



***Feasibility Study
For
Generation Interconnection
Request
GEN-2004-019***

***SPP Tariff Studies
(#GEN-2004-019)***

March 7, 2005

Executive Summary

<OMITTED TEXT> (Customer) has requested a Feasibility Study for the purpose of interconnecting 40.5MW of wind generation within the service territory of Western Farmers Electric Cooperative (WFEC) in Harper County Oklahoma. The proposed point of interconnection is in the existing Ft. Supply – Buffalo 69kV line at a new switching station to be located south of Buffalo, OK. This 69kV line is owned by WFEC. The proposed in-service date is June 30, 2007.

Power flow analysis has indicated that for the powerflow cases studied, it is possible to interconnect the 40.5MW of generation with transmission system reinforcements within the local transmission system. The requirements for interconnection consist of adding a new 69kV switching station. This 69kV addition shall be constructed and maintained by WFEC. The Customer did not propose a specific 69kV line extending to serve its 69-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the necessary substation additions in the Ft. Supply - Buffalo 69kV line will not be a significant expense.

The total cost for adding a new 69kV switching station, the required interconnection facility, is estimated at \$2,000,000. 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 69kV line from the Customer substation into a new WFEC switching station. This cost does not include the Customer's 69-34.5kV 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 interconnect with a higher priority withdraws, then this request may have to be re-evaluated to determine the local Network Constraints.

An alternative exists that may lower the total costs of Network Upgrades to the Customer. Instead of rebuilding the Ft. Supply – new switching station – Buffalo and Freedom – Alva – Cherokee Switch 69kV lines at an estimated cost of \$6.7M, an alternative that may be evaluated includes the addition of a new Ft. Supply – new

switching station 69kV line, Ft. Supply 69kV bay addition, and a 69kV bay addition in the new switching station at an estimated cost of \$4.7M. The Customer should advise the Southwest Power Pool if the Customer desires an evaluation of this alternative circuit configuration.

Introduction

<OMITTED TEXT> (Customer) has requested a Feasibility Study for the purpose of interconnecting 40.5MW of wind generation within the service territory of WFEC in Harper County Oklahoma. The existing Ft. Supply – Buffalo 69kV line is owned by WFEC, and the proposed generation interconnect is within WFEC. The proposed point of interconnection is at a new 69kV switching station. The proposed in-service date is June 30, 2007.

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 69kV switching station. This 69kV addition shall be constructed and maintained by WFEC. The Customer did not propose a route of its 69kV line to serve its 69-34.5kV facilities. It is assumed that obtaining all necessary right-of-way for the new WFEC 69kV switching station will not be a significant expense.

The total cost for WFEC to add a new 69kV switching station, the interconnection facility, in the Ft. Supply - Buffalo 69kV line is estimated at \$2,000,000. 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 69kV line from the Customer substation into the new WFEC switching station. The Customer is responsible for this 69kV line up to the point of interconnection. This cost does not include the Customer's 69-34.5kV 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 – 69-34.5 kV Substation facilities.	*
Customer – 69kV line between Customer substation and new WFEC 69kV switching station.	*
Customer - Right-of-Way for Customer Substation & Line.	*
Total	*

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

Table 2: Required Interconnection Network Upgrade Facilities

Facility	ESTIMATED COST (2005 DOLLARS)
WFEC – Add 69kV 3-breaker ring switching station in the Ft Supply - Buffalo line.	\$2,000,000
Total	\$2,000,000

Table 3: Network Constraints

Facility
WFEC - ALVA - CHEROKEE SW 69kV: Rebuild 3/0 line with 795MCM ACSR.
WFEC - ALVA - FREEDOM 69kV: Rebuild 3/0 line with 795MCM ACSR.
WFEC - BUFFALO - *2004-19T 69kV: Rebuild 3/0 line with 795MCM ACSR.
AEPW - ELK CITY - *2002-05T 138kV: Replace Interconnect Metering Cts & jumpers @ Elk City
WFEC - ELK CITY - *2002-05T 138kV: (1)
WFEC - FPL SWITCH - MOORELAND 138kV: (1)
WFEC - FT SUPPLY - *2004-19T 69kV: Rebuild 3/0 line with 795MCM ACSR.
WFEC - FT SUPPLY - WOODWARD 69kV: (1)
WFEC - GLASS MOUNTAIN - MOORELAND 138kV: (1)
WFEC - MOREWOOD - MOREWOOD SW 138-69kV: (1)

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

Instead of rebuilding the Ft. Supply – new switching station – Buffalo and Freedom – Alva – Cherokee Switch 69kV lines at an estimated cost of \$6.7M, an alternative that may be evaluated includes the addition of a new Ft. Supply – new switching station 69kV line, Ft. Supply 69kV bay addition, and a 69kV bay addition in the new switching station at an estimated cost of \$4.7M.

Table 4: Contingency Analysis Results

Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
ALVA - CHEROKEE SW 69kV, Rebuild 3/0 line with 795MCM ACSR.	10SP, 55909-56015, WFEC AEP-IM, FAIRVIEW - OKEENE 69kV	110.9	0	6/30/2007
ALVA - CHEROKEE SW 69kV	07SP, 55909-56015, WFEC AEP-IM, FAIRVIEW - OKEENE 69kV	107.4	0	
ALVA - CHEROKEE SW 69kV	07SP, 55848-55999, WFEC AEP-OP, CEDARDALE - MOORELAND 138kV	100.3	39	
ALVA - CHEROKEE SW 69kV	10SP, 55848-55999, WFEC AEP-OP, CEDARDALE - MOORELAND 138kV	100.0	41	
ALVA - FREEDOM 69kV, Rebuild 3/0 line with 795MCM ACSR.	05AP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	102.8	39	12/1/2007
ALVA - FREEDOM 69kV	07WP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	102.2	39	
ALVA - FREEDOM 69kV	10WP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	101.3	40	

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)
BUFFALO - *2004-19T 69kV, Rebuild 3/0 line with 795MCM ACSR.	10WP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	123.5	33	6/30/2007
BUFFALO - *2004-19T 69kV	07WP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	123.4	33	
BUFFALO - *2004-19T 69kV	05AP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	123.1	33	
BUFFALO - *2004-19T 69kV	07SP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	120.9	33	
BUFFALO - *2004-19T 69kV	10SP, 55919-99953, WFEC AEP-OP - , FT SUPPLY - 2004-19T 69kV	120.8	34	
BUFFALO - *2004-19T 69kV	07SP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	119.5	22	
BUFFALO - *2004-19T 69kV	10SP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	119.4	22	
BUFFALO - *2004-19T 69kV	10WP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	118.3	24	
BUFFALO - *2004-19T 69kV	07SP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	118.1	23	
BUFFALO - *2004-19T 69kV	10SP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	117.9	24	

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BUFFALO - *2004-19T 69kV	10WP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	117.0	25	
BUFFALO - *2004-19T 69kV	07WP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	115.3	26	
BUFFALO - *2004-19T 69kV	07WP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	114.2	27	
BUFFALO - *2004-19T 69kV	10SP, 54795-55999, OKGE ENID - WFEC AEP-OP, KNOBHILL - MOORELAND 138kV	111.7	26	
BUFFALO - *2004-19T 69kV	10SP, 54794-54795-55732, OKGE ENID, KNOBHILL 138-69kV	111.7	26	
BUFFALO - *2004-19T 69kV	07SP, 54795-55999, OKGE ENID - WFEC AEP-OP, KNOBHILL - MOORELAND 138kV	111.4	26	
BUFFALO - *2004-19T 69kV	07SP, 54794-54795-55732, OKGE ENID, KNOBHILL 138-69kV	111.4	26	
BUFFALO - *2004-19T 69kV	05AP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	108.4	33	
BUFFALO - *2004-19T 69kV	05AP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	107.5	34	
BUFFALO - *2004-19T 69kV	10SP, 54792-54794, OKGE ENID, ALVA - KNOBHILL 69kV	103.0	36	

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Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
BUFFALO - *2004-19T 69kV	07SP, 54792-54794, OKGE ENID, ALVA - KNOBHILL 69kV	102.1	38	
BUFFALO - *2004-19T 69kV	10WP, 54795-55999, OKGE ENID - WFEC AEP-OP, KNOBHILL - MOORELAND 138kV	101.2	39	
BUFFALO - *2004-19T 69kV	10WP, 54794-54795-55732, OKGE ENID, KNOBHILL 138-69kV	101.2	39	
ELK CITY - *2002-05T 138kV, Replace Interconnect Metering Cts & jumpers @ Elk City	07SP, 54787-56065, OKGE ENID - WFEC AEP-OP, DEWEY - TALOGA 138kV	114.9	0	6/30/2007
ELK CITY - *2002-05T 138kV,	10SP, 54787-56065, OKGE ENID - WFEC AEP-OP, DEWEY - TALOGA 138kV	113.8	0	
ELK CITY - *2002-05T 138kV	07SP, 54787-54822, OKGE ENID - OKGE METRO, DEWEY - SOUTHARD 138kV	112.3	0	
ELK CITY - *2002-05T 138kV	07SP, 54788-55999, OKGE ENID - WFEC AEP-OP, GLASS MOUNTAIN - MOORELAND 138kV	112.2	0	
ELK CITY - *2002-05T 138kV	07SP, 54778-54788, OKGE ENID, CLEO CORNER - GLASS MOUNTAIN 138kV	111.6	0	
ELK CITY - *2002-05T 138kV	10SP, 54788-55999, OKGE ENID - WFEC AEP-OP, GLASS MOUNTAIN - MOORELAND 138kV	111.4	0	
ELK CITY - *2002-05T 138kV	07SP, 54778-54789, OKGE ENID, CLEO CORNER - MEN TAP 138kV	111.2	0	

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Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
ELK CITY - *2002-05T 138kV	10SP, 54787-54822, OKGE ENID - OKGE METRO, DEWEY - SOUTHARD 138kV	111.1	0	
ELK CITY - *2002-05T 138kV	10SP, 54778-54788, OKGE ENID, CLEO CORNER - GLASS MOUNTAIN 138kV	110.7	0	
ELK CITY - *2002-05T 138kV	07SP, 54789-54790, OKGE ENID, MEN TAP - IMO TAP 138kV	110.4	0	
ELK CITY - *2002-05T 138kV	10SP, 54778-54789, OKGE ENID, CLEO CORNER - MEN TAP 138kV	110.1	0	
ELK CITY - *2002-05T 138kV	07SP, 55848-55999, WFEC AEP-OP, CEDARDALE - MOORELAND 138kV	109.5	0	
ELK CITY - *2002-05T 138kV	10SP, 54789-54790, OKGE ENID, MEN TAP - IMO TAP 138kV	109.3	0	
ELK CITY - *2002-05T 138kV	07SP, 55848-56016, WFEC AEP-OP - WFEC AEP-IM, CEDARDALE - OKEENE 138kV	109.2	0	
ELK CITY - *2002-05T 138kV	07SP, 54822-54823, OKGE METRO, SOUTHARD - ROMAN NOSE 138kV	109.1	0	
ELK CITY - *2002-05T 138kV	10SP, 55848-55999, WFEC AEP-OP, CEDARDALE - MOORELAND 138kV	108.7	0	
ELK CITY - *2002-05T 138kV	10SP, 55848-56016, WFEC AEP-OP - WFEC AEP-IM, CEDARDALE - OKEENE 138kV	108.3	0	

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ELK CITY - *2002-05T 138kV	10SP, 54822-54823, OKGE METRO, SOUTHARD - ROMAN NOSE 138kV	107.6	0	
ELK CITY - *2002-05T 138kV	07SP, 54819-54823, OKGE METRO, EL RENO - ROMAN NOSE 138kV	106.2	5	
ELK CITY - *2002-05T 138kV	07SP, 55999-56065, WFEC AEP-OP, MOORELAND - TALOGA 138kV	106.1	1	
ELK CITY - *2002-05T 138kV	07SP, 55882-56016, WFEC AEP-IM, DOVER SW - OKEENE 138kV	105.8	5	
ELK CITY - *2002-05T 138kV	10SP, 55999-56065, WFEC AEP-OP, MOORELAND - TALOGA 138kV	105.3	6	
ELK CITY - *2002-05T 138kV	07SP, 56000-56002, WFEC AEP-CS, MOREWOOD - MORWOOD 69kV	105.2	5	
ELK CITY - *2002-05T 138kV	10SP, 55882-56016, WFEC AEP-IM, DOVER SW - OKEENE 138kV	104.9	11	
ELK CITY - *2002-05T 138kV	10SP, 54119-51534, AEPW WESTERN - SPS SPS-CNPL, OKLAUNION - Tuco Interchange 345kV	104.8	8	
ELK CITY - *2002-05T 138kV	07SP, 55832-56002, WFEC AEP-CS, BRANTLEY - MORWOOD 69kV	104.7	9	
ELK CITY - *2002-05T 138kV	07SP, 54119-51534, AEPW WESTERN - SPS SPS-CNPL, OKLAUNION - Tuco Interchange 345kV	104.6	9	

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ELK CITY - *2002-05T 138kV	10SP, 56000-56002, WFEC AEP-CS, MOREWOOD - MORWOOD 69kV	104.6	9	
ELK CITY - *2002-05T 138kV	10SP, 54819-54823, OKGE METRO, EL RENO - ROMAN NOSE 138kV	104.5	14	
ELK CITY - *2002-05T 138kV	07SP, 56000-56001, WFEC AEP-CS, MOREWOOD - MOREWOOD SW 138-69kV	104.4	7	
ELK CITY - *2002-05T 138kV	07SP, 55832-55885, WFEC AEP-CS, BRANTLEY - DURHAM 69kV	104.2	12	
ELK CITY - *2002-05T 138kV	10SP, 55832-56002, WFEC AEP-CS, BRANTLEY - MORWOOD 69kV	104.0	14	
ELK CITY - *2002-05T 138kV	10SP, 56000-56001, WFEC AEP-CS, MOREWOOD - MOREWOOD SW 138-69kV	103.8	13	
ELK CITY - *2002-05T 138kV	10SP, 55832-55885, WFEC AEP-CS, BRANTLEY - DURHAM 69kV	103.6	16	
ELK CITY - *2002-05T 138kV	07SP, 54108-54117, AEPW WESTERN, CARNEGIE - FORT COBB 138kV	103.3	17	
ELK CITY - *2002-05T 138kV	07SP, 54117-54140, AEPW WESTERN, FORT COBB - SOUTHWEST STATION 138kV	103.3	17	
ELK CITY - *2002-05T 138kV	10SP, 54108-54117, AEPW WESTERN, CARNEGIE - FORT COBB 138kV	103.3	17	

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

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ELK CITY - *2002-05T 138kV	10SP, 54117-54140, AEPW WESTERN, FORT COBB - SOUTHWEST STATION 138kV	103.3	17	
ELK CITY - *2002-05T 138kV	07SP, 50827-50915, SPS SPS-OKLA - SPS SPS-AMA, Grapevine Interchange - Nichols Station 230kV	103.2	17	
ELK CITY - *2002-05T 138kV	07SP, 54108-54126, AEPW WESTERN, CARNEGIE - HOBART JUNCTION 138kV	102.9	20	
ELK CITY - *2002-05T 138kV	07SP, 55885-56060, WFEC AEP-CS, DURHAM - SWEETWATER 69kV	102.9	21	
ELK CITY - *2002-05T 138kV	10SP, 54108-54126, AEPW WESTERN, CARNEGIE - HOBART JUNCTION 138kV	102.8	20	
ELK CITY - *2002-05T 138kV	10SP, 50827-50915, SPS SPS-OKLA - SPS SPS-AMA, Grapevine Interchange - Nichols Station 230kV	102.6	21	
ELK CITY - *2002-05T 138kV	10SP, 55885-56060, WFEC AEP-CS, DURHAM - SWEETWATER 69kV	102.2	26	
ELK CITY - *2002-05T 138kV	07SP, 56089-56103, WFEC AEP-CS - WFEC FLA, WASHITA - BLUCAN1 138kV	102.1	26	
ELK CITY - *2002-05T 138kV	07SP, 54795-55999, OKGE ENID - WFEC AEP-OP, KNOBHILL - MOORELAND 138kV	101.6	29	
ELK CITY - *2002-05T 138kV	07SP, 54794-54795-55732, OKGE ENID, KNOBHILL 138-69kV	101.5	30	

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

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Facility	Model & Contingency	Facility Loading (% Rate B) Or Voltage (PU)	ATC (MW)	Date Required (M/D/Y)
ELK CITY - *2002-05T 138kV	07SP, 54880-54881, OKGE METRO, NORTHWEST - SPRING CREEK 345kV	101.4	31	
ELK CITY - *2002-05T 138kV	10SP, 56089-56103, WFEC AEP-CS - WFEC FLA, WASHITA - BLUCAN1 138kV	101.2	32	
ELK CITY - *2002-05T 138kV	10SP, 54880-54881, OKGE METRO, NORTHWEST - SPRING CREEK 345kV	101.0	34	
ELK CITY - *2002-05T 138kV	10SP, 54795-55999, OKGE ENID - WFEC AEP-OP, KNOBHILL - MOORELAND 138kV	100.9	34	
ELK CITY - *2002-05T 138kV	10SP, 54794-54795-55732, OKGE ENID, KNOBHILL 138-69kV	100.8	35	
ELK CITY - *2002-05T 138kV	07SP, 54803-54881, OKGE ENID - OKGE METRO, SOONER - SPRING CREEK 345kV	100.7	36	
ELK CITY - *2002-05T 138kV	07SP, 56017-56089, WFEC AEP-CS, ONEY - WASHITA 138kV	100.7	36	
ELK CITY - *2002-05T 138kV	07SP, 54715-54901, OKGE ENID - OKGE METRO, WOODRING - CIMARRON 345kV	100.6	36	
ELK CITY - *2002-05T 138kV	07SP, 54119-59991, AEPW WESTERN - ERCOT , OKLAUNION - OKLAUN 345kV	100.6	36	
ELK CITY - *2002-05T 138kV	07SP, 55827-56017, WFEC AEP-CS, BINGER NIJECT - ONEY 138kV	100.5	37	

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

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ELK CITY - *2002-05T 138kV	10SP, 56017-56089, WFEC AEP-CS, ONEY - WASHITA 138kV	100.4	38	
ELK CITY - *2002-05T 138kV	07SP, 54151-54173, AEPW WESTERN, LAWTON 112th & WEST GORE - LAWTON AIRGAS TAP 138kV	100.2	39	
ELK CITY - *2002-05T 138kV	07SP, 56015-56090, WFEC AEP-IM, OKEENE - WATONGA SW 69kV	100.1	40	
ELK CITY - *2002-05T 138kV	10SP, 55827-56017, WFEC AEP-CS, BINGER NIJECT - ONEY 138kV	100.1	40	
FPL SWITCH - MOORELAND 138kV,	05AP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	127.8	0	10/1/2007
FPL SWITCH - MOORELAND 138kV,	05AP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	127.0	0	
FPL SWITCH - MOORELAND 138kV	07WP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	106.3	19	
FPL SWITCH - MOORELAND 138kV	07WP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	105.4	22	
FPL SWITCH - MOORELAND 138kV	10WP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	101.3	36	
FPL SWITCH - MOORELAND 138kV	10WP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	100.3	39	

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)
FT SUPPLY - *2004-19T 69kV, Rebuild 3/0 line with 795MCM ACSR.	07SP, 55835-99953, WFEC AEP-OP - , BUFFALO - 2004-19T 69kV	131.1	31	6/1/2007
FT SUPPLY - *2004-19T 69kV	10SP, 55835-99953, WFEC AEP-OP - , BUFFALO - 2004-19T 69kV	130.5	31	
FT SUPPLY - *2004-19T 69kV	07WP, 55835-99953, WFEC AEP-OP - , BUFFALO - 2004-19T 69kV	129.9	31	
FT SUPPLY - *2004-19T 69kV	10WP, 55835-99953, WFEC AEP-OP - , BUFFALO - 2004-19T 69kV	129.9	31	
FT SUPPLY - *2004-19T 69kV	05AP, 55835-99953, WFEC AEP-OP - , BUFFALO - 2004-19T 69kV	129.8	31	
FT SUPPLY - *2004-19T 69kV	05AP, 55835-56093, WFEC AEP-OP, BUFFALO - WEST 69kV	120.4	33	
FT SUPPLY - *2004-19T 69kV	07WP, 55835-56093, WFEC AEP-OP, BUFFALO - WEST 69kV	118.5	33	
FT SUPPLY - *2004-19T 69kV	05AP, 55915-56093, WFEC AEP-OP, FREEDOM - WEST 69kV	118.3	33	
FT SUPPLY - *2004-19T 69kV	07WP, 55915-56093, WFEC AEP-OP, FREEDOM - WEST 69kV	117.4	34	
FT SUPPLY - *2004-19T 69kV	10WP, 55835-56093, WFEC AEP-OP, BUFFALO - WEST 69kV	117.4	34	

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)
FT SUPPLY - *2004-19T 69kV	10WP, 55915-56093, WFEC AEP-OP, FREEDOM - WEST 69kV	116.4	34	
FT SUPPLY - *2004-19T 69kV	10SP, 55835-56093, WFEC AEP-OP, BUFFALO - WEST 69kV	116.2	34	
FT SUPPLY - *2004-19T 69kV	07SP, 55915-56093, WFEC AEP-OP, FREEDOM - WEST 69kV	115.5	34	
FT SUPPLY - *2004-19T 69kV	10SP, 55915-56093, WFEC AEP-OP, FREEDOM - WEST 69kV	115.1	34	
FT SUPPLY - *2004-19T 69kV	07WP, 55806-55915, WFEC AEP-OP, ALVA - FREEDOM 69kV	112.2	35	
FT SUPPLY - *2004-19T 69kV	05AP, 55806-55915, WFEC AEP-OP, ALVA - FREEDOM 69kV	112.1	35	
FT SUPPLY - *2004-19T 69kV	10WP, 55806-55915, WFEC AEP-OP, ALVA - FREEDOM 69kV	110.0	36	
FT SUPPLY - *2004-19T 69kV	07SP, 55806-55915, WFEC AEP-OP, ALVA - FREEDOM 69kV	106.4	37	
FT SUPPLY - *2004-19T 69kV	10SP, 55806-55915, WFEC AEP-OP, ALVA - FREEDOM 69kV	104.9	38	

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)
FT SUPPLY - WOODWARD 69kV,	05AP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	148.7	0	6/30/2007
FT SUPPLY - WOODWARD 69kV	05AP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	146.3	0	
FT SUPPLY - WOODWARD 69kV	07WP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	144.6	0	
FT SUPPLY - WOODWARD 69kV	10WP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	141.8	0	
FT SUPPLY - WOODWARD 69kV	07WP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	141.3	0	
FT SUPPLY - WOODWARD 69kV	10WP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	138.4	2	
FT SUPPLY - WOODWARD 69kV	07SP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	134.6	7	
FT SUPPLY - WOODWARD 69kV	10SP, 55920-55957, WFEC AEP-OP, FT SUPPLY - IODINE 138kV	133.2	8	
FT SUPPLY - WOODWARD 69kV	07SP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	130.5	11	
FT SUPPLY - WOODWARD 69kV	10SP, 55957-55999, WFEC AEP-OP, IODINE - MOORELAND 138kV	129.1	13	

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)
GLASS MOUNTAIN - MOORELAND 138kV,	07SP, 54121-99940, AEPW WESTERN - , ELK CITY - 2002-05T 138kV	106.0	9	6/30/2007
GLASS MOUNTAIN - MOORELAND 138kV,	10SP, 54121-99940, AEPW WESTERN - , ELK CITY - 2002-05T 138kV	105.4	11	
MOREWOOD - MOREWOOD SW 138-69kV,	07SP, 54121-99940, AEPW WESTERN - , ELK CITY - 2002-05T 138kV	119.3	0	6/30/2007
MOREWOOD - MOREWOOD SW 138-69kV	10SP, 54121-99940, AEPW WESTERN - , ELK CITY - 2002-05T 138kV	119.0	0	
MOREWOOD - MOREWOOD SW 138-69kV	10WP, 54121-99940, AEPW WESTERN - , ELK CITY - 2002-05T 138kV	102.6	13	

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, 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 June 30, 2007. The available seasonal models used were the 2005 April 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 40.5MW 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

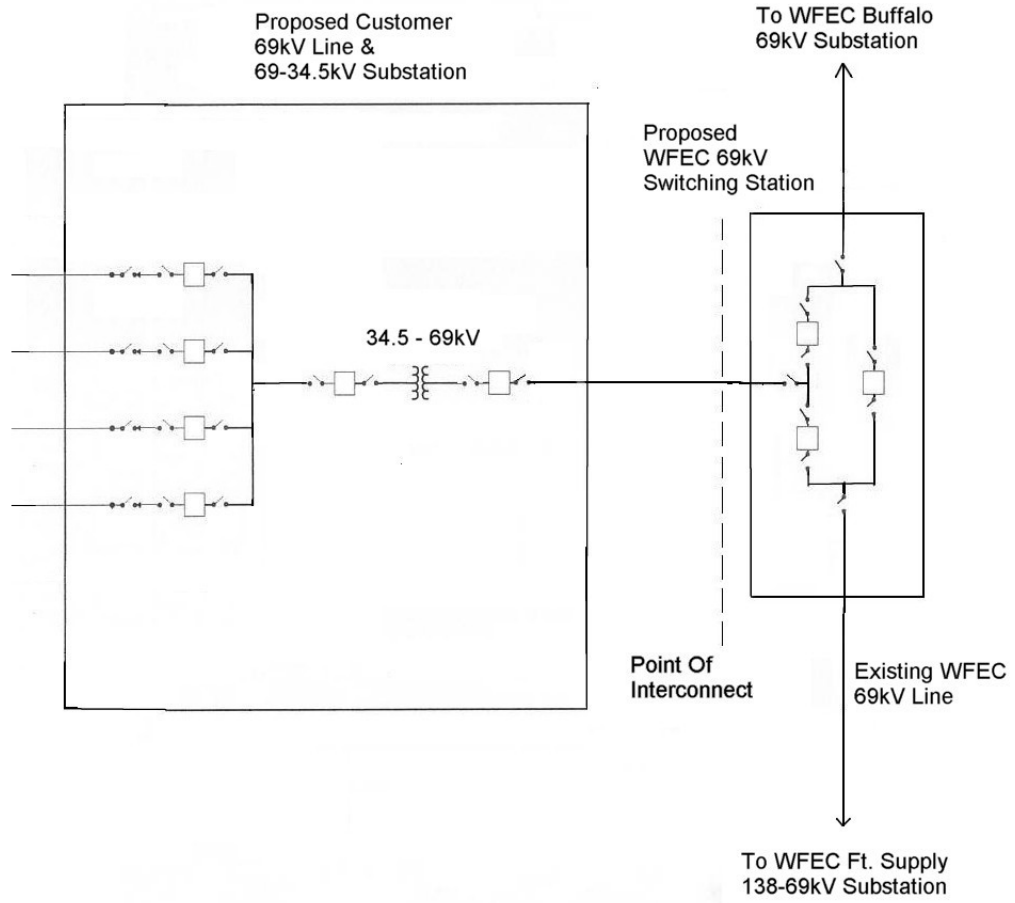
The minimum cost of interconnecting the Customer project is estimated at \$2,000,000 for WFEC's interconnection Network Upgrade facilities listed in Table 2 excluding upgrades of other transmission facilities by AEPW and WFEC listed in Table 3 of which are Network Constraints. At this time, the cost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