



SPP *Southwest Power Pool*

***System Impact Study SPP-2001-244
For Transmission Service
Requested By
Empire District Electric Co.***

From CSWS To EDE

***For a Reserved Amount Of 100MW
From 6/1/2003
To 6/1/2013***

SPP Coordinated Planning

System Impact Study

Empire District Electric Co. has requested a system impact study for long-term Firm Point-to-Point transmission service from CSWS to EDE. The period of the transaction is from 6/1/2003 to 6/1/2013. The request is for OASIS reservation 274980 for an amount of 100 MW.

The principal objective of this study is to identify constraints on the SPP Regional Tariff System and potential facility upgrades that may be necessary to facilitate the additional 100 MW of service requested.

The CSWS to EDE transfer was first studied to determine the facility upgrades required if the request were the highest priority request in the queue. These results are documented in Table 1 of the report. The request was then studied to determine the facility upgrades required based on the actual queue position of the request with the higher priority requests still being studied included in the models. These results are documented in Table 2 of the report. Results of the two studies can then be compared to give the customer an estimated range of facility upgrades that may be required in order to accommodate the 100 MW CSWS to EDE transfer.

SPP used eight seasonal models to study the CSWS to EDE 100 MW transfer for the requested service period for each scenario. The SPP 2002 Series Cases 2003 Summer Peak, 2003 Fall Peak, 2003/04 Winter Peak, 2004 Spring Peak, 2005 Summer Peak, 2005/06 Winter Peak, 2008SP and 2008/2009 Winter Peak were used to study the impact of the 100 MW transfer on the SPP system during the requested service period of 6/1/2003 to 6/1/2013. The Spring Peak models apply to April and May, the Summer Peak models apply to June through September, the Fall Peak models apply to October and November, and the Winter Peak models apply to December through March. 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 2002 base case series models.

With the CSWS to EDE 100 MW transfer as the highest priority request in the queue, the study results show that limiting constraints exist. By studying the request in its actual queue position with higher priority requests included, the number of constraints that limit the ATC to less than 100 MW increases. Due to the number of limiting constraints identified, the Transmission Service Request cannot be granted. These results do not include an evaluation of potential constraints in the planning horizon beyond the reservation period that may limit the right to renew service. The upgrades and cost 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 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 upgrades that would be required if the CSWS to EDE request were the highest priority request in the queue

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03SP	WERE-WERE	166Th Street - Jarbalo Junction Switching Station 115kV	97	Midland Junction - Pentagon 115kV	0	May be relieved due to Westar Transmission Operating Directive 1202	Not Available
03SP	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03SP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	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
03SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	Replace Switches Alumax Tap	\$ 30,000
03SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03SP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03SP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	43	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	Solution Undetermined	Not Available
03SP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	Solution Undetermined	Not Available
03SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Springfield - Sub 382 - Larussel 161kV	3	Third Party Facility	\$ -
03SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 1	84	Carthage 161/69kV Transformer Ckt 2	6	Third Party Facility	\$ -
03SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR	\$ 981,000
03SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	34	Solution Undetermined	Not Available
03SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	5	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	Replace Breaker 10070 @ Perdue	\$ 150,000
03SP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.7	Doniphan 161/69kV Transformer Ckt 2	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Dyess - Chamber Springs 161kV	244	Chamber Springs - Farmington Aecc 161kV	0	AEPW Planned Tontitown Project	\$ -
03SP	AEPW-AEPW	Dyess - East Rogers 161kV	244	Flint Creek - Gentry Rec 161kV	0	AEPW Planned Tontitown Project	\$ -
03SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - Elm Springs Rec 161kV	0	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR	\$ 8,000,000
03SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - Elm Springs Rec 161kV	0	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR.	\$ 400,000
03SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	Replace substation bus and jumpers at MacArthur 69 kV	\$ 22,000
03SP	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	Replace disconnect switches at Gill 69 kV (use 800 A.), Replace line switch at Oatville 69 kV (use 800 A.)	\$ 45,000
03SP	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	Replace 755 ACAR Strain Bus	\$ 25,000
03SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	Replace 755 ACAR Strain Bus	\$ 25,000
03SP	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	Build new Linn County sub with 345/161kV 400 Mva transformer. Tap Wolf Creek to LaCygne 345kV line and Centerville to Paola 161kV line	\$ 6,945,000

Table 1 - continued – SPP facility upgrades that would be required if the CSWS to EDE request were the highest priority request in the queue

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03SP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	Invalid Overload	\$ -
03FA	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03FA	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
03FA	SWPA-EES	Bull Shoals - Midway 161kV	162	Norfolk - Buford Tap 161kV	28	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,000
03FA	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	70	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
03FA	AEPW-AEPW	Denver Center 138/13.8kV T Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
03FA	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
03FA	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	See Previous	See Previous
03FA	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
03WP	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03WP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03WP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03WP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03WP	AEPW-AEPW	Denver Center 138/13.8kV T Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
03WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
03WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
03WP	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	See Previous	See Previous
03WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
04G	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
04G	WERE-WERE	Athens Switching Station - Coffey County No. 4 Vernon 69kV	45	Wolf Creek - Lacygne 345kV	0	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
04G	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
04G	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	See Previous
04G	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
04G	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
04G	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	WERE-WERE	166Th Street - Jarbalo Junction Switching Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
05SP	GRRD-GRRD	Afton 161/69kV Transformer	50	Miami - Afton 161kV	38	Replace 50 MVA Transformer with 84 MVA unit	\$ 833,000
05SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
05SP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous

Table 1 - continued – SPP facility upgrades that would be required if the CSWS to EDE request were the highest priority request in the queue

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05SP	AECI-AECI	Bristow 138/69kV Transformer ckt 1	56	Bristow 138/69kV Transformer Ckt 2	0	Solution Undetermined	Not Available
05SP	AECI-AECI	Bristow 138/69kV Transformer ckt 2	56	Bristow 138/69kV Transformer Ckt 1	0	Solution Undetermined	Not Available
05SP	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Riverside Station Auto 138/345kV Transformer	0	Replace wavetrapp	\$ 30,000
05SP	AEPW-AEPW	Carson South 138/13.8kV Transformer	33	Carson Tap - Union Avenue 138kV	0	Solution Undetermined	Not Available
05SP	AEPW-AEPW	Carson-Center 138/13.8kV T Transformer	33	Carson South - Tulsa Power Station 138kV	0	See Previous	See Previous
05SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Clinton - Osceola 161kV	1	See Previous	See Previous
05SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Chamber Springs - Farmington Aecc 161kV	335	Chamber Springs - Tontitown 161kV	0	Replace Farmington switch	\$ 60,000
05SP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	244	Flint Creek - Tontitown 161kV	0	Rebuild 12 miles with 2156ACSR	\$ 7,200,000
05SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Cherokee Rec - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR	\$ 1,641,000
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	See Previous	See Previous
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	See Previous	See Previous
05SP	SPRM-AECI	Clay - Logan 161kV	185	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	79	Replace transmission line structures to allow operation at 100C	\$ 250,000
05SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Elm Springs Rec - Tontitown 161kV	306	Dyess - Tontitown 161kV	0	Replace Switch and Elm Springs Strain Bus	\$ 100,000
05SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Tontitown 161kV	0	Replace switch and jumpers	\$ 45,000
05SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	See Previous	See Previous
05SP	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Hallsville - Longview Heights 69kV	48	Marshall - Marshall Auto 69kV	0	Rebuild 7.07 miles of 4/0 ACSR with 795 ACSR	\$ 3,000,000
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Mockingbird Hill Switching Station - SW Lawrence 115kV	0	May be relieved due to Westar Transmission Operating Directive 1210	Not Available
05SP	AEPW-AEPW	Longwood - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR and replace jumpers & Bus Riser jumpers	\$ 1,577,000
05SP	AEPW-AEPW	Marshall - North Marshall 69kV	72	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Replace 350 CU bus & jumpers @ North Marshall.	\$ 23,300
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	See Previous	See Previous
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	See Previous	See Previous
05SP	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Rock Hill - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 0.81 miles 666MCM to 1272 ACSR - Reconductor other 5.76 miles of 795 ACSR with 1272 ACSR. Reset CTs and relay settings @ Rock Hill	\$ 342,970

Table 1 - continued – SPP facility upgrades that would be required if the CSWS to EDE request were the highest priority request in the queue

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05SP	AEPW-WFEC	Southwest Station - Anadarko 138kV	203	Lawton Eastside - Cimarron 345kV	73	Replace bus, jumpers, switches, supports and foundations at Anadarko Switch Station	\$ 450,000
05SP	SWPA-SPRM	Springfield - Brookline 161kV	323	Southwest - Southwest Disposal 161kV	37	Solution Undetermined	Not Available
05SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	See Previous	See Previous
05SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 1	78	Tahlequah 69/161kV Transformer Ckt 2	0	Solution Undetermined	Not Available
05SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 2	78	Tahlequah 69/161kV Transformer Ckt 1	0	Solution Undetermined	Not Available
05SP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	See Previous	See Previous
05WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffrey Energy Center 345kV	0	See Previous	See Previous
05WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Sub 124 - Aurora H.T. - Sub 383 - Monett 161kV	82	See Previous	See Previous
05WP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
05WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
05WP	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	WERE-WERE	166Th Street - Jarbalo Junction Switching Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
08SP	GRRD-GRRD	412Sub - Kansas Tap 161kV	338	Flint Creek - Grda1 345kV	25	Reconductor 9.7 miles with 1590MCM ACSR	\$ 1,488,000
08SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
08SP	WERE-WERE	Auburn Road - Indian Hills 115kV	223	Hoyt - Jeffrey Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
08SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffrey Energy Center 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
08SP	AEPW-OKGE	Bonanza - Bonanza Tap 161kV	177	Aes - Tarby 161kV	32	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR	\$ 50,000
08SP	AECI-AECI	Bristow 138/69kV Transformer ckt 1	56	Bristow 138/69kV Transformer Ckt 2	0	See Previous	See Previous
08SP	AECI-AECI	Bristow 138/69kV Transformer ckt 2	56	Bristow 138/69kV Transformer Ckt 1	0	See Previous	See Previous
08SP	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Riverside Station Auto 138/345kV Transformer	0	See Previous	See Previous
08SP	AEPW-AEPW	Broken Arrow 81St - Broken Arrow 101St North 138kV	235	Riverside Station Auto 138/345kV Transformer	0	Rebuild 2.05 miles of 795 ACSR with 1590 ACSR	\$ 1,100,000
08SP	AEPW-AEPW	Broken Arrow North - South Tap - Lynn Lane Tap 138kV	235	Tulsa North - Northeast Station 345kV	50	Rebuild 4.63 miles of 795 ACSR with 1590 ACSR	\$ 2,600,000
08SP	AEPW-AEPW	Broken Arrow North - South Tap - Oneta 138kV	235	Tulsa North - Northeast Station 345kV	0	Rebuild 4.31 miles of 795 ACSR with 1590 ACSR.	\$ 2,370,500
08SP	AEPW-AEPW	Carson South 138/13.8kV Transformer	33	Carson Tap - Union Avenue 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	See Previous	See Previous
08SP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	See Previous	See Previous
08SP	SWPA-EES	Carthage - Jasper 69kV	47	Butler - Adrian 161kV	25	Third Party Facility	\$ -
08SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	244	Chamber Springs - Farmington Aecc 161kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Chamber Springs 161/345kV Transformer	660	Flint Creek - Grda1 345kV	1	Install 2nd 345/161 kV Auto-transformer	\$ 4,000,000
08SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Stonewall - Western Electric T 138kV	0	See Previous	See Previous

Table 1 - continued – SPP facility upgrades that would be required if the CSWS to EDE request were the highest priority request in the queue

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
08SP	AEPW-AEPW	Cherokee Rec - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	WERE-WERE	Chisholm - Evans Energy Center North 138kV	382	Hoover North - Lakeridge 138kV	0	See Previous	See Previous
08SP	WERE-WERE	Chisholm - Evans Energy Center North 138kV	382	Evans Energy Center South - Lakeridge 138kV	0	Solution Undetermined	Not Available
08SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	See Previous	See Previous
08SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	See Previous	See Previous
08SP	WERE-WERE	County Line - Rock Creek 69kV	41	Hoyt - Stranger Creek 345kV	0	Solution Undetermined	Not Available
08SP	KACP-KACP	Craig - College 161kV	335	Stilwell - Antioch 161kV	0	Solution Undetermined	Not Available
08SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - East Centerton 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Elm Springs Rec - Tontitown 161kV	306	Chamber Springs - Farmington Aecc 161kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - East Centerton 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Clarksville 345kV	0	See Previous	See Previous
08SP	AEPW-EES	Fulton - Patmos 115kV	174	Lydia - Valliant 345kV	0	Using 1590MCM ACSR, reconductor 7.1 miles	\$ 2,300,000
08SP	WERE-WERE	Gill Energy Center East - Interstate 138kV	210	Evans Energy Center South - Lakeridge 138kV	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	See Previous	See Previous
08SP	WERE-WERE	Gill Energy Center West - Haysville Junction 69kV	80	Canal 138/211kV Transformer Ckt 0	0	Solution Undetermined	Not Available
08SP	AEPW-AEPW	Hallsville - Longview Heights 69kV	48	Marshall - Marshall Auto 69kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Jacksonville (Swe-Rc-Etec) - Overton 138kV	235	Crockett - Tenaska Rusk County 345kV	0	Reset relays at Jacksonville & Overton	\$ 15,000
08SP	SWPA-EES	Jonesboro - Jonesboro 161kV	223	New Madrid - Kennett 161kV	0	Solution Undetermined	Not Available
08SP	GRRD-GRRD	Kerr - 412Sub 161kV	338	Flint Creek - Grda1 345kV	0	Reconductor 12.5 miles with 1590MCM ACSR.	\$ 1,918,000
08SP	AEPW-AEPW	Knox Lee - Oak Hill #2 138kV	210	Knox Lee - Monroe Corners Rec 138kV	0	Replace wavetrap @ Knoxlee	\$ 20,000
08SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Bismark Junction Sw Sta - Farmer's Consumer Co-Op 115kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Longwood - Nor am 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Marshall - North Marshall 69kV	72	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	See Previous	See Previous
08SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	See Previous	See Previous
08SP	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	WERE-WERE	North American Philips Junction (North) - Smoky Hill 115kV ckt 1	68	N.A. Philips Junction (North) - Smoky Hill 115kV Ckt 2	0	Solution Undetermined	Not Available
08SP	WERE-WERE	North American Philips Junction (South) - West Mcpherson 115kV	68	East Mcpherson - Summit 230kV	12	May be relieved due to Westar Transmission Operating Directive 613	Not Available
08SP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	Add 2nd 345/161 kV 369MVA transformer.	\$ 3,000,000

Table 1 - continued – SPP facility upgrades that would be required if the CSWS to EDE request were the highest priority request in the queue

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
08SP	AEPW-AEPW	Raines - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR	\$ 2,000,000
08SP	AEPW-AEPW	Rock Hill - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	South Fayetteville - Farmington Aecc 161kV	313	Chamber Springs - Tontitown 161kV	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Southwest Lawrence - Wakarusa Junction Switching Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	Solution Undetermined	Not Available
08SP	SWPA-SPRM	Springfield - Brookline 161kV	323	Southwest - Southwest Disposal 161kV	0	See Previous	See Previous
08SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	See Previous	See Previous
08SP	AECI-AECI	Stilwell - Titantic Tap 69kV	36	Sallisaw - Brushy 69kV	30	Line Owned by GRDA - Solution Undetermined	\$ -
08SP	EMDE-EMDE	Sub 110 - Oronogo Jct. - Sub 432 - Joplin Oakland North 161kV	214	Sub 292 - Tipton Ford - Sub 389 - Joplin Southwest 161kV	7	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$ 800,000
08SP	EMDE-AECI	Sub 446 - Chesapeake - 2MTVRN 69kV	36	Sub 124 - Aurora H.T. - Sub 355 - Aurora West 69kV	0	Solution Undetermined	Not Available
08SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 1	78	Tahlequah 69/161kV Transformer Ckt 2	0	See Previous	See Previous
08SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 2	78	Tahlequah 69/161kV Transformer Ckt 1	0	See Previous	See Previous
08SP	WERE-WERE	Tecumseh Energy Center - Tecumseh Hill 115kV	236	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
08SP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	See Previous	See Previous
08WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffrey Energy Center 345kV	0	See Previous	See Previous
08WP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	See Previous	See Previous
08WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Sub 124 - Aurora H.T. - Sub 355 - Aurora West 69kV	38	See Previous	See Previous
08WP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
08WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	East Manhattan - Concordia 230kV	34	May be relieved due to Westar Transmission Operating Directive 803	Not Available
08WP	SPRM-AECI	Clay - Logan 161kV	232	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	10	See Previous	See Previous
08WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
08WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.7	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
08WP	AEPW-AEPW	Jacksonville (Swe-Rc-Etec) - Overton 138kV	265	Crockett - Tenaska Rusk County 345kV	0	See Previous	See Previous
08WP	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	WERE-WERE	Southwest Lawrence - Wakarusa Junction Switching Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	See Previous	See Previous
08WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
Total (Excludes Costs Not Available)							\$ 54,616,770

Table 2 - SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03SP	WERE-WERE	166Th Street - Jarbalo Junction Sw Station 115kV	97	Midland Junction - Pentagon 115kV	0	May be relieved due to Westar Transmission Operating Directive 1202	Not Available
03SP	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03SP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03SP	GRRD-GRRD	Afton 161/69kV Transformer	50	Miami - Afton 161kV	13	Replace 50 MVA Transformer with 84 MVA unit	\$ 833,000
03SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	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
03SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	Replace Switches Alumax Tap	\$ 30,000
03SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03SP	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03SP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03SP	SWPA-AEPW	Beaver - Eureka Springs 161kV	274	Flint Creek - Sub 383 - Monett 345kV	0	AEPW Reconductor 1.25 miles with 1590ACSR SWPA Reconnect CT's; Replace metering & reset relays	\$ 537,500
03SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-OKGE	Bonanza - Bonanza Tap 161kV	177	Ft Smith - ANO 500kV	60	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR	\$ 50,000
03SP	SWPA-AEPW	Broken Bow - Craig Junction 138kV	107	Bbdamp4 - Mountain River 138kV	0	Rebuild 7.66 miles of 3/0 CW CU with 795 ACSR	\$ 2,700,000
03SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Sweetwater - Fletcher 161kV	24	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,000
03SP	AEPW-AEPW	Carson South 138/13.8kV Transformer	33	Carson Tap - Union Avenue 138kV	52	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	Solution Undetermined	Not Available
03SP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	Solution Undetermined	Not Available
03SP	SWPA-EES	Carthage - Jasper 69kV	47	Clark 161/69kV Transformer	14	Third Party Facility	\$ -
03SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR	\$ 981,000
03SP	AEPW-AEPW	Cherokee Rec - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR	\$ 1,641,000
03SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	Solution Undetermined	Not Available
03SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	Solution Undetermined	Not Available
03SP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	0	Replace wave trap to increase rating to conductor rating (2000 A)	\$ 20,000
03SP	WERE-WERE	Creswell - Paris 69kV	80	Creswell - Oak 69kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	Replace Breaker 10070 @ Perdue	\$ 150,000
03SP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Dyess - Chamber Springs 161kV	244	Chamber Springs - Farmington Aecc 161kV	0	AEPW Planned Tontitown Project	\$ -
03SP	AEPW-AEPW	Dyess - East Rogers 161kV	244	Flint Creek - Gentry Rec 161kV	0	AEPW Planned Tontitown Project	\$ -

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03SP	AEPW-AEPW	East Centeron - Gentry Rec 161kV	353	Flint Creek - Elm Springs Rec 161kV	0	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR	\$ 8,000,000
03SP	AEPW-AEPW	Flint Creek - Elm Springs Rec 161kV	312	Chamber Springs - Clarksville 345kV	0	AEPW Planned Tontitown Project	\$ -
03SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - Elm Springs Rec 161kV	0	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR.	\$ 400,000
03SP	OKGE-OKGE	Ft Smith 161/345kV Transformer	493	Ft Smith 345/500kV Transformer	0	Convert Ft. Smith 161kv to 1- 1/2 breaker design and install 2nd 500-161kV XFR bank	\$ 10,000,000
03SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	Replace substation bus and jumpers at MacArthur 69 kV	\$ 22,000
03SP	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	Replace disconnect switches at Gill 69 kV , Replace line switch at Oatville 69 kV	\$ 45,000
03SP	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	See Previous	See Previous
03SP	AEPW-AEPW	Lieberman - IPC Jefferson 138kV	136	Longwood - Wilkes 345kV	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM	\$ 7,411,000
03SP	AEPW-AEPW	Longwood - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR and replace jumpers & Bus Riser jumpers	\$ 1,577,000
03SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	Replace 755 ACAR Strain Bus	\$ 25,000
03SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	Replace 755 ACAR Strain Bus	\$ 25,000
03SP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	Add 2nd 345/161 kV 369MVA transformer.	\$ 3,000,000
03SP	AEPW-AEPW	Raines - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR	\$ 2,000,000
03SP	AEPW-AEPW	Rock Hill - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Reconductor 0.81 miles 666MCM to 1272 ACSR - Reconductor other 5.76 miles of 795 ACSR with 1272 ACSR. Reset CTs and relay settings @ Rock Hill	\$ 342,970
03SP	SWPA-SWPA	Sallisaw - Gore 161kV	189	Muskogee - Ft Smith 345kV	27	Increase clearances of approximately ten spans to allow operation of line at 100C, This will increase the line capacity to 223MVA	\$ 500,000
03SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	Build new Linn County substation with 345/161kV 400 Mva transformer. Tap Wolf Creek to LaCygne 345kV line and Centerville to Paola 161kV line	\$ 6,945,000
03SP	EMDE-EMDE	Sub 110 - Oronogo Jct. - Sub 432 - Joplin Oakland North 161kV	214	Sub 292 - Tipton Ford - Sub 389 - Joplin Southwest 161kV	83	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$ 800,000
03SP	GRRD-OKGE	Tahlequah - Highway 59 161kV	167	Muskogee - Ft Smith 345kV	0	Remove switches #130 and #132 to increase rating from 600A to conductor limit of 662 Amps for Rate B and replace structures	\$ 30,000
03SP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	Invalid Overload	\$ -
03SP	SWPA-OKGE	Van Buren - VBI 161kV	335	Muskogee - Ft Smith 345kV	0	SPA: Replace metering CTs, disconnect switches, breakers, and bus differential relaying at Van Buren. OKGE: Replace Switch and reconnect CT ratio at VBI	\$ 1,050,000
03FA	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03FA	WERE-WERE	Athens Sw Station - Coffey County No. 4 Vernon 69kV	45	Wolf Creek - Lacygne 345kV	0	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
03FA	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
03FA	SWPA-AEPW	Broken Bow - Craig Junction 138kV	122	Bbdamp4 - Mountain River 138kV	0	See Previous	See Previous
03FA	SWPA-EES	Carthage - Reed Springs 69kV	36	Sub 124 - Aurora H.T. - Sub 383 - Monett 161kV	5	Third Party Facility	\$ -

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03FA	SWPA-EMDE	Carthage - Sub 109 - Atlas Jct. 161kV	167	Sub 292 - Tipton Ford - Sub 389 - Joplin Southwest 161kV	39	Solution Undetermined	Not Available
03FA	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	0	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
03FA	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
03FA	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03FA	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
03FA	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
03WP	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03WP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
03WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03WP	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03WP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
03WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Neosho - Morgan 345kV	20	See Previous	See Previous
03WP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	81	See Previous	See Previous
03WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
03WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
03WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
03WP	OKGE-OKGE	Eastern Ave - Memorial 138kV	191	Memorial - Skyline 138kV	0	Solution Undetermined	Not Available
03WP	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	See Previous	See Previous
03WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
03WP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
03WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
04G	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	See Previous
04G	WERE-WERE	Athens Sw Station - Coffey County No. 4 Vernon 69kV	45	Wolf Creek - Lacygne 345kV	0	May be relieved due to Westar Transmission Operating Directive 1304	Not Available
04G	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
04G	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	See Previous
04G	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
04G	OKGE-OKGE	Eastern Ave - Memorial 138kV	191	Memorial - Skyline 138kV	0	See Previous	See Previous
04G	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
04G	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
04G	AEPW-AEPW	South Shreveport - Wallace Lake 138kV	210	Dolet Hills 345/230kV Transformer	0	Dolet Hills Operating Guide	\$ -
04G	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	WERE-WERE	166Th Street - Jarbalo Junction Sw Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
05SP	GRRD-GRRD	Afton 161/69kV Transformer	50	Miami - Afton 161kV	0	See Previous	See Previous

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
05SP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
05SP	SWPA-AEPW	Beaver - Eureka Springs 161kV	274	Flint Creek - Sub 383 - Monett 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
05SP	AEPW-OKGE	Bonanza - Bonanza Tap 161kV	177	Ft Smith - ANO 500kV	0	See Previous	See Previous
05SP	AECI-AECI	Bristow 138/69kV Transformer ckt 1	56	Bristow 138/69kV Transformer Ckt 2	0	Solution Undetermined	Not Available
05SP	AECI-AECI	Bristow 138/69kV Transformer ckt 2	56	Bristow 138/69kV Transformer Ckt 1	0	Solution Undetermined	Not Available
05SP	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Riverside Station Auto 138/345kV Transformer	0	Replace wavetrap	\$ 30,000
05SP	SWPA-AEPW	Broken Bow - Craig Junction 138kV	107	Bbdamp4 - Mountain River 138kV	0	See Previous	See Previous
05SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Newpo - 5SWIFTN 161kV	3	See Previous	See Previous
05SP	AEPW-AEPW	Carson South 138/13.8kV Transformer	33	Carson Tap - Union Avenue 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	See Previous	See Previous
05SP	SWPA-EES	Carthage - Jasper 69kV	47	2BOWRML - Reed Springs 69kV	31	See Previous	See Previous
05SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Sub 349 - Asbury - Sub 421 - Purcell Southwest 161kV	9	See Previous	See Previous
05SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Chamber Springs - Farmington Aecc 161kV	335	Chamber Springs - Tontitown 161kV	0	Replace Farmington switch	\$ 60,000
05SP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	244	Flint Creek - Tontitown 161kV	0	Rebuild 12 miles with 2156ACSR	\$ 7,200,000
05SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Cherokee Rec - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	See Previous	See Previous
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	See Previous	See Previous
05SP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
05SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Elm Springs Rec - Tontitown 161kV	306	Dyess - Tontitown 161kV	0	Replace Switch and Elm Springs Strain Bus	\$ 100,000
05SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Tontitown 161kV	0	Replace switch and jumpers	\$ 45,000
05SP	OKGE-OKGE	Ft Smith 161/345kV Transformer	493	Ft Smith 345/500kV Transformer	0	See Previous	See Previous
05SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	See Previous	See Previous
05SP	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	See Previous	See Previous
05SP	SWPA-SWPA	Gore - Muskogee Tap 161kV	206	Muskogee - Ft Smith 345kV	0	Reconductor 16 miles of 477 ACSR line with 795 ACSR	\$ 4,000,000

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05SP	AEPW-AEPW	Hallsville - Longview Heights 69kV	48	Marshall - Marshall Auto 69kV	0	Rebuild 7.07 miles of 4/0 ACSR with 795 ACSR	\$ 3,000,000
05SP	AEPW-AEPW	Jacksonville (Swe-Rc-Etec) - Overton 138kV	235	Crockett - Tenaska Rusk County 345kV	0	Reset relays at Jacksonville & Overton	\$ 15,000
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Mockingbird Hill Sw Station - Southwest Lawrence 115kV	0	May be relieved due to Westar Transmission Operating Directive 1210	Not Available
05SP	AEPW-AEPW	Lieberman - IPC Jefferson 138kV	136	Longwood - Wilkes 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Longwood - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Marshall - North Marshall 69kV	72	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Replace 350 CU bus & jumpers @ North Marshall.	\$ 23,300
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	See Previous	See Previous
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	See Previous	See Previous
05SP	OKGE-WFEC	Midwest Tap - Franklin Sw 138kV	215	Midwest Tap - Hollywood 138kV	0	Replace 600A metering CTs with 1200A	\$ 55,000
05SP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	North Marshall - Woodlawn 69kV	51	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Replace 3/0 CU jumpers @ North Marshall	\$ 15,000
05SP	OKGE-OKGE	Osage - Continental Blacks 69kV	111	Kildare - White Eagle 138kV	0	Rebuild & Reconductor 0.57 Miles, replace Wavetrap and increase CT ratio	\$ 255,000
05SP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Raines - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Rock Hill - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
05SP	SWPA-SWPA	Sallisaw - Gore 161kV	189	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
05SP	WERE-WERE	Southwest Lawrence - Wakarusa Junction Sw Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	Solution Undetermined	Not Available
05SP	SWPA-SPRM	Springfield - Brookline 161kV	323	Junction - Brookline 161kV	0	Solution Undetermined	Not Available
05SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	See Previous	See Previous
05SP	GRRD-OKGE	Tahlequah - Highway 59 161kV	167	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
05SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 1	78	Tahlequah 69/161kV Transformer Ckt 2	0	Solution Undetermined	Not Available
05SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 2	78	Tahlequah 69/161kV Transformer Ckt 1	0	Solution Undetermined	Not Available
05SP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	See Previous	See Previous
05SP	SWPA-OKGE	Van Buren - VBI 161kV	335	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
05SP	OKGE-OKGE	VBI - Highway 59 161kV	167	Muskogee - Ft Smith 345kV	0	Replace 600A Switch 131 in VBI Sub with 1200A and rebuild 1.12 mile with 477 ACSR.	\$ 400,000
05WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
05WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Sub 292 - Tipton Ford - Sub 383 - Monett 161kV	44	See Previous	See Previous
05WP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
05WP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	275	Chamber Springs - Farmington Aecc 161kV	0	See Previous	See Previous
05WP	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	84	See Previous	See Previous

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05WP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	96	See Previous	See Previous
05WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
05WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
05WP	AEPW-AEPW	South Shreveport - Wallace Lake 138kV	210	Dolet Hills 345/230kV Transformer	0	See Previous	See Previous
05WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	WERE-WERE	166Th Street - Jarbalo Junction Sw Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
08SP	GRRD-GRRD	412Sub - Kansas Tap 161kV	338	Flint Creek - Grda1 345kV	0	Reconductor 9.7 miles with 1590MCM ACSR	\$ 1,488,000
08SP	GRRD-GRRD	Afton 161/69kV Transformer	50	Miami - Afton 161kV	71	See Previous	See Previous
08SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Arsenal Hill - Raines 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Rebuild 5.32 miles 2-266MCM ACSR with 1590MCM ACSR	\$ 3,731,000
08SP	WERE-WERE	Auburn Road - Indian Hills 115kV	223	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
08SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
08SP	SWPA-AEPW	Beaver - Eureka Springs 161kV	274	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
08SP	AEPW-OKGE	Bonanza - Bonanza Tap 161kV	177	Ft Smith - ANO 500kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Bonanza - Hackett Aecc 161kV	177	Ft Smith - ANO 500kV	0	Solution Undetermined	Not Available
08SP	AECI-AECI	Bristow 138/69kV Transformer ckt 1	56	Bristow 138/69kV Transformer Ckt 2	0	See Previous	See Previous
08SP	AECI-AECI	Bristow 138/69kV Transformer ckt 2	56	Bristow 138/69kV Transformer Ckt 1	0	See Previous	See Previous
08SP	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Riverside Station Auto 138/345kV Transformer	0	See Previous	See Previous
08SP	AEPW-AEPW	Broken Arrow 81St - Broken Arrow 101St North 138kV	235	Riverside Station Auto 138/345kV Transformer	0	Rebuild 2.05 miles of 795 ACSR with 1590 ACSR	\$ 1,100,000
08SP	AEPW-AEPW	Broken Arrow North - North Tap - Oneta 138kV	235	Riverside Station Auto 138/345kV Transformer	52	Solution Undetermined	Not Available
08SP	AEPW-AEPW	Broken Arrow North - South Tap - Lynn Lane Tap 138kV	235	Tulsa North - Northeast Station 345kV	0	Rebuild 4.63 miles of 795 ACSR with 1590 ACSR	\$ 2,600,000
08SP	AEPW-AEPW	Broken Arrow North - South Tap - Oneta 138kV	235	Tulsa North - Northeast Station 345kV	0	Rebuild 4.31 miles of 795 ACSR with 1590 ACSR.	\$ 2,370,500
08SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Sub 439 - Stateline 161/18kV Transformer	11	See Previous	See Previous
08SP	AEPW-AEPW	Carson South 138/13.8kV Transformer	33	Carson Tap - Union Avenue 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	See Previous	See Previous
08SP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	See Previous	See Previous
08SP	SWPA-EES	Carthage - Jasper 69kV	47	Sub 124 - Aurora H.T. - Sub 383 - Monett 161kV	9	See Previous	See Previous
08SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Neosho 345/791kV Transformer Ckt 0	8	See Previous	See Previous
08SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	244	Chamber Springs - Farmington Aecc 161kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Chamber Springs 161/345kV Transformer	660	Flint Creek - Grda1 345kV	0	Install 2nd 345/161 kV Auto-transformer	\$ 4,000,000

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
08SP	OKGE-OKGE	Cherokee PI Tap - Continental Blacks 69kV	111	Kildare - White Eagle 138kV	0	Reconstruct and replace 1.54 miles of 477AS33 conductor with 795AS33	\$ 462,000
08SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Cherokee Rec - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	OKGE-OKGE	Chilocco - Chikaskia Tap 69kV	57	Kildare - White Eagle 138kV	0	Reconstruct and replace 11.34 miles of 00X7 copper line with 477AS33	\$ 2,835,000
08SP	WERE-WERE	Chisholm - Evans Energy Center North 138kV	382	Evans Energy Center South - Lakeridge 138kV	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Humbold - S1280 5 161kV	31	Replace 82 structures	\$ 742,000
08SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	See Previous	See Previous
08SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	See Previous	See Previous
08SP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	0	See Previous	See Previous
08SP	WERE-WERE	County Line - Rock Creek 69kV	41	Hoyt - Stranger Creek 345kV	0	Solution Undetermined	Not Available
08SP	KACP-KACP	Craig - College 161kV	335	Stilwell - Antioch 161kV	0	Solution Undetermined	Not Available
08SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
08SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - East Centerton 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	East Rogers - Avoca 161kV	244	Flint Creek - Sub 383 - Monett 345kV	79	Solution Undetermined	Not Available
08SP	AEPW-AEPW	Elm Springs Rec - Tontitown 161kV	306	Chamber Springs - Farmington Aecc 161kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - East Centerton 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Clarksville 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Forbing Tap - South Shreveport 69kV	95	Broadmoor - Fort Humbug 69kV	0	Solution Undetermined	Not Available
08SP	WFEC-WFEC	Franklin Sw 69/138kV Transformer	70	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
08SP	OKGE-OKGE	Ft Smith 161/345kV Transformer	493	Ft Smith 345/500kV Transformer	0	See Previous	See Previous
08SP	AEPW-EES	Fulton - Patmos 115kV	174	Crockett - Grimes 345kV	0	Using 1590MCM ACSR, reconductor 7.1 miles	\$ 2,300,000
08SP	WERE-WERE	Gill Energy Center East - Interstate 138kV	210	Evans Energy Center South - Lakeridge 138kV	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	See Previous	See Previous
08SP	WERE-WERE	Gill Energy Center West - Haysville Junction 69kV	80	Canal 138/211kV Transformer Ckt 0	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Gill Energy Center West - Haysville Junction 69kV	80	Canal 69/211kV Transformer Ckt 0	0	See Previous	See Previous
08SP	SWPA-SWPA	Gore - Muskogee Tap 161kV	206	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Hallsville - Longview Heights 69kV	48	Marshall - Marshall Auto 69kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Jacksonville (Swe-Rc-Etec) - Overton 138kV	235	Crockett - Tenaska Rusk County 345kV	0	See Previous	See Previous
08SP	GRRD-GRRD	Kerr - 412Sub 161kV	338	Flint Creek - Grda1 345kV	0	Reconductor 12.5 miles with 1590MCM ACSR.	\$ 1,918,000
08SP	AEPW-AEPW	Knox Lee - Oak Hill #2 138kV	210	Knox Lee - Monroe Corners Rec 138kV	0	Replace wavetrap @ Knoxlee	\$ 20,000
08SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Bismark Junction Sw Sta - Farmer's Consumer Co-Op 115kV	0	See Previous	See Previous

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
08SP	AEPW-AEPW	Lieberman - IPC Jefferson 138kV	136	Longwood - Wilkes 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Longwood - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Longwood - Oak Pan-Harr Rec 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	Rebuild 1.8 miles of 666 ACSR with 1590 ACSR	\$ 750,000
08SP	AEPW-AEPW	Marshall - North Marshall 69kV	72	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	See Previous	See Previous
08SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	See Previous	See Previous
08SP	AEPW-OKGE	Midland - Howe Int 69kV	48	Bonanza - Bonanza Tap 161kV	0	Solution Undetermined	Not Available
08SP	OKGE-WFEC	Midwest Tap - Franklin Sw 138kV	215	Weleetka - Pharoah 138kV	0	See Previous	See Previous
08SP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	OKGE-WERE	Newkirk - Creswell 138kV	168	Woodring - Wichita 345kV	0	May be relieved due to updated line ratings	Not Available
08SP	WERE-WERE	North American Philips Junction (North) - Smoky Hill 115kV ckt 1	68	N.A. Philips Junction (North) - Smoky Hill 115kV Ckt 2	0	Solution Undetermined	Not Available
08SP	WERE-WERE	North American Philips Junction (South) - West Mchpherson 115kV	68	East Mchpherson - Summit 230kV	0	May be relieved due to Westar Transmission Operating Directive 613	Not Available
08SP	AEPW-AEPW	North Bartlesville - Bartlesville Southeast 138kV	210	Delaware - Northeast Station 345kV	36	Replace Bartlesville Southeast Wavetrap	\$ 30,000
08SP	AEPW-AEPW	North Marshall - Woodlawn 69kV	51	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	GRRD-GRRD	Okay 161/69kV Transformer	112	Wagoner 69/161kV Transformer	19	Replace with 84MVA transformer.	\$ 1,340,000
08SP	OKGE-OKGE	Osage - Continental Blacks 69kV	111	Kildare - White Eagle 138kV	0	See Previous	See Previous
08SP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	GRRD-GRRD	Pensacola - Gray Tap 69kV	47	Kansas Tap - Kansas 161kV	0	Rebuild 4/0 to 795MCM	\$ 730,000
08SP	AEPW-AEPW	Raines - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Rock Hill - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	See Previous
08SP	SWPA-SWPA	Sallisaw - Gore 161kV	189	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	SWPA-AECI	Sallisaw - Liberty Tap 161kV	189	Muskogee - Ft Smith 345kV	29	Solution Undetermined	Not Available
08SP	OKGE-OKGE	Seminole - Park Lane 138kV	287	Seminole - Vanoss 138kV	0	Replace 1200Ct and 1600 Amp switch with 2000Amp equipment	\$ 100,000
08SP	AEPW-AEPW	South Fayetteville - Farmington Aecc 161kV	313	Chamber Springs - Tontitown 161kV	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Southwest Lawrence - Wakarusa Junction Sw Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	See Previous	See Previous
08SP	SWPA-SPRM	Springfield - Brookline 161kV	323	Junction - Brookline 161kV	0	See Previous	See Previous
08SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	See Previous	See Previous
08SP	OKGE-OKGE	Stonewall - Remngton Park 138kV	191	Memorial - Tennessee Tap 138kV	0	Solution Undetermined	Not Available
08SP	EMDE-AECI	Sub 446 - Chesapeake - 2MTVRN 69kV	36	Sub 124 - Aurora H.T. - Sub 355 - Aurora West 69kV	0	Solution Undetermined	Not Available

Table 2 - continued – SPP facility upgrades required based on the actual queue position with higher priority requests included

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
08SP	GRRD-OKGE	Tahlequah - Highway 59 161kV	167	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 1	78	Tahlequah 69/161kV Transformer Ckt 2	0	See Previous	See Previous
08SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 2	78	Tahlequah 69/161kV Transformer Ckt 1	0	See Previous	See Previous
08SP	WERE-WERE	Tecumseh Energy Center - Tecumseh Hill 115kV	236	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
08SP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	See Previous	See Previous
08SP	SWPA-OKGE	Van Buren - VBI 161kV	335	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	OKGE-OKGE	VBI - Highway 59 161kV	167	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08SP	SWPA-WFEC	Weleetka - Pharoah 138kV	191	Franklin - Franklin Sw 138kV	0	Replace wavetrap at Weleetka and replace jumpers.	\$ 75,000
08SP	SWPA-AEPW	Weleetka - Weleetka 138kV	210	Franklin - Franklin Sw 138kV	0	Solution Undetermined	Not Available
08WP	WERE-WERE	166Th Street - Jarbalo Junction Sw Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
08WP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
08WP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	See Previous	See Previous
08WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Ft Smith - ANO 500kV	10	See Previous	See Previous
08WP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	275	Chamber Springs - Farmington Aecc 161kV	0	See Previous	See Previous
08WP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
08WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
08WP	AEPW-EES	Fulton - Patmos 115kV	197	Crockett - Grimes 345kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Jacksonville (Swe-Rc-Etec) - Overton 138kV	265	Crockett - Tenaska Rusk County 345kV	0	See Previous	See Previous
08WP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	121	Marshall 138/69kV Transformer Ckt 2	98	See Previous	See Previous
08WP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	121	Marshall 138/69kV Transformer Ckt 1	98	See Previous	See Previous
08WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	AEPW-AEPW	North Bartlesville - Bartlesville Southeast 138kV	210	Delaware - Northeast Station 345kV	16	See Previous	See Previous
08WP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	See Previous
08WP	AEPW-AEPW	South Shreveport - Wallace Lake 138kV	210	Dolet Hills 345/230kV Transformer	0	See Previous	See Previous
08WP	WERE-WERE	Southwest Lawrence - Wakarusa Junction Sw Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	See Previous	See Previous
08WP	SWPA-SPRM	Springfield - Clay 161kV	167	James River - Mentor 161kV	52	Replace disconnect switches at Springfield	\$ 200,000
08WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	KACP-KACP	West Gardner 345/161kV Transformer ckt 11	440	West Gardner - Craig 345kV Ckt 1	41	Solution Undetermined	Not Available
Total (Excludes Costs Not Available)							\$ 91,885,270