



SPP *Southwest Power Pool*

***System Impact Study SPP-2002-209
For Transmission Service
Requested By
Western Farmers Electric Cooperative***

From WFEC To OKGE

***For a Reserved Amount Of 110MW
From 6/1/03
To 6/1/04***

SPP Coordinated Planning

System Impact Study

Western Farmers Electric Cooperative (WFEC) has requested a system impact study for Network Service from WFEC to OKGE. The Network Service request is studied for two separate designated network resources. The requests are OASIS reservations 440943 and 440948 for an amount of 110 MW each. The period of each transaction is from 6/1/03 to 6/1/04.

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 up to 110 MW of service from each additional designated network resource. Only 110 MW of network service is under contract and any of the designated network resources may be supplying the entire 110 MW at any given time.

The WFEC to OKGE 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 Tables 1 and 2 of the report. The results given in Tables 1 and 2 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 addition of two designated network resources for the 110 MW WFEC to OKGE transfer.

SPP used four seasonal models to study the WFEC to OKGE 110 MW transfer for the requested service period. The SPP 2002 Series Cases 2003 Summer Peak, 2003Fall, 2003/04 Winter Peak, and 2004 Spring were used to study the impact of the 110 MW transfer on the SPP system during the requested service period of 6/1/2003 to 6/1/2004. 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 this study 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 WFEC to OKGE transfer for first Designated Network Resource

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
03SP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw - Goldsby 69kV	98	Solution Undetermined	Not Available
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	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	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	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	12	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	12	May be relieved due to OKGE Operating Guide	Not Available
03SP	AEPW-AEPW	Flint Creek - Elm Springs Rec 161kV	312	Chamber Springs - Farmington Aecc 161kV	35	AEPW Planned Tontitown Project	\$ -
03SP	AEPW-AEPW	Flint Creek - Gentry Rec 161kV	353	Chamber Springs - Farmington Aecc 161kV	100	Rebuild 1.09 miles of 2-397.5 ACSR with 2156 ACSR.	\$ 400,000
03SP	AEPW-AEPW	Greggton - Lake Lamond 69kV	107	Diana - Perdue 138kV	0	Solution Undetermined	Not Available
03SP	WERE-WERE	Kereford Junction - Northwest Leavenworth 115kV	68	Arnold - Stranger Creek 115kV	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	OKGE-OKGE	Tinker #4 - Tinker #2 138kV	100	Horseshoe Lake - Midway 138kV	0	Invalid Overload	\$ -
03FA	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	105	Solution Undetermined	Not Available
03FA	AEPW-WFEC	Valliant - Hugo Power Plant 138kV	288	Hugo Power Plant - Vallent 138kV	96	See Previous	See Previous
03WP	AEPW-AEPW	Diana - Perdue 138kV	237	Harrison Road - Liberty City Tap 138kV	0	See Previous	See Previous
03WP	WFEC-WFEC	Lexington - Paoli 69kV	34	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
03WP	WFEC-WFEC	Little Axe - Noble 69kV	26	Paoli 69/138kV Transformer	73	Solution Undetermined	Not Available
03WP	WFEC-WFEC	Paoli 69/138kV Transformer	42	Canadian Sw - Noble 69kV	0	Solution Undetermined	Not Available
04G	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	See Previous	See Previous
Total (Excludes Costs Not Available)							\$ 3,882,000

Table 2 – SPP facility upgrades identified for the WFEC to OKGE transfer for second Designated Network Resource

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
3SP	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 Availabl
3SP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw - Goldsby 69kV	42	Solution Undetermined	Not Availabl
3SP	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 Availabl
3SP	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 Availabl
3SP	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 Availabl
3SP	WFEC-WFEC	Carter Jct - Lake Creek 69kV	26	Elk City 138/69kV Transformer	50	Solution Undetermined	Not Availabl
3SP	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
3SP	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	\$ 1,641,00
3SP	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	Replace 82 structures	\$ 742,00
3SP	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 Availabl
3SP	AEPW-AEPW	Flint Creek - Elm Springs Rec 161kV	312	East Centerton - Gentry Rec 161kV	0	See Previous	See Previou
3SP	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
3SP	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.)	\$ 45,00
3SP	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 Availabl
3SP	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 Availabl
3SP	WERE-WERE	NA Philips Junction (North) - Smoky Hill 115kV ckt 1	68	NA Philips Junction (North) - Smoky Hill 115kV Ckt 2	0	Solution Undetermined	Not Availabl
3SP	SWPS-SWPS	Northwest Interchange 69/115kV Transformer	46	East Plant Interchange - Van Buren 1 Tap 69kV	0	Solution Undetermined	Not Availabl
3SP	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 Availabl
3FA	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 Availabl
3FA	WERE-WERE	Auburn Road - Jeffrey Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previou
3FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previou
3FA	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previou
3FA	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	See Previous	See Previou
3FA	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previou
3FA	WERE-WERE	Coffey County No. 4 Vernon - Green 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	See Previou
3FA	AEPW-AEPW	Flint Creek - Elm Springs Rec 161kV	312	Flint Creek - Gentry Rec 161kV	0	AEPW Planned Tontitown Project	\$ -
3FA	WFEC-WFEC	Goldsby - Oklahoma University Sw 69kV	34	Franklin Sw 69/138kV Transformer	31	Solution Undetermined	Not Availabl
3FA	WEPL-WEPL	Greensburg - Judson Large V 115kV	80	Mullergren - Spearville 230kV	0	Solution Undetermined	Not Availabl
3FA	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previou

Table 2 - continued – SPP facility upgrades identified for the WFEC to OKGE transfer for second Designated Network Resource

Year	From Area - To Area	Branch Over 100% Rate B	Rate B	Outaged Branch Causing Overload	ATC	Solution	Estimated Cost
3FA	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
3FA	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
3WP	WFEC-WFEC	Acme - West Norman 69kV	38	Canadian Sw 69/138kV Transformer	99	See Previous	See Previous
3WP	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
3WP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
3WP	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
3WP	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
3WP	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
3WP	AEPW-AEPW	Denver East 138/13.8kV Transformer	33	Carson South - Kenosha West 138kV	0	Solution Undetermined	Not Available
3WP	WEPL-WEPL	Greensburg - Judson Large V 115kV	80	Mullergren - Spearville 230kV	0	See Previous	See Previous
3WP	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
3WP	WFEC-WFEC	Lexington - Paoli 69kV	34	Canadian Sw 69/138kV Transformer	0	Solution Undetermined	Not Available
3WP	WFEC-WFEC	Little Axe - Noble 69kV	26	Paoli 69/138kV Transformer	99	Solution Undetermined	Not Available
3WP	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
3WP	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
4G	AEPW-AEPW	Alumax Tap - Northwest Texarkana 138kV	261	Nw Texarkana-Bann T - Northwest Texarkana 138kV	0	Replace Switches Alumax Tap	\$ 30,00
4G	WERE-WERE	Athens Switching Station - Coffey County No. 4 Vernon 69kV	45	Wolf Creek - Lacygne 345kV	0	See Previous	See Previous
4G	WERE-WERE	Auburn Road - Jeffery Energy Center 230kV	565	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
4G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 1	75	Hoyt - Jeffery Energy Center 345kV	0	See Previous	See Previous
4G	WERE-WERE	Auburn Road - South Gage (West) 115kV ckt 2	97	Hoyt - Jeffery Energy Center 345kV Ckt 1	0	See Previous	See Previous
4G	WERE-WERE	Circleville - Hoyt Hti Switching Junction 115kV	97	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
4G	WERE-WERE	Circleville - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
4G	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
4G	WERE-WERE	Kelly - King Hill N.M. Coop 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
4G	WERE-WERE	Mockingbird Hill Switching Sta - Stull Switching Sta 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
4G	WERE-WERE	Tecumseh Hill - Stull Switching Station 115kV	92	Hoyt - Stranger Creek 345kV	0	See Previous	See Previous
Total (Excludes Costs Not Available)							\$ 3,461,00