

**GEN-20\_\_ - \_\_\_\_\_**  
**APPENDIX 3A to GIP**  
**DEFINITIVE INTERCONNECTION SYSTEM IMPACT STUDY AGREEMENT**

**THIS AGREEMENT** is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_ by and between \_\_\_\_\_ a \_\_\_\_\_ and existing under the laws of the State of \_\_\_\_\_ ("Interconnection Customer") and Southwest Power Pool, Inc. a non-profit organization under the laws of the State of Arkansas ("Transmission Provider "). Interconnection Customer and Transmission Provider each may be referred to as a "Party," or collectively as the "Parties."

**RECITALS**

**WHEREAS**, Interconnection Customer is proposing to develop a Generating Facility or generating capacity addition to an existing Generating Facility consistent with the Interconnection Request submitted by Interconnection Customer dated \_\_\_\_\_; and

**WHEREAS**, Interconnection Customer desires to interconnect the Generating Facility with the Transmission System;

**WHEREAS**, Transmission Provider has completed a Preliminary Interconnection System Impact Study and provided the results of said study to Interconnection Customer (This recital to be omitted if Interconnection Customer did not participate in Preliminary Interconnection System Impact Study); and

**WHEREAS**, Interconnection Customer has participated in a Preliminary Interconnection System Impact Study and wishes to participate in the Definitive Interconnection System Impact Study or has requested Transmission Provider to perform a Definitive Interconnection System Impact Study to assess the impact of interconnecting the Generating Facility to the Transmission System, and of any Affected Systems;

**NOW, THEREFORE**, in consideration of and subject to the mutual covenants contained herein the Parties agreed as follows:

- 1.0 When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated in Transmission Provider's FERC-approved GIP.
- 2.0 Interconnection Customer elects and Transmission Provider shall cause to be performed a Definitive Interconnection System Impact Study consistent with Section 7.0 of this GIP in accordance with the Tariff.

Issued by: Heather H. Starnes, Manager, Regulatory Policy

Issued on: January 29, 2010

Effective: March 31, 2010

- 3.0 The scope of the Definitive Interconnection System Impact Study shall be subject to the assumptions set forth in Attachment A to this Agreement.
- 4.0 The Definitive Interconnection System Impact Study will be based upon the results of the Preliminary Interconnection System Impact Study and the technical information provided by Interconnection Customer in the Interconnection Request, subject to any modifications in accordance with Section 4.4 of the GIP. Transmission Provider reserves the right to request additional technical information from Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the Definitive Interconnection System Impact Study. If Interconnection Customer modifies its designated Point of Interconnection, Interconnection Request, or the technical information provided therein is modified, the time to complete the Definitive Interconnection System Impact Study may be extended.
- 5.0 The Definitive Interconnection System Impact Study report shall provide the following information:
- identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection;
  - identification of any thermal overload or voltage limit violations resulting from the interconnection;
  - identification of any instability or inadequately damped response to system disturbances resulting from the interconnection and
  - description and non-binding, good faith estimated cost of facilities required to interconnect the Generating Facility to the Transmission System and to address the identified short circuit, instability, and power flow issues.
- 6.0 Interconnection Customer shall provide the deposit specified under Section 8.2 of the GIP for the performance of the Definitive Interconnection System Impact Study. Transmission Provider's good faith estimate for the time of completion of the Definitive Interconnection System Impact Study is [insert date].

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Upon receipt of the Definitive Interconnection System Impact Study results, Transmission Provider shall charge and Interconnection Customer shall pay the actual costs of the Definitive Interconnection System Impact Study.

Any difference between the deposit and Interconnection Customer's study cost obligation shall be paid by or refunded to Interconnection Customer, as appropriate per Section 8.4 of the Generation Interconnection Procedures.

- 7.0 Miscellaneous. The Definitive Interconnection System Impact Study Agreement shall include standard miscellaneous terms including, but not limited to, indemnities, representations, disclaimers, warranties, governing law, amendment, execution, waiver, enforceability and assignment, that reflect best practices in the electric industry, that are consistent with regional practices, Applicable Laws and Regulations and the organizational nature of each Party. All of these provisions, to the extent practicable, shall be consistent with the provisions of the GIP and the GIA.

**IN WITNESS THEREOF**, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

**Southwest Power Pool, Inc.**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**[Insert name of Interconnection Customer]**

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

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**Attachment A to Appendix 3A  
Definitive Interconnection System Impact  
Study Agreement**

**ASSUMPTIONS USED IN CONDUCTING THE  
DEFINITIVE INTERCONNECTION SYSTEM IMPACT STUDY**

The Definitive Interconnection System Impact Study will be based upon the information set forth in the Interconnection Requests and results of applicable prior studies, subject to any modifications in accordance with Section 4.4 of the GIP, and the following assumptions:

Designation of Point of Interconnection and configuration to be studied.

[Above assumptions to be completed by Interconnection Customer and other assumptions to be provided by Interconnection Customer, Transmission Owner and Transmission Provider]

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**FIELD TIME CONSTANT DATA (SEC)**

Open Circuit	$T'_{do}$	_____	$T'_{qo}$	_____
Three-Phase Short Circuit Transient	$T'_{d3}$	_____	$T'_q$	_____
Line to Line Short Circuit Transient	$T'_{d2}$	_____		
Line to Neutral Short Circuit Transient	$T'_{d1}$	_____		
Short Circuit Subtransient	$T''_d$	_____	$T''_q$	_____
Open Circuit Subtransient	$T''_{do}$	_____	$T''_{qo}$	_____

**ARMATURE TIME CONSTANT DATA (SEC)**

Three Phase Short Circuit	$T_{a3}$	_____
Line to Line Short Circuit	$T_{a2}$	_____
Line to Neutral Short Circuit	$T_{a1}$	_____

NOTE: If requested information is not applicable, indicate by marking "N/A."

**MW CAPABILITY AND PLANT CONFIGURATION  
 GENERATING FACILITY DATA**

**ARMATURE WINDING RESISTANCE DATA (PER UNIT)**

Positive	$R_1$	_____
Negative	$R_2$	_____
Zero	$R_0$	_____

Rotor Short Time Thermal Capacity  $I_2^2t =$  \_\_\_\_\_  
 Field Current at Rated kVA, Armature Voltage and PF = \_\_\_\_\_ amps  
 Field Current at Rated kVA and Armature Voltage, 0 PF = \_\_\_\_\_ amps  
 Three Phase Armature Winding Capacitance = \_\_\_\_\_ microfarad  
 Field Winding Resistance = \_\_\_\_\_ ohms \_\_\_\_\_ °C  
 Armature Winding Resistance (Per Phase) = \_\_\_\_\_ ohms \_\_\_\_\_ °C

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### CURVES

Provide Saturation, Vee, Reactive Capability, Capacity Temperature Correction curves.  
Designate normal and emergency Hydrogen Pressure operating range for multiple curves.

### GENERATOR STEP-UP TRANSFORMER DATA RATINGS

Capacity Self-cooled/  
Maximum Nameplate  
\_\_\_\_\_ / \_\_\_\_\_ kVA

Voltage Ratio (Generator Side/System side/Tertiary)  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ kV

Winding Connections (Low V/High V/Tertiary V (Delta or Wye))  
\_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Fixed Taps Available \_\_\_\_\_

Present Tap Setting \_\_\_\_\_

Impedance: Positive  $Z_1$  (on self-cooled kVA rating) \_\_\_\_\_ % \_\_\_\_\_ X/R

Impedance: Zero  $Z_0$  (on self-cooled kVA rating) \_\_\_\_\_ % \_\_\_\_\_ X/R

### **EXCITATION SYSTEM DATA**

Identify appropriate IEEE model block diagram of excitation system and power system stabilizer (PSS) for computer representation in power system stability simulations and the corresponding excitation system and PSS constants for use in the model.

### **GOVERNOR SYSTEM DATA**

Identify appropriate IEEE model block diagram of governor system for computer representation in power system stability simulations and the corresponding governor system constants for use in the model.

### **WIND GENERATORS**

Number of generators to be interconnected pursuant to this Interconnection Request:

\_\_\_\_\_

Elevation: \_\_\_\_\_      \_\_\_\_\_ Single Phase      \_\_\_\_\_ Three Phase

Inverter manufacturer, model name, number, and version:

\_\_\_\_\_

List of adjustable setpoints for the protective equipment or software:

\_\_\_\_\_

Note: A completed General Electric Company Power Systems Load Flow (PSLF) data sheet or other compatible formats, such as IEEE and PTI power flow models, must be supplied with the Interconnection Request. If other data sheets are more appropriate to the proposed device, then they shall be provided and discussed at Scoping Meeting.

### INDUCTION GENERATORS

- (\*) Field Volts: \_\_\_\_\_
- (\*) Field Amperes: \_\_\_\_\_
- (\*) Motoring Power (kW): \_\_\_\_\_
- (\*) Neutral Grounding Resistor (If Applicable): \_\_\_\_\_
- (\*)  $I_2^2t$  or K (Heating Time Constant): \_\_\_\_\_
- (\*) Rotor Resistance: \_\_\_\_\_
- (\*) Stator Resistance: \_\_\_\_\_
- (\*) Stator Reactance: \_\_\_\_\_
- (\*) Rotor Reactance: \_\_\_\_\_
- (\*) Magnetizing Reactance: \_\_\_\_\_
- (\*) Short Circuit Reactance: \_\_\_\_\_
- (\*) Exciting Current: \_\_\_\_\_
- (\*) Temperature Rise: \_\_\_\_\_
- (\*) Frame Size: \_\_\_\_\_
- (\*) Design Letter: \_\_\_\_\_
- (\*) Reactive Power Required In Vars (No Load): \_\_\_\_\_
- (\*) Reactive Power Required In Vars (Full Load): \_\_\_\_\_
- (\*) Total Rotating Inertia, H: \_\_\_\_\_ Per Unit on KVA Base

Note: Please consult Transmission Provider prior to submitting the Interconnection Request to determine if the information designated by (\*) is required.

Issued by: Heather H. Starnes, Manager, Regulatory Policy

Issued on: June 1, 2009

Effective: June 2, 2009