



# **SPP** *Southwest Power Pool*

*System Impact Study  
SPP-2003-091-1  
For Transmission Service  
Requested By  
Kansas Electric Power Cooperative*

*From WR To EDE*

*For a Reserved Amount Of  
9MW From 6/1/2003 To 6/1/2020*

*SPP Engineering, Tariff Studies*

## **System Impact Study**

Kansas Electric Power Cooperative has requested a system impact study for Network transmission service from WR to EDE for 9 MW. The period of the service requested is from 6/1/2003 to 6/1/2020. The OASIS reservation number is 496617. 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.

The WR to EDE request was studied to determine the facility upgrades required based on the actual queue position of the request with only those higher priority requests in Facility Study mode included in the models. Higher priority requests still in study mode that have not gone to facility study mode were not included in the models. 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. The results of this study gives the customer an estimated cost of the facility upgrades that may be required in order to accommodate the WR to EDE 9 MW request.

Nine seasonal models were used to study the WR to EDE 9 MW request for the requested service period with consideration of the elapsed request period. The SPP 2003 Series Cases 2003 Fall Peak (03FA), 2003/04 Winter Peak (03WP), 2004 April Min (04AP), 2004 Spring Peak (04G), 2004 Summer Peak (04SP), 2004 Fall Peak (04FA), 2004/05 Winter Peak (04WP), 2009 Summer Peak (09SP), and 2009/10 Winter Peak (09WP) were used to study the impact of the 9 MW request on the SPP system during a the requested service period of 6/1/2003 to 6/1/2020. 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 2003 base case series models.

PTI's MUST First Contingency Incremental Transfer Capability (FCITC) DC analysis was used to study the request. The MUST option to convert MVA branch ratings to estimated MW ratings was used to partially compensate for reactive loading.

With only the higher priority requests that have signed Facility Study Agreements included in the models, the study results of the WR to EDE 9 MW 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 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. Execution of a Facility Study Agreement is now required to maintain queue position. The final upgrade solutions and cost assignments will be determined upon the completion of the facility study.

**Table 1** – SPP facility overloads identified for the WR to EDE transfer

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
03FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
03FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
03FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56861 EMANHAT6 230 58758 CONCORD6 230 1	0	"	-
03FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	58757 CONCORD3 115 58758 CONCORD6 230 1	0	"	-
03FA	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
03FA	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	89	56765 HOYT 7 345 56772 STRANGR7 345 1	0	"	-
03WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56765 HOYT 7 345 56772 STRANGR7 345 1	0	"	-
03WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
03WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56861 EMANHAT6 230 58758 CONCORD6 230 1	0	"	-
03WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	58757 CONCORD3 115 58758 CONCORD6 230 1	0	"	-
03WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
03WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
03WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	89	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
03WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	89	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
04AP		NONE IDENTIFIED			9		
04G	WERE-WERE	56851 AUBURN 6 230 *B016 AUBRN77X 1 1	306	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Transmission Operating Directive 400 Outage of the JEC to Hoyt 345kV Line	-
04G	WERE-WERE	57151 AUBURN 3 115 *B016 AUBRN77X 1 1	307	56765 HOYT 7 345 56766 JEC N 7 345 1	0	"	-
04G	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04G	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
04G	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04G	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	89	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04G	WERE-WERE	57631 CC4VERN2 69 57636 GREEN 2 69 1	43	56791 BENTON 7 345 56797 WOLFCRK7 345 1	0	May be relieved due to Westar Transmission Operating Directive 1304 Overload of the Athens to Wolf Creek 69 kV line	-
04G	WERE-WERE	57631 CC4VERN2 69 57636 GREEN 2 69 1	43	56794 ROSEHIL7 345 56797 WOLFCRK7 345 1	0	"	-
04SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	353	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR. Replace East Centerton Wavetrap & jumpers	\$8,000,000
04SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	304	Base Case	0	See Previous	-
04SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	353	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR. Replace Flint Creek wavetrap & jumpers	\$450,000
04SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	353	53144 LOWELL 5 161 53170 TONTITN5 161 1	0	See Previous	-
04SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	353	53144 LOWELL 5 161 53152 ROGERS 5 161 1	0	"	-
04SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	303	Base Case	0	"	-
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	247	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	Rebuild 12 miles with 2156ACSR	\$7,200,000
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	247	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	See Previous	-
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	247	53157 SFAYTVL5 161 53195 FARMGTN5 161 1	0	"	-
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	247	53139 FLINTCR5 161 53187 GENTRYR5 161 1	0	"	-
04SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	247	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	0	"	-
04SP	WERE-WERE	56851 AUBURN 6 230 *B016 AUBRN77X 1 1	304	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Transmission Operating Directive 400 Outage of the JEC to Hoyt 345kV Line	-
04SP	WERE-WERE	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	298	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Transmission Operating Directive 901 Outage of the Lawrence Hill-Midland Junction 230kV Line	-

**Table 1 continued** – SPP facility overloads identified for the WR to EDE transfer

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
04SP	WERE-WERE	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	298	57252 MIDLAND3 115 *B114 MIDJ126X 1 1	0	May be relieved due to Westar Transmission Operating Directive 615 Loss of the Midland Junction 230/115kV Transformer	-
04SP	WERE-WERE	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	298	56855 MIDLAND6 230 *B114 MIDJ126X 1 1	0	"	-
04SP	WERE-WERE	56855 MIDLAND6 230 *B114 MIDJ126X 1 1	308	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	0	May be relieved due to Westar Transmission Operating Directive 631 Loss of the Lawrence Hill 230/115kV Transformer	-
04SP	WERE-WERE	56855 MIDLAND6 230 *B114 MIDJ126X 1 1	308	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	0	"	-
04SP	WERE-WERE	57151 AUBURN 3 115 *B016 AUBRN77X 1 1	306	56765 HOYT 7 345 56766 JEC N 7 345 1	0	May be relieved due to Westar Transmission Operating Directive 400 Outage of the JEC to Hoyt 345kV Line	-
04SP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	96	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04SP	WERE-WERE	57233 166TH 3 115 57244 JARBALO3 115 1	97	57252 MIDLAND3 115 57261 PENTAGN3 115 1	2	May be relieved due to Westar Transmission Operating Directive 1202 Overload of the Jarbalo to Jaggard 115 kV Line	-
04SP	WERE-WERE	57244 JARBALO3 115 57259 NW LEAV3 115 1	125	57242 HALLMRK3 115 57244 JARBALO3 115 1	0	May be relieved due to Westar Transmission Operating Directive 1216 Outage of the Jarbalo to Hallmark 115 kV Line Section	-
04SP	WERE-WERE	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	302	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Transmission Operating Directive 901 Outage of the Lawrence Hill-Midland Junction 230kV Line	-
04SP	WERE-WERE	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	302	57252 MIDLAND3 115 *B114 MIDJ126X 1 1	0	May be relieved due to Westar Transmission Operating Directive 615 Loss of the Midland Junction 230/115kV Transformer	-
04SP	WERE-WERE	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	302	56855 MIDLAND6 230 *B114 MIDJ126X 1 1	0	"	-
04SP	WERE-WERE	57252 MIDLAND3 115 *B114 MIDJ126X 1 1	308	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	0	May be relieved due to Westar Transmission Operating Directive 631 Loss of the Lawrence Hill 230/115kV Transformer	-
04SP	WERE-WERE	57252 MIDLAND3 115 *B114 MIDJ126X 1 1	308	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	0	"	-
04SP	EMDE-EMDE	59467 ORO110 5 161 59494 OAK432 5 161 1	214	59472 TIP292 5 161 59483 JOP389 5 161 1	0	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$800,000
04FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
04FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56861 EMANHAT6 230 58758 CONCORD6 230 1	0	"	-
04FA	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	58757 CONCORD3 115 58758 CONCORD6 230 1	0	"	-
04FA	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04FA	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	89	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	275	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	See Previous	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56861 EMANHAT6 230 58758 CONCORD6 230 1	0	"	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	58757 CONCORD3 115 58758 CONCORD6 230 1	0	"	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56861 EMANHAT6 230 58758 CONCORD6 230 1	0	"	-
04WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	58757 CONCORD3 115 58758 CONCORD6 230 1	0	"	-
04WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-

**Table 1 continued** – SPP facility overloads identified for the WR to EDE transfer

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
04WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
04WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	56861 EMANHAT6 230 58758 CONCORD6 230 1	0	"	-
09SP	SWPA-SPRM	52692 SPRGFLD5 161 59969 BRKLINE 5 161 1	309	59954 SWPS 5 161 59960 SWDISP 5 161 1	0	Replace disconnect switches at Springfield.	\$60,000
09SP	SWPA-SPRM	52692 SPRGFLD5 161 59969 BRKLINE 5 161 1	309	59959 BATFLD 5 161 59960 SWDISP 5 161 1	0	See Previous	-
09SP	SWPA-SPRM	52692 SPRGFLD5 161 59969 BRKLINE 5 161 1	309	59955 JUNCTN 5 161 59969 BRKLINE 5 161 1	0	"	-
09SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	353	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	See Previous	-
09SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	353	53144 LOWELL 5 161 53170 TONTITN5 161 1	0	"	-
09SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	353	53144 LOWELL 5 161 53152 ROGERS 5 161 1	0	"	-
09SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	353	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	"	-
09SP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	353	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	"	-
09SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	349	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	See Previous	-
09SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	349	53144 LOWELL 5 161 53170 TONTITN5 161 1	0	"	-
09SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	349	53144 LOWELL 5 161 53152 ROGERS 5 161 1	0	"	-
09SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	349	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	"	-
09SP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	349	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	"	-
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	244	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	See Previous	-
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	244	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	"	-
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	244	53157 SFAYTVL5 161 53195 FARMGTN5 161 1	0	"	-
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	244	53139 FLINTCR5 161 53187 GENTRYR5 161 1	0	"	-
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	244	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	0	"	-
09SP	AEPW-AEPW	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	335	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	Replace Farmington switch 8839, rebuild 10.24 miles with 2156 ACSR, replace Chamber Springs wavetrap, & replace Farmington AECC bus.	\$6,400,000
09SP	AEPW-AEPW	53157 SFAYTVL5 161 53195 FARMGTN5 161 1	313	53154 CHAMSPR5 161 53170 TONTITN5 161 1	0	Replace Farmington switch 5894 and replace South Fayetteville wavetrap jumpers	\$50,000
09SP	OKGE-OKGE	55234 PECANCK5 161 55235 PECANCK7 345 1	369	53756 CLARKSV7 345 55224 MUSKOGEE7 345 1	0	Add 2nd 345/161 kV 369MVA transformer.	\$3,000,000
09SP	WERE-WERE	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	298	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Transmission Operating Directive 901 Outage of the Lawrence Hill-Midland Junction 230kV Line	-
09SP	WERE-WERE	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	298	57252 MIDLAND3 115 *B115 MIDJ126X 1 1	0	May be relieved due to Westar Transmission Operating Directive 615 Loss of the Midland Junction 230/115kV Transformer	-
09SP	WERE-WERE	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	298	56855 MIDLAND6 230 *B115 MIDJ126X 1 1	0	"	-
09SP	WERE-WERE	56855 MIDLAND6 230 *B115 MIDJ126X 1 1	308	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	0	May be relieved due to Westar Transmission Operating Directive 631 Loss of the Lawrence Hill 230/115kV Transformer	-
09SP	WERE-WERE	56855 MIDLAND6 230 *B115 MIDJ126X 1 1	308	56853 LAWHILL6 230 *B101 LAHWL29X 1 1	0	"	-
09SP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	96	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
09SP	WERE-WERE	57182 TECHILE3 115 57187 27CROCO3 115 1	67	57182 TECHILE3 115 57187 27CROCO3 115 2	0	Invalid Contingency	-
09SP	WERE-WERE	57182 TECHILE3 115 57187 27CROCO3 115 2	91	57151 AUBURN 3 115 *B015 AUBRN77X 1 1	0	May be relieved due to Westar Transmission Operating Directive 618 Loss of the Auburn 230/115 kV transformer	-
09SP	WERE-WERE	57182 TECHILE3 115 57187 27CROCO3 115 2	91	56851 AUBURN 6 230 *B015 AUBRN77X 1 1	0	May be relieved due to Westar Transmission Operating Directive 618 Loss of the Auburn 230/115 kV transformer	-
09SP	WERE-WERE	57236 COOP 3 115 57277 WAKARUS3 115 1	92	57271 SWLWRNC3 115 57277 WAKARUS3 115 1	0	Rebuild 1.53-mile line	\$390,000
09SP	WERE-WERE	57250 LWRNCHL3 115 *B101 LAHWL29X 1 1	302	56853 LAWHILL6 230 56855 MIDLAND6 230 1	0	May be relieved due to Westar Transmission Operating Directive 901 Outage of the Lawrence Hill-Midland Junction 230kV Line	-

**Table 1 continued** – SPP facility overloads identified for the WR to EDE transfer

Study Case	From Area - To Area	Branch Overload	Rating <MW>	Outaged Branch Causing Overload	ATC <MW>	Solution	Estimated Cost
09SP	WERE-WERE	57250 LWRNCHL3 115 *B101 LAWHL29X 1 1	302	57252 MIDLAND3 115 *B115 MIDJ126X 1 1	0	May be relieved due to Westar Transmission Operating Directive 615 Loss of the Midland Junction 230/115kV Transformer	-
09SP	WERE-WERE	57250 LWRNCHL3 115 *B101 LAWHL29X 1 1	302	56855 MIDLAND6 230 *B115 MIDJ126X 1 1	0	"	-
09SP	WERE-WERE	57250 LWRNCHL3 115 57280 WREN 3 115 1	139	57234 BISMAR3 115 57236 COOP 3 115 1	0	May be relieved due to Westar Transmission Operating Directive 1210 Outage of the Bismark to COOP 115kV Line Section	-
09SP	WERE-WERE	57250 LWRNCHL3 115 57280 WREN 3 115 1	139	57253 MOCKBRD3 115 57271 SWLWRNC3 115 1	0	May be relieved due to Westar Transmission Operating Directive 1210 Outage of the Mockingbird Hill-SW Lawrence 115kV Line Section	-
09SP	WERE-WERE	57252 MIDLAND3 115 *B115 MIDJ126X 1 1	308	56853 LAWHILL6 230 *B101 LAWHL29X 1 1	0	May be relieved due to Westar Transmission Operating Directive 631 Loss of the Lawrence Hill 230/115kV Transformer	-
09SP	WERE-WERE	57252 MIDLAND3 115 *B115 MIDJ126X 1 1	308	57250 LWRNCHL3 115 *B101 LAWHL29X 1 1	0	"	-
09SP	WERE-WERE	57271 SWLWRNC3 115 57277 WAKARUS3 115 1	92	57236 COOP 3 115 57277 WAKARUS3 115 1	2	Rebuild 4.09-mile line	\$1,000,000
09SP	KACP-KACP	57978 CRAIG 5 161 58048 COLLEGE5 161 1	330	57966 WGARDNR5 161 58044 MOONLT 5 161 1	0	Reconductor 4 miles with 1192.5 ACSS, 558 normal/emergency rating and upgrade breaker.	\$700,000
09SP	EMDE-EMDE	59467 ORO110 5 161 59494 OAK432 5 161 1	214	59472 TIP292 5 161 59483 JOP389 5 161 1	0	See Previous	-
09SP	EMDE-EMDE	59500 RNM393 5 161 *B150 REINMILL 1 1	75	59472 TIP292 5 161 59483 JOP389 5 161 1	1	Replace 161/69 KV Transformer with a 150 MVA Transformer.	\$1,730,000
09WP	SWPA-SPRM	52692 SPRGFLD5 161 59969 BRKLINE 5 161 1	318	59954 SWPS 5 161 59960 SWDISP 5 161 1	0	See Previous	-
09WP	SWPA-SPRM	52692 SPRGFLD5 161 59969 BRKLINE 5 161 1	318	59959 BATFLD 5 161 59960 SWDISP 5 161 1	0	"	-
09WP	SWPA-SPRM	52692 SPRGFLD5 161 59969 BRKLINE 5 161 1	318	59955 JUNCTN 5 161 59969 BRKLINE 5 161 1	0	"	-
09WP	AEPW-AEPW	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	367	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	See Previous	-
09WP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	360	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	See Previous	-
09WP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	360	53144 LOWELL 5 161 53170 TONTITN5 161 1	0	"	-
09WP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	360	53144 LOWELL 5 161 53152 ROGERS 5 161 1	0	"	-
09WP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	360	SERCW- 6	0	"	-
09WP	AEPW-AEPW	53139 FLINTCR5 161 53187 GENTRYR5 161 1	360	53140 FLINTCR7 345 59481 MON383 7 345 1	0	"	-
09WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53154 CHAMSPR5 161 53195 FARMGTN5 161 1	0	See Previous	-
09WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53139 FLINTCR5 161 53170 TONTITN5 161 1	0	"	-
09WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53157 SFAYTVL5 161 53195 FARMGTN5 161 1	0	"	-
09WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53139 FLINTCR5 161 53187 GENTRYR5 161 1	0	"	-
09WP	AEPW-AEPW	53154 CHAMSPR5 161 53170 TONTITN5 161 1	243	53133 ECNTRTN5 161 53187 GENTRYR5 161 1	0	"	-
09WP	OKGE-OKGE	55234 PECANCK5 161 55235 PECANCK7 345 1	369	53756 CLARKSV7 345 55224 MUSKOG7 345 1	0	See Previous	-
09WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
09WP	WERE-WERE	57152 CIRCLVL3 115 57165 HTI JCT3 115 1	95	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
09WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
09WP	WERE-WERE	57152 CIRCLVL3 115 57331 KING HL3 115 1	90	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
09WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	56765 HOYT 7 345 56772 STRANGR7 345 1	0	May be relieved due to Westar Transmission Operating Directive 803 Outage of the Hoyt to Stranger 345 kV line	-
09WP	WERE-WERE	57217 KELLY 3 115 57331 KING HL3 115 1	88	57982 IATAN 7 345 59199 ST JOE 3 345 1	0	Solution Undetermined	-
09WP	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	141	56873 SUMMIT 6 230 *B171 SUMMIT1X 1 1	0	May be relieved due to Westar Transmission Operating Directive 613 Outage of the Summit 345/230 kV Transformer	-
09WP	WERE-WERE	57342 WJCCTY 3 115 57343 WJCCTYE3 115 1	141	56773 SUMMIT 7 345 *B171 SUMMIT1X 1 1	0	May be relieved due to Westar Transmission Operating Directive 613 Outage of the Summit 345/230 kV Transformer	-
09WP	EMDE-EMDE	59500 RNM393 5 161 *B150 REINMILL 1 1	75	59472 TIP292 5 161 59483 JOP389 5 161 1	0	See Previous	-
Total Estimated Cost							\$29,780,000