

# PROCEDURE FOR MAKING APPLICATION FOR GRANT OF CONNECTIVITY with Distribution Network of \_GVCL

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## 1. OUTLINE

- 1.1. This Procedure is in accordance with the various provisions of the "Terms and Conditions of Intra State Open Access Regulations of Gujarat Electricity Regulatory Commission Notification No.3 of 2011 hereinafter referred to as "the Regulations".
- 1.2. This Procedure shall apply to the Applications made for Grant of Connectivity to the Distribution lines or associated facilities with such lines on the -----Gujarat Vij Company Limited System, herein after referred to as Distribution Company(Distribution System), received by the on or after (dtd.\_\_\_\_\_).
- 1.3. Application for grant of connectivity can be made by
  - 1.3.1. A Generating station of installed capacity of below 4 MW, including a captive generating plant of exportable capacity of below 4 MW.
  - 1.3.2. A bulk consumer who intends to avail supply of maximum up to 4 MW including its contracted demand with the local Distribution Company through the Distribution network and/ or State Transmission System.
- 1.4. Applicant (Generator) already connected to grid (regional or state) are not allowed to apply for additional connectivity.
- 1.5. The nodal agency for grant of "Connectivity, Long-term access and Medium-term open access or short term open access to the \_GVCL Distribution System" shall be the Gujarat Vij Company Limited (-GVCL).
- 1.6. Applicant granted "Connectivity" with the grid at the point specified by Distribution Company shall have to approach to Distribution Company at least more than **2 (two) years** prior to physical interconnection for obtaining Connection Offer. Further, applicant will have to sign "Connection Agreement" with Distribution Company prior to the physical inter-connection. In case the connectivity is granted to the Distribution system of other Distribution licensee or person authorized for laying Distribution line by the competent authority a tripartite agreement shall be signed between the applicant, the Distribution Licensee and such other Distribution Licensee or person. in line with the provisions of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007. After signing of the Agreement, Nodal Agency will provide a copy of the same to SLDC and to Gujarat Energy Transmission Corporation Limited.

- 1.7. The Scheduling Jurisdiction of all State Utilities and State entities will remain with the State Load Dispatch Centre (SLDC). SLDC shall be responsible real time monitoring, issuance of switching instructions, energy accounting and management of UI Pool A/c etc. for such State utilities/State entities.
- 1.8. The applicant shall have to comply with the provisions of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and amendment thereof from time to time.

**2. Condition Precedent for Making Application for Connectivity By Generating Station:**

**2.1** In order to ensure preparedness of applicant making application for the connectivity to the \_GVCL Distribution system, an applicant shall be required to submit along with its application, documents in support of having initiated specific actions for project preparatory activities in respect of matters mentioned in (i) to (iv) below. In absence of fulfillment of these conditions the application shall be rejected.

- (i) Site identification and land acquisition: The applicant prior to making application for connectivity should have acquired and taken possession of at least 50% of the area of the land required for the generation project. The "Requirement" of land would be considered as indicated in the proposal filed with the competent authority for seeking environmental clearance.  
In case of land to be acquired under the Land Acquisition Act 1984, the applicant shall submit copy of notification issued for such land under section 4 of the Land Acquisition Act, 1984. In all other cases, the applicant shall furnish documentary evidence in the form of certificate by concerned and competent revenue/ registration authority for the acquisition/ ownership/ vesting of the land.
- (ii) Environmental clearance for the power station: The applicant shall have submitted the requisite proposal, for the environmental clearance, to the concerned administrative authority responsible for according approval in the Central and State Government as the case may be.
- (iii) Forest Clearance ( if applicable) for the land for the power station: The applicant shall have submitted the requisite proposal, for the forest clearance, to the concerned administrative authority responsible for according final approval in the Central & Gujarat State Govt. as the case may be.
- (iv) Fuel Arrangements: Fuel arrangements shall have to be made for the quantity of fuel required to generate power from the power station for the total installed capacity intended for connectivity.
  1. In case of domestic coal, the applicant shall have made firm arrangements for fuel tie up either by way of mine allocation or fuel linkage.
  2. In case of imported coal, the applicant shall have either acquired mines having proven reserves for at least 50% of the quantity of coal required OR shall have a fuel supply agreement for at least 50% of the quantity of coal required for a term of at least five (5) years.
  3. In case of domestic gas, the applicant shall have made firm arrangements for fuel tie up by way of long term fuel supply agreement.
  4. In case of RLNG, the Bidder shall have made firm arrangements for fuel tie up by way of fuel supply agreement for at least 50% of the quantity of fuel required for a term of at least five (5) years.

5. In case of hydro projects DPR for the generation project should have been submitted to CEA.
  6. In case of Renewable Generator, the approval of State Nodal Agency i.e. GEDA or Central Nodal Agency may be submitted.
- (v) Water linkage: The applicant shall have acquired approval from the Gujarat State Irrigation department or any other relevant authority for the quantity of water required for the power station.

These evidences shall be supported by a sworn in affidavit by the generation project developer as per the format given at **FORMAT – CON-1**.

### **3.0 SUBMISSION OF APPLICATION**

3.1. An Application for Grant of Connectivity to Distribution Company should be submitted in a sealed envelope with "Application for Grant of Connectivity" clearly marked on the envelope. The application shall be addressed to

**Additional** Chief Engineer ((R&C)  
Gujarat Vij Company Limited

3.2 An Application for Grant of Connectivity to Distribution System of Distribution Company shall be made as per the application format for connectivity and shall contain details such as, geographical location of the generation project, unit-wise commissioning schedule, quantum of power to be interchanged (that is the quantum of power to be injected in the case of a generating station including a captive generating plant, which should not be more than **4 MW**)  
[**FORMAT-CON-2** : "Application for Grant of Connectivity"].

3.3. Application shall be accompanied by a non-refundable fee of Rs. one lakh in favour of Distribution Company as specified in the Regulations

3.4. Application fees can be directly credited to Distribution Company's Account electronically through RTGS as per details given below:

- a) Payee : **Gujarat Vij Company Limited**
- b) Name of Bank :
- c) Branch :
- d) IFSC :
- e) A/c No. :

Provided that proof of payment directly credited to above Distribution Company's account must be attached with the application.

3.5. All applications received during the month shall be treated to have been made concurrently.

- 3.6. An incomplete Application, and/or an Application not found to be in conformity with these Procedures and Regulations, shall be rejected.

#### **4. CHANGES TO THE APPLICATION ALREADY MADE**

- 4.1. Any material change in the location of the generation project/drawl point or change in the 10% quantum of power to be interchanged with the Distribution system shall require filing of fresh application along with applicable fees and the already filed application shall be considered disposed and application fee shall be forfeited.
- 4.2. If any applicant has already been granted connectivity and subsequently applies afresh with material changes as provided above in para – 3.1, then the already granted connectivity shall stand cancelled.

#### **5. GRANT OF CONNECTIVITY**

- 5.1. On receipt of the application, the Distribution Company shall, in consultation and through coordination with other agencies involved including State Transmission Utility other Distribution licensee(es) or person authorized by the competent authority whose network is likely to be used, process the application and carry out the necessary inter-connection study as specified in the Central Electricity (Technical Standards for Connectivity to the Grid) Regulations, 2007 and time to time amendment to thereof.
- 5.2. The outcome of processing of application for grant of connectivity shall be communicated to the applicant within 60 days from last day of the month in which the application has been received as per **FORMAT-CON-3**.
- 5.3. Applicant granted "Connectivity" with the Distribution System at the point specified by Distribution Company shall have to apply for "Connection Offer" to \_GVCL at least more then **1 (one) years** prior to physical interconnection as per format given at **FORMAT-CON-4**. Here it may be mentioned that it is advisable that the applicants to apply above connection offer as early as possible for enabling them having lead time for any type of access.
- 5.4. The Distribution Company will process the Connection Offer application and will intimate the Connection Offer as per format given at **FORMAT-CON-5** which clearly indicates the responsibility, requirements for establishing physical interconnection. Pursuant to the Connection Offer, the applicant shall have to sign "Connection Agreement" with Distribution Company prior to the physical inter-connection as per format given at **FORMAT-CON-6**. In case the connectivity is granted to the Distribution system of a Distribution licensee or a person authorized by Competent authority other than -GVCL, a tripartite agreement shall be signed

between the applicant, the Distribution Company and other such Distribution Licensee or person, in line with the provisions of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007. After signing of the Agreement, Nodal Agency will provide a copy of the same to SLDC and to State Transmission Utility.

## **6. INTERCHANGE OF POWER WITH THE NETWORK of DISTRIBUTION COMPANY:**

- 6.1. The grant of connectivity shall not entitle an applicant to interchange any power with the Distribution System unless it obtains long-term/ Medium Term Open access.
- 6.2. The Applicant shall ensure that its unscheduled interchange with the grid is only limited to inadvertent changes only and does not cause any Distribution System constraint. In case of repeated instances of unscheduled interchange with grid leading to Distribution System constraints or grid violations and continued violation of instruction of SLDC/ ALDC State/Transmission Utility or Distribution Company to reduce such interchange, would entail cancellation of connectivity. The SLDC/ALDC may report such matter to respective Commission-GERC.
- 6.3. However, generating station, including captive generating plant, which has been granted connectivity to the Distribution System shall be allowed to undertake testing including full load testing by injecting its infirm power into the Distribution System before being put into commercial operation, even before availing any type of open access, after obtaining permission of the Gujarat State Load Dispatch Centre and the Distribution Company which shall keep grid security in view while granting such permission. This infirm power injected from a generating station into the transmission and/or Distribution System shall be compensated to the extent of the actual fuel cost and secondary fuel cost as the case may be incurred by the generator.,
- 6.4. The Generating Station including Captive Generating Station will submit likely date of synchronization, likely quantum and period of injection of infirm power to the SLDC Distribution Company at least one month in advance.

## **7. GENERAL**

- 7.1. The applicant shall keep the nodal agency indemnified at all times and shall undertake to indemnify, defend and keep the nodal agency, harmless from any and all damages, losses, claims and actions including those relating to injury to or death of any person or damage to property, demands, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from such grant of connectivity.
- 7.2. All costs/expenses/charges associated with the application, including bank draft,

bank guarantee etc. shall be borne by the applicant.

- 7.3. The applicant shall abide by the provisions of the Electricity Act, 2003, Indian Electricity Grid Code, GERC Grid Code and GERC Regulations, as amended from time to time.
- 7.4. This procedure aims at easy and pragmatic disposal of applications made for Connectivity to Distribution System. However, some teething problems may still be experienced. The various implications would be known only after practical experience is gained by way of implementing these procedures. In order to resolve the same, this procedure shall be reviewed or revised by the Nodal agency with prior approval of GERC.
- 7.5. All complaints regarding unfair practices, delays, discrimination, lack of information, supply of wrong information or any other matter related to grant of connectivity to Distribution System shall be directed to GERC for redressal.

**FORMAT-CON-1**

**On Non Judicial Stamp paper of Rs. 100**

**AFFIDAVIT**

In the matter of filing application to -----Gujarat Vij Company Limited, for grant of Connectivity under GERC **Open Access Regulations, Order No:3 of 2011.**

I.....(Name).....S/o Shri .....(Father's name)... working as ..... (Post)..... in .....(name of the Company).....,having its registered office at ..... (address of the company)....., do solemnly affirm and say as follows:

1. I am the ..... (Post)..... of .....(Name of the Company)....., the representative in the above matter and am duly authorized to file the above application and to make this affidavit.
2. I submit that M/s.....(name of the company)..... is a registered company.....(Public Ltd/Pvt. Ltd.)..... Registered under Companies Act. Under the Article of Association of the Company and in accordance with the provisions of Electricity Act,2003/relevant Regulation(s) of GERC, the company can file the enclosed application.
3. I submit that all the details given in the enclosed application for grant of Connectivity/Medium Term Open Access/Long Term Access along with necessary documents are true and correct and nothing material has been concealed thereof.

(Signature)  
Name of the Applicant

(To be duly attested by Notary)

**FORMAT-CON-2**

**Application for grant of Connectivity**

- 1 Name the Applicant**
- 2 Address for Correspondence**
- 3 Contact Details**

Prime Contact Person

Designation  
Phone No.(Landline)  
Phone No.(Mobile)  
Fax  
E-Mail

Alternate Contact Person

Designation  
Phone No.(Landline)  
Phone No.(Mobile)  
Fax  
E-Mail

**4 Nature of the Applicant**

Normal Generator

**Renewable  
energy  
Generator**

Captive Generator

**5 Details for Connectivity**

**5a. Capacity(MW) for which connectivity  
is required**

**5b. Date from which connectivity is  
required**

**6 Location of the Generating Station  
/ Captive Generating Plant**

Nearest Village / Town  
District  
State  
Latitude  
Longitude

**7 Installed Capacity of the Generating  
Station**

Unit-1  
Unit-2  
Unit-3

**8 Commissioning Schedule of  
the Generating Station (new)**

Unit-1  
Unit-2

**9 Details of the Generating Station**

Name of the Power Plant  
Promoter  
Fuel  
Source of Fuel  
Generation Voltage  
Step-up Voltage  
Is it an identified project of CEA  
Base Load / Peaking

**10 Details of Nearest 400/220/132/66 kV sub-stations**

***Sub-Station-1***

Voltage levels available  
Owner  
Distance(Km)

***Sub-Station-2***

Voltage levels available  
Owner  
Distance(Km)

***Sub-Station-3***

Voltage levels available  
Owner  
Distance (Km)

**11. Details of DD/ Cheque (Application Fee)**

Amount (in Rs.)

DD/ Cheque no.  
Date

Bank Name Branch name:

**FORMAT-CON-3**

**Intimation for grant of Connectivity**

**1 Intimation No.**

**Date :**

**2 Ref. Application No.**

**Date :**

**3 Name of the Applicant**

**4 Address for Correspondence**

**5 Nature of the Applicant**

Normal Generator

**RE Generator**

Captive Generator

**6 Details for Connectivity**

6a Capacity(MW) for which connectivity is granted

6b Point at which Connectivity is granted

6c Date from which connectivity is granted

6d Distribution System Required for connectivity

6e Transmission System Required for Connectivity

6f Implementing Agency for Distribution System required for connectivity

6g Implementing Agency for transmission system required for connectivity

6h Agencies between which agreement is to be signed for implementation of Distribution / Transmission system required for connectivity

**7 Distribution Charges Applicable**

**8. Amount (in Rupees) for which Bank Guarantee is To be provided by the applicant.**

**9. Transmission Charges Applicable**

10. Amount (in Rupees) for which Bank Guarantee is to be provided by the applicant

**11 Location of the Generating Station**

Nearest Village / Town  
District

State  
Latitude  
Longitude

**12 Installed Capacity of the Generating Station**

Unit-1

Unit-2

Unit-3

**11 Commissioning Schedule of the  
Generating Station**

Unit-1  
Unit-2  
Unit-3

**FORMAT-CON-4**

**APPLICATION FORM FOR SEEKING CONNECTION TO  
DISTRIBUTION SYSTEM OF --GVCL**

**General Information to the Applicants**

1. This application form outlines the information that Distribution Company requires to process an application for connection to Distribution System of – GVCL.
2. Prior to Grant of Connectivity to Distribution System of \_\_GVCL it is prerequisite for seeking connection to Distribution System.
3. Based on the information provided through this application, \_\_GVCL shall issue “Connection Offer” to the applicant. The connection offer shall include allocation of “space” in the substation where connection has been sought.
4. The “Connection Offer” shall also outline broad technical requirements in line with the applicable CEA Regulations (Technical Guidelines for Connectivity toGrid) Regulations 2007, Grid Code and other best industry practices to ensure safe operation, integrity and reliability in the grid.
5. Pursuant to getting “Connection Offer” the applicant shall be required to sign “Connection Agreement” as per the provisions of CEA Regulations (Technical Guidelines for Connectivity to Grid) Regulations 2007, Grid Code.

**APPLICATION FORM FOR SEEKING CONNECTION TO DISTRIBUTION  
SYSTEM of \_\_\_\_GVCL**

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**A. DETAILS OF APPLICANT**

1.	Name of the Applicant Company	:	
2.	Details of Grant of Connectivity (a) Connectivity Intimation No. (b) Date		
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
5.	Estimated time of completion of project (Please enclose PERT chart)		<input type="checkbox"/>

**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	:	<b>Schedule – IV</b>
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)		<b>Schedule – V</b>
8.	Dynamic Simulation Data Excitation Generator Power System Stabilizer		<b>Schedule – VI</b> <b>Schedule –VII</b> <b>Schedule – VIII</b>

**D. 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 SLDC)	:	
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 STS. Further, any additional data sought for processing the application shall be furnished.**

**Authorized Signatory  
Of Applicant**

**Name :**  
**Designatio:**  
**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)	$X_d'$	
2.	Sub-transient Reactance (Unsaturated)	$X_d''$	
3.	Synchronous Reactance	$X_s$	
4.	Zero Phase Sequence Reactance	$X_0$	
4.	Negative Phase Sequence Reactance	$X_2$	

## 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	$X_d$	
2.	Quadrature Axis Positive Phase Sequence Synchronous Reactance	$X_q$	
3.	Direct Axis Transient Reactance (unsaturated)	$X_d'$	
4.	Quadrature Axis Transient Reactance (unsaturated)	$X_q'$	
5.	Sub-Transient Reactance (unsaturated)	$X_d''$	
5.	Armature Leakage Reactance	$X_l$	
6.	Direct Axis Transient open circuit Time Constant (Secs)	$T_{do}'$	
7.	Direct Axis Subtransient open circuit Time Constant(Secs)	$T_{do}''$	
8.	Quadrature Axis Transient open circuit Time Constant(Secs)	$T_{qo}'$	
9.	Quadrature Axis Subtransient open circuit Time Constant(Secs)	$T_{qo}''$	
10.	Inertia of complete turbogenerator (MWs/MVA)	$H$	
11.	Please provide open circuit magnetization curve enter drawing number here or mention "assume" <i>if this not available then GETCO shall assume magnetic saturation characteristics as per the <b>Annexure-I</b></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 GVCL. 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 GVCL is shown in **Annexure-II**.

Please fill/tick the appropriate box

below: Please assume

OR

If the excitation data is not available at this stage then GVCL 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**

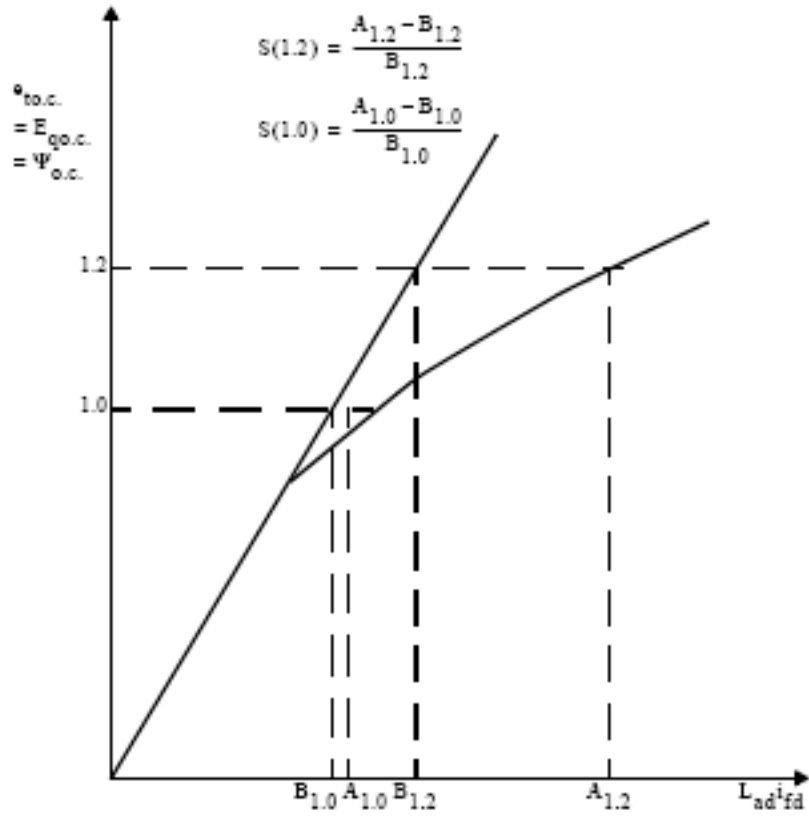
1.	Transformer positive sequence resistance (R1%)	
2.	Transformer positive sequence reactance (X1%)	
3.	Transformer zero sequence resistance (R0%)	
4.	Transformer zero sequence reactance (X0%)	
5.	Transformer Vector group	
5.	Nature of Tap Changer (on load/off load)	
6.	Number of steps and step size	

**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 GETCO**

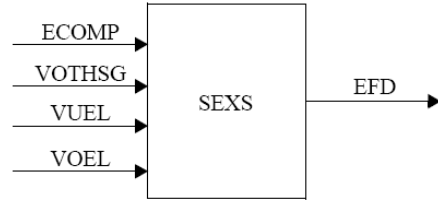
	<b>Excitation System</b>
ESAC1A	1992 IEEE type AC1A excitation system model
ESAC2A	1992 IEEE type AC2A excitation system model
ESAC3A	1992 IEEE type AC3A excitation system model
ESAC4A	1992 IEEE type AC4A excitation system model
ESAC5A	1992 IEEE type AC5A excitation system model
ESAC6A	1992 IEEE type 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**

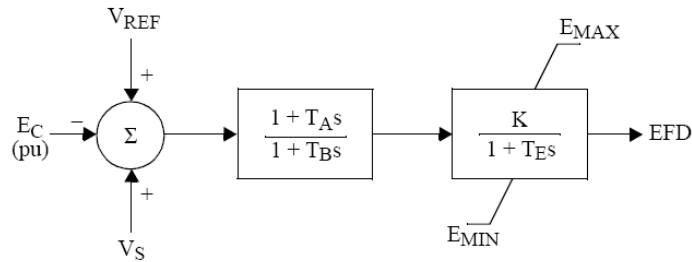
This model is located at system bus # \_\_\_\_\_ IBUS,  
 machine # \_\_\_\_\_ I.  
 This model uses CONs starting with # \_\_\_\_\_ J,  
 and STATEs starting with # \_\_\_\_\_ K.



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,  $T_E$ ,  $E_{MIN}$ ,  $E_{MAX}$ /



$$V_S = VOTHSG + VUEL + VOEL$$

**FORMAT-CON-5**

**Draft Connection Offer Letter for Connection to the \_\_\_\_ Gujarat Vij Co Ltd  
Distribution system State Transmission Grid**

[ Name ]

[Address of the party]

Subject : Connection Offer letter for connection to the Distribution System of GVCL

. Dear Sir,

We write with reference to the application No. \_\_\_\_\_ dated \_\_\_\_\_ seeking connectivity to the Distribution System. We have examined your proposal and it is hereby permitted to connect to the **Dist system /** grid as per the details given below:

1. Name of the Link : from [Name of switchyard/substation] – to  
[Name of switchyard/substation]
2. Voltage level : 11 KV
3. Type of Link : Double Circuit / Single Circuit
4. Reactive compensation to be provided : [Specify rating of Line Reactor/Bus  
Reactor/Series compensation if any]
5. Maximum Import Capacity through the Link :
6. Maximum Export Capacity through the Link :
7. Date of commissioning :
8. Space allocated in the switchyard of connectivity : Refer enclosed single line  
diagram at **Annexure-I**
9. Equipment to be provided by applicant in the allocated space meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and amendment thereof from time to time and shall be compatible with the equipment installed at other end. : [refer **Annexure-II**]
- 10 Protection Equipment to be provided by : [refer **Annexure-II**]

applicant shall be meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and shall be compatible & matching with the equipment installed at other end.

: [refer **Annexure-III**]

11 System recording & SCADA Equipment shall be meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and shall be compatible to exchange data with the existing system installed in the STS network.

12 Details of the modification/alteration to existing facilities for accommodating proposed connection and its estimated cost.

: [refer **Annexure-IV**]

13 Name of Communication Link for Data and Voice Communication

: from [Name of switchyard/substation] –  
to  
[Name of switchyard/substation]

14 Communication equipment details upto GETCO Data Collection Point

: [refer **Annexure-V**]

15 Site responsibility schedule at

: [as marked in the attached GA diagram  
**Annexure-VI**]

It should be noted by the applicant that all the equipments and systems to be provided by applicant shall have to conform with the technical standards as specified in the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and Grid Code.

The applicant will establish, test, commission and demonstrate the voice and data communication facilities with SLDC before test charging.

The applicant will forward meter data in the format appropriate and at a periodicity as specified by the appropriate regulatory authority from time to time. This shall be established & demonstrated by the applicant prior to test charging of interconnecting line

At the connection point to the Distribution System, all works associated with Substation shall be taken- up by GETCO on deposit of cost for the same. However, these equipment shall be owned and maintained by the GETCO at the cost of applicant

Thanking You

Yours faithfully,

## Annexure - II

**Equipment to be provided by applicant in the substation the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and amendment thereof time to time.**

<b>Sl. No.</b>	<b>Name of Equipments</b>	<b>Nos.</b>	<b>Ratings</b>
1.	Circuit Breaker		
2.	Isolators		
3.	Earth Switches		
4.	CT		
5.	CVT		
6.	Wave Trap		
7.	Etc.		
8.			
9.			

**Annexure-III****System recording & SCADA Equipment to be provided by the applicant**

<b>Sl. No.</b>	<b>Name of Equipments</b>	<b>Nos.</b>	<b>Ratings</b>
1.	Event Logger		
2.	Disturbance recorder		
3.	Fault locator		
4.	Data Acquisition System		
5.	Communication equipment		
6.	Etc.		
7.			
8.			

**Annexure-IV**

**Details of the modification/alteration to existing facilities for accommodating proposed connection and its estimated cost**

**Annexure-V**

**Communication equipment details upto GETCO Data Collection Point**

## Annexure-VI

### Site responsibility schedule

#### A. Principle & Procedure :

The responsibility of control, operation, maintenance & all matters pertaining to safety of equipments and apparatus at the connection point shall lie with the owner. For ease of day-to-day operation as a general practice O&M is carried out by the owner of the substation in whose premises the proposed bay is located for which a separate O&M contract is entered into, based on mutually agreed terms and conditions.

#### B. List of equipment and their ownership at the connection point :

Sl. No.	Name of Equipments	Ownership
1.		
2.		
3.		
4.		
5.		
6.		
7.		

#### C. Site common Drawings

:

- a. Site layout
- b. Electrical layout (SLD)
- c. General Arrangement Drawings (GA)
- d. Details of protection
- e. Common services drawing

**FORMAT-CON-6**  
**DRAFT Connection Agreement**

THIS AGREEMENT is made the [ ] day of [ ] 201[ ]

BETWEEN:

- (1) **[Name and registered address of the Distribution Company]** (hereinafter called the "GVCL") which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors or permitted assigns and for the purposes of this Connection Agreement the GVCL shall act through its \_\_\_\_\_  
**[address of the regional head quarter where connection shall be located]** Unit

as the first party  
; and

- (2) **[Name and registered address of the STU]** (hereinafter called the "GETCO") which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors or permitted assigns and for the purposes of this Connection Agreement the STU shall act through its \_\_\_\_\_  
**[address of the regional head quarter where connection shall be located]** Unit

as the second party  
; and

- (2) **[Name and registered address of the applicant Company]** (herein after called "**the Applicant**") which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors or permitted assigns and each of the parties hereto being a "Party" and the term "Parties" shall be construed accordingly.

As the third party

WHEREAS:

- (A) The Applicant has applied to the \_GVCL for connection of the [**mention generating station including a captive generating plant as appropriate**] facility to the \_GVCL's Distribution System and use of the \_GVCL's Distribution System to transmit electricity to and or from the Facility through

the Distribution System of \_GVCL and/ or through State Transmission System.

- (B) The \_GVCL has agreed to the connection of the [**mention generating station including a captive generating plant as appropriate**] Facility to the \_GVCL's Distribution System (via the customer's Site-Related Connection Equipment) at the Connection Point (..... Mention details of the connection point, the name of sub-station, etc.....) and to the applicant to transmit electricity from the Facility through the GVCL's Distribution System and/ or Transmission system of State Transmission Utility.
- (C) The Parties shall enter into this connection agreement to record the terms and conditions upon which the Parties will carry out their respective Connection Works, in addition to the estimated cost required to be carried out by the GVCL for works related to the interconnection, in accordance with the Connection Agreement. In the case of a generating plant seeking connection to the Distribution System not owned by GVCL, a tripartite Connection Agreement would be signed between the owner of such Distribution System, GVCL and the applicant. The responsibilities of the three parties would be defined accordingly in the tripartite Agreement.
- (D) Further, the parties shall separately take up modalities for implementation of the works on mutually agreed terms and conditions. The scope of works, time schedule for completion of works, including the timelines for the various milestones to be reached for completion of works (PERT chart), shall form an appendix to this agreement, and shall form the basis for evaluating if the works by the parties is being executed in time. Penalties for non-completion of works in time by one party resulting in financial losses to the other party may be appropriately priced, as per mutual agreement, for indemnification of each other against losses incurred in this regard, and form a part of this Agreement. Similarly, for the regular O&M of the connection equipments owned by the applicants and located in the STU's premises/switchyard, the parties shall separately take up the O&M agreement on mutually agreed terms and conditions.
- (E) Further, a signed copy of the Agreement(s) along with all the Annexures, and amendments when ever made, shall be submitted to SLDC/ ALDC.

IT IS HEREBY AGREED as follows:

## **1. General Conditions for Connectivity**

- 1.1 The Parties agree to the following General Conditions that are incorporated into this Agreement.
- (a) The parties shall abide by the Central Electricity Regulatory Commission Grant of Connectivity in State Transmission and related matters) Regulations, 2010, in respect of procedure of grant of connectivity and other matters and amendment thereof from time to time.

- (b) The applicant or GVCL or State transmission licensee, as the case may be, shall be responsible for planning, design, construction, and safe and reliable operation of its own equipments in accordance with the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007, Central Electricity Authority (Technical Standards for Construction of electrical plants and electric lines) Regulations, Central Electricity Authority (Grid Standards) Regulations, Grid Code and other statutory provisions.
- (c) The applicant shall provide necessary facilities for voice & data communication for transfer of real time operational data such as voltage, frequency, real and reactive power flow, energy, status of circuit breaker & isolators positions, transformer taps and other parameters from their station to Data Collection Point (DCP) of STU as per Grid Code. STU may provide access to Customer's data transfer through communication network in case spare channels are available on mutually agreed terms. The location of DCP of STU shall be the nearest station connected electrically where wideband communication capacity of GETCO is available. Additional communication system from DCP to the concerned SLDC/ALDC shall be the responsibility of STU; however its cost shall be borne by the applicant. The responsibility of data transfer shall be that of the applicant.

1.2 The following documents and their schedules which have been initialed by the parties and annexed herewith shall be deemed to form part of this Agreement in the order of precedence listed below :-

- (a) Application for seeking connection to the Distribution System of GVCL.
- (b) Offer Letter of this Agreement attached hereto;
- (c) This Agreement;

### **1.3 Availability of Statutory/Regulatory Approval**

Notwithstanding anything in the Agreement to the contrary, the applicant shall be responsible for obtaining the statutory clearances/approval including transmission license (if required) for carrying out the works requiring connection to the Distribution System of GVCL. Accordingly, the provisions of the Agreement dealing with the carrying out of the Works, either by the applicant or GVCL in all respects would be conditional on and subject to the GVCL being satisfied that the necessary approvals/clearances are available with the customer.

## **2 Agreement to Pay Charges and Costs**

### **2.1 Agreement to Monthly Distribution Charges:/ Transmission Charges**

The Customer agrees to pay or make arrangements for payment of the Monthly Distribution Charges for wheeling and/ or Transmission Tariff including SLDC charges, FERV, income tax or other taxes, cess, duties etc., for use of Distribution System and/or State Transmission System, as and when Long term access, Medium-term open access or short-term open access is availed by the applicant, in accordance with the relevant regulations of GERC in this regard.

## **2.2 Agreement to additional costs**

The Customer agrees to pay cost towards modification/alterations to existing infrastructure of GVCL or State Transmission Utility for accommodating the proposed connection as specified in the offer letter.

## **2.3 Agreement to pay for damages**

The customer agrees to pay/ make good damages, if any, caused to the property of the GVC and/or the State Transmission Utility which has been notified by the GVCL and/ or by State Transmission Utility within reasonable time of its occurrence, during the course of control, operation and maintenance of the equipment.

## **2.4 Agreement to pay Charges for installation of equipment in the Substation:**

The applicant will execute an agreement with STU for the Erection of equipment of applicant or State transmission licensee in the substation premises of the STU for installation if equipment(s), if required. For this purpose the applicant shall pay charges to the STU on mutually agreed term.

## **2.5 Agreement to pay O&M Charges:**

The applicant shall agree to pay O&M charges to the GVCL and to STU for maintenance of 11 KV line on mutually agreed terms and to STU for the installation of equipment of applicant in the STU's substation and being operated & maintained by the STU in their substation. These O&M charges will be governed time to time as per the mutually agreed term.

## **3. Conditions Precedent to the implementation of the Commissioning Instructions**

The applicant or State transmission licensee shall have to get appropriate "Commissioning Instruction" prior to actually first charging of the equipment through the grid. The charging instruction shall be issued only when the Distribution Company and STU is satisfied (acting reasonably) that:

(a) the Connection Works have been completed;

(b) the applicant has complied with its all obligations as set out in the Offer Letter;

(c) the applicant has demonstrated the voice & data communication facilities to SLDC/ ALDC;

- (d) the applicant has obtained necessary approvals like PTCC, Electrical Inspectorate of CEI etc. from competent authority;
- (e) the Customer has complied with its obligations under the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and amendment thereof from time to time.

#### **4. Metering**

The customer shall provide and maintain the Metering equipment, in accordance with the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 and GRID CODE of Gujarat and Indian Energy Grid Code.

#### **5.1 Network and Site Access**

Distribution System of GVL is and being restricted area the STU and GVCL may give permission or allow access to Customer's employees and/or agents and/or subcontractors and/or invitees in the Owner's premises and/or to the Distribution System of GVCL to carry out preliminary site investigation works, the Connection Works, modification works, inspections, etc , based on a written request by the applicant ,as deemed fit. All such actions are to be carried out under the strict supervision of the GVCL's and/or STU's authorized representative to safeguard the safety and security requirements of GVCL's Distribution System and/ or STU's installations and safety of the representatives of the applicant .

Similarly the applicant may also allow, on prior permission, site access to the GVCL's and/or STU's employees and/or agents/contractors and/or invitees to carry out preliminary site investigation works, inspections, etc in the connection site of the applicant or State transmission licensee, as deemed fit.

#### **5.2 Conditions of access**

Site access for the Distribution System of GVCL/STU/applicant shall include the right to bring such vehicles, plant, machinery and construction materials as shall be reasonably necessary to carry out the functions in respect of which the permission of access is granted. Being a restricted area, any individual to whom access is given under the Agreement shall comply with all reasonable directions given by the applicant GVCL/ STU and its appropriately authorized employees and agents to safe guard the interest of safety and security requirements of personnel and equipment. All such access shall be exercisable without payment of any kind.

#### **6. Transfer Assignment and Pledge**

The applicant shall not transfer, assign or pledge its rights and obligations under this connection agreement to any other person.

#### **7. Notice**

All notices required or referred to under this Agreement shall be in writing and

signed by the respective authorized signatories of the parties mentioned herein, unless otherwise notified. Each such notice shall be deemed to have been duly given if delivered or served by registered mail/speed post of the department of post with an acknowledgment due to other party (ies) as per authorization by parties.

The authorities of the parties who shall issue/receive notices etc. in connection with this agreement shall be informed in advance.

## **8. Settlement of Disputes And Arbitration**

All differences and/or disputes between the parties arising out of or in connection with these presents shall at first instance be settled through amicable settlement at the level of CEO/CMD.

In the event of unresolved disputes or differences as covered under the statutory arbitration provided under The Electricity Act, 2003, the same shall be resolved accordingly.

Notwithstanding the existence of any disputes and differences referred to arbitration, the parties herein shall continue to perform their respective obligations under this Agreement.

## **9. Force Majeure**

Force Majeure herein is defined as any clause which is beyond the control of the Owner or the Customer as the case may be, which they could not be foreseen or with a reasonable amount of diligence could not have been foreseen and which substantially affects the performance of the agreement such as:

- Natural phenomenon including but not limited to floods, droughts, earthquake and epidemics;
- Acts of any Government, domestic or foreign, including but not limited to war, declared or undeclared, priorities, guarantees, embargoes.

Provided either party shall within fifteen (10) days from the occurrence of such a cause notify the other in writing of such causes.

Neither of the parties shall not be liable for delays in performing obligations on account of any force majeure causes as referred to and/or defined above.

## **10. Confidentiality**

The parties shall keep in confidence any information obtained under this Connection Agreement and shall not divulge the same to any third party without the prior written consent of the other party, unless such information is

- a) In the public domain.
- b) Already in the possession of the receiving party.
- c) Required by the Govt. Ministries/Agencies/Court of Law.

The information exchanged herein between the parties shall be used only for the purpose of, and in accordance with, this Agreement and for the purpose stated herein. This clause shall remain in force even after termination of Connection Agreement.

**11 Governing Laws and Jurisdiction**

The agreement shall be governed by Indian Laws and Rules framed there under. The courts in Gujarat shall have exclusive jurisdiction.

**12 Amendment to the Connection Agreement**

In case of Modification to point of connection like re-allocation of space in substation or another substation, up gradation of voltage level etc. by either of the parties, if mutually agreed, an amendment to the Connection Agreement shall be executed between the parties within 30 days of implementing such modification.

IN WITNESS WHEREOF the STU and the applicant or State transmission licensee have caused this Agreement to be executed by duly authorized representative on date above first herein written.

Signed for and on behalf of

Signed for and on behalf of

[STU Details]

(Distribution Company Details)

Signed for and on behalf of:-

[Applicant Details]