



SPP *Southwest
Power Pool*

***System Impact Study SPP-2002-027
For Transmission Service
Requested By
Utilicorp***

From WR To WPEK

***For a Reserved Amount Of 178MW
From 1/1/2005
To 1/1/2020***

SPP Coordinated Planning

System Impact Study

Utilicorp (UCU) has requested a system impact study for long-term Firm Point-to-Point transmission service from WR to WPEK. The period of the transaction is from 1/1/2005 to 1/1/2020. The request is for OASIS reservation 340007 for an amount of 178 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 178 MW of service requested.

The WR to WPEK 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 178 MW WR to WPEK transfer.

SPP used four seasonal models to study the WR to WPEK 178 MW transfer for the requested service period. The SPP 2002 Series Cases 2005 Summer Peak, 2005/06 Winter Peak, 2008 Summer Peak 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 1/1/2005 to 1/1/2020. 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 WR to WPEK 178 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 WR to WPEK transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05SP	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
05SP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	May be relieved due to Westar Transmission Operating Directive 400	Not Available
05SP	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Tulsa North - Northeast Station 345kV	0	Replace wav etrap	\$ 30,000
05SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Ises - Morefield 161kV	0	Replace disconnect switches, metering CTs and wave trap at Bull Shoals	\$ 150,000
05SP	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	Replace 82 structures	\$ 742,000
05SP	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
05SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	0	May be relieved due to Westar Transmission Operating Directive 1203	Not Available
05SP	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
05SP	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
05SP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Center Nth - Evans Energy Center Sth 138kV	0	Solution Undetermined	Not Available
05SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	East Centerton - Gentry Rec 161kV	0	Replace switch and jumpers	\$ 45,000
05SP	SWPA-EES	Hergett - Jonesboro 161kV	148	Jonesboro - Jonesboro 161kV	0	Solution Undetermined	Not Available
05SP	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
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Bismark Jct Swi Station -Farmer's Consumer Co-Op 115kV	0	May be relieved due to Westar Transmission Operating Directive 1210	Not Available
05SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Mockingbird Hill Switching Station - SW Lawrence 115kV	0	See Previous	See Previous
05SP	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
05SP	WEPL-WEPL	Phillipsburg - Smith Center 115kV	40	Knoll - Summit 230kV	0	Solution Undetermined	Not Available
05SP	WERE-WERE	SW Lawrence - Wakarusa Junction Switching Sta 115kV	92	Ku Campus - 19Th Street Junction 115kV	83	Solution Undetermined	Not Available
05SP	AEPW-WFEC	Southwest Station - Anadarko 138kV	203	Lawton Eastside - Cimarron 345kV	33	Replace bus, jumpers, switches, supports and foundations at Anadarko Switch Station	\$ 450,000
05SP	SWPA-SPRM	Springfield - Brookline 161kV	323	Southwest - Southwest Disposal 161kV	0	Solution Undetermined	Not Available
05SP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	0	May be relieved due to Westar Transmission Operating Directive 1203	Not Available
05SP	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
05SP	WERE-WERE	West Mcpherson - Wheatland 115kV	70	Circle - Rice County 115kV	51	Solution Undetermined	Not Available
05WP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
05WP	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Tulsa Power Station - 36Th & Lewis 138kV	0	See Previous	See Previous
05WP	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	WERE-WERE	Fort Jct Swi Station - West Jcti City Jct (East) 115kV	68	Fort Jct Swi Station - West Jct City Jct (East) 115kV Ckt 2	0	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	See Previous
05WP	WERE-WERE	Mead - Plaza 69kV	72	Evans Energy Center Nth - Evans Energy Center Sth 138kV	55	Solution Undetermined	Not Available

Table 1 - continued – SPP facility upgrades identified for the WR to WPEK transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
05WP	WERE-WERE	Mockingbird Hill Swi Station - Stull Swi Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	SUNC-WEPL	North Cimarron - Cimarron River Plant 115kV	143	Spearville 115/230kV Transformer	167	Solution Undetermined	Not Available
05WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
05WP	WERE-WERE	West Jct City - West Jct City Jct (East) 115kV	141	Jeffery Energy Center - Summit 345kV	134	May be relieved due to Westar Transmission Operating Directive 402	Not Available
08SP	WERE-WERE	166Th Street - Jarbalo Junction Switching Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
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	AEPW-AEPW	Broken Arrow 101St North - Oneta 138kV	210	Riverside Station - Oru West Tap 138kV	0	See Previous	See Previous
08SP	SWPA-EES	Bull Shoals - Midway 161kV	162	Ises - Morefield 161kV	0	See Previous	See Previous
08SP	WFEC-WFEC	Carter Jct - Dill Jct 69kV	26	Pine Ridge - Washita 69kV	91	Solution Undetermined	Not Available
08SP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	0	Solution Undetermined	Not Available
08SP	SWPA-EES	Carthage - Reed Springs 69kV	36	Montrose - Clinton 161kV	103	Third Party Facility	\$ -
08SP	WERE-WERE	Chisholm - Evans Energy Center North 138kV	382	Evans Energy Center South - Lakeridge 138kV	0	Solution Undetermined	Not Available
08SP	WERE-WERE	Circle - Tower 43 115kV	68	Sandhill Ark Valley Co-Op D.P. Junction - Circle 115kV	176	Solution Undetermined	Not Available
08SP	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Clifton - Greenleaf 115kV	0	See Previous	See Previous
08SP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	WFEC-WFEC	Comanche - Walters 69kV	38	Comanche - Lawton Disposal Tap 69kV	168	Solution Undetermined	Not Available
08SP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	0	See Previous	See Previous
08SP	WERE-WERE	County Line - Rock Creek 69kV	41	Stranger Creek 345/951kV Transformer	0	May be relieved due to Westar Transmission Operating Directive 612	Not Available
08SP	WERE-WERE	County Line - Tecumseh Hill 115kV	106	Tecumseh Energy Center - Tecumseh Hill 115kV	0	May be relieved due to Westar Transmission Operating Directive 1203	Not Available
08SP	KACP-KACP	Craig - College 161kV	335	Stilwell - Antioch 161kV	0	Solution Undetermined	Not Available
08SP	AEPW-AEPW	Denver East 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	Solution Undetermined	Not Available
08SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 1	493	Draper Lake 138/345kV Transformer Ckt 2	0	See Previous	See Previous
08SP	OKGE-OKGE	Draper Lake 138/345kV Transformer ckt 2	493	Draper Lake 138/345kV Transformer Ckt 1	0	See Previous	See Previous
08SP	AEPW-AEPW	Flint Creek - Tontitown 161kV	312	Chamber Springs - Tontitown 161kV	0	See Previous	See Previous
08SP	AEPW-AEPW	Fulton - Hope 115kV	174	Fulton 138/115kV Transformer	0	Solution Undetermined	Not Available
08SP	AEPW-EES	Fulton - Patmos 115kV	174	Finney Station - Potter County Interchange 345kV	0	Using 1590MCM ACSR, reconductor 7.1 miles	\$ 2,300,000
08SP	AEPW-AEPW	Fulton 138/115kV Transformer	184	Fulton - Hope 115kV	0	Solution Undetermined	Not Available
08SP	SWPA-EES	Hergett - Jonesboro 161kV	148	Jonesboro - Jonesboro 161kV	0	See Previous	See Previous
08SP	WERE-WERE	Jeffrey Energy Center - East Manhattan 230kV	446	Hoyt - Jeffery Energy Center 345kV	168	May be relieved due to Westar Transmission Operating Directive 400	Not Available
08SP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	WERE-WERE	Lawrence Hill - Wren 115kV	141	Bismark Junction Swi Sta - Farmer's Consumer Co-Op 115kV	0	See Previous	See Previous
08SP	WFEC-WFEC	Lindsay Sw - Wallville 69kV	26	Fletcher - Marlow Jct 69kV	0	Solution Undetermined	Not Available

Table 1 - continued – SPP facility upgrades identified for the WR to WPEK transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
08SP	WERE-WERE	Mockingbird Hill Switching Sta - Stull Swi Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08SP	WERE-WERE	NA Philips Junction (South) - West Mcherson 115kV	68	East Mcherson - Summit 230kV	6	See Previous	See Previous
08SP	SWPS-SWPS	Northeast Hereford Interchange 115/69kV Transformer	84	Hereford Interchange - Deaf Smith Interchange 115kV	0	Solution Undetermined	Not Available
08SP	WEPL-WEPL	Phillipsburg - Smith Center 115kV	40	Knoll - Summit 230kV	0	See Previous	See Previous
08SP	WERE-WERE	SW Lawrence - Wakarusa Junction Swi Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	See Previous	See Previous
08SP	SWPA-SPRM	Springfield - Brookline 161kV	323	Southwest - Southwest Disposal 161kV	0	See Previous	See Previous
08SP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 115kV	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 - 27Th & Croco 115kV	68	Tecumseh Hill - 27Th & Croco 115kV Ckt 2	4	May be relieved due to Westar Transmission Operating Directive 618	Not Available
08SP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Stranger Creek 345/951kV Transformer Ckt 0	0	See Previous	See Previous
08SP	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	Invalid Overload	\$ -
08SP	WERE-WERE	West Mcherson - Wheatland 115kV	70	Circle - Rice County 115kV	0	See Previous	See Previous
08WP	WERE-WERE	166Th Street - Jarbalo Junction Swi Station 115kV	97	Midland Junction - Pentagon 115kV	0	See Previous	See Previous
08WP	WERE-WERE	Anzio - Fort Junction Switching Station 115kV	92	West Jct City - West Jct City Jct (East) 115kV	124	May be relieved due to Westar Transmission Operating Directive 1217	Not Available
08WP	WERE-WERE	Auburn Road - Jeffrey 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	Not Available
08WP	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	WERE-WERE	County Line - Hook Jct 115kV	92	Tecumseh Energy Center - Tecumseh Hill 115kV	0	See Previous	See Previous
08WP	WERE-WERE	El Paso - Gill Energy Center South 138kV	210	Evans Energy Center Nth - Evans Energy Center Sth 138kV	0	See Previous	See Previous
08WP	WERE-WERE	Fort Jct Switching Sta - West Jct City Jct (East) 115kV	68	Fort Jct Switching Sta - West Jct City Jct (East) 115kV Ckt 2	0	See Previous	See Previous
08WP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	WERE-WERE	Mead - Plaza 69kV	72	Evans Energy Center Nth - Evans Energy Center Sth 138kV	0	See Previous	See Previous
08WP	WERE-WERE	Mockingbird Hill Swi Station - Stull Swi Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
08WP	WERE-WERE	SW Lawrence - Wakarusa Junction Swi Station 115kV	92	Ku Campus - 19Th Street Junction 115kV	0	See Previous	See Previous
08WP	WERE-WERE	Tecumseh Energy Center - Hook Jct 115kV	160	Tecumseh Energy Center - Tecumseh Hill 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
08WP	WERE-WERE	West Jct City - West Jct City Jct (East) 115kV	141	Jeffery Energy Center - Summit 345kV	58	See Previous	See Previous
						Total (Excludes Costs Not Available)	\$ 3,717,000