



SPP *Southwest Power Pool*

*System Impact Study
SPP-2001-076
For Transmission Service
Requested By
Western Resources Generation
Services*

From WR to BLKW

*For a Reserved Amount Of 200MW
From 2/1/02
To 3/1/12*

SPP Coordinated Planning

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1. Executive Summary

Western Resources Generation Services has requested a system impact study for long-term Firm Point-to-Point transmission service from Western Resources to WSCC Blackwater (BLKW) HVDC Tie. The period of the transaction is from 2/1/02 to 3/1/12. The request is for OASIS reservation 242232, totaling 200MW.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 200MW transfer while maintaining system reliability.

Currently, the 200MW capacity of the BLKW HVDC Tie is fully reserved by higher priority requests. The expansion of the HVDC Tie will be required in order to accept the request. Two long-term firm transmission reservations exist that hold the capacity of the tie. The reservations are SPS OASIS reservation 225223 for 150MW from SPS to BLKW with a reservation period of 1/1/2001 to 6/1/2011 and SPP OASIS reservation 252077 for 50MW from SPS to BLKW with a reservation period of 1/1/2002 to 1/1/2003.

With an assumed expanded HVDC tie or new tie, new overloads caused by the 200MW transfer from WR to BLKW were identified along with determining the impact of the transfer on any previously assigned and identified facilities.

The WR to BLKW transfer overloads new facilities as well as impacts facilities that have been identified as limiting constraints for previously studied transfers. Tables 1 and 2 list the new overloads caused by the 200MW transfer. Table 3 lists the previously assigned and identified facilities impacted by the 200MW transfer. Facilities found in Table 3 limit the ATC to zero.

In addition to the thermal limitations identified, the SPP to SPS interface has Voltage Stability Limitations. The ATC determination and the higher priority transmission requests over the SPP to SPS interface are documented in Tables 4 and 5. The ATC was determined by using previously calculated Total Transfer Capability (TTC) for SPS Imports, the Transmission Reliability Margin for SPS Imports of 540MW, and the existing higher priority SPS Imports. For the 2004 and 2006 Summer, the ATC has been determined to be zero.

The SPP and effected member companies shall use due diligence to coordinate the addition of necessary facilities or transmission system upgrades to provide the requested transmission service. WRGS is to compensate SPP for such costs pursuant to the terms of section 27 of the SPP Open Access Transmission Tariff. Expedited procedures for new facilities and upgrades are available to WRGS per section 19.8 of the SPP Open Access Transmission Service Tariff.

Engineering and construction of any new facilities or modifications will not start until after a transmission service agreement and/or construction agreement is in place and

effected member companies receive the appropriate authorization to proceed from the SPP after receiving authorization from the transmission customer.

2. Introduction

Western Resources Generation Services has requested an impact study for transmission service from Western Resources control area with a point-of-delivery of BLKW.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 200MW. This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analysis for both thermal overloads and voltage stability.

The steady-state analyses consider the impact of the 200MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

3. Study Methodology

A. Description

Three analyses were conducted to determine the impact of the 200MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 200MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits. The final analysis was done to determine the ATC, using the calculated TTC of the posted SPS Voltage Constrained Import Limits Study.

The first analysis was to study the steady-state analysis impact of the 200MW transfer on the SPP system and surrounding systems. The second step was to study Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency.

The second analysis was done to determine the impact of the transfer on previously assigned and identified facilities.

B. Model Updates

SPP used ten seasonal models to study the 200MW request. The SPP 2001 Series Cases 2001/02 Winter Peak, 2002 Spring Peak, 2002 Summer Peak, 2002/03 Winter Peak, 2003 Spring Peak, 2004 Summer Peak, 2004/05 Winter Peak, 2006 Summer Peak, 2006/07 Winter Peak, and 2010 Summer Peak were used to study the impact of the 200MW transfer on the SPP system during the reservation period of 2/1/02 to 3/1/12.

The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect future firm transfers during the request period that were not already included in the January 2001 base case series models.

The significant Proposed Bulk Transmission Line Additions included in the models that impact the transfer are documented below and were taken from the SPP 2001 EIA-411 Report.

Utility Name	Terminals	Miles	Year	Operating Voltage In kV
SPS	Holcomb Plant to Potter County Interchange	229	2001	345
SPS	Holcomb Plant to Lamar	107	2004	345
SPS	Amarillo South-Harrington/Swisher	12	2002	230
SPS	Frio Draw Interchange-Potter Co Interch	100	2003	345
SPS	Frio Draw Interchange-OASIS Interchange	20	2003	230
SPS	Frio Draw Interchange-Roosevelt	20	2003	230
SPS	Potter County-N.W. Interchange (OGE)	275	2006	345

The Holcomb Plant to Potter County Interchange 345kV line will be in service before the start of the requested transmission service. Removal of the other proposed lines will affect the results of this study.

C. Transfer Analysis

Using the created models and the ACCC function of PSS/E, single and select double contingency outages were analyzed. Then full AC solution was used to obtain the most accurate results possible. Any facility overloaded, using MVA ratings, in the transfer case and not overloaded in the base case was flagged. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

A. Steady-State Analysis Results

Tables 1, 2, and 3 contain the steady-state analysis results of the System Impact Study. The tables identify the seasonal case in which the event occurred; the emergency rating of the overloaded circuit (Rate B), the contingent loading percentage of circuit with and without the studied transfer, the estimated ATC value using interpolation if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Table 1 shows the new facility overloads caused by the 200MW transfer. Upgrades associated with these new overloads can be directly assigned to the WR to BLKW transfer.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 200MW transfer.

Table 3 documents the 200MW transfer impact on previously assigned and identified facilities.

B. Voltage Stability Limitations

Tables 4 and 5 provide information from the previous Voltage Stability study regarding the import capability of the SPS system. Table 4 lists the existing higher priority transmission requests over the SPS interface. Table 5 documents the ATC, using the results of Table 4 and the TTC for SPS imports due to voltage stability limitations. The TTC was taken from the SPS Voltage Constrained Import Limits Study. The study is posted on OASIS.

The ATC for SPS Imports is limited to 159MW in the 2002 Summer, 105MW in the 2004 Summer, and zero in the 2006 and 2010 Summer. Upon the signing of a Facility Study agreement, additional analysis will be conducted to determine the system upgrades required to increase the voltage limited ATC up to the requested amount. As a result of the system upgrades to improve voltage stability, the steady-state contingency analysis will need to be reevaluated to identify what facility overloads still require mitigation.

Table 1 – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
01WP	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (WEST), 115KV 57342 WJCCTY 3 115 to 57344 WJCCTYW3 115 CKT 1	141	98.9	104.9	JEFFREY ENERGY CENTER TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	38	
01WP	SPS-SPS	POTASH JCT 230/115KV TRANSFORMER 52253 POTJCT6 230 to 52252 POTJCT3 115 CKT 1	150	99.3	102.7	EDDY CO TO CUNNINGHAM, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1	41	
01WP	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (WEST), 115KV 57342 WJCCTY 3 115 to 57344 WJCCTYW3 115 CKT 1	141	98.7	104.7	SUMMIT 345/230KV TRANSFORMER 56773 SUMMIT 7 345 to 56873 SUMMIT 6 230 CKT1	43	
01WP	SWPA-WFEC	BROWN TO RUSSETT, 138KV 52802 S BROWN4 138 to 56044 RUSSETT4 138 CKT 1	96	97.7	101.8	BROWN TO BROWN, 138KV 52802 S BROWN4 138 to 55157 BROWN 4 138 CKT1	113	
01WP	SPS-SPS	POTASH JCT TO CARLSBAD, 115KV 52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1	90	95.7	101.5	EDDY CO TO CUNNINGHAM, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1	148	
01WP	WERE-WERE	MCDOWELL CREEK TO FORT JCT, 115 KV 57335 MCDOWEL3 115 to 57328 FT JCT 3 115 CKT 1	68	96.9	100.8	JEFFREY ENERGY CENTER TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	158	
01WP	WERE-WERE	MCDOWELL CREEK TO FORT JCT, 115 KV 57335 MCDOWEL3 115 to 57328 FT JCT 3 115 CKT 1	68	96.7	100.7	SUMMIT 345/230KV TRANSFORMER 56773 SUMMIT 7 345 to 56873 SUMMIT 6 230 CKT1	165	
01WP	WERE-WERE	HOYT TO HOYT HTI SWITCHING JCT, 115KV 57163 HOYT 3 115 to 57165 HTI JCT3 115 CKT 1	92	95.9	100.2	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	190	
02G	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (EAST), 115KV 57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	98.8	101.5	JEFFREY ENERGY CENTER TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	91	
02G	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (EAST), 115KV 57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	98.6	101.3	SUMMIT 345/230KV TRANSFORMER 56773 SUMMIT 7 345 to 56873 SUMMIT 6 230 CKT1	103	
02G	WERE-WERE	WEAVER TO ROSE HILL JCT, 69KV 57604 WEAVER 269.0 to 57837 RH JCT 269.0 CKT 1	43	95.2	102.7	EL PASO TO FARBER, 138KV 57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT1	127	
02G	SPS-SPS	EDDY CO 230/115KV TRANSFORMER 52185 EDDYCO6 230 to 52184 EDDYCO3 115 CKT 1	168	95.9	102.2	CHAVES CO TO EDDY CO , 230KV 52073 CHAVES6 230 to 52185 EDDYCO6 230 CKT1	131	
02G	WERE-WERE	GOLDEN PLAINS JCT TO HESSTON, 69KV 57735 GOLDPLJ269.0 to 57737 HESSTON269.0 CKT 1	32	97.1	101.0	HALSTEAD TO MUD CREEK JCT, 69KV 57736 HALSTED269.0 to 57744 MUDCRKJ269.0 CKT1	150	
02G	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.0	100.2	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	168	
02G	SPS-SPS	POTASH JCT TO CARLSBAD, 115KV 52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1	90	94.4	100.8	EDDY CO TO CUNNINGHAM, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1	174	
02G	WERE-WERE	OWL CREEK TO LEHIGTP, 69KV 57642 OWL CRK269.0 to 57638 LEHIGTP269.0 CKT 1	32	96.8	100.2	ATHENS SS TO ORCHARD, 69KV 57623 ATHENS 269.0 to 57643 ORCHARD269.0 CKT1	188	
02SP	SPS-SPS	DEAF SMITH 230/115KV TRANSFORMER 51111 DFSMTH6 230 to 51110 DFSMTH3 115 CKT 1	150	99.8	105.6	FINNEY TO POTTER CO , 345KV 50858 FINNEY7 345 to 50888 POTTRC7 345 CKT1	7	
02SP	SPS-SPS	BC-EARTH TO PLANT X, 115KV 51250 BC-EART3 115 to 51418 PLANTX3 115 CKT 1	146	99.9	103.3	DEAF SMITH 230/115KV TRANSFORMER 51110 DFSMTH3 115 to 51111 DFSMTH6 230 CKT1	9	
02SP	SPS-SPS	RANDALL CO 230/115KV TRANSFORMER 51021 RANDALL6 230 to 51020 RANDALL3 115 CKT 1	225	99.8	101.9	EAST PLANT TO PIERCE TAP, 115KV 50956 EASTPL3 115 to 50964 PIERCT3 115 CKT1	15	
02SP	SPS-SPS	POTASH JCT TO CARLSBAD, 115KV 52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1	90	98.3	106.6	EDDY CO TO CUNNINGHAM, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1	40	
02SP	SPS-SPS	EAST PLANT 115/69KV TRANSFORMER 50956 EASTPL3 115 to 50955 EASTPL2 69.0 CKT 2	40	99.9	100.5	EAST PLANT TO MANHATTAN, 115KV 50956 EASTPL3 115 to 50978 MANHATT3 115 CKT1	44	
02SP	WFEC-OKGE	FRANKLIN SW TO MIDWEST TAP, 138KV 55917 FRNKLSN4 138 to 54946 MIDWEST4 138 CKT 1	215	99.3	102.2	CROMWELL TO WETUMKA, 138KV 55869 CROMWEL4 138 to 56084 WETUMKA4 138 CKT1	49	

Table 1 continued – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
02SP	SPS-SPS	OSAGE SS TO CANYON EAST, 115KV 51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT 1	90	96.6	110.2	BC-EARTH TO PLANT X, 115KV 51250 BC-EART3 115 to 51418 PLANTX3 115 CKT1	50	
02SP	WERE-WERE	CHASE TO WHITE JCT, 69KV 57588 CHASE 269.0 to 57605 WHITE J269.0 CKT 1	43	99.5	101.5	WEAVER 138/69KV TRANSFORMER 56991 WEAVER 4 138 to 57604 WEAVER 269.0 CKT1	50	
02SP	WFEC-OKGE	FRANKLIN SW TO MIDWEST TAP, 138KV 55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	99.2	102.1	PHAROAH TO WETUMKA, 138KV 56026 PHAROAH4 138 to 56084 WETUMKA4 138 CKT1	57	
02SP	WERE-WERE	COUNTY LINE TO TECUMSEH HILL, 115KV 57153 COLINE 3 115 to 57182 TECHILE3 115 CKT 1	106	98.5	103.6	TECUMSEH ENERGY CENTER TO TECUMSEH HILL, 115KV 57180 TEC E 3 115 to 57182 TECHILE3 115 CKT1	60	
02SP	SPS-SPS	RANDALL CO 230/115KV TRANSFORMER 51021 RANDALL6 230 to 51020 RANDALL3 115 CKT 1	225	99.2	101.3	EAST PLANT TO MANHATTAN, 115KV 50956 EASTPL3 115 to 50978 MANHATT3 115 CKT1	76	
02SP	SPS-SPS	OSAGE SS TO MANHATTAN TAP, 115KV 51014 OSAGE--3 115 to 51018 MANHTP3 115 CKT 1	146	98.1	103.1	DEAF SMITH 230/115KV TRANSFORMER 51110 DFSMTH3 115 to 51111 DFSMTH6 230 CKT1	77	
02SP	SPS-SPS	LUBBOCK EAST 230/115KV TRANSFORMER 51689 LUBE6 230 to 51688 LUBE3 115 CKT 1	150	99.9	100.2	TUCO 230/115KV TRANSFORMER 51532 TUCO3 115 to 51533 TUCO6 230 CKT1	80	
02SP	WERE-WERE	HUNTSVILLE TO ST JOHN, 115KV 57423 HUNTSVL3 115 to 57433 ST JOHN3 115 CKT 1	80	91.4	111.9	CIRCLE TO MULLERGREN, 230KV 56871 CIRCLE 6 230 to 58779 MULGREN6 230 CKT1	84	
02SP	SPS-SPS	HEREFORD TO FRIONA, 115KV 51106 HEREFD3 115 to 51122 FRIONA3 115 CKT 1	90	83.6	121.6	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	86	
02SP	SPS-SPS	HEREFORD TO FRIONA, 115KV 51106 HEREFD3 115 to 51122 FRIONA3 115 CKT 1	90	83.0	120.4	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	91	
02SP	SPS-SPS	EAST PLANT TO PIERCE TAP, 115KV 50956 EASTPL3 115 to 50964 PIERCT3 115 CKT 1	146	97.1	102.6	EAST PLANT TO MANHATTAN, 115KV 50956 EASTPL3 115 to 50978 MANHATT3 115 CKT1	104	
02SP	SPS-SPS	RANDALL CO 230/115KV TRANSFORMER 51021 RANDALL6 230 to 51020 RANDALL3 115 CKT 1	225	99.1	100.8	NICHOLS STATION 230/115KV TRANSFORMER 50914 NICHOL3 115 to 50915 NICHOL6 230 CKT1	105	
02SP	WERE-WERE	HUTCHINSON 115/69KV TRANSFORMER 57513 HEC 269.0 to 57420 HEC 3X1.00 CKT 1	112	70.3	124.9	HUTCHINSON GT STATION TO CIRCLE, 115KV 57413 CIRCLE 3 115 to 57421 HEC GT 3 115 CKT1	109	
02SP	WERE-WERE	HUTCHINSON GT STATION TO CIRCLE, 115KV 57421 HEC GT 3 115 to 57413 CIRCLE 3 115 CKT 1	186	79.8	116.5	HUTCHINSON TO HUTCHINSON GT STATION, 69KV 57513 HEC 269.0 to 57514 HEC GT 269.0 CKT1	110	
02SP	WERE-WERE	HOYT TO HOYT HTI SWITCHING JCT, 115KV 57163 HOYT 3 115 to 57165 HTI JCT3 115 CKT 1	92	98.9	100.8	JEFFREY TO EAST MANHATTAN, 230KV 56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	117	
02SP	WERE-WERE	HUTCHINSON 115/69KV TRANSFORMER 57420 HEC 3X1.00 to 57419 HEC 3 115 CKT 1	112	65.8	122.5	HUTCHINSON GT STATION TO CIRCLE, 115KV 57413 CIRCLE 3 115 to 57421 HEC GT 3 115 CKT1	121	
02SP	SPS-SPS	EAST PLANT 115/69KV TRANSFORMER 50956 EASTPL3 115 to 50955 EASTPL2 69.0 CKT 1	40	99.8	100.2	OSAGE SS TO ARROWHEAD, 115KV 51014 OSAGE--3 115 to 51036 ARRWH3 115 CKT1	121	
02SP	WERE-WERE	43RD & LORRAINE TO MEADOWLARK, 69KV 57512 43LORAN269.0 to 57517 MEADOW 269.0 CKT 1	85	82.1	110.1	HUTCHINSON GT STATION TO CIRCLE, 115KV 57413 CIRCLE 3 115 to 57421 HEC GT 3 115 CKT1	128	
02SP	SPS-SPS	NE HEREFORD TO DS-MTR, 69KV 51094 NEHFD3 115 to 51095 DS-MTR2 69.0 CKT 1	84	96.2	101.9	HEREFORD TO DEAF SMITH, 115KV 51106 HEREFD3 115 to 51110 DFSMTH3 115 CKT1	132	
02SP	SPS-SPS	EAST PLANT 115/69KV TRANSFORMER 50956 EASTPL3 115 to 50955 EASTPL2 69.0 CKT 2	40	99.5	100.2	PIERCE TAP TO OSAGE SS, 115KV 50964 PIERCT3 115 to 51014 OSAGE--3 115 CKT1	134	
02SP	WERE-WERE	HALSTEAD TO MUD CREEK JCT, 69KV 57736 HALSTED269.0 to 57744 MUDCRKJ269.0 CKT 1	59	99.5	100.2	HALSTEAD NORTH TO MOUNDRIDGE, 138KV 57011 HALSTDN4 138 to 57013 MOUND 4 138 CKT1	138	
02SP	WERE-WERE	GILL EAST TO OATVILLE, 69KV 57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	72	93.9	102.6	GILL EAST TO HAYSVILLE JCT, 69KV 57795 GILL E 269.0 to 57804 HAYSVLJ269.0 CKT1	140	

Table 1 continued – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
02SP	WERE-WERE	MEADOWLARK TO 16TH & WOODLAWN JCT, 69KV 57517 MEADOW 269.0 to 57526 16WOODJ269.0 CKT 1	71	76.2	110.1	HUTCHINSON GT STATION TO CIRCLE, 115KV 57413 CIRCLE 3 115 to 57421 HEC GT 3 115 CKT1	140	
02SP	SPS-SPS	OSAGE SS TO CANYON EAST, 115KV 51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT 1	90	87.7	105.1	POTTER CO TO PLANT X, 230KV 50887 POTTRC6 230 to 51419 PLANTX6 230 CKT1	141	
02SP	SPS-SPS	OSAGE SS TO MANHATTAN TAP, 115KV 51014 OSAGE--3 115 to 51018 MANHTP3 115 CKT 1	146	97.6	100.9	BUSHLAND TO COULTER, 115KV 50992 BUSHLND3 115 to 51002 COULTER3 115 CKT1	148	
02SP	WERE-WERE	HYDRAULIC NORTH TO MACARTHUR, 69KV 57807 HYDRA N269.0 to 57813 MACARTH269.0 CKT 1	63	96.5	101.2	CANAL TO RUTAN, 69KV 57784 CANAL 269.0 to 57838 RUTAN 269.0 CKT1	149	
02SP	SPS-SPS	OSAGE SS TO CANYON EAST, 115KV 51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT 1	90	85.0	104.9	TUCO 230/115KV TRANSFORMER 51533 TUCO6 230 to 51534 TUCO7 345 CKT1	150	
02SP	SPS-SPS	OSAGE SS TO CANYON EAST, 115KV 51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT 1	90	85.0	104.9	TUCO TO OKLAUNION, 345KV 51534 TUCO7 345 to 54119 O.K.U.-7 345 CKT1	151	
02SP	SPS-SPS	OSAGE SS TO MANHATTAN TAP, 115KV 51014 OSAGE--3 115 to 51018 MANHTP3 115 CKT 1	146	97.6	100.8	BUSHLAND 230/115KV TRANSFORMER 50992 BUSHLND3 115 to 50993 BUSHLND6 230 CKT1	152	
02SP	WERE-WERE	CIRCLEVILLE TO KING HILL, 115KV 57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	97.1	100.9	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	154	
02SP	WERE-WERE	GILL EAST TO MACARTHUR, 69KV 57795 GILL E 269.0 to 57813 MACARTH269.0 CKT 1	68	93.8	101.8	GILL EAST TO OATVILLE, 69KV 57795 GILL E 269.0 to 57825 OATVILL269.0 CKT1	156	
02SP	WERE-WERE	WEAVER TO ROSE HILL JCT, 69KV 57604 WEAVER 269.0 to 57837 RH JCT 269.0 CKT 1	43	95.0	101.4	FARBER TO SEDGWICK CO, 138KV 57042 FARBER 4 138 to 57063 SC10BEL4 138 CKT1	157	
02SP	SPS-SPS	CANYON EAST TO CANYON WEST, 115KV 51080 CANYNE3 115 to 51078 CANYNW3 115 CKT 1	90	87.5	103.4	HEREFORD TO DEAF SMITH, 115KV 51106 HEREDF3 115 to 51110 DFSMTH3 115 CKT1	157	
02SP	WERE-WERE	HUTCHINSON TO 43RD AND LORRAINE, 69KV 57513 HEC 269.0 to 57512 43LORAN269.0 CKT 1	85	92.6	101.4	HUTCHINSON 115/69KV TRANSFORMER 57513 HEC 269.0 to 57420 HEC 3X1.00 CKT1	168	
02SP	SPS-SPS	CANYON WEAT TO DAWN, 115KV 51078 CANYNW3 115 to 51102 DOWNFL3 115 CKT 1	90	86.0	102.5	DEAF SMITH 230/115KV TRANSFORMER 51110 DFSMTH3 115 to 51111 DFSMTH6 230 CKT1	170	
02SP	WERE-WERE	HUTCHINSON TO HUNTSVILLE, 115KV 57419 HEC 3 115 to 57423 HUNTSVL3 115 CKT 1	92	84.5	102.3	CIRCLE TO MULLERGREEN, 230KV 56871 CIRCLE 6 230 to 58779 MULGREN6 230 CKT1	174	
02SP	SPS-SPS	MANHATTAN TO EAST PLANT, 115KV 50978 MANHATT3 115 to 50956 EASTPL3 115 CKT 1	146	96.6	100.5	RANDALL CO 230/115KV TRANSFORMER 51020 RANDALL3 115 to 51021 RANDALL6 230 CKT1	176	
02SP	SPS-SPS	MANHATTAN TO EAST PLANT, 115KV 50978 MANHATT3 115 to 50956 EASTPL3 115 CKT 1	146	96.6	100.5	HARRINGTON TO RANDALL, 230KV 50907 HARRNG6 230 to 51021 RANDALL6 230 CKT1	176	
02SP	SPS-SPS	FRIONA TO CARGILL, 115KV 51122 FRIONA3 115 to 51120 CARGIL3 115 CKT 1	90	68.3	104.2	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	177	
02SP	SPS-SPS	FRIONA TO CARGILL, 115KV 51122 FRIONA3 115 to 51120 CARGIL3 115 CKT 1	90	67.7	103.1	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	182	
02SP	SPS-SPS	EAST PLANT TO MANHATTAN, 115KV 50956 EASTPL3 115 to 50978 MANHATT3 115 CKT 1	146	95.0	100.5	EAST PLANT TO PIERCE TAP, 115KV 50956 EASTPL3 115 to 50964 PIERCT3 115 CKT1	183	
02SP	WERE-WERE	GILL EAST TO PECK, 69KV 57795 GILL E 269.0 to 57830 PECK 269.0 CKT 1	37	89.7	100.9	EL PASO TO FARBER, 138KV 57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT1	184	
02SP	WERE-WERE	16TH & WOODLAWN JCT TO 3RD & VAN BUREN, 69KV 57526 16WOODJ269.0 to 57527 3 VANBU269.0 CKT 1	71	66.3	100.4	HUTCHINSON GT STATION TO CIRCLE, 115KV 57413 CIRCLE 3 115 to 57421 HEC GT 3 115 CKT1	197	
02WP	SWPA-WFEC	BROWN TO RUSSETT, 138KV 52802 S BROWN4 138 to 56044 RUSSETT4 138 CKT 1	96	99.9	103.7	BROWN TO BROWN, 138KV 52802 S BROWN4 138 to 55157 BROWN 4 138 CKT1	3	

Table 1 continued – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
02WP	WERE-WERE	SOUTH PHILIPS TO WEST MCPHERSON, 115KV CKT 2 57374 SPHILPJ3 115 to 57438 WMCIPHER3 115 CKT 2	92	98.9	106.5	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	28	
02WP	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (WEST), 115KV 57342 WJCCTY 3 115 to 57344 WJCCTYW3 115 CKT 1	141	98.8	104.1	JEFFREY ENERGY CENTER TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	46	
02WP	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (WEST), 115KV 57342 WJCCTY 3 115 to 57344 WJCCTYW3 115 CKT 1	141	98.5	103.9	SUMMIT 345/230KV TRANSFORMER 56773 SUMMIT 7 345 to 56873 SUMMIT 6 230 CKT1	54	
02WP	SPS-SPS	POTASH JCT TO CARLSBAD, 115KV 52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1	90	96.6	103.1	EDDY CO TO CUNNINGHAM, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1	105	
02WP	SWPA-WFEC	BROWN TO RUSSETT, 138KV 52802 S BROWN4 138 to 56044 RUSSETT4 138 CKT 1	96	97.7	101.3	EXPLORER TAP TO BROWN, 138KV 55153 EXPLRTP4 138 to 55157 BROWN 4 138 CKT1	127	
02WP	WERE-WERE	MCDOWELL CREEK TO FORT JCT, 115 KV 57335 MCDOWEL3 115 to 57328 FT JCT 3 115 CKT 1	68	97.6	101.3	JEFFREY ENERGY CENTER TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	130	
02WP	WERE-WERE	MCDOWELL CREEK TO FORT JCT, 115 KV 57335 MCDOWEL3 115 to 57328 FT JCT 3 115 CKT 1	68	97.4	101.1	SUMMIT 345/230KV TRANSFORMER 56773 SUMMIT 7 345 to 56873 SUMMIT 6 230 CKT1	140	
03G	SPS-SPS	POTASH JCT 230/115KV TRANSFORMER 52253 POTJCT6 230 to 52252 POTJCT3 115 CKT 1	150	100.0	104.0	EDDY CO TO CUNNINGHAM, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1	0	
03G	SPS-SPS	DEAF SMITH 230/115KV TRANSFORMER 51111 DFSMTH6 230 to 51110 DFSMTH3 115 CKT 1	150	97.4	102.4	BC-EARTH TO PLANT X, 115KV 51250 BC-EART3 115 to 51418 PLANTX3 115 CKT1	104	
03G	WERE-WERE	PENTAGON TO CRAIG JCT, 115KV 57261 PENTAGN3 115 to 57237 CRAIG J3 115 CKT 1	92	99.3	100.5	EUDORA TO WAKARUS JCT SS, 115KV 57240 EUDORA 3 115 to 57277 WAKARUS3 115 CKT1	123	
03G	WERE-WERE	CRAIG JCT TO TIMBERLANE, 115KV 57237 CRAIG J3 115 to 57273 TIMBRLN3 115 CKT 1	92	99.2	100.4	EUDORA TO WAKARUS JCT SS, 115KV 57240 EUDORA 3 115 to 57277 WAKARUS3 115 CKT1	127	
03G	WERE-WERE	AUBURN 230/115KV TRANSFORMER 56851 AUBURN 6 230 to 57151 AUBURN 3 115 CKT 1	308	98.0	101.1	HOYT TO JEFFREY ENERGY CENTER, 345KV 56765 HOYT 7 345 to 56766 JEC N 7 345 CKT1	128	
04SP	WFEC-OKGE	FRANKLIN SW TO MIDWEST TAP, 138KV 55917 FRNKLN4 138 to 54946 MIDWEST4 138 CKT 1	215	99.9	103.0	PHAROAH TO WETUMKA, 138KV 56026 PHAROAH4 138 to 56084 WETUMKA4 138 CKT1	5	
04SP	AEPW-AEPW	ONETA TO BROKEN ARROW 101ST NORTH, 138KV 53818 ONETA--4 138 to 53781 BA101-N4 138 CKT 1	210	100.0	100.2	BROKEN ARROW N - N TAP TO ONETA, 138KV 53797 BANNTAP4 138 to 53818 ONETA--4 138 CKT1	7	
04SP	SPS-SPS	OSAGE TO MANHATTAN, 115KV 51014 OSAGE--3 115 to 51018 MANHTP3 115 CKT 1	146	99.9	103.0	NICHOLS TO AMARILLO, 230KV 50915 NICHOL6 230 to 51041 AMARLS6 230 CKT1	9	
04SP	WERE-WERE	HOYT TO HOYT HTI SWITCHING JCT, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.9	101.3	EAST MANHATTAN TO CONCORD, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	13	
04SP	AEPW-AEPW	PRATTVILLE TO SAND SPRINGS, 138KV 53770 PRATTV-4 138 to 53827 S.S.---4 138 CKT 1	235	99.8	101.7	RIVERSIDE STATION TO EXPLORER GLENPOOL, 138KV 53795 R.S.S.-4 138 to 55248 EXPLGLN4 138 CKT1	23	
04SP	AEPW-AEPW	SYNDER TO TIPTON & HEADERICK, 69KV 54138 SNYDER-269.0 to 54125 TIP&HED269.0 CKT 1	53	97.3	104.2	HOBERT JUNCTION TO TAMARAC TAP, 138KV 54126 HOB-JCT4 138 to 54158 TAMARTP4 138 CKT1	79	
04SP	SPS-SPS	DEAF SMITH 230/115KV TRANSFORMER CKT 1 51111 DFSMTH6 230 to 51110 DFSMTH3 115 CKT 1	150	98.6	101.8	DEAF SMITH 230/115KV TRANSFORMER CKT 2 51110 DFSMTH3 115 to 51111 DFSMTH6 230 CKT2	85	
04SP	SPS-SPS	DEAF SMITH 230/115KV TRANSFORMER CKT 2 51111 DFSMTH6 230 to 51110 DFSMTH3 115 CKT 2	150	98.6	101.8	DEAF SMITH 230/115KV TRANSFORMER CKT 1 51110 DFSMTH3 115 to 51111 DFSMTH6 230 CKT1	85	
04SP	OKGE-OKGE	RUSSETT TO GLASSES, 138KV 55120 RUSSETT4 138 to 55147 GLASSES4 138 CKT 1	96	99.1	101.3	BROWN TAP TO EXPLORER TAP, 138KV 55152 BROWNTP4 138 to 55153 EXPLRTP4 138 CKT1	85	
04SP	SPS-SPS	CV-ARTE TO ARTESIA, 69KV 52171 CV-ARTE269.0 to 52173 ARTW2 69.0 CKT 1	54	99.3	100.5	NAVAJO 3 TO NAVAJO 4, 115KV 52162 NAVAJ33 115 to 52166 NAVAJ43 115 CKT1	116	

Table 1 continued – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
04SP	WERE-WERE	HUNTSVILLE TO ST JOHN, 115KV 57423 HUNTSVL3 115 to 57433 ST JOHN3 115 CKT 1	80	92.8	104.4	CIRCLE TO MULLERGREN, 230KV 56871 CIRCLE 6 230 to 58779 MULGREN6 230 CKT1	124	
04SP	SPS-SPS	EDDY CO 230/115KV TRANSFORMER 52185 EDDYCO6 230 to 52184 EDDYCO3 115 CKT 1	168	98.9	100.4	SEVEN RIVERS 230/115KV TRANSFORMER 52293 7RIVER6 230 to 52294 7RIVER3 115 CKT1	142	
04SP	WFEC-WFEC	HAMON BUTLER TO MOREWOOD, 69KV 55942 HM-BTTP269.0 to 56000 MORWODS269.0 CKT 1	26	85.5	102.2	MOORELAND TO MOREWOOD, 138KV 55999 MOORLND4 138 to 56001 MORWODS4 138 CKT1	174	
04WP	OKGE-OKGE	DEER CREEK TO SINCLAIR BLACK, 69KV 54741 DEERCRC269.0 to 54728 SINCLBK269.0 CKT 1	72	100.0	100.1	HEMLOCK TAP TO CHESTNUT, 69KV 54725 HEMLKTP269.0 to 54726 CHSTNUT269.0 CKT1	0	
04WP	AEPW-AEPW	OKMULGEE TO EAST CENTRAL HENRYETTA, 69KV 54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	99.4	103.1	OKMULGEE TO KELCO, 138KV 54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT1	33	
04WP	OKGE-WFEC	RUSSETT TO RUSSETT, 138KV 55120 RUSSETT4 138 to 56044 RUSSETT4 138 CKT 1	96	98.3	102.2	BROWN TO BROWN, 138KV 52802 S BROWN4 138 to 55157 BROWN 4 138 CKT1	86	
04WP	WERE-WERE	3RD & VAN BUREN TO E & MADISON JCT, 69KV 57527 3 VANBU269.0 to 57508 E MADSN269.0 CKT 1	41	99.9	100.1	CIRCLE TO DAVIS, 115KV 57413 CIRCLE 3 115 to 57415 DAVIS 3 115 CKT1	123	
04WP	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (EAST), 115KV 57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	96.4	101.9	JEFFREY ENERGY CENTER TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	130	
04WP	WERE-WERE	WEST JCT CITY TO WEST JCT CITY JCT (EAST), 115KV 57343 WJCCTYE3 115 to 57342 WJCCTY 3 115 CKT 1	141	96.2	101.8	SUMMIT 345/230KV TRANSFORMER 56773 SUMMIT 7 345 to 56873 SUMMIT 6 230 CKT1	135	
04WP	WERE-WERE	EL PASO TO GILL WEST, 138KV 57039 ELPASO 4 138 to 57045 GILL W4 138 CKT 1	191	99.1	100.2	EVANS NORTH TO EVANS SOUTH, 138KV 57040 EVANS N4 138 to 57041 EVANS S4 138 CKT1	161	
04WP	WERE-WERE	PENTAGON TO CRAIG JCT, 115KV 57261 PENTAGN3 115 to 57237 CRAIG J3 115 CKT 1	92	96.3	100.1	EUDORA TO WAKARUS JCT SS, 115KV 57240 EUDORA 3 115 to 57277 WAKARUS3 115 CKT1	195	
04WP	WERE-WERE	CRAIG JCT TO TIMBERLANE, 115KV 57237 CRAIG J3 115 to 57273 TIMBRLN3 115 CKT 1	92	96.2	100.1	EUDORA TO WAKARUS JCT SS, 115KV 57240 EUDORA 3 115 to 57277 WAKARUS3 115 CKT1	197	
06SP	WERE-WERE	GILL EAST TO PECK, 69KV 57795 GILL E 269.0 to 57830 PECK 269.0 CKT 1	37	99.9	103.6	OXFORD TO SUMNER CO, 138KV 56982 OXFORD 4 138 to 57063 SC10BEL4 138 CKT1	5	
06SP	SPS-SPS	EDDY CO 230/115KV TRANSFORMER 52185 EDDYCO6 230 to 52184 EDDYCO3 115 CKT 1	168	99.9	102.0	CHAVES CO TO EDDY CO , 230KV 52073 CHAVES6 230 to 52185 EDDYCO6 230 CKT1	10	
06SP	SPS-SPS	ARTESIA TO CV-ARTE, 69KV 52153 ARTESIA269.0 to 52171 CV-ARTE269.0 CKT 1	54	98.4	117.8	NAVAJO TO EDDY CO, 115KV 52166 NAVAJ43 115 to 52184 EDDYCO3 115 CKT1	16	
06SP	AEPW-AEPW	OKMULGEE TO EAST CENTRAL HENRYETTA, 69KV 54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	99.7	103.5	OKMULGEE TO KELCO, 138KV 54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT1	17	
06SP	SPS-SPS	CHAVES CO 115/69KV TRANSFORMER 52072 CHAVES3 115 to 52071 CHAVES2 69.0 CKT 1	40	99.8	102.0	NAVAJO TO EDDY CO, 115KV 52166 NAVAJ43 115 to 52184 EDDYCO3 115 CKT1	18	
06SP	WERE-WERE	GILL EAST TO PECK, 69KV 57795 GILL E 269.0 to 57830 PECK 269.0 CKT 1	37	99.6	103.4	CRESWELL NORTH TO OXFORD, 138KV 56981 CRESWLN4 138 to 56982 OXFORD 4 138 CKT1	19	
06SP	AEPW-AEPW	SYNDER TO FREDERICK JCT, 69KV 54138 SNYDER-269.0 to 54123 FREDJC-269.0 CKT 1	26	99.8	101.2	ANADARKO TO PARADISE, 138KV 55814 ANADARK4 138 to 56024 PARADSE4 138 CKT1	29	
06SP	SPS-SPS	OSAGE SS TO MANHATTAN TAP, 115KV 51014 OSAGE--3 115 to 51018 MANHTP3 115 CKT 1	146	99.2	103.4	EAST PLANT TO PIERCE TAP, 115KV 50956 EASTPL3 115 to 50964 PIERCT3 115 CKT1	36	
06SP	AEPW-AEPW	VERDIGRIS TO CLAREMORE TRANSOK, 138KV 53869 VERDIGS4 138 to 53879 CLARTOK4 138 CKT 1	151	99.8	100.9	OWASSO SOUTH TO NE STATION, 138KV 53857 OWASSOS4 138 to 53945 N.E.S.-4 138 CKT1	39	
06SP	SPS-SPS	SOUTH GEORGIA TO OSAGE SS, 115KV 51008 GEORGIA3 115 to 51014 OSAGE--3 115 CKT 1	146	99.7	101.1	OSAGE SS TO ARROWHEAD, 115KV 51014 OSAGE--3 115 to 51036 ARRWH3 115 CKT1	46	

Table 1 continued – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
06SP	WERE-WERE	WEAVER TO ROSE HILL JCT, 69KV 57604 WEAVER 269.0 to 57837 RH JCT 269.0 CKT 1	43	99.0	101.8	OXFORD TO SUMNER CO, 138KV 56982 OXFORD 4 138 to 57063 SC10BEL4 138 CKT1	71	
06SP	WERE-WERE	WEAVER TO ROSE HILL JCT, 69KV 57604 WEAVER 269.0 to 57837 RH JCT 269.0 CKT 1	43	98.9	101.8	CRESWELL NORTH TO OXFORD, 138KV 56981 CRESWLN4 138 to 56982 OXFORD 4 138 CKT1	75	
06SP	OKGE-AEPW	EXPLORER GLEENPOOL TO RIVERSIDE STATION, 138KV 55248 EXPLGLN4 138 to 53795 R.S.S.-4 138 CKT 1	287	99.2	101.0	PRATTVILLE TO BLUEBELL, 138KV 53770 PRATTV-4 138 to 55242 BLUEBEL4 138 CKT1	89	
06SP	SPS-SPS	ARTESIA TO CV-ARTE, 69KV 52153 ARTESIA269.0 to 52171 CV-ARTE269.0 CKT 1	54	90.6	111.6	NAVAJO 3 TO NAVAJO 4, 115KV 52162 NAVAJ33 115 to 52166 NAVAJ43 115 CKT1	90	
06SP	AEPW-AEPW	ONETA TO BROKEN ARROW 101ST NORTH, 138KV 53818 ONETA--4 138 to 53781 BA101-N4 138 CKT 1	210	99.7	100.3	MINGO RD NORTH TO 21ST STREET TAP, 138KV 53772 MINGO-N4 138 to 53841 21STTAP4 138 CKT1	101	
06SP	WERE-WERE	CIRCLEVILLE TO KING HILL, 115KV 57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	98.3	100.9	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	132	
06SP	WFEC-AEPW	ESQUANDALE JCT TO WALTERS JCT, 69KV 55905 ESQNDLJ269.0 to 54097 WALTRS-269.0 CKT 1	48	98.3	100.4	PARADISE TO SNYDER, 138KV 56024 PARADSE4 138 to 56052 SNYDER 4 138 CKT1	162	
06SP	WFEC-AEPW	ESQUANDALE JCT TO WALTERS JCT, 69KV 55905 ESQNDLJ269.0 to 54097 WALTRS-269.0 CKT 1	48	98.2	100.4	SNYDER 138/69KV TRANSFORMER 56051 SNYDER 269.0 to 56052 SNYDER 4 138 CKT1	163	
06SP	OKGE-OKGE	MORRISON TO STILLWATER, 138KV 55006 MORRISN4 138 to 55011 STILWTR4 138 CKT 1	191	97.7	100.4	NORTHWEST TO SPRING CREEK, 345KV 54880 NORTWST7 345 to 54881 SPRNGCK7 345 CKT1	171	
06WP	AEPW-AEPW	OKMULGEE TO EAST CENTRAL HENRYETTA, 69KV 54023 OKMULGE4 138 to 54049 EC.HEN-4 138 CKT 1	105	97.4	101.4	OKMULGEE TO KELCO, 138KV 54023 OKMULGE4 138 to 54057 KELCO 4 138 CKT1	132	
10SP	AEPW-AEPW	ONETA TO BROKEN ARROW 101ST NORTH, 138KV 53818 ONETA--4 138 to 53781 BA101-N4 138 CKT 1	210	100.0	100.2	JENKS TO SOUTHER HILLS WEST, 138KV 53771 JENKS--4 138 to 53826 S.HIL-W4 138 CKT1	0	
10SP	AEPW-AEPW	CACHE TO SNYDER, 138KV 54163 CACHE--4 138 to 54098 SNYDER-4 138 CKT 1	105	99.6	105.6	FORT COBB TO SOUTHWEST STATION, 138KV 54117 FTCOBNG4 138 to 54140 S.W.S.-4 138 CKT1	14	
10SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54988 TINKER44 138 to 54990 TINKER24 138 CKT 1	100	99.9	100.2	CHERRY CREEK TO BOYD, 138KV 54957 CHERYCK4 138 to 54958 BOYD 4 138 CKT1	48	
10SP	SPS-SPS	DEAF SMITH TO HEREFORD, 115KV 51110 DFSMTH3 115 to 51106 HEREFD3 115 CKT 1	146	97.8	106.0	OSAGE SS TO CANYON EAST, 115KV 51014 OSAGE--3 115 to 51080 CANYNE3 115 CKT1	53	
10SP	AEPW-AEPW	CACHE TO SNYDER, 138KV 54163 CACHE--4 138 to 54098 SNYDER-4 138 CKT 1	105	98.3	104.3	CARNEGIE TO FORT COBB, 138KV 54108 CARNEG-4 138 to 54117 FTCOBNG4 138 CKT1	57	
10SP	SPS-SPS	SOUTH GEORGIA TO OSAGE SS, 115KV 51008 GEORGIA3 115 to 51014 OSAGE--3 115 CKT 1	146	99.5	101.0	CHERRY CREEK TO NICHOLS, 115KV 50908 CHERRY3 115 to 50914 NICHOL3 115 CKT1	64	
10SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54988 TINKER44 138 to 54990 TINKER24 138 CKT 1	100	99.9	100.2	36 & MERIDIAN TO PENNSYLVANIA, 138KV 54888 36&MER 4 138 to 54925 PENN 4 138 CKT1	70	
10SP	SPS-SPS	HALE CO TO TUCO, 115KV 51402 HALECO3 115 to 51532 TUCO3 115 CKT 1	90	99.2	101.0	TUCO 230/115KV TRANSFORMER 51532 TUCO3 115 to 51533 TUCO6 230 CKT1	85	
10SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54988 TINKER44 138 to 54990 TINKER24 138 CKT 1	100	99.9	100.2	STUBBEMAN TO HOLLYWOOD, 138KV 54952 STUBMAN4 138 to 54953 HOLLYWD4 138 CKT1	91	
10SP	WFEC-WFEC	EL RENO TO EL RENO SW, 69KV 55899 ELRENOJ269.0 to 55892 EL RENO269.0 CKT 1	26	97.1	103.1	JENSEN TAP TO JENSEN RD, 138KV 54820 JENSENT4 138 to 54821 JENSEN 4 138 CKT1	98	
10SP	AEPW-AEPW	CACHE TO SNYDER, 138KV 54163 CACHE--4 138 to 54098 SNYDER-4 138 CKT 1	105	96.9	102.9	CARNEGIE TO HOBART JCT, 138KV 54108 CARNEG-4 138 to 54126 HOB-JCT4 138 CKT1	104	
10SP	WFEC-WFEC	WALTERS TO COMANCHE, 69KB 56086 WALTERS269.0 to 55863 COMANCH269.0 CKT 1	38	99.2	100.7	LAWTON DISPOSAL TAP TO LAWTON RELIFT TAP, 69KV 54187 L-DISTP269.0 to 54189 L-RLITP269.0 CKT1	112	

Table 1 continued – SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Solution
10SP	OKGE-AEPW	BLUEBELL TO PRATTVILLE, 138KV 55242 BLUEBEL4 138 to 53770 PRATTV-4 138 CKT 1	235	98.7	101.0	BEELINE TO EXPLORER GLEENPOOL, 138KV 55247 BEELINE4 138 to 55248 EXPLGLN4 138 CKT1	114	
10SP	SPS-SPS	ATOKA 115/69KV TRANSFORMER 52180 ATOKA3 115 to 52179 ATOKA2 69.0 CKT 1	40	95.9	103.0	CHAVES CO TO EDDY CO , 230KV 52073 CHAVES6 230 to 52185 EDDYCO6 230 CKT1	116	
10SP	WEPL-MIDW	MULLERGREN TO HEIZER, 115KV 58779 MULGREN6 230 to 56601 HEIZER 3 115 CKT 1	142	99.3	100.4	KNOLL TO SUMMIT, 230KV 56558 KNOLL 6 230 to 56873 SUMMIT 6 230 CKT1	128	
10SP	WEPL-MIDW	MULLERGREN TO HEIZER, 115KV 58779 MULGREN6 230 to 56601 HEIZER 3 115 CKT 1	142	99.3	100.3	KNOLL 230/115KV TRANSFORMER 56558 KNOLL 6 230 to 56561 KNOLL 3 115 CKT1	137	
10SP	WFEC-WFEC	WALTERS TO COMANCHE, 69KB 56086 WALTERS269.0 to 55863 COMANCH269.0 CKT 1	38	99.0	100.4	LAWTON RELIEF TAP TO OMPA-WALTERS, 69KV 54189 L-RLITP269.0 to 56211 OMWALTR269.0 CKT1	137	
10SP	WFEC-WFEC	MOORELAND 138/69KV TRANSFORMER 55999 MOORLND4 138 to 55995 MOORLND269.0 CKT 1	65	99.4	100.3	MOORELAND TAP TO MOORELAND, 138KV 54780 MORLNDT4 138 to 55999 MOORLND4 138 CKT1	141	
10SP	OKGE-OKGE	PAOLI TO PAULS VALLEY, 69KV 55099 PAOLI 269.0 to 55101 PAULSVL269.0 CKT 1	60	99.8	100.1	CHIGLEY 138/69KV TRANSFORMER 55113 CHIGLEY269.0 to 55114 CHIGLEY4 138 CKT1	149	
10SP	OKGE-WFEC	CLEO CORNER TO CLEO JCT, 69KV 54777 CLEOCOR269.0 to 55855 CLEO JT269.0 CKT 1	26	99.3	100.2	FAIRVIEW TO OKEENE, 69KV 55909 FAIRVEW269.0 to 56015 OKEENE 269.0 CKT1	155	

Table 2 – Non - SPP Facility Overloads caused by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
01WP	OPPD-OPPD	60131 S1263T1T 161 to 61015 W BROCK869.0 CKT 1	53	99.5	100.8	60136 S975T4 T 161 to 64145 HUMBOLT5 161 CKT1
01WP	OPPD-OPPD	60131 S1263T1T 161 to 61015 W BROCK869.0 CKT 1	53	99.4	100.8	60136 S975T4 T 161 to 60089 S975 869.0 CKT1
02G	EES-EES	99154 3TALULA 115 to 99155 3DELHI 115 CKT 1	80	99.9	100.1	99148 8STERL 500 to 99203 8PERYVIL 500 CKT1
02G	EES-EES	99154 3TALULA 115 to 99155 3DELHI 115 CKT 1	80	99.9	100.1	98937 8B.WLSN 500 to 99203 8PERYVIL 500 CKT1
02G	EES-EES	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	99.7	100.3	99308 3MAG-E 115 to 99310 3MCNEIL 115 CKT1
02G	EES-EES	99310 3MCNEIL 115 to 99230 3COUCH 115 CKT 1	167	99.5	100.2	99403 3HSEHVW 115 to 99407 3FRIEND 115 CKT1
02G	NPPD-NPPD	64103 GENTLMN4 230 to 64101 G.GENT Y 345 CKT 1	336	99.1	100.2	64102 GENTLMN3 345 to 64166 KEYSTON3 345 CKT1
02SP	EES-EES	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT 1	120	100.0	100.1	99249 3EMERSN 115 to 99288 3KERLIN* 115 CKT1
02SP	AMRN-AMRN	31221 MOBERLY 161 to 31222 MOBERLY 69.0 CKT 1	75	99.9	100.1	31221 MOBERLY 161 to 31222 MOBERLY 69.0 CKT2
02SP	MIPU-MIPU	59289 BELTON 269.0 to 59288 RGAFB 269.0 CKT 1	53	99.9	100.1	59239 HSNVL 5 161 to 59295 HSNVL 269.0 CKT1
02WP	OPPD-OPPD	60131 S1263T1T 161 to 61015 W BROCK869.0 CKT 1	53	98.8	100.2	60136 S975T4 T 161 to 64145 HUMBOLT5 161 CKT1
04WP	AECI-AECI	96090 5KINGDM 161 to 96517 2KINGDM 69.0 CKT 1	29	100.0	100.3	96061 5BOONE 161 to 96493 2BOONE 69.0 CKT1
04WP	AECI-AECI	96082 5GEORGE 161 to 96531 2GEORGE 69.0 CKT 1	56	99.8	100.3	30233 CALIF 161 to 96063 5CALIF 161 CKT1
04WP	AECI-AECI	96090 5KINGDM 161 to 96517 2KINGDM 69.0 CKT 2	29	99.9	100.2	96061 5BOONE 161 to 96493 2BOONE 69.0 CKT1
04WP	AECI-AECI	96082 5GEORGE 161 to 96531 2GEORGE 69.0 CKT 1	56	99.8	100.3	96063 5CALIF 161 to 96550 2CALIF 69.0 CKT1
04WP	OPPD-OPPD	60131 S1263T1T 161 to 61015 W BROCK869.0 CKT 1	53	98.8	100.2	60136 S975T4 T 161 to 64145 HUMBOLT5 161 CKT1
04WP	OPPD-OPPD	60131 S1263T1T 161 to 61015 W BROCK869.0 CKT 1	53	98.8	100.2	60136 S975T4 T 161 to 60089 S975 869.0 CKT1
06SP	MIPU-AECI	59216 BUTLER_5 161 to 96689 2BUTLER 69.0 CKT 1	56	98.8	100.1	59208 NEVADA 5 161 to 59216 BUTLER_5 161 CKT1
10SP	OPPD-OPPD	64448 S1229 5 161 to 60201 S1201 5 161 CKT 1	321	100.0	100.1	60209 S1209 5 161 to 64407 S3459T3T 345 CKT1
10SP	SUNC-SUNC	56448 HOLCOMB3 115 to 56393 PLYMELL3 115 CKT 1	143	99.2	100.9	56446 HLCXFM6 230 to 56449 HOLCOMB7 345 CKT1
10SP	SUNC-SUNC	56448 HOLCOMB3 115 to 56393 PLYMELL3 115 CKT 1	143	99.2	100.9	56446 HLCXFM6 230 to 56448 HOLCOMB3 115 CKT1
10SP	AECI-AECI	96090 5KINGDM 161 to 96517 2KINGDM 69.0 CKT 1	25	99.9	100.1	31230 MONTGMRY 345 to 31231 MONTGMRY 161 CKT1
10SP	SUNC-SUNC	56448 HOLCOMB3 115 to 56393 PLYMELL3 115 CKT 1	143	94.8	100.2	50858 FINNEY7 345 to 50888 POTTRC7 345 CKT1

Table 3 – Previously Assigned or Identified SPP Facilities Impacted by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Assignment
01WP	SWPA-WFEC	TUPELO TO TUPELO TAP, 138KV 52800 TUPELO 4 138 to 56071 TUPLOTP4 138 CKT 1	96	100.5	107.5	PITTSBURG TO VALLIANT, 345KV 54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	SPP Flowgate
01WP	WERE-WERE	PHILIPS TO SOUTH PHILIPS JCT, 115KV 57372 PHILIPS3 115 to 57374 SPHILPJ3 115 CKT 1	160	110.1	119.3	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	0	SPP Flowgate
01WP	WERE-WERE	EXIDE JCT TO SUMMIT, 115KV 57368 EXIDE J3 115 to 57381 SUMMIT 3 115 CKT 1	181	105.1	109.8	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	0	1999-017
01WP	WERE-WERE	EXIDE JCT TO PHILIPS, 115KV 57368 EXIDE J3 115 to 57372 PHILIPS3 115 CKT 1	181	100.0	104.6	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	0	1999-017
01WP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	83.3	122.5	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	85	
01WP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	83.1	122.2	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	87	
01WP	WFEC-WFEC	FRANKLIN SW TO ACME, 69KV 55916 FRNKLNS269.0 to 55802 ACME 269.0 CKT 1	34	98.1	101.2	GOLDSBY TO OKLAHOMA UNIVERSITY SW, 69KV 55924 GOLDSBY269.0 to 56018 OU SW 269.0 CKT1	120	1999-017
02G	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	87.0	126.1	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	66	
02G	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	86.9	125.9	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	67	
02SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	106.6	154.2	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	0	
02SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	106.8	154.2	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	0	
02WP	WERE-WERE	PHILIPS TO SOUTH PHILIPS JCT, 115KV 57372 PHILIPS3 115 to 57374 SPHILPJ3 115 CKT 1	160	105.1	113.1	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	0	SPP Flowgate
02WP	SWPA-WFEC	TUPELO TO TUPELO TAP, 138KV 52800 TUPELO 4 138 to 56071 TUPLOTP4 138 CKT 1	96	103.8	110.1	PITTSBURG TO VALLIANT, 345KV 54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	SPP Flowgate
02WP	WFEC-WFEC	FRANKLIN SW TO ACME, 69KV 55916 FRNKLNS269.0 to 55802 ACME 269.0 CKT 1	34	123.1	126.1	GOLDSBY TO OKLAHOMA UNIVERSITY SW, 69KV 55924 GOLDSBY269.0 to 56018 OU SW 269.0 CKT1	0	1999-017
02WP	WERE-WERE	EXIDE JCT TO SUMMIT, 115KV 57368 EXIDE J3 115 to 57381 SUMMIT 3 115 CKT 1	181	102.4	106.3	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	0	1999-017
02WP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	84.2	123.5	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	80	
02WP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	84.0	122.9	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	82	
02WP	WERE-WERE	EXIDE JCT TO PHILIPS, 115KV 57368 EXIDE J3 115 to 57372 PHILIPS3 115 CKT 1	181	97.5	101.4	SUMMIT TO EAST MCPHERSON, 230KV 56873 SUMMIT 6 230 to 56872 EMCIPHER6 230 CKT1	127	1999-017
03G	WFEC-WFEC	FRANKLIN SW TO ACME, 69KV 55916 FRNKLNS269.0 to 55802 ACME 269.0 CKT 1	34	102.4	105.6	GOLDSBY TO OKLAHOMA UNIVERSITY SW, 69KV 55924 GOLDSBY269.0 to 56018 OU SW 269.0 CKT1	0	1999-017
03G	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	88.4	128.0	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	58	
03G	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	88.6	127.9	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	58	
04SP	AEPW-OKGE	RIVERSIDE STATION TO EXPLORER GLENPOOL, 138KV 53795 R.S.-4 138 to 55248 EXPLGLN4 138 CKT 1	265	98.9	100.4	SAND SPRINGS TO PRATTVILLE, 138KV 53827 S.S.--4 138 to 53770 PRATTV-4 138 CKT1	0	SPP Flowgate

Table 3 continued – Previously Assigned or Identified SPP Facilities Impacted by the WR to BLKW 200MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATEB	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC (MW)	Assignment
04SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	74.5	99.5	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	200	
04SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	74.9	99.9	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	200	
04WP	SWPA-WFEC	TUPELO TO TUPELO TAP, 138KV 52800 TUPELO 4 138 to 56071 TUPLOTP4 138 CKT 1	96	101.6	108.6	PITTSBURG TO VALLIANT, 345KV 54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	SPP Flowgate
06SP	AEPW-OKGE	RIVERSIDE STATION TO EXPLORER GLENPOOL, 138KV 53795 R.S.S.-4 138 to 55248 EXPLGLN4 138 CKT 1	265	105.3	107.0	SAND SPRINGS TO PRATTVILLE, 138KV 53827 S.S.----4 138 to 53770 PRATTV-4 138 CKT1	0	SPP Flowgate
06SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	73.4	98.3	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	200	
06SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	73.6	98.6	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	200	
10SP	AEPW-OKGE	RIVERSIDE STATION TO EXPLORER GLENPOOL, 138KV 53795 R.S.S.-4 138 to 55248 EXPLGLN4 138 CKT 1	265	111.1	112.9	SAND SPRINGS TO PRATTVILLE, 138KV 53827 S.S.----4 138 to 53770 PRATTV-4 138 CKT1	0	SPP Flowgate
10SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	89.6	116.1	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	78	
10SP	SPS-SPS	ROOSEVELT CO TO TOLK, 230KV CKT 2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	89.3	115.9	ROOSEVELT CO TO TOLK, 230KV CKT 1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	80	

Table 4 – Existing Higher Priority Transmission Requests Over the SPP to SPS Interface During the Reservation Period

Request	POR	POD	Amnt	Customer	Status	2001	2002	2002	2002	2003	2004	2004	2006	2006	2010
						Winter Peak 12/1-4/1 (01WP)	Spring Peak 4/1-6/1 (02G)	Summer Peak 6/1-10/1 (02SP)	Winter Peak 12/1-4/1 (02WP)	Spring Peak 4/1-6/1 (03G)	Summer Peak 6/1-10/1 (04SP)	Winter Peak 12/1-4/1 (04WP)	Summer Peak 6/1-10/1 (06SP)	Winter Peak 12/1-4/1 (06WP)	Summer Peak 6/1-10/1 (10SP)
136714	AMRN	SPS	50	SPSM	Confirmed	50	50	50	50	50	50	50	50	50	50
136717	AMRN	SPS	50	SPSM	Confirmed	50	50	50	50	50	50	50	50	50	50
136718	AMRN	SPS	50	SPSM	Confirmed	50	50	50	50	50	50	50	50	50	50
136724	AMRN	SPS	50	SPSM	Confirmed	50	50	50	50	50	50	50	50	50	50
	LAMAR HVDC	SPS	210									210	210	210	210
Total Amount of Requests						200	200	200	200	200	200	410	410	410	410

Table 5 – Available Transfer Capability During the Reservation Period for SPS Imports Due To Voltage Stability Limitations

	2001	2002	2002	2002	2003	2004	2004	2006	2006	2010
	Winter Peak 12/1-4/1 (01WP)	Spring Peak 4/1-6/1 (02G)	Summer Peak 6/1-10/1 (02SP)	Winter Peak 12/1-4/1 (02WP)	Spring Peak 4/1-6/1 (03G)	Summer Peak 6/1-10/1 (04SP)	Winter Peak 12/1-4/1 (04WP)	Summer Peak 6/1-10/1 (06SP)	Winter Peak 12/1-4/1 (06WP)	Summer Peak 6/1-10/1 (10SP)
Total Transfer Capability (TTC)	993	985	899	929	1090	845	1253	950	1528	950
Transmission Reliability Margin (TRM)	540	540	540	540	540	540	540	540	540	540
Total Amount of Requests	200	200	200	200	200	200	410	410	410	410
Available Transfer Capability (ATC)	253	245	159	189	350	105	303	0	578	0

5. Conclusion

With the assumption that the Blackwater HVDC Tie is expanded or a new tie is built at Blackwater, the results of the study show that before the 200MW transfer can take place system upgrades will be required to increase the voltage limited ATC. These system upgrades will be determined once a facility study agreement is executed. After determining the upgrades required to increase the voltage limited ATC, Tables 1, 2 and 3 will need to be revised with the determined voltage upgrades included in the models.

Upgrades associated with the facility overloads identified in revised Table 1 and Table 3 will be required before the start of service. Third-party system overloads will need to be reviewed with affected transmission owners.

Facility restrictions exist in SPP that limit the requested WR to BLKW 200MW reservation; therefore, a Facility Study is required to determine details and costs of upgrades.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:

Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply immediately
4. Solution options - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts

ACCC CASES:

Solutions – AC contingency checking (ACCC)

1. MW mismatch tolerance –0.5
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excl'd cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits - Apply automatically
4. Solution options - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts