Southwest Power Pool

Limited Operational Impact Study For Generation Interconnection Request GEN-2008-088

SPP Generation Interconnection

(#GEN-2008-088)

September 2011

Executive Summary

<OMITTED TEXT> (Customer) has requested interconnection under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnection of 50.6 MW of wind generation within the balancing authority of Southwestern Public Service (SPS) in Oldham County, Texas. SPP is not able to complete the required network upgrades in time for the Customer's requested in-service date of December 1, 2011. Therefore, Customer has requested this Limited Operation Impact Study (LOIS) to determine the impacts of interconnecting its generating facility to the transmission system before all required Network Upgrades identified in the DISIS-2010-001-2 posted on May 13, 2011 can be placed into service. Limited Operation Studies are conducted under GIA Section 5.9 of the SPP OATT.

This study assumed that only those projects with queue priority equal to or over GEN-2008-088, which are identified in Table 3 of this study, might go into service before the completion of all Network Upgrades identified in DISIS-2010-001-2. This study also assumed that all other additional generation projects with queue priority equal to or over GEN-2008-088, those listed in Table 4 of this report, will NOT go into commercial operation before the completion of all Network Upgrades identified in DISIS-2010-001-2 study. If any of these projects go into commercial operation then this study must be conducted again to determine whether sufficient interconnection capacity exists to interconnect the GEN-2008-088 interconnection request in addition to all higher priority requests in operation or pending operation.

The wind generation facility was studied with Twenty-two (22) Siemens 2.3 MW wind turbine generators. This Impact study addresses the thermal loading and dynamic stability effects of interconnecting the plant to the rest of the SPS transmission system for the system condition as it will be on December 1, 2011.

Power flow analysis studies included the prior queued projects listed in Table 3. The analysis showed that with system upgrades scheduled to be in-service prior to the requested service date, the maximum power that the customer's wind facility can interconnect into the SPS transmission system is 39.1 MW due to capacity of the switch 2749 – Wildorado 69kV Ckt. Power flow analysis was based on both summer and winter peak conditions and light loading cases.

The power factor requirements for GEN-2008-088 are outlined in the DISIS-2010-001-2 study.

The stability study results show that the transmission system remains stable for all simulated contingencies and conditions studied for the Customer facility with prior queued projects listed in Table 3. If the Customer changes generation technology, this LOIS will be considered invalid and the Customer will not be allowed to interconnect on a limited basis.

Two seasonal base cases were used in the study to analyze the stability impacts of the proposed generation facility. The cases studied were modified 2011 summer peak and 2011 winter peak cases that were adjusted to reflect system conditions at the requested in-service date. Each case was modified to include prior queued projects that are listed in the body of the report. Thirty-five (35) contingencies were identified for use in this study. The Siemens 2.3 MW wind turbines were modeled using information provided by the Customer.

In accordance with its Interconnection Agreement, the Customer must decide within 30 days of the posting of this study as to whether it will move forward to revise its GIA for a commercial operation date prior to the in service date of its required Network Upgrades.

The cost to interconnect on a limited basis is $1,506,032.

Nothing in this study should be construed as a guarantee of transmission service. If the customer wishes to sell power from the facility, a separate request for transmission service shall be requested on Southwest Power Pool's OASIS by the Customer.

1.0 Introduction

<OMITTED TEXT> (Customer) has requested interconnection under the Southwest Power Pool Open Access Transmission Tariff (OATT) for interconnection of 50.6 MW of wind generation within the balancing authority of Southwestern Public Service (SPS) in Oldham County, Texas. SPP is not able to complete the required network upgrades in time for the Customer's requested in-service date of December 1, 2011. Therefore, Customer has requested this Limited Operation Impact Study (LOIS) to determine the impacts of interconnecting its generating facility to the transmission system before all required Network Upgrades identified in the DISIS-2010-001-2 posted on May 13, 2011 can be placed into service. Limited Operation Studies are conducted under GIA Section 5.9 of the SPP OATT.

This Impact study addresses the thermal loading and dynamic stability effects of interconnecting the plant to the rest of the SPS transmission system for the system condition as it will be on December 1, 2011. Two seasonal base cases were used in the study to analyze the stability impacts of the proposed generation facility. The cases studied were modified 2011 summer peak and 2011 winter peak cases that were adjusted to reflect system conditions at the requested in-service date. Each case was modified to include prior queued projects that are listed in the body of the report. Thirty-five (35) contingencies were identified for use in this study. The Siemens 2.3 MW wind turbines were modeled using information provided by the Customer.

2.0 Purpose

The purpose of this Limited Operational Impact Study (LOIS) is to evaluate the impact of the proposed interconnection on the reliability of the Transmission System. The LOIS considers the Base Case as well as all Generating Facilities (and with respect to (b) below, any identified Network Upgrades associated with such higher queued interconnection) that, on the date the LOIS is commenced:

a) are directly interconnected to the Transmission System;
b) are interconnected to Affected Systems and may have an impact on the Interconnection Request;
c) have a pending higher queued Interconnection Request to interconnect to the Transmission System listed in Table 3; or
d) have no Queue Position but have executed an LGIA or requested that an unexecuted LGIA be filed with FERC.

Any changes to these assumptions, for example, one or more of the previously queued projects not included in this study signing an interconnection agreement, may require a re-study of this request at the expense of the customer.

Nothing in this System Impact Study constitutes a request for transmission service or confers upon the Interconnection Customer any right to receive transmission service.

3.0 Facilities

3.1 Generating Facility

The project was modeled as an equivalent wind turbine generator of 50.6 MW output. The wind turbine is connected to an equivalent 0.69/34.5KV generator step unit (GSU). The high side of the GSU is connected to the 34.5/69kV substation transformer. A 69kV transmission line connects the Customer's substation transformer to the POI.

3.2 Interconnection Facility

The Point of Interconnection (POI) will be at Vega 69kV substation. Figure 1 shows the facility and proposed POI at the proposed interim in-service date. Figure 2 shows the One Line to the Point of Interconnection.

Cost to interconnect on a limited basis is estimated at $1,506,032.

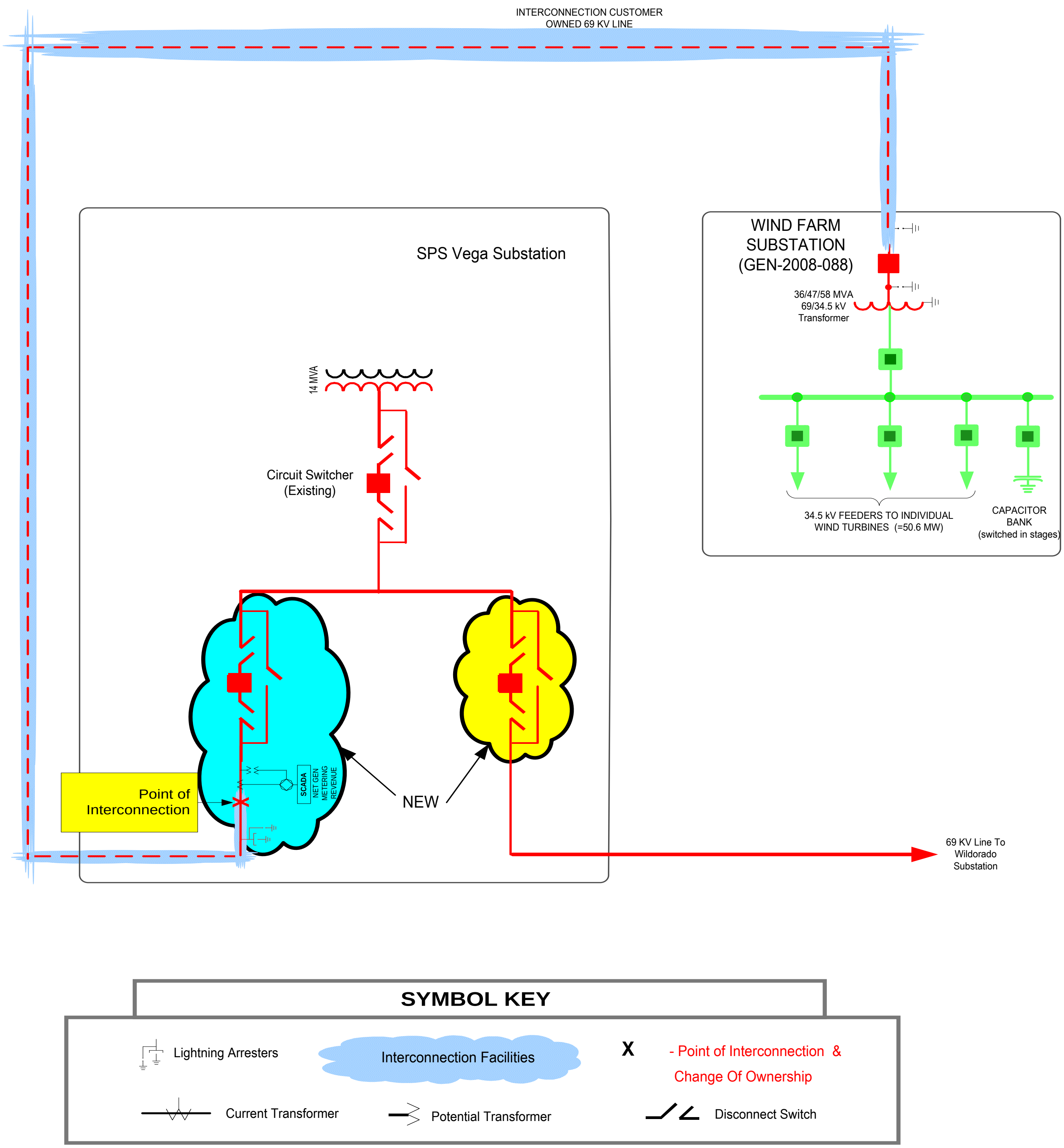

Figure 1: GEN-2008-088 Facility and Proposed Interconnection Configuration

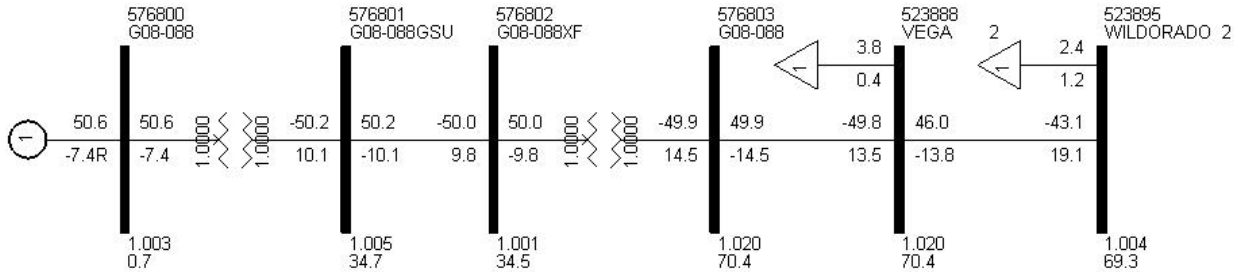

Figure 2: GEN-2008-088 One Line Bus Interconnection

4.0 Power Flow Analysis

A powerflow analysis was conducted for the Interconnection Customer's facility using a modified version of the 2011 spring, 2012 summer, and 2012 winter seasonal models. The output of the Interconnection Customer's facility was offset in the model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource (ERIS) Interconnection Request. This analysis was conducted assuming that previous queued requests listed in Table 3 were in-service.

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 Reliability Standards for transmission planning. All MDWG power flow models shall be tested to verify compliance with the System Performance Standards from NERC Table 1 – Category A."

The ACCC function of PSS/E was used to simulate single contingencies in portions of or all of the control area of SPS and other control areas within SPP and the resulting data analyzed. This satisfies the "more probable" contingency testing criteria mandated by NERC and the SPP criteria.

Higher queued projects listed in Table 4 were not modeled as in service. If any of these come in service, this study will need to be performed again to determine if any limited operation service is available.

The ACCC analysis indicates that as a result of the Customer's project at full nameplate power the SPS transmission system will experience injection constraints with higher queued projects listed in Table 3 modeled as in service. These analysis results are listed in Table 1. The analysis shows that the customer will be able to interconnect 39.1 MW with the higher queued projects listed in Table 3 in-service.

Table 1: ACCC Analysis

SOURCE	SCENARIO	SEASON	DIRECTION	MONTCOMMONNAME	RATEB	TDF	TC%LOADING	Available Interconnection	CONTNAME
G08_088	0	12SP	'TO->FROM'	'SWITCH 2749 - WILDORADO 69KV CKT 1'	35	1	123.362	42.82	'BASE CASE'
G08_088	0	12WP	'TO->FROM'	'SWITCH 2749 - WILDORADO 69KV CKT 1'	35	1	129.0065	40.85	'BASE CASE'
G08_088	0	11G	'TO->FROM'	'SWITCH 2749 - WILDORADO 69KV CKT 1'	35	1	131.3874	40.01	'BASE CASE'

5.0 Power Factor Analysis

The power factor requirements for GEN-2008-088 are outlined in the DISIS-2010-001-2 study.

6.0 Stability Analysis

6.1 Contingencies Simulated

Thirty-five (35) contingencies were considered for the transient stability simulations. These contingencies included three phase and single phase transmission line faults and transformer faults at locations defined by SPP. Single-phase line faults were simulated by applying a fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice.

The faults that were defined and simulated are listed below in Table 2.

Table 2: Fault Definitions

Cont. No.	Cont. Name	Description
1	FLT01-3PH	3 phase fault on the Potter Co. (523961) to Hitchland (523097) 345kV line, near Potter Co. a. Apply fault at the Potter Co. 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT02-1PH	*Single phase fault and sequence like previous*
3	FLT03-3PH	3 phase fault on the Potter Co. 345kV (523961) to 230kV (523959) transformer, near the 345kV kV bus. a. Apply fault at the Potter Co. 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
4	FLT05-3PH	3 phase fault on the Tuco 230kV (525830) to 345kV (525832) transformer, near the 230kV bus. a. Apply fault at the Tuco 230kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
5	FLT07-3PH	3 phase fault on the Grapevine (523771) to Nichols (524044) 230kV line, near Grapevine. a. Apply fault at the Grapevine 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT08-1PH	*Single phase fault and sequence like previous*

Cont. No.	Cont. Name	Description
7	FLT09-3PH	3 phase fault on the Conway (524079) to Yarnell (524072) 115kV line, near Conway. a. Apply fault at the Conway 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
8	FLT10-1PH	*Single phase fault and sequence like previous*
9	FLT11-3PH	3 phase fault on the Conway (524079) to Kirby (524088) 115kV line, near Conway. a. Apply fault at the Conway 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
10	FLT12-1PH	*Single phase fault and sequence like previous*
11	FLT13-3PH	3 phase fault on the Grapevine 230kV (523771) to 115kV (523770) transformer, near the 230kV bus. a. Apply fault at the Grapevine 230kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
12	FLT15-3PH	3 phase fault on the Tuco (525832) to GEN-2008-014 Tap (560813) 345kV line, near Tuco. a. Apply fault at the Tuco 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
13	FLT16-1PH	*Single phase fault and sequence like previous*
14	FLT17-3PH	3 phase fault on the Kirby (524088) to McClellan (523804) 115kV line, near Kirby. a. Apply fault at the Kirby 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
15	FLT18-1PH	*Single phase fault and sequence like previous*
16	FLT19-3PH	3 phase fault on the Potter (523959) to Moore County (523309) 230kV line, near Potter. a. Apply fault at the Potter 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
17	FLT20-1PH	*Single phase fault and sequence like previous*
18	FLT21-3PH	3 phase fault on the Potter (523959) to Harrington West (523977) 230kV line, near Potter. a. Apply fault at the Potter 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
19	FLT22-1PH	*Single phase fault and sequence like previous*

Cont. No.	Cont. Name	Description
20	FLT23-3PH	3 phase fault on the Potter (523959) to Bushland (524267) 230kV line, near Potter. a. Apply fault at the Potter 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
21	FLT24-1PH	*Single phase fault and sequence like previous*
22	FLT25-3PH	3 phase fault on the Potter (523959) to GEN-2006-039 Tap (560009) 230kV line, near Potter. a. Apply fault at the Potter 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
23	FLT26-1PH	*Single phase fault and sequence like previous*
24	FLT27-3PH	3 phase fault on the Northwest Tap (524096) to Northwest (524105) 69kV line, near Northwest. a. Apply fault at the Northwest 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
25	FLT28-1PH	*Single phase fault and sequence like previous*
26	FLT29-3PH	3 phase fault on the Northwest Tap (524096) to Soncy (524200) 69kV line, near Northwest. a. Apply fault at the Northwest 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
27	FLT30-1PH	*Single phase fault and sequence like previous*
28	FLT31-3PH	3 phase fault on the Northwest 115/69kV autotransformer on the 69kV bus (524105) a. Apply fault at the Northwest 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
29	FLT33-3PH	3 phase fault on the Coulter 115/69kV autotransformer on the 69kV bus (524305) a. Apply fault at the Coulter 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
30	FLT35-3PH	3 phase fault on the Bushland 230kV (524267) to 115kV (5524266) transformer, near the 230kV bus. a. Apply fault at the Bushland 230kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.

Cont. No.	Cont. Name	Description
31	FLT37-3PH	3 phase fault on the Northwest (524106) to Sunset (524249) 115kV line, near Northwest. a. Apply fault at the Northwest 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
32	FLT38-1PH	*Single phase fault and sequence like previous*
33	FLT39-3PH	3 phase fault on the Nichols (524043) to Cherry (524009) 115kV line, near Nichols. a. Apply fault at the Nichols 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
34	FLT40-1PH	*Single phase fault and sequence like previous*
35	FLT41-3PH	3 phase fault on the Nichols 230kV (524044) to 115kV (524043) transformer, near the 230kV bus. a. Apply fault at the Nichols 230kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.

6.2 <u>Further Model Preparation</u>

The base cases contain higher or equally queued projects as shown in Table 3.

The wind generation from the study customer and the previously queued customers were dispatched into the SPP footprint.

Initial simulations were carried out on both base cases and cases with the added generation for a no-disturbance run of 20 seconds to verify the numerical stability of the model. All cases were confirmed to be stable.

Table 3: Prior Queued Projects Included

Project	MW
Llano Estacado	80
GEN-2001-033	180
GEN-2001-036	80
GEN-2002-008	120
GEN-2002-009	80
GEN-2002-022	240
GEN-2003-020	80
GEN-2006-018	170
GEN-2008-051	161

The projects in Table 4 are higher or equally queued projects that are <u>not</u> included in this analysis. If any of these projects request to come into service during limited operation, this study will need to be re-performed to determine if any limited operation is available.

Table 4: Prior Queued Projects Not Included

Project	MW
GEN-2002-008	120
GEN-2003-020	80
GEN-2006-039	400
GEN-2006-044	370
GEN-2006-045	240
GEN-2006-047	240
GEN-2007-002	160
GEN-2007-048	400
GEN-2008-008	60
GEN-2008-014	150
GEN-2008-051	161
GEN-2010-006	205
ASGI-2010-010	42

6.3 Results

Results of the stability analysis are summarized in Table 5. The results indicate that for all contingencies studied the transmission system remains stable with the inclusion of equally or higher queued projects listed in Table 3.

Table 5: Results of Simulated Contingencies

Cont. No.	Cont. Name	Description	2011 Summer	2011 Winter
1	FLT01-3PH	3 phase fault on the Potter Co. (523961) to Hitchland (523097) 345kV line, near Potter Co.	Stable	Stable
2	FLT02-1PH	*Single phase fault and sequence like previous*	Stable	Stable
3	FLT03-3PH	3 phase fault on the Potter Co. 345kV (523961) to 230kV (523959) transformer, near the 345kV kV bus.	Stable	Stable
4	FLT05-3PH	3 phase fault on the Tuco 230kV (525830) to 345kV (525832) transformer, near the 230kV bus.	Stable	Stable
5	FLT07-3PH	3 phase fault on the Grapevine (523771) to Nichols (524044) 230kV line, near Grapevine.	Stable	Stable
6	FLT08-1PH	*Single phase fault and sequence like previous*	Stable	Stable
7	FLT09-3PH	3 phase fault on the Conway (524079) to Yarnell (524072) 115kV line, near Conway.	Stable	Stable
8	FLT10-1PH	*Single phase fault and sequence like previous*	Stable	Stable
9	FLT11-3PH	3 phase fault on the Conway (524079) to Kirby (524088) 115kV line, near Conway.	Stable	Stable
10	FLT12-1PH	*Single phase fault and sequence like previous*	Stable	Stable
11	FLT13-3PH	3 phase fault on the Grapevine 230kV (523771) to 115kV (523770) transformer, near the 230kV bus.	Stable	Stable

Cont. No.	Cont. Name	Description	2011 Summer	2011 Winter
12	FLT15-3PH	3 phase fault on the Tuco (525832) to GEN-2008-014 Tap (560813) 345kV line, near Tuco.	Stable	Stable
13	FLT16-1PH	*Single phase fault and sequence like previous*	Stable	Stable
14	FLT17-3PH	3 phase fault on the Kirby (524088) to McClellan (523804) 115kV line, near Kirby.	Stable	Stable
15	FLT18-1PH	*Single phase fault and sequence like previous*	Stable	Stable
16	FLT19-3PH	3 phase fault on the Potter (523959) to Moore County (523309) 230kV line, near Potter.	Stable	Stable
17	FLT20-1PH	*Single phase fault and sequence like previous*	Stable	Stable
18	FLT21-3PH	3 phase fault on the Potter (523959) to Harrington West (523977) 230kV line, near Potter.	Stable	Stable
19	FLT22-1PH	*Single phase fault and sequence like previous*	Stable	Stable
20	FLT23-3PH	3 phase fault on the Potter (523959) to Bushland (524267) 230kV line, near Potter.	Stable	Stable
21	FLT24-1PH	*Single phase fault and sequence like previous*	Stable	Stable
22	FLT25-3PH	3 phase fault on the Potter (523959) to GEN-2006-039 Tap (560009) 230kV line, near Potter.	Stable	Stable
23	FLT26-1PH	*Single phase fault and sequence like previous*	Stable	Stable
24	FLT27-3PH	3 phase fault on the Northwest Tap (524096) to Northwest (524105) 69kV line, near Northwest.	Stable	Stable
25	FLT28-1PH	*Single phase fault and sequence like previous*	Stable	Stable
26	FLT29-3PH	3 phase fault on the Northwest Tap (524096) to Soncy (524200) 69kV line, near Northwest.	Stable	Stable
27	FLT30-1PH	*Single phase fault and sequence like previous*	Stable	Stable
28	FLT31-3PH	3 phase fault on the Northwest 115/69kV autotransformer on the 69kV bus (524105)	Stable	Stable
29	FLT33-3PH	3 phase fault on the Coulter 115/69kV autotransformer on the 69kV bus (524305)	Stable	Stable
30	FLT35-3PH	3 phase fault on the Bushland 230kV (524267) to 115kV (5524266) transformer, near the 230kV bus.	Stable	Stable
31	FLT37-3PH	3 phase fault on the Northwest (524106) to Sunset (524249) 115kV line, near Northwest.	Stable	Stable
32	FLT38-1PH	*Single phase fault and sequence like previous*	Stable	Stable
33	FLT39-3PH	3 phase fault on the Nichols (524043) to Cherry (524009) 115kV line, near Nichols.	Stable	Stable
34	FLT40-1PH	*Single phase fault and sequence like previous*	Stable	Stable
35	FLT41-3PH	3 phase fault on the Nichols 230kV (524044) to 115kV (524043) transformer, near the 230kV bus.	Stable	Stable

6.4 FERC LVRT Compliance

FERC Order #661A places specific requirements on wind farms through its Low Voltage Ride Through (LVRT) provisions. For Interconnection Agreements signed after December 31, 2006, wind farms shall stay on line for faults at the POI that draw the voltage down at the POI to 0.0 pu.

Two fault contingencies were developed to verify that the wind farm will remain on line when the POI voltage is drawn down to 0.0 pu. These contingencies are shown in Table 6.

Table 6: LVRT Fault Contingencies

Cont. Name	Description
FLT27-3PH	3 phase fault on the Northwest Tap (524096) to Northwest (524105) 69kV line, near Northwest. a. Apply fault at the Northwest 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
FLT29-3PH	3 phase fault on the Northwest Tap (524096) to Soncy (524200) 69kV line, near Northwest. a. Apply fault at the Northwest 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

The project wind farm remained online for the fault contingency described in this section and for all the fault contingencies described in section 6.1. GEN-2008-088 is found to be in compliance with FERC Order #661A.

7.0 <u>Conclusion</u>

<OMITTED TEXT> (Customer) has requested a Limited Operation Impact Study for interconnection service of 50.6 MW of wind generation within the balancing authority of Southwestern Public Service in Oldham County, Texas, in accordance with Section 5.9 of the SPP GIA.

The results of this study show that the wind generation facility and the transmission system remain stable for all contingencies studied. Also, GEN-2008-088 is found to be in compliance with FERC Order #661A.

With the inclusion of only the equally or higher queued projects listed in Table 3, limited interconnection service for 39.1 MW can be accomodated before the inclusion of all the network upgrades listed in DISIS-2010-001-2 are completed.

The power factor requirements for GEN-2008-088 are outlined in the DISIS-2010-001-2 study.

The projects in Table 4 are higher or equally queued projects that are not included in this analysis. If any of these projects come into service, this study will need to be re-performed to determine if any limited operation capacity is available.

The estimated costs for network upgrades and interconnection facilities for limited operation are estimated at $1,506,032.

These estimates do not include any 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. It should be noted that the models used for simulation do not contain all SPP transmission service.