SPP Southwest Power Pool

Feasibility Study For Generation Interconnection Request GEN-2005-012

SPP Tariff Studies
(#GEN-2005-012)

March 17, 2006

Executive Summary

<OMITTED TEXT> (Customer) has requested a Feasibility Study for the purpose of interconnecting 400MW of wind generation within the service territory of West Plains Energy (WEPL) (d/b/a Aquila, Inc.) in Ford County Kansas. The Customer's proposed point of interconnection is in the existing Spearville 345–230-115kV Substation. These facilities are owned by Sunflower Electric Power Corporation (SUNC) and WEPL where the 345kV bus is owned by SUNC. The proposed in-service date is December 1, 2008.

As a result of a scoping meeting held on October 19, 2005 given the then known limitations of transformer capacity in the Spearville Substation, two options existed for evaluation. Subsequently, an interconnection at 345kV was evaluated and the results are documented in this report. Given the lack of ATC in the immediate area with an interconnection at the 345kV bus of which is owned by SUNC, no additional analysis was completed at this time. In the future when additional transmission facilities are defined and represented in load flow models that may accommodate the power transfers, then a comparison analysis may be completed using alternative buses within the Spearville Substation.

In addition, given a modeled contingency with an outage of the Holcomb – Spearville 345kV line in all cases, load flow solutions were nearly obtained with the specified amount of reactive compensation included in the Customer's 345–34.5kV Substation. Additional transmission facilities are required and must be modeled before additional analyses may be completed with reasonable results. The specified reactive compensation is required for voltage regulation at Spearville to minimize the potential for voltage collapse.

Power flow analysis has indicated that for the powerflow cases studied, it is possible to interconnect the 400MW of generation with transmission system reinforcements within the local Midwest Energy (MIDW), Westar Energy (WERE) and WEPL transmission system. The requirements for interconnection consist of adding 345kV bus with applicable breakers. This 345kV addition shall be constructed and maintained by SUNC. The Customer did not propose a specific 345kV line extending to serve its 345-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the necessary substation additions in the Spearville Substation will not be a significant expense.

In order to maintain acceptable bus voltages in the local area for an outage of the Holcomb – Spearville 345kV line, the Customer while using the Vestas machine will need to install 84MVAR of reactive compensation in the Customer's substation including one 27MVAR bank switched at each of two 34.5kV buses as well as a 30MVAR SVC at a third 34.5kV bus. Dynamic Stability studies performed as part of the impact study will provide additional guidance as to whether the reactive compensation can in part be static or must be dynamic (such as a SVC). With this reactive compensation installed, additional transmission facilities are required to increase the ATC above 0MW for this contingency.

The cost for adding the 345kV bus and a breaker in the Spearville Substation, the interconnection facility, is estimated at $650,000. Including the interconnection metering, the total estimated cost is $900,000. An alternative point of interconnection is at the WEPL 230kV bus in the Spearville Substation, and adding a line position is estimated to cost $2,300,000. Other Network Constraints in the Midwest Energy (MIDW), Westar Energy (WERE) and WEPL system that may be verified with a transmission service request and associated studies are listed in Table 3. These Network Constraints are in the local area of the new generation when this generation is sunk throughout the SPP footprint for the Energy Resource Interconnection request. With a defined source and sink in a Transmission Service Request, this list of Network Constraints will be refined and expanded to account for all Network Upgrade requirements. This cost does not include building 345kV line from the Customer substation into the Spearville Substation. This cost does not include the Customer's 345-34.5kV substation.

In Table 4, a value of Available Transfer Capability (ATC) associated with each overloaded facility is included. These values may be used by the Customer for future analyses including the determination of lower generation capacity levels that may be installed. When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower. When a facility is overloaded for more than 10 contingencies, then only the results with the 10 highest values of loading may be included in this table.

There are a significant number of overloaded facilities associated with this request. For the outage of the Holcomb – Spearville 345kV line, there is no load flow solution for this contingency in all cases given the lack of existing transmission capacity. While there are low voltage conditions associated with this request, none are included given the lack of transmission facilities that must be addressed for transmission service. Therefore, the reactive compensation requirements in the Customer's substation may be re-evaluated in a subsequent transmission study while using the Vestas machine.

There are several other proposed generation additions in the general area of the Customer's facility. It was assumed in this preliminary analysis that these other projects within the WEPL and MIDW service territories will be in service. Those previously queued projects that have advanced to nearly complete phases were included in this Feasibility Study. In the event that another request for a generation interconnection with a higher priority withdraws, then this request may have to be re-evaluated to determine the local Network Constraints.

Introduction

<OMITTED TEXT> (Customer) has requested a feasibility study for the purpose of interconnecting 400MW of wind generation within the service territory of West Plains Energy in Ford County Kansas. The existing Spearville 345–230-115kV Substation facilities are owned by both SUNC and WEPL, and the proposed generation interconnection is with WEPL. The evaluated point of interconnection is at an extension of the 345kV bus owned by SUNC. The proposed in-service date is December 1, 2008.

Interconnection Facilities

The primary objective of this study is to identify the system problems associated with connecting the plant to the area transmission system. The Feasibility and other subsequent Interconnection Studies are designed to identify attachment facilities, Network Upgrades and other direct assignment facilities needed to accept power into the grid at the interconnection receipt point.

The requirements for interconnection consist of adding 345kV bus, breakers, etc. in the Spearville Substation. This 345kV addition shall be constructed and maintained by SUNC. The Customer did not propose a route of its 345kV line to serve its 345-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the additions in the SUNC 345kV facilities will not be a significant expense.

The cost for SUNC to add 345kV facilities in its Spearville Substation, the interconnection facility, is estimated at $650,000 for bus and a breaker. Including the interconnection metering, the total estimated cost is $900,000. Other Network Constraints in the MIDW, WERE and WEPL systems that were identified are listed in Table 3. These estimates will be refined during the development of the impact study based on the final designs. This cost does not include building 345kV line from the Customer substation into the SUNC facilities. The Customer is responsible for this 345kV line up to the point of interconnection. This cost does not include the Customer's 345-34.5kV substation and the cost estimate should be determined by the Customer.

The costs of interconnecting the facility to the SUNC transmission system are listed in Table 2. **These costs do not include any cost that might be associated with short circuit study results or dynamic stability study results**. These costs will be determined when and if a System Impact Study is conducted.

Table 1: Direct Assignment Facilities

Facility	ESTIMATED COST (2006 DOLLARS)
Customer – 345-34.5 kV Substation facilities including two of 27MVAR 34.5kV capacitor banks and a 30MVAR 34.5kV SVC.	*
Customer – 345kV line between Customer substation and upgraded SUNC 345kV Spearville Substation facilities.	*
Customer - Right-of-Way for Customer Substation & Line.	*
Customer – Add interconnection metering at Spearville 345kV bus by SUNC.	$250,000
Total	*****

Note: *Estimates of cost to be determined by Customer.

Table 2: Required Interconnection Network Upgrade Facilities

Facility	ESTIMATED COST (2006 DOLLARS)
SUNC - Add 345kV bus, breaker, etc. in the Spearville Substation.	$650,000
Total	**$650,000**

Table 3: Network Constraints

Facility
MIDW - EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622
MIDW - EDWARDS - ST_JOHN 115kV, 56617 - 56624
WEPL - Greensburg - 2001-39A 115kV, 58764 - 99977
WEPL - Greensburg - Sun City 115kV, 58764 - 58797
WEPL - Harper - Medicine Lodge 138kV, 58768 - 58774
WEPL - Harper - Milan Tap 138kV, 58768 - 58775
MIDW - KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622
WEPL - Medicine Lodge - Sun City 115kV, 58773 - 58797
WEPL - Medicine Lodge 138-115kV, 58773 - 58774
Customer - Customer Substation Reactive Compensation, Capacitor Banks and SVC.
WERE - AUBURN ROAD - JEFFREY ENERGY CENTER 230kV, 56851 - 56852
WEPL - Cimarron River Tap - Cudahy 115kV, 58752 - 58759
WERE - CIRCLE - SANDHILL JCT 115kV, 57413 - 57434
WERE - CLEARWT - GILL ENERGY CENTER WEST 138kV, 57036 - 57045
WERE - CLEARWT - Milan Tap 138kV, 57036 - 58775
WEPL - CLEARWT - Milan Tap 138kV, 57036 - 58775
WEPL - Cudahy - Judson Large 115kV, 58759 - 58771
WEPL - East Hall Tap - Mullergren 115kV, 58760 - 58778
MIDW - EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622
MIDW - EDWARDS - ST_JOHN 115kV, 56617 - 56624
WEPL - Greensburg - 2001-39A 115kV, 58764 - 99977
WEPL - Greensburg - Sun City 115kV, 58764 - 58797
WEPL - Haggard - West Dodge 115kV, 58767 - 58799
WEPL - Harper - Medicine Lodge 138kV, 58768 - 58774
WEPL - Harper - Milan Tap 138kV, 58768 - 58775
WERE - HOYT - JEFFERY ENERGY CENTER 345kV, 56765 - 56766
MIDW - HUNTSVILLE - HUTCHINSON ENERGY CENTER 115kV, 56618 - 57419
WERE - HUNTSVILLE - HUTCHINSON ENERGY CENTER 115kV, 56618 - 57419
MIDW - HUNTSVILLE - ST_JOHN 115kV, 56618 - 56624

Table 3: Network Constraints

Facility
WEPL - Judson Large - 2001-39A 115kV, 58771 - 99977
MIDW - KINSLEY_115 - 2004-14 115kV, 56619 - 99973
MIDW - KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622
WEPL - Medicine Lodge - Sun City 115kV, 58773 - 58797
WEPL - Medicine Lodge 138-115kV, 58773 - 58774
WEPL - Mullergren - 2004-14T 230kV, 58779 - 99976
WERE - NORTH AMERICAN PHILIPS - NORTH AMERICAN PHILIPS JUNCTION (SOUTH) 115kV, 57372 - 57374
WERE - NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV, 57374 - 57438
WERE - NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV CKT 2, 57374 - 57438
WEPL - Pratt - St John 115kV, 58787 - 58796
WERE - SANDHILL JCT - WEST MCPHERSON 115kV, 57434 - 57438
WERE - SANDHILL JCT - WEST MCPHERSON 115kV CKT 2, 57434 - 57438
WEPL - Seward - St John 115kV, 58792 - 58796
WEPL - Spearville - 2004-14T 230kV, 58795 - 99976
WEPL - Spearville - North Judson Large 115kV, 58794 - 58871
WERE - SPRING CREEK JUNCTION - MOUNDRIDGE 115kV, 57380 - 57429
MIDW - ST_JOHN - St John 115kV, 56624 - 58796
WEPL - ST_JOHN - St John 115kV, 56624 - 58796

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622,	15SP, Base Case	115.6	196	12/1/2008
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 – 56622	10WP, Base Case	114.6	209	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 – 56622	07WP, Base Case	114.4	211	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	10SP, Base Case	114.1	219	
EDWARDS - ST_JOHN 115kV, 56617 - 56624,	07WP, Base Case	108.3	290	12/1/2008
EDWARDS - ST_JOHN 115kV, 56617 - 56624	10WP, Base Case	107.7	300	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	15SP, Base Case	105.5	328	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	10SP, Base Case	104.4	342	
Greensburg - 2001-39A 115kV, 58764 - 99977,	15SP, Base Case	178.0	0	12/1/2008
Greensburg - 2001-39A 115kV, 58764 - 99977	10SP, Base Case	173.7	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	07WP, Base Case	172.6	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	10WP, Base Case	169.9	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	06AP, Base Case	137.9	0	
Greensburg - Sun City 115kV, 58764 - 58797,	15SP, Base Case	101.0	376	6/1/2014
Harper - Medicine Lodge 138kV, 58768 - 58774,	15SP, Base Case	161.8	0	12/1/2008
Harper - Medicine Lodge 138kV, 58768 - 58774	07WP, Base Case	161.2	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	10WP, Base Case	157.8	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	10SP, Base Case	157.0	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	06AP, Base Case	127.2	159	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Harper - Milan Tap 138kV, 58768 - 58775,	07WP, Base Case	107.9	307	12/1/2008
Harper - Milan Tap 138kV, 58768 - 58775	10WP, Base Case	105.3	338	
Harper - Milan Tap 138kV, 58768 - 58775	15SP, Base Case	105.0	344	
Harper - Milan Tap 138kV, 58768 - 58775	10SP, Base Case	101.4	385	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622,	15SP, Base Case	134.2	0	12/1/2008
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	10SP, Base Case	131.8	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	10WP, Base Case	126.9	52	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	07WP, Base Case	125.7	65	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	06AP, Base Case	105.6	324	
Medicine Lodge - Sun City 115kV, 58773 - 58797,	07WP, Base Case	158.8	0	12/1/2008
Medicine Lodge - Sun City 115kV, 58773 - 58797	15SP, Base Case	157.1	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	10WP, Base Case	156.0	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	10SP, Base Case	153.2	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	06AP, Base Case	130.6	25	
Medicine Lodge 138-115kV, 58773 - 58774,	07WP, Base Case	170.5	0	12/1/2008
Medicine Lodge 138-115kV, 58773 - 58774	15SP, Base Case	168.1	0	
Medicine Lodge 138-115kV, 58773 - 58774	10WP, Base Case	166.5	0	
Medicine Lodge 138-115kV, 58773 - 58774	10SP, Base Case	164.1	0	
Medicine Lodge 138-115kV, 58773 - 58774	06AP, Base Case	140.8	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Customer Substation Reactive Compensation, Capacitor Banks and SVC.	15SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV .	No solution, and the ATC = 0MW.	0	12/1/2008
Customer Substation Reactive Compensation, Capacitor Banks and SVC.	06AP, 56449-56469, SUNC SEPC , HOLCOMB - SPEARVILLE 345kV.	No solution, and the ATC = 0MW.	0	12/1/2008
Customer Substation Reactive Compensation, Capacitor Banks and SVC.	10SP, 56449-56469, SUNC SEPC , HOLCOMB - SPEARVILLE 345kV.	No solution, and the ATC = 0MW.	0	12/1/2008
Customer Substation Reactive Compensation, Capacitor Banks and SVC.	07WP, 56449-56469, SUNC SEPC , HOLCOMB - SPEARVILLE 345kV.	No solution, and the ATC = 0MW.	0	12/1/2008
Customer Substation Reactive Compensation, Capacitor Banks and SVC.	10WP, 56449-56469, SUNC SEPC , HOLCOMB - SPEARVILLE 345kV .	No solution, and the ATC = 0MW.	0	12/1/2008
Customer Substation Reactive Compensation, Capacitor Banks and SVC.	15SP, 56449-56469, SUNC SEPC , HOLCOMB - SPEARVILLE 345kV .	No solution, and the ATC = 0MW.	0	12/1/2008

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

With reactive compensation installed in the Customer's 345-34.5kV Substation at the 34.5kV buses, additional transmission facilities are required to increase the ATC above 0MW given these contingencies.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
AUBURN ROAD - JEFFREY ENERGY CENTER 230kV, 56851 - 56852,	10SP, 56765-56766, WERE NEAST , HOYT - JEFFERY ENERGY CENTER 345kV	120.3	0	12/1/2008
AUBURN ROAD - JEFFREY ENERGY CENTER 230kV, 56851 - 56852	10WP, 56765-56766, WERE NEAST , HOYT - JEFFERY ENERGY CENTER 345kV	115.3	0	
Cimarron River Tap - Cudahy 115kV, 58752 - 58759,	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	101.7	348	6/1/2013
CIRCLE - SANDHILL JCT 115kV, 57413 - 57434,	15SP, 56871-56872, WERE WEST , CIRCLE - EAST MCPHERSON 230kV	128.6	78	6/1/2011
CLEARWT - GILL ENERGY CENTER WEST 138kV, 57036 - 57045,	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	122.8	224	12/1/2008
CLEARWT - GILL ENERGY CENTER WEST 138kV, 57036 - 57045	07WP, 58794-58795, WEPL , Spearville 230-115kV	101.2	380	
CLEARWT - GILL ENERGY CENTER WEST 138kV, 57036 - 57045	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	100.2	397	
CLEARWT - Milan Tap 138kV, 57036 - 58775,	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	124.7	205	12/1/2008
CLEARWT - Milan Tap 138kV, 57036 - 58775,	10WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	107.9	315	12/1/2008
CLEARWT - Milan Tap 138kV, 57036 - 58775	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	107.0	304	
CLEARWT - Milan Tap 138kV, 57036 - 58775	10WP, 58794-58795, WEPL , Spearville 230-115kV	105.0	326	
CLEARWT - Milan Tap 138kV, 57036 - 58775	07WP, 58794-58795, WEPL , Spearville 230-115kV	104.0	331	
CLEARWT - Milan Tap 138kV, 57036 - 58775	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	103.2	346	
CLEARWT - Milan Tap 138kV, 57036 - 58775	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	102.1	382	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Cudahy - Judson Large 115kV, 58759 - 58771,	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	112.8	279	12/1/2008
Cudahy - Judson Large 115kV, 58759 - 58771	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	105.9	220	
Cudahy - Judson Large 115kV, 58759 - 58771	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	105.3	251	
Cudahy - Judson Large 115kV, 58759 - 58771	10WP, 58794-58795, WEPL , Spearville 230-115kV	101.8	336	
Cudahy - Judson Large 115kV, 58759 - 58771	15SP, 58794-58795, WEPL , Spearville 230-115kV	100.4	386	
East Hall Tap - Mullergren 115kV, 58760 - 58778,	15SP, 56551-56561, MIDW REG E-IL, SALINE RIVER - KNOLL 115kV	102.5	0	6/1/2011
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622,	10WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	232.6	0	12/1/2008
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	07WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	231.4	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	10SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	230.8	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	06AP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	202.5	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	159.2	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	154.3	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	15SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	150.2	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	10WP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	148.3	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	07WP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	146.9	0	
EDWARDS - PAWNEE-EDWARDS_JCT 115kV, 56617 - 56622	15SP, 58764-58797, WEPL , Greensburg - Sun City 115kV	146.2	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
EDWARDS - ST_JOHN 115kV, 56617 - 56624,	10WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	225.1	0	12/1/2008
EDWARDS - ST_JOHN 115kV, 56617 - 56624	07WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	224.4	0	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	10SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	219.0	0	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	06AP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	199.1	0	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	148.3	15	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	146.7	38	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	10WP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	141.5	0	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	07WP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	140.7	0	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	15SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	139.4	0	
EDWARDS - ST_JOHN 115kV, 56617 - 56624	10WP, 58764-58797, WEPL , Greensburg - Sun City 115kV	139.2	4	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Greensburg - 2001-39A 115kV, 58764 - 99977,	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	253.0	0	12/1/2008
Greensburg - 2001-39A 115kV, 58764 - 99977	10WP, 58794-58795, WEPL , Spearville 230-115kV	247.3	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	15SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	246.7	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	07WP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	241.6	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	07WP, 58794-58795, WEPL , Spearville 230-115kV	240.7	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	237.9	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	236.2	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	10SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	236.0	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	10WP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	234.5	0	
Greensburg - 2001-39A 115kV, 58764 - 99977	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	231.6	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Greensburg - Sun City 115kV, 58764 - 58797,	15SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	142.6	20	12/1/2008
Greensburg - Sun City 115kV, 58764 - 58797	10SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	136.5	57	
Greensburg - Sun City 115kV, 58764 - 58797	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	136.2	0	
Greensburg - Sun City 115kV, 58764 - 58797	10SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	132.7	88	
Greensburg - Sun City 115kV, 58764 - 58797	15SP, 58794-58795, WEPL , Spearville 230-115kV	132.3	0	
Greensburg - Sun City 115kV, 58764 - 58797	10SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	130.5	0	
Greensburg - Sun City 115kV, 58764 - 58797	10SP, 58794-58795, WEPL , Spearville 230-115kV	128.1	0	
Greensburg - Sun City 115kV, 58764 - 58797	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	124.7	209	
Greensburg - Sun City 115kV, 58764 - 58797	15SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	117.9	199	
Greensburg - Sun City 115kV, 58764 - 58797	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	117.9	187	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Haggard - West Dodge 115kV, 58767 - 58799,	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	126.2	0	12/1/2008
Haggard - West Dodge 115kV, 58767 - 58799	06AP, 56373-56386, SUNC NORTON-D, RHOADES - GRAHAM SUBSTATION 115kV	114.8	0	
Haggard - West Dodge 115kV, 58767 - 58799	06AP, 58750-58850, WEPL , Beloit 115-34.5kV	114.7	0	
Haggard - West Dodge 115kV, 58767 - 58799	10SP, 56558-56873, MIDW REG E-IL - WERE WEST , KNOLL - SUMMIT 230kV	106.6	0	
Haggard - West Dodge 115kV, 58767 - 58799	10SP, 56558-56561, MIDW REG E-IL, KNOLL 230-115kV	106.5	0	
Haggard - West Dodge 115kV, 58767 - 58799	10SP, 57795-56732, WERE SCENTRAL, GILL ENERGY CENTER EAST - GILL ENERGY CENTER UNIT 2 69-12.5kV	106.0	0	
Haggard - West Dodge 115kV, 58767 - 58799	10SP, 56455-58754, SUNC SEPC - WEPL , NORTH CIMARRON - Cimarron River Plant 115kV	105.4	0	
Haggard - West Dodge 115kV, 58767 - 58799	15SP, 56558-56873, MIDW REG E-IL - WERE WEST , KNOLL - SUMMIT 230kV	104.5	0	
Haggard - West Dodge 115kV, 58767 - 58799	15SP, 56551-56561, MIDW REG E-IL, SALINE RIVER - KNOLL 115kV	103.4	0	
Haggard - West Dodge 115kV, 58767 - 58799	15SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	103.3	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Harper - Medicine Lodge 138kV, 58768 - 58774,	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	222.5	0	12/1/2008
Harper - Medicine Lodge 138kV, 58768 - 58774	10WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	200.5	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	198.3	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	195.7	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	10WP, 58794-58795, WEPL , Spearville 230-115kV	195.4	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	07WP, 58794-58795, WEPL , Spearville 230-115kV	193.7	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	192.7	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	190.6	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	15SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	189.1	0	
Harper - Medicine Lodge 138kV, 58768 - 58774	10SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	188.8	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Harper - Milan Tap 138kV, 58768 - 58775,	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	156.0	8	12/1/2008
Harper - Milan Tap 138kV, 58768 - 58775	10WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	137.4	89	
Harper - Milan Tap 138kV, 58768 - 58775	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	136.3	31	
Harper - Milan Tap 138kV, 58768 - 58775	10WP, 58794-58795, WEPL , Spearville 230-115kV	133.9	32	
Harper - Milan Tap 138kV, 58768 - 58775	07WP, 58794-58795, WEPL , Spearville 230-115kV	132.7	0	
Harper - Milan Tap 138kV, 58768 - 58775	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	132.0	153	
Harper - Milan Tap 138kV, 58768 - 58775	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	131.9	0	
Harper - Milan Tap 138kV, 58768 - 58775	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	128.3	107	
Harper - Milan Tap 138kV, 58768 - 58775	15SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	127.0	195	
Harper - Milan Tap 138kV, 58768 - 58775	10SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	126.1	175	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
HOYT - JEFFERY ENERGY CENTER 345kV, 56765 - 56766,	15SP, 56766-56770, WERE NEAST - WERE NCENTRAL, JEFFERY ENERGY CENTER - MORRIS COUNTY 345kV	104.9	0	6/1/3011
HOYT - JEFFERY ENERGY CENTER 345kV, 56765 - 56766	15SP, 56851-56852, WERE NEAST , AUBURN ROAD - JEFFREY ENERGY CENTER 230kV	104.7	0	
HOYT - JEFFERY ENERGY CENTER 345kV, 56765 - 56766	15SP, 56854-56663, WERE NEAST , LAWRENCE ENERGY CENTER UNIT 5 230-24kV	102.7	0	
HOYT - JEFFERY ENERGY CENTER 345kV, 56765 - 56766	15SP, 56853-56854, WERE NEAST , LAWRENCE HILL - LAWRENCE ENERGY CENTER UNIT 5 230kV	102.7	0	
HOYT - JEFFERY ENERGY CENTER 345kV, 56765 - 56766	15SP, 57040-56722, WERE SCENTRAL, EVANS ENERGY CENTER NORTH - EVANS ENERGY CENTER UNIT 2 138-24kV	100.3	291	
HUNTSVILLE - HUTCHINSON ENERGY CENTER 115kV, 56618 - 57419,	07WP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	117.3	0	12/1/2008
HUNTSVILLE - HUTCHINSON ENERGY CENTER 115kV, 56618 - 57419,	10WP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	114.0	266	12/1/2008
HUNTSVILLE - HUTCHINSON ENERGY CENTER 115kV, 56618 - 57419	06AP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	107.4	0	
HUNTSVILLE - ST_JOHN 115kV, 56618 - 56624,	07WP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	126.8	185	12/1/2008
HUNTSVILLE - ST_JOHN 115kV, 56618 - 56624	10WP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	123.9	182	
HUNTSVILLE - ST_JOHN 115kV, 56618 - 56624	06AP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	114.9	0	
HUNTSVILLE - ST_JOHN 115kV, 56618 - 56624	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	103.7	364	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Judson Large - 2001-39A 115kV, 58771 - 99977,	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	152.1	0	12/1/2008
Judson Large - 2001-39A 115kV, 58771 - 99977	15SP, 99977-99978, , 2001-39A 115-34.5kV	118.3	181	
Judson Large - 2001-39A 115kV, 58771 - 99977	10SP, 99977-99978, , 2001-39A 115-34.5kV	114.8	224	
Judson Large - 2001-39A 115kV, 58771 - 99977	07WP, 99977-99978, , 2001-39A 115-34.5kV	114.6	221	
Judson Large - 2001-39A 115kV, 58771 - 99977	10WP, 99977-99978, , 2001-39A 115-34.5kV	111.0	271	
Judson Large - 2001-39A 115kV, 58771 - 99977	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	108.7	305	
Judson Large - 2001-39A 115kV, 58771 - 99977	10WP, 58794-58795, WEPL , Spearville 230-115kV	104.0	350	
Judson Large - 2001-39A 115kV, 58771 - 99977	15SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	102.3	0	
Judson Large - 2001-39A 115kV, 58771 - 99977	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	101.1	374	
Judson Large - 2001-39A 115kV, 58771 - 99977	07WP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	100.6	0	
KINSLEY_115 - 2004-14 115kV, 56619 - 99973,	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	195.0	73	12/1/2008
KINSLEY_115 - 2004-14 115kV, 56619 - 99973	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	108.4	284	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622,	10SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	252.2	0	12/1/2008
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	10WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	245.8	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	07WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	244.3	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	06AP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	208.7	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	179.5	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	15SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	170.1	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	168.3	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	15SP, 58764-58797, WEPL , Greensburg - Sun City 115kV	165.7	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	15SP, 58773-58797, WEPL , Medicine Lodge - Sun City 115kV	164.1	0	
KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV, 56619 - 56622	10SP, 58764-58797, WEPL , Greensburg - Sun City 115kV	161.3	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Medicine Lodge - Sun City 115kV, 58773 - 58797,	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	238.3	0	12/1/2008
Medicine Lodge - Sun City 115kV, 58773 - 58797	10WP, 58794-58795, WEPL , Spearville 230-115kV	232.6	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	07WP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	227.2	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	07WP, 58794-58795, WEPL , Spearville 230-115kV	226.7	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	224.6	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	15SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	224.3	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	10WP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	220.2	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	216.0	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	10SP, 58795-99976, WEPL - , Spearville - 2004-14T 230kV	214.5	0	
Medicine Lodge - Sun City 115kV, 58773 - 58797	15SP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	213.9	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Medicine Lodge 138-115kV, 58773 - 58774,	10WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	202.9	0	12/1/2008
Medicine Lodge 138-115kV, 58773 - 58774	10WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	193.3	0	
Medicine Lodge 138-115kV, 58773 - 58774	07WP, 58794-58871, WEPL , Spearville - North Judson Large 115kV	193.0	0	
Medicine Lodge 138-115kV, 58773 - 58774	10WP, 58794-58795, WEPL , Spearville 230-115kV	192.3	0	
Medicine Lodge 138-115kV, 58773 - 58774	07WP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	190.9	0	
Medicine Lodge 138-115kV, 58773 - 58774	07WP, 58794-58795, WEPL , Spearville 230-115kV	190.2	0	
Medicine Lodge 138-115kV, 58773 - 58774	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	189.7	0	
Medicine Lodge 138-115kV, 58773 - 58774	10SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	188.5	0	
Medicine Lodge 138-115kV, 58773 - 58774	07WP, 56871-58779, WERE WEST - WEPL , CIRCLE - Mullergren 230kV	187.6	0	
Medicine Lodge 138-115kV, 58773 - 58774	15SP, 57040-56722, WERE SCENTRAL, EVANS ENERGY CENTER NORTH - EVANS ENERGY CENTER UNIT 2 138-24kV	187.1	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Mullergren - 2004-14T 230kV, 58779 - 99976,	15SP, 56619-56622, MIDW REG E-IL, KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV	113.8	269	12/1/2008
Mullergren - 2004-14T 230kV, 58779 - 99976	15SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	113.4	289	
Mullergren - 2004-14T 230kV, 58779 - 99976	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	112.0	296	
Mullergren - 2004-14T 230kV, 58779 - 99976	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	111.5	294	
Mullergren - 2004-14T 230kV, 58779 - 99976	15SP, 56449-56465, SUNC SEPC , HOLCOMB - SETAB 345kV	111.1	0	
Mullergren - 2004-14T 230kV, 58779 - 99976	10SP, 56619-56622, MIDW REG E-IL, KINSLEY_115 - PAWNEE-EDWARDS_JCT 115kV	110.0	0	
Mullergren - 2004-14T 230kV, 58779 - 99976	15SP, 56617-56622, MIDW REG E-IL, EDWARDS - PAWNEE-EDWARDS_JCT 115kV	109.8	0	
Mullergren - 2004-14T 230kV, 58779 - 99976	10SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	109.6	0	
Mullergren - 2004-14T 230kV, 58779 - 99976	15SP, 56617-56624, MIDW REG E-IL, EDWARDS - ST_JOHN 115kV	107.6	0	
Mullergren - 2004-14T 230kV, 58779 - 99976	10SP, 56449-56465, SUNC SEPC , HOLCOMB - SETAB 345kV	107.6	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
NORTH AMERICAN PHILIPS - NORTH AMERICAN PHILIPS JUNCTION (SOUTH) 115kV, 57372 - 57374,	15SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	136.1	0	6/1/2009
NORTH AMERICAN PHILIPS - NORTH AMERICAN PHILIPS JUNCTION (SOUTH) 115kV, 57372 - 57374	10SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	114.6	224	
NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV, 57374 - 57438,	15SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	147.7	0	6/1/2009
NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV, 57374 - 57438	10SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	124.5	125	
NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV, 57374 - 57438	15SP, 57374-57438, WERE WEST , NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV CKT 2	113.1	149	
NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV CKT 2, 57374 - 57438,	15SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	128.9	43	6/1/2009
NORTH AMERICAN PHILIPS JUNCTION (SOUTH) - WEST MCPHERSON 115kV CKT 2, 57374 - 57438	10SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	108.6	289	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Pratt - St John 115kV, 58787 - 58796,	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	131.5	0	12/1/2008
Pratt - St John 115kV, 58787 - 58796	15SP, 58764-58797, WEPL , Greensburg - Sun City 115kV	126.7	0	
Pratt - St John 115kV, 58787 - 58796	10SP, 58764-58797, WEPL , Greensburg - Sun City 115kV	123.6	45	
Pratt - St John 115kV, 58787 - 58796	15SP, 58773-58797, WEPL , Medicine Lodge - Sun City 115kV	123.0	49	
Pratt - St John 115kV, 58787 - 58796	10SP, 58773-58797, WEPL , Medicine Lodge - Sun City 115kV	119.9	98	
Pratt - St John 115kV, 58787 - 58796	07WP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	114.8	161	
Pratt - St John 115kV, 58787 - 58796	07WP, 58764-58797, WEPL , Greensburg - Sun City 115kV	109.2	251	
Pratt - St John 115kV, 58787 - 58796	10WP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	108.8	258	
Pratt - St John 115kV, 58787 - 58796	07WP, 58773-58797, WEPL , Medicine Lodge - Sun City 115kV	106.4	296	
Pratt - St John 115kV, 58787 - 58796	10WP, 58764-58797, WEPL , Greensburg - Sun City 115kV	103.1	350	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
SANDHILL JCT - WEST MCPHERSON 115kV, 57434 - 57438,	15SP, 56871-56872, WERE WEST , CIRCLE - EAST MCPHERSON 230kV	122.3	136	6/1/2011
SANDHILL JCT - WEST MCPHERSON 115kV CKT 2, 57434 - 57438,	15SP, 56871-56872, WERE WEST , CIRCLE - EAST MCPHERSON 230kV	106.7	309	6/1/2011
Seward - St John 115kV, 58792 - 58796,	07WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	149.7	46	12/1/2008
Seward - St John 115kV, 58792 - 58796	06AP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	144.8	16	
Seward - St John 115kV, 58792 - 58796	10SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	136.1	119	
Seward - St John 115kV, 58792 - 58796	10WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	133.0	91	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Spearville - 2004-14T 230kV, 58795 - 99976,	15SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	108.6	339	12/1/2008
Spearville - 2004-14T 230kV, 58795 - 99976	15SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	106.9	347	
Spearville - 2004-14T 230kV, 58795 - 99976	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	106.4	348	
Spearville - 2004-14T 230kV, 58795 - 99976	15SP, 56449-56465, SUNC SEPC , HOLCOMB - SETAB 345kV	105.9	0	
Spearville - 2004-14T 230kV, 58795 - 99976	15SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	104.4	0	
Spearville - 2004-14T 230kV, 58795 - 99976	10SP, 56451-56465, SUNC SEPC , MINGO - SETAB 345kV	104.3	0	
Spearville - 2004-14T 230kV, 58795 - 99976	10SP, 56449-56465, SUNC SEPC , HOLCOMB - SETAB 345kV	102.0	0	
Spearville - 2004-14T 230kV, 58795 - 99976	15SP, 58764-58797, WEPL , Greensburg - Sun City 115kV	101.6	0	
Spearville - 2004-14T 230kV, 58795 - 99976	10SP, 56449-50858, SUNC SEPC - SPS SPS-AMA , HOLCOMB - Finney Station 345kV	101.5	0	
Spearville - 2004-14T 230kV, 58795 - 99976	15SP, 58773-58797, WEPL , Medicine Lodge - Sun City 115kV	100.6	0	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
Spearville - North Judson Large 115kV, 58794 - 58871,	10SP, 58764-99977, WEPL - , Greensburg - 2001-39A 115kV	124.9	102	6/1/2009
SPRING CREEK JUNCTION - MOUNDRIDGE 115kV, 57380 - 57429,	15SP, 56872-56873, WERE WEST , EAST MCPHERSON - SUMMIT 230kV	108.6	250	6/1/2011
SPRING CREEK JUNCTION - MOUNDRIDGE 115kV, 57380 - 57429	15SP, 56871-56872, WERE WEST , CIRCLE - EAST MCPHERSON 230kV	103.8	329	
ST_JOHN - St John 115kV, 56624 - 58796,	10SP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	129.8	69	12/1/2008
ST_JOHN - St John 115kV, 56624 - 58796,	07WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	126.1	156	12/1/2008
ST_JOHN - St John 115kV, 56624 - 58796	06AP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	112.9	278	
ST_JOHN - St John 115kV, 56624 - 58796	10WP, 58779-99976, WEPL - , Mullergren - 2004-14T 230kV	111.3	257	

Note: When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. If the loading of a facility is higher, the level of ATC will be lower.

Powerflow Analysis

A powerflow analysis was conducted for the facility using modified versions of the 2006 April, 2007 Winter Peak, 2010 Summer and Winter Peak, and 2015 Summer Peak models. The output of the Customer's facility was offset in each model by a reduction in output of existing online SPP generation. The proposed in-service date of the generation is December 1, 2008. The available seasonal models used were through the 2015 Summer Peak of which is the end of the current SPP planning horizon.

The analysis of the Customer's project indicates that, given the requested generation level of 400MW and location, additional criteria violations will occur on the existing MIDW, WERE and WEPL facilities under steady state conditions in the peak seasons. There are several other proposed generation additions in the general area of the Customer's facility. Local projects that were previously queued were assumed to be in service in this Feasibility Study. Those local projects that were previously queued and have advanced to nearly complete phases were included in this Feasibility Study.

In order to maintain acceptable bus voltages in the local area for an outage of the Holcomb – Spearville 345kV line, the Customer will need to install additional reactive compensation in the WEPL area. 84MVAR switched compensation is required on a contingency basis to prevent excessive voltage decay. This Customer must install approximately 27MVAR in each of two capacitor banks switched at 34.5kV in the Customer's 345-34.5kV Substation, plus a 30MVAR SVC at a third 34.5kV bus. Dynamic Stability studies performed as part of the impact study will provide additional guidance as to how much of the reactive compensation can be static or a portion must be dynamic (such as a SVC).

Powerflow Analysis Methodology

The Southwest Power Pool (SPP) criteria states that: "The transmission system of the SPP region shall be planned and constructed so that the contingencies as set forth in the Criteria will meet the applicable *NERC Planning Standards* for System Adequacy and Security – Transmission System Table l hereafter referred to as NERC Table l) and its applicable standards and measurements".

Using the created models and the ACCC function of PSS\E, single contingencies in portions or all of the modeled control areas of Midwest Energy, Sunflower Electric Power Corporation, West Plains Energy and Westar Energy were applied and the resulting scenarios analyzed. This satisfies the 'more probable' contingency testing criteria mandated by NERC and the SPP criteria.

Conclusion

The minimum cost of interconnecting the Customer project is estimated at $900,000 for SUNC's interconnection Network Upgrade facilities listed in Tables 1 & 2 excluding upgrades of other transmission facilities by MIDW, WEPL and WERE listed in Table 3 of which are Network Constraints. At this time, the cost estimates for other Direct Assignment facilities including those in Table 1 have not been defined by the Customer. As stated earlier, local projects that were previously queued are assumed to be in service in this Feasibility Study.

In order to aid in maintaining adequate voltages, the Customer will need to install 84MVAR of reactive compensation in its new substation. A switched 27MVAR capacitor bank may be installed at each of two 34.5kV buses. A 30MVAR SVC may be installed at a third 34.5kV bus. Dynamic Stability studies performed as part of the impact study will provide guidance as to how much reactive compensation can be static or must be dynamic (such as a SVC).

In Table 4, a value of Available Transfer Capability (ATC) associated with each overloaded facility is included. These values may be used by the Customer to determine lower generation capacity levels that may be installed. When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations. When a facility is overloaded for more than 10 contingencies, then only the results with the 10 highest values of loading may be included in this table.

These interconnection costs do not include any cost that may be associated with short circuit or transient stability analysis. These studies will be performed if the Customer signs a System Impact Study Agreement.

The required interconnection costs listed in Table 2 and other upgrades associated with Network Constraints listed in Table 3 do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer requests transmission service through Southwest Power Pool's OASIS.

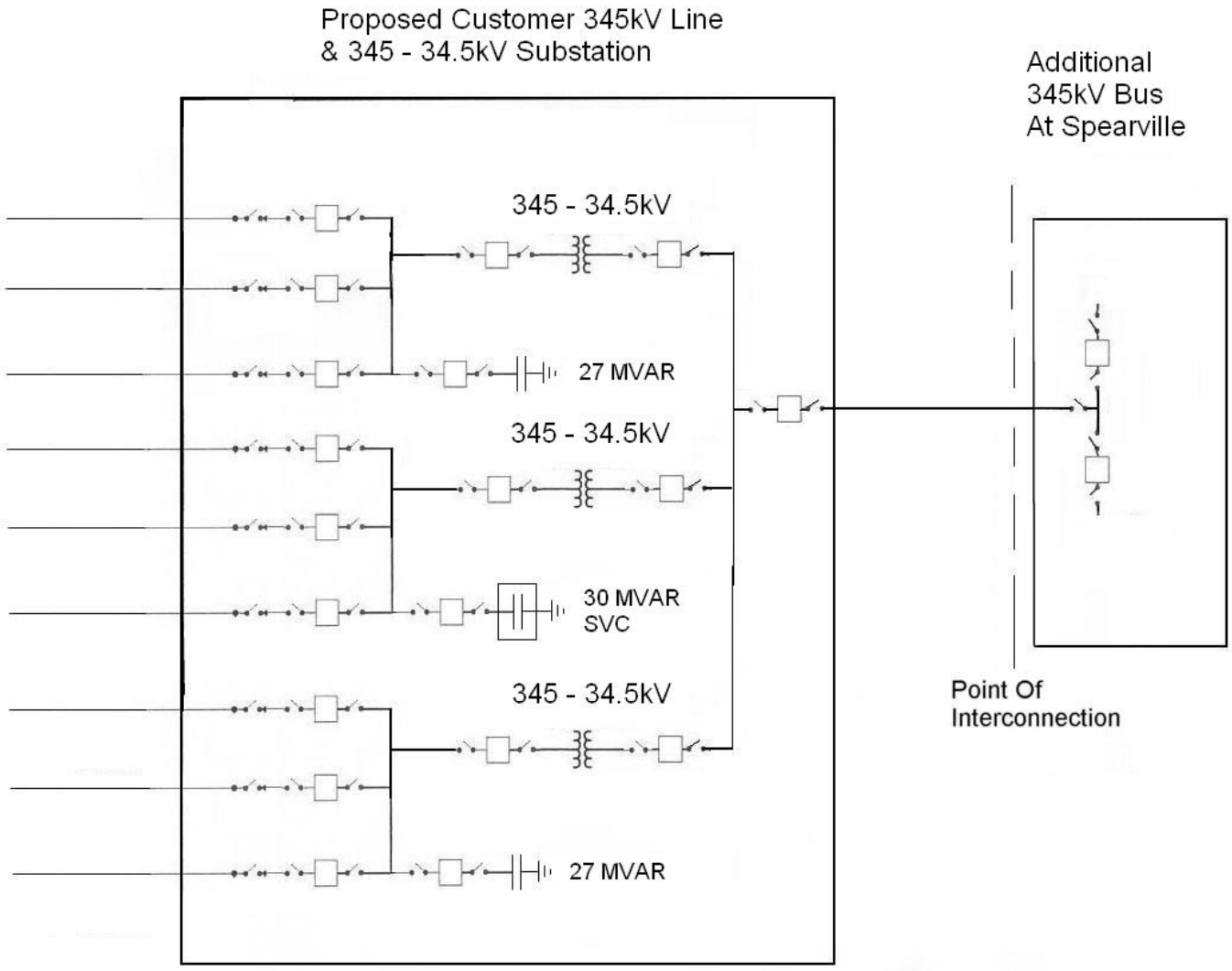

Figure 1: Proposed Interconnection
(Final substation design to be determined)