APPLICATON FORM FOR SEEKING CONNECTIVITY TO INTER-STATE TRANSMISSION SYSTEM

General Information to the Applicants

1. This application form is for seeking connectivity to the inter-State transmission system by an applicant (generating station including captive generating plant or bulk consumer) as defined in the Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-state Transmission and related matters) Regulations, 2009. A separate application would have to be made for availing long-term access or medium-term open access or short-term open access. Provided further that a person may apply for connectivity and long-term access or medium-term open access simultaneously.

2. The application form outlines the information that CTU requires, to process an application for connection to Inter-State Transmission System (ISTS

3. All applicants and the CTU shall abide by the Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-state Transmission and related matters) Regulations, 2009, in respect of procedure of grant of connectivity and other matters.

4. Pursuant to the applicant's application being approved by CTU for connectivity to the inter-state transmission system, CTU shall issue "Connection Offer" to the applicant. On the Connection offer being accepted by the applicant, the applicant shall sign a Connection Agreement with the Central Transmission Utility or inter-State transmission licensee owning the

sub-station or pooling station or switchyard or the transmission line as identified by the nodal agency where connectivity is being granted, as provided for in the Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium-term Open Access in inter-state Transmission and related matters) Regulations, 2009:

5. An application for connectivity is not required to be made by any transmission licensee, since transmission system planning is carried out in a coordinated manner by the Central Transmission Utility and the Central Electricity Authority;

Provided, however, that an inter-State transmission licensee other than Central Transmission Utility, nevertheless, shall sign a connection agreement with the Central Transmission Utility, as given above.

APPLICATON FORM FOR SEEKING CONNECTION TO INTER-STATE TRANSMISSION SYSTEM

A. DETAILS OF APPLICANT

1.	Name of the Applicant Company	:	
2.	Address for Correspondence	:	
3.	Contact Person 3.1 Prime Contact Person (a) Name (b) Designation (c) Phone No. (d) FAX (e) E-mail 3.2 Alternate Contact Person (a) Name (b) Designation (c) Phone No. (d) FAX (e) E-mail	:	
4.	Status of Applicant Company (Please tick the appropriate box)	:	☐ Generating Station including captive generating plant ☐ Bulk Consumer
5.	Estimated time of completion of project (Please enclose PERT chart)		

B. MAPS AND DIAGRAMS

1. Provide necessary survey of India topo sheet clearly marking the location of the proposed site. **Schedule - I**
2. Provide site plan (both hard and soft copy in AutoCAD 2000 & above version) in appropriate scale. **Schedule – II.** The site plan should indicate following details

   a. The proposed location of the connection point

b. Generators
c. Transformer
d. Site building

3. Provide an electrical Single Line Diagram (SLD) of the proposed facility detailing all significant items of plant. The plan is to be submitted in both hard copy and soft copy in AutoCAD 2000 & above version **Schedule - III**

C. DETAILS OF CONNECTION - GENERATION PLANT

1.	Type of Generation Plant (Hydro, Thermal, Gas etc	:	
2.	Rating of Generator Units	:	**Schedule – IV**
3.	Maximum Export Capacity Required	:	
4.	In case of hydro generator, the expected		
4.	Maximum Import Capacity required This is the amount of import capacity that the site will require during startup (MVA)	:	
5.	Station house load during normal operating conditions (MW/MVAR)	:	
6.	Expected running regime e.g. base load, peaking etc	:	
7.	Generator Data for Fault (Short Circuit Studies)		**Schedule – V**
8.	Dynamic Simulation Data Generator Excitation Power System Stabilizer		 **Schedule – VI** **Schedule – VII** **Schedule – VIII**

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D. DETAILS OF CONNECTION – BULK CONSUMER

1.	Type of Load (Industrial/Commercial) including type of industry, i.e. electric furnace, rolling mills, manufacturing, assembly line, etc.	:	
2.	Peak requirement of load in MVA, MW and MVAR	:	
3.	Peak import required in MVA, MW and MVAR	:	

4.	Month-wise Peak import required in MVA, MW and MVAR	:	
5.	Month-wise Energy requirement in MUs.	:	
6.	Data for Fault (Short Circuit Studies)		

E. DETAILS OF CONNECTION – DATA AND VOICE COMMUNICATION

1.	Type Data Gateway (Remote Terminal Unit/ Substation Automation System Gateway)	:	
2.	Data Communication connectivity Standard followed (As per interface requirement and other guideline made available by the respective RLDC)	:	
3.	Write here the communication media, interface and capacity being targeted for connection for Data and voice Communication	:	

This is to certify that the above data submitted with the application are pertaining to connection sought for the ISTS. Further, any additional data sought for processing the application shall be furnished.

Authorized Signatory
Of Applicant

Name :
Designation :
Seal :

Place :
Date :

Schedule – I : Survey of India topo sheet clearly marking the location of the proposed site

Schedule – II : Site plan in appropriate scale.

Schedule – III : Electrical Single Line Diagram (SLD) of the proposed facility detailing all significant items of plant.

Schedule – IV : Rating of Generating Units

(Add additional sheets if number of units are more)

		Unit – 1	Unit - 2	Unit – 3
1.	Unit Rating (MVA)			
2.	Normal Max. Continuous Generation Capacity at Normal operating temperature (MW)			
3	Normal Max. Continuous Export Capacity at Normal operating temperature (MW)			
4	Maximum (Peaking) generating Capacity at min ambient air temperature (MW)			
5	Maximum (Peaking) Export Capacity at min ambient air temperature (MW)			
6	Minimum Continuous Generating Capacity (MW)			
7	Minimum Export Generating Capacity (MW)			
8	Normal Maximum Lagging MVAR at rated MW output			
9.	Normal Maximum leading MVAR at rated MW output			

Please attach a capability Curve : _____

Drawing no. of the Capability Diagram attachment

Schedule – V : Generator Data for Fault (Short Circuit Studies)

All data to be provided on pu machine MVA base

1.	Direct Axis Transient Reactance (Unsaturated)	Xd'	
2.	Sub-transient Reactance (Unsaturated)	Xd"	
3.	Synchronous Reactance	Xs	
4.	Zero Phase Sequence Reactance	Xo	
4.	Negative Phase Sequence Reactance	X2	

Schedule – VI : Dynamic Simulation Data

Generator Data

All data to be provided on pu machine MVA base

1.	Direct Axis Positive Phase Sequence Synchronous Reactance	Xd	
2.	Quadrature Axis Positive Phase Sequence Synchronous Reactance	Xq	
3.	Direct Axis Transient Reactance (unsaturated)	Xd'	
4.	Quadrature Axis Transient Reactance (unsaturated)	Xq'	
5.	Sub-Transient Reactance (unsaturated)	Xd''	
5.	Armature Leakage Reactance	X*l*	
6.	Direct Axis Transient open circuit Time Constant (Secs)	Tdo'	
7.	Direct Axis Subtransient open circuit Time Constant(Secs)	Tdo''	
8.	Quadrature Axis Transient open circuit Time Constant(Secs)	Tqo'	
9.	Quadrature Axis Subtransient open circuit Time Constant(Secs)	Tqo''	
10.	Inertia of complete turbogenerator (MWs/MVA)	H	
11.	Please provide open circuit magnetization curve enter drawing number here or mention "assume" *if this not available then POWERGRID shall assume magnetic saturation characteristics as per the* ***Annexure-I***		

Excitation Data

Please submit Laplace domain control block diagram that represents the generator excitation system in accordance with the IEEE standard excitation model or as otherwise agreed with POWERGRID. This control block diagram

should completely specify all the time constants and gains to fully explain the transfer function from the compensator or generator terminal voltage and field current to generator voltage. A list of acceptable IEEE standard excitation model available with PSS/E simulation package used by POWERGRID is shown in **Annexure-II**.

Please fill/tick the appropriate box below:

Please assume ☐ model

OR

If the excitation data is not available at this stage then POWERGRID shall assume exciter model given at **Annexure-III** which represents a typical excitation model.

Assume the model given at **Annexure-III** as our model ☐

Schedule – VII: Two Winding Transformer Data

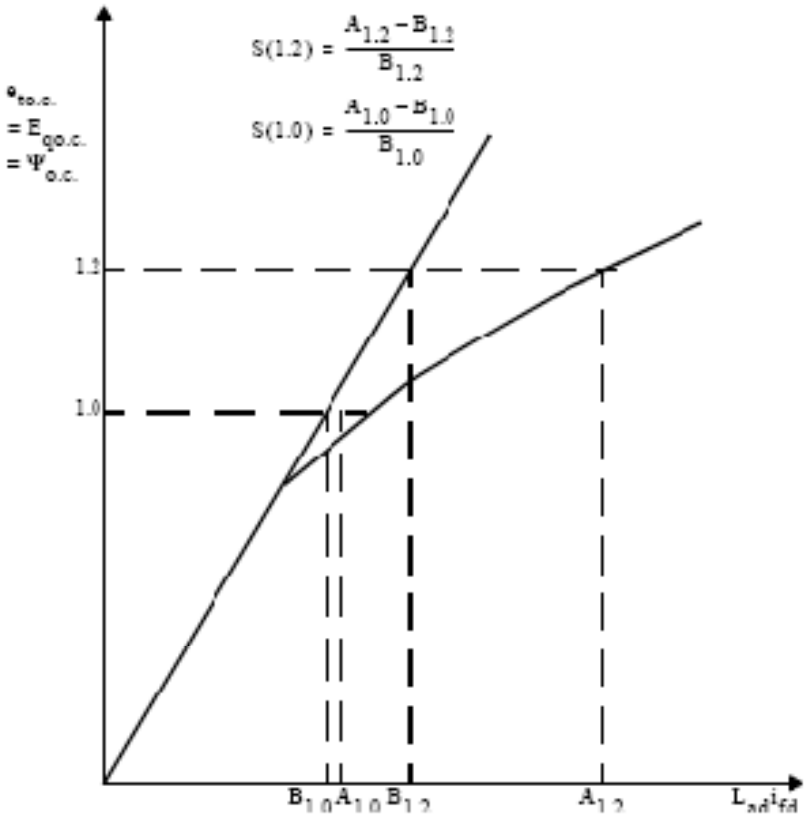
1.	Transformer positive sequence resistance (R1%)	
2.	Transformer positive sequence reactance (X1%)	
3.	Transformer zero sequence resistance (R0%)	
4.	Transformer zero sequence reactance (X0%)	
5.	Transformer Vector group	
5.	Nature of Tap Changer (on load/off load)	
6.	Number of steps and step size	

Schedule – VIII: Three Winding Transformer Data

1.	Transformer Vector group	
2.	positive sequence resistance (R1HL1%) between HV/LV1	
3.	positive sequence reactance (X1HL1%) between HV/LV1	
4.	zero sequence resistance (R0HL1%) between HV/LV1	
5.	zero sequence reactance (X0HL1%) between HV/LV1	
6.	positive sequence resistance (R1HL2%) between HV/LV2	
7.	positive sequence reactance (X1HL2%) between HV/LV2	
8.	Transformer zero sequence resistance (R0HL2%) between HV/LV2	
9.	zero sequence reactance (X0HL2%) between HV/LV2	
10.	positive sequence resistance (R1L1L2%) between LV1/LV2	
11.	positive sequence reactance (X1L1L2%) between LV1/LV2	
12.	zero sequence resistance (R0L1L2%) between LV1/LV2	
13.	zero sequence reactance (X0L1L2%) between LV1/LV2	
14.	positive sequence resistance (R1HL1//L2%) between HV/(LV1+LV2)	
15.	positive sequence reactance (X1HL1//L2%) between HV/(LV1+LV2)	
16.	zero sequence resistance (R0HL1//L2%) between HV/(LV1+LV2)	
17.	zero sequence reactance (X0HL1//L2%) between HV/(LV1+LV2	

Annexure-I

Open Circuit magnetization curve



Magnetic saturation data to be assumed

S(1.0) =

S(1.2) =

Annexure-II

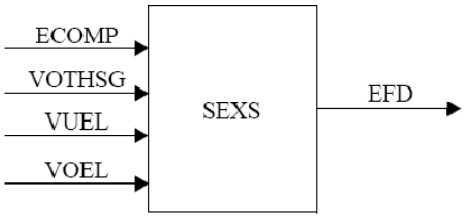
Acceptable IEEE standard excitation model available with PSS/E simulation package used by POWERGRID

Excitation System Models	
ESAC1A	1992 IEEE type AC1A excitation system model
ESAC2A	1992 IEEE type AC2A excitation system model
ESAC3A	1992 IEEE type AC3A excitation system model
ESAC4A	1992 IEEE type AC4A excitation system model
ESAC5A	1992 IEEE type AC5A excitation system model
ESAC6A	1992 IEEE type AC6A excitation system model
ESAC8B	Basler DECS model
ESDC1A	1992 IEEE type DC1A excitation system model
ESDC2A	1992 IEEE type DC2A excitation system model
ESST1A	1992 IEEE type ST1A excitation system model
ESST2A	1992 IEEE type ST2A excitation system model
ESST3A	1992 IEEE type ST3A excitation system model
EXAC1	1981 IEEE type AC1 excitation system model
EXAC1A	Modified type AC1 excitation system model
EXAC2	1981 IEEE type AC2 excitation system model
EXAC3	1981 IEEE type AC3 excitation system model
EXAC4	1981 IEEE type AC4 excitation system model
EXBAS	Basler static voltage regulator feeding dc or ac rotating exciter model
EXDC2	1981 IEEE type DC2 excitation system model
EXELI	Static PI transformer fed excitation system model
EXPIC1	Proportional/integral excitation system model
EXST1	1981 IEEE type ST1 excitation system model
EXST2	1981 IEEE type ST2 excitation system model
EXST2A	Modified 1981 IEEE type ST2 excitation system model
EXST3	1981 IEEE type ST3 excitation system model
IEEET1	1968 IEEE type 1 excitation system model
IEEET2	1968 IEEE type 2 excitation system model
IEEET3	1968 IEEE type 3 excitation system model
IEEET4	1968 IEEE type 4 excitation system model
IEEET5	Modified 1968 IEEE type 4 excitation system model
IEEEX1	1979 IEEE type 1 excitation system model and 1981 IEEE type DC1 model
IEEEX2	1979 IEEE type 2 excitation system model
IEEEX3	1979 IEEE type 3 excitation system model
IEEEX4	1979 IEEE type 4 excitation system, 1981 IEEE type DC3 and 1992 IEEE type DC3A models
IEET1A	Modified 1968 IEEE type 1 excitation system model
IEET1B	Modified 1968 IEEE type 1 excitation system model
IEET5A	Modified 1968 IEEE type 4 excitation system model
IEEX2A	1979 IEEE type 2A excitation system model
SCRX	Bus or solid fed SCR bridge excitation system model
SEXS	Simplified excitation system model

Annexure-III

SEXS – Simplified Excitation System Model

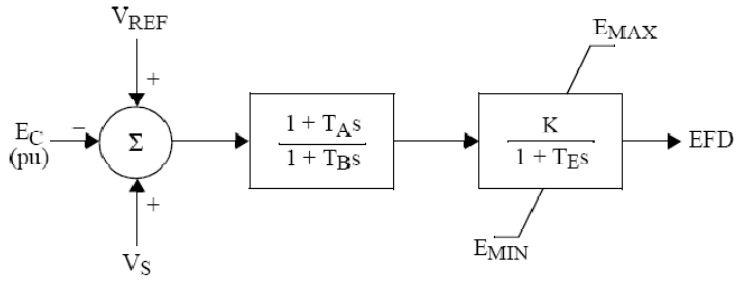
This model is located at system bus #_____ IBUS,
machine #_____ I.
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.



CONs	#	Value	Description
J			T_A/T_B
J+1			T_B (>0) (sec)
J+2			K
J+3			T_E (sec)
J+4			E_{MIN} (pu on EFD base)
J+5			E_{MAX} (pu on EFD base)

STATEs	#	Description
K		First integrator
K+1		Second integrator

IBUS, 'SEXS', I, T_A/T_B, T_B, K, T_E, E_{MIN}, E_{MAX}/



V_S = VOTHSG + VUEL + VOEL