Feasibility Study For Generation Interconnection Request GEN-2006-045

SPP Tariff Studies
(#GEN-2006-045)

May, 2007

Executive Summary

<OMITTED TEXT> (Customer) has requested a feasibility study for the purpose of interconnecting 240 MW of wind generation within the control area of Southwestern Public Service Company (SPS) in Randall County, Texas. The proposed method of interconnection is to add a fourth 230 kV line terminal to an earlier proposed 230 kV switching station to be built on the existing Potter County – Plant X 230 kV transmission line, which is owned by SPS. The proposed in-service date is December 31, 2008

Power flow analysis has indicated that for the powerflow cases studied, it is possible to interconnect the 240 MW of generation with transmission system reinforcements within the local transmission system. In order to maintain acceptable reactive power compensation, the customer will need to install 50 Mvars of 34.5 kV capacitor banks in the Customer's collector substation on the 34.5 kV bus. Dynamic Stability studies performed as part of the 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 240 MW of generation on the existing Potter County – Plant X 230 kV transmission line consists of adding a new 230 kV line terminal into a proposed 230kV three-breaker ring-bus switching station to be built for generation interconnection request #GEN-2006-039. Customer did not propose a specific 230 kV line extending to serve its 230 – 34.5 kV facilities. It is assumed that obtaining all necessary right-of-way for the new switching station will not be a significant expense.

The total minimum cost for building the required facilities for this 240 MW of generation is $500,000. These costs are shown in Table 2. Other Network Constraints in the American Electric Power West (AEPW), SPS, and Sunflower (SUNC) transmission systems that may be verified with a transmission service request and associated studies are listed in Table 4. 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 (ER) Interconnection request. With a defined source and sink in a Transmission Service Request (TSR), this list of Network Constraints will be refined and expanded to account for all Network Upgrade requirements. This cost does not include building the 230 kV line from the Customer substation into the new 230 kV ring bus. This cost does not include the Customer's 230/34.5 kV substation or the 34.5 kV, 50 Mvar capacitor bank(s).

In Table 5, 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 control area 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 240 MW of wind generation within the control area of Southwestern Public Service Company (SPS) in Randall County, Texas. The proposed method of interconnection is to add a fourth 230 kV line terminal to an earlier proposed 230 kV switching station to be built on the existing Potter County – Plant X 230 kV transmission line, which is owned by SPS. The proposed in-service date is December 31, 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 of the 240 MW consist of adding a new 230 kV line terminal into a previously proposed three-breaker ring-bus station on the existing Potter County – Plant X 230 kV transmission line owned by SPS. This substation was first proposed to be built for generation interconnection request #GEN-2006-039. This substation shall be constructed and maintained by SPS. If #GEN-2006-039 withdraws from the queue, the Customer will be responsible for the cost of constructing the original three breaker 230kV ring bus. The Customer did not propose a route of its 230 kV line to serve its 230/34.5 kV facilities. It is assumed that obtaining all necessary right-of-way for the substation construction will not be a significant expense.

The total cost for adding a 230 kV line terminal to the proposed 230 kV ring bus substation is approximately $500,000. This cost is listed in Table 2. If GEN-2006-039 withdraws from the queue, the Customer will be responsible for building a new 230 kV three breaker ring switching station and the required interconnection facilities, which is estimated at $3,000,000 and is listed in Table 3. Other Network Constraints in the SPS, American Electric Power West (AEPW), and Sunflower (SUNC) transmission systems that were identified are listed in Table 4. These estimates will be refined during the development of the impact study based on the final designs. This cost does not include building the 230 kV facilities from the Customer substation into the new 230 kV ring bus. The Customer is responsible for these 230 kV facilities up to the point of interconnection. This cost does not include the Customer's 230/34.5 kV substation, which should be determined by the Customer. This cost does not include the 34.5 kV, 50 Mvar capacitor bank to be installed in the Customer substation

The costs of interconnecting the facility to the SPS transmission system are listed in Tables 1 & 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.

A preliminary one-line drawing of the interconnection and direct assigned facilities are shown in Figure 1.

Table 1: Direct Assignment Facilities

FACILITY	ESTIMATED COST (2007 DOLLARS)
Customer – 230/34.5 kV Substation facilities.	*
Customer – 230 kV transmission line facilities between Customer facilities and the new 230 kV ring bus.	*
Customer - Right-of-Way for Customer facilities.	
Customer – 34.5 kV, 50 Mvar capacitor bank(s) in Customer substation.	*
Total	*****

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

Table 2: Required Interconnection Network Upgrade Facilities

FACILITY	ESTIMATED COST (2007 DOLLARS)
SPS – Add 230kV line terminal to the three breaker ring bus substation constructed for GEN-2006-039	**$500,000**
Total	*****

Table 3: Required Interconnection Network Upgrade Facilities (if GEN-2006-039 withdraws)

FACILITY	ESTIMATED COST (2007 DOLLARS)
SPS – Build 230 kV, 3-breaker ring-bus switching station. Station to include breakers, switches, control relaying, high speed communications, metering and related equipment and all structures	**$3,000,000**
Total	*****

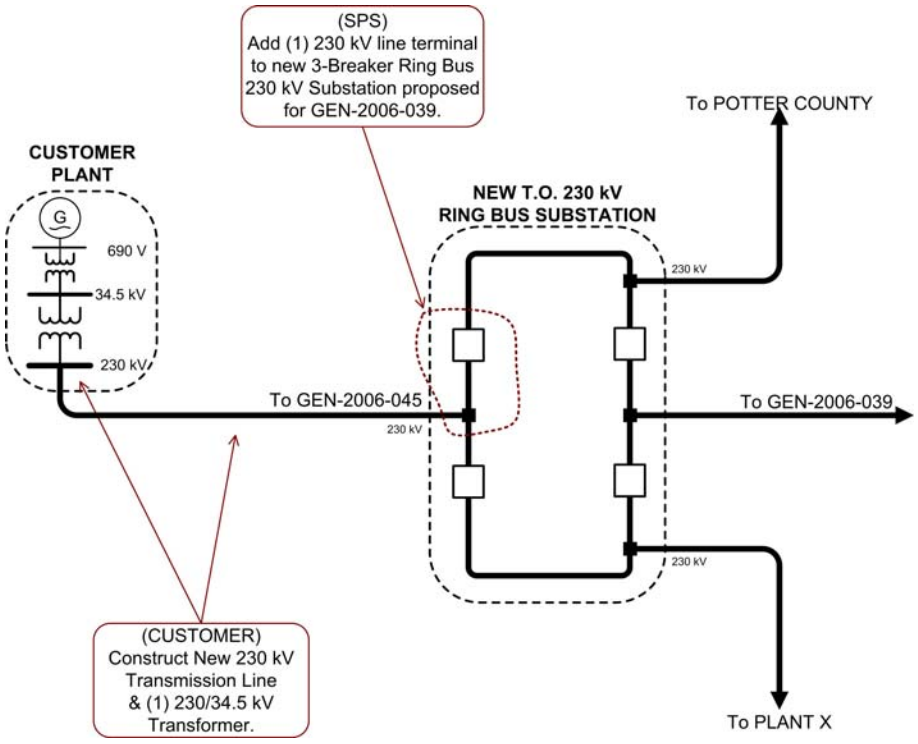

Figure 1: Proposed Interconnection
(Final substation design to be determined)

Powerflow Analysis

A powerflow analysis was conducted for the facility using modified versions of the 2008 winter peak, the 2009 winter and summer peak, the 2012 summer and winter peak, and 2017 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. This method allows the request to be studied as an Energy Resource (ER) Interconnection request. The proposed in-service date of the generation is December 31, 2008. The available seasonal models used were through the 2017 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 240 MW and location, additional criteria violations will occur on the existing AEPW, SPS, and WFEC transmission systems under steady state and contingency conditions in the peak seasons.

In Table 5, 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.

Numerous voltage violations for load serving buses within the SPP footprint were also observed for the some of the contingencies listed in Table 5. 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 at the point of interconnection. The Customer will be required to install 50 Mvar of capacitor banks in their substation on the 34.5 kV buses in the Customer substation. Dynamic Stability studies performed as part of the 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. Those 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 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 Sunflower Electric Power Corporation (SUNC), Missouri Public Service (MIPU), Westar (WESTAR), 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.

Table 4: Network Constraints

AREA	ELEMENT
AEPW	'CLINTON JUNCTION - ELK CITY 138KV CKT 1'
AEPW	'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'
AEPW	'JERICHO (JERIC2WT) 115/69/14.4KV TRANSFORMER CKT 1'
AEPW	'SHAMROCK (SHAMRCK1) 115/69/14.4KV TRANSFORMER CKT 1'
SPS	'CUNNINGHAM STATION 230/115KV TRANSFORMER CKT 1'
SPS	'ELK CITY 230KV - GRAPEVINE INTERCHANGE 230KV CKT 1'
SPS	'ETTER RURAL SUB - MOORE COUNTY INTERCHANGE E. 115KV CKT 1'
SPS	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'
SPS	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
SPS	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
SPS	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
SPS	'LUBBOCK POWER & LIGHT-HOLLY PLANT 230/69KV TRANSFORMER CKT 1'
SPS	'MOORE COUNTY INTERCHANGE 230/115KV TRANSFORMER CKT 1'
SPS	'PERRYTON INTERCHANGE - TRI COUNTY REC-COLE 115KV CKT 1'
SPS	'PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 1'
SPS	'SPEARMAN INTERCHANGE - SPEARMAN SUB 115KV CKT 1'
SUNC	'SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1'

Table 5: Contingency Analysis

ELEMENT	SEASON	RATE	LOADING (%)	ATC (MW)	CONTINGENCY
2008 Winter Peak					
NO SOLUTION	08WP			0	TUCO – OKLAUNION 345KV
'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'	08WP	706	109.7	0	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'	08WP	706	109.5	0	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'	08WP	287	115.5	76	'SPP-SWPS-04A'
'SHAMROCK (SHAMRCK1) 115/69/14.4KV TRANSFORMER CKT 1'	08WP	69	105.3	155	'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'
'ELK CITY 230KV - GRAPEVINE INTERCHANGE 230KV CKT 1'	08WP	351	105.9	182	'SPP-SWPS-04A'
'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'	08WP	606	106.7	201	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'	08WP	606	104.5	213	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'
2009 Summer Peak					
'LUBBOCK POWER & LIGHT-HOLLY PLANT 230/69KV TRANSFORMER CKT 1'	09SP	100	120.5	0	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'
'LUBBOCK POWER & LIGHT-SOUTHEAST 230/69KV TRANSFORMER CKT 1'	09SP	100	119.4	0	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'
'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'	09SP	635	113.9	0	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'	09SP	635	114.2	0	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
'LUBBOCK POWER & LIGHT-WADSWORTH 230/69KV TRANSFORMER CKT 1'	09SP	100	106.3	127	'LUBBOCK POWER & LIGHT-SOUTHEAST 230/69KV TRANSFORMER CKT 1'
'LUBBOCK POWER & LIGHT-WADSWORTH 230/69KV TRANSFORMER CKT 1'	09SP	100	106.3	127	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'
'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'	09SP	606	106.0	205	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'	09SP	287	102.9	208	'FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1'
'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'	09SP	606	103.9	216	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'
2009 Winter Peak					
NO SOLUTION	09WP			0	TUCO – OKLAUNION 345KV
'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'	09WP	706	109.7	0	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'	09WP	706	110.0	0	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'	09WP	287	112.6	116	'SPP-SWPS-04A'
'SHAMROCK (SHAMRCK1) 115/69/14.4KV TRANSFORMER CKT 1'	09WP	69	106.4	144	'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'
'CUNNINGHAM STATION 230/115KV TRANSFORMER CKT 1'	09WP	168	102.5	150	'LEA COUNTY INTERCHANGE 230/115KV TRANSFORMER CKT 1'
'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'	09WP	606	106.7	201	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
'G06-39T 230.00 - POTTER COUNTY INTERCHANGE	09WP	606	104.5	212	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'

Table 5: Contingency Analysis (continued)

ELEMENT	SEASON	RATE	LOADING (%)	ATC (MW)	CONTINGENCY
230KV CKT 1'					
2009 Winter Peak (continued)					
'ELK CITY 230KV - GRAPEVINE INTERCHANGE 230KV CKT 1'	09WP	351	101.9	222	'SPP-SWPS-04A'
2012 Summer Peak					
NO SOLUTION	12SP			0	MOORE COUNTY 230/115KV AUTOTRANSFORMER
NO SOLUTION	12SP			0	MOORE – POTTER COUNTY 230KV
'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'	12SP	635	110.5	40	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'	12SP	635	110.3	44	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'	12SP	287	104.4	193	'FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1'
'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'	12SP	606	105.9	205	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'	12SP	606	103.9	216	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'
'SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1'	12SP	336	100.5	230	'HOLCOMB - SETAB 345KV CKT 1'
2012 Winter Peak					
'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'	12WP	706	112.9	0	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'	12WP	706	113.2	0	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'	12WP	287	125.1	12	'TUCO INTERCHANGE (TUCO XX4) 345/230/13.2KV TRANSFORMER CKT 1'
'ELK CITY 230KV - GRAPEVINE INTERCHANGE 230KV CKT 1'	12WP	351	120.4	94	'TUCO INTERCHANGE (TUCO XX4) 345/230/13.2KV TRANSFORMER CKT 1'
'SHAMROCK (SHAMRCK1) 115/69/14.4KV TRANSFORMER CKT 1'	12WP	69	110.1	106	'ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1'
'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'	12WP	606	106.2	202	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
'CLINTON JUNCTION - ELK CITY 138KV CKT 1'	12WP	143	103.7	208	'TUCO INTERCHANGE (TUCO XX4) 345/230/13.2KV TRANSFORMER CKT 1'
'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'	12WP	606	104.5	213	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'
'JERICHO (JERIC2WT) 115/69/14.4KV TRANSFORMER CKT 1'	12WP	46	100.4	240	'KIRBY SWITCHING STATION - MCCLELLAN SUB 115KV CKT 1'
2017 Summer Peak					
NO SOLUTION	17SP			0	HOLCOMB – FINNEY 345KV
NO SOLUTION	17SP			0	MOORE COUNTY 230/115KV AUTOTRANSFORMER
NO SOLUTION	17SP			0	MOORE COUNTY – POTTER 230KV
NO SOLUTION	17SP			0	BOWERS – GRAPEVINE 115KV
NO SOLUTION	17SP			0	BOWERS 115/69KV AUTOTRANSFORMER
'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'	17SP	635	112.2	0	'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'
'PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 2'	17SP	161	123.1	0	'PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 1'
'ETTER RURAL SUB - MOORE COUNTY INTERCHANGE E.	17SP	99	175.9	0	'MOORE COUNTY INTERCHANGE E. - RITA BLANCA REC-

Table 5: Contingency Analysis (continued)

ELEMENT	SEASON	RATE	LOADING (%)	ATC (MW)	CONTINGENCY
115KV CKT 1'					HOGUE 115KV CKT 1'
2017 Summer Peak (continued)					
'HARRNG_MID6 230.00 - NICHOLS STATION 230KV CKT 2'	17SP	635	111.9	0	'HARRINGTON STATION - NICHOLS STATION 230KV CKT 1'
'MOORE COUNTY INTERCHANGE 230/115KV TRANSFORMER CKT 1'	17SP	252	107.5	3	'HERRING TAP - RIVERVIEW INTERCHANGE 115KV CKT 1'
'PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 1'	17SP	197	104.6	59	'MOORE COUNTY INTERCHANGE E. - SHERMAN COUNTY TAP 115KV CKT 1'
'SPEARMAN INTERCHANGE - SPEARMAN SUB 115KV CKT 1'	17SP	161	109.0	139	'HANSFORD 3 115.00 - TEXAS COUNTY INTERCHANGE 115KV CKT 1'
'MOORE COUNTY INTERCHANGE 230/115KV TRANSFORMER CKT 1'	17SP	252	102.3	179	'HANSFORD 3 115.00 - SPEARMAN INTERCHANGE 115KV CKT 1'
'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'	17SP	606	106.1	205	'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'
'G06-39T 230.00 - POTTER COUNTY INTERCHANGE 230KV CKT 1'	17SP	606	104.1	215	'G06-39T 230.00 - PLANT X STATION 230KV CKT 1'
'PERRYTON INTERCHANGE - TRI COUNTY REC-COLE 115KV CKT 1'	17SP	99	101.0	226	'HANSFORD 3 115.00 - TEXAS COUNTY INTERCHANGE 115KV 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 $500,000 for Direct Assignment facilities and Network Upgrades listed in Tables 1 and 2. These costs exclude upgrades of other transmission facilities that were listed in Table 4 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. In addition to the Customer's proposed interconnection facilities, the Customer will be responsible for installing 50 Mvar of 34.5 kV capacitors in the Customer substation for reactive support. Dynamic stability analysis will determine if a portion of this should be dynamic (SVC). 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.

In Table 5, 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.

The required interconnection costs listed in Table 2 and other upgrades associated with Network Constraints listed in Table 4 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.

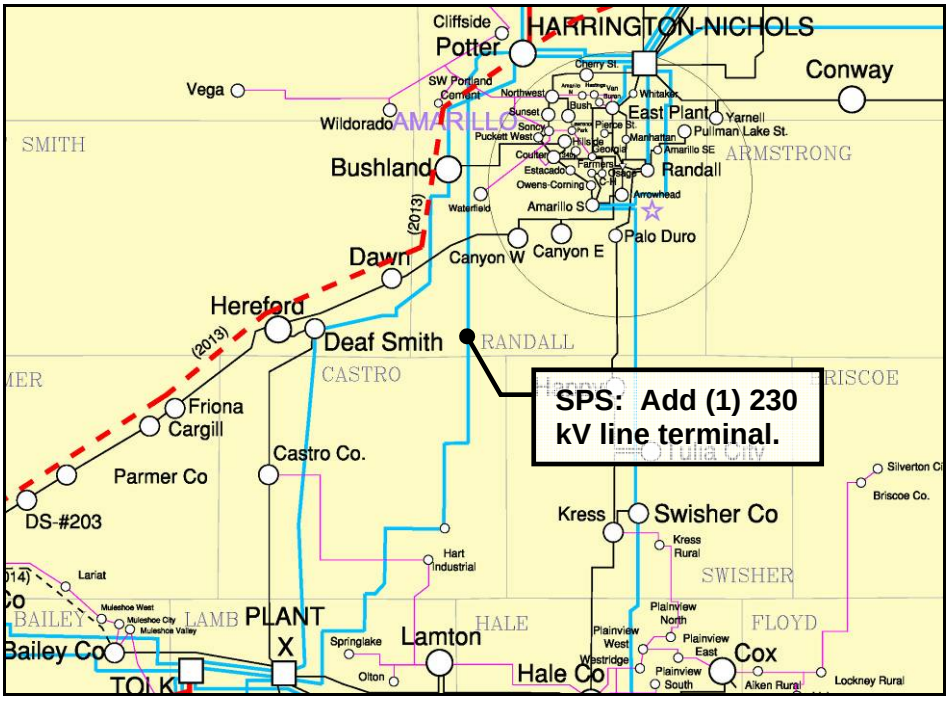

FIGURE 2. MAP OF THE LOCAL AREA