



SPP *Southwest Power Pool*

***System Impact Study SPP-2001-285
For Transmission Service***

***Requested By
Kansas City Board of Public Utilities***

From SPA To KACY

***For a Reserved Amount Of 38MW
From 1/1/02
To 7/1/07***

SPP Coordinated Planning

System Impact Study

Kansas City Board of Public Utilities (KBPU) has requested a system impact study for long-term Firm Point-to-Point transmission service from SPA to KACY. The period of the transaction is from 1/1/02 to 7/1/07. The request is for OASIS reservation 293046 for an amount of 38 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 38 MW of service requested.

The SPA to KACY transfer was studied to determine the facility upgrades required based on the actual queue position of the request with only those higher priority requests in Facility Study mode included in the models. Higher priority requests still in study that have not gone to facility study were not included in the models. These results are documented in Table 1 of the report. The results given in Table 1 include upgrades that may be assigned to higher priority requests. The results of this study give the customer an estimated cost of facility upgrades that may be required in order to accommodate the 38 MW SPA to KACY transfer.

SPP used seven seasonal models to study the SPA to KACY 38 MW transfer for the requested service period. The SPP 2002 Series Cases 2003 Spring Peak, 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 38 MW transfer on the SPP system during the requested service period of 1/1/2002 to 7/1/2007. 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 only the higher priority requests that have signed Facility Study Agreements included in the models, the study results of the SPA to KACY 38 MW show that limiting constraints exist. 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 identified for the SPA to KACY transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03G	WFEC-WFEC	Acme - Franklin Sw 69kV	34	Canadian Sw - Goldsby 69kV	0	Solution Undetermined	Not Available
03G	WERE-WERE	Auburn Road - Indian Hills 115kV	118	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
03G	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
03G	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
03G	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
03G	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	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 - Goldsby 69kV	0	See Previous	See Previous
03SP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw - Goldsby 69kV	0	Solution Undetermined	Not Available
03SP	GRRD-GRRD	Afton 161/69kV Transformer	50	Miami - Afton 161kV	0	Replace 50 MVA Transformer with 84 MVA unit	\$ 833,000
03SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03SP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03SP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
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	Carthage - Jasper 69kV	0	Third Party Facility	\$ -
03SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	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	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	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	Not Available
03SP	AEPW-AEPW	Dyess - East Rogers 161kV	244	East Centerton - Gentry Rec 161kV	38	AEPW Planned Tontitown Project	\$ -
03SP	AEPW-AEPW	East Centerton - Gentry Rec 161kV	353	Dyess - East Rogers 161kV	27	Rebuild 19.16 miles of 2-397.5 ACSR with 2156 ACSR	\$ 8,000,000
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 (use 800 A.), Replace line switch at Oatville 69 kV (use 800 A.)	\$ 45,000
03SP	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 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	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	Upgrade to be completed 7/1/2003	\$ -

Table 1 - continued – SPP facility upgrades identified for the SPA to KACY transfer

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 Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	0	Solution Undetermined	Not Available
03SP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
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 - Goldsby 69kV	0	See Previous	See Previous
03FA	WERE-WERE	Auburn Road - Jeffrey 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-AECI	Doniphan 161/69kV Transformer ckt 1	18.8	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
03FA	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Ctr Nth - Evans Energy Ctr Sth 138kV	0	Solution Undetermined	Not Available
03FA	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
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	Goldsby - Oklahoma University Sw 69kV	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 ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
03WP	SWPA-AECI	Doniphan 161/69kV Transformer ckt 1	18.7	Doniphan 161/69kV Transformer Ckt 2	0	See Previous	See Previous
03WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Ctr Nth - Evans Energy Ctr Sth 138kV	0	See Previous	See Previous
03WP	WFEC-WFEC	Lexington - Paoli 69kV	34	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03WP	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 115kV	92	Hoyt - Stranger Creek 345kV	18	See Previous	See Previous
03WP	WFEC-WFEC	Paoli 69/138kV Transformer	42	Canadian Sw - Noble 69kV	0	Solution Undetermined	Not Available
03WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
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 ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
04G	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
04G	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	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	0	See Previous	See Previous
05SP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
05SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Sub 382 - Larussel - Sub 383 - Monett 161kV	0	See Previous	See Previous
05SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	0	See Previous	See Previous
05SP	AEPW-AEPW	Denver Center 138/13.8kV Transformer	33	Denver-West - Sand Springs 138kV	0	Solution Undetermined	Not Available
05SP	AEPW-AEPW	Denver-West 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	See Previous	See Previous
05SP	AEPW-OKGE	Fitzhugh - Altus 69kV	72	Avec Ozark - Helberg 69kV	0	Solution Undetermined	Not Available
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

Table 1 - continued – SPP facility upgrades identified for the SPA to KACY transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05SP	KACY-KACY	Kaw 2 - Everett 2 69kV	68	Muncie 2 - Levee 2 69kV	37	Solution Undetermined	Not Available
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Mockingbird Hill Switching Sta - 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	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05SP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	See Previous	See Previous
05SP	KACY-KACY	Owens Corning 2 - Levee 2 69kV	82	Quindaro 2 - Victory West 2 69kV	27	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	Invalid Overload	\$ -
05WP	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffrey Energy Center 345kV	0	See Previous	See Previous
05WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Ctr Nth - Evans Energy Ctr Sth 138kV	0	See Previous	See Previous
05WP	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	SWPA-SWPA	Norfolk 161/69kV Transformer ckt 1	25	Norfolk 161/69kV Transformer Ckt 2	0	See Previous	See Previous
05WP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	0	See Previous	See Previous
05WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
						Total (Excludes Costs Not Available)	\$ 10,477,000