



**Feasibility Study
For
Generation Interconnection
Request
GEN-2007-012**

SPP Tariff Studies
(#GEN-2007-012)

October 2007

Executive Summary

<OMITTED TEXT> (Customer) has requested a Feasibility Study for the purpose of interconnecting 300 MW of wind generation within the control area of Sunflower Electric Power Corporation (SUNC) located in Rawlins County, Kansas. The proposed method of interconnection is a new 345 kV ring-bus switching station to be located on the existing Mingo (SUNC) – Red Willow (Nebraska Public Power District, NPPD) 345 kV transmission line, owned by SUNC within the state of Kansas. The proposed in-service date is October 15, 2010.

Power flow analysis has indicated that for the powerflow cases studied, it is possible to interconnect the 300 MW of generation with transmission system reinforcements within the local transmission system. In order to maintain acceptable reactive power compensation, the customer will be required to pay for the installation of a combined total of at least 60 Mvar of 34.5 kV capacitor bank(s) to be installed in the Customer's collector substation. Dynamic Stability studies performed as part of the System Impact Study will provide additional guidance as to whether the required reactive compensation can be static or a portion must be dynamic (such as a SVC).

The requirement to interconnect the 300 MW of wind generation on the existing Mingo (SUNC) – Red Willow (NPPD) 345 kV transmission line consists of constructing a new 345 kV three-breaker ring-bus switching station. The new station will be constructed and maintained by SUNC. The Customer did not propose a specific route for the 345 kV line extending to serve its 345/34.5 kV collection facilities. It is assumed that obtaining all necessary right-of-way for the new transmission line to serve its facilities will not be a significant expense.

The total minimum cost for building the required facilities for this 300 MW of generation is \$6,275,000. These costs are shown in Tables 1 and 2. Network constraints in the Midwest Energy (MIDW), NPPD, Southwestern Public Service Company (SPS), SUNC, West Plains (WEPL), and Westar Energy (WERE) transmission systems that were identified are shown in Table 3. These Network constraints will have to be verified with a Transmission Service Request (TSR) and associated studies. Network Constraints are in the local area of the new generation when this generation is sunk throughout the SPP footprint for the Energy Resource (ER) 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 the 345 kV line from the Customer 345/34.5 kV collector substation into the point of interconnection. This cost also does not include the Customer's 345/34.5 kV collector substation or the 34.5 kV, 60 Mvar capacitor bank(s).

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.

There are several other proposed generation additions in the general area of the Customer's facility. It was assumed in this preliminary analysis that not all of these other projects within the SPS and SUNC control areas 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.

The required interconnection costs listed in Tables 1 and 2 and other upgrades associated with Network Constraints 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 submits a Transmission Service Request through Southwest Power Pool's OASIS.

Contents

Introduction	5
Interconnection Facilities	5
Interconnection Estimated Costs	6
Powerflow Analysis	7
Powerflow Analysis Methodology	8
Powerflow Results.....	9
Conclusion	13
Appendix A: Point of Interconnection Area Map.....	14

Tables

Table 1: Direct Assignment Facilities	6
Table 2: Required Interconnection Network Upgrade Facilities.....	6
Table 3: Network Constraints.....	9
Table 4: Contingency Analysis	10

Figures

Figure 1: Proposed Method of Interconnection	5
Figure 2: Point of Interconnection Area Map	14

Introduction

<OMITTED TEXT> (Customer) has requested a Feasibility Study for the purpose of interconnecting 300 MW of wind generation within the control area of Sunflower Electric Power Corporation (SUNC) located in Rawlins County, Kansas. The proposed method of interconnection is a new 345 kV ring-bus switching station to be located on the existing Mingo (SUNC) – Red Willow (Nebraska Public Power District, NPPD) 345 kV transmission line, owned by SUNC within the state of Kansas. The proposed in-service date is October 15, 2010.

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 of the 300 MW consist of constructing a new 345 kV three-breaker ring-bus switching station on the existing Mingo (SUNC) – Red Willow (NPPD) 345 kV transmission line, owned by SUNC within the state of Kansas. This substation will be located within the Kansas state boundary and will be constructed and maintained by SUNC. A preliminary one-line drawing of the interconnection facilities are shown in Figure 1. The Customer did not propose a specific route of its 345 kV line to serve its 345/34.5 kV collection system facilities. It is assumed that obtaining all necessary right-of-way for construction of the Customer 345 kV transmission line and the 345/34.5 kV collector substation will not be a significant expense.

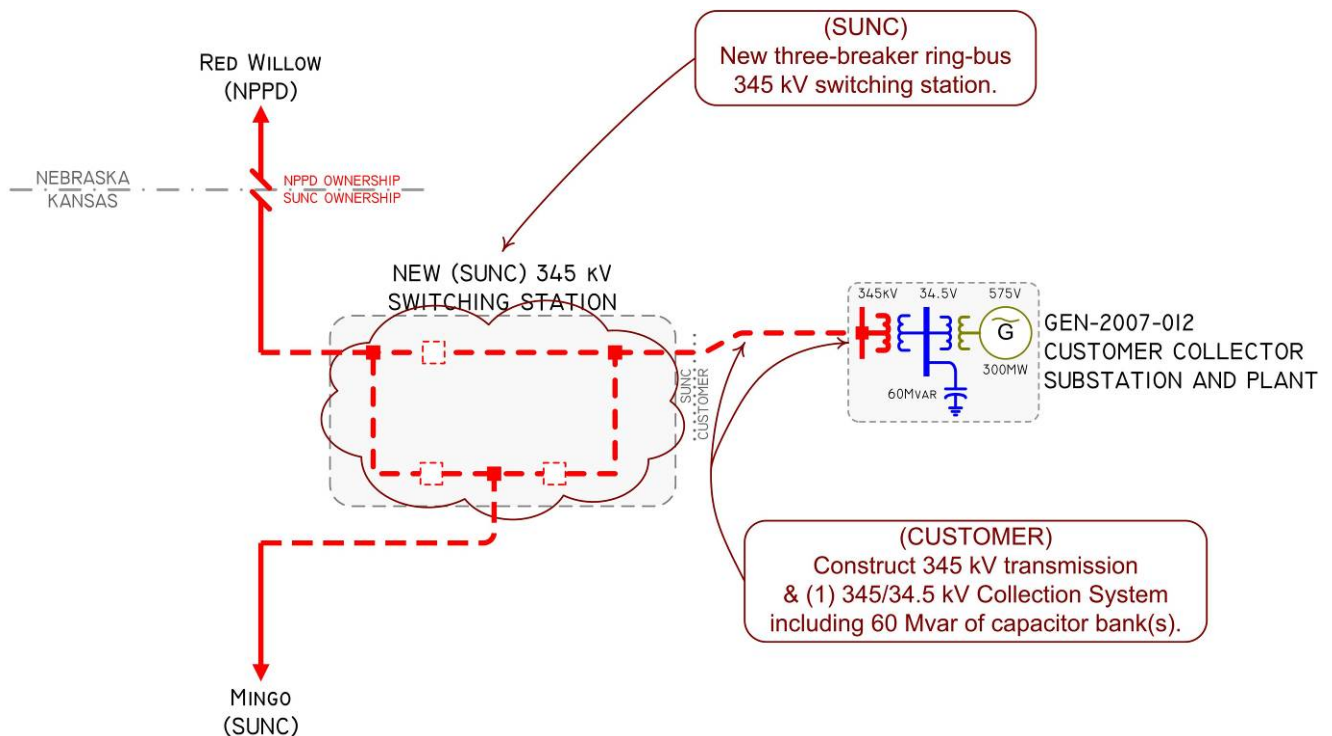


Figure 1: Proposed Method of Interconnection

(Final design to be determined)

Interconnection Estimated Costs

The minimum cost for adding a new breaker and terminating the transmission line serving GEN-2007-012 facilities is estimated at \$6,275,000. These costs are listed in Tables 1 and 2. These estimates will be refined during the development of the System Impact Study based on the final designs. This cost does not include building the Customer's 345 kV transmission line extending from the point of interconnection to serve its 345/34.5 kV collection facilities. This cost also does not include the Customer's 345/34.5 kV collector substation or the 60 Mvar of capacitor bank(s), all of which should be determined by the Customer. The Customer is responsible for these 345 kV – 34.5 kV facilities up to the point of interconnection. Other Network Constraints in the Midwest Energy (MIDW), NPPD, Southwestern Public Service Company (SPS), SUNC, West Plains (WEPL), and Westar Energy (WERE) transmission systems that were identified are shown in Table 3.

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 (2007 DOLLARS)
CUSTOMER – (1) 345/34.5 kV Customer collector substation facilities.	*
CUSTOMER – (1) 345 kV transmission line from Customer collector substation to the new three-breaker ring-bus station located on the Mingo (SUNC) – Red Willow (NPPD) 345 kV transmission line.	*
CUSTOMER – 34.5 kV, 60 Mvar capacitor bank(s) to be installed in the Customer 345/34.5 kV collector substation.	*
CUSTOMER – Right-of-Way for all Customer facilities.	*
TOTAL	*

* *Estimates of cost to be determined.*

Table 2: Required Interconnection Network Upgrade Facilities

FACILITY	ESTIMATED COST (2007 DOLLARS)
SUNC – (1) 345 kV three-breaker ring-bus switching station for GEN-2007-012 located in Kansas on the Mingo (SUNC) – Red Willow (NPPD) 345 kV transmission line. Station to include breakers, switches, control relaying, high speed communications, metering and related equipment and all related structures.	\$6,275,000
TOTAL	*

* *Estimates of cost to be determined.*

Powerflow Analysis

A powerflow analysis was conducted for the facility using modified versions of the 2009 winter peak model, the 2012 summer and winter peak models, and the 2017 summer peak model. The output of the Customer's facility was offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource (ER) Interconnection request. The proposed in-service date of the generation is October 15, 2010. The available seasonal models used were through the 2017 Summer Peak of which is the end of the current SPP planning horizon.

Following current practice, this analysis was conducted assuming that previous queued requests in the immediate area of this interconnect request were in service. The analysis of the Customer's project indicates that, given the requested generation level of 300 MW and location, additional criteria violations will occur on the existing MIDW, NPPD, SPS, SUNC, WEPL, and WERE transmission systems under steady state and contingency conditions in the peak seasons. Table 3 lists these overloaded facilities.

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 one contingency, only the highest loading on the facility for each season is included in the table.

Voltage violations for load serving buses within the SPP footprint were also observed for some of the contingencies listed in Table 3. These voltage violations have not been listed in this report.

In order to maintain a zero reactive power flow exchanged at the point of interconnection, additional reactive compensation is required. The Customer will be required to install a combined total of 60 Mvar of capacitor bank(s) in the Customer's 345/34.5 kV collector substation on the 34.5 kV bus. Dynamic Stability studies performed as part of the System Impact Study will provide additional guidance as to whether the reactive compensation can be static or a portion must be dynamic (such as a SVC or STATCOM). It is possible that an SVC or STATCOM device will be required at the Customer facility because of FERC Order 661A Low Voltage Ride-Through Provisions (LVRT) which went into effect January 1, 2006. FERC Order 661A orders that wind farms stay on-line for 3-phase faults at the point of interconnection even if that requires the installation of a SVC or STATCOM device.

There are several other proposed generation additions in the general area of the Customer's facility. Some of the local projects that were previously queued were assumed to be in service in this Feasibility Study. Not all local projects that were previously queued and have advanced to nearly complete phases were included in this Feasibility Study.

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 I hereafter referred to as NERC Table I) 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 Sunflower Electric Power Corporation (SUNC), Missouri Public Service (MIPU), Westar Energy (WERE), Kansas City Power & Light (KCPL), West Plains (WEPL), Midwest Energy (MIDW), Oklahoma Gas and Electric OKGE, American Electric Power West (AEPW), Grand River Dam Authority (GRDA), Southwestern Public Service Company (SPS), Western Farmers Electric Cooperative (WFEC) and other control areas were applied and the resulting scenarios analyzed. This satisfies the ‘more probable’ contingency testing criteria mandated by NERC and the SPP criteria.

Powerflow Results

Table 3: Network Constraints

AREA	OVERLOADED ELEMENT
MIDW	ALEXANDER - NEKOMA 115KV CKT 1
MIDW	ALEXANDER - NESS CITY 115KV CKT 1
MIDW	COLBY - HOXIE 115KV CKT 1
MIDW/WEPL	ST JOHN - ST_JOHN 115KV CKT 1
NPPD	BROKEN BOW (NPPD) - LOUP CITY (NPPD) 115KV CKT 1
NPPD	CROOKED CREEK (NPPD) - NORTH PLATTE (NPPD) 230KV CKT 1
NPPD	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1
NPPD	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2
SPS	HARRINGTON STATION - NICHOLS STATION 230KV CKT 1
SPS	HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2
SPS	POTTER COUNTY INTERCHANGE (POTTR CO) 345/230/13.2KV TRANSFORMER CKT 1
SPS/WEPL	EAST LIBERAL - TEXAS COUNTY INTERCHANGE PHASE SHIFT TFMR 115KV CKT 1
SUNC	BEELER - DIGHTON TAP 115KV CKT 1
SUNC	DIGHTON TAP - MANNING TAP 115KV CKT 1
SUNC	HOLCOMB - PLYMELL 115KV CKT 1
SUNC	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1
SUNC	PIONEER TAP - PLYMELL 115KV CKT 1
SUNC	SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1
SUNC/WEPL	CIMARRON RIVER PLANT - NORTH CIMARRON 115KV CKT 1
WEPL	CIMARRON RIVER PLANT - NORTH LIBERAL TAP 115KV CKT 1
WEPL	GREENSBURG - JUDSON LARGE 115KV CKT 1
WEPL	HARPER - MEDICINE LODGE 138KV CKT 1
WEPL	MEDICINE LODGE - SUN CITY 115KV CKT 1
WEPL	MEDICINE LODGE (MED-LDG4) 138/115/2.72KV TRANSFORMER CKT 1
WEPL	MULLERGREN – SPEARVILLE 230KV CKT 1
WEPL	SEWARD - ST JOHN 115KV CKT 1
WEPL/WERE	CIRCLE - MULLERGREN 230KV CKT 1
WERE	CIRCLE - RENO COUNTY 115KV CKT 1
WERE	CIRCLE - RENO COUNTY 115KV CKT 2
WERE	EXIDE JUNCTION - NORTH AMERICAN PHILIPS 115KV CKT 1
WERE	EXIDE JUNCTION – SUMMIT 115KV CKT 1
WERE	NORTHVIEW - SUMMIT 115KV CKT 1
MIDW	Midwest Energy
NPPD	Nebraska Public Power District
SPS	Southwestern Public Service
SUNC	Sunflower Electric Power Corporation
WEPL	West Plains
WERE	Westar Energy

Table 4: Contingency Analysis

SEASON	OVERLOADED ELEMENT	RATING (MVA)	LOADING (%)	ATC (MW)	CONTINGENCY
09WP	SEWARD - ST JOHN 115KV CKT 1	80	163	0	CIRCLE - MULLERGREN 230KV CKT 1
09WP	CIRCLE - RENO COUNTY 115KV CKT 2	92	152	0	CIRCLE - RENO COUNTY 115KV CKT 1
09WP	MEDICINE LODGE - SUN CITY 115KV CKT 1	80	143	0	MULLERGREN - SPEARVILLE 230KV CKT 1
09WP	MEDICINE LODGE (MED-LDG4) 138/115/2.72KV TRANSFORMER CKT 1	65	141	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
09WP	HARPER - MEDICINE LODGE 138KV CKT 1	72	139	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
09WP	POTTER COUNTY INTERCHANGE (POTTR CO) 345/230/13.2KV TRANSFORMER CKT 1	560	112	0	TOLK (GEN525562 1)
09WP	BROKEN BOW (NPPD) - LOUP CITY (NPPD) 115KV CKT 1	92	113	32	GRAND ISLAND (NPPD) - SWEETWATER (NPPD) 345KV CKT 1
09WP	ST JOHN - ST_JOHN 115KV CKT 1	88	113	56	CIRCLE - MULLERGREN 230KV CKT 1
09WP	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	112	115	HOLCOMB - SETAB 345KV CKT 1
09WP	CROOKED CREEK (NPPD) - NORTH PLATTE (NPPD) 230KV CKT 1	402	107	117	GRAND ISLAND (NPPD) - SWEETWATER (NPPD) 345KV CKT 1
09WP	ALEXANDER - NESS CITY 115KV CKT 1	101	114	119	MULLERGREN - SPEARVILLE 230KV CKT 1
09WP	ALEXANDER - NEKOMA 115KV CKT 1	101	108	195	MULLERGREN - SPEARVILLE 230KV CKT 1
09WP	CIMARRON RIVER PLANT - NORTH CIMARRON 115KV CKT 1	143	104	218	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
09WP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1	105	101	281	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2
09WP	COLBY - HOXIE 115KV CKT 1	101	101	292	MINGO - SETAB 345KV CKT 1
12SP	MEDICINE LODGE - SUN CITY 115KV CKT 1	80	154	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	SEWARD - ST JOHN 115KV CKT 1	80	152	0	CIRCLE - MULLERGREN 230KV CKT 1
12SP	MULLERGREN - SPEARVILLE 230KV CKT 1	355	143	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	NORTHVIEW - SUMMIT 115KV CKT 1	181	132	0	EXIDE JUNCTION - SUMMIT 115KV CKT 1
12SP	POTTER COUNTY INTERCHANGE (POTTR CO) 345/230/13.2KV TRANSFORMER CKT 1	560	127	0	TOLK (GEN525562 1)
12SP	HARRINGTON STATION - NICHOLS STATION 230KV CKT 1	635	123	0	HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2
12SP	CIMARRON RIVER PLANT - NORTH LIBERAL TAP 115KV CKT 1	115	123	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2	635	123	0	HARRINGTON STATION - NICHOLS STATION 230KV CKT 1
12SP	EXIDE JUNCTION - SUMMIT 115KV CKT 1	196	122	0	NORTHVIEW - SUMMIT 115KV CKT 1
12SP	EXIDE JUNCTION - NORTH AMERICAN PHILIPS 115KV CKT 1	196	116	0	NORTHVIEW - SUMMIT 115KV CKT 1
12SP	HOLCOMB - PLYMELL 115KV CKT 1	143	112	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	PIONEER TAP - PLYMELL 115KV CKT 1	143	108	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	MEDICINE LODGE (MED-LDG4) 138/115/2.72KV TRANSFORMER CKT 1	65	122	8	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	EAST LIBERAL - TEXAS COUNTY INTERCHANGE PHASE SHIFT TFMR 115KV CKT 1	119	126	11	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	HARPER - MEDICINE LODGE 138KV CKT 1	72	126	31	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1	336	113	81	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	ALEXANDER - NESS CITY 115KV CKT 1	101	116	87	MULLERGREN - SPEARVILLE 230KV CKT 1

TABLE 4: Contingency Analysis (continued)

SEASON	OVERLOADED ELEMENT	RATING (MVA)	LOADING (%)	ATC (MW)	CONTINGENCY
12SP	DIGHTON TAP - MANNING TAP 115KV CKT 1	98	110	115	MULLERGREN - SPEARVILLE 230KV CKT 1
12SP	CIRCLE - MULLERGREN 230KV CKT 1	319	111	144	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	ALEXANDER - NEKOMA 115KV CKT 1	101	110	172	MULLERGREN - SPEARVILLE 230KV CKT 1
12SP	GREENSBURG - JUDSON LARGE 115KV CKT 1	130	108	175	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1	105	105	195	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2
12SP	COLBY - HOXIE 115KV CKT 1	101	105	230	MULLERGREN - SPEARVILLE 230KV CKT 1
12SP	CIMARRON RIVER PLANT - NORTH CIMARRON 115KV CKT 1	143	103	235	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12SP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2	105	103	237	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1
12SP	BEELER - DIGHTON TAP 115KV CKT 1	98	102	267	MULLERGREN - SPEARVILLE 230KV CKT 1
12WP	SEWARD - ST JOHN 115KV CKT 1	80	147	0	CIRCLE - MULLERGREN 230KV CKT 1
12WP	MEDICINE LODGE - SUN CITY 115KV CKT 1	80	139	0	MULLERGREN - SPEARVILLE 230KV CKT 1
12WP	MEDICINE LODGE (MED-LDG4) 138/115/2.72KV TRANSFORMER CKT 1	65	132	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12WP	HARRINGTON STATION - NICHOLS STATION 230KV CKT 1	706	108	0	HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2
12WP	HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2	706	107	0	HARRINGTON STATION - NICHOLS STATION 230KV CKT 1
12WP	HARPER - MEDICINE LODGE 138KV CKT 1	72	119	26	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
12WP	ALEXANDER - NESS CITY 115KV CKT 1	101	114	126	MULLERGREN - SPEARVILLE 230KV CKT 1
12WP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1	105	108	142	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2
12WP	CROOKED CREEK (NPPD) - NORTH PLATTE (NPPD) 230KV CKT 1	402	104	167	GENTLEMAN STATION (NPPD) - SWEETWATER (NPPD) 345KV CKT 1
12WP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2	105	106	181	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1
12WP	BROKEN BOW (NPPD) - LOUP CITY (NPPD) 115KV CKT 1	92	104	192	CROOKED CREEK (NPPD) - RIVERDALE (NPPD) 230KV CKT 1
12WP	ALEXANDER - NEKOMA 115KV CKT 1	101	108	201	MULLERGREN - SPEARVILLE 230KV CKT 1
12WP	ST JOHN - ST_JOHN 115KV CKT 1	88	104	215	CIRCLE - MULLERGREN 230KV CKT 1
12WP	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	104	233	HOLCOMB - SETAB 345KV CKT 1
12WP	POTTER COUNTY INTERCHANGE (POTTR CO) 345/230/13.2KV TRANSFORMER CKT 1	560	102	252	TOLK (GEN525562 1)
12WP	COLBY - HOXIE 115KV CKT 1	101	102	278	MULLERGREN - SPEARVILLE 230KV CKT 1
17SP	MEDICINE LODGE - SUN CITY 115KV CKT 1	80	127	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
17SP	POTTER COUNTY INTERCHANGE (POTTR CO) 345/230/13.2KV TRANSFORMER CKT 1	560	120	0	TOLK (GEN525562 1)
17SP	CIMARRON RIVER PLANT - NORTH LIBERAL TAP 115KV CKT 1	115	115	0	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
17SP	CIRCLE - RENO COUNTY 115KV CKT 1	194	114	0	CIRCLE - RENO COUNTY 115KV CKT 2
17SP	MULLERGREN - SPEARVILLE 230KV CKT 1	355	115	84	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
17SP	EAST LIBERAL - TEXAS COUNTY INTERCHANGE PHASE SHIFT TFMR 115KV CKT 1	119	111	152	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
17SP	MEDICINE LODGE (MED-LDG4) 138/115/2.72KV TRANSFORMER CKT 1	65	108	176	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
17SP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1	105	104	206	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2
17SP	HARPER - MEDICINE LODGE 138KV CKT 1	72	107	211	2003-13 345.00 - POTTER COUNTY INTERCHANGE 345KV CKT 1
17SP	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 2	105	102	251	MCCOOK (NPPD) - RED WILLOW (NPPD) 115KV CKT 1

TABLE 4: Contingency Analysis (continued)

SEASON	OVERLOADED ELEMENT	RATING (MVA)	LOADING (%)	ATC (MW)	CONTINGENCY
17SP	COLBY - HOXIE 115KV CKT 1	101	103	276	2007-12 345.00 - RED WILLOW (NPPD) 345KV CKT 1

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.

Conclusion

The minimum cost of interconnecting the Customer's interconnection request is estimated at \$6,275,000 for Direct Assignment Facilities and Network Upgrades. At this time, the cost estimates for other Direct Assignment facilities including those in Tables 1 and 2 have not been defined by the Customer. In addition to the Customer's proposed interconnection facilities, the Customer will be responsible for installing a total of 60 Mvar of capacitor bank(s) in the Customer's substation for reactive support. As stated earlier, some but not all of the local projects that were previously queued are assumed to be in service in this Feasibility Study. These costs exclude upgrades of other transmission facilities that were listed in Table 3 of which are Network Constraints.

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 one contingency, only the highest loading on the facility for each season is included in the 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. At the time of the System Impact Study, a better determination of the interconnection facilities may be available.

The required interconnection costs listed in Tables 1 and 2 and other upgrades associated with Network Constraints 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 submits a Transmission Service Request through Southwest Power Pool's OASIS.

Appendix A: Point of Interconnection Area Map

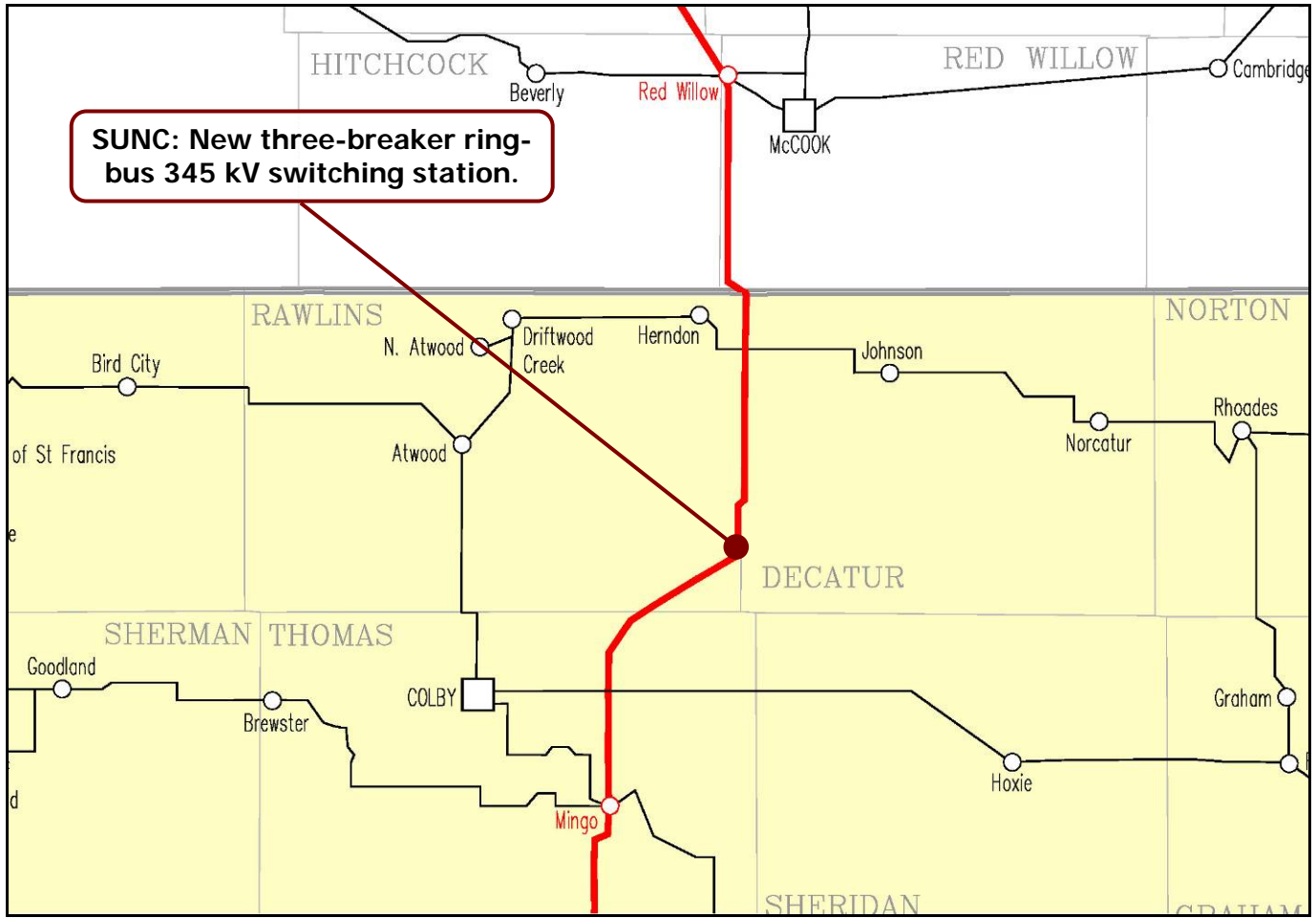


Figure 2: Point of Interconnection Area Map