %TDF	Outaged Branch Causing Overload	Solution	Estimated Cost
05FA	SWPA-SWPA	52688 CARTHAG5 161 59466 ATL109 5 161 1	0	183	167	1.419	0.8890	59472 TIP292 5 161 59483 JOP389 5 161 1	EMDE: Reconstruct and replace 8.2 miles of 556 ACSR with Bundled 556 ACSR. SWPA: Replace 600 Amp disconnect switches.	\$ 5,260,000
05FA	OKGE-OKGE	54721 IMO 2 69 54722 CLEVETP2 69 1	0	39	36	0.054	N/A	54731 SO4TH4 4 138 54790 IMO TAP4 138 1	Solution Undetermined	
05FA	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	150	240	210	0.183	N/A	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
05FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	108	95	0.417	0.3200	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05FA	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	0	97	90	0.417	0.3200	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05FA	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	0	93	90	0.417	0.3200	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05FA	EMDE-EMDE	59467 ORO110 5 161 59494 OAK432 5 161 1	0	216	214	1.279	0.8260	59472 TIP292 5 161 59483 JOP389 5 161 1	See Previous Upgrade Specified for Facility	
05WP	SWPA-SWPA	52648 NORFORK5 161 *B399 NFK X1 1 1	0	28	25	0.021	0.0030	52648 NORFORK5 161 *B399 NFK X2 1 1	See Previous Upgrade Specified for Facility	
05WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	277	275	3.379	1.2950	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	See Previous Upgrade Specified for Facility	
05WP	WERE-WERE	57039 ELPASO 4 138 57046 GILL S 4 138 1	150	218	210	0.181	N/A	57040 EVANS N4 138 57041 EVANS S4 138 1	Invalid Contingency	
05WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	0	96	96	0.451	0.2540	57982 IATAN 7 345 59199 ST JOE 3 345 1	See Previous Upgrade Specified for Facility	
05WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	0	104	90	0.412	0.3160	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
05WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	0	100	89	0.412	0.3160	56765 HOYT 7 345 56772 STRANGR7 345 1	May be relieved due to Westar Operating Procedure 803 - Outage of the Hoyt to Stranger 345 kV line	
									Total Estimated Cost	\$ 46,909,000

N/A = Original request path has negative impact on facility. No credit for positive impact removed can be given to the redirected path for this facility.

Table 2 – Example of Curtailment of Previously Confirmed Service as an Option to Relieving Impact on an Identified Facility

Monitored Branch Over 100% Rate B	Outaged Branch Causing Overload	Date Curtailment Needed	AEPW to EES % Response	ERCOTE to EES % Response	*ATC (MW) Needed	**Amount of Previously Confirmed ERCOTE to EES Service Needed for Curtailment	Amount of Previously Confirmed AEPW to EES Service Needed for Curtailment
CIRCLEVILLE - HOYT HTI SWITCHING JUNCTION 115KV	IATAN - ST JOE 345KV	4/1/2004 - 6/1/2004	0.457	0.251	18	34	18
FRANKLIN SW - MIDWEST TAP 138KV	PHAROAH - WETUMKA 138KV	6/1/2004 - 10/1/2004	0.471	N/A	150	N/A	150
CHAMBER SPRINGS - FARMINGTON AECC 161KV	DYESS - SOUTH SPRINGDALE 161KV	6/1/2004 - 10/1/2004	0.856	N/A	45	N/A	45
EAST CENTERTON - GENTRY REC 161KV	FLINT CREEK - TONTITOWN 161KV	6/1/2004 - 10/1/2004	1.096	0.660	60	99	60
FLINT CREEK - GENTRY REC 161KV	LOWELL - TONTITOWN 161KV	6/1/2004 - 10/1/2004	1.767	N/A	28	N/A	28
CIRCLEVILLE - KING HILL N.M. COOP 115KV	IATAN - ST JOE 345KV	12/1/2004 - 4/1/2004	0.465	0.258	67	120	67
BULL SHOALS - MIDWAY 161KV	INDEPENDENCE - MOOREFIELD 161KV	6/1/2005 - 10/1/2005	1.670	0.993	61	102	61
FLINT CREEK - TONTITOWN 161KV	CHAMBER SPRINGS - TONTITOWN 161KV	6/1/2005 - 10/1/2005	0.748	N/A	16	N/A	16
ORONOJO JCT. - JOPLIN OAKLAND NORTH 161KV	TIPTON FORD - JOPLIN SOUTHWEST 161KV	6/1/2005 - 10/1/2005	1.283	N/A	51	N/A	51
CARTHAGE - SUB 109 - ATLAS JCT. 161KV	TIPTON FORD - JOPLIN SOUTHWEST 161KV	10/1/2005 - 12/1/2005	1.419	0.889	56	89	56

N/A = Original request path has negative impact on facility. No credit for positive impact removed can be given to the redirected path for this facility.

* ATC (MW) Needed = Study Amount (MW) - (ATC (MW) from Table 1 + ATC (MW) Credit Given to the Redirected Path for Positive Impact Removed by the Original Path)

ATC (MW) Credit = Redirect Amount (MW) * (%Response of Redirect Path) / (%Response Original Path)

** Amount (MW) Needed for Curtailment = ATC (MW) Needed * (%Response Original Path) / (%Response of Redirect Path)

Table 3 – Example of the Redispatch of Units as an Option to Relieving Impact on an Identified Facility

Limiting Facility: EAST CENTERTON - GENTRY REC 161KV

Line Outage: FLINT CREEK - TONTITOWN 161KV

Date Redispatch Needed: 6/1/04-10/1/04

Relief Amount: 0.7 MW

Source	Sink	GSF
EMDE_OZD312 14.60	System Swing	0.04358
EMDE_L1G382 113.2	System Swing	0.00732
SWPA_BVR #1 113.8	System Swing	0.18322
SWPA_TBR1&2 113.8	System Swing	0.04490
SWPA_BSH #1 113.8	System Swing	0.02727
SPRM_JRPS#5 113.8	System Swing	0.00337
SPRM_JRGT1 113.8	System Swing	0.00279
SWPA_FTG1&2 113.8	System Swing	-0.02112
SWPA_TEN1&2 113.8	System Swing	-0.01394
AEPW_NES1-1 14.4	System Swing	-0.02295
GRDA_GRDA17-122.8	System Swing	-0.04486
GRDA_GRDA15-122.8	System Swing	-0.03793

Example relief pairs with redispatch amounts required to relieve facility by 0.7 MW

Source	Sink	Factor	Redispatch Amount (MW)
GRDA_GRDA17-122.8	SWPA_BVR #1 113.8	-0.22808	3
SWPA_TEN1&2 113.8	SWPA_BVR #1 113.8	-0.19716	4
GRDA_GRDA15-122.8	EMDE_OZD312 14.60	-0.08151	9
AEPW_NES1-1 14.4	SWPA_TBR1&2 113.8	-0.06785	10
SWPA_FTG1&2 113.8	SWPA_BSH #1 113.8	-0.04839	14
GRDA_GRDA17-122.8	SPRM_JRPS#5 113.8	-0.04823	15

Factor = Source GSF Referenced to System Swing - Sink GSF Referenced to System Swing

Redispatch Amount = Relief Amount / Factor

Appendix A

MUST CHOICES IN RUNNING FCITC DC ANALYSIS

CONSTRAINTS/CONTINGENCY INPUT OPTIONS

1. AC Mismatch Tolerance – 2 MW
2. Base Case Rating – Rate A
3. Base Case % of Rating – 100%
4. Contingency Case Rating – Rate B
5. Contingency Case % of Rating – 100%
6. Base Case Load Flow – PSS/E
7. Convert branch ratings to estimated MW ratings – Yes
8. Contingency ID Reporting – Labels
9. Maximum number of contingencies to process - 50000

MUST CALCULATION OPTIONS

1. Phase Shifters Model for DC Linear Analysis – Constant flow for Base Case and Contingencies
2. Report Base Case Violations with FCITC – Yes
3. Maximum number of violations to report in FCITC table - 50000
4. Distribution Factor (OTDF and PTDF) Cutoff – 0.0
5. Maximum times to report the same elements - 10
6. Apply Distribution Factor to Contingency Analysis – Yes
7. Apply Distribution Factor to FCITC Reports – Yes
8. Minimum Contingency Case flow change – 1 MW
9. Minimum Contingency Case Distribution Factor change – 0.0
10. Minimum Distribution Factor for Transfer Sensitivity Analysis – 0.0