# APPENDIX 1 to LGIP

# INTERCONNECTION REQUEST FOR A LARGE GENERATING FACILITY

1. The undersigned Interconnection Customer submits this request to interconnect its Large Generating Facility with Transmission Provider’s Transmission System pursuant to a Tariff.

2. This Interconnection Request is for (check one):

 \_\_\_\_\_ A proposed new Large Generating Facility.

 \_\_\_\_\_ An increase in the generating capacity or a Material Modification of an existing Generating Facility.

3. The type of interconnection service requested (check one):

 \_\_\_\_\_ Energy Resource Interconnection Service

 \_\_\_\_\_ Network Resource Interconnection Service

4. \_\_\_\_\_ Check here only if Interconnection Customer requesting Network Resource Interconnection Service also seeks to have its Generating Facility studied for Energy Resource Interconnection Service

5. Interconnection Customer provides the following information:

 a. Address or location or the proposed new Large Generating Facility site (to the extent known) or, in the case of an existing Generating Facility, the name and specific location of the existing Generating Facility;

 b. Maximum summer at \_\_\_\_ degrees C and winter at \_\_\_\_\_ degrees C megawatt electrical output of the proposed new Large Generating Facility or the amount of megawatt increase in the generating capacity of an existing Generating Facility;

 c. General description of the equipment configuration;

 d. Commercial Operation Date (Day, Month, and Year);

 e. Name, address, telephone number, and e-mail address of Interconnection Customer’s contact person;

 f. Approximate location of the proposed Point of Interconnection (optional); and

 g. Interconnection Customer Data (set forth in Attachment A)

6. Applicable deposit amount as specified in the LGIP.

7. Evidence of Site Control as specified in the LGIP (check one)

 \_\_\_\_ Is attached to this Interconnection Request

 \_\_\_\_ Will be provided at a later date in accordance with this LGIP

8. This Interconnection Request shall be submitted to the representative indicated below:

 FERC Tariff and Compliance Manager

Black Hills Corporation

P.O. Box 1400

Rapid City, SD 57709

Fax: 605.721.2735

Email: Larry.Williamson@blackhillscorp.com

9. Representative of Interconnection Customer to contact:

 [To be completed by Interconnection Customer]

10. This Interconnection Request is submitted by:

 Name of Interconnection Customer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 By (signature): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Name (type or print): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

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

**Attachment A to Appendix 1**

**Interconnection Request**

**LARGE GENERATING FACILITY DATA**

**UNIT RATINGS**

kVA °F Voltage \_\_\_\_\_\_\_\_\_\_\_\_\_

Power Factor

Speed (RPM) Connection (e.g. Wye) \_\_\_\_\_\_\_\_\_\_\_

Short Circuit Ratio \_\_\_\_\_\_\_\_ Frequency, Hertz \_\_\_\_\_\_\_\_\_\_\_\_

Stator Amperes at Rated kVA Field Volts \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Max Turbine MW °F \_\_\_\_\_\_

**COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA**

Inertia Constant, H = kW sec/kVA

Moment-of-Inertia, WR2 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lb. ft.2

**REACTANCE DATA (PER UNIT-RATED KVA)**

 **DIRECT AXIS QUADRATURE AXIS**

Synchronous – saturated Xdv Xqv \_\_\_\_\_\_\_

Synchronous – unsaturated Xdi Xqi \_\_\_\_\_\_\_

Transient – saturated X’dv X’qv \_\_\_\_\_\_\_

Transient – unsaturated X’di X’qi \_\_\_\_\_\_\_

Subtransient – saturated X”dv X”qv \_\_\_\_\_\_\_

Subtransient – unsaturated X”di X”qi \_\_\_\_\_\_\_

Negative Sequence – saturated X2v

Negative Sequence – unsaturated X2i

Zero Sequence – saturated X0v

Zero Sequence – unsaturated X0i

Leakage Reactance Xlm

**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 Ta3 \_\_\_\_\_\_\_

Line to Line Short Circuit Ta2 \_\_\_\_\_\_\_

Line to Neutral Short Circuit Ta1 \_\_\_\_\_\_\_

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

**MW CAPABILITY AND PLANT CONFIGURATION**

**LARGE GENERATING FACILITY DATA**

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

Positive R1 \_\_\_\_\_\_\_

Negative R2 \_\_\_\_\_\_\_

Zero R0 \_\_\_\_\_\_\_

Rotor Short Time Thermal Capacity I22t = \_\_\_\_\_\_\_

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

**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 Z1 (on self-cooled kVA rating) % X/R

Zero Z0 (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): \_\_\_\_\_\_\_\_\_\_\_\_

(\*) I22t 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.