



# **SPP** *Southwest Power Pool*

***System Impact Study SPP-2001-196  
For Transmission Service  
Requested By  
Arkansas Electric Marketing, LLC***

***From CSWS To AECI***

***For a Reserved Amount Of 400MW  
From 6/1/03  
To 6/1/06***

***SPP Coordinated Planning***

## **System Impact Study**

Arkansas Electric Marketing, LLC has requested a system impact study for long-term Firm Point-to-Point transmission service from CSWS to AECI. The period of the transaction is from 6/1/03 to 6/1/06. The request is for OASIS reservations 256574 - 256577 for a total amount of 400 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 400 MW of service requested.

The CSWS to AECI 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 400 MW CSWS to AECI transfer.

SPP used six seasonal models to study the CSWS to AECI 400 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, and 2005/06 Winter Peak were used to study the impact of the 400 MW transfer on the SPP system during the requested service period of 6/1/2003 to 6/1/2006. 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 AECI 400 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 400 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 AECI 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 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	AEPW-AEPW	Alumax Tap - Bann 138kV	261	Nw Texarkana-Bann T - NW Texarkana 138kV	0	Replace six (6) 138 kV switches. Rebuild 0.67 miles of 1024 ACAR with 2156 ACSR. Replace wavetrap jumpers and breaker 3300 @ Bann.	\$ 630,00
03SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - NW Texarkana 138kV	0	Replace Switches Alumax Tap	\$ 30,00
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	AEPW-AEPW	Big Sandy - Perdue 69kV	85	Perdue - Lake Hawkins 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	151	Solution Undetermined	Not Available
03SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,00
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	Sub 124 - Aurora H.T. - Sub 383 - Monett 161kV	0	Third Party Facility	\$
03SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 1	84	Carthage 161/69kV Transformer Ckt 2	0	Third Party Facility	\$
03SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 2	84	Carthage 161/69kV Transformer Ckt 1	90	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	\$ 981,00
03SP	AEPW-AEPW	Cherokee Rec - Tatum 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	253	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR	\$ 1,641,00
03SP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Clifton - Greenleaf 115kV	0	Replace 82 structures	\$ 742,00
03SP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	165	Solution Undetermined	Not Available
03SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	25	Solution Undetermined	Not Available
03SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	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	\$ 150,00

**Table 1 - continued** – SPP facility upgrades that would be required if the CSWS to AECI 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	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.7	Doniphan 161/69kV Transformer Ckt 2	0	Solution Undetermined	Not Available
03SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 1	493	Draper Lake 138/345kV Transformer Ckt 2	33	May be relieved due to OKGE Operating Guide	Not Available
03SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 2	493	Draper Lake 138/345kV Transformer Ckt 1	33	May be relieved due to OKGE Operating Guide	\$
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 Centeron - Gentry Rec 161kV	353	Flint Creek - Elm Springs Rec 161kV	0	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR	\$ 8,000,00
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.	\$ 400,00
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	\$ 22,00
03SP	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	Replace disconnect switches at Gill 69 kV (800 A.), Replace line switch at Oatville 69 kV (800 A.)	\$ 45,00
03SP	AEPW-AEPW	Greggton - Lake Lamond 69kV	107	Diana - Perdue 138kV	0	Solution Undetermined	Not Available
03SP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	AEPW-AEPW	Longwood - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	306	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR and replace jumpers & Bus Riser jumpers	\$ 1,577,00
03SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	Replace 755 ACAR Strain Bus	\$ 25,00
03SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	Replace 755 ACAR Strain Bus	\$ 25,00
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	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	Replace Norfolk Transformer by SWPA In-Service Date 6/1/2005	Not Available
03SP	AEPW-AEPW	Pittsburg - Ferndale Lake Tap 69kV	79	Adora Rec - Adora T 69kV	0	Reset CTs @ Pittsburg	\$ 10,00
03SP	MIDW-WEPL	Seward 69/115kV Transformer	44	Heizer 115/230kV Transformer	0	Solution Undetermined	Not Available
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	\$ 6,945,00
03SP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	0	Solution Undetermined	Not Available
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	\$
03FA	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	\$
03FA	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	\$
03FA	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	See Previous	\$

**Table 1 - continued** – SPP facility upgrades that would be required if the CSWS to AECI 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
03FA	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	latan - St Joe 345kV	0	See Previous	\$
03FA	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
03FA	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	169	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	\$
03FA	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	\$
03FA	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy North - Evans Energy South 138kV	0	Solution Undetermined	Not Available
03FA	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
03FA	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	371	See Previous	\$
03FA	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
03WP	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	\$
03WP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	0	See Previous	\$
03WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$
03WP	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$
03WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Carthage - Jasper 69kV	4	See Previous	\$
03WP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	latan - St Joe 345kV	0	See Previous	\$
03WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
03WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$
03WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	\$
03WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	\$
03WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy North - Evans Energy Center 138kV	0	See Previous	\$
03WP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
03WP	WFEC-WFEC	Little Axe - Noble 69kV	26	Paoli 69/138kV Transformer	0	Solution Undetermined	Not Available
03WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	107	See Previous	\$
03WP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	378	See Previous	\$
03WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
04G	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	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	\$
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	\$
04G	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	274	See Previous	\$
04G	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	latan - St Joe 345kV	0	See Previous	\$
04G	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$

**Table 1 - continued** – SPP facility upgrades that would be required if the CSWS to AECI 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
04G	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	\$
04G	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$
04G	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
04G	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
04G	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05SP	WERE-WERE	166Th Street - Jarbalo Junction Sw Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	\$
05SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	NW Texarkana-Bann T - NW Texarkana 138kV	340	See Previous	\$
05SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	NW Texarkana-Bann T - NW Texarkana 138kV	0	See Previous	\$
05SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$
05SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	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	Broken Arrow North - North Tap - Oneta 138kV	0	Replace wavetrap	\$ 30,00
05SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	See Previous	\$
05SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	See Previous	\$
05SP	SWPA-EES	Carthage - Jasper 69kV	47	Milo - Clark 69kV	0	Third Party Facility	\$
05SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Sub 124 - Aurora H.T. - Sub 383 - Monett 161kV	0	See Previous	\$
05SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 1	84	Carthage 161/69kV Transformer Ckt 2	0	See Previous	\$
05SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 2	84	Carthage 161/69kV Transformer Ckt 1	0	See Previous	\$
05SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	\$
05SP	AEPW-AEPW	Chamber Springs - Farmington Aecc 161kV	335	Chamber Springs - Tontitown 161kV	0	Replace Farmington switch	\$ 60,00
05SP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	244	Flint Creek - Tontitown 161kV	0	Rebuild 12 miles with 2156ACSR	\$ 7,200,00
05SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	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	\$
05SP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Clifton - Greenleaf 115kV	0	See Previous	\$
05SP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	See Previous	\$
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	See Previous	\$
05SP	SPRM-AECI	Clay - Logan 161kV	185	Multiple Outage Contingency, Franks- Huben 345kV, Huben - Morgan 345kV	0	Replace transmission line structures to allow operation at 100C	\$ 250,00
05SP	AEPW-WFEC	Cornville - Corn Tap 138kV	105	Southwest Station - Anadarko 138kV	0	Solution Undetermined	Not Available
05SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	0	See Previous	\$

**Table 1 - continued** – SPP facility upgrades that would be required if the CSWS to AECI 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-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$
05SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	\$
05SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 1	493	Draper Lake 138/345kV Transformer Ckt 2	0	See Previous	\$
05SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 2	493	Draper Lake 138/345kV Transformer Ckt 1	0	See Previous	\$
05SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	See Previous	\$
05SP	AEPW-AEPW	Elm Springs Rec - Tontitown 161kV	306	Dyess - Tontitown 161kV	0	Replace Switch and Elm Springs Strain Bus	\$ 100,00
05SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	See Previous	\$
05SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Clarksville 345kV	0	Replace switch and jumpers	\$ 45,00
05SP	WERE-WERE	Gill Energy Center East - Macarthur 69kV	68	Gill Energy Center East - Oatville 69kV	0	See Previous	\$
05SP	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	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	\$ 3,000,00
05SP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Mockingbird Hill Sw 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	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.	\$ 23,30
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	See Previous	\$
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	See Previous	\$
05SP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05SP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	See Previous	\$
05SP	AEPW-AEPW	Northwest Henderson - Poynter 69kV	72	Evenside - Northwest Henderson 69kV	0	Solution Undetermined	Not Available
05SP	OKGE-OKGE	Pecan Creek 345/161kV Transformer	369	Muskogee - Ft Smith 345kV	185	Add 2nd 345/161 kV 369MVA transformer.	\$ 3,000,00
05SP	AEPW-AEPW	Raines - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	212	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR	\$ 2,000,00
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	\$ 342,97
05SP	MIDW-WEPL	Seward 69/115kV Transformer	44	Heizer 115/230kV Transformer	0	See Previous	\$
05SP	WERE-WERE	SW Lawrence - Wakarusa Junction Sw Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	371	Solution Undetermined	Not Available
05SP	AEPW-WFEC	Southwest Station - Anadarko 138kV	203	Fort Cobb - Southwest Station 138kV	0	Replace bus, jumpers, switches, supports and foundations at Anadarko Switch Station	\$ 450,00
05SP	KACP-KACP	Stilwell - Lacygne 345kV	1251	West Gardner - Lacygne 345kV	0	See Previous	\$

**Table 1 - continued** – SPP facility upgrades that would be required if the CSWS to AECI 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	EMDE-EMDE	Oronogo Jct. - Joplin Oakland North 161kV	214	Tipton Ford - Joplin Southwest 161kV	256	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$ 800,000
05SP	GRRD-GRRD	Tahlequah 161/69kV Transformer ckt 1	78	Tahlequah 69/161kV Transformer Ckt 2	122	Solution Undetermined	Not Available
05SP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	0	See Previous	\$
05SP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	See Previous	\$
05WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffrey Energy Center 345kV	0	See Previous	\$
05WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Carthage - Jasper 69kV	0	See Previous	\$
05WP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	\$
05WP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Concordia 115/230kV Transformer	0	See Previous	\$
05WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05WP	SPRM-AECI	Clay - Logan 161kV	232	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	98	See Previous	\$
05WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$
05WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy North - Evans Energy South 138kV	0	See Previous	\$
05WP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
05WP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	See Previous	\$
05WP	SWPA-SPRM	Springfield - Clay 161kV	167	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	90	Replace disconnect switches at Springfield	\$ 200,000
05WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$
<b>Total (Excludes Costs Not Available)</b>							<b>\$ 38,874,27</b>



**Table 2** – SPP facility upgrades required based on the actual queue position of the CSWS to AECI transfer 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	AEPW-AEPW	Alumax Tap - Bann 138kV	261	NW Texarkana-Bann T - NW Texarkana 138kV	0	Replace six (6) 138 kV switches. Rebuild 0.67 miles of 1024 ACAR with 2156 ACSR. Replace wavetrap jumpers and breaker 3300 @ Bann	\$ 630,000
03SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	NW Texarkana-Bann T - NW 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	AEPW-AEPW	Big Sandy - Perdue 69kV	85	Perdue - Lake Hawkins 138kV	0	Solution Undetermined	Not Available
03SP	AEPW-AEPW	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	9	Solution Undetermined	Not Available
03SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,000
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	Milo - Clark 69kV	0	Third Party Facility	\$ -
03SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Beaver - Eureka Springs 161kV	0	Third Party Facility	\$ -
03SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 1	84	Carthage 161/69kV Transformer Ckt 2	0	Third Party Facility	\$ -
03SP	SWPA-SWPA	Carthage 161/69kV Transformer ckt 2	84	Carthage 161/69kV Transformer Ckt 1	0	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 3.25 miles of 666 ACSR with 1272 ACSR	\$ 1,641,000
03SP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Clifton - Greenleaf 115kV	0	Replace 82 structures	\$ 742,000
03SP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
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	225	Replace wave trap to increase rating to conductor rating (2000 A)	\$ 20,000
03SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy - Tecumseh Hill 115kV	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
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	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 1	493	Draper Lake 138/345kV Transformer Ckt 2	0	May be relieved due to OKGE Operating Guide	Not Available
03SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 2	493	Draper Lake 138/345kV Transformer Ckt 1	0	May be relieved due to OKGE Operating Guide	\$ -
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 bus and jumpers @ 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	AEPW-AEPW	Greggton - Lake Lamond 69kV	107	Diana - Perdue 138kV	0	Solution Undetermined	Not Available
03SP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	May be relieved due to Westar Transmission Operating Directive 803	Not Available
03SP	AEPW-AEPW	Lieberman - IPC Jefferson 138kV	136	Longwood - Wilkes 345kV	3	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 - North Marshall 69kV	72	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	27	Replace 350 CU bus & jumpers @ North Marshall.	\$ 23,300
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	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	Replace Transformer by SWPA. In-Service 6/1/2005	Not Available
03SP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	383	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	252	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

**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	MIDW-WEPL	Seward 69/115kV Transformer	44	Heizer 115/230kV Transformer	0	Solution Undetermined	Not Available
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	Oronogo Jct. - Joplin Oakland North 161kV	214	Tipton Ford - Joplin Southwest 161kV	31	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR	\$ 800,000
03SP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy - Tecumseh Hill 115kV	0	Solution Undetermined	Not Available
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	\$ -
03FA	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	\$ -
03FA	WERE-WERE	Athens Sw Station - Coffey County No. 4 69kV	45	Wolf Creek - Lacygne 345kV	266	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	\$ -
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$ -
03FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	\$ -
03FA	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	See Previous	\$ -
03FA	SWPA-EMDE	Carthage - Sub 109 - Atlas Jct. 161kV	167	Tipton Ford - Joplin Southwest 161kV	331	Solution Undetermined	Not Available
03FA	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	latan - St Joe 345kV	0	See Previous	\$ -
03FA	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
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	\$ -
03FA	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	\$ -
03FA	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Nth - Evans Energy Sth 138kV	0	Solution Undetermined	Not Available
03FA	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
03FA	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
03FA	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
03WP	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	\$ -
03WP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	0	See Previous	\$ -
03WP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$ -
03WP	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$ -
03WP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	44	See Previous	\$ -
03WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Carthage - Jasper 69kV	0	See Previous	\$ -
03WP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Concordia 115/230kV Transformer	0	See Previous	\$ -
03WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	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
03WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Iatan - St Joe 345kV	0	See Previous	\$ -
03WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$ -
03WP	AEPW-AEPW	Denver East 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	252	Solution Undetermined	Not Available
03WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	\$ -
03WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.7	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	\$ -
03WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Nth - Evans Energy Sth 138kV	0	See Previous	\$ -
03WP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
03WP	WFEC-WFEC	Little Axe - Noble 69kV	26	Paoli 69/138kV Transformer	0	Solution Undetermined	Not Available
03WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
03WP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	See Previous	\$ -
03WP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	155	See Previous	\$ -
03WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
04G	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw 69/138kV Transformer	0	See Previous	\$ -
04G	WERE-WERE	Athens Sw Station - Coffey County No. 4 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	\$ -
04G	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$ -
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	\$ -
04G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	\$ -
04G	SWPA-EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	See Previous	\$ -
04G	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	East Manhattan - Concordia 230kV	0	See Previous	\$ -
04G	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
04G	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	\$ -
04G	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$ -
04G	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
04G	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
04G	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	146	See Previous	\$ -
04G	AEPW-AEPW	South Shreveport - Wallace Lake 138kV	210	Dolet Hills 345/230kV Transformer	80	Dolet Hills Operating Guide	\$ -
04G	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05SP	WERE-WERE	166Th Street - Jarbalo Junction Sw Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	\$ -
05SP	GRRD-GRRD	Afton 161/69kV Transformer	50	Miami - Afton 161kV	0	Replace 50 MVA Transformer with 84 MVA unit	\$ 833,000
05SP	AEPW-AEPW	Alumax Tap - Bann 138kV	261	NW Texarkana-Bann T - NW Texarkana 138kV	164	See Previous	\$ -
05SP	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	NW Texarkana-Bann T - NW Texarkana 138kV	0	See Previous	\$ -
05SP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	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	Blue Circle - Catoosa 69kV	72	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	Solution Undetermined	Not Available
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	Broken Arrow North - North Tap - Oneta 138kV	0	Replace wavetrap	\$ 30,000
05SP	SWPA -EES	Bull Shoals - Midway 161kV	162	Bull Shoals - Buford Tap 161kV	0	See Previous	\$ -
05SP	AEPW-AEPW	Carson-Center 138/13.8kV Transformer	33	Carson South - Tulsa Power Station 138kV	0	See Previous	\$ -
05SP	SWPA -EES	Carthage - Jasper 69kV	47	Milo - Clark 69kV	0	See Previous	\$ -
05SP	SWPA -EES	Carthage - Reed Springs 69kV	36	Beaver - Eureka Springs 161kV	0	See Previous	\$ -
05SP	SWPA -SWPA	Carthage 161/69kV Transformer ckt 1	84	Carthage 161/69kV Transformer Ckt 2	0	See Previous	\$ -
05SP	SWPA -SWPA	Carthage 161/69kV Transformer ckt 2	84	Carthage 161/69kV Transformer Ckt 1	0	See Previous	\$ -
05SP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	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	Muskogee - Ft Smith 345kV	0	Rebuild 12 miles with 2156ACSR	\$ 7,200,000
05SP	AEPW-AEPW	Cherokee Rec - Knox Lee 138kV	209	Georgia-Pacific - Logansport 138kV	0	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	\$ -
05SP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Clifton - Greenleaf 115kV	0	See Previous	\$ -
05SP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 1	84	Claremore 161/69kV Transformer Ckt 2	0	See Previous	\$ -
05SP	GRRD-GRRD	Claremore 161/69kV Transformer ckt 2	84	Claremore 161/69kV Transformer Ckt 1	0	See Previous	\$ -
05SP	SPRM-AECI	Clay - Logan 161kV	185	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	0	Replace transmission line structures to allow operation at 100C	\$ 250,000
05SP	AEPW-WERE	Coffeyville Tap - Dearing 138kV	210	Delaware - Neosho 345kV	240	See Previous	\$ -
05SP	AEPW-WFEC	Cornville - Corn Tap 138kV	105	Southwest Station - Anadarko 138kV	0	Solution Undetermined	Not Available
05SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy - Tecumseh Hill 115kV	0	See Previous	\$ -
05SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$ -
05SP	AEPW-AEPW	Denver East 138/13.8kV Transformer	33	Denver-West 138/13.8kV Transformer	339	See Previous	\$ -
05SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	\$ -
05SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 1	493	Draper Lake 138/345kV Transformer Ckt 2	0	See Previous	\$ -
05SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 2	493	Draper Lake 138/345kV Transformer Ckt 1	0	See Previous	\$ -
05SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Flint Creek - Tontitown 161kV	0	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	\$ -
05SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Clarksville 345kV	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	\$ -

**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	WERE-WERE	Gill Energy Center East - Oatville 69kV	72	Gill Energy Center East - Macarthur 69kV	0	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	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Mockingbird Hill Sw Sta - SW 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	\$ -
05SP	WFEC-WFEC	Little Axe - Noble 69kV	26	Paoli 69/138kV Transformer	0	See Previous	\$ -
05SP	AEPW-AEPW	Longwood - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	\$ -
05SP	AEPW-AEPW	Marshall - North Marshall 69kV	72	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	See Previous	\$ -
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	107	Marshall 138/69kV Transformer Ckt 2	0	See Previous	\$ -
05SP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	107	Marshall 138/69kV Transformer Ckt 1	0	See Previous	\$ -
05SP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05SP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	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	AEPW-AEPW	Northwest Henderson - Poynter 69kV	72	Evenside - Northwest Henderson 69kV	0	Solution Undetermined	Not Available
05SP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	0	See Previous	\$ -
05SP	AEPW-AEPW	Raines - Noram 138kV	234	Multiple Outage Contingency , Southwest Shreveport - Longwood 345kV, Southwest Shreveport to Diana 345kV	0	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	\$ -
05SP	AEPW-AEPW	Sabine Mining Co. T - Southeast Marshall 138kV	287	Longwood - Wilkes 345kV	8	Solution Undetermined	Not Available
05SP	MIDW-WEPL	Seward 69/115kV Transformer	44	Heizer 115/230kV Transformer	0	See Previous	\$ -
05SP	WERE-WERE	SW Lawrence - Wakarusa Jct Sw Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	Solution Undetermined	Not Available
05SP	AEPW-WFEC	Southwest Station - Anadarko 138kV	203	Midwest Tap - Franklin Sw 138kV	0	Replace bus, jumpers, switches, supports and foundations at Anadarko Switch Station	\$ 450,000
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	\$ -
05SP	EMDE-EMDE	Oronogo Jct. - Joplin Oakland North 161kV	214	Tipton Ford - Joplin Southwest 161kV	0	See Previous	\$ -
05SP	GRRD-GRRD	Tahlequah 69/161kV Transformer ckt 1	78	Tahlequah 69/161kV Transformer Ckt 2	63	Solution Undetermined	Not Available
05SP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy - Tecumseh Hill 115kV	0	See Previous	\$ -
05SP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	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	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	See Previous	\$ -
05WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffrey Energy Center 345kV	0	See Previous	\$ -
05WP	SWPA-EES	Carthage - Reed Springs 69kV	43	Carthage - Jasper 69kV	0	See Previous	\$ -
05WP	AEPW-AEPW	Catoosa 138/69kV Transformer	55	Lynn Lane West Tap - Lynn Lane Tap 138kV	0	See Previous	\$ -
05WP	AEPW-AEPW	Chamber Springs - Tontitown 161kV	275	Chamber Springs - Farmington Aecc 161kV	155	See Previous	\$ -
05WP	WERE-WERE	Circleville - Hoyt Hti Sw Junction 115kV	97	Concordia 115/230kV Transformer	0	See Previous	\$ -
05WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05WP	SPRM-AECI	Clay - Logan 161kV	232	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	0	See Previous	\$ -
05WP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Tulsa North - 46Th Street East 138kV	0	See Previous	\$ -
05WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	270	See Previous	\$ -
05WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Nth - Evans Energy Sth 138kV	0	See Previous	\$ -
05WP	WERE-WERE	Fort Jct Sw Sta - West Jct City 115kV ckt 1	68	Fort Jct Sw Sta - West Jct City 115kV Ckt 2	259	May be relieved due to Westar Transmission Operating Directive 1217	Not Available
05WP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05WP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 1	121	Marshall 138/69kV Transformer Ckt 2	274	See Previous	\$ -
05WP	AEPW-AEPW	Marshall 138/69kV Transformer ckt 2	121	Marshall 138/69kV Transformer Ckt 1	274	See Previous	\$ -
05WP	WERE-WERE	Mockingbird Hill Sw Station - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
05WP	SWPA-SWPA	Norfolk 161/69kV Transformer	25	Norfolk - West Plains 161kV	290	Replace Norfolk Transformer by SWPA In-Service Date 6/1/2005	Not Available
05WP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	See Previous	\$ -
05WP	OKGE-OKGE	Pecan Creek 161/345kV Transformer	369	Muskogee - Ft Smith 345kV	218	See Previous	\$ -
05WP	AEPW-AEPW	South Shreveport - Wallace Lake 138kV	210	Dolet Hills 345/230kV Transformer	0	See Previous	\$ -
05WP	SWPA-SPRM	Springfield - Clay 161kV	167	Multiple Outage Contingency, Franks - Huben 345kV, Huben - Morgan 345kV	0	Replace disconnect switches at Springfield	\$ 200,000
05WP	WERE-WERE	Tecumseh Hill - Stull Sw Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	\$ -
<b>Total (Excludes Costs Not Available)</b>							<b>\$ 47,143,270</b>