

CONNECTION AGREEMENT

For

**Connection to Intra-State Transmission System (InSTS)/
Distribution System**

In

Andhra Pradesh

Note:**Applicability:**

1. The connectivity agreement shall be executed by the respective parties in accordance with the details specified in the following table:

S. No	Connectivity Voltage Level	Entity seeking Connectivity	Parties to execute the Agreement
1	Case 1(G1): System Voltage at 132kV and above	Generator	APTRANSCO and Generator
2	Case 1(G2): System Voltage at 33kV	Generator connected at 33kV Side of 132/33kV APTRANSCO Substation	APTRANSCO, APDISCOM, and Generator
3	Case 1(G3) System Voltage at 33kV and below	Generator connected at 33kV and below	APDISCOM and Generator
4	Case 2 (T): System Voltage at 132kV and above	Transmission Licensee	APTRANSCO and Transmission Licensee
5	Case 2 (D1): System Voltage at 33kV Side of APTRANSCO Substation	Distribution Licensee	APTRANSCO and Distribution Licensee
6	Case 2 (D2): System Voltage at 33kV and below	Distribution Licensee	APDISCOM and Distribution Licensee
7	Case 3(C): System Voltage at 33 kV and above	▪ Bulk Consumer connected at 132kV and above ▪ Bulk Consumer connected at 33kV side of 132/33kV Substation	APTRANSCO, APDISCOM and Bulk Consumer

Table 1: Applicability of the Connection Agreement

Note: The bulk consumers, which have in-house captive generation facilities and intend to inject /supply surplus power to grid for sale, shall enter into a connection agreement applicable for a generator. In case of bulk consumers who intend to utilize the entire captive generation and not supply power to the grid, those consumers can enter the agreement applicable to bulk consumers.

1. For new generator connection, the connection agreement shall be concluded prior to the synchronization of the generator.
2. For new consumers, the connection agreement shall be concluded before the supply is extended to the consumer.
3. For existing generators and consumers, the connection agreement shall be executed within 3 months from the date of approval of the agreement by the Regulatory Commission.
4. The articles and clauses must be selected based on Table 1 as per applicability.

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CHAPTER 1

DEFINITIONS AND INTERPRETATIONS

The following definitions shall be applicable for all schedules and shall be agreed by all parties of the agreement:

1. **‘Act’** means the Electricity Act, 2003 including amendments thereto.
2. **‘Apparatus’** means electrical apparatus and includes all machines, fittings, accessories, and appliances in which conductors are used.
3. **‘Appropriate Transmission Utility’** means the Central Transmission Utility or State Transmission Utility as the case may be.
4. **‘Automatic Voltage Regulator (AVR)’** means a continuously acting automatic excitation control system to regulate a generating unit terminal voltage.
5. **‘British Standards’ (BS)** means those standards and specifications approved by the British Standards Institution.
6. **‘Bulk Consumer’** refers to any consumer who avails of supply at a voltage of 33 kV and above.
7. **‘CEA or Authority’** means the Central Electricity Authority constituted and established under Sub-Section (1) of Section 70 of the Act, 2003.
8. **‘CEA Registry’** means the Registry for maintaining database of generating stations as specified in the CEA Technical Standards for Connectivity.
9. **‘CEA Technical Standards for Connectivity’** means the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007.
10. **‘CEA Technical Standards for Construction’** means the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010;
11. **‘Central Commission’** means the Central Electricity Regulatory Commission referred to in sub-section (1) of Section 76 of the Act;
12. **‘Central Transmission Utility’ or ‘CTU’** shall have the same meaning as defined in sub-section 10 of Section 2 of the Act;
13. **‘Commission’** means the Andhra Pradesh State Electricity Regulatory Commission or APERC established for the state of Andhra Pradesh.
14. **“Connectivity”** in relation to a Generating Station, including a captive generating plant, a Consumer or a Licensee, means the state of getting connected to the Intra-State Transmission System;

15. **“Consumer”** shall carry the same meaning as in the Act, but shall be restricted to such consumers within State;
16. **"Distribution licensee"** means a licensee authorized to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply;
17. **‘Distribution System’** means any system consisting mainly of cables, service lines and overhead lines, electrical plant and meters having design voltage of 33 kV and under and shall also include any other system of higher voltage as the commission may specifically recognize. A Distribution system shall not include any part of the Transmission system.
18. **‘Earthing’** means electrical connection between non-energized conducting parts and the general mass of earth by an earthing device.
19. **‘Event logging facility / Event Logger’**, means a device provided to record the sequence of operations in time, of relays / equipment at a location during an event.
20. **‘Electrical Plant or Plant’** means any plant, equipment, apparatus or appliance or any part thereof used for, or connected with, the generation, transmission, distribution, or supply of electricity but does not include-
 - a. an electric line; or
 - b. a meter used for ascertaining the quantity of electricity supplied to any premises; or
 - c. an electrical equipment, apparatus, or appliance under the control of a consumer.
21. **‘Frequency’** means the number of alternating cycles per second (expressed in Hertz).
22. **‘Generating Unit or Generator’** means an Electrical Generator coupled to a prime mover within a Power Station together with all Plants and Apparatus at that Power Station (up to the Connection point) which relates exclusively to the operation of that generator. Further, a generating unit can also consider systems such as PV solar power generation and battery energy storage systems, etc.

In case of solar photo voltaic generating station, each inverter along with associated modules will be reckoned as a separate generating unit.
23. **‘IEC Standard’** means standard approved by the International Electro technical Commission.
24. **‘Indian Standard (IS)’** means the standards specified by the Bureau of Indian Standards.
25. **‘Isolator or Isolating device’** means a device for achieving isolation of one part of an electrical system from the rest of the system.

26. **‘Installed capacity’**,
- i. in case of coal, lignite, gas engines and hydro stations, means the summation of the name plate capacities of all the units of the generating station or Maximum Continuous Rating of the generating station; and
 - ii. in case of solar/ wind generating stations and generating stations using inverters, means the summation of the name plate capacities of wind turbines or solar generating units in terms of AC capacity in KW; and
 - iii. in case of biomass, Municipal solid waste plant and bagasse generating stations, means the summation of the name plate capacities of the generating unit, as the case may be.
27. **‘Inter Connection Point’** means a point on the grid, including a sub-station or a switchyard, where the interconnection is established between the facility of the requester and the grid(APTRANSCO/APDISCOM) and where electricity injected into or drawn from the grid can be measured unambiguously for the requester.
28. **‘Intra-State Transmission System’** (In-STTS) means any system for conveyance of electricity by transmission lines within the area of the state and includes all transmission lines, sub-stations and associated equipment of all Intra-State transmission licensees in the State:
- Provided that the definition of point of separation between a transmission system and a distribution system and between a generating station and transmission system shall be guided by the provision of the regulations notified by the authority under clause (b) of section 73 of the Act.
29. **‘Maximum Continuous Rating’**(MCR) of a generating unit means the maximum continuous output in MW at the generator terminals guaranteed by the manufacturer at rated parameters.
30. **‘Power Factor’** means the cosine of the electrical angle between the voltage and current complexors in an AC electrical circuit.
31. **‘Power Purchase Agreement (PPA)’** means the Power Purchase Agreement signed between the Developer and APDISCOMS/Consumer/ Procurer/Purchaser.
32. **‘Power System Stabilizers’** (PSS) means controlling equipment which receives input signals of speed, frequency and power to control the excitation via the voltage regulator for damping power oscillations of a synchronous machine.
33. **‘Protection system’** means the equipment by which abnormal conditions in the grid are detected and fault clearance, actuating signals or indications are initiated without the intervention by the operator.

34. **‘Reactive Power’** means in relation to the AC system, the product of root means square (r.m.s.) voltage, root means square (r.m.s.) current and the sine of the electrical phase angle between the voltage complex or and current complex or, measured in volt amperes reactive (VAr).
35. **“Renewable Power Park Developer”** means an entity authorised by the Central Government or a State Government as Power Park developer for Renewable Energy Generating Station(s);
36. **‘Requester’** includes a generating company, captive generating plant, energy storage system, transmission licensee (other than Central Transmission Utility and State Transmission Utility), distribution licensee, solar park developer, wind-solar photo voltaic hybrid system, or bulk consumer whose electrical plant is connected to the Grid at voltage level 33kV and above;
37. **‘Site Common Drawing’** means drawings prepared for a connection site, which depicts layout of connection site, electrical layout, common protection, and control drawings and common services.
38. **‘Southern Regional Power Committee or SRPC’** means a committee established by resolution by the Central Government for a specified region for facilitating the integrated operation of power systems in that region.
39. **‘Single Line Diagram’** means diagrams which are schematic representation of the HV/EHV apparatus and the connections to all external circuits at a Connection Point incorporating its numbering nomenclature and labeling.
40. **‘Standards’** means “Standards on Grid Connectivity” as specified by Central Electricity Authority.
41. **‘APSLDC’** means the company notified by the state government under Sec 31(1) of the Act, 2003 or the center run by the STU within the state for undertaking load dispatch operations.
42. **‘State Grid Code’** means the regulation specifying the philosophy, liabilities, and responsibilities for planning and operating state power system.
43. **‘State Transmission Utility’ or ‘STU’** means Transmission Corporation of Andhra Pradesh Limited notified by Government of Andhra Pradesh vide G.O.Ms.No.9 dt. 27.01.2003, as specified under sub-section (1) of section 39 of the Act.
44. **‘System Protection Scheme or Protection Scheme’** means scheme designed to detect abnormal system conditions and take predetermined corrective action to preserve system integrity and provide acceptable system performance.

45. **‘Total Harmonic Distortion’ (THD)** means a measure of distortion of the voltage or current waveform (which shall ideally be sinusoidal) and is the square root of the sum of squares of all voltages or current harmonics expressed as a percentage of the magnitude of the fundamental.
46. **"Transmission Licensee"** means a licensee authorised to establish or operate transmission lines;
47. **‘Transmission System’** means a network of transmission lines and sub-stations.
48. **‘Under Frequency Relay’ (UFR)** means a relay which operates when the system frequency falls below specified limits and initiates load shedding.
49. **‘User’** means persons including intra-state generating stations, transmission licensees, distribution licensees, consumers of the distribution licensees directly connected to the intra-state transmission system (including consumers connected at 33kV bus of distribution substations), persons availing inter/ intra state open access, and captive generating plants connected and operating in parallel with the grid, including those who are connected at 33kV bus of the distribution substations, who are connected to and/or use the intra-state transmission system.
50. **‘Voltage Unbalance’** means the deviation between highest and lowest line voltage divided by Average Line Voltage of the three phases.

The words and expressions used in this agreement and not defined herein but defined in the Act or the State Grid Code or any other regulations specified by the Commission /Authority shall, unless the context otherwise requires, have the meanings assigned to them under the Act or the State Grid Code or other regulations specified by the commission/Authority, as the case may be.

CHAPTER 2

CONNECTION AGREEMENT

(Applicable only in Case 1(G1))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED, a company incorporated and constituted under the laws of India with its registered office at **D.No.48-12-4/1, Vidyut Soudha, Vijayawada – 520 004**, Andhra Pradesh (hereinafter referred to as “**Nodal Agency**” which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) represented by Superintending Engineer/O&M/_____/APTRANSCO as the party of the first part.;

Party name_____, is a “(Generating Company/Power Developer including Captive Generator)” incorporated under the companies Act, 1956 having its registered office at ----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Connectivity Grantee**’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) which expression shall unless repugnant to the context or meaning thereof include its successors and assignees as party of the second part.

WHEREAS, APTRANSCO is the State Transmission Utility constituted and functioning as per Section 39 (1) of the Electricity Act 2003 and is a Transmission Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Intra-State Transmission System in the State of Andhra Pradesh.

WHEREAS, _____ is developing/have developed a _____ MW(capacity) _____ Power Project (Fuel type) at _____;

Details of commercial arrangement regarding evacuation of power:

WHEREAS, _____ is seeking/having grid connectivity for their project to APTRANSCO network; and

WHEREAS, APTRANSCO has issued the feasibility letter/approval for Grid Connectivity to the project from the _____ (Substation) at _____ voltage level vide Lr.No. _____ & Permit No. _____

(Applicable only in Case 1(G2))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED, a company incorporated and constituted under the laws of India with its registered office at **D.No.48-12-4/1, Vidyut Soudha, Vijayawada – 520 004**, Andhra Pradesh (hereinafter referred to as “**Nodal Agency**” which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) represented by Superintending Engineer/O&M/_____/APTRANSCO as the party of the first part.;

AND

_____ **POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED**, a company incorporated and constituted under the laws of India with its registered office at _____ (hereinafter referred to as “**AP_PDCL**” which expression shall unless to the context or meaning thereof include its successors and assigns), represented by Superintending Engineer/Operation/AP_PDCL as party of the second part:

AND

Party name_____, is a “(Generating Company/Power Developer including Captive Generator” incorporated under the companies Act, 1956 having its registered office at ----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Connectivity Grantee**’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) which expression shall unless repugnant to the context or meaning thereof include its successors and assignees as party of the third part.

WHEREAS, APTRANSCO is the State Transmission Utility constituted and functioning as per Section 39 (1) of the Electricity Act 2003 and is a Transmission Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Intra-State Transmission System in the State of Andhra Pradesh.

WHEREAS, AP_PDCL (referred to as AP DISCOM) is the Distribution Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Distribution System within its specified area of supply.

WHEREAS, _____ is developing/have developed a _____ MW(capacity) _____ Power Project (Fuel type) at _____;

Details of commercial arrangement regarding evacuation of power:

WHEREAS, _____ is seeking/having grid connectivity for their project their project to APTRANSCO/AP_PDCL network; and

WHEREAS, APTRANSCO/AP_PDCL has issued the feasibility letter/approval for Grid Connectivity to the project from the _____ (Substation) at _____ voltage level vide Lr.No. _____ & Permit No. _____

(Applicable only in Case 1(G3))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

_____ **POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED**, a company incorporated and constituted under the laws of India with its registered office at _____ (hereinafter referred to as “**AP_PDCL**” which expression shall unless to the context or meaning thereof include its successors and assigns), represented by Superintending Engineer/Operation/AP_PDCL as party of the first part:

AND

Party name _____, is a “(Generating Company/Power Developer including Captive Generator” incorporated under the companies Act, 1956 having its registered office at ----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Connectivity Grantee**’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) which expression shall unless repugnant to the context or meaning thereof include its successors and assignees as party of the second part.

WHEREAS, AP_PDCL (referred to as AP DISCOM) is the Distribution Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Distribution System within its specified area of supply.

WHEREAS, _____ is developing/have developed a _____ MW(capacity) _____ Power Project (Fuel type) at _____;

Details of commercial arrangement regarding evacuation of power:

WHEREAS, _____ seeking/having grid connectivity for their project to AP_PDCL network; and

WHEREAS, AP_PDCL has issued the feasibility letter/approval for Grid Connectivity to the project from the _____ (Substation) at _____ voltage level vide Lr.No. _____ & Permit No. _____

(Applicable only in Case 2(T))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED, a company incorporated and constituted under the laws of India with its registered office at **D.No.48-12-4/1, Vidyut Soudha, Vijayawada – 520 004**, Andhra Pradesh (hereinafter referred to as “**Nodal Agency**” which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) represented by Superintending Engineer/O&M/_____/APTRANSCO as the party of the first part.;

AND

Party name_____, is a “(Transmission Licensee incorporated under the companies Act, 1956 having its registered office at -----
----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Transmission Licensee Grantee** under Section 14 of the Electricity Act’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns)(which expression shall unless repugnant to the context or meaning thereof include its successors and assigns as party of the second part.

WHEREAS, APTRANSCO is the State Transmission Utility constituted and functioning as per Section 39 (1) of the Electricity Act 2003 and is a Transmission Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Intra-State Transmission System in the State of Andhra Pradesh.

WHEREAS, _____ is a transmission licensee as per section 14 of Act 2003.

WHEREAS, _____ is seeking/having grid connectivity to APTRANSCO network;
and

Details of commercial arrangement regarding evacuation of power:

WHEREAS, APTRANSCO has issued the feasibility letter/approval for Grid Connectivity to the project from the _____ (Substation) at _____ voltage level vide Lr.No._____ & Permit No._____

(Applicable only in Case 2(D1))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED, a company incorporated and constituted under the laws of India with its registered office at **D.No.48-12-4/1, VidyutSoudha, Vijayawada – 520 004**, Andhra Pradesh (hereinafter referred to as “**Nodal Agency**” which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) represented by Superintending Engineer/O&M/_____/APTRANSCO as the party of the first part.;

AND

Party name_____, is a “(Distribution Licensee/Discom incorporated under the companies Act, 1956 having its registered office at ----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Distribution Licensee Grantee**’ under Section 14 of the Electricity Act’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) which expression shall unless repugnant to the context or meaning thereof include its successors and assigns as party of the second part.

WHEREAS, APTRANSCO is the State Transmission Utility constituted and functioning as per Section 39 (1) of the Electricity Act 2003 and is a Transmission Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Intra-State Transmission System in the State of Andhra Pradesh.

WHEREAS, _____ is a distribution licensee

WHEREAS, _____ is seeking/having grid connectivity to APTRANSCO network; and

WHEREAS, APTRANSCO has issued the feasibility letter/approval for Grid Connectivity to the project from the _____ (Substation) at _____ voltage level vide Lr.No._____

_____ & Permit No. _____

(Applicable only in Case 2(D2))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

_____ **POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED**, a company incorporated and constituted under the laws of India with its registered office at _____ (hereinafter referred to as “**AP_PDCL**” which expression shall unless to the context or meaning thereof include its successors and assigns), represented by Superintending Engineer/Operation/AP_PDCL as party of the first part:

AND

Party name_____, is a “(Distribution Licensee/Discom incorporated under the companies Act, 1956 having its registered office at ----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Distribution Licensee Grantee**’ under Section 14 of the Electricity Act’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns)which expression shall unless repugnant to the context or meaning thereof include its successors and assigns as party of the second part.

WHEREAS, AP_PDCL (referred to as AP DISCOM) is the Distribution Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Distribution System within its specified area of supply.

WHEREAS, _____ is a distribution licensee

WHEREAS, _____ is seeking/having grid connectivity to APDDISCOM network;

WHEREAS, AP_PDCL has issued the feasibility letter/approval for Grid Connectivity to the project from the _____ (Substation) at _____ voltage level vide Lr.No._____ & Permit No._____

(Applicable only in Case 3(C))

This Connection Agreement (the “Agreement”) is made on the _____ day of _____ by and between:

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED, a company incorporated and constituted under the laws of India with its registered office at **D.No.48-12-4/1, Vidyut Soudha, Vijayawada – 520 004**, Andhra Pradesh (hereinafter referred to as “**Nodal Agency**” which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) represented by Superintending Engineer/O&M/_____/APTRANSCO as the party of the first part.;

AND

_____ **POWER DISTRIBUTION COMPANY OF ANDHRA PRADESH LIMITED**, a company incorporated and constituted under the laws of India with its registered office at _____ (hereinafter referred to as “**AP_PDCL**” which expression shall unless to the context or meaning thereof include its successors and assigns), represented by Superintending Engineer/Operation/AP_PDCL as party of the second part.

AND

Party Name_____, is a “(Bulk Consumer)” incorporated under the companies Act, 1956 having its registered office at ----- (hereinafter referred to either as ‘**Short name of the Party**’ or ‘**Connectivity Grantee**’ which expression shall unless repugnant to the context or meaning thereof include its successors and assigns) which expression shall unless repugnant to the context or meaning thereof include its successors and assignees as party of the third part.

WHEREAS, APTRANSCO is the State Transmission Utility constituted and functioning as per Section 39 (1) of the Electricity Act 2003 and is a Transmission Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Intra-State Transmission System in the State of Andhra Pradesh.

WHEREAS, AP_PDCL (referred to as AP DISCOM) is the Distribution Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Distribution System within its specified area of supply.

WHEREAS, _____ is a Bulk Consumer is seeking/having connection to APTRANSCO/AP_PDCL network for a CMD_____ MVA(capacity)

WHEREAS, APTRANSCO has issued the feasibility letter/approval for Grid Connectivity to Bulk Consumer from the _____ (Substation) at _____ voltage level vide Lr.No._____ & Permit No._____

WHEREAS, the *Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007*, along with its subsequent amendments, are applicable to all users, requesters, the Central Transmission Utility, and the State Transmission Utility in order to ensure the safe operation, integrity, and reliability of the grid.

AND WHEREAS, a Connection Agreement is required to be executed between **APTRANSCO/APDISCOM** and the respective users of the Intra-State Transmission System/Distribution System, in compliance with the provisions specified in the Schedule of the *Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007*, as amended, and the *Central Electricity Authority (Grid Standards) Regulations, 2010*.

NOW, THEREFORE, in consideration of the premises and the mutual agreements, covenants, and conditions set forth herein, it is hereby agreed by and between the parties as follows:

2.1 Compliance of Regulations:

i. Compliance of Central Electricity Authority Regulations:

All/ Both the parties agree and confirm that they shall comply with the provisions of the Central Electricity Authority's Technical Standards for Connectivity to the Grid Regulations 2007 including any subsequent amendments issued by the CEA.

The stipulations mentioned in the connectivity regulations issued by the CEA, in respect of Generators (whether conventional or generators using inverters and renewable sources), Transmission Lines and Substations, Bulk Loads and DISCOMs shall be complied with.

ii. Compliance with Central Electricity Regulatory Commission Regulations:

All/ Both the parties agree and confirm that they shall comply with the provisions of the applicable regulations of Central Electricity Regulatory Commission, including any subsequent amendments thereof.

iii. Compliance of Andhra Pradesh State Electricity Regulatory Commission Regulations:

All/ Both the parties agree and confirm that they shall comply with the provisions of the applicable regulations of Andhra Pradesh State Electricity Regulatory Commission, including any subsequent amendments thereof.

2.2 Connection Standards and Codes of Practice

- a) _____ shall follow industry best practices and applicable standards in respect of the equipment installation and its operation, and maintenance.
- b) Unless there is a commercial arrangement between the parties regarding evacuation of power, _____ shall not inject power into or draw power from the Intra-State network.
- c) _____ shall be liable for any drawal or injection of energy without a commercial arrangement. Any such injected energy shall be treated as inadvertent and, besides attracting penalties as per DSM regulations, and such energy drawal shall be treated as that of a “full open access consumer”, with appropriate charges levied and disconnection of supply enforced.
- d) The equipment including overhead lines and cables, shall comply with the relevant Indian Standards, British Standards (BS) or International Electro technical Commission (IEC) Standards, American National Standards Institute (ANSI) Standards, or any other equivalent International Standards.

Provided that, whenever an International Standard or International Electro technical Commission (IEC) Standard is followed, necessary corrections or modifications shall be made for nominal system frequency, nominal system voltage, ambient temperature, humidity and other conditions prevailing in India before actual adoption of the said Standard.

- e) The effects of wind, storms, floods, lightning, elevation, temperature extremes, icing, contamination, pollution, and earthquakes shall be considered in the design and operation of the connected facilities.
- f) The construction, installation, operation, and maintenance of the equipment by all/ both the parties shall conform to the relevant standards specified by the Authority. The equipment, including overhead lines and cables, shall be of approved standards as communicated by APTRANSCO / APDISCOM (whichever is applicable).
- g) _____ shall be responsible for the planning, design, construction, reliability, protection, and safe operation of its own equipment, subject to the regulations on construction, operation, maintenance, connectivity and other applicable statutory provisions.
- h) There shall be no fluctuations or disturbances to the transmission network or other consumers connected to the network due to the paralleling of the generators. _____ shall provide, at its own expense, adequate protection as required by APTRANSCO to facilitate safe parallel operation of the generator with the network and to prevent disturbances of the grid.
- i) _____ shall make arrangements for the integration of control and tele-metering features for their system into the Automatic Generation Control, Automatic Load Shedding, Special Protection System, Energy Management Systems and Supervisory Control and Data Acquisition system of the respective state or region.
- j) _____ shall comply with the applicable DSM regulations issued by APERC/CERC.
- k) (Applicable for generators only) _____ shall provide the unique registration number issued by the Authority, as per the CEA (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019, to APTRANSCO/AP DISCOM (whichever is applicable), and shall also provide the registration details from APSLDC ,as per clause 3.1 of the APERC Regulation No.1 of 2006.
- l) _____ shall cooperate with the Power Systems wing of APTRANSCO / AP DISCOM (whichever is applicable) and APSLDC with respect to the matters listed below, but not limited to:
 - i) Coordination of protection and appropriate settings of its protective relays.

- ii) Maintenance of meters and communication systems under its jurisdiction in good working condition.
- iii) Participate in contingency operations such as load shedding, increasing or reducing generation, islanding, black start, providing start-up power, and restoration as per the procedures established by the APSLDC.
- iv) Furnish data as required by APTRANSCO / AP DISCOM (whichever is applicable), and/or the APSLDC, or any committee constituted by the Authority or appropriate Government for system studies, simulation models, or for facilitating analysis of tripping or disturbance in power system.
- v) Carry out modifications to its equipment with respect to short-circuit levels, protection coordination, and other technical requirements deemed necessary due to operational considerations.
- vi) Abide by the coordinated outage plan of the state and region for generating units and transmission lines, as approved by APTRANSCO/AP DISCOMs, the APSLDC, and the /Regional Power Committee; and
- vii) Comply with the cyber security guidelines issued by the Central Government/State Government (whichever is applicable), from time to time, and with the technical standards for communication systems in power sector, as laid down by the Authority, APSLDC, or Commission (whichever is applicable).
- viii) Provide dynamic reactive power support, have Low Voltage Ride Through (LVRT) and High Voltage Ride Through (HVRT) features, and maintain frequency and power output controllers in accordance with the CEA (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019, and subsequent amendments thereof (applicable for solar and wind power generators only).
- ix) Ensure that inverters have voltage control & night mode, and shall operate for reactive power compensation as per the CEA (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019, and subsequent amendments thereof (applicable for solar / wind power generators only).
- x) (Applicable for solar and wind power generators only) Have the features or provisions to control active power injection in accordance with the signals or instructions from the APSLDC or Regional Power Committee.

2.3 Safety Standards

All/ Both parties shall comply with the Central Electricity Authority (Measures Relating to Safety and Electricity Supply) Regulations, 2010, and amendments thereof.

2.4 Substation Grounding

Both /All parties shall ensure proper grounding at their respective substations. Each sub-station must have a ground mat solidly connected to all metallic structures and other non-energized metallic equipment. The ground mat shall limit the ground potential gradients to voltage and current levels that do not endanger the safety of personnel or damage equipment which are in, or immediately adjacent to, the station under normal and fault conditions. The size and type of the ground mat shall be based on local soil conditions and the magnitudes of available electrical fault currents. In areas where ground mat voltage rises would exceed acceptable and safe limits (for example due to high soil resistivity or limited sub-station space), grounding rods and ground wells may be used to reduce the ground grid resistance to acceptable levels. Substation grounding shall be done in accordance with the standards of the Institute of Electrical and Electronics Engineers (IEEE) – 80.

2.5 Metering Requirements

Metering requirement at the inter-connection points shall be governed by the Metering Code as specified in APERC metering regulations/proceedings approved by the Commission and in line with APTRANSCO T.O.O.Ms. No.2982 Dt:18.10.2023 and its subsequent amendments issued from time to time. _____ shall abide by the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 and its subsequent amendments from time to time, in addition to the metering proceedings of APERC dated: 29-01-2015 and its subsequent amendments. Further, the following shall apply:

- a) Metering at the interconnection points shall be maintained by Generating Company, APTRANSCO, APDISCOMs (whichever is applicable), in accordance with the metering proceedings of APERC dated 29-01-2025. The metering system shall be capable of measuring and storing all relevant parameters at the interconnection points required for billing intra-state energy exchange as per applicable tariffs, as well as for energy accounting and UI settlement, in accordance with the specifications issued by the Commission from time to time. The metering software and load survey parameters shall comply with the energy billing center of APTRANSCO/APDISCOM, as applicable,

Maintenance of metering (meters and allied equipment) shall include rectification of defective meters and allied equipment.

- b) The meters shall be tested by NABL accredited laboratory for routine accuracy testing at least once every five years and shall be recalibrated, if required. Provided that these meters shall also be tested periodically, or whenever the energy and other quantities recorded by the meter are found to be abnormal or inconsistent with electrically adjacent meters. The testing activities shall be carried out in accordance with prevailing Transco Orders(T.O.O's) in vogue and as per established general practice. During periodical testing of meters, the time drift of the meters with respect to adjacent meters shall also be observed and, if any abnormalities are found, the drift shall be corrected with reference to IST.
- c) In case of the in-house captive generator intending to inject energy into grid under open access, the existing interface metering shall be considered.
- d) Reading of the meters shall be taken periodically at the appointed day and time by authorities of APTRANSCO or AP DISCOM (whichever is applicable), in the presence of the user or their authorized representative.

2.6 Equipment at Connection Points

_____ shall confirm that their respective equipment at the connection point complies with the minimum technical and design criteria specified in Central Electricity Authority's Technical Standards for Connectivity to the Grid Regulations, 2007, including any subsequent amendments thereof, and CEA (Grid Standards) Regulations,2010. Single Line Diagrams showing the arrangement of equipment belonging to _____ and /or APTRANSCO/APDISCOM at each connection point are appended to this agreement and made available to the APSLDC. The parties herein agree that they shall not alter the arrangement of equipment at the connection point without consent of other party.

_____ confirm that, before physical connection of their systems at the connection point(s), they shall intimate to the APTRANSCO/APDISCOM and the APSLDC.

2.7 Site Common Drawings

Site common drawings shall be prepared for each connection point and shall include the following information: (i) site layout; (ii) electrical layout; (iii) details of protection / control; and (iv) common services drawings.

Detailed drawings shall be prepared by APTRANSCO/APDISCOM and user in respect of their system / facility at each connection point and copies shall be made available to concerned user and APTRANSCO / AP DISCOM (whichever is applicable) respectively.

In the event of any changes in the site common drawings deemed necessary by APTRANSCO/ AP DISCOM (whichever is applicable) or the user in respect of their system / facility at the connection point, the details of such changes shall be furnished to the other party as soon as possible.

Any changes made shall conform to the Electricity Act, 2003, and the regulations issued there under, including but not limited to the regulation.

2.8 Power Quality

The user shall ensure the power quality parameters, such as harmonics, DC injection, flicker etc., are maintained in accordance with the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007 (and subsequent amendments thereof) and the APERC regulations issued from time to time. The measurement of these parameters shall be carried out at least once a year, in the presence of all/both parties, as per the above-mentioned regulations.

2.9 Inspection, Test, Calibration, and Maintenance

Before connecting, _____ shall complete all inspections and tests finalized in consultation with the APTRANSCO or APDISCOM (whichever is applicable), to which its equipment is connected.

_____ shall make available all drawings, specifications and test records of the project equipment pertaining to integrated operation to the APTRANSCO and AP DISCOM.

_____ shall cooperate and facilitate for periodical testing and execution of the equipment maintenance schedule.

2.10 Site Responsibility Schedule

A Site Responsibility Schedule (SRS) for every connection point shall be prepared by the owner of the sub-station where connection is taking place. The details shall be provided as annexure (Annexure-1) to the agreement.

The site responsibility schedule shall be prepared by APTRANSCO/ AP DISCOM (whichever is applicable) and the user, detailing the ownership responsibilities of each, before execution of the project or connection, including safety responsibilities.

The following information shall be included in Site Responsibility Schedule (SRS), namely:

- a) Schedule of electrical apparatus, services, and supplies.
- b) Schedule of telecommunications and measurement apparatus
- c) Safety rules applicable to each plant/apparatus.
- d) The ownership of Plant/apparatus
- e) The responsibility for control of Plant/apparatus
- f) The responsibility for maintenance of plant /apparatus
- g) The responsibility for operation of plant/apparatus
- h) The manager of the site
- i) The responsibility for all matters relating to safety of persons at site
- j) The responsibility for all matters relating to safety of equipment at site

No connection shall be made unless the Site Responsibility Schedule is prepared and signed by all concerned parties.

2.11 Capital Expenditure by parties

The user shall bear the entire cost of interconnection facilities. The operation and maintenance expenditure of the interconnection facilities from time to time shall be borne by the developer. Maintenance work shall be carried out in coordination with APTRANSCO or AP DISCOM (whichever is applicable).

2.12 Commercial Agreement to Pay Charges & Costs

(Applicable for Case 1(G1), Case 1(G2), and Case 1(G3) only):

a) Agreement to Pay Monthly Transmission/Wheeling Tariff for Captive and Third-Party Wheeling:

_____ declares that they shall pay the Monthly Transmission Tariff or Wheeling Tariff, including APSLDC charges, for use of Intra-State Transmission System, as and when Open Access is availed by the applicant, in accordance with the relevant regulations of APERC in this regard.

The commercial arrangement for evacuation and sale of power shall be governed by the respective PPAs with APDISCOMs/Distribution Licensee or Open Access Agreements with other users of the Intra-State Transmission System (In-STS) network.

In the case of in-house captive generators exclusively operating in parallel with APTRANSCO / AP DISCOMs (whichever is applicable) for safe operation, they shall pay applicable Grid Support/Parallel Operation charges as notified by APERC and as amended from time to time.

b) Agreement to Pay Additional Costs:

_____ declares that they shall pay the cost towards modifications or alterations to the infrastructure of APTRANSCO/ APDISCOM (whichever is applicable), as the case may be, for accommodating of the proposed connection, as specified in the approval of APTRANSCO or AP DISCOM (whichever is applicable) furnishing connection details.

c) Agreement to pay for Damages:

_____, as per mutual agreement, declares that they shall pay for, or make good any damages caused by the customer to the property of the APTRANSCO or AP DISCOM (whichever is applicable), as notified by the respective authority, within a reasonable time of their occurrence, during the course of control, operation, or maintenance of the equipment.

d) Operation & Maintenance charges:

1. If the Generating company/Developer chooses to retain the ownership of the dedicated transmission, the following shall be followed.

a) DEDICATED TRANSMISSION LINE:

Ownership: The ownership of the dedicated transmission line from generation site to the APTRANSCO/AP DISCOM grid shall remain with generator/developer.

Maintenance: The generator shall maintain the dedicated transmission line. Maintenance includes rectification, replacement of defective equipment/ structures/conducting materials/ Insulators etc.

b) Metering Bay:

Location: Interface meters for energy accounting & billing shall be installed at the APTRANSCO/AP DISCOM Grid SS end which would be the Interconnection point.

Cost bearing: The generator shall bear the entire cost of interface metering & allied equipment.

Ownership: The generator shall own the interface meters.

Maintenance: The generator shall maintain the meters and allied equipment. Maintenance includes rectification, and replacement of defective meters and allied equipment. The maintenance work must be done in coordination with APTRANSCO/AP DISCOM.

c) Terminal Bay:

Cost bearing: The generator shall bear the entire cost of the terminal bay at the Grid SS end.

Ownership: The ownership of the terminal bay at grid SS belongs to the generator.

Maintenance: As the terminating bay falls in the premises of the APTRANSCO/AP DISCOM, APTRANSCO/AP DISCOM alone has to operate and maintain the terminal bay of dedicated power evacuation line. The generator shall pay APTRANSCO/AP DISCOM for the **operation and maintenance of the bays** at the APTRANSCO/AP DISCOM substation.

Any costs related to the replacement of equipment or spares in case of failure shall be borne by the generator.

2. If the Generating company/Developer chooses to transfer the ownership of the dedicated transmission line, the following shall be followed.

a) **Metering Bay:**

Location: Interface meters for energy accounting & billing shall be installed on the outgoing feeder at the Generator premises, which would be the Interconnection point. If pooling bus is not made available, the metering shall be installed at incoming feeder of APTRANSCO/AP DISCOM grid SS.

Cost bearing: The generator shall bear the entire cost of interface metering & allied equipment.

Ownership: The generator shall own the interface meters.

Maintenance: The generator shall maintain the meters and allied equipment. Maintenance includes rectification, and replacement of defective meters and allied equipment. The maintenance work must be done in coordination with APTRANSCO/AP DISCOM.

b) **DEDICATED TRANSMISSION LINE & BAY:-**

Ownership: The ownership of the dedicated transmission line from Interconnection point of Pooling SS/Pooling bus to APTRANSCO/AP DISCOM grid, including terminal bay at grid SS shall be transferred to APTRANSCO / AP DISCOM shall be transferred to APTRANSCO, duly following the procedure in vogue and T.O.O Ms.No. 2558, Dated: 26-09-2022 and amendment issued time to time. The assets to be transferred shall be free from mortgages, loans, and any other litigations etc.

Maintenance: The APTRANSCO/AP DISCOM shall maintain the dedicated transmission line and bay.

Note: APTRANSCO/AP DISCOM shall have the liberty to use the dedicated transmission line(s) that are handed over, for all practical purposes and system improvement/strengthening.

e) Maintenance charges of Transmission Line and Terminal bay (for cases Where Generator Retains Ownership)

The Generator may also request APTRANSCO/ AP DISCOM (whichever is applicable) to maintain the line and terminal bay. In such cases, if the transmission line and terminal bay are maintained by the APTRANSCO/ AP DISCOM (whichever is applicable), the cost of maintenance of the line shall be borne by the Generator.

Provided that the metering shall be in line with 2.12 (d)(1)(b)

The charges are based on the methodology stipulated in clause 2.12(g). The details regarding the bay arrangements and the detailed charges shall be laid down in the Site Responsibility Schedule.

- f)** The generator or developer must pay for any energy consumed for these excluded purposes at the tariff determined by the relevant authority. Separate billing and compliance with established regulations are mandatory for such consumption.

g) Methodology for the O&M Expenses and Escalation:

The O&M expenses shall be in line with the Cost Data/ SSR data (whichever is applicable). The following table mentions the methodology to be used for calculating the O&M expenses and escalation:

S.No	Category	Base level	Escalation
1	Transmission Network for APTRANSCO / Distribution network for AP DISCOM	1.5 % of the actual capital expenditure at the time of commissioning of transmission system.	Weighted average index with 60 % weightage to Wholesale Price Index and 40 % to Consumer Price Index

The above methodology is as per the CERC regulations.

The maintenance work will not cover the supply of any equipment or spares, including emergency replacements. In case the services of the manufacturers or any outside agency are required on any particular occasion which cannot be carried out by APTRANSCO/ AP DISCOM (whichever is applicable) personnel, APTRANSCO/ AP DISCOM (whichever is applicable) shall arrange for the same at the applicant's cost, post prior concurrence.

A detailed schedule of the O&M activities and responsibilities shall be included in the Site Responsibility Schedule.

(Applicable for Case 2(T) only):

a) Agreement to pay Monthly Transmission Tariff:

_____ declares that they shall pay the Monthly Transmission Tariff including APSLDC charges for use of Intra-State Transmission System.

b) Agreement to Additional costs:

_____ declares that they shall pay the cost towards modifications/alterations to the infrastructure of APTRANSCO, as the case may be, for accommodation of the proposed connection, as specified in the approval of APTRANSCO furnishing connection details.

c) Agreement to pay for Damages:

_____ declares, as per mutual agreement, that they shall pay or make good for any damages, if incurred, caused by the customer to the property of the APTRANSCO, as the case may be, which has been notified by the APTRANSCO, as the case may be, within reasonable time of its occurrence, during the course of control, operation and maintenance of the equipment.

d) Bay and Line maintenance charges:

(i) Line maintenance charges

The line and associated equipment up to the interconnection point / isolating device at the connection point shall be maintained by the user.

(ii) Bay maintenance charges

As the terminating bay falls under the premises of the APTRANSCO, APTRANSCO alone shall operate and maintain the line terminal bay of dedicated lines at the APTRANSCO substation. The user shall pay to APTRANSCO for the operation and maintenance of the bays at the APTRANSCO substation. Any costs related to replacement of equipment or spared in case of failure shall be borne by the user.

APTRANSCO shall have the right to recover the operation and maintenance charges for the terminal bay. The charges are based on the methodology

stipulated in clause 2.13.d.(iii). The details regarding the bay arrangements and the detailed charges shall be laid down in the Site Responsibility Schedule.

(iii) Methodology for O&M expenses and Escalation

The O&M expenses shall be in line with the Cost Data/ SSR data (whichever is applicable). The following table specifies the methodology to be used for calculating the O&M expenses and escalation:

S.No	Category	Base level	Escalation
1	Transmission Network for APTRANSCO	1.5 percent of the actual capital expenditure at the time of commissioning of transmission system	Weighted average index with 60 % weightage to Wholesale Price Index and 40 percent to Consumer Price Index

The above methodology is as per the CERC regulations. The maintenance work shall not cover supply of any equipment or spares, including emergency replacements. In case the services of the manufacturers or any outside agency are required on any occasion which cannot be carried out by APTRANSCO personnel, APTRANSCO shall arrange for the same at the applicant's cost post prior concurrence.

A detailed schedule of the O&M activities and responsibilities shall be included in the Site Responsibility Schedule.

(Applicable for Case 2(D1) & 2(D2)):

a) Agreement to pay Monthly Transmission Tariff:

_____ declares that they shall pay the Monthly Transmission Tariff/Wheeling Tariff including APSLDC charges for use of Intra-State Transmission System. The commercial arrangement for evacuation/transmission of power shall be governed by their respective commercial agreements with APTRANSCO.

(Applicable for Case 3(C)):

a) Terminal Bay & Dedicated Transmission Line:

The service line and terminal bay shall be the property of the Licensee, which shall maintain as its own. The Licensee shall also have the right to use the service line for the supply of energy to any other person(s)/Discoms / other licensee/ entity etc.

However, assets built by consumers on a turnkey basis for the service line, instead of paying service line charges, shall be transferred to APTRANSCO/APDISCOM through a formal gift/donation deed. These assets shall be free from mortgages, loans, and any other litigation.

b) Metering Bay:

Ownership: All Meters and other equipment shall remain with Licensee, shall be and continue to be at all times the property of the Licensee.

Location: At consumer premises.

Maintenance: The consumer shall not interfere in any manner with the property of the Licensee and shall be fully responsible for the safety of the Licensee's property at the consumer's premises.

In the event of any loss or damage caused to Licensee's property by any act, neglect, or default of the consumer, his servants or persons employed by him or due to any reason other than force-majeure conditions, the consumer shall compensate the Licensee for the cost of necessary repairs or replacement as may be assessed by the Licensee. In addition, the consumer shall pay penalties prescribed or lawfully, due to the Licensee for unauthorized interference with the Licensee's property or seals, within thirty days of the issue of the bill, in this regard.

Non-payment of such bill by the consumer will entail all the consequences attendant on the failure to pay the Monthly bill for current consumption.

2.13 General guidelines on Protection

The parties agree and confirm that the connection with Intra-State Transmission System shall comply with following minimum technical design criteria regarding System parameters and protection.

i) Grid Parameters Variations – General:

The parties shall ensure that plant and apparatus requiring service from, or providing service to, the In-Sts is of such design and construction that ensures satisfactory operation, of such plant and apparatus which will not be obstructed by variation in instantaneous values of system frequency and voltage from their nominal values and that such plant and apparatus shall not induce any adverse effect on the In-Sts.

ii) Grid Parameters -Frequency Variation:

Rated frequency of the system shall be 50.0 Hz and _____ shall make all possible efforts to ensure that the grid frequency always remains within the frequency band as specified by IEGC and any other regulations as may be specified by the appropriate authority from time to time.

iii) Grid Parameters -Voltage Variation:

The variations of voltage may not be more than the voltage range specified as per Clause 16.3 and Clause 25.27 of State Electricity Grid Code Regulation 2018 and its amendments.

A generating unit shall be provided with an Automatic Voltage Regulator, protective devices, and safety devices.

iv) Protection System:

Protection System shall be designed to reliably detect fault on various abnormal conditions and provide an appropriate means and location to isolate the equipment or system automatically. The protection system must be able to detect power system faults within the zone. The protection system should be able to detect abnormal conditions such as equipment failures or open phase conditions. Further, the following shall also be applicable:

- Every Element of the power system shall be protected by the standard protection system having the required reliability, selectivity, speed, discrimination, and sensitivity. Where failure of a protective relay in the

user's system has substantial impact on the grid, the user shall connect an additional protection as back up protection besides the Main protection.

- Notwithstanding the protection systems provided in the grid, the user shall provide requisite protections for safeguarding their system from faults originating in the grid
- Bus bar protection and Breaker Fail protection or Local Breaker Back-up Protection shall be provided wherever stipulated in the regulations.
- Special protection Scheme such as Under Frequency relay for Load shedding, voltage instability, angular instability, generation backing down or Islanding Schemes may also be required to be provided to avert system disturbances.
- Protection co-ordination issues shall be finalized at regional levels by Regional Electricity Board/Regional Power Committee and for Intra-State lines by STU.
- The user shall develop protection manuals conforming to various standards for the reference and use of its personnel.
- The protection systems shall be provided by all transmission licensees and users to isolate the faulty equipment and protect the other components against all types of faults, internal / external to them, within the specified fault clearance time with reliability, selectivity, and sensitivity.
- In case of APTRANSCO network, The general philosophy of 220kV & above transmission lines protection shall be as per “Recommended Methodology for Relay Settings of Uncompensated Transmission Lines” furnished in the Report of Task Force on Power System Analysis Under Contingencies. However, the procedure for calculation of zonal reactive reaches shall be as per existing APTRANSCO standards.
- In case of connection is at 132 kV level, the general protection philosophy of 132 kV transmission lines shall be as per APTRANSCO standards.
- In case the connection is at 33kV level, the transmission/ distribution line protection shall be as per the existing APTRANSCO/ AP DISCOM standards. For protection of 33 kV feeders connected to the transmission/

distribution substation, the user shall provide numerical based directional 3 O/L & 1 E/F relays with instantaneous element.

- Provided that all users or transmission licensees shall establish protection systems as specified by the competent Authority under the provisions of the Act, 2003
- Additional Protection System shall be provided by the user as recommended by the STU/SRPC, if it is felt that the existing protection system is inadequate to meet the technical and protection requirements as stipulated in the AP Grid Code Regulation, 2018 as amended from time to time.
- 220kV and 400kV feeders shall have single phase auto reclose facility at both ends.
- Periodical testing of the protection settings shall be done for the bays at the user's end in the presence of APTRANSCO / AP DISCOM (officials). User shall ensure the periodical maintenance and testing of equipment and relays at user end as per norms.
- All the users shall facilitate the identification, installation and commissioning of System Protection Schemes (SPS) (including inter-tripping and run-back) in the power system to operate the transmission system closer to their limits and to protect against situations such as voltage collapse and cascade tripping, tripping of important corridors/flow-gates etc., as per IEGC Clause 5.2 (O).

v) Sub-station Equipment

All sub-station equipment of both the parties shall comply with Bureau of Indian Standards/International Electro Technical Commission (IEC)/ IEEE /Technical specification of Licensee, prevailing Codes of practice.

All equipment shall be designed, manufactured, and tested and certified in accordance with the quality assurance requirements as per the standards of International Electro Technical Commission or the Bureau of Indian standards.

Each connection between a user and In-Sts shall be controlled by a circuit breaker capable of interrupting, at the connection point, at the least short circuit current as advised by APTRANSCO/ AP DISCOM (whichever is applicable).

vi) **Fault Clearance Times**

The fault clearance time for primary protection schemes, for a three phase fault close to the bus-bars on the user's equipment directly connected to In-Sts and for a three phase fault close to the bus-bars on In-Sts connected to user's equipment, shall be as per the State Grid Code and APTRANSCO protection standards.

Back-up protection shall be provided for required isolation/protection in the event of failure of the primary protection systems provided to meet the above fault clearance time requirements. If a Generating Unit is connected to the intra-state Transmission System directly, it shall be capable of withstanding, until clearing of the faulty by back-up protection on the intra-state Transmission system side.

2.14 Reactive Power Management

_____ agrees that the reactive power management and/or other facilities shall be provided, in the areas prone to lower high voltage systems close to the load points thereby avoiding the need for exchange of Reactive Power to/from the intra-state Transmission System and to maintain the intra-state Transmission system voltage within the specified range.

_____ shall agree to abide by the guidelines for Reactive Power management as specified under IEGC Grid Code and also as per the regulations of CEA/CERC as amended from time to time.

The line reactors may be provided to control temporary over voltage within the limits.

Generating stations shall generate or absorbs the reactive power at the point of interconnection to grid as per the IEGC Grid code, CEA, Hon'ble APERC and Hon'ble CERC regulation issued from time to time.

The additional reactive compensation to be provided by the user shall be indicated by APSLDC/APTRANSCO / AP DISCOM (whichever is applicable) for implementation.

2.15 SCADA and Communication Facilities

_____ agrees to install and maintain a reliable and efficient speech and data communication system to facilitate necessary communication and data telemetry to APSLDC, in accordance with IEGC, APERC orders, and relevant TOOs in vogue, for supervision and control of the State Grid under normal and abnormal conditions.

_____ agrees to bear the entire cost of installation and maintenance of the said communication facilities.

_____ agrees to install the communication facilities as per the Data Acquisition System (DAS) Architecture approved by APSLDC.

All the users and transmission licensees, including APTRANSCO, shall maintain the required facilities at their respective ends, subject to the following:

- a) The equipment / devices for communication and data telemetry such as voltage, frequency, line flows (MW and MVAR), isolator and breaker status etc., shall be provided considering the guidelines of AP
- b) APSLDC, the interface requirements and other applicable guidelines / specifications.
- c) Communication to APSLDC shall be established through IEC 60870-5-104 protocol only.
- d) The users connected at 132 kV and above, communication & data telemetry to APSLDC shall be established through Optical Fiber only.
- e) The users connected at 33 kV and below, MPLS (Multi- protocol label switching) may be used for communication & data telemetry to APSLDC.
- f) The communication channel shall be maintained with an annual availability of at least 99.9%.

2.16 System Recording Instruments

_____ agrees to provide the recording instruments Data Acquisition System /Disturbance Recorder/ Event Logger /Fault Locator (including time synchronization equipment) as may be necessary under applicable standards within the 3 months from the date of connection agreement (in respect of existing users).

Every Generating Station and substation connected to the grid at 33kV and above shall be provided with Disturbance Recording and Event Logging facilities. All such equipment shall be provided with time synchronization facility for global common time reference.

All the users and transmission licensees shall provide all the requisite recording instruments in accordance with the agreed time schedule.

2.17 Conditions Precedent to the implementation of the Charging Clearance

New intra state transmission lines (132 KV & 220KV) and substation elements in 132 KV and 220KV substations shall obtain appropriate *charging clearance* prior to the first charging of the equipment through the grid, as per T.O.O (CE-APSLDC) Ms No: 2795, Dt. 26-04-2023. The charging clearance shall be issued by APTRANSCO/APSLDC only upon fulfillment of the following conditions:

- a) Generators / developers seeking synchronization of power plants with the grid shall apply to the Chief Engineer/ APSLDC as per the T.O.O (CE-APSLDC) Ms. No. 2268, Dt:29-09-202, along with any amendments issued from time to time.
- b) ----- shall not synchronize its generating units (including RE/BESS) with the grid prior to obtaining the FTC clearance from APSLDC. Failing which, penalty shall be levied by APTRANSCO / APDISCOMS as per the rules / procedures in vogue.
- c) The applicant has obtained all necessary statutory approvals such as PTCC, Electrical Inspectorate of CEA, CEIG, etc., from competent authority.
- d) The applicant has completed the interconnection works (feeder bay and metering bay)
- e) The applicant has complied with all obligations set out in the approvals issued by APTRANSCO/APDISCOMS.

- f) The applicant has complied with the provisions of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, APERC regulations, and their amendments from time to time.
- g) The applicant has demonstrated voice and data communication along with requisite system recording facilities to APSLDC.

2.18 Access to all parties

The parties owning the Connection Site, as the case may be, shall provide reasonable access and other required facilities to another including the APSLDC, whose equipment is proposed to be installed at the connection site for installation, operation, maintenance etc.

Written procedures and agreements shall be developed between entities to ensure that mandatory access is available to the entity concerned at the same time safeguarding the interests of All/ Both entities at the connection site.

The authorized personnel of All/ Both parties shall have the right to inspect the plant of other party at inter-connection point to ensure conformity to standards and restrictions.

2.19 Unintended and Unscheduled back-energisation

_____ shall not energize In-Sts system by injecting supply from its generators or any other source either by automatic controls or manually unless specifically requested by APTRANSCO/ AP DISCOM (whichever is applicable).

2.20 Notice

All correspondence/notices required or referred to under this Agreement shall be in writing and signed by the respective authorized signatories of the _____ and APTRANSCO/ AP DISCOM (whichever is applicable) 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 be responsible for the correspondence notices in connection with this agreement shall be informed in advance.

2.21 Settlement of Disputes and Arbitration

All differences and or/disputes between the _____ and APTRANSCO/ AP DISCOM (whichever is applicable) arising out of or in connection with these presents shall at first instance be settled through amicable settlement at the level of CEO/ SE (OMC/APTRANSCO or APDISCOM).

In the event that unresolved disputes or differences exist, such disputes shall be referred to the State Electricity Regulatory Commission for resolution.

2.22 Force Majeure

Force Majeure herein is defined as any clause which is beyond the control of the APTRANSCO /AP DISCOM (whichever is applicable) or the User as the case may be, which 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. Force Majeure events would include:

- a) Natural phenomenon including but not limited to floods, droughts, earthquake, and epidemics.
- b) War (whether declared or undeclared), invasion, armed conflict, or act of foreign enemy in each case involving or directly affecting India, revolution, riot, insurrection or other civil commotion, act of terrorism or sabotage in each case within India.
- c) Nuclear explosion, radioactive or chemical contamination or ionizing radiation directly affecting the generation station, captive generating plant or bulk consumer, inter-state transmission system of the STU or Intra-State transmission licensee other than STU, or any facility or system that is integral to and substantial for the performance to this agreement.
- d) Any event or circumstances of a nature analogous to any events set forth above within India.

Provided either party shall within fifteen (15) days from the occurrence of such a Force majeure event notify the other in writing of such cause (s).

Neither of the parties shall be liable for delays in performing obligations on account of any force majeure causes as referred to and /or defined above.

2.23 Confidentiality

The _____ and APTRANSCO/ AP DISCOM (whichever is applicable) 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 competent jurisdiction.

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.

2.24 Transfer Assignment and Pledge

The User shall not assign, sell, convey, or otherwise transfer this agreement, or any of its rights or obligations there under, without prior written consent of the APTRANSCO / APDISCOM (whichever is applicable). In case this agreement is assigned, it shall be only for the purpose of title transfer and not for the purpose of trade. The assignee or other transferee shall assume all duties and obligations arising from and after the time of the consent to transfer by APTRANSCO /APDISCOM (whichever is applicable), but such assignment or transfer shall not release the assigning or transferring user from its duties and obligations unless specifically provided in the written consent and in the assignment, conveyance or transfer document. All duties and obligations arising prior to the assignment or transfer shall remain the duties and obligations of the assignor unless all/ both the parties specifically agree otherwise.

2.25 Non-Compliance

Failure by the user to comply with the CEA regulations / APERC regulations, and with the terms of the agreement, shall lead to disconnection.

2.26 Amendment to the Connection Agreement

In case of modification to point of connection like re-allocation of bays, upgradation 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.

2.27 Validity of the Connection Agreement

This agreement shall remain valid unless All/ Both the _____ and APTRANSCO/ AP DISCOM (whichever is applicable) with mutual agreement decide to amend /modify in respect of re-allocation of bays, up gradation of voltage level etc. or terminate it without having any effect on other commercial agreements.

Any APERC/CEA order amended shall have the effect on the operation of this agreement and the same shall be applicable for the _____.

In witness whereof the parties have signed this agreement on the day, month and year first written above.

For and on behalf of

APTRANSCO/APDISCOM

Designation:

Name:

Signature:

In the presence of

1 _____ (Name & Designation) _____

2 _____ (Name & Designation) _____

For and/on behalf of

Name of the Entity:

Designation:

Name:

Signature:

In the presence of

1 _____ (Name & Designation) _____

2 _____ (Name & Designation) _____

ANNEXURE-1

Site Responsibility Schedule

Format, principles, and Procedure
(Pursuant to Clause 20.1 of the State Electricity Grid Code)

A1: SITE RESPONSIBILITY SCHEDULE

1. Introduction

Clause 6.7(2) of the Central Electricity Authority's Technical Standards for Connectivity to the Grid Regulations 2007, relates to connection conditions for connectivity with Intra State Transmission system and states the terms and conditions of the connection agreement between the user and the STU. A Site Responsibility Schedule for work relating to each connection is required to be prepared detailing responsibilities of each part for ownership, control, operation maintenance, and safety of any person at connection site.

This document describes the format, principles, and procedure for preparation of SRS for the works to be carried out for new connections modifying an existing connection to and / or use of the Intra -State Transmission System.

2. Objectives

The objective of this procedure is to ensure that the responsibilities of the parties seeking connection or modification of an existing connection with Intra State Transmission System are clearly identified in the Site Responsibility Schedule.

3. Scope and Applicability

The Site Responsibility Schedule shall be prepared for all connections to /or use of Intra State Transmission System. _____, user of the Intra State Transmission System shall comply with the following requirements.

- a) Single Line Diagram of each connection point.
- b) Site Common Drawings of each connection point.

4. Availability of copy of Format and Procedure

The Format, principles, and procedure for preparation of the site Responsibility Schedule at connection point of the intra-state Transmission/Distribution System (Pursuant to Clause 20.1 of the State Electricity Grid Code) can be obtained from Nodal Officer of STU/DISCOM as given below:

Superintending Engineer/OMC/_____,

Transmission Corporation of Andhra Pradesh Limited

(and / or)

Superintending Engineer/Operation/_____,

Andhra Pradesh State _____ Distribution Company Limited

Tel: _____ ; Mobile: _____ ; Fax : _____

E-mail: _____

The copy of application form and the procedure is also available at web-sites of APTRANSCO/AP DISCOM and can be downloaded from website.

5. Operational responsibility

The Nodal Officer of STU/DISCOM nominated by the APTRANSCO/APDISCOM shall be responsible for coordination and implementing the procedure of Site Responsibility Schedule and ensuring that the process is carried out on a continuous basis. He shall also coordinate with other transmission licensees for the connectivity with Intra-State Transmission System.

6. Safety

The responsibility of parties for safety at the connection point and system connected thereto shall be clearly indicated in the Site Responsibility Schedule so that there are no chances of misunderstanding and role of each party is clearly defined. The safety responsibility shall be defined in unambiguous terms.

7. Responsibility for preparation of Site Responsibility Schedule

Site Responsibility Schedule shall be prepared by the APTRANSCO/APDISCOM with whose system the _____ seeks to connect. The Site Responsibility Schedule shall be prepared and finalized by the APTRANSCO/APDISCOM in consultation and in agreement with the _____ seeking connection with Intra State Transmission schedule.

At the connection site where equipment is installed, _____ shall furnish required data to the APTRANSCO/APDISCOM and the APTRANSCO/APDISCOM shall prepare Site Responsibility Schedule. At a generating station, the APTRANSCO/APDISCOM shall furnish the necessary data to the generating company who shall prepare site Responsibility Schedule.

The Site Responsibility Schedule shall be signed by the authorized person of the APTRANSCO/DISCOM and the authorized personnel of the generating company.

8. Site Responsibility Schedule contents.

Following information shall be included in the Site Responsibility Schedule:

- a. Schedule of High Voltage (HV) Apparatus
- b. Schedule of plant, Low voltage (LV) / Medium Voltage (MV) Schedule:
- c. Services and supplies
- d. Schedule of telecommunications and measurement apparatus
- e. Safety rules applicable to each plant/apparatus.

The Site Responsibility Schedulenecessarily to provide responsibility with regard to following for each item of equipment installed at the connection site:

- a. The ownership of Plant/ apparatus
- b. The responsibility for control of Plant/ apparatus
- c. The responsibility for maintenance of Plant/ apparatus
- d. The responsibility for operation of Plant/ apparatus
- e. The manager of the Site
- f. The responsibility for all matters relating to safety of persons at Site.

9. Single Line Diagram

Single Line Diagram shall be prepared by parties for each connection point detailing all equipment at the connection point.

Single Line Diagram shall clearly indicate the schematic representation of the all HV/EHV apparatus and the connections to all external circuits at the connection point. The Single Line Diagram shall incorporate standard numbering nomenclature and labeling of the

APTRANSCO/APDISCOM. Single Line Diagram shall be furnished for each connection point by _____ to the APSLDC.

In the event of a proposal to change any equipment, the concerned parties shall intimate the necessary changes required to STU/DISCOM and all other Users. Single Line Diagram shall be updated appropriately by the concerned parties and a copy of the same shall be provided to the APSLDC.

10. Site Common Drawings

_____ shall agree to prepare Site Common Drawings showing layout of equipment, electrical layout drawings, common protection/control drawings and common service drawings as specified in Clause 20.3 of State Grid Code.

11. General Conditions regarding Equipment Maintenance

In case of a generator or a transmission licensee, the maintenance of the line and associated equipment, till the interconnection point / Isolating device at the connection point, shall be under the scope of the user.

As the terminating bay falls under the premises of the STU/ DISCOM, APTRANSCO / AP DISCOMs (whichever is applicable) alone must operate and maintain the line terminal bay of dedicated lines at the STU/ DISCOM substation. Besides meeting the cost of equipment or spares required for replacement of failed or defective equipment, the generator must pay for the operation and maintenance of the bays at the APTRANSCO/ AP DISCOMs (whichever is applicable) substation.

APTRANSCO/ AP DISCOMs (whichever is applicable) have the right to recover the operation and maintenance charges for the terminal bay

A proforma related to the activities has been enclosed with the document (Schedule-2). Details shall be added according to the site conditions and maintenance responsibility shall be indicated.

The maintenance work will not cover supply of any equipment / spares including emergency replacements. In case the services of the manufacturers or any outside agency are required on any particular occasion which cannot be carried out by APTRANSCO/ AP DISCOMs (whichever is applicable) personnel, APTRANSCO/ AP DISCOMs (whichever is applicable) shall arrange for the same at the applicant's cost post prior concurrence.

12. Access to Connection Site

The parties owning the Connection Site shall provide reasonable access and other required facilities to APTRANSCO/AP DISCOM (whichever is applicable) whose equipment is installed or proposed to be installed at the Connection Site for installation, operation, maintenance, etc.

Written procedures and agreements shall be developed between the parties to ensure that mandatory access is available to APTRANSCO/AP DISCOM (whichever is applicable) or _____ at the same time safeguarding the interests of the parties at the Connection Site.

General Format of Site Responsibility Schedule **Schedule -1**

Name of Transmission Licensee	---
Name & Designation of coordinating officer of Transmission Licensee/ Distribution Licensee (whichever is applicable)	
Contact Address Telephone Mobile Fax No E-mail Id	
Name of Sub-Station where inter- connection with In-Sts is proposed	
Voltage of Connection with intra –State Transmission System	
Name of User (including other transmission /Distribution licensee/ Discom) seeking connection with In-Sts.	
Name & Designation of co-ordinating officer of User	
Contact Address Telephone /Mobile/ Fax No E-mail Id	

Schedule -2: Activity Responsibility

Item of Plant/Apparatus	Plan Owner	Safety Responsibility	Control Responsibility	Operation Responsibility	Maintenance Responsibility	Remark
Give details of all equipment at connection site	-----Details as per filled in Performa enclosed herewith-----					
Metering System	-----Details as per filled in Performa enclosed herewith-----					
Name, designation and Contact details (Telephone/Mobile/E-mail) of authorized officer responsible for activity on behalf of Transmission Licensee						
Signature						
Name, designation, and Contact details (Telephone/Mobile/E-mail) of authorized officer responsible for activity on behalf of user						
Signature						

Date:

Details of all formats for Connection Agreement

Details of Energy Meters.

Schedule-3

Sr.No.	Name of feeder where installed	Type of Meter	Make and Model	Class of Meter	Sr.No. Meter.	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1								
2								
3								
4								

Type of Meter

- 1) Panel Meter (Import / Export)
- 2) ABT Main and Check Meter
- 3) Billing Energy Meters
- 4) Express Feeder Separated Energy Meter.

Authorized Signatory (APTRANSCO/AP DISCOM)

Authorized Signatory (User)

Details of Capacitive Voltage Transformers (Metering)**Schedule -4**

Sr. No.	Name of Feeder where installed	Make	Voltage Ratio	Class	No. of Cores	Burden in VA	Insulation Level	Type	Sr. No.	Lab. Testing No.	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1													
2													
3													
4													
5													
6													

Type: CVT / PT & Model No.**Authorized Signatory (APTRANSCO/AP DISCOM)****Authorized Signatory (User)**

Details of Electro Magnetic Voltage Transformers (Protection)

Schedule -5

Sr.No.	Name of Feeder where installed	Make	Voltage Ratio	Class	No.of Cores	Burden in VA	Insulation Level	Type	Sr.No.	Lab. Testing No.	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1													
2													
3													
4													
5													
6													

Type: CVT / PT & Model No.

Authorized Signatory (APTRANSCO/AP DISCOM)

Authorized Signatory (User)

Details of Current Transformers (Metering)**Schedule -6**

Sr. No.	Name of Feeder where installed	Make	Voltage	Ratio	No. of Cores	Class	Burden in VA	Sr.No.	Lab. Testing No.	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1												
2												
3												
4												
5												
6												

Type CVT / PT & Model No.**Authorized Signatory (APTRANSCO/AP DISCOM)****Authorized Signatory (User)**

Details of Current Transformers (Protection)**Schedule -7**

Sr. No.	Name of Feeder where installed	Make	Voltage	Ratio	No. of Cores	Class	Burden in VA	Sr. No.	Lab. Testing No.	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1												
2												
3												
4												
5												
6												
7												

Type CVT / PT & Model No.**Authorized Signatory (APTRANSCO/AP DISCOM)****Authorized Signatory (User)**

Details of Circuit Breakers.**Schedule -8**

Sr. No.	Name of Line / TF	Make	Type	Model	Breaker No.	Normal Current in AMP	Capacity in KV	Rupturing Current	DC Voltage	Working Pressure	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1													
2													
3													
4													
5													
6													

Breaker Type: MOCB, SF6, ABCB etc.

Authorized Signatory (APTRANSCO/AP DISCOM)

Authorized Signatory (User)

Details of Isolators.**Schedule -9**

Sr.No.	Name of Line / TF Where Provided	Make	Voltage	Capacity in AMP.	Type	Sr. No	With ES	Without ES	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1											
2											
3											
4											
5											

Type: Double Break (DB), Centre Break (CB) etc.

Authorized Signatory (APTRANSCO/AP DISCOM)

Authorized Signatory (User)

Details of LAs.**Schedule -10**

Sr.No.	Name of Line / TF Where Installed	Make	Type	Voltage	Sr.No.			Equipment Owner	Equipment Responsibility	Maintenance Responsibility
					R-Ph	Y-Ph	B-ph			
1										
2										
3										

Authorized Signatory (APTRANSCO/AP DISCOM)**Authorized Signatory (User)**

Details of Wave Trap.**Schedule -11****Details of Wave Trap (W.T)**

Sr.No.	Name of Line / TF Where installed	Make	Capacity / Value	Sr.No. of C.C.			Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1									
2									

Authorized Signatory (APTRANSCO/AP DISCOM)**Authorized Signatory (User)**

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAYS CONNECTING

Details of Control & Relay (C&R) Panel

Schedule -12

Sr.No.	Name of Line / TF Where installed	Make	Sr. No. of Panel	Diff. Protn. Make / Type / Sr.No.	Dist. Protn. Make / Type / Sr.No.	Back up Protn. Make / Type / Sr.No.	Equipment Owner	Equipment Responsibility	Maintenance Responsibility
1									
2									

Authorized Signatory (APTRANSCO/AP DISCOM)

Authorized Signatory (User)