



***Feasibility Study  
For  
Generation Interconnection  
Request  
GEN-2004-021***

***SPP Tariff Studies  
(#GEN-2004-021)***

**March 7, 2005**

## **Executive Summary**

<OMITTED TEXT> (Customer) has requested a Feasibility Study for the purpose of interconnecting 150MW of wind generation within the service territory of Western Farmers Electric Cooperative (WFEC) in Custer County Oklahoma. The proposed point of interconnection is in the existing Weatherford – Clinton 138kV line at a new switching station to be located northwest of Weatherford, OK. This 138kV line is owned by WFEC. The proposed in-service date is December 1, 2005.

Power flow analysis has indicated that for the powerflow cases studied, it is possible to interconnect the 150MW of generation with transmission system reinforcements within the local transmission system. The requirements for interconnection consist of adding a new 138kV switching station. This 138kV addition shall be constructed and maintained by WFEC. The Customer did not propose a specific 138kV line extending to serve its 138-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the necessary substation additions in the Weatherford – Clinton 138kV line will not be a significant expense.

The total cost for adding a new 138kV switching station, the required interconnection facility, is estimated at \$2,200,000. Other Network Constraints in the American Electric Power West (AEPW) and WFEC systems 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. 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 138kV line from the Customer substation into a new WFEC switching station. This cost does not include the Customer's 138-34.5kV 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.

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 WFEC and AEPW 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 150MW of wind generation within the service territory of WFEC in Custer County Oklahoma. The existing Weatherford – Clinton 138kV line is owned by WFEC, and the proposed generation interconnect is within WFEC. The proposed point of interconnection is at a new 138kV switching station in this line. The proposed in-service date is December 1, 2005.

## 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 a new 138kV switching station. This 138kV addition shall be constructed and maintained by WFEC. The Customer did not propose a route of its 138kV line to serve its 138-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the new WFEC 138kV switching station will not be a significant expense.

The total cost for WFEC to add a new 138kV switching station, the interconnection facility, in the Weatherford – Clinton 138kV line is estimated at \$2,200,000. Other Network Constraints in the WFEC and AEPW system 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 138kV line from the Customer substation into the new WFEC switching station. The Customer is responsible for this 138kV line up to the point of interconnection. This cost does not include the Customer's 138-34.5kV substation and the cost estimate should be determined by the Customer.

The costs of interconnecting the facility to the WFEC 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 (2005 DOLLARS)
Customer – 138-34.5 kV Substation facilities.	*
Customer – 138kV line between Customer substation and new WFEC 138kV switching station.	*
Customer - Right-of-Way for Customer Substation & Line.	*
<b>Total</b>	<b>*</b>

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

**Table 2: Required Interconnection Network Upgrade Facilities**

Facility	ESTIMATED COST (2005 DOLLARS)
WFEC - Add 3-breaker 138kV ring switching station.	\$2,200,000
<b>Total</b>	<b>\$2,200,000</b>

**Table 3: Network Constraints**

Facility
WFEC - ANADARKO 138-69kV: Add 2nd 112MVA transformer including bus and breakers. (2) Overloaded facility identified in GEN-2004-020.
AEPW - CLINTON - FOSS TAP 69kV: Replace switch @ Clinton Jct
AEPW - CLINTON 138kV: Replace Interconnect Metering CTs & jumpers @ Elk City
WFEC - CLINTON 138kV: (1)
AEPW - CLINTON CITY - FOSS TAP 69kV: Replace wavetraps @ Clinton City
AEPW - CLINTON CITY - THOMAS TAP 69kV: Replace wavetraps @ Clinton City
AEPW - CLINTON CITY - THOMAS TAP 69kV: Rebuild 13.9 miles of 4/0 ACSR with 795 ACSR
WFEC - EL RENO SW - EL RENO 69kV: (1)
AEPW - ELGIN JUNCTION - *2001-35T 138kV: None. Ratings to be updated in models.
AEPW - ELK CITY - CLINTON 138kV: Replace switches @ Clinton Jct & Reset CT @ Elk City
AEPW - ELK CITY 69kV: Replace Metering CTs & Jumpers @ Elk City (AEPW) & reset relaying CT
WFEC - ELK CITY 69kV: None. Upgrade to be completed in current workplan.
AEPW - FLETCHER TAP - LAWTON EASTSIDE 138kV: Replace switches 1334 & 1335 @ Lawton Eastside
WFEC - HAMON BUTLER - MOREWOOD 69kV: (1)
AEPW - SOUTHWEST STATION - NORGE ROAD 138kV: Rebuild 22.35 miles of 397.5 ACSR with 1272 ACSR & Replace switches 1302, 1303, & 1398MD @ Norge Road.
WFEC - WASHITA 138-69kV: (1)
AEPW - WEATHERFORD - THOMAS TAP 69kV: Rebuild 0.9 miles of 4/0 ACSR with 795 ACSR

Note: (1) Network Upgrade description will be determined at the request of the Customer.

(2) Overloaded facility identified in prior evaluation.

**Table 4: Contingency Analysis Results**

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
ANADARKO 138-69kV, Add 2nd 112MVA transformer including bus and breakers.	07SP, 55814-55923, WFEC FLA - WFEC AEP-OP, ANADARKO - GEORGIA 138kV	117.5	0	6/1/2006
ANADARKO 138-69kV	07SP, 55912-55923, WFEC FLA - WFEC AEP-OP, FLETCHER - GEORGIA 138kV	113.3	0	6/1/2006
ANADARKO 138-69kV	07WP, 55814-55923, WFEC FLA - WFEC AEP-OP, ANADARKO - GEORGIA 138kV	101.7	91	12/1/2006
CLINTON - FOSS TAP 69kV, Replace switch @ Clinton Jct	07SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	103.9	122	6/1/2006
CLINTON - FOSS TAP 69kV	10SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	103.4	126	6/1/2008
CLINTON 138kV, Replace Interconnect Metering CTs & jumpers @ Elk City	05WP, 55814-56089, WFEC FLA - WFEC AEP-CS, ANADARKO - WASHITA 138kV	105.0	142	12/1/2005
CLINTON 138kV,	05AP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	104.7	143	
CLINTON 138kV	07SP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	104.7	143	
CLINTON 138kV	10WP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	104.4	144	
CLINTON 138kV	07WP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	104.1	144	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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)
CLINTON 138kV	05WP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	103.8	144	
CLINTON 138kV	10SP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	103.6	145	
CLINTON 138kV	05AP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	103.2	145	
CLINTON 138kV	07SP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	102.1	147	
CLINTON 138kV	10WP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	102.1	147	
CLINTON 138kV	07WP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	101.9	147	
CLINTON 138kV	05WP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	101.6	148	
CLINTON 138kV	10SP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	100.8	149	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.  
 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)
CLINTON CITY - FOSS TAP 69kV, Replace wavetraps @ Clinton City	07SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	140.3	0	12/1/2005
CLINTON CITY - FOSS TAP 69kV	10SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	139.5	0	
CLINTON CITY - FOSS TAP 69kV	07SP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	129.9	0	
CLINTON CITY - FOSS TAP 69kV	10SP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	128.7	0	
CLINTON CITY - FOSS TAP 69kV	10WP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	121.8	35	
CLINTON CITY - FOSS TAP 69kV	07WP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	120.0	44	
CLINTON CITY - FOSS TAP 69kV	10WP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	115.9	66	
CLINTON CITY - FOSS TAP 69kV	07WP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	114.3	74	
CLINTON CITY - FOSS TAP 69kV	05WP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	110.5	77	
CLINTON CITY - FOSS TAP 69kV	05WP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	104.9	126	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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)
CLINTON CITY - FOSS TAP 69kV	05AP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	100.9	145	
CLINTON CITY - THOMAS TAP 69kV, Replace wavetrap @ Clinton City	10WP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	100.9	145	12/1/2010
CLINTON CITY - THOMAS TAP 69kV, Rebuild 13.9 miles of 4/0 ACSR with 795 ACSR	10SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	111.9	94	6/1/2006
CLINTON CITY - THOMAS TAP 69kV	07SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	111.7	94	
CLINTON CITY - THOMAS TAP 69kV	07SP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	100.3	147	
EL RENO SW - EL RENO 69kV,	05AP, 54820-54821, OKGE METRO, JENSEN TAP - JENSEN ROAD 138kV	111.6	97	12/1/2005
EL RENO SW - EL RENO 69kV	07WP, 54820-54821, OKGE METRO, JENSEN TAP - JENSEN ROAD 138kV	106.2	122	
EL RENO SW - EL RENO 69kV	05WP, 54820-54821, OKGE METRO, JENSEN TAP - JENSEN ROAD 138kV	103.9	133	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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)
ELGIN JUNCTION - *2001-35T 138kV, None	10SP, 54086-54140, AEPW WESTERN, FLETCHER TAP - SOUTHWEST STATION 138kV	106.6	45	6/1/2006
ELGIN JUNCTION - *2001-35T 138kV	10SP, 54086-54130, AEPW WESTERN, FLETCHER TAP - LAWTON EASTSIDE 138kV	106.0	55	
ELGIN JUNCTION - *2001-35T 138kV	07SP, 54086-54140, AEPW WESTERN, FLETCHER TAP - SOUTHWEST STATION 138kV	104.7	74	
ELGIN JUNCTION - *2001-35T 138kV	10SP, 54108-54126, AEPW WESTERN, CARNEGIE - HOBART JUNCTION 138kV	104.3	48	
ELGIN JUNCTION - *2001-35T 138kV	07SP, 54086-54130, AEPW WESTERN, FLETCHER TAP - LAWTON EASTSIDE 138kV	104.1	84	
ELGIN JUNCTION - *2001-35T 138kV	07SP, 54108-54126, AEPW WESTERN, CARNEGIE - HOBART JUNCTION 138kV	101.7	109	
ELK CITY - CLINTON 138kV, Replace switches @ Clinton Jct & Reset CT @ Elk City	05WP, 54152-54160, AEPW WESTERN, WEATHERFORD JCT. - Weatherford Southeast 138kV	117.6	102	12/1/2005
ELK CITY - CLINTON 138kV	05WP, 54096-54152, AEPW WESTERN, HINTON - WEATHERFORD JCT. 138kV	114.9	109	
ELK CITY - CLINTON 138kV	05WP, 54096-54821, AEPW WESTERN - OKGE METRO, HINTON - JENSEN ROAD 138kV	113.9	112	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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)
ELK CITY - CLINTON 138kV	05AP, 54152-54160, AEPW WESTERN, WEATHERFORD JCT. - Weatherford Southeast 138kV	112.6	113	
ELK CITY - CLINTON 138kV	05AP, 54096-54152, AEPW WESTERN, HINTON - WEATHERFORD JCT. 138kV	111.3	117	
ELK CITY - CLINTON 138kV	05AP, 54096-54821, AEPW WESTERN - OKGE METRO, HINTON - JENSEN ROAD 138kV	110.9	118	
ELK CITY - CLINTON 138kV	07WP, 54152-54160, AEPW WESTERN, WEATHERFORD JCT. - Weatherford Southeast 138kV	110.0	121	
ELK CITY - CLINTON 138kV	07WP, 54096-54152, AEPW WESTERN, HINTON - WEATHERFORD JCT. 138kV	107.2	129	
ELK CITY - CLINTON 138kV	10WP, 54152-54160, AEPW WESTERN, WEATHERFORD JCT. - Weatherford Southeast 138kV	106.7	130	
ELK CITY - CLINTON 138kV	07WP, 54096-54821, AEPW WESTERN - OKGE METRO, HINTON - JENSEN ROAD 138kV	106.4	131	
ELK CITY - CLINTON 138kV	10SP, 54152-54160, AEPW WESTERN, WEATHERFORD JCT. - Weatherford Southeast 138kV	104.9	135	
ELK CITY - CLINTON 138kV	10WP, 54096-54152, AEPW WESTERN, HINTON - WEATHERFORD JCT. 138kV	103.9	139	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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)
ELK CITY - CLINTON 138kV	07SP, 54152-54160, AEPW WESTERN, WEATHERFORD JCT. - Weatherford Southeast 138kV	103.6	139	
ELK CITY - CLINTON 138kV	05WP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	102.9	141	
ELK CITY - CLINTON 138kV	10WP, 54096-54821, AEPW WESTERN - OKGE METRO, HINTON - JENSEN ROAD 138kV	102.9	141	
ELK CITY - CLINTON 138kV	05WP, 54160-54199, AEPW WESTERN, Weatherford Southeast - WEATHERFORD TAP 138kV	100.5	148	
ELK CITY - CLINTON 138kV	10SP, 54096-54152, AEPW WESTERN, HINTON - WEATHERFORD JCT. 138kV	100.1	150	
ELK CITY 69kV, Replace Metering CTs & Jumpers @ Elk City (AEPW) & reset relaying CT	05WP, 54121-56001, AEPW WESTERN - WFEC AEP-CS, ELK CITY - MOREWOOD SW 138kV	104.8	94	12/1/2005
ELK CITY 69kV, None by WFEC as upgrade to be completed in current work plan.	07SP, 56092-99954, WFEC AEP-CS - , WEATHERFORD - 2004-21T 138kV	101.1	139	
ELK CITY 69kV	07SP, 55950-56092, WFEC AEP-CS, HYDRO - WEATHERFORD 138kV	100.6	144	
FLETCHER TAP - LAWTON EASTSIDE 138kV, Replace switches 1334 & 1335 @ Lawton Eastside	10SP, 54149-99936, AEPW WESTERN - , ELGIN JUNCTION - 2001-35T 138kV	102.9	106	6/1/2007
FLETCHER TAP - LAWTON EASTSIDE 138kV	07SP, 54149-99936, AEPW WESTERN - , ELGIN JUNCTION - 2001-35T 138kV	100.2	147	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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)
HAMON BUTLER - MOREWOOD 69kV,	05AP, 55999-56001, WFEC AEP-OP - WFEC AEP-CS, MOORELAND - MOREWOOD SW 138kV	115.7	21	4/1/2006
HAMON BUTLER - MOREWOOD 69kV	07WP, 55999-56001, WFEC AEP-OP - WFEC AEP-CS, MOORELAND - MOREWOOD SW 138kV	109.8	82	
SOUTHWEST STATION - NORGE ROAD 138kV, Rebuild 22.35 miles of 397.5 ACSR with 1272 ACSR & Replace switches 1302, 1303, &1398MD @ Norge Road.	10SP, 54084-54140, AEPW WESTERN, VERDEN - SOUTHWEST STATION 138kV	106.6	14	6/1/2006
SOUTHWEST STATION - NORGE ROAD 138kV	10SP, 54084-54165, AEPW WESTERN, VERDEN - NORTH 29TH CHICKASHA 138kV	105.4	37	
SOUTHWEST STATION - NORGE ROAD 138kV	07SP, 54084-54140, AEPW WESTERN, VERDEN - SOUTHWEST STATION 138kV	104.1	65	
SOUTHWEST STATION - NORGE ROAD 138kV	07SP, 54084-54165, AEPW WESTERN, VERDEN - NORTH 29TH CHICKASHA 138kV	103.0	88	
SOUTHWEST STATION - NORGE ROAD 138kV	10SP, 54112-54165, AEPW WESTERN, CORNVILLE - NORTH 29TH CHICKASHA 138kV	101.8	113	
SOUTHWEST STATION - NORGE ROAD 138kV	10SP, 55814-55867, WFEC FLA - WFEC AEP-IM-I, ANADARKO - CORN TAP 138kV	101.4	119	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable. 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)
WASHITA 138-69kV,	05WP, 55814-56089, WFEC FLA - WFEC AEP-CS, ANADARKO - WASHITA 138kV	106.1	133	12/1/2005
WEATHERFORD - THOMAS TAP 69kV, Rebuild 0.9 miles of 4/0 ACSR with 795 ACSR	07SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	104.8	127	6/1/2006
WEATHERFORD - THOMAS TAP 69kV	10SP, 54199-99950, AEPW WESTERN - , WEATHERFORD TAP - 2003-22T 138kV	104.8	127	

Note: Listed loading of each facility is the highest value when an operating guide is not applicable.

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 2005 April, 2005 Winter Peak, 2007 and 2010 Summer and Winter 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 generator is December 1, 2005. The available seasonal models used were the 2005 April, 2005 Winter, and 2007 through 2010 peak models. This is the end of the current SPP planning horizon.

The analysis of the Customer's project indicates that, given the requested generation level of 150MW and location, additional criteria violations will occur on the existing WFEC and AEPW 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.

## **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 Western Farmers Electric Cooperative, American Electric Power West, OG&E Electric Services, and Southwestern Public Service Company were applied and the resulting scenarios analyzed. This satisfies the 'more probable' contingency testing criteria mandated by NERC and the SPP criteria.

## **Conclusion**

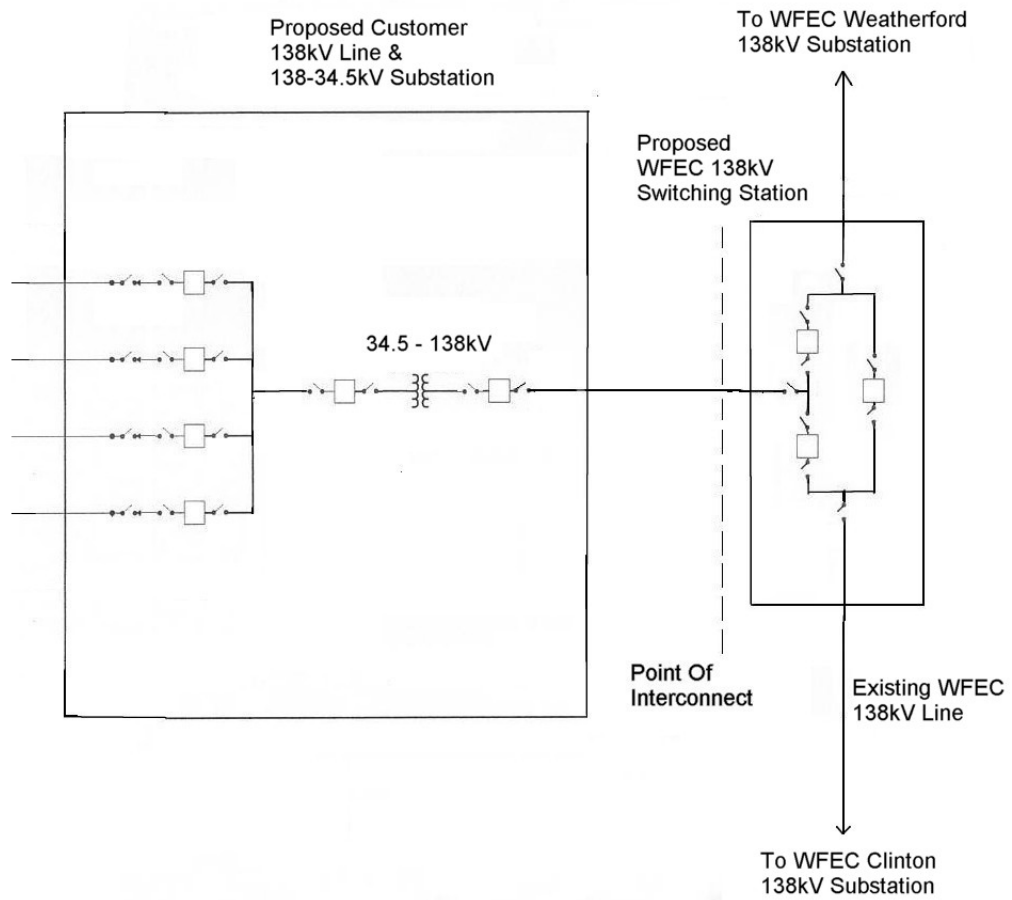
The minimum cost of interconnecting the Customer project is estimated at \$2,200,000 for WFEC's interconnection Network Upgrade facilities listed in Table 2 excluding upgrades of other transmission facilities by AEPW and WFEC listed in Table 3 of which are Network Constraints. At this time, the cost 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 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

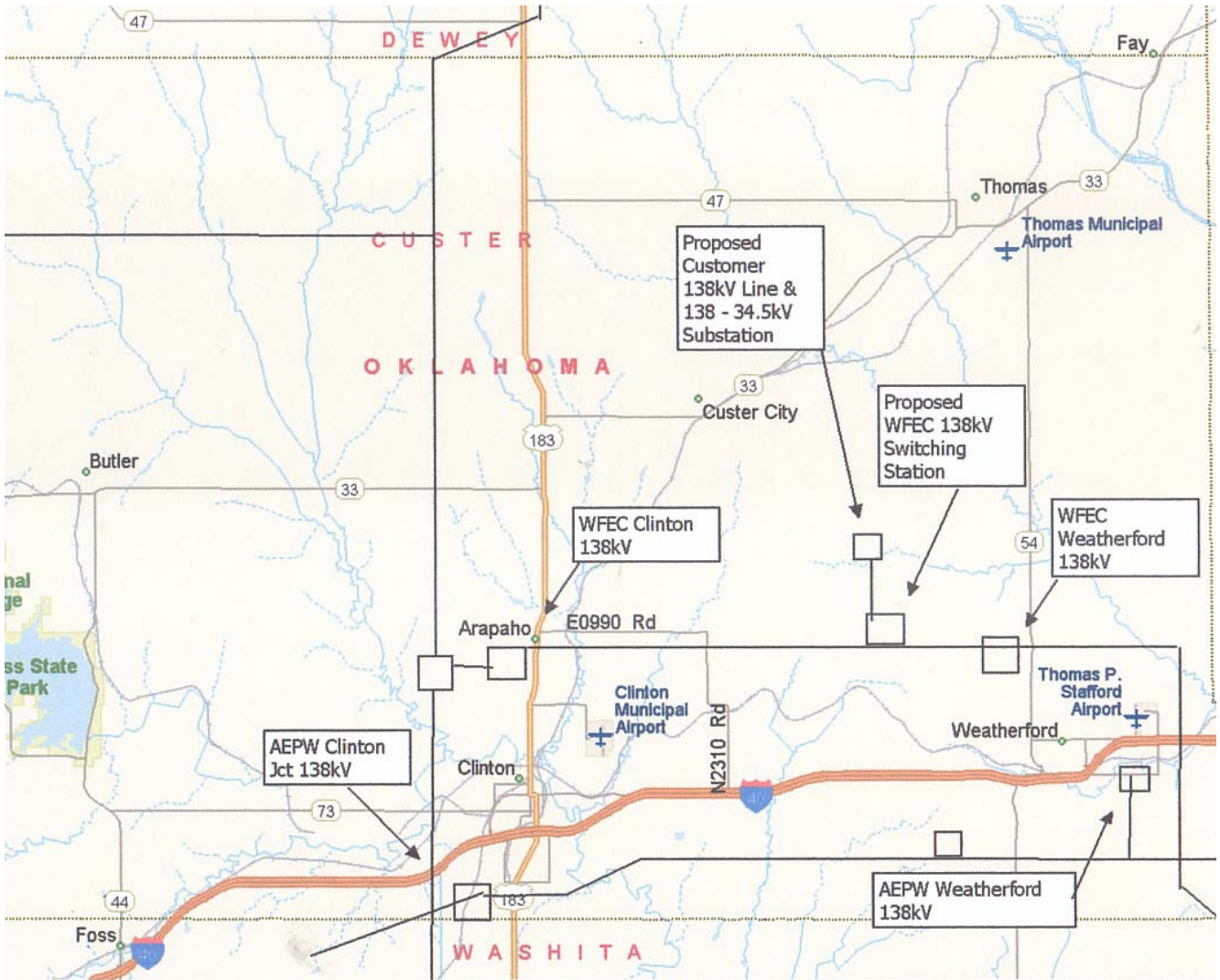
determine lower generation capacity levels that may be installed. When transmission service associated with this interconnection is evaluated, the loading of the facilities listed in this table may be greater due to higher priority reservations.

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)**



**Figure 2: Map Of The Surrounding Area**