सत्यमेव जयते

The Gazette of Meghalaya

EXTRAORDINARY
PUBLISHED BY AUTHORITY

No. 130 **Shillong, Thursday, August 13, 2026** **22nd Shravana, 1948 (S. E.)**

PART-I

GOVERNMENT OF MEGHALAYA
PROGRAMME IMPLEMENTATION & EVALUATION DEPARTMENT

NOTIFICATION

The 10th August, 2026.

No.PIED/PIA/08643/2025/NF/1. - In continuation to this Department's Letter No.PIA.15/2014/98 dated 29th July, 2026, the tenure of the following persons engaged on Contractual Service for the Project Monitoring Unit attached in Member of Parliament Local Area Development Scheme (MPLADS) under Programme Implementation & Evaluation Department is renewed at the fixed pay/remuneration as indicated against each for another 1 (one) year with effect from 1st April, 2026 to 31st March, 2027.

Sl. No.	Name	Designation	Rate or Fixed Pay/Remuneration
1	Shri R.M German Nongtdu	Executive Engineer	₹ 45,000/- p/m (Rupees Forty five thousand only).
2	Vacant	Junior Engineer	₹ 25,000/- p/m (Rupees Twenty five thousand only).
3	Kum. Aroma Lawai	Data Entry Operator	₹ 20,000/- p/m (Rupees Twenty thousand only)
4	Kum. Ranu D. Momin	Multi Task Assistant	₹ 18,000/- p/m (Rupees Eighteen thousand only).
5	Kum. Ardrisha Marboh	Multi Task Assistant	₹ 18,000/- p/m (Rupees Eighteen thousand only).

SAMPATH KUMAR,
Additional Chief Secretary to the Govt. of Meghalaya,
Programme Implementation & Evaluation Department.

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PART-IIA

MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION

NOTIFICATION

The 10th August, 2026.

No. MSERC/SGC/2021/155.-

Preamble

1. The Commission vide Notification No. MSERC/MGC/08/2011/ 08, dated 27th April 2012, had notified the Meghalaya State Electricity Regulatory Commission (State Grid Code) 2012 in line with Indian Electricity Grid Code (IEGC).
2. The State Grid Code is applicable to all State Transmission Utility, SLDC and Users, who are connected to the State Transmission network.
3. The Central Electricity Regulatory Commission (CERC) vide Notification dated 29.05.2023, had notified the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023.
4. Clause (h) of sub-section (1) of Section 86 of the Electricity Act 2003, stipulates that the State Commissions are mandated to specify the State Grid Code consistent with the Grid Code specified by the Central Commission under clause (h) of sub-section (1) of Section 79 of the Act.
5. Therefore, in exercise of powers conferred under clause (zp) of section 181 read with clause (h) of sub-section (1) of section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling in this behalf, vide Public Notice No. MSERC/SGC/2021/82 dated 9th June 2026 it had issued and posted the *Draft*

*Meghalaya State Electricity Regulatory Commission (State Grid Code) Regulations, 2026***,** *in the website of the Commission inviting* comments/suggestions/objections from the stakeholders by 29th June 2026.

6. Thereafter, the Commission after receiving a request had extended the last date for submission of comments/suggestions/objections till 8th July 2026.
7. In response, the Commission received submissions from the following stakeholders within the stipulated date:
   1. Byrnihat Industries Association (BIA)
   2. Meghalaya Power Transmission Corporation Limited (MePTCL)
   3. Senior Electrical Inspectorate.
8. Subsequently, Public Hearing was conducted on 24th July 2026 via Hybrid Mode, to elicit the views of the public and stakeholders on the *Draft Meghalaya State Electricity Regulatory Commission (State Grid Code) Regulations, 2026.* The Commission has given due consideration to the suggestions/objections/comments received from the stakeholders.
9. Accordingly, in exercise of powers conferred under clause (zp) of section 181 read with clause (h) of sub-section (1) of section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling in this behalf, the Meghalaya State Electricity Regulatory Commission hereby makes the Regulations namely *Meghalaya State Electricity Regulatory Commission (State Grid Code) (6 of 2026) Regulations, 2026*

ORDER

After considering the comments/suggestions/objections of the stakeholders on the Draft Regulations, the Commission hereby approves the *Meghalaya State Electricity Regulatory Commission (State Grid Code) (6 of 2026) Regulations, 2026*

Sd/-
Chandan Kumar Mondol,
Chairman

MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION

SHILLONG

NOTIFICATION

Dated: 10th August 2026

No. MSERC/SGC/2021/155: In exercise of powers conferred under clause (zp) of section 181 read with clause (h) of sub-section (1) of section 86 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling in this behalf, the Meghalaya State Electricity Regulatory Commission after previous publication hereby makes the Regulations namely Meghalaya State Electricity Regulatory Commission (State Grid Code) (6 of 2026) Regulations, 2026.

CHAPTER-1

PRELIMINARY

1.1. SHORT TITLE, EXTENT AND COMMENCEMENT

1.1.1. These regulations shall be called the Meghalaya State Electricity Regulatory Commission (State Grid Code) (6 of 2026) Regulations, 2026.

1.1.2. These regulations shall come into force from the date of its publication in the Gazette of Meghalaya.

1.1.3. These regulations shall apply to the STU, Users of intra-state transmission system and State Load Despatch Centre in the state of Meghalaya.

1.2. DEFINITIONS

In these Regulations the following words and expressions shall, unless the subject matter or context otherwise requires or is inconsistent therewith, bear the following meanings:

1.2.1. **"Act"** means the Electricity Act, 2003 (Act No. 36 of 2003) as amended from time to time;

1.2.2. **"Active Energy"** means the electrical energy supplied or consumed during a time interval, being an integral of Active power with respect to time measured in units of watt-hours or Standard multiples thereof. One kilowatt-hour (kWh) is one unit;

1.2.3. **"Active Power"** means the electric power, being the product of root mean square (rms) voltage and root mean square(rms) current and cosine of the phase angle between the voltage and current vectors measured in units of Watts (W) or in standard multiples thereof;

1.2.4. **"Ancillary Services"** in relation to a power system operation, means the services necessary to support the grid operation in maintaining power quality, reliability and security of the grid and includes Primary Reserve Ancillary Service, Secondary Reserve Ancillary Service, Tertiary Reserve Ancillary Service, active power support for load following, reactive power support, black start and such other services as defined in these regulations;

1.2.5. **"Apparatus"** means all the electrical apparatus like machines, fittings, accessories and appliances in which electrical conductors are used;

1.2.6. **"Apparent Power"** means the product of voltage and alternating current measured in unit of volt-amperes and standard multiples thereof;

1.2.7. **"Appropriate Load Dispatch Centre"** means the 'National Load Dispatch Centre'(NLDC) or 'Regional Load Dispatch Centre' (RLDC) or the 'State Load Dispatch Centre' (SLDC) and includes any 'Area Load Dispatch Centre' (ALDC) attached to SLDC as the case may be;

1.2.8. **"Appropriate Transmission Utility"** means the "Central Transmission Utility" (CTU) or the "State Transmission Utility" (STU), as the case may be;

1.2.9. **"Area of Supply"** means the Area within which a Distribution Licensee is authorized by his license to supply electricity;

1.2.10. **"Area Load Dispatch Centre (ALDC)"** means a load despatch centre(s) established by distribution licensee for load despatch and control in a particular area of the State which is within the Control Area of SLDC;

1.2.11. **"Area Control Error (ACE)"** shall have the same meaning as defined in IEGC.

1.2.12. **"Authority"** means the Central Electricity Authority (CEA) referred to in sub-section (1) of Section 70 of the Act;

1.2.13. **"Automatic Generation Control (AGC)"** means a mechanism that automatically adjusts the generation of a control area to maintain its interchange schedule plus its share of frequency response;

1.2.14. **"Automatic Load Control (ALC)"** means a mechanism that automatically adjusts the load of a control area to maintain its Interchange Schedule and its effective role of frequency control;

1.2.15. **"Automatic Voltage Regulator (AVR)"** means a continuously acting automatic excitation control system to control the voltage of a Generating Unit measured at the generator terminals;

1.2.16. **"Auxiliary Energy Consumption"** shall have the same meaning as defined in the Tariff Regulations;

1.2.17. **"Available Transfer Capability (ATC)"** means the available power transfer capability across control areas or across regions or between ISTS and state network or between cross-border interconnections declared by the concerned load despatch centre for scheduling transactions in a specific direction with

due consideration for the network security. Mathematically, ATC is the Total Transfer Capability less Transmission Reliability Margin;

1.2.18. **"Available Capacity"** shall have the same meaning as defined in the DSM Regulations;

1.2.19. **"Backing Down"** SLDC instructions or NERLDC instructions conveyed through SLDC for reduction of generation from generating unit under abnormal conditions such as high frequency, low system demand or network constraints.

1.2.20. **"Beneficiary"** a person who has share in State Generating Stations or a bilateral transaction including open access users;

1.2.21. **"Bilateral Transaction"** means a transaction, other than collective transaction, for exchange of power between a specified buyer and specified seller directly or through a trading licensee or at a Power Exchange;

1.2.22. **"Blackout state"** means a condition at a specific time where a part or all the operations of the power system have got suspended;

1.2.23. **"Black Start Procedure"** means the procedure necessary to recover from a partial or a total blackout in the state;

1.2.24. **"Bulk Consumer"** means a Consumer who avails supply at voltage of 33 kV or above;

1.2.25. **"Buyer"** means a licensee or consumer or captive user or company located within the State, receiving power by using the State-grid including such system when it is used in conjunction with inter-State transmission system and whose scheduling and/or metering and energy accounting is coordinated by the SLDC in accordance with the State Grid Code;

1.2.26. **"Captive Power Plant (CPP)"** means a Power Plant set up by any person to generate electricity for his own use and includes a power plant set up by any co-operative society or association of persons for generating electricity primarily for use of members of such co-operative society or association;

1.2.27. **"CEA Grid Standards"** means the Central Electricity Authority (Grid Standards) Regulations, 2010 and its amendment or re-enactment;

1.2.28. **"CEA Technical Standards for Communication"** means the Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020 and its amendment or re-enactment;

1.2.29. **"CEA Technical Standards for Connectivity"** means the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and its amendment or re-enactment;

1.2.30. **"CEA Technical Standards for Construction"** means the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 and its amendment or re-enactment;

1.2.31. **"Central Commission"** means the Central Electricity Regulatory Commission (CERC) referred to in sub-Section (1) of section 76 of the Act;

1.2.32. **"Central Transmission Utility (CTU)"** means any Government Company which the Central Government may notify under sub section (1) of section 38 of the Act.

1.2.33. **"Check Meter"** means a meter, which shall be connected to the same core of the Current Transformer (CT) and Voltage Transformer (VT) to which main meter is connected and shall be used for accounting and billing of electricity in case of failure of main meter;

1.2.34. **"Communication System"** shall have the same meaning as defined in the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 and its amendment or re-enactment;

1.2.35. **"Commission"** means the Electricity Regulatory Commission for the State of Meghalaya;

1.2.36. **"Congestion"** means a situation where the demand for transmission capacity or power flow on any transmission corridor exceeds its Available Transfer Capability;

1.2.37. **"Connectivity"** means the state of getting connected to the InSTS by a generating station, including captive generating plant or User or an Intra-State Transmission Licensee;

1.2.38. **"Connection point"** means an electrical point of connection between the Transmission System and the User System;

1.2.39. **"Connection Agreement"** means an agreement between STU and any other person(s) setting out the terms and conditions relating to connection to and/or use of the Intra-State Transmission System in terms of Open Access Regulations;

1.2.40. **"Consumer"** means any person who is supplied with electricity for his own use by a licensee or the Government or by any other person engaged in the business of supplying electricity to public under the Act or any other law for the time being in force and includes any person whose premises are for the time being connected for the purpose of receiving electricity with the works of a licensee, the Government or such other person, as the case may be;

1.2.41. **"Control Area"** is an electrical system bounded by interconnections (tie lines) metering and telemetry which controls its generation and / or load to maintain its interchange schedule with other control areas and contributes to regulation of frequency as specified in these regulations;

1.2.42. **"Collective Transaction"** shall have the same meaning as defined in the Central Electricity Regulatory Commission (Power Market) Regulations, 2021 and its amendment or re-enactment;

1.2.43. **"Cold Start"** in relation to steam turbine means start up after a shutdown period exceeding 72 hours (turbine metal temperatures below approximately 40% of their full load values);

1.2.44. **"Date of Commercial Operation (COD)"** shall have the same meaning as specified under Chapter 5 of this Regulation;

1.2.45. **"Declared Capacity (DC)"** in relation to a generating station means, the capability to deliver ex-bus electricity in MW declared by such generating station in relation to any time-block of the day as defined in this Regulation or whole of the day, duly taking into account the availability of fuel or water, and subject to further qualification as per provisions of Chapter-10 of these regulations;

1.2.46. **"Demand"** means the demand of Active Power in MW and Reactive Power in MVAR of electricity unless otherwise stated;

1.2.47. **"Demand Response"** means variation in electricity usage by the end consumers or by a control area manually or automatically, on standalone or aggregated basis, in response to the system requirements as identified by the State Load Despatch Centre;

1.2.48. **"Despatch Schedule"** means the ex-power plant net MW and MWh output of a generating station, for a time block, scheduled to be injected to the Grid from time to time;

1.2.49. **"Deviation"** in a time block for a Seller of electricity means its total actual injection minus its total scheduled generation; and for a Buyer of electricity means its total actual drawal minus its total scheduled drawal, and shall be computed in accordance with these Regulations;

1.2.50. **"DSM Regulations"** means the Meghalaya State Electricity Regulatory Commission (Intra-State Deviation Settlement Mechanism and Related Matters) Regulations, 2025 and its amendments or re-enactment;

1.2.51. **"Disturbance Recorder (DR)"** means a device for recording the behaviour of the pre-selected digital and analog values of the system parameters during an event;

1.2.52. **"Data Acquisition System (DAS)"** means a system for recording the sequence of operation in time, of the relays or equipment as well as the measurement of pre-selected system parameters;

1.2.53. **"df/dt Relay"** is a relay which operates when the rate of change of system frequency (over time) goes higher than a specified limit and initiates load shedding;

1.2.54. **"Distribution system"** is the system of wires and associated facilities between the delivery points on the transmission lines or the generating station connection and the point of connection to the installation of the consumers;

1.2.55. **"Drawal"** is the import / export of electrical energy from / to the grid;

1.2.56. **"Drawal Schedule"** means the summation of the station-wise ex-power plant drawal schedules from all ISGS and In-SGS and drawal from or injection into the Distribution Licensee area (State Grid) consequent to open access transactions;

1.2.57. **"Energy Charges"** means the energy charges for the generating stations whose tariffs are determined by the Commission under Section 62 of the Act;

1.2.58. **"Energy Storage System (ESS)"** in relation to the electricity system, means a facility where electrical energy is converted into any form of energy which can be stored, and subsequently reconverted into electrical energy and injected back into the grid;

1.2.59. **"Energy Accounting and Audit Meters"** means meters used for accounting of the electricity to various segments of electrical system so as to carry out further analysis to determine the consumption and loss of energy therein over a specified time period;

1.2.60. **"Event"** means an unscheduled or unplanned occurrence in the grid including faults, incidents and breakdowns;

1.2.61. **"Event Logging Facilities"** means a device for recording the chronological sequence of operations, of the relays and other equipment;

1.2.62. **"Extra High Voltage (EHV)"** means Voltage exceeding 33000 volts under normal circumstance subject to the percentage variation allowed by the Authority;

1.2.63. **"Ex- Power Plant"** means net MW or MWh output of a generating station, after deducting auxiliary consumption and transformation losses;

1.2.64. **"Fault Locator or FL"** means a device installed at the end of a transmission line to measure or indicate the distance at which a line fault may have occurred;

1.2.65. **"Flexible Alternating Current Transmission (FACTS)"** means a power electronics-based system and other static equipment that provide control of one or more AC transmission system parameters to improve power system stability, enhance controllability and increase power transfer capability of transmission systems;

1.2.66. **"Flat Frequency Control"** means a mechanism for correcting ACE by factoring in only the frequency deviation and ignoring the deviation of net actual interchange from net scheduled interchange;

1.2.67. **"Forced Outage"** means an outage of a generating unit or a transmission facility due to a fault or any other reasons which have not been planned.

1.2.68. **"Free Governor Mode of Operation"** means the mode of operation of governor where machines are loaded or unloaded directly in response to grid frequency i.e. machine unloads when grid frequency is more than 50 Hz and loads when grid frequency is less than 50 Hz. The amount of loading or unloading is proportional to the governor droop;

1.2.69. **"Generating Unit"** means

a) a unit of a generating station (other than those covered in sub-clauses (b) and (c) of this clause) having electrical generator coupled to a prime mover within a power station together with all plant and apparatus at the power station which relate exclusively to operation of that turbo-generator.

b) an inverter along with associated photovoltaic modules and other equipment in respect of generating station based on solar photo voltaic technology

c) a wind turbine generator with associated equipment, in respect of generating station based on wind energy.

d) in respect of RHGS, combination of hydro generator under sub-clause (a); or solar generator under sub-clause (b) or wind generator under sub-clause (c) of this clause;

1.2.70. **"GNA Regulations"** means the Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 and its amendments or re-enactment;

1.2.71. **"Grid"** means a High Voltage back bone system of inter-connected Transmission Lines, Sub Stations and Generating plants;

1.2.72. **"Grid Code"** means the Indian Electricity Grid Code, (IEGC) specified by the Central Commission under clause (h) of sub section (1) of Section 79 of the Act;

1.2.73. **"Grid Disturbance"** is the situation where disintegration and collapse of the grid either in part or full take place in an unplanned and abrupt manner, affecting the power supply in a large area of the region

1.2.74. **"Grid Security"** means the power system capability to retain a normal state or to return to a normal state as soon as possible, and which is characterized by operational security limits;

1.2.75. **"High voltage or HV"** means voltage greater than 400 V and does not exceed 33000 Volts under normal conditions, subject to the percentage variation allowed by the Authority;

1.2.76. **"Hot Start"** in relation to steam turbine, means the start up after a shutdown period of less than 10 hours (turbine metal temperatures below approximately 80% of their full load values);

1.2.77. **"Independent Power Producer"** means a Power Station owned by a generator who is not a part of Power and Electricity Department;

1.2.78. **"Indian Standards"** are Standards and specifications approved by the Bureau of Indian Standards;

1.2.79. **"Inertia"** means the contribution to the capability of the power system to resist changes in frequency by means of an inertial response from a generating unit, network element or other equipment that is coupled with the power system and synchronized to the frequency of the power system;

1.2.80. **"Infirm Power"** means the electricity injected into the grid prior to the date of commercial operation of a unit of the generating station;

1.2.81. **"Instrument Transformer"** means the Current Transformer (CT), Voltage Transformer (VT) and Capacitor Voltage Transformer (CVT);

1.2.82. **"Interconnecting Transformer"** means a transformer connecting EHV lines of different voltage systems;

1.2.83. **"Interface Meter"** means a meter used for accounting and billing of electricity, connected at the point of interconnection between electrical systems of generating company, licensee and consumers, directly connected to the Inter-State Transmission System or Intra–State Transmission system who have to be covered under ABT and have been permitted open access;

1.2.84. **"Intermediary Procurers"** shall have the same meaning as defined in Electricity (Amendment) Rules, 2022 and its subsequent amendment;

1.2.85. **"Inter-State Transmission System"** shall have the same meaning as defined in sub-section (36) of Section 2 of the Act;

1.2.86. **"Isolation"** means the disconnection of EHV / HV Apparatus from the remainder of the System in which that EHV / HV Apparatus is situated;

1.2.87. **"Lean Period"** means the period in a day when the electrical power demand is lowest;

1.2.88. **"License"** means a license granted under section 14 of the Act;

1.2.89. **"Licensee"** means a person who has been granted a license under section 14 of the Act;

1.2.90. **"Load"** means the Active, Reactive or Apparent power consumed by a utility/installation of consumer;

1.2.91. **"Load Crash"** sudden or rapid reduction of electrical load connected to a system that could be caused due to tripping of major transmission line(s), feeder(s), power transformer(s) or natural causes like rain etc.

1.2.92. **"Low Voltage or LV Voltage"** a voltage not exceeding 440 volts;

1.2.93. **"Main Meter"** means a meter which would primarily be used for accounting and billing of electricity;

1.2.94. **"Main protection"** means a protection equipment or system expected to have priority in initiating either a fault clearance or an action to terminate an abnormal condition in a power system;

1.2.95. **"Maximum Continuous Rating (MCR)"** means the maximum continuous output in MW at the generator terminals guaranteed by the manufacturer at rated parameters;

1.2.96. **"Merit Order"** means the order of ranking of available electricity generation in ascending order from least energy charge to highest energy charge to be used for deciding despatch instructions to minimize the overall cost of generation;

1.2.97. **"Minimum Turndown Level"** means the minimum output power expressed in percentage of maximum continuous power rating that the generating unit can sustain continuously; to be on bar and includes minimum power level as defined in CEA (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023;

1.2.98. **"Multiple Supply Consumer or MSC"** means a consumer who has a supply agreement with the distribution licensee in whose area of supply the consumer is located and also has a supply agreement with the person other than the distribution licensee under the Open Access Regulations and includes a consumer of a distribution licensee who also avails of wheeling facility for carrying the electricity from his captive generating plant to the destination of his own use;

1.2.99. **"Nadir Frequency"** means minimum frequency after a contingency in case of generation loss and maximum frequency after a contingency in case of load loss;

1.2.100. **"Net Drawal Schedule"** means the drawal schedule by Users which is the algebraic sum of all its transactions through the intra-State transmission system at InSTS periphery after deducting the transmission losses;

1.2.101. **"Net Injection Schedule"** means the injection schedule of a User which is the algebraic sum of all its transactions through the intra-State transmission system at InSTS periphery;

1.2.102. **"Off Bar Declared Capability"** means the difference between Declared Capacity and On-Bar Declared Capacity in MW;

1.2.103. **"On Bar Declared Capacity"** in relation to a generating station means the capability to deliver ex-bus electricity in MW from the units on-bar declared by such generating station in relation to any time block of the day or whole of the day, duly taking into account the availability of fuel and water and subject to further qualification in the relevant regulations;

1.2.104. **"On Bar Installed Capacity"** means the summation of name plate capacities or the capacities as approved by the Commission from time to time, of all units of the generating station in MW which are on-bar. In case of a combined cycle module of a gas or liquid fuel-based stations, the installed capacity of steam turbine shall be in proportion to the on-bar capacity of gas turbines of the module;

1.2.105. **"Open Access"** means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Commission;

1.2.106. **"Operation"** means a scheduled or planned action relating to the operation of a system;

1.2.107. **"Operational Parameters"** means the parameters for system security as specified by the system operator including frequency, voltage at station-bus, angular separation, damping ratio, short circuit level, inertia;

1.2.108. **"Outage"** means a total or partial regulation in availability due to repair and maintenance of the Transmission or Distribution or Generation facility or defect in Auxiliary System;

1.2.109. **"Part Load"** means the condition of a generating station, which is loaded but is not running at its declared availability;

1.2.110. **"Partial shutdown"** means a shutdown of a part of the system resulting in failure of power supply, either from external connections or from the healthy part of the system;

1.2.111. **"Peak period"** means a period in a day when the electrical power demand is highest;

1.2.112. **"Person"** means any company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person;

1.2.113. **"Planned outage"** means an outage of generating plant or part of the Transmission system, or part of a User System coordinated by SLDC;

1.2.114. **"Power factor"** means the ratio of Active Power (KW) to Apparent Power (KVA) Power;

1.2.115. **"Pooling Station"** means the InSTS grid sub-station where pooling of generation of connected individual generating stations is done for interfacing with the next higher voltage level;

1.2.116. **"Primary Reserve"** means the maximum quantum of power which will immediately come into service through governor action of the generator or frequency controller or through any other resource in the event of sudden change in frequency as specified in Regulation 8.6 of these regulations;

1.2.117. **"Protection"** means the scheme and apparatus for detecting abnormal conditions on a system and initiating fault clearance or actuating signals or indications.

1.2.118. **"Qualified Coordinating Agency (QCA)"** means the lead generator or any authorized agency on behalf of REGS or RHGS (as per GNA Regulations) including Energy Storage Systems connected to one or more pooling station(s) for coordinating with concerned load despatch centre for scheduling, operational coordination and deviation settlement;

1.2.119. **"Rated MW"** means the "Name plate" MW output of a Generating machine, being that output up to which the Generating machine is designed to operate;

1.2.120. **"Reactive Power"** means the product of voltage and current and the sine of the phase angle between them measured in units of volt-amperes reactive and standard multiples thereof;

1.2.121. **"Ramp Rate"** means rate of change of a generating station output expressed in %MW per minute.

1.2.122. **"Reference contingency"** means the maximum positive power deviation occurring instantaneously between generation and demand and considered for estimation of reserves;

1.2.123. **"Renewable Energy Generating Station (REGS)"** means a generating station based on a renewable source of energy with or without Energy Storage System and shall include Renewable Hybrid Generating Station;

1.2.124. **"Renewable Hybrid Generating Station (RHGS)"** means a generating station based on hybrid of two or more renewable source(s) of energy with or without Energy Storage System, connected at the same inter-connection point;

1.2.125. **"Requester"** means a person such as Generating Company including captive generating plant or Transmission Licensee (excluding State Transmission Utility) or Distribution Licensee or Bulk Consumer, who is seeking connection of his new or expanded electrical plant in the Grid at Voltage level exceeding 33 kV;

1.2.126. **"Rotational Load Shedding"** planned disconnection of customers on a rotational basis during periods when there is a significant short fall of power required to meet the total Demand;

1.2.127. **"Safety Rules"** means the rules framed by the Users and the transmission licensee to ensure safety to persons working on plant / apparatus;

1.2.128. **"Security Constrained Economic Despatch or SCED"** means optimised despatch of generating units subject to operational and technical limits of generation and transmission facilities as specified in these regulations;

1.2.129. **"Start–Up**" means the action of bringing a generating unit from shutdown to synchronous speed;

1.2.130. **"Start-up Power"** is that which is required for initial start-up and commissioning of a new generating unit as well as start-up after forced or planned outage of an existing generating unit

1.2.131. **"State Grid Code (SGC)"** means the Meghalaya State Grid Code notified by the Commission;

1.2.132. **"Seller"** means a person, including a generating station, supplying electricity through a transaction scheduled in accordance with these regulations;

1.2.133. **"State Load Despatch Centre (SLDC)"** means the Centre established under sub-section (1) of Section 31 of the Act;

1.2.134. **"State Transmission System"** means any system for transmission of electricity other than an Inter-State Transmission System and includes;

i. Any system for the conveyance of electricity by means of a main transmission line within the territory of the State.

ii. The transmission of electricity within the territory of State on a system built, owned, operated, maintained or controlled by STU

1.2.135. **"State Transmission Utility (STU)"** means the Government Company specified as such by the State Government under sub-section (1) of section 39 of the Act;

1.2.136. **"Sub-station"** means Station for transforming or converting electricity for the transmission or distribution thereof and includes transformers, converters, switchgears, capacitors, synchronous condensers, structures, cable and other appurtenant equipment and any buildings used for that purpose and the site thereof;

1.2.137. **"Supervisory Control and Data Acquisition or (SCADA)"** means the communication links and data processing systems, which provide information to enable implementation of requisite supervisory and control actions;

1.2.138. **"Supplier"** means any generating company or licensee from whose system electricity flows into the system of another generating company or licensee or consumer;

1.2.139. **"Synchronized"** means those conditions where an incoming generating unit or system is connected to the bus bars of another system so that the frequencies and phase relationships of that generating unit or system as the case may be, and the system to which it is connected are identical;

1.2.140. **"System**" shall have the same meaning as defined in sub-section (50) of Section 2 of the Act;

1.2.141. **"System Constraint"** means a situation in which there is a need to prepare and activate a remedial action in order to respect operational security limits;

1.2.142. **"Tariff Regulations"** means the Tariff Regulations notified by the Commission;

1.2.143. **"Time Block"** means a block of duration as specified by the Commission for which energy meters record values of specified electrical parameters with first time block starting at 00:00 Hrs, presently of fifteen (15) minutes duration;

1.2.144. **"Total Transfer Capability (TTC)"** means the amount of electric power that can be transferred reliably over the intra-control area transmission system under a given set of operating conditions considering the effect of occurrence of the worst credible contingency;

1.2.145. **"Transmission licensee"** means a licensee authorized to establish and operate transmission lines;

1.2.146. **'Transmission lines"** means all high pressure cables and overhead lines (not being an essential part of the distribution system of a licensee) transmitting electricity from a generating station to another generating station or a substation, together with any step-up and step-down transformers, switch-gear and other works necessary to and used for the control of such cables or overhead lines, and such buildings or part thereof as may be required to accommodate such transformers, switch-gear and other works;

1.2.147. **"Transmission system"** means the system consisting of high-pressure cables and overhead lines of transmission licensee including electrical sub-stations, for transmission of electrical power from the generating station up to connection point / interface point with the distribution system. This shall not include any part of the distribution system;

1.2.148. **"Transmission Planning Criteria"** means the criteria issued by CEA for transmission system planning;

1.2.149. **'Transmission Reliability Margin (TRM)"** means the amount of margin earmarked in the total transfer capability to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions;

1.2.150. **"Under Frequency Relay"** means an electrical measuring relay intended to operate when its characteristic quantity reaches the relay settings by decrease in frequency;

1.2.151. **"User"** means and includes generating company, captive generating plant, energy storage system, transmission licensee including deemed transmission licensee, distribution licensee, solar park developer, wind park developer, wind-solar photo voltaic hybrid system, or bulk consumer which is or whose electrical plant is connected to the grid at voltage level 33 kV and above;

1.2.152. **"Voltage Stability"** means the ability of a transmission system to maintain steady acceptable voltages at all nodes in the transmission system in the normal situation and after being subjected to a disturbance;

1.2.153. **"Warm Start"** means the start up after a shutdown period between 10 hours and 72 hours (turbine metal temperatures between approximately 40% to 80% of their full load values) in relation to steam turbine;

1.2.154. **"WS Seller**" shall have the same meaning as defined in the DSM Regulations.

Words and expressions used in these regulations that are not defined herein but defined in the Act or regulations of the Commission shall have the meaning as assigned to them under the Act or the said regulations of the Commission

CHAPTER-2

MANAGEMENT OF GRID CODE AND ROLE OF VARIOUS ORGANIZATIONS

2.1. INTRODUCTION

2.1.1. The State Grid Code (SGC) lays down the rules, guidelines and standards to be followed by the STU, Transmission Licensee, Users of intra-state transmission system and State Load Despatch Centre, to plan, develop, operate and maintain an efficient and coordinated power system in the State of Meghalaya in coordination with the North Eastern Regional Grid System as per the provisions of Indian Electricity Grid Code (IEGC) issued by Central Electricity Regulatory Commission (CERC) as amended from time to time and also in line with the National Electricity policy.

2.2. OBJECTIVES OF STATE GRID CODE

2.2.1. The principal objectives of the State Grid Code are:

a. To provide clarity in the functions of the STU, Transmission Licensee, State Generation Companies, Distribution Licensees, IPPs / CPPs and open access customers connected to the State Grid by specifying their respective roles, responsibilities and obligations with respect to the operation of the State Grid;

b. To improve the Grid stability and achieve minimum standards of system performance;

c. To specify the transmission connectivity requirement for new entrants i.e., future new generating companies, distribution/trading licensees, open access customers and consumers;

d. To document the normal practices in grid operation for easy reference and for compliance;

e. To elicit with generators on the performance characteristics of their plant to meet the connectivity requirements;

f. To provide a mechanism for clear and consistent disclosure of all information between the utilities concerned;

g. To indicate how generation is to be scheduled and dispatched;

h. To enforce what is verbally agreed.

2.3. IMPLEMENTATION OF THE STATE GRID CODE:

2.3.1. State Transmission Utility and State Load Dispatch Centre shall be responsible for implementation of the State Grid Code. All Users shall comply with the provisions of SGC and assist the STU and SLDC in all aspects. The Users must provide all the information required for implementation of the SGC.

2.3.2. If any User has any difficulty in complying with or any of the provisions of the SGC, he shall, without delay, inform the same to the STU/SLDC for guidance in complying with the provision.

2.3.3. The operation of the SGC shall be reviewed regularly by the State Grid Code Review Committee (SGCRC) in accordance with the provisions of the relevant section of the SGC.

2.3.4. Users shall provide such reasonable cooperation and assistance as STU / SLDC may seek and as require by them. The STU / SLDC shall however refer all such cases for ratification in the next meeting of the review committee.

2.4. ROLE OF VARIOUS ORGANIZATIONS

2.4.1. **Role of STU**

1. Section 39 of the Electricity Act 2003, outlines that the function of the State Transmission Utility (STU) shall be:
   a. to undertake transmission of electricity through intra-State transmission system;
   b. to discharge all functions of planning and co-ordination relating to intra-State transmission system with-
      i. Central Transmission Utility;
      ii. State Governments;
      iii. Generating Companies;
      iv. Regional Power Committees;
      v. Authority;
      vi. Licensees;
      vii. Any other person notified by the State Government in this behalf;
   c. to ensure development of an efficient, co-ordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centres;
   d. to provide non-discriminatory open access to its transmission system for use by-
      i. any licensee or generating company on payment of the transmission charges; or
      ii. any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the

transmission charges and a surcharge thereon, as may be specified by the Commission.

2.4.2. **Role of SLDC**

In accordance with Section 32 of the Electricity Act 2003, the State Load Despatch Centre (SLDC) shall have the following functions:

1. The State Load Despatch Centre shall be the apex body to ensure integrated operation of the power system in a State.
2. The State Load Despatch Centre shall-
   a. be responsible for optimum scheduling and despatch of electricity within a State, in accordance with the contracts entered into with the licensees or the generating companies operating in the State;
   b. monitor grid operations;
   c. keep accounts of the quantity of electricity transmitted through the State grid;
   d. exercise supervision and control over the intra-State transmission system; and
   e. be responsible for carrying out real time operations for grid control and despatch of electricity within the State through secure and economic operation of the State grid in accordance with the Grid Standards and the State Grid Code.

In accordance with Section 33 of the Electricity Act 2003,

1. The State Load Despatch Centre in a State may give such directions and exercise such supervision and control as may be required for ensuring the integrated grid operations and for achieving the maximum economy and efficiency in the operation of power system in the State.
2. Every licensee, generating company, generating station, sub-station and any other person connected with the operation of the power system shall comply with the directions issued by the State Load Despatch Centre under sub-section 1 above.
3. The State Load Despatch Centre shall comply with the directions of the Regional Load Despatch Centre.

2.5. STATE GRID CODE REVIEW COMMITTEE (SGCRC)

2.5.1. The State Transmission Utility (STU) is required to implement and comply with the State Grid Code and to carry out periodic review and amendments of the same with the approval of the Commission. A State Grid Code Review Committee shall be constituted by STU, comprising the representatives of the State Constituents of the State Transmission System, within thirty days from the date of notification of the State Grid Code.

2.5.2. The Chairperson of the State Grid Code Review Committee shall be an engineer of the STU not below the rank of Superintending Engineer. The Member Secretary of the Review Committee shall also be nominated by STU. The Review Committee shall also consist of the following members as recommended by the heads of the respective organizations:

   a. One representative from the State Government connected with

Electricity Affairs of the State;

b. One representative at executive level from the concerned Regional Load Despatch Centre;
c. One representative at executive level from the State Load Despatch Centre;
d. One representative at executive level from Distribution Licensee of the State;
e. One representative at executive level from each of the generating companies feeding not less than 30 MW to the State Grid;
f. One representative from small generating stations of less than 30 MW capacity on rotation basis;
g. Any other person as may be nominated by the Commission.

2.5.3. The Member Secretary nominated by STU shall be the convener and he shall coordinate the functioning of the committee.

2.5.4. STU shall inform all the Users, the names and addresses of the Review Committee Chairperson and the Member Secretary. Any subsequent changes shall also be informed to all the Users by STU. Similarly, each User shall inform the names and designations of their representatives to the Member Secretary of the Review Committee.

2.6. FUNCTIONS OF THE STATE GRID CODE REVIEW COMMITTEE (SGCRC)

2.6.1. The functions of the State Grid Code Review Committee are as follows:

a. Monitor implementation of the State Grid Code, and continuous scrutiny and review;
b. Consideration of all requests for review proposed by any User and publication of the recommendations for changes in the State Grid Code together with reasons for such changes;
c. Consideration of the problems raised by any User as well as resolution of the problems;
d. Ensuring that the changes / modifications proposed in the State Grid Code are consistent and compatible with Indian Electricity Grid Code (IEGC);
e. To constitute a subcommittee **(Protection Coordination Committee)** with engineers having adequate experience in Power Transmission System Protection from STU, Generating companies and Distribution Licensees. The Protection Coordination Committee shall also be responsible for all the protection coordination functions specified in this State Grid Code;
f. Such other matters as may be directed by the Commission from time to time.

The SGCRC may hold any number of meetings as required subject to the condition that at least one meeting shall be held once every six (6) months. Sub-meetings may be held by STU with the Users whenever required to discuss individual requirements to prepare proposals for Review Committees consideration.

2.7. FUNCTIONS OF THE PROTECTION COORDINATION COMMITTEE

2.7.1. The main functions, of the Protection Coordination Committee (PCC) are as follows:

(i) Create awareness about various issues related to protection requirements for any equipment connected to the Intra-State Transmission System;

(ii) Review and specify the minimum protection requirements for the User system connected to the Intra-State Transmission System;

(iii) Deliberate and decide in various settings, testing procedure and periodicity of testing of the protection relays;

(iv) Deliberate and decide regarding upgradation of protection schemes and switchgear equipment;

(v) Review and analyse the reasons for failure of protection system in case of any grid disturbances and recommend methods for improvement;

(vi) Investigate into any malfunctions of protection equipment or other unsatisfactory protection issues;

(vii) Consider the requests of User for amendment to any protective conditions specified in this Code.

The Protection Co-ordination Committee shall meet whenever requested by STU or at least once in every three months and shall give their recommendations, if any, to the SGCRC.

2.8. REVIEW AND REVISION

2.8.1. SGC shall be reviewed by the SGCRC at least once in every twelve (12) months.

2.8.2. No change in the State Grid Code shall be made without being deliberated and agreed by the State Grid Code Review Committee and approved by the Commission.

2.8.3. User seeking any amendment to the State Grid Code shall send written requests to the Member Secretary of the State Grid Code Review Committee.

2.8.4. The Member Secretary shall place all the proposed revisions for the State Grid Code to the Review Committee for its consideration.

2.8.5. After discussion in the review meeting, the State Grid Code Review Committee shall send a report to the STU/Commission, providing information regarding:

a. Outcome of the review;
b. Any proposed revisions to the State Grid Code; and
c. Copies of all written representations received from the Users;

2.8.6. The STU shall send its recommendations regarding the proposed modification(s)/amendment(s) on the report along with all the related

correspondence to the Commission.

2.8.7. Amendments to the State Grid Code shall be finalized and notified by the Commission duly adopting the prescribed procedure followed for regulations issued by the Commission.

2.8.8. After the approval by the Commission, the STU shall publish revisions to the State Grid Code and forward copies of approved amendments to all Users.

2.8.9. STU shall maintain copies of the State Grid Code with the latest amendments.

2.8.10. The Commission, may, on the application by the User or otherwise, call an emergency meeting of the Grid Code Review Committee as and when required and make such alterations or amendments in the State Grid Code as it thinks fit.

2.9. COMPATIBILITY WITH INDIAN ELECTRICITY GRID CODE (IEGC)

This State Grid Code shall be consistent and aligned with the IEGC as amended from time to time. Any operational, technical or administrative matter not explicitly covered in this Regulation shall be governed by the corresponding provisions of the IEGC.

Provided that in matters relating to inter-State transmission, if any provision of the State Grid Code is inconsistent with the provisions of the IEGC, the provisions of IEGC as notified by CERC shall prevail.

CHAPTER-3

RESOURCE PLANNING CODE

3.1. GENERAL

3.1.1. This chapter covers the integrated resource planning including demand forecasting, generation resource adequacy planning and transmission resources adequacy assessment required for secure grid operation. The planning of generation and transmission resources shall be to meet the projected demand in compliance with specified reliability standards for serving the load with optimum generation mix with a focus on integration of environment friendly technologies after taking into account the need, inter alia for flexible resources, storage systems for energy shift and demand response measures for managing the intermittency and variability of renewable energy sources.

3.2. INTEGRATED RESOURCE PLANNING

3.2.1. The integrated resource planning shall include:

a. Demand forecasting;

b. Generation resource adequacy planning and

c. Transmission resource adequacy planning.

3.3. DEMAND FORECASTING

3.3.1. The Demand forecasting shall be in accordance with the Meghalaya State Electricity Regulatory Commission (Framework for Resource Adequacy) Regulations, 2023 and its amendment thereof or re-enactment.

3.4. GENERATION RESOURCE ADEQUACY, POWER PROCUREMENT PLANNING, MONITORING AND COMPLIANCE

3.4.1. The Generation Resource Adequacy, Power Procurement Planning, Monitoring and Compliance shall be in accordance with the Meghalaya State Electricity Regulatory Commission (Framework for Resource Adequacy) Regulations, 2023 and its amendment thereof or re-enactment.

3.5. TRANSMISSION RESOURCE ADEQUACY ASSESSMENT

3.5.1. To match with the Demand Forecasting and Generation Resource Adequacy, planned as per MSERC (Framework for Resource Adequacy) Regulations, 2023 and its amendments thereof or re-enactment, STU shall undertake assessment and planning of the intra-State transmission system as per the provisions of the Act and shall inter alia take into account:

i. import and export capability across ISTS and STU interface; and
ii. adequate power transfer capability across each flow-gate.

3.5.2. The Planning Philosophy for the Intra-State Transmission System (InSTS) shall be as detailed in the guidelines of "Manual of Transmission Planning Criteria" issued by CEA from time to time.

CHAPTER-4
CONNECTION CODE

4.1. GENERAL

4.1.1. This Chapter covers the technical and design criteria for connectivity, procedure and requirements for physical connection and integration of grid elements.

4.1.2. The connectivity to the InSTS shall be granted by STU.

4.1.3. User seeking to get connected to the InSTS for the first time through a new or modified power system element shall fulfil the requirements and follow the procedures specified under this Code prior to obtaining the permission of the SLDC.

4.1.4. After grant of connectivity and prior to the declaration of commercial operation, the tests as specified under Chapter-5 of these regulations shall be performed.

4.2. COMPLIANCE WITH EXISTING RULES AND REGULATIONS

4.2.1. All Users connected to or seeking connection to the grid shall comply with all the applicable regulations as enacted or amended from time to times such as:

a) Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and its subsequent amendment or re-enactment;

b) Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 and its subsequent amendment or re-enactment;
c) Central Electricity Authority (Measures Relating to Safety & Electric Supply) Regulations, 2023 and its subsequent amendment or re-enactment;
d) Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 and its subsequent amendment or re-enactment;
e) Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020 and its subsequent amendment or re-enactment;
f) Central Electricity Authority (Grid Standards) Regulations, 2010 and its subsequent amendment or re-enactment;
g) Central Electricity Authority (Cyber Security in Power Sector) Guidelines, 2021 and its subsequent amendment or re-enactment;
h) Central Electricity Authority (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023 and its subsequent amendment or re-enactment;
i) Meghalaya State Electricity Regulatory Commission (Terms and Conditions for Open Access) Regulations, 2012 and its subsequent amendment or re-enactment.
j) Meghalaya State Electricity Regulatory Commission (Intra-State Deviation Settlement Mechanism and Related Matters) Regulations, 2025 and its subsequent amendment or re-enactment.
k) Any other regulation and standard as specified from time to time.

4.3. PROCEDURES FOR CONNECTION

4.3.1. User seeking to establish new or modified arrangement of connection to or for use of Intra State Transmission System (InSTS) shall submit an application to the STU in the Standard format appended to this Regulation.

4.3.2. STU shall process the applications for grant of connectivity in accordance with these Regulations.

4.3.3. The grant of connectivity to the InSTS by the STU shall be governed by the Open Access Regulations or as per the standard format prepared by STU and approved by the Commission.

4.3.4. Post completion of all physical arrangements of connectivity and completing the necessary site tests, the User shall request the SLDC for first energization in the specified format as per the procedure for first time energization of power system elements.

4.3.5. SLDC, in coordination with STU and SGCRC, after due consultation of stakeholders, shall publish a detailed procedure covering modalities for first time energization and integration of new or modified power system element and finalize in line with NLDC First Time Energization/Charging (FTC) procedure within sixty (60) days of

notification of these Regulations and submit to the Commission for its approval. The procedure shall specify requirements for integration with the grid such as protection, telemetry and communication systems, metering, statutory clearances and modelling data requirements for system studies.

Provided further that no connection shall be made unless first time energization and integration of new or modified power system elements is prepared and signed by all concerned parties.

4.4. CONNECTION AGREEMENT

4.4.1. In case of Users seeking connectivity to the Grid, a Connectivity Agreement shall be signed between such User and the STU. In case of multiple transmission licensees connected at same station, the Site Responsibility Schedule including the responsibility for operation & protection coordination and data sharing among the licensees, shall be specified in the Connection Agreement.

Existing Users shall also be required to execute the revised Connection Agreement within 1 (one) month from the notification of this Regulations.

4.4.2. The Connection Agreement is Annexed to this Regulation.

4.5. TECHNICAL REQUIREMENTS

4.5.1. SLDC in consultation with STU shall carry out a joint system study six (6) months before the expected date of first energization of a new power system element to identify operational constraints, if any. In case of constraints, SLDC shall identify measures for facilitating the integration of the element subject to grid security. The User shall furnish all technical data including that of its embedded generators and other elements to the SLDC, for necessary technical studies.

4.5.2. SLDC shall publish a detail procedure covering modalities for carrying out interconnection studies.

4.6. DATA AND COMMUNICATION FACILITIES

4.6.1. Reliable speech and data communication systems on path diversified data links shall be provided by the User to facilitate necessary communication, data exchange, supervision and control of the grid by SLDC in accordance with CEA Technical standards for communication.

4.6.2. The associated communication system to facilitate data flow up to appropriate data collection point on STU system including inter-operability requirements shall also be established by the concerned user as specified in the connectivity agreement.

4.6.3. The communication system along with data links provided for speech and real time data communication shall be monitored in real time by all User, STU and SLDC to ensure high reliability of the communication links.

4.7. SITE RESPONSIBILITY SCHEDULE

4.7.1. For every connection to InSTS for which a Connectivity agreement is required, the User shall prepare a schedule called ‘Site Responsibility Schedule’ indicating the following for each item of equipment installed at the connection site.

i. Ownership of the equipment;
ii. Responsibility for control of equipment;
iii. Responsibility for maintenance of equipment;
iv. Responsibility for operation of equipment;
v. Responsibility for all matters relating to safety of any person at the connection / interface site;
vi. Management of the Connection/Interface site.

4.7.2. The format to be used in the preparation of Site Responsibility Schedule is given in Appendix – VI.

4.8. ACCESS TO CONNECTION SITE

The User owning the electrical plant shall provide reasonable access and other required facilities to the State Transmission Utility or State Load Despatch Centre, whose equipment is installed or proposed to be installed at the Connection Site for installation, operation and maintenance etc, of the equipment.

4.9. SITE COMMON DRAWINGS

Site Common Drawings shall be prepared for each connection point by the owner of the sub-station where connection is taking place.

4.10. SYSTEM PERFORMANCE

4.10.1. The Design and Construction of all the equipment connected to the State Transmission System shall satisfy the relevant Indian Standard Specifications. In case of equipment for which Indian Standard Specifications do not exist, the appropriate IEC, or IEEE or other International Standards shall apply.

4.10.2. Installation of all electrical equipment shall comply with IE Rules, 1956 which are in force for time being or as replaced by new rules made under Electricity Act, 2003.

4.10.3. For every new / modified connection sought, the STU shall specify the connection point, technical requirements and the voltage to be used, along with metering and protection requirements as specified in the Metering Code (Chapter-11) and Protection Code (Chapter-12).

4.10.4. Insulation coordination of the User equipment shall conform to Indian Standards issued by Bureau of Indian Standards (BIS). If BIS are not available for a particular equipment or material, the standards defined by STU from time to time shall be followed.

4.10.5. Protection schemes and metering schemes shall be as detailed in the Protection and Metering Chapters of this Code.

4.10.6. The frequency shall always remain within the band as specified in this Regulation.

4.10.7. The User shall however, be subject to the Grid discipline prescribed by SLDC and RLDC.

4.11. CONNECTION POINT/INTERFACE POINT

4.11.1. State Generating Station (SGS) / IPPs / CPPs

- The voltage at the Connection point / Interface point with the State Transmission System may be 220/132/110/66 KV or as agreed with STU.
- Unless specifically agreed with STU, the Connection point with generating station shall be the terminal isolator provided just before the outgoing gantry of the feeders.
- SGS shall operate and maintain all terminals, communication and protection equipment provided within the generating station.
- The provisions for the metering between generating station and STU system shall be as per the Metering Code.
- Respective Users shall maintain their equipment from the going out feeders' gantry onwards emanating from generating station.

4.11.2. Distribution Licensee

- The voltage at the Connection Point / Interface Point to State Transmission System may be as specified by the Distribution Licensee or as agreed with STU.
- Unless specifically agreed with Distribution Licensee, the Connection point with STU shall be the outgoing feeder gantry, from STU sub-station.
- STU shall operate and maintain all terminals, communication and protection equipment provided within its sub-station.
- The provisions for the metering between Distribution Licensee and STU systems shall be as per the Metering Code.
- Respective Users shall maintain their equipment beyond the outgoing gantry of feeders emanating from STU sub-station onwards.

4.11.3. Regional Transmission System

- The Connection, protection scheme, metering scheme and the voltage shall be in accordance with the provisions of IEGC.

4.11.4. EHV Consumers and Open Access Customers:

- The voltage may be 220/132/110/66 KV or as agreed with STU.
- The Connection point shall be just before the feeder gantry in their premises.
- The metering point shall be Connection point / Interface Point with their system.

4.12. GENERAL CONDITIONS FOR CONNECTIVITY OF RENEWABLE ENERGY GENERATING STATION TO THE GRID

A generating station of renewable sources can be connected at the distribution level (not exceeding 33 kV) or transmission level (above 33 kV) of the State.

CHAPTER-5

COMMISSIONING AND COMMERCIAL OPERATION CODE

5.1. GENERAL

This chapter covers aspects related to (i) drawl of startup power from and injection of infirm power into the grid, (ii) trial run operation (iii) documents and tests required to be furnished before declaration of COD, (iv) requirements for declaration of COD.

5.2. DRAWAL OF START UP POWER AND INJECTION OF INFIRM POWER

5.2.1. A unit of a generating station including unit of a captive generating plant that has been granted connectivity to the intra-State Transmission System in accordance with GNA/Open Access Regulations shall be allowed to inter-change power with the grid during the commissioning period, including testing and full load testing before the COD, after obtaining prior permission of the State Load Despatch Centre:
Provided that the State Load Despatch Centre while granting such permission shall keep grid security in view.

5.2.2. The period for which such inter-change shall be allowed shall be as follows: -

a. Drawal of start-up power shall not exceed 15 months prior to the expected date of first synchronization and one year after the date of first synchronization; and
b. Injection of infirm power shall not exceed one year from the date of first synchronization for generating stations other than REGS and ESS (except Hydro PSP ESS).
c. Injection of infirm power shall not exceed forty-five (45) days from the date of FTC (First Time Charging) approval for REGS and ESS (except Hydro PSP ESS).

5.2.3. Notwithstanding the provisions of clause 5.2.2. of this Regulation, the Commission may allow extension of the period for inter-change of power beyond the stipulated period on an application made by the generating station at least two months in advance of the completion of the stipulated period:
Provided that for REGS and ESS (except Hydro PSP ESS) extension of period for injection of infirm power beyond the stipulated period may be allowed (a) for a period up to six (6) months on an application(s) made by such generating station or ESS (except Hydro PSP ESS) to SLDC along with detailed reasons, at least ten (10) days in advance of the completion of the stipulated period, (b) for a period beyond six (6) months by the Commission on an application(s) made by such generating station or ESS (except Hydro PSP ESS) along with detailed reasons, at least thirty (30) days in advance of the completion of the stipulated period.

5.2.4. Drawal of start-up power shall be subject to payment of transmission charges as per the Tariff Regulations.

5.2.5. The charges for deviation for drawal of start-up power or for injection of infirm power shall be as per the DSM Regulations;

5.2.6. Start-up power shall not be used by the generating station for construction activities;

5.2.7. The onus of proving that the interchange of infirm power from the unit(s) of the generating station is for the purpose of pre-commissioning activities, testing and commissioning, shall rest with the generating station, and SLDC shall seek such information on each occasion of the interchange of power before COD. For this, the generating station shall furnish to SLDC relevant details, such as those relating to the specific commissioning activity, testing, and full load testing, its duration and the intended period of interchange. The generating station shall submit a tentative plan for the quantum and time of injection of infirm power on day ahead basis to SLDC.

5.2.8. In the case of multiple generating units of the same generating station or multiple generating stations owned by different entities connected at a common InSTS interface point, SLDC shall ensure segregation of firm power from generating units that have achieved COD from power injected or drawn by generating units which have not achieved COD through appropriate accounting of energy.

5.2.9. SLDC shall stop the drawal of the start-up Power in the following events:

a. In case, it is established that the start-up power has been used by the generating station for construction activity;

b. In the case of default in payment of monthly transmission charges, charges under SLDC Fees and Charges Regulations and deviation charges under the DSM Regulations.

5.3. DATA TO BE FURNISHED PRIOR TO NOTICE OF TRIAL RUN

5.3.1. The following details, as applicable, shall be furnished by each Intra-State entity generating station to SLDC and the beneficiaries of the generating station, wherever identified, prior to notice of trial run:

Description	Units
Installed Capacity of generating station	MW
Installed Capacity of generating station	MVA
MCR	MW
Number x unit size	No x MW
Time required for cold start	Minute
Time required for warm start	Minute
Time required for hot start	Minute
Time required for combined cycle operation under cold conditions	Minute
Time required for combined cycle operation under warm conditions	Minute
Ramping up capability	% per minute
Ramping down capability	% per minute
Minimum turndown level	% of MCR

Description	Units
Minimum turndown level	MW (ex-bus)
Inverter Loading Ratio (DC/AC capacity)	
Name of QCA (where applicable)	
Full reservoir level (FRL)	Metre
Design Head	Metre
Minimum draw down level (MDDL)	Metre
Water released at Design Head	M^3/MW
Unit-wise forbidden zones	MW

5.4. NOTICE OF TRIAL RUN

5.4.1. The generating company proposing its generating station or a unit thereof for trial run or repeat of trial run shall give a notice of not less than seven (7) days to SLDC, STU and the beneficiaries of the generating stations, including intermediary procurers, wherever identified:

Provided that in case the repeat trial run is to take place within forty-eight (48) hours of the failed trial run, fresh notice shall not be required.

5.4.2. The transmission licensee proposing its transmission system or an element thereof for trial run shall give a notice of not less than seven (7) days to SLDC, STU, distribution licensees of the area and the owner of the inter-connecting system.

5.4.3. SLDC shall allow commencement of the trial run from the requested date or in the case of any system constraints, not later than seven (7) days from the proposed date of the trial run. The trial run shall commence from the time and date as decided and informed by SLDC.

5.4.4. A generating station shall be required to undergo a trial run in accordance with Regulation 5.5 of these Regulations after completion of Renovation and Modernization for extension of the useful life of the project as per the Tariff Regulations.

5.5. TRIAL RUN OF GENERATING UNIT

5.5.1. Trial Run of the **Thermal Generating Unit** shall be carried out in accordance with the following provisions:

a. A thermal generating unit shall be in continuous operation at MCR for seventy-two (72) hours on designated fuel:

Provided that:

i. short interruption or load reduction shall be permissible with the corresponding increase in duration of the test;

ii. interruption or partial loading may be allowed with the condition that the average load during the duration of the trial run shall not be less than MCR, excluding the period of interruption but including the corresponding extended period;

iii. cumulative interruption of more than four (4) hours shall call for a repeat of trial run.

b. Where, on the basis of the trial run, a thermal generating unit fails to demonstrate the unit capacity corresponding to MCR, the generating company has the option to de-rate the capacity of the generating unit or to go for a repeat trial run. If the generating company decides to de-rate the unit capacity, the de-rated capacity in such cases shall not be more than 95% of the demonstrated capacity, to cater for primary response.

5.5.2. Trial Run of **Hydro Generating Unit** shall be carried out in accordance with the following provisions:

a. A hydro generating unit shall be in continuous operation at MCR for twelve (12) hours:

Provided that-

i. short interruption or load reduction shall be permissible with a corresponding increase in duration of the test;

ii. interruption or partial loading may be allowed with the condition that the average load during the duration of trial run shall not be less than MCR excluding period of interruption but including the corresponding extended period;

iii. cumulative interruption of more than four (4) hours shall call for a repeat of trial run;

iv. if it is not possible to demonstrate the MCR due to insufficient reservoir or pond level or insufficient inflow, COD may be declared, subject to the condition that the same shall be demonstrated immediately when sufficient water is available after COD:

Provided that if such a generating station is not able to demonstrate the MCR when sufficient water is available, the generating company shall de-rate the capacity in terms of sub-clause (b) of this clause, and such de-rating shall be effective from COD.

b. Where, on the basis of the trial run, a hydro generating unit fails to demonstrate the unit capacity corresponding to MCR, the generating company shall have the option to either de-rate the capacity or go for a repeat trial run. If the generating company decides to de-rate the unit capacity, the de-rated capacity in such cases shall not be more than 90% of the demonstrated capacity to cater for primary response.

5.5.3. Trial Run of **Wind / Solar / ESS / Hybrid Generating Station**

a. **Trial run of the solar inverter unit(s)** connected at State Transmission system shall be performed for a minimum capacity aggregating to 5 MW:

Provided that in the case of a project having a capacity of more than 5MW, the trial run for the balance capacity shall be performed in a maximum of four instalments with a minimum capacity of 5 MW:

b. **Successful trial run of a solar inverter unit(s)** covered under above sub-clause (a) shall mean the flow of power and communication signal for not less than four (4) hours on a cumulative basis between sunrise and sunset in a single day with the requisite metering system, power plant controller, telemetry and protection system in service. The generating company shall record the output of the unit(s) during the trial run and shall corroborate its performance with the temperature and solar irradiation recorded at site during the day and plant design parameters:
Provided that:

i. the output below the corroborated performance level with the solar irradiation of the day shall call for a repeat of the trial run;

ii. if it is not possible to demonstrate the rated capacity of the plant due to insufficient solar irradiation, COD may be declared subject to the condition that the same shall be demonstrated immediately when sufficient solar irradiation is available after COD, within one year from the date of COD:
Provided that if such a generating station is not able to demonstrate the rated capacity when sufficient solar irradiation is available after COD, the generating company shall de-rate the capacity in terms of clause 5.5.9. of this Regulations.

5.5.4. **Trial run of a wind turbine(s)** connected at State Transmission system shall be performed for a minimum capacity aggregating to 5 MW:
Provided that in the case of a project having a capacity of more than 5 MW, the trial run for wind turbine(s) above the capacity of 5 MW shall be performed in batch sizes of not less than 5 MW

5.5.5. **Successful trial run of a wind turbine(s)** covered under the above Regulation shall mean the flow of power and communication signal for a period of not less than four (4) hours on a cumulative basis in a single day during periods of wind availability with the requisite metering system, power plant controller, telemetry and protection system in service. The generating company shall record the output of the unit(s) during the trial run and corroborate its performance with the wind speed recorded at the site(s) during the day and plant design parameters:
Provided that-

i. the output below the corroborated performance level with the wind speed of the day shall call for a repeat of the trial run;

ii. if it is not possible to demonstrate the rated capacity of the plant due to insufficient wind velocity, COD may be declared subject to the condition that the same shall be demonstrated immediately when sufficient wind velocity is available after COD, within one year from the date of COD:

Provided that if such a generating station is not able to demonstrate the rated capacity when sufficient wind velocity is available after COD, the generating company shall de-rate the capacity in terms of clause 5.5.9. of this Regulations

5.5.6. **Successful trial run of a standalone Energy Storage System (ESS)** connected to the State Transmission System shall mean one (1) cycle of charging and discharging of energy as per the design capabilities with the requisite metering, telemetry and protection system being in service.

5.5.7. **Successful trial run of a pumped storage plant** connected to the State Transmission System shall mean one (1) cycle of turbo-generator and pumping motor mode as per the design capabilities up to the rated water drawing levels with the requisite metering, telemetry and protection system being in service.

Provided that if it is not possible to demonstrate the design capabilities up to the rated water drawing levels due to insufficient reservoir levels, the COD may be declared after demonstrating the capabilities at available water drawing levels, subject to the condition that design capabilities up to the rated water drawing levels shall be demonstrated immediately when sufficient reservoir level is available after COD.

Provided further that if such a generating station is not able to demonstrate the design capabilities when sufficient water is available, the generating company shall have the option to either go for a repeat trial run or de-rate the capacity. If the generating company decides to de-rate the unit capacity in terms of clause 5.5.9. of this Regulations, such de-rating shall be effective from the COD.

5.5.8. **Successful trial run of a hybrid system** connected to the State Transmission System shall mean successful trial run of each individual source of the hybrid system in accordance with the applicable provisions of these regulations.

5.5.9. Where, on the basis of the trial run, solar / wind / storage / hybrid generating station fails to demonstrate its rated capacity, the generating company shall have the option to either go for a repeat trial run or de-rate the capacity subject to a minimum aggregated de-rated capacity of 5 MW and above, as the case may be.

5.5.10. Notwithstanding the provisions contained in this Regulation, where Power purchase Agreement provides for a specific capacity that can be declared COD, trial run shall be allowed for such capacity in terms of such Power purchase agreement.

5.6. TRIAL RUN OF INTRA-STATE TRANSMISSION SYSTEM

5.6.1. Trial run of intra state transmission system or an element thereof shall mean successful energisation of the transmission system or the element thereof at its nominal system voltage through interconnection with the grid for a continuous twenty-four (24) hours flow of power and communication signal from the sending end to the receiving end and with the requisite metering system, telemetry and protection system:

Provided that under exceptional circumstances and with the prior approval of STU and SLDC, a transmission element can be energized at lower nominal system voltage level.

Provided further that the STU and SLDC may allow anti-theft charging where the transmission line is not carrying any power.

5.7. DOCUMENTS AND TEST PRIOR TO DECLARATION OF COMMERCIAL OPERATION

5.7.1. Notwithstanding the requirements in other standards, codes and contracts, for ensuring grid security, the tests as specified in the following clauses shall be scheduled and carried out in coordination with SLDC and STU by the generating company or the transmission licensee, as the case may be, and relevant reports and other documents as specified shall be submitted to SLDC and STU before a certificate of successful trial run is issued to such a generating company or the transmission licensee, as the case may be.

5.7.2. All thermal generating stations having a capacity of more than 200 MW and hydro generating stations having a capacity of more than 25 MW shall submit documents confirming the enablement of automatic operation of the plant from the appropriate load despatch centre by integrating the controls and tele-metering features of their system into the automatic generation control in accordance with the CEA Technical Standards for Construction Regulations and CEA Technical Standards for Connectivity Regulations and amendments or re-enactment thereof.

5.7.3. Documents and Tests Required for Thermal (coal/lignite) Generating Stations:

a. The generating company shall submit the following documents from the Original Equipment Manufacturer (OEM), namely
   i. Start-up curve for boiler and turbine including starting time of unit in cold, warm and hot conditions.
   ii. capability curve of generator.
   iii. design ramp rate of boiler and turbine.
b. The following tests shall be performed:
   i. Operation at a load of fifty-five (55) percent of MCR as per the CEA Technical Standards for Construction Regulations, for a sustained period of four (4) hours.
   ii. Ramp-up from fifty-five (55) percent of MCR to MCR at a ramp rate of at least one (1) percent of MCR per minute, in one step or two steps (with stabilization period of 30 minutes between two steps), and sustained operation at MCR for one (1) hour.
   iii. Demonstrate overload capability with the valve wide open as per the CEA Technical Standards for Construction Regulations and sustained operation at that level for at least five (5) minutes.

iv. Ramp-down from MCR to fifty-five (55) percent of MCR at a ramp rate of at least one (1) percent of MCR per minute, in one or two steps (with stabilization period of 30 minutes between two steps).
v. Primary response through injecting a frequency test signal with a step change of ± 0.1 Hz at 55%, 60%, 75% and 100% load.
vi. Reactive power capability as per the generator capability curve as provided by OEM considering over-excitation and under-excitation limiter settings and prevailing grid condition.

5.7.4. **Documents and Tests Required for Hydro Generating Stations including Pumped Storage Hydro Generating Station**:

a. The generating company shall submit documents from the OEM for the turbine characteristics curve indicating the operating zone(s) and forbidden zone(s). In order to demonstrate the operating flexibility of the generating unit, it shall be operated below and above the forbidden zone(s).
b. The following tests shall be performed considering the water availability and head:
   i. Primary response through injecting a frequency test signal with a step change of ± 0.1 Hz for various loadings within the operating zone;
   ii. Reactive power capability as per the generator capability curve considering over-excitation and under-excitation limiter settings;
   iii. Black start capability, wherever feasible;
   iv. Operation in synchronous condenser mode wherever designed.

5.7.5. **Documents and Test Required for Gas Turbine based Generating Stations:**

a. The generating company shall submit the documents from the OEM for (i) starting time of the unit in cold, warm and hot conditions (ii) design ramp rate.
b. The following tests shall be performed:
   i. Primary response through injecting a frequency test signal with a step change of ± 0.1 Hz for various loadings within the operating zone;
   ii. Reactive power capability as per the generator capability curve considering over-excitation and under-excitation limiter settings;
   iii. Black start capability up to 100 MW capacity, wherever feasible;
   iv. Operation in synchronous condenser mode wherever designed.

5.7.6. **Documents and Tests Required for the Generating Stations based on wind and solar resources**

a. The generating company shall submit a certificate confirming compliance with CEA Technical Standards for Connectivity in accordance with clause 5.9.4. of these regulations;
b. Type test report for Fault Ride through Test (LVRT and HVRT) for units commissioned after the specified date as per CEA Technical Standards for

Connectivity mandating Low Voltage Ride Through (LVRT) and High Voltage Ride Through (HVRT) capability shall be submitted;

c. The following tests shall be performed at the point of interconnection:
   i. Frequency response of machines as per the CEA Technical Standards for Connectivity;
   ii. Reactive power capability as per OEM rating at the available irradiance or the wind energy, as the case may be;

Provided that the generating company may submit offline simulation studies for the specified tests, in case testing is not feasible before COD, subject to the condition that tests shall be performed within a period of one (1) year from the date of achieving COD.

5.7.7. **Documents and Tests Required for Energy Storage Systems**

a. The ESS shall submit a certificate confirming compliance with the CEA Technical Standards for Connectivity in accordance with clause 5.9.4. of these regulations.
b. The following tests shall be performed at the point of interconnection:
   i. Power output capability in MW and energy output capacity in MWh;
   ii. Frequency response of ESS;
   iii. Ramping capability as per design.

5.7.8. **Documents and Tests Required for HVDC Transmission System**

a. The transmission licensee shall submit technical details including operating guidelines such as filter bank requirements at various operating loads and monopolar/ or bipolar configuration, reactive power controller, run-back features, frequency controller, reduced voltage mode of operation, circuit design parameters and power oscillation damping, as applicable;
b. The following tests shall be performed:
   i) Minimum load operation;
   ii) Ramp rate;
   iii) Overload capability, subject to grid condition;
   iv) Black start capability in the case of Voltage Source Convertor (VSC) HVDC wherever feasible;
   v) Dynamic Reactive Power Support (in the case of VSC based HVDC).

5.7.9. **Documents and Tests Required for Static Var Compensator (SVC) or Static Synchronous Compensator (STATCOM)**

a. The transmission licensee shall submit technical particulars including a single line diagram, V/I characteristics, the rating of coupling transformer, the rating of each VSC, Mechanically Switched Reactor (MSR) and Mechanically Switched Capacitor (MSC) branch, different operating modes, the IEEE standard Model, Power Oscillation Damping (POD) enabled and tuned (if not, then reasons for the same)

and the results of an offline simulation-based study to validate the performance of POD.

b. The following tests shall be performed to validate the full reactive power capability of SVC and STATCOM in both directions i.e. absorption as well as injection mode:
   i. POD performance test;
   ii. dynamic performance testing:

Provided that the transmission licensee may submit offline simulation studies for the specified tests, in case the conduct of tests is not feasible before COD, subject to the condition that tests shall be performed within a period of one year from the date of achieving COD.

5.8. CERTIFICATE OF SUCCESSFUL TRIAL RUN

5.8.1. In case any objection is raised by a beneficiary in writing to the SLDC with a copy to all concerned regarding the trial run within two (2) days of completion of such trial run, the SLDC shall, within five (5) days of receipt of such objection, in coordination with the concerned entity and the beneficiaries, decide if the trial run was successful or if there is a need for a repeat trial run.

5.8.2. After completion of a successful trial run and receipt of documents and test reports as per Regulation 5.7 of these regulations, the SLDC shall issue a certificate to that effect to the concerned generating station, ESS or transmission licensee, as the case may be, with a copy to their respective beneficiary(ies) and the STU, within three days.

5.9. DECLARATION BY GENERATING COMPANY AND TRANSMISSION LICENSEE

5.9.1. **Thermal Generating Station**

a. The generating company shall certify that:
   i. The generating station or unit thereof meets the relevant requirements and provisions of the CEA Technical Standards for Construction Regulations, CEA Technical Standards for Connectivity Regulations, CEA Technical Standards for Communication Regulations, Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations,2010, CEA (Flexible operation of thermal power plants) Regulations, 2023 and these regulations, as applicable;
   ii. The main plant equipment and auxiliary systems including the balance of the plant such as the fuel oil system, coal handling plant, Demineralization (DM) plant, pre-treatment plant, fire-fighting system, ash disposal system and any other site-specific system have been commissioned and are capable of full load operation of the units of the generating station on a sustained basis;
   iii. Permanent electric supply system including emergency supplies and all necessary instrumentation, control and protection systems and auto loops for full load operation of the unit has been put into service.

b. The certificates required under sub-clause (a) of this clause shall be signed by the authorized signatory not below the rank of CMD or CEO or MD of the generating company and shall be submitted to the SLDC before the declaration of COD.

5.9.2. **Hydro Generating Station**

a) The generating company shall certify that:

i.) The generating station or unit thereof meets the requirement and relevant provisions of the CEA Technical Standards for Construction Regulations, CEA Technical Standards for Connectivity Regulations, CEA Technical Standards for Communication, Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations,2010 and these regulations, as applicable;

ii.)The main plant equipment and auxiliary systems including the drainage de-watering system, primary and secondary cooling system, Low Pressure (LP) and High Pressure (HP) air compressor and firefighting system have been commissioned and are capable of full load operation of units on a sustained basis;

iii.) Permanent electric supply systems including emergency supplies and all necessary Instrumentations Control and Protection Systems and auto loops for full load operation of the unit are put into service.

b) The certificates required under sub-clause (a) of this clause shall be signed by the authorized signatory not below the rank of CMD or CEO or MD of the generating company and shall be submitted to the SLDC before the declaration of COD.

5.9.3. **Transmission system**

The transmission licensee shall submit a certificate signed by the authorized signatory not below the rank of CMD or CEO or MD of the company to the SLDC and to the STU before declaration of COD that the transmission line, sub-station and communication system conform to the CEA Technical Standards for Construction Regulations, CEA Technical Standards for Connectivity Regulations, CEA Technical Standards for Communication, Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations,2010 and these regulations and are capable of operation to their full capacity.

5.9.4. **Wind, Solar, Storage, and Hybrid Generating Station**

The generating station based on wind and solar resources, the ESS and the hybrid generating station shall submit a certificate signed by the authorized signatory not below the rank of CMD or CEO or MD to the SLDC before declaration of COD, that the said generating station or the ESS as the case may be, including main plant equipment such as wind turbines or solar inverters or auxiliary systems, as the case may be, has complied with all relevant provisions of CEA Technical Standards for Connectivity Regulations, CEA Technical Standards for Communication, Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations,2010 and these regulations.

5.10. DECLARATION OF COMMERCIAL OPERATION (DOCO) AND COMMERCIAL OPERATION DATE (COD)

5.10.1. A generating station or unit thereof or a transmission system or an element thereof or ESS may declare commercial operation as follows and inform SLDC, STU and its beneficiaries:

a. Thermal Generating Station or a unit thereof

i. The commercial operation date in the case of a unit of the thermal generation station shall be the date declared by the generating company after a successful trial run at MCR or de-rated capacity as per clause 5.5.1 (b) of these regulations, as the case may be, and submission of a declaration as per clause 5.9.1 of these regulations.

ii. In the case of the generating station, the COD of the last unit of the generating station shall be considered as the COD of the generating station.

b. Hydro Generating Station

i. The commercial operation date in the case of a unit of the hydro generating station including a pumped storage hydro generating station shall be the date declared by the generating station after a successful trial run at MCR or de-rated capacity as per clause 5.5.2 (b) of these regulations, as the case may be, and submission of a declaration as per clause 5.9.2 of these regulations.

ii. In the case of the generating station, the COD of the last unit of the generating station shall be considered as the COD of the generating station.

c. Transmission System

i. The commercial operation date in the case of an Intra-State Transmission System or an element thereof shall be the date declared by the transmission licensee on which the Transmission System or an element thereof is in regular service at 0000 hours after successful trial operation for transmitting electricity and communication signals from the sending end to the receiving end as per Regulation 5.6 and submission of a declaration as per clause 5.9.3 of these regulations

Provided that the commercial operation date of a transmission element that is part of the Associated Transmission System (ATS) shall be declared only after a successful trial run of the last element of the said transmission system:

Provided further that where only some of the transmission elements of the transmission system have achieved a successful trial run and the transmission licensee seeks commercial operation for such elements for utilization by such licensee and is agreed upon by the State Transmission Utility, the commercial operation date of such transmission elements of the transmission system may be declared by the transmission licensee as per this Regulation:

Provided also that where only some of the transmission element(s) of the transmission system have achieved a successful trial run and if the operation of

such transmission elements is certified by STU and concerned RPC for improving the performance, safety and security of the grid, the commercial operation date of such transmission element(s) of the transmission system may be declared by the transmission licensee as per this Regulation:

Provided also that in case a transmission system or an element thereof executed under regulated tariff mechanism is prevented from regular service on or after the scheduled COD for reasons not attributable to the transmission licensee or its supplier or its contractors but is on account of the delay in commissioning of the concerned generating station or in commissioning of the upstream or downstream transmission system of other transmission licensee, the transmission licensee shall approach the Commission through an appropriate petition along with a certificate from the STU to the effect that the transmission system is complete as per the applicable CEA Standards, for approval of the commercial operation date of such transmission system or an element thereof:

Provided also that in the case of intra-State Transmission System executed through Tariff Based Competitive Bidding, the transmission licensee may declare deemed COD of the InSTS in accordance with the provisions of the Transmission Service Agreement after obtaining (a)a certificate from the STU to the effect that the transmission system is complete as per the specifications of the bidding guidelines and applicable CEA Standards and (b) no load charging certificate from the SLDC, where no load charging is possible.

ii. The COD of a transmission element of the transmission system under Tariff Based Competitive Bidding (TBCB) shall be declared only after the declaration of the COD of all the pre-required transmission elements as per the Transmission Services Agreement (TSA):

Provided that in case any transmission element is required in the interest of the power system as certified by the STU, the COD of the said transmission element may be declared prior to the declaration of the COD of its pre-required transmission elements.

d. Communication System

Date of commercial operation in relation to a communication system or an element thereof shall mean the date declared by the Transmission licensee from 0000 hours of which a communication system or element thereof shall be put into service after completion of the site acceptance test including transfer of voice and data to the respective control centres as certified by State Load Despatch Centre.

e. Generating Stations based on Wind and Solar resources; ESS and Hybrid Generating Station

i. The commercial operation date in the case of units of a renewable generating station aggregating to 5MW and above or such other limit as specified in clause 5.5.3 of these regulations, shall mean the date declared by the generating station after undergoing a successful trial run as per clause 5.5.3 of these regulations, submission of declaration as per clause 5.9.4 of these regulations, and subject to fulfilment of other conditions, if any, as per PPA.

ii. In the case of a generating station as a whole, the commercial operation date of the last unit of the generating station shall be considered as the COD of the generating station.

5.10.2. On declaration of commercial operation date, scheduling of the generating station or unit thereof, shall start from 0000 hours of D+2 (where D is the date when a generating station intimates the Commercial Operation Date of the generating station or unit thereof) or the commercial operation date declared by the generating station or unit thereof, whichever is later.

CHAPTER-6

OPERATION CODE

6.1. GENERAL

6.1.1. The STU and SLDC shall periodically review the performance of the Grid for the past period and plan stable operation of the Grid for the future, considering various parameters and occurrences such as frequency deviations, voltage profile, line loadings, Grid Incidents, performance of system protection schemes.

6.1.2. Overall operation of the State Grid shall be monitored by the State Load Despatch Centre (SLDC).

6.1.3. All Users shall comply with this operation plan, for deriving maximum benefits from the integrated operation and for equitable sharing of obligations.

6.1.4. Users, STU, SLDC and QCA shall at all times functions in coordination to ensure integrity, stability and resilience of the grid and achieve economy and efficiency in the operation of power system.

6.1.5. State Load Despatch Centre shall develop document and maintain a set of detailed internal operating procedures for managing the State Grid in consultation with STU, SGCRC and stakeholders and shall be consistent with the Detail Operating Procedures of RLDC.

6.1.6. The control rooms of the State Load Despatch Centre, generating station, transmission substations of 132 kV and above and any other control centres of Transmission Licensees and Users shall be manned round-the-clock by qualified operating personnel. Alternatively, the same may be operated round the clock from a remotely located control room, subject to the condition that such remote operation does not result in a delay in the execution of any switching instructions and information flow:

Provided that a transmission licensee owning a transmission line but not owning the connected substation, shall have a coordination centre functioning round the clock, manned by qualified personnel for operational coordination with SLDC and equipped to carry out the operations as directed by SLDC.

6.1.7. Qualified Coordinating Agency (QCA) shall have coordination centres functioning round the clock, manned by qualified personnel for operational coordination with SLDC and generating stations. ESS and Bulk Consumers, which are State entities shall have coordination centres functioning round the clock and manned by qualified personnel for operational coordination with SLDC and equipped to carry out the operations directed by SLDC.

6.2. DEMAND ESTIMATION FOR OPERATIONAL PURPOSE

6.2.1. The demand estimates will enable the SLDC to conduct system studies for operational planning purpose.

1. The long-term demand estimation and load forecast (for more than 1 year) shall be done by STU as per Chapter 3 of this regulation. SLDC shall be provided with a copy of the same as and when it is finalized.
2. It shall be the responsibility of Distribution Licensees to fully cooperate with STU in preparation of demand estimation and load forecasting for the entire state.
3. The Distribution Licensees shall provide to the STU their estimates of demand for the year ahead on month-basis at each inter connection point for the next financial year by 31st January of each year. Distribution Licensees shall also provide daily demand on the month ahead at each inter connection point by 25th for the next month.
4. Based on the data furnished by the Distribution Licensees, STU shall make monthly peak and lean period demand estimates for year ahead and daily peak and lean period demand estimates for the month ahead and furnish the same to SLDC.
5. The Distribution Licensees shall provide to SLDC, estimates of loads that may be shed when required, in discrete blocks with details of arrangements of such load shedding.
6. Distribution Licensees shall also furnish realistic category wise demand along with details of essentials loads, supply lines to be maintained in rural areas, details of power cuts imposed or to be imposed etc to STU and SLDC.
7. The SLDC would update the demand forecast (in MW as well as MWh) on quarterly, monthly, weekly and ultimately on daily basis which would be used in the day-ahead scheduling.

6.3. PERIODIC REPORTS

6.3.1. Daily and monthly reports covering the performance of the State Grid shall be prepared by SLDC.

6.3.2. The report shall, inter- alia contains the following: -

i. Frequency profile;

ii. Source wise generation for each control area;
iii. Drawal from the grid and area control error;
iv. Demand met (peak, off-peak and average);
v. Demand/Energy unserved in MW and MWh;
vi. Instances and quantum of curtailment of renewable energy;
vii. Voltage profile of important substations and sub-stations normally having low or high voltage;
viii. Major Generation and Transmission Outages;
ix. Constraint and instances of congestion in the transmission system;
x. Instances of persistent/significant non-compliance with SGC;
xi. Status of reservoirs;

6.4. OTHER REPORTS

6.4.1. The SLDC shall prepare a quarterly report which shall bring out the system constraints, reasons for not meeting the requirements, if any, of security standards and quality of service, along with details of various actions taken by different users, and the users responsible for causing the constraints.

6.4.2. The SLDC shall also provide information/report which can be called for by STU in the interest of smooth operation of InSTS.

6.5. WRITTEN OPERATING INSTRUCTIONS

6.5.1. Written operating instructions for each equipment and operating procedure for sequence of operations of power system equipment shall be available at each substation and switchyard.

6.5.2. The operating procedure followed shall not be inconsistent with the manufacturer's instructions regarding particular items of equipment.

6.5.3. All operators shall be aware of all the operating instructions and procedures and be capable of operating the equipment skilfully.

6.5.4. These operating instructions and procedures shall be revised whenever required.

CHAPTER-7
SYSTEM SECURITY

7.1. GENERAL

7.1.1. All Users shall operate their respective power systems and power stations in synchronization with each other at all times in coordination with SLDC.

7.1.2. All switching operations, whether manually or automatic, will be based on the guidelines of the following:

i) IEGC Regulations and its subsequent amendment;
ii) Instructions/Guidelines/Procedures issued by SLDC;
iii) Decisions/ Recommendations made by State Grid Code Review Panel and
iv) State Grid Code.

7.1.3. No element (s) of the grid shall be isolated from the grid except: -

i) During an emergency as per the Detailed Operating Procedure of SLDC, where such isolation would prevent a total grid collapse and/ or would enable early restoration of power supply.

ii) When serious damage to a critical equipment is imminent and such isolation would prevent it

iii) For safety of Human life;

iv) When such isolation is specifically instructed by SLDC and

v) On operation of under frequency/islanding scheme as approved by NERPC/SLDC.

Any such isolation shall be reported to SLDC within next 15 minutes.

7.1.4. Complete synchronization of the InSTS shall be restored as soon as the conditions permit it. The restoration process shall be supervised by SLDC, in accordance with the operating procedures separately formulated by SLDC.

7.1.5. No important element of the In-STS shall be deliberately opened or removed from service at any time, except when specifically instructed by SLDC or with a specific and prior clearance of SLDC. The list of such important grid elements that are critical for grid operation including vital distribution elements on which the above stipulations apply shall be prepared and reviewed at least in every three (3) months by the SLDC in consultation with the Transmission Licensees and Users and shall be available on MeECL website.

Provided that, in case of opening/removal of any important element of the In- STS under an emergency situation, the same shall be intimated immediately to SLDC within fifteen (15) minutes after the event.

Provided further that any emergency tripping, not advised or permitted by SLDC, shall be put up before the PCC, in the subsequent meeting.

7.1.6. Any tripping, whether manual or automatic of any elements of the InSTS, referred in clause 7.1.5 above, shall be promptly reported to the SLDC within fifteen (15) minutes, along with the reasons for such switching off or tripping to the extend determined and the likely time of restoration shall also be intimated within half an hour. SLDC shall ensure restoration of such elements within the estimated time of restoration as intimated.

Provided that the information/data from disturbance recorder, sequential event logger outputs, etc., containing the sequence of tripping and restoration or any other information as asked, shall be sent to SLDC for the purpose of analysis:

Provided further that such information/data may be directly made available at SLDC through suitable communication media for faster post fault analysis during grid disturbances.

7.1.7. Maintenance of grid elements shall be carried out by the respective users in accordance with the provisions of the CEA Grid Standards. Outage of an element that

is causing or likely to cause danger to the grid or sub-optimal operation of the grid shall be monitored by SLDC. SLDC shall report such outages to the SGCRC to the Commission and shall issue suitable instructions to restore such elements in a specified time period.

7.1.8. Except in an emergency, or when it becomes necessary to prevent imminent damage to critical equipment, no user shall suddenly reduce its generating unit output by more than 20MW without prior permission of SLDC.

7.1.9. Except in an emergency, or when it becomes necessary to prevent imminent damage to critical equipment, no user shall cause a sudden variation in its load by more than 100 MW without the prior permission of SLDC.

7.1.10. STU and SLDC shall make all possible efforts to ensure that frequency remains within the band of 49.90 Hz to 50.05 Hz as specified in this Regulation or IEGC and as amended from time to time.

7.1.11. Each User and Transmission Licensee shall provide adequate and reliable communication facility internally to SLDC, to ensure the exchange of data/information necessary to maintain reliability and security of the grid.

7.1.12. Users and Transmission Licensees shall send the requested information/data including disturbance recorder/sequential event recorder output, etc; to SLDC for the purpose of analysis of any grid disturbance/event.

7.1.13. A generating unit shall be capable of continuously supplying its normal rated active and/or reactive output at the rated system frequency and voltage, subject to the design limitations specified by the manufacturer.

7.1.14. A generating unit shall be provided with an Automatic Voltage Regulator (AVR), protective devices and safety devices, as set out in Connection Agreement and/or specified by the Authority

7.1.15. Power System Stabilizers (PSS), AVR of generating units and reactive power controllers shall be properly tuned by the generating station as per the plan and the procedure prepared by the RPC. In case the tuning is not complied with as per the plan and procedure, the SLDC shall issue notice to the defaulting generating station to complete the tuning within a specified time, failing which the SLDC may approach the Commission under Section 33 of the Act.

7.1.16. Provisions of protection and relay settings shall be coordinated periodically throughout the State grid, as per the plan finalized by the PCC in accordance with the Protection Code of these Regulations.

7.1.17. SLDC shall prepare the islanding schemes for the State Grid in accordance with the CEA Grid Standards for identified generating stations, cities and locations and ensure their implementation. The islanding schemes shall be reviewed and augmented depending on the assessment of critical loads at least once a year or earlier, if required.

7.1.18. Mock drill of the islanding schemes prepared by SLDC shall be carried out annually by the SLDC in coordination with respective RLDC and other users involved in the islanding scheme. In case mock drill with field testing is not possible to be carried out for a particular scheme, joint simulation testing shall be carried out by SLDC.

7.1.19. All generating units shall normally have their AVR in operation, with appropriate settings:

Provided that in case a generating unit of over 100 MW is required to be operated without its AVR in service, the SLDC shall be immediately intimated about the reason and duration, and its permission is obtained.

7.1.20. The tuning of AVR, PSS, Voltage Controllers including for low and high voltage ride through capability of wind and solar generators or any other requirement as per CEA Technical Standards for Connectivity shall be carried out by the respective generating station:

a. at least once every five (5) years;
b. based on operational feedback provided by the SLDC after analysis of a grid event or disturbance; and
c. in case of major network changes or fault level changes near the generating station as reported by STU or SLDC, as the case may be.
d. in case of a major change in the excitation system of the generating station.

7.1.21. All distribution licensees, STU and Users shall provide automatic under-frequency relays (UFR) and *df/dt* relays for load shedding in their respective systems to arrest frequency decline that could result in grid failure as per the plan given by NERPC from time to time. The default UFR settings shall be as specified in Table below or as amended in IEGC from time to time:

Serial No.	**Stage of UFR Operation**	**Frequency (Hz)**
1	Stage-1	49.40
2	Stage-2	49.20
3	Stage-3	49.00
4	Stage-4	48.80
Note 1: STU shall plan and implement UFR settings and df/dt load shedding schemes depending on load generation balance in coordination with SLDC and approval of NERPC.		
Note 2: Pumped storage hydro plants operating in pumping mode or ESS operating in charging mode shall be automatically disconnected before the first stage of UFR.		

Provided that the quantum of load relief under each stage of UFR shall be as indicated by the NERPC to Meghalaya.

Provided further that the particulars of feeders or group of feeders at STU sub-station which shall be tripped under under-frequency load shedding scheme whether manually or automatically on rotational basis or otherwise, will be available at the sub-station for information of the consumer(s).

7.1.22. The following shall be factored in while designing and implementing the UFR and *df/dt* relay schemes:

a. The under-frequency and *df/dt* load shedding relays are always functional;
b. Demand disconnection shall not be set with any time delay in addition to the operating time of the relays and circuit breakers;
c. There shall be a uniform spatial spread of feeders selected for UFR and *df/dt* disconnection;
d. SLDC through the STU and generation company shall ensure that telemetered data of feeders (MW power flow in real time and circuit breaker status) on which UFR and *df/dt* relays are installed, is available at its control centre;
e. SLDC shall monitor the combined load in MW of these feeders at all times;
f. SLDC shall share the above data with the respective RLDC, wherever applicable and submit a monthly exception report to SGCRC and NERPC wherever applicable. SLDC shall inform the SGCRC and the PCC on a quarterly basis, durations during the quarter when the combined load in MW of these feeders was below the level considered while designing the UFR scheme by SLDC. STU / SLDC shall take corrective measures within a reasonable period in coordination with distribution licensee to incorporate more feeders under UFR scheme if the quantum of load relief is not sufficient during manifold operations;
g. PCC shall undertake a monthly review of the UFR and df/dt scheme and also carry out random inspection of the under-frequency relays. SLDC shall publish such review along with an exception report, after concurrence from the PCC on its website;
h. SLDC shall report the actual operation of UFR and df/dt schemes and load relief to the concerned RLDCs and RPCs and publish the monthly report on its website.

7.1.23. SLDC, STU or User may identify the requirement of System Protection Schemes (SPS) (including inter-tripping and run-back) in the power system to operate the transmission system within operating limits and to protect against situations such as voltage collapse, cascade tripping and tripping of important corridors/flow-gates. Any such SPS at the intra-state level shall be finalized by SLDC in concurrence with NERPC and NERLDC. SPS shall be installed and commissioned by the concerned user. SPS shall always be kept in service. If any SPS at the intra-state level is to be taken out of service, the permission of the SLDC shall be required and same shall be informed to NERLC wherever applicable.

7.1.24. SLDC, and users shall operate in a manner to ensure that the steady state grid voltage as per the CEA Grid Standards remains within the following operating range:

Voltage (kV rms)		
Nominal	**Maximum**	**Minimum**
765	800	728
400	420	380
230*	245*	207*
220	245	198
132	145	122
110	121	99
66	72	60
33	36	30

**As per CEA Manual on Transmission Planning Criteria and subsequent updation.*

7.1.25. SLDC shall take appropriate measures to control the voltage as per their operating procedures.

7.1.26. The concerned user shall implement defence mechanisms as finalized by the NERPC/SLDC to prevent voltage collapse and cascade tripping.

7.1.27. All defence mechanisms shall always be in operation and any exception shall be immediately intimated by the concerned user to the SLDC along with the reasons and the likely duration of such exception. The concerned user shall also obtain permission from SLDC.

7.2. SPECIAL REQUIREMENTS FOR RENEWABLE ENERGY

7.2.1. System Operator shall make all efforts to evacuate the available Solar, wind, mini-hydel and hybrid of wind/solar/mini-hydel sources and treat the plants as must-run stations. However, SLDC may instruct such generator to back down generation in case grid security or safety of any equipment or personnel is likely to be endangered and such Renewable Energy (RE) sources shall comply with the same. For this, mandatory Data Acquisition System and Load / Generation Forecasting facility shall be provided by the generator for transfer of information to the SLDC.

7.2.2. The RE curtailment procedure shall be prepared by SGCRC and same shall be implemented with due intimation to the Commission.

i) SLDC may direct a Wind/Solar/mini-hydel Generators to curtail its VAR drawal/injection in case the security of grid or safety of any equipment or personnel is endangered.

ii) During the wind generator start-up, the wind generator shall ensure that the reactive power drawal (inrush currents in case of induction generators) shall not affect the grid performance.

CHAPTER-8

FREQUENCY AND VOLTAGE MANAGEMENT CODE

8.1. FREQUENCY CONTROL

8.1.1. The rated frequency of the system shall be 50.00 Hz and shall be regulated within the allowable band of 49.90-50.05 Hz in line with IEGC. The frequency shall be measured with a resolution of +/-0.001 Hz by SLDC and such frequency data measured every second shall be archived by SLDC.

8.1.2. SLDC shall endeavour that the grid frequency remains close to 50.00 Hz and in case frequency goes outside the allowable band, it shall ensure that the frequency is restored within the allowable band of 49.90-50.05 Hz at the earliest.

8.1.3. All Users shall adhere to their schedule of injection or drawal, as the case may be, and take such action as required under these regulations and as directed by SLDC so that the grid frequency is maintained and remains within the allowable band.

8.2. FALLING FREQUENCY

SLDC shall take appropriate action to issue instructions in coordination with NERLDC to arrest the falling frequency and restore it, within permissible range. Such instructions may include dispatch instruction to generators under control area of SLDC and or instruction to Users and distribution licensees to reduce load demand manually and/or through automatic load shedding.

8.3. RISING FREQUENCY

SLDC shall take appropriate action to issue instructions to the generators under its control in coordination with NERLDC to arrest the rising frequency and restore it, within permissible range. SLDC shall also issue instructions to Users and distribution licensees in coordination with NERLDC to lift Load shedding in any persist.

8.4. RESERVES

8.4.1. There shall be reserves as under:

a. Primary, Secondary and Tertiary reserves:

i) Primary, Secondary and Tertiary reserves shall be deployed for the purpose of frequency control, reducing area control error and relieving congestion;

ii) The response under Primary reserve shall be provided as per these regulations;

iii) Secondary reserves including automatic generation control and demand response shall be deployed in the control area as per these regulations or the CERC Ancillary Services Regulations or the MSERC (Ancillary Services) Regulations as and when the same is notified;

iv)Tertiary reserves shall be deployed in the control area as per these regulations or the CERC Ancillary Services Regulations or the MSERC (Ancillary Services) Regulations as and when the same is notified.

b. Black Start Reserves

Generating stations having black start capability, ESS and HVDC Station based on VSC shall be identified by SLDC, to act as black start reserves.

c. Voltage Control Reserves

Voltage Control Reserves shall be deployed for controlling the voltage at a bus or sub-system through reactive power injection or drawal.

8.4.2. The reserves shall be operated as Ancillary Services, namely:

a) Primary Reserve Ancillary Service (PRAS);
b) Secondary Reserve Ancillary Service (SRAS);
c) Tertiary Reserve Ancillary Service (TRAS);
d) Black Start Ancillary Services; and
e) Voltage Control Ancillary Services.

8.4.3. The mechanism of procurement and deployment of PRAS, SRAS and TRAS shall be as specified in these regulations or in the CERC Ancillary Services Regulations or MSERC (Ancillary Service) Regulations as and when the same is notified.

8.4.4. The primary response of the generating units shall be verified by SLDC during grid events. The concerned generating station shall furnish the requisite data to SLDC within two days of notification of reportable event.

8.5. CONTROL HIERARCHY

8.5.1. Inertia

The power system shall be operated at all times with a minimum inertia to be stipulated by SLDC so that the minimum nadir frequency post reference contingency stays above the threshold set for under frequency load shedding (UFLS). To maintain the minimum inertia, the SLDC may, if required, bring quick start synchronous generation on bar and reschedule generation including curtailment of wind, solar and wind-solar hybrid generation, in coordination with RLDC. The compensation for such quick start synchronous generation shall be included in the procedure to be prepared by SLDC and approved by the Commission.

8.6. Primary Control

8.6.1. Primary control is local automatic control in a generating unit or energy storage system or demand side response for the purpose of adjusting its active power output or consumption, as the case may be, in response to frequency excursion. Primary control, in the case of generators, is the immediate automatic control implemented through turbine speed governors or frequency controllers whereas for a User or distribution licensee, it is the automatic reduction / disconnection of load during the exigency period.

8.6.2. Primary control shall be provided by the Primary Reserves Ancillary Service (PRAS).

8.6.3. The minimum quantum of PRAS required for reference contingency will be declared by SLDC at the start of each financial year.

8.6.4. The generating stations and units thereof shall have electronically controlled governing systems or frequency controllers in accordance with the CEA Technical Standards for Connectivity and are mandated to provide PRAS. The generating stations and units thereof with governors shall be under Free Governor Mode of Operation.

8.6.5. SLDC may also identify other resources such as ESS and demand response to provide PRAS in consultation with SLDC for which PRAS Providers shall be compensated in accordance with the CERC Ancillary Services Regulations or the MSERC (Ancillary Services) Regulations as and when the same is notified.

8.6.6. All the generating units shall have their governors or frequency controllers in operation all the time with droop settings of 3 to 6 % (for thermal generating units and WS Seller) or 0-10% (for hydro generating units) as specified in the CEA Technical Standards for Connectivity.

8.6.7. The primary response requirement shall be as mentioned in Table below:

Fuel/Source	**Minimum unit-size/Capacity**	**Up to**
Coal/Lignite Based	200 MW and above	±5% of MCR
Hydro	25 MW and above	±10**%** of MCR
Gas based	Gas Turbine above 50 MW	±5**%** of MCR (corrected for ambience temperature)
WS Seller (commissioned after the date as specified in the CEA Technical Standards for Connectivity)	Capacity of Generating station more than 10 MW and connected at 33 kV and above	As per CEA Technical Standards for Connectivity

Provided that:

1. WS Sellers commissioned after the date as specified in CEA Technical Standards for Connectivity shall have the option to provide primary response individually through ESS or through a common ESS installed at its pooling station;
2. Nuclear generating stations and hydro generating stations (with pondage up to 3 hours or Run of the river projects) shall be exempt from mandatory primary response. They may provide the primary response to the extent possible, considering the safety and security of machines and humans.

8.6.8. All generating stations mentioned in above table shall have the capability of instantaneously picking up to a minimum of 105% of their operating level and up to 105% or 110% of their MCR, as the case may be, when the frequency falls suddenly and thus providing primary response whenever conditions arise.

Any generating station not complying with the above requirements shall be kept in operation (synchronized with the State/regional grid) only after obtaining the permission of the SLDC.

Provided that, the provision shall not be applicable for the wind/solar/hybrid generators operating without Battery Energy Storage System (BESS).

8.6.9. All generating stations, including the WS seller mentioned in above table shall have the capability of reducing output at least by 5% or 10%, as applicable, of their operating level and up to 5% or 10% of their MCR, as applicable, limited to the minimum turndown level when the frequency rises above the reference frequency and thus providing primary response, whenever condition arise. Any generating station not complying with the above requirements shall be kept in operation (synchronized with the regional grid) only after obtaining permission from SLDC.

8.6.10. The normal governor action shall not be suppressed in any manner through load limiter, Automatic Turbine Run-up System (ATRS), turbine supervisory control or coordinated control system and no time delays shall be deliberately introduced. In the case of a renewable energy generating unit, a reactive power limiter or power factor controller or voltage limiter shall not suppress the primary frequency response within its capabilities. The inherent dead band of a generating unit or frequency controller shall not exceed +/- 0.03 Hz. The governor shall be set with respect to a reference frequency of 50.000 Hz and response outside the dead band shall be with respect to a total change in frequency.

8.6.11. The thermal and hydro generating units shall not resort to Valve Wide Open (VWO) operation to make available margin for providing governor action.

8.6.12. The PRAS shall start immediately when the frequency deviates beyond the dead band as specified in clause 8.6.10 and shall be capable of providing its full PRAS capacity obligation within 45 seconds and sustaining at least for the next five (5) minutes.

8.6.13. SLDC shall assess its frequency response characteristics of its control area and share the assessment with the RLDC along with high resolution data of at least ten (10) seconds for Intra state entity Generating Stations and energy storage systems. Higher resolution data from GT terminal shall be furnished by Generators to SLDC, which shall be verified by SLDC and same will be furnished to RLDC.

8.6.14. All intra state entity Generating Stations and Users (as applicable) connected to In-STS shall submit their frequency response characteristics (FRC) to SLDC on monthly basis to corroborate their self-certification regarding the compliance to governor mode of operation.

8.6.15. Except under an emergency, or to prevent imminent damage to the equipment, no User shall suddenly reduce his generating unit output by more than the limit as specified by the SLDC, without prior intimation to and consent of the SLDC. Similarly, no User shall cause a sudden variation in its load by more than the limit as

specified by the SLDC, without prior intimation to and consent of the SLDC. All the Users shall ensure that temporary overvoltage due to sudden load rejection and the maximum permissible values of voltage unbalance shall remain within limits specified under IEGC or Authority as amended from time to time.

8.6.16. SLDC shall grade the median Frequency Response Performance (FRP) annually, considering at least ten (10) reportable events. In case the median Frequency Response Performance is less than 0.75 as calculated as per the procedure of IEGC-2023, SLDC after analysing the FRP shall direct the concerned entities to take corrective action. All such cases shall be reported to the RPC for its review.

8.7. SECONDARY CONTROL

8.7.1. Secondary control is a centralized automatic function to regulate the generation or load in a control area to restore the frequency within the allowable band or replenish deployed primary reserves.

8.7.2. Secondary Control shall be provided by a generating station or an entity having energy storage resource or an entity capable of providing demand response, on a standalone or aggregated basis, connected to an inter-State transmission system or an intra-State transmission system, as a Secondary Reserve Ancillary Service (SRAS) Provider, as specified in the CERC Ancillary Services Regulations or MSERC (Ancillary Services) Regulations as and when the same is notified.

8.7.3. Secondary control signals shall be automatically generated from SLDC and shall be transmitted to SRAS Providers for desired automated response when the Area Control Error (ACE) for State goes beyond the minimum threshold limit of ±10 MW, which may be reviewed from time to time based on the review of the performance of SRAS. However, the SRAS provider participating in National/Regional SRAS secondary control signals will be automatically generated from NLDC and will be transmitted to SRAS Providers through the RLDC exercising the control area jurisdictions for desired automated response when the Area Control Error (ACE) for each region goes beyond the minimum threshold limit of ±10 MW, which may be reviewed from time to time based on the review of the performance of SRAS. However, in this case the State DSM would be corrected in real time.

Provided that as and when the bi-directional communication system of SRAS providers with RLDC is fully established, secondary control signals shall be automatically generated from the respective RLDC.

8.7.4. ACE of State, shall be auto calculated at the control centre of SLDC, based on telemetered values, and external inputs, namely, the Frequency Bias Coefficient and Offset referred to in clause 8.7.5 and 8.7.6 respectively of this clause as per the following formula:

$$ACE = (I_a - I_s) - 10 * B_f * (F_a - F_s) + Offset$$

Where,

I_a = Actual net interchange in MW (positive value for export)

I_s = Scheduled net interchange in MW (positive value for export)
B_f = Frequency Bias Coefficient in MW/0.1 Hz (negative value)
F_a = Actual system frequency in Hz
F_s = Schedule system frequency in Hz
Offset = Provision for compensating measurement error

8.7.5. Frequency Bias Coefficient (B_f) shall be assessed and declared by SLDC for the State. Frequency Bias Coefficient shall normally be based on the median Frequency Response Characteristics (FRC) observed during the previous financial year of each control area and refined from time to time.

8.7.6. Offset shall be used to account for measurement errors and shall be decided by SLDC for its control area.

8.7.7. Secondary control may be operated under tie-line bias control, flat frequency control or flat tie-line control mode depending on grid requirements:
Provided that Secondary control may be suspended due to system maintenance or grid security or for any other reasons to be recorded in writing:
Provided further that SLDC shall lay down in the detailed operating procedure after stakeholder consultation, the conditions during which a particular mode shall be chosen and shall document the reasons for operating in a particular mode:
Provided also that the coordinated operation of AGC by the nested control areas shall be adopted based on mutually agreed protocols.

8.7.8. Schedule system frequency (F_s) shall be a reference frequency of 50 Hz unless otherwise specified by NLDC under certain conditions to be recorded in writing.

8.7.9. SLDC shall compute the ACE of the state control area in real time based on telemetered data. ACE data shall be archived at an interval of 10 seconds or less. SLDC shall share the data with the concerned RLDC and NLDC.

8.7.10. The SRAS Providers shall start responding to SRAS signals within thirty (30) seconds of receipt of the signal and shall be capable of providing the entire SRAS capacity obligation within fifteen (15) minutes and sustaining it at least for the next thirty (30) minutes. The secondary reserves shall be gradually replaced by tertiary reserves within 30 minutes.

8.7.11. With due regard to the requirement of planning reserve margin and resource adequacy referred to in Chapter 3 of these regulations and based on the following methodologies, the secondary reserve capacity requirements shall be estimated by SLDC for State control areas:
The positive and negative secondary reserve capacity requirements for any control area for a calendar year shall be equal to the 99 percentiles of positive and negative ACE respectively of that control area during the previous financial year
OR
The secondary reserve capacity requirement for any control area shall be equal to the 110 % of the largest unit size in the respective regional control area or state

control area plus load forecast error plus wind forecast error plus solar forecast error during the previous calendar year.

OR

Such other methodology as may be stipulated by SLDC after obtaining the due approval of the Commission.

8.7.12. Until specified by the Commission, the methodology specified in clause 8.7.11 of this clause shall be adopted by the SLDC to estimate the secondary reserve capacity requirement in the State control areas.

8.7.13. The reserve capacity requirement as per the methodology mentioned in clause 8.7.12 of this clause shall be estimated by SLDC respectively by 15th January every year for the next financial year and submitted to NLDC.

8.7.14. All India secondary reserve capacity requirement for the regional control area and the State control area shall be as estimated by NLDC based on reference contingency and other factors such as forecast errors.

8.7.15. SLDC shall ensure the availability of the quantum of secondary reserve at the State control area with due regard to the secondary reserves estimated and allocated for the State as published by NLDC in terms of IEGC by allocating to each User, and inform the same to RLDC and NLDC two days before the day of scheduling. The modalities for information exchange and timelines in this respect shall be as per the detailed procedure issued by NLDC.

8.7.16. If User fall short of maintaining secondary reserve capacity as allocated to it in terms of IEGC, whichever is lower, SLDC through RLDC shall procure such Secondary reserve capacity on behalf of the User under advance intimation to the User and allocate the cost of procurement of such capacity to such User based on the assessment. The procedure for cost allocation among Users shall be finalized by SGCRC and approved by the Commission. SLDC may use the amount for procurement of secondary reserves from the DSM pool account, RE DSM pool account or any other pool account specified by the Commission.

8.7.17. SLDC shall indicate the shortfall in secondary reserves, if any, and announce emergency alerts for such periods.

8.7.18. Secondary reserves shall be procured by SLDC from a generating station or an entity having energy storage resources or an entity capable of providing demand response, on a standalone or aggregated basis, connected to an intra-State transmission system or Service Provider in the inter-State Transmission system in accordance with the CERC Ancillary Services regulations or MSERC Ancillary Service Regulations as and when notified.

8.7.19. All thermal generating stations having a capacity of more than 200 MW and hydro generating stations having a capacity of more than 25 MW shall make arrangements to enable automatic operation of the plant from the appropriate load despatch centre by integrating the controls and telemetering features of their system into the

automatic generation control in accordance with the CEA Technical Standards for Construction and the CEA Technical Standards for Connectivity. The communication system shall be established in accordance with the CEA Communication Regulations.

8.7.20. All renewable energy generating stations and ESS shall be equipped with the facility to control active power injection in accordance with the CEA Connectivity Standards and the communication system shall be established in accordance with the CEA Technical Standards for Communication.

8.7.21. SRAS shall have a bi-directional communication system along with metering and SCADA telemetry in place as per the requirements stipulated in the Detailed Procedure issued under the MSERC Ancillary Service Regulations as and when notified.

8.8. TERTIARY CONTROL

8.8.1. Tertiary reserve requirement for the State, shall be as estimated by SLDC with due regard inter alia to the requirement of planning reserve margin and resource adequacy as referred to in Chapter 3 of these regulations, so as to take care of contingencies and to cater to the need for replacing secondary reserves estimated as per clause 8.7. of this Regulation by 25th January every year, which will be implemented for the next financial year from 1st April onwards by the State control areas.

8.8.2. SLDC shall ensure the availability of the quantum of tertiary reserve at their control area with due regard to the tertiary reserves estimated and allocated for the State as published by NLDC in terms of IEGC, and inform the same to RLDC two days before the day of scheduling.

8.8.3. SLDC shall ensure availability of the quantum of tertiary reserve at their control area on day ahead basis with due regard to the tertiary reserves estimated and allocated for its share by NLDC in terms of IEGC, and inform the same to RLDC.

8.8.4. If User falls short in maintaining tertiary reserve capacity as allocated to it in terms of IEGC, whichever is lower, the SLDC will procure such tertiary reserve capacity on behalf of the User under advance intimation to the User and allocate the cost of procurement of such capacity to such User based on the assessment. The procedure for cost allocation among Users shall be finalized by SGCRC and approved by the Commission. SLDC may use the amount for procurement of secondary reserves from the DSM pool account, RE DSM pool account or any other pool account specified by the Commission.

8.8.5. Tertiary reserves shall be procured by SLDC from a generating station or an entity having energy storage resourced or an entity capable of providing demand response, on a standalone or aggregated basis, connected to an inter-State transmission system or an intra-State transmission system in accordance with the CERC/MSERC Ancillary Services regulations.

8.8.6. Tertiary reserves to be provided by the TRAS provider shall be capable of providing TRAS within fifteen (15) minutes of despatch instructions from SLDC, and shall be capable of sustaining the service for at least the next 60 minutes. TRAS shall be activated and deployed by the appropriate load despatch center on account of the following events:

i) To replenish the secondary reserve, in case the secondary reserve has been deployed continuously in one direction for fifteen (15) minutes for more than 20 MW or in respect of a State such other volume limit as may be specified by MSERC;

ii) Generation unit or transmission line outages;

iii) Any such other event affecting the grid security.

8.8.7. The quantum of reserves procured by SLDC shall be communicated to RLDC.

Provided that Reserves as specified in the above Regulation 8.4 to Regulation 8.8 shall be implemented by the SLDC as per the circumstances prevailing in the State.

8.9. VOLTAGE MANAGEMENT

8.9.1. Users using the State Transmission System shall make all possible efforts to ensure that the grid voltage always remains within the limits specified in IEGC and amended thereof. The specified limit of voltage specified in IEGC are reproduced below:

Voltage (kV rms)		
Nominal	**Maximum**	**Minimum**
765	800	728
400	420	380
230*	245*	207*
220	245	198
132	145	122
110	121	99
66	72	60
33	36	30

** As per CEA Manual on Transmission Planning Criteria and subsequent updation.*

8.9.2. STU and/or SLDC shall carry out load flow studies based on operational data available from time to time, to predict where voltage problems may be encountered and to identify appropriate measures to ensure that voltages remain within the defined limits. On the basis of these studies, SLDC shall instruct the generators within its control area to maintain specified voltage level at interconnecting points. SLDC and STU shall co-ordinate with the DISCOM to determine voltage level at the interconnection points. SLDC shall continuously monitor 400/220/132kV voltage levels at strategic sub-stations.

8.9.3. SLDC, in close coordination with NERLDC shall take appropriate measures to control State Transmission System voltages, which may include but not be limited to transformer tap changing, capacitor/reactor switching including capacitor switching by DISCOMs at 33 kV sub-stations, operation of Hydro unit as synchronous condenser and use of MVAr reserves with the generators within its control area within technical limits agreed to between STU and Generators. Generators shall inform SLDC of their reactive reserve capability promptly on request.

8.9.4. SGS and IPPs shall make available to SLDC, the up-to-date capability curves for all Generating Units, indicating any restrictions, to allow accurate system studies and effective operation of the State Transmission System. CPPs shall similarly furnish the net reactive capability that will be available for Export to/ Import from State Transmission System.

8.9.5. DISCOM and Open Access Users shall participate in voltage management by providing local VAR compensation (as far as possible in low voltage system close to load points) such that they do not depend upon EHV grid for reactive support.

8.9.6. Close Co-ordination between Users and SLDC, STU and NERLDC shall exist at all times for the purposes of effective frequency and voltage management.

8.10. REACTIVE POWER MANAGEMENT

8.10.1. All Users shall endeavour to maintain the voltage at the inter-connection point in the range specified in the Grid Code.

8.10.2. All generating stations shall be capable of supplying reactive power support so as to maintain power factor at the point of inter-connection within the limits of 0.95 lagging to 0.95 leading as per the CEA Technical Standards for Connectivity Regulations and amendments thereof.

8.10.3. All generating stations connected to the grid shall generate or absorb reactive power as per instructions of SLDC, within the capability limits of the respective generating units, where capability limits shall be as specified by the OEM.

8.10.4. The reactive interchange of Users shall be measured and monitored by SLDC.

8.10.5. SLDC may direct the Users about reactive power set-points, voltage set points and power factor control to maintain the voltage at inter-connection points.

8.10.6. SLDC shall assess the dynamic reactive power reserve available at various substations or generating stations under any credible contingency on a regular basis based on technical details and data provided by Users, as per the procedure specified by SLDC prepared in line with the procedure issued by NLDC or NERLDC.

8.10.7. SLDC shall take appropriate measures to maintain the voltage within limits, inter alia, using the following facilities, but not limited to and the facility owner shall abide by the instructions of SLDCs:

i.) Shunt reactors;

ii.) Shunt capacitors (excluding HVDC automatic control)

iii.) Thyristor-Controlled Series Capacitor (TCSC);
iv.) Voltage Sourced Converter (VSC) based High Voltage Direct Current (HVDC),
v.) Synchronous/non-synchronous generator voltage control including inverter based reactive power support;
vi.) Synchronous condenser;
vii.) Static VAR compensators (SVC), STATCOM and other FACTS devices;
viii.) Transformer tap change: generator transformer and inter-connecting transformer;
ix.) HVDC power order or HVDC controller selection to optimise filter bank.

8.10.8. Reactive power facility shall be in operation at all times and shall not be taken out without the permission of SLDC.

8.10.9. Periodic or seasonal tap changing of inter-connecting transformers and generator transformers shall be carried out to optimize the voltages, subject to technical feasibility, and wherever necessary, other options such as tap staggering may be carried out in the network.

8.10.10. Hydro and gas generating units having this capability shall operate in synchronous condenser mode operation as per instructions of SLDC. Standalone synchronous condenser units shall operate as per the instructions of SLDC. The compensation for such synchronous condenser mode operation shall be included in the procedure, in line with the procedure of NERLDC/NLDC and approved by the Commission.

8.10.11. Any commercial settlement for reactive power shall be governed as per the regulatory framework specified in Appendix-VII

8.10.12. If voltage is outside the limit as specified in this Regulation, SLDC shall take all reasonable actions necessary to restore the voltages so as to be within the relevant limits including switching ON or OFF of lines considering the security of the system.

CHAPTER-9

OPERATIONAL PLANNING

9.1. TIME HORIZON

9.1.1. Operational planning shall be carried out in advance by SLDC within control areas with Monthly and Yearly time horizons in co-ordination with STU.

9.1.2. Operational planning shall be carried out in advance by SLDC within control areas on Intra-day, Day Ahead, Weekly time horizons.

9.1.3. SLDC in consultation with NERLDC, shall issue procedures and formats for data collection to carry out:

i) Operational planning analysis;
ii) Real-time monitoring;
iii) Real-time assessments.

9.2. DEMAND ESTIMATION

9.2.1. SLDC shall carry out demand estimation as part of operational planning after duly factoring in the demand estimation done by STU as part of resource adequacy planning referred to in Chapter 3 of these regulations. Demand estimation by SLDC shall be for both active power and reactive power incidents on the transmission system based on the details collected from distribution licensees, grid-connected distributed generation resources, captive power plants and other bulk consumers embedded within the State.

9.2.2. SLDC shall develop methodology for daily, weekly, monthly, yearly demand estimation in MW and MWh for operational analysis as well as resource adequacy purposes. SLDC, while estimating demand may utilize state of the art tools, weather data, historical data and any other data. For this purpose, all distribution licensees shall maintain a historical database of demand.

9.2.3. Demand estimation by SLDC shall be done on day ahead basis with time block wise granularity for the daily operation and scheduling. In case SLDC observes a major change in demand in real time for the day, it shall immediately submit the revised demand estimate to the NERLC for demand estimate correction.

9.2.4. Users shall submit node-wise morning peak, evening peak, day shoulder and night off-peak estimated demand in MW and MVAr on monthly and quarterly basis for the nodes 132kV and above for preparation of scenarios for computation of ATC/TTC by SLDC.

9.2.5. SLDC shall estimate peak and off-peak demand (active as well as reactive power) on a weekly and monthly basis for load-generation balance planning as well as for operational planning analysis, which shall be a part of the operational planning data. The demand estimates mentioned above shall have granularity of a time block. The estimate shall cover the load incident on the grid as well as the net load incident taking into account embedded generation in the form of roof-top solar and other distributed generation.

9.2.6. Timeline for submission of demand estimate data by Distribution licensees/Buyer or other entities directly connected to In-STS, as applicable, to SLDC shall be as follows:

Daily demand estimation	10:00 hours of previous day
Weekly demand estimation	First working day of previous week
Monthly demand estimation	Fifth day of previous month
Yearly demand estimation	30th September of the previous year

9.2.7. SLDC shall compute forecasting error for intra-day, day-ahead, weekly, monthly and yearly forecasts and analyse the same in order to reduce forecasting error in the future. The computed forecasting errors shall be made available by SLDC in the websites.

9.3. GENERATION ESTIMATION

9.3.1. The modalities of generation estimation by entities shall be as per the Procedure referred to in Regulation 9.1 and 9.2 of these regulations and the Resource Adequacy Framework.

9.3.2. SLDC shall forecast generation from wind, solar, ESS and Renewable Energy hybrid generating stations that are intra-state entities with inputs received from the generators/QCA, for different time horizons as referred to in Regulation 9.1 of these regulations for the purpose of operational planning.

9.4. ADEQUACY OF RESOURCES

9.4.1. SLDC shall estimate and ensure the adequacy of resources, identify generation reserves, demand response capacity and generation flexibility requirements with due regard to the resource adequacy framework as specified under Chapter 3 of these regulations.

9.4.2. SLDC shall furnish time block-wise information for the following day in respect of all intra-state entities to RLDC who shall validate the adequacy of resources with due regard to the following:

i) Demand forecast aggregated for the control area;
ii) Renewable energy generation forecast for the control area;
iii) Injection schedule for intra-State entity generating station;
iv) Requisition from regional entity generating stations;
v) Secondary and planned procurement through Tertiary reserve requirement;
vi) Planned procurement of power through other bilateral or collective transactions, if any.

9.5. OPERATIONAL PLANNING STUDY

9.5.1. Based on the operational planning analysis data, operational planning study shall be carried out by SLDC for time horizons in line with IEGC, as under:

Time horizon of operational planning study	Means for carrying out study
Real time and Intra-day	For various operating conditions using online/offline SCADA/EMS system
Day-ahead	For various operating conditions using offline tools
Weekly	For various operating conditions using offline tools
Monthly/Yearly	For various operating conditions using offline tools

9.5.2. SLDC shall utilize network estimation tool integrated in their EMS and SCADA systems for the real time operational planning study. All Users shall make available at all times real time error free operational data for the successful execution of

network analysis using EMS/SCADA. Failure to make available such data shall be immediately reported to SLDC, along with a firm timeline for restoration. The performance of online network estimation tools at SLDC shall be reviewed in the monthly operational meeting of NERPC, as per IEGC for their early resolution.

9.5.3. SLDC shall perform day-ahead, weekly, monthly and yearly operational studies for the State for:

a) assessment and declaration of total transfer capability (TTC) and available transfer capability (ATC) for the import or export of electricity by the State. TTC and ATC shall be revised from time to time based on the commissioning of new elements and other grid conditions and shall be published on SLDC website with all the assumptions and limiting constraints;
b) planned outage assessment;
c) special scenario assessment;
d) system protection scheme assessment;
e) natural disaster assessment; and
f) any other study relevant in operational scenario.

9.5.4. Operational planning study shall be done to assess whether the planned operations shall result in deviations from any of the system operational limits defined under these regulations and applicable CEA Standards. The deviations, if any, shall be reviewed in the operational meeting of SGCRC and significant deviations shall be monitored by SLDC for early resolution.

9.5.5. SLDC shall maintain records of the completed operational planning study, including date specific power flow study results, the operational plan and minutes of meetings on operational study.

9.5.6. SLDC shall have operating plans to address potential deviations from system operational limit identified as a result of the operational planning study. These operating plans shall be communicated to users in advance so that they can take corrective measures. In case any user is unable to adhere to such an operating plan, it shall inform SLDC in advance with detailed reasons and explanations for the non-adherence. These detailed reasons and explanations shall be discussed in the monthly operation sub-committee of the region. The quarterly report shall be submitted by SLDC to the Commission.

9.5.7. SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC.

Users shall provide SLDC the details of new elements to be commissioned in the next six months with the state grid in the formats prescribed by SLDC.

9.5.8. Defence mechanisms like system protection scheme, load-rejection scheme, generation run-back, islanding scheme or any other scheme for system security shall

be proposed by the concerned user or SLDC or RLDC or NLDC and shall be deployed as finalized by the respective RPC.

9.5.9. SLDC shall compare the results of the studies of the impact of new elements on the system and transfer capability addition with those of the interconnection and planning studies by STU, as applicable and any significant variations observed shall be communicated to CEA, RPC and STU for immediate and long-term mitigation measures.

9.6. DEMAND CONTROL

9.6.1. Primarily the need for demand control would arise on account of the following conditions:

a) Variations in demand from the estimated or forecasted values which cannot be absorbed by the grid.
b) Unforeseen generation/transmission outages resulting in reduced power availability and
c) Heavy reactive power demand causing low voltages.

9.6.2. SLDC shall match the consolidated demands of the DISCOM with consolidated generation availability from SGS, CGS, IPP/CGP and other sources and exercise Demand Control to ensure that there is a balance between the energy availability and the DISCOM demand plus losses plus the required reserve.

9.6.3. On exhaustion of all methods of demand management, SLDC may exercise load curtailment directly through tripping of circuit breaker using RTIs or through telephonic instructions.

9.7. DEMAND AND LOAD MANAGEMENT

9.7.1. All User shall restrict their drawal from the grid, within the net drawal schedule for ensuring grid security.

9.7.2. Distribution Licensee shall ensure that requisite load shedding is carried out in its control area, so that there is no over drawal. Distribution Licensees shall also provide to SLDC, time block wise details of such load shedding.

9.7.3. SLDC, in coordination with STU and Distribution Licensees shall develop Automatic Demand Management scheme with emergency controls at SLDC.

The Distribution Licensees in consultation with SLDC shall also formulate and implement state of art demand management schemes for automatic demand management like rotational load shedding, demand response to reduce over drawal in order to comply with clause 9.7.1 and 9.7.2 of this regulation.

9.7.4. SLDC shall be responsible for reduction of demand in the event of insufficient generating capacity, inadequate transfers from external interconnections to meet demand, or in the event of breakdown or congestion in In-STS or ISTS or other operating problems (such as frequency, ACE, voltage levels beyond normal operating limit, or thermal overloads of the equipment and lines, etc.) or over

drawal of power vis-à-vis that of intra-state entities beyond the Volume limits specified in MSERC Deviation Settlement Mechanism Regulations.

9.7.5. SLDC for the safety of In-STS may direct the Users to curtail their drawal from the In- STS. Such directions shall include the time period or the system conditions until which the issued directions shall be applicable:

Provided that any non-compliance of such direction shall be dealt with as per the provisions of Monitoring and Compliance Code of these Regulations.

9.8. POST DESPATCH ANALYSIS

9.8.1. Operational analysis

a) SLDC shall analyse the following:
   i) Pattern of demand met, under drawls and over drawls, frequency profile, voltage and tie-line flows, angular spread, area control error, reserve margin, load and RE forecast errors, ancillary services despatched, transmission congestion and (N-1) violations;
   ii) Generation mix in terms of source and station wise generation;
   iii) Irregular pattern in any of the system parameters mentioned in sub-clauses (a)(i) and (a)(ii) above and reasons thereof; and
   iv) Extreme weather events or any other event affecting grid security.
b) Such analysis shall be disclosed in the website of SLDC.
c) SLDC shall prepare a quarterly report that shall bring out the system constraints, reasons for not meeting the requirements, if any, of security standards and quality of service, along with details of actions taken, including by those responsible for causing disturbances in the system parameters.
d) SLDC shall also provide such a report to the RPC.
e) For the purpose of analysis and reporting, telemetered data shall be archived with a granularity of not more than five (5) minutes and higher granularity for special events. Such data shall be stored by SLDC for at least fifteen years and reports shall be stored for twenty-five (25) years for operational analysis.

9.9. LOAD CRASH

9.9.1. In the event of load crash in the system due to weather disturbance or any other reasons, the situation would be controlled by SLDC by the following methods in descending priorities:

a. Lifting of the load restrictions, if any;
b. Exporting the power to neighbouring regions/ states;
c. Backing down of thermal stations with a time lag of 5-10 minutes for short period in merit order;
d. Closing down of hydel units (subject to non-spilling of water and effect on irrigation) keeping in view the inflow of water into canals and safety of

canals/hydel channels. The above methodology shall be reviewed from time to time;

e. While implementing the above, the system security aspects should not be violated as per provisions in Chapter 7 of this State Grid Code.

CHAPTER-10

SCHEDULING AND DESPATCH CODE

10.1. INTRODUCTION

10.1.1. This chapter deals with the procedure for scheduling, injection and drawal of power by the Users through Intra-State Transmission System and the modalities for exchange of information and sets out the responsibilities of each User and SLDC in Scheduling and Despatch of energy.

10.1.2. The procedure for submission of capability declaration by Users and submission of requisition / drawal schedule by other Users is intended to enable SLDC to prepare the Despatch Schedule for each Generating station and drawal schedule for each User.

10.2. APPLICABILITY

This Scheduling and Despatch Code shall be applicable to:

10.2.1. All Seller(s)/Generator(s), captive generators, open access generators, RE generators other than WS seller connected to In-STS having installed generating capacity of 5 MW and above of Unit or Combined capacity of all units in the generating station (or such other threshold capacity specified by the Commission from time to time).

10.2.2. All Buyer(s) including distribution licensee(s), deemed distribution licensee(s) located in the state, open access consumers and CPP connected to In-STS.

10.3. GENERAL PRINCIPLE OF SCHEDULING

10.3.1. All the scheduling will be done on 15-minute time block basis. For the purpose of scheduling each day starting from 00:00 hours (IST) to 24:00 hours (IST) are divided into 96-time blocks each of 15 minutes duration. SLDC shall compile and intimate DISCOM/Buyer the drawal schedule and to each SGC and IPPs, the generation schedule in advance.

10.3.2. SLDC shall be responsible for optimum scheduling and despatch of electricity, monitoring of real time grid operations through secure and economic operation of the State grid and management of the reserves including energy storage systems and demand response within the State, supervision and control over the intra-State transmission system, processing of interface energy meter data and coordinating the accounting and the settlement of State pool account, as may be specified by the Commission.

10.3.3. The Users connected exclusively to the intra-State transmission systems shall be under the control area jurisdiction of SLDC for scheduling and despatch of electricity.

10.3.4. Users connected to both inter-State transmission systems and intra-State transmission systems shall be under the control area jurisdiction of RLDC, if more than or equal to 50% of the quantum of connectivity is with ISTS, and if more than 50% of the quantum of connectivity is with intra-State transmission system, it shall be under the control area jurisdiction of SLDC.

10.3.5. In case User is connected to both inter-State transmission systems and intra-State transmission systems, wherein SLDC is responsible for scheduling, such User shall ensure grid security.

10.3.6. Unless otherwise decided by the Commission, the User that have already declared COD as on the date of coming into force of these Regulations, shall continue to remain under the control of SLDC as existing before the date of coming into force of these regulations:

10.4. RESPONSIBILITIES OF SLDC

The SLDC, in discharge of its functions under the Act and for stable, smooth and secure operation of the integrated grid, shall be responsible for the following within its control area:

10.4.1. Forecasting demand for its control area for each time block on day-ahead and intra-day basis;

10.4.2. Scheduling and despatch for the User in the State control area in accordance with contracts;

10.4.3. SLDC shall certify the Declared Capacity of generating stations/units, which is under the purview of SLDC and shall be binding on all the participants;

10.4.4. Balancing demand and supply to minimize Area Control Error (ACE) for the State;

10.4.5. Maintaining and despatching reserves as shall be decided by NERPC as per guidelines of central agencies;

10.4.6. Implementing SCED and SCUC as shall be directed by NLDC/NERPC as per guidelines of central agencies;

10.4.7. Declaring Total Transfer Capability (TTC) and Available Transfer Capability (ATC) in respect of import and export of electricity of its control area with intra state transmission systems in coordination with State Transmission Utility and revising the same from time to time based on grid conditions. Assessment of TTC and ATC shall be done on a continuous basis at least Eleven (11) months (M-12) in advance and revised based on contingencies from time to time with addition of new elements (commissioned or to be commissioned). TTC and ATC calculations for the State shall be done based on procedure for the transfer capability assessment methodology published by NLDC.

10.5. DECLARATION OF CAPACITY BY GENERATING STATIONS THAT ARE STATE ENTITIES:

10.5.1. The Generating Station shall declare ex-bus Declared Capacity limited to 100% MCR less auxiliary power consumption on day ahead basis without fail.

10.5.2. The Hydro generating Station may declare ex-bus Declared Capacity more than 100% MCR less auxiliary power consumption limited to overload capability during the high inflow periods. The high inflow period for this shall be notified by SLDC.

10.5.3. WS seller, connected to the InSTS shall declare the available capacity on day ahead basis, as per the provision of Regulation 10.10 of these regulations.

10.5.4. SLDC shall periodically check that the generating station is not manipulating the declaration of the Declared Capacity with the intent of making undue money through Fixed Charges or DSM.

10.5.5. The SGC, IPPs and any other thermal generating station, other than WS sellers shall be required to demonstrate the declare capability of its generating station as and when asked by the SLDC. In the event of the SGS and IPPs failing to demonstrate the declared capacity, it shall be treated as a mis-declaration for which charges shall be levied by SLDC and shall be recovered as per the detailed procedure.

10.5.6. The charges for the first mis-declaration for a block or multiple blocks in a day shall be the charges corresponding to two days fixed charges at normative availability. For the second mis-declaration the charges shall be corresponding to four days fixed charges at normative availability and for subsequent mis declarations, the penalty shall increase in a geometric progression over a period of a month.

10.5.7. DISCOM will give their requisitions on day ahead and real time basis to the SLDC and SLDC shall operate on real time basis as per individual Merit Order, i.e., in ascending order of the cost of energy (i.e., variable cost) of generating stations excluding hydro, nuclear and REGS.

Notwithstanding anything contained in the above clause, in the absence of any requisition from the DISCOM(s), the SLDC shall operate on real time basis as per the Merit Order Despatch or as it deems fit and appropriate in the given circumstances based on the available data.

10.5.8. The net drawal schedule of any DISCOM issued by SLDC, considering economic operation of State grid would be sum of ex-power plant schedules from different SGS/ IPPs/JVs, share from ISGS and any bilateral exchange agreed by the DISCOM and drawal/ injection on behalf of Open Access customers.

10.5.9. The generation schedule of each SGS shall be sum of the requisitions made by each Distribution Licensee, restricted to their entitlement and subjected to maximum and minimum value criteria or any other technical constraints indicated by SLDC.

10.5.10. All the Intra State Users shall endeavour to maintain their drawals/ injections in such a manner that they do not violate the limits on deviation volume as specified in the Meghalaya State Electricity Regulatory Commission (Intra-State Deviation

Settlement Mechanism and Related Matters) Regulations, 2025 and its amendment thereof.

10.5.11. The following specific points would be taken into consideration, while preparing the schedules:

i) SLDC to check that the resulting power flows do not give rise to any transmission constraint. In case of any constraints, SLDC has to moderate the schedule to the required extent, under intimation to concerned generating stations , Distribution Licensees, Open Access Consumers and CPPs.

ii) The state entity generating stations shall declare the ramping rate along with declaration of day-ahead capacity in the following manner, which shall be accounted for in the preparation of generation schedules:

a) Coal or lignite fired plants shall declare a ramp up or ramp down rate of not less than 1% of ex-bus capacity corresponding to MCR on bar per minute;

b) Gas power plants shall declare a ramp up or ramp down rate of not less than 3% of ex-bus capacity corresponding to MCR on bar per minute;

c) Hydro power plants shall declare a ramp up or ramp down rate of not less than 10% of ex-bus capacity corresponding to MCR on bar per minute;

d) Renewable Energy generating stations shall declare a ramp up or ramp down rate as per CEA Technical Standards for Connectivity Regulations.

10.6. FOR OPTIMUM UTILIZATION OF HYDRO ENERGY

10.6.1. During high inflow and water spillage conditions, for Storage type generating station and Run–of River Generating Stations with or without Pondage, the declared capacity for the day may be up to the installed capacity plus overload capability (up to 10% or such other limit as certified by the OEM and approved by CEA) minus auxiliary consumption, corrected for the reservoir level. In case, the overload capability of such a station is more than 10% as approved, such a station shall declare the overload capability in advance.

10.6.2. During high inflow and water spillage conditions, the SLDC shall allow scheduling of power from hydro generating stations for overload capability up to 10% of Installed Capacity or any other limit as per above clause, subject to the availability of margins in the transmission system

10.7. SCHEDULING OF WS SELLER AND ESS BY QCA

10.7.1. The renewable energy generating station(s) or Projects based on energy storage system(s) connected at a particular InSTS substation or at multiple InSTS substations located in the State may appoint a QCA on their behalf to coordinate and facilitate scheduling for such generating stations or energy storage system(s).

Provided that the roles, technical obligations, and forecasting or scheduling activities of the QCA shall be discharged as per the provisions of this State Grid Code, read in conjunction with the Indian Electricity Grid Code (IEGC) and the relevant

Deviation Settlement Mechanism (DSM) Regulations notified by the Commission, as amended from time to time.

10.7.2. SLDC shall submit a procedure for aggregation of pooling stations for the purpose of combined scheduling and deviation settlement for wind or solar or renewable hybrid generating stations that are regional entities, within three (3) months of notification of these regulations for approval of the Commission.

10.7.3. The QCA shall be registered with the SLDC.

10.7.4. QCA registered with the SLDC shall, on behalf of wind, solar or renewable hybrid generating stations or Energy Storage System shall:

a) Forecast generation from wind/ solar generators, Hybrid of Wind and Solar Generating Stations and Energy Storage System (ESS) under its jurisdiction based on inputs received from the generators for each time block on day-ahead and intra-day basis:

Provided that such forecasts may be used by the wind /solar generators, Hybrid of Wind and Solar Generating Stations and Energy Storage System (ESS) at their own risk and discretion along with all commercial liabilities arising out of it;

b) Coordinate and facilitate scheduling of power with the SLDC; and

c) Undertake commercial settlement of deviations with the SLDC in accordance with the DSM Regulations;

d) Submit a copy of the consent to the SLDC certifying that QCA shall undertake all operational and commercial responsibilities on behalf of generating stations as per Regulations.

10.7.5. The concerned wind, solar or renewable hybrid generating stations including energy storage systems shall indemnify the SLDC for any act of commission or omission on the part of QCA including compliance with the Grid Code and settlement of its financial liability in the pooled account.

10.7.6. Contract between the generating stations and QCA shall invariably contain provisions for internal dispute resolution, and any disputes arising between the generating stations and QCA shall be settled in accordance with the said mechanism.

10.7.7. For Optimum Utilization of Wind/ Solar generators, Hybrid of Wind and Solar Generating Stations and Energy Storage System (ESS) shall mandatorily provide to SLDC, in a format as specified by SLDC, the technical specifications of their plants at the beginning and whenever there is any change. The data relating to power system parameters and weather-related data as applicable shall also be mandatorily provided by such generators to SLDC in real time.

10.8. ADHERENCE TO SCHEDULE

Each Intra State Entity shall regulate its generation or demand or both, as the case may be, so as to adhere to the schedule of net injection into or net drawal from the In-STS/ISTS.

10.9. AREA CONTROL ERROR

The State Load Despatch Centre and other drawee Intra State entities shall keep their Area Control Error close to zero (0) by rescheduling, deploying reserves and automatic demand management scheme.

10.10. SCHEDULING PROCESS

10.10.1. By 6 AM on 'D-1' day, each Intra SGS/CGP/ IPPs/REGS/ other generators connected with the InSTS will intimate SLDC, station wise ex-power plant MW and MWH capabilities foreseen for the next day 'D', i.e., between 0000 hours to 2400 hours, at 15-minute intervals in the formats prescribed by SLDC

10.10.2. The Generating Stations shall submit the following information:

(i) Generating Station based on coal and lignite:

a) Time block-wise On-bar Declared Capacity (MW) for on-bar units wise and station wise;

b) Time block-wise Off-bar Declared Capacity (MW) for off-bar units wise and station wise;

c) Time block-wise Ramp up rate (MW/ min) for on-bar capacity of each unit;

d) Time block-wise Ramp down rate (MW/min) for on -bar capacity of each unit;

e) MWh capability for the day;

f) Minimum turndown level (MW) and in percentage (%) of ex-bus capacity on-bar of each unit;

Note:-Declared Capacity shall be given as per unit wise/plant wise as requested by SLDC.

(ii) Generating Station based on hydro energy:

a) Time block-wise ex-bus declared capacity;

b) MWh capability for the day.

c) Ex-bus peaking capability in MW and MWh;

d) Time block-wise Ramp up rate (MW/min) for on-bar capacity;

e) Time block-wise Ramp down rate (MW/min) for on-bar capacity;

f) Unit-wise/plant wise forbidden zones in MW and percentage (%) of ex-bus installed capacity;

g) Minimum MW and duration corresponding to requirement of water release for irrigation, drinking water and other considerations;

h) Unit-wise/ plant wise maximum MW along with probable combination of unit maximum in case adequate water is not available.

Note:-Declared Capacity shall be given as per unit wise/plant wise as requested by SLDC.

(iii) The renewable energy generating station based on wind/ solar, hybrid of wind and solar, individually or represented by a lead generator or QCA, shall submit

aggregate available capacity of the pooled generation and aggregate schedule along with contract-wise breakup for each time block for 0000 hours to 2400 hours of the 'D' day, by 6 AM on 'D-1' day. The source-wise/ pooling substation wise breakup of aggregate available capacity of the pooled generation shall also be furnished.

(iv) ESS including pumped storage plant, individually or represented by the lead ESS or QCA on their behalf, shall submit aggregate available capacity of the pooled generation and aggregate schedule along with contract-wise breakup for each time-block for 0000 hours to 2400 hours of the 'D' day, by 6 AM on 'D-1' day. The source-wise/ pooling substation wise breakup of aggregate available capacity of the pooled generation shall also be furnished.

(v) The availability declaration by generating station shall have a resolution of two decimal (0.01) MW and three decimal (0.001) MWh.

10.10.3. By 0600 hrs every day, each Seller connected to In-STS, shall furnish to SLDC, its unit-wise generation availability in MW and MWh taking into consideration any outage of its generating unit for the next day, i.e., from 0000 hrs to 2400 hrs of the following day on 15-minute time block.

10.10.4. By 0600 hrs every day, Pooling Sub-Station-wise QCAs, connected to In-STS, shall furnish to SLDC, their generation availability in MW and MWh taking into consideration any outage of its generating unit for the next day, i.e., from 0000 hrs to 2400 hrs of the following day on 15-minute time block.

10.10.5. By 0715 hrs every day, SLDC shall advice the station-wise ex-power plant MW and MWh availability of ISGS & each Seller connected to In-STS and Pooling Sub-Station wise QCAs, connected to In-STS for the next day, i.e., from 0000 hrs to 2400 hrs of the following day on 15-minute time block to Beneficiaries in the State.

10.10.6. By 0730 hrs every day, Distribution Licensee shall furnish their requisition of ISGS & In-SGS drawal to the SLDC in accordance with contracts.

10.10.7. **Submission of Drawal Schedule by Buyers**

a) Every Open Access Consumer connected to the Intra-State Transmission System shall submit its day-ahead drawal schedule, including source-wise and contract-wise quantum of power, directly to the State Load Despatch Centre (SLDC) in the format and within the timelines specified by the SLDC.

b) Each Distribution Licensee shall submit its day-ahead requisition and drawal schedule directly to the SLDC for supply to consumers within its licensed area.

c) The schedules submitted by Open Access Consumers and the requisitions submitted by Distribution Licensees shall form the basis for preparation of the State drawal schedule by the SLDC.

d) Any revision of schedule by an Open Access Consumer shall be submitted directly to the SLDC and shall be processed in accordance with the provisions of this Code and the applicable Open Access Regulations.

10.11. RULES FOR REVISION IN SCHEDULE

10.11.1. Curtailment of scheduled transactions for grid security:

When for the reason of transmission constraints or in the interest of grid security, it becomes inevitable to curtail power flow on a transmission corridor, the transactions already scheduled may be curtailed with immediate effect by the SLDC (in coordination with Regional Load Despatch Centre, as applicable) keeping in view the transaction which is likely to relieve the threat to grid security, in conformity with the IEGC, as follows:

i. Transactions under STOA/T-GNA shall be curtailed first followed by transactions under LTA & MTOA/GNA.

ii. Transactions under STOA/T- GNA shall be curtailed in the following order:
   a) Within transactions under STOA/T-GNA, bilateral transactions shall be curtailed first followed by collective transactions under day ahead market followed by collective transactions under real time market;
   b) Within bilateral transactions under STOA/T-GNA, curtailment shall be done first from generation sources other than wind, solar, wind-solar hybrid and run of the river hydro plants with up to three hours pondage (in case of excess water leading to spillage), pro rata based on their STOA/T-GNA quantum;
   c) The generation from wind, solar, wind-solar hybrid and run of the river hydro plants with up to three hours pondage (in case of excess water leading to spillage) shall be curtailed pro rata based on STOA/T-GNA, after curtailment of generation from other sources, within STOA/T-GNA;
   d) Collective transactions under day ahead market shall be curtailed after curtailment of bilateral transactions under STOA/T-GNA;
   e) Collective transactions under real time market shall be curtailed after curtailment of collective transactions under day ahead market.

iii. Transactions under LTA & MTOA/GNA shall be curtailed in the following order:
   a) Within transactions under LTA & MTOA/GNA, curtailment shall be done first from generation sources other than wind, solar, wind-solar hybrid and run of the river hydro plants with up to three hours pondage (in case of excess water leading to spillage), on pro rata basis based on their LTA & MTOA/GNA quantum;
   b) The generation from wind, solar, wind-solar hybrid and run of the river hydro plants with up to three hours pondage (in case of excess water leading to spillage) shall be curtailed pro rata based on their LTA & MTOA/GNA quantum, after curtailment of generation from other sources, within LTA & MTOA/GNA.

10.11.2. SLDC shall publish, from time to time on its website, the operational limits of parameters for maintenance of grid security for the information and compliance of users of the grid. The curtailment of schedule shall be carried out only in case of violation of the operational limits.

10.11.3. In the event of bottleneck in evacuation of power due to outage, failure or limitation in the transmission system or any other constraint necessitating reduction in generation, the SLDC shall revise the schedules:

Provided that generation and drawal schedules revised by the SLDC shall become effective from 7th block or 8th block depending on time block in which schedule has been revised as first-time block.

10.11.4. In case of contingencies such as critical loading of lines, transformers, abnormal voltages or threat to system security, the following steps as considered necessary, may be taken by SLDC:

i. Issue directions to concerned entities to adhere to the schedules;
ii. Switching on/off pump storage plants operating in pumping mode;
iii. Despatching emergency demand response measures;
iv. Direct the state entities to increase or decrease their drawal or injection by revising their schedules and such directions shall be immediately acted upon.

10.11.5. Whenever SLDC revises final schedules due to reasons of grid security or contingency, brief reasons shall be informed immediately to the concerned entity followed by a detailed explanation to be posted on SLDC website within 24 hours.

10.11.6. Any verbal directions by SLDC shall be confirmed in writing as soon as possible latest within twenty-four hours.

10.11.7. Revision of Declared Capacity and schedule shall be allowed on account of forced outage of a unit of an intra-State generating station or ESS (as an injecting entity) only in case of bilateral transactions and not in case of collective transaction. Such generating station or ESS (as injecting entity) or the electricity trader or any other agency selling power from the unit of the generating station or ESS shall immediately intimate the outage of the unit along with the requisition for revision of Declared Capacity, schedule and the estimated time of restoration of the unit, to SLDC. The schedule of beneficiaries, sellers and buyers of power from this generating unit shall be revised on a pro-rata basis for all bilateral transactions. The revised Declared Capacity and schedules shall become effective from 6th time block, counting the time block in which revision is advised by the generators to be the first one. The revised declared capacity shall be considered based on the ramp-up rate of the generating stations.

Provided that the generating station or ESS (as injecting entity) or Trading Licensee or any other agency selling power from a generating station, or unit(s), or ESS, may revise its estimated restoration time only once in a day.

Provided further that the SLDC shall inform the revised schedule to the seller and the buyer. The original schedule shall become effective in the 6th time block from the estimated time of restoration of the unit.

Provided further that in case of inter-state transactions, the revision of schedule shall be carried out as per the provisions of the IEGC as amended from time to time.

10.11.8. The generating station (other than lignite, gas based thermal generating station, and hydro generating station) or ESS (as an injecting entity) shall be allowed a maximum of 4 (four) revisions of Declared Capacity and schedule in a day subject to a maximum of 60 (sixty) revisions during a month, due to reasons such as a partial outage of the unit or variation of fuel quality or any other technical reason to be recorded in writing:

Provided that SLDC may allow upward revision of DC beyond the above limit keeping in view of grid requirements.

10.11.9. The generating station based on lignite, gas, or hydro generating station shall be allowed 6(six) revisions of Declared Capacity and schedule in a day subject to a maximum of 120 (One hundred twenty) revisions during a month, due to reasons such as a partial outage of the unit or water availability for hydro generating stations or fuel quality or variations in the supply of gas for gas generating stations or any other technical reason to be recorded in writing:

Provided that SLDC may allow upward revision of DC beyond the above limit keeping in view grid requirements.

10.11.10. In case of requirement of revision of schedule due to forecasting error, a WS Seller may revise its schedule only in case of bilateral transactions and not in case of collective transaction. Such revision of schedule shall become effective from 6th time block, counting the time block in which the revision is informed by WS seller to be the first one.

10.11.11. In case of requirement of revision of Declared Capacity due to forecasting error, a Run-of-River generating station may request for revision of its Declared Capacity and schedule only in case of bilateral transactions and not in case of collective transaction. Such revision shall become effective from 6th time block, counting the time block in which the revision is informed to SLDC to be the first one.

10.11.12. If a revision is received from any ISGS stations, RLDC will flash the information in real-time basis containing all the relevant information needed to revise the schedule based on which SLDC will process the revision in parallel. The implementation time of revision will be same for both RLDC and SLDC.

10.11.13. SLDC, on behalf of intra-State drawee entities may revise their schedules, which shall become effective from 6th time block, counting the time block in which the revised schedule is issued by SLDC to be the first one:

Provided that scheduled transactions under short term open access once scheduled cannot be revised.

10.11.14. After the operating day is over at 24:00 hours, the schedule finally implemented during the "D" day (taking into account all before-the-fact changes in Despatch Schedule of Electricity Generating Stations and Drawal Schedule of the other Intra-State Entities) shall be issued by SLDC within three (3) days or on receipt of RLDC implemented schedule. Further, the implemented schedule may be revised by SLDC, if Ex-post facto revision in implemented schedule is made by NERPC. These Schedules shall form the basis for commercial accounting. The average ex-bus capability for each SGS and IPPs shall also be worked out based on all before-the-fact advice to SLDC.

10.11.15. The SLDC shall prepare detailed procedure for the scheduling as per this grid code within 60 days of notification of these regulations duly consulting the stakeholders and submit it to the Commission for approval.

10.12. REVISION OF SCHEDULES ON REQUEST OF BUYERS

a) SLDC on behalf of intra-state entities, may revise their schedules under LTA & MTOA/GNA as per sub-clauses (b) and (c) of this clause in accordance with their respective contracts:

Provided that scheduled transactions under STOA/T-GNA once scheduled cannot be revised other than in case of forced outage or partial outage.

b) The request for revision of scheduled transaction for 'D' day, shall be allowed subject to the following:

i. Request of buyers for upward revision of schedule from the generating station whose tariff is determined under Section 62 of the Act shall be allowed starting 2 PM on 'D-1' day, only in respect of the remaining available quantum of un-requisitioned surplus in such generating stations, after finalization of schedules under day ahead market.

Provided that downward revision of schedules by the buyers for 'D' day, after 1430 hrs on 'D-1' day in the generating station shall not be allowed below their respective share of minimum turndown level in the generating station.

c) Based on the request for revision in schedule made as per sub-clauses (a) and (b) of this clause, any revision in schedule made in odd time blocks shall become effective from 7th time block and any revision in schedule made in even time blocks shall become effective from 8th time block, counting the time block in which the request for revision has been received by the SLDC to be the first one.

d) While finalizing the drawal and despatch schedules, in case any congestion is foreseen in the intra-State transmission system or technical constraints of a generating station, the SLDC shall moderate the schedules as required, under intimation to the concerned intra state entities.

10.13. DISCREPANCY IN SCHEDULE

10.13.1. All intra state entities, open access customers, injecting entities and drawee consumers shall closely check their transaction Schedule and point out errors, if any, to the SLDC.

10.13.2. The final schedules issued by SLDC shall be open to all state entities and other state open access entities for any checking and verification, for a period of 5 days. In case any mistake or omission is detected, the SLDC shall make a complete check and rectify the same.

10.14. MARGIN FOR PRIMARY RESPONSE

10.14.1. For the purpose of ensuring primary response, SLDC (in co-ordination with NERLDC, wherever required), shall not schedule the generating station or unit(s) thereof beyond ex-bus generation corresponding to 100% of the Installed capacity of the generating station or unit(s) thereof. The generating station shall not resort to Valve Wide Open (VWO) operation of units, whether running on full load or part load, and shall ensure that there is margin available for providing governor action as primary response.

10.14.2. In case of gas or liquid fuel-based units, suitable adjustment in Installed Capacity shall be made by SLDC (in co-ordination with NERLDC, wherever required), as the case may be, for scheduling in due consideration the prevailing ambient conditions of temperature and pressure vis-à-vis site ambient conditions on which installed capacity of the generating station or unit(s) thereof have been specified:

Provided that the hydro generating stations shall be permitted to schedule ex-bus generation corresponding to 110% of the installed capacity or any other overload capability as allowed under clause 10.5 of these regulations, during high inflow periods to avoid spillage.

10.15. SCHEDULING FROM ALTERNATE SOURCE OF POWER BY A GENERATING STATION

10.15.1. A generating station may supply power from alternate source in case of forced outage of unit(s). This facility shall also be available to a generating station other than REGS replacing its scheduled generation by power supplied from REGS irrespective of whether such identified sources are located within or outside the premises of the generating station or at a different location.

10.15.2. The methodology for scheduling of power from alternate sources covered under forced outage of unit (s) shall be as per the following steps:

a. The generating station may enter into contract with alternate supplier under bilateral transaction or collective transaction.

b. In case of bilateral transaction, the generating station shall request SLDC to schedule power from such alternate supplier to its beneficiaries which shall become effective from 7th or 8th time blocks, as the case may be.

c. The power scheduled from alternate supplier shall be reduced from the schedule of the generating station.
d. In case of alternate supply is arranged through collective transactions, the transacted quantum shall be reduced from the scheduled generation of the generating station.
e. The generating station shall not be required to pay the transmission charges and losses for such purchase of power to supply to the buyer from alternate sources.

10.15.3. The methodology for scheduling of power from alternate sources for a generating station other than REGS replacing its scheduled generation by power supplied from REGS , shall be as per the following steps:

a. The generating station shall enter into contract with REGS for supply of power from alternate sources.
b. The generating station shall request SLDC to schedule power from such alternate source to its beneficiaries which shall become effective from 7th or 8th time blocks, as the case may be.
c. The power scheduled from alternate source shall be reduced from the schedule of the generating station.
d. The generating station shall not be required to pay the transmission charges and losses for such purchase and supply from alternate sources to the buyer.
e. In case of a generating station whose tariff is determined by the Commission under Section 62 of the Act, supply of power by such generating station to its buyer from an alternate source, shall be subject to the Commission's Regulations/Orders issued from time to time.
f. In case of a generating station other than whose tariff is determined by the Commission under Section 62 of the Act, supply of power by such generating station to its buyer from an alternate source shall be in accordance with the contract with the buyer and in the absence of a specific provision in the contract, in terms of mutual consent including on sharing of net savings between the generating station and the buyer.

10.16. MINIMUM TURNDOWN LEVEL FOR INTRA STATE ENTITY THERMAL GENERATING STATIONS

10.16.1. The minimum turndown level for operation in respect of a unit of thermal generating station connected to STU and which is in control of SLDC shall be 55% of the MCR of the said unit or such other minimum power level as specified in the CEA (Flexible Operation of coal based Thermal Generating Units) Regulations, 2023, as amended from time to time, whichever is lower:

Provided that the Commission may through an order fix a different minimum turndown level of operation in respect of specific unit(s) of a thermal generating station:

Provided further that such generating station on its own option may declare a minimum turndown level below the minimum turndown level specified in this Regulation.

Provided further that the thermal generating stations whose tariffs are adopted under Section 63 of the Act shall be compensated for part load operation, that is, for generation below the normative level of operation, in terms of the provisions of the contract entered into by such generating stations with the beneficiaries or buyers, or in the absence of such provision in the contract, as per the mechanism to be specified by the Commission separately.

10.17. DATA REGISTRATION

Users shall provide SLDC with data, as and when required by the SLDC as per this Code.

CHAPTER-11

METERING CODE

11.1. TRANSMISSION METERING CODE

11.1.1. The STU shall be responsible for procurement and installation of Interface Energy Meters (IEMs), at the cost of respective entity, at all the interface points and other identified points for recording of actual active and reactive energy interchanged in each time-block through those points, and its operation and periodic calibration shall be done by the respective entity.

11.1.2. STU shall be responsible for replacement of faulty meters.

11.1.3. The installation, operation, calibration and maintenance of Interface Energy Meters (IEMs) with automatic remote meter reading (AMR) facility shall be in accordance with the CEA Metering Regulations 2006.

11.1.4. The installation, operation, and maintenance of additional communication links, if any, required for the purpose of AMR facility shall be in accordance with CEA Communications Regulations.

11.1.5. Access to such metering data to the SLDC shall be in accordance with the CEA Metering Regulations 2006.

11.1.6. Entities in whose premises the IEMs are installed shall be responsible for

a) monitoring the healthiness of the CT and PT inputs to the meters;
b) taking weekly meter readings for the seven-day period ending on the preceding Sunday 24:00 hrs and transmitting them to the SLDC by Tuesday noon, in case such readings have not been transmitted through automatic remote meter reading (AMR) facility;
c) monitoring and ensuring that the time drift of IEM is within the limits as specified in CEA Metering Regulations 2006; and
d) promptly intimating the changes in CT and PT ratio to SLDC.

11.1.7. SLDC shall, based on the IEM readings, compute time block wise actual net injection and drawal of the state entities within their control area:
Provided that the computations done by SLDC shall be open to all concerned entities for a period of fifteen (15) days for checking and verification.

11.1.8. In case any error or omission is detected by self-analysis or brought to notice by an entity, the STU shall make a complete check and rectify the error within a period of a month from date of such detection.

11.1.9. SLDC shall prepare state energy account in accordance with these regulations.

11.1.10. STU shall make necessary arrangements for installation of suitable meters, capable of recording energy flows at 15-minute intervals or any other time interval as specified by the Commission, at the points of injection and drawal. The time synchronization of metering system shall be through Global Positioning System with counter check from the State Energy Accounting Centre at SLDC.

11.1.11. STU shall register all the interface points and interface meters in the MDAS software and share the meter data with SLDC registry for DSM computation. No change in the interface metering infrastructure shall be carried out by STU without prior approval of the SLDC and suitable modifications in the records of the registry in the Meter Data Acquisition System (MDAS) software.

CHAPTER-12
PROTECTION CODE

12.1. INTRODUCTION

12.1.1. The chapter covers the protection protocol, protection settings and protection audit plan of electrical systems to be adopted in order to safeguard the State Transmission System and User system from faults.

12.2. OBJECTIVE

12.2.2. The objective of this chapter is to define the minimum protection requirements for any equipment connected to the State Transmission System and thereby minimize the disruption due to faults.

12.3. GENERAL PRINCIPLES

12.3.1. There shall be a uniform protection protocol for the Users of the State grid:

a) for proper co-ordination of protection system in order to protect the equipment/system from abnormal operating conditions, isolate the faulty equipment and avoid unintended operation of protection system;
b) to have a repository of protection system, settings and events at State level;
c) specifying timelines for submission of data;
d) to ensure healthiness of recording equipment including triggering criteria and time synchronization; and
e) to provide for periodic audit of protection system.

12.3.2. STU shall be guided by the advice of NERPC / NERLDC for the following:

i. Planning for upgrading and strengthening protection system based on analysis of grid disturbance and partial/total blackout in State Transmission System;

ii. Planning of Islanding and system split schemes and installation of Under Frequency Relays and df/dt relays.

12.3.3. Under-Frequency relay for load shedding, relays provided for islanding scheme, disturbance recorder, and fault locator installed at various sub-stations shall be tested and calibrated. All Users shall ensure correct and appropriate settings of protection equipment.

12.3.4. Protection settings shall not be altered or bypassed and/or disconnected without consultation and agreement of all affected Users. In the case where protection is bypassed and/or disconnected, by agreement, then the cause must be rectified, and the protection restored to normal condition as quickly as possible. If agreement has not been reached, the electrical equipment will be removed from service forthwith.

12.3.5. No item of electrical equipment shall be allowed to remain connected to the State Transmission System unless it is covered by minimum specified protection aimed at reliability, selectivity, speed and sensitivity.

12.4. PROTECTION CO-ORDINATION

A Protection Coordination Committee (PCC) shall be constituted as per Chapter-2 of this Code and shall be responsible for all the protection coordination functions. STU shall be responsible for arranging periodical meetings of the PCC. STU shall investigate any malfunction of protection or other unsatisfactory protection issues. User shall take prompt action to correct any protection mal-function or issue as discussed and agreed to, in the periodical meetings. The functioning of the PCC shall be governed in line with that of the concerned body of the NERPC.

12.5. PROTECTION PROTOCOL

12.5.1. All Users connected to the State grid shall provide and maintain effective protection system having reliability, selectivity, speed and sensitivity to isolate faulty section and protect element(s) as per CEA Technical Standards for Connectivity Regulations, CEA Grid Standards Regulations, CEA Technical Standards for Communication Regulations, CEA Technical Standards for Construction Regulations and amendments thereof and any other applicable CEA Standards specified from time to time.

12.5.2. Back-up protection system shall be provided to protect an element in the event of failure of the primary protection system.

12.5.3. PCC shall develop the protection protocol and revise the same, after review from time to time, in consultation with the stakeholders in the State, and in doing so shall be guided by the principle that minimum electrical protection functions for equipment connected with the grid shall be provided as per CEA Technical

Standards for Connectivity Regulations, CEA Grid Standards Regulations, CEA Technical Standards for Communication Regulations, CEA Technical Standards for Construction Regulations, CEA Safety Regulations and amendments thereof and any other CEA standards specified from time to time.

12.5.4. The protection protocol in a particular system may vary depending upon operational experience. Changes in protection protocol, as and when required, shall be carried out after deliberation and approval of the PCC.

12.5.5. In line with the protection protocol of RPC, PCC shall prepare the Protection Manual within 90 days from the notification of these Regulations in consultation with stakeholders covering all the protection aspects of the grid elements connected to 400/220/132kV and below voltage level which shall be followed by all users.

12.5.6. Violation of the protection protocol and protection manual of the State shall be brought to the notice of PCC by SLDC.

12.6. PROTECTION SETTINGS

12.6.1. PCC shall undertake review of the protection settings, assess the requirement of revisions in protection settings and revise protection settings in consultation with the stakeholders of the State from time to time and at least once in a year. The necessary studies in this regard shall be carried out by the PCC. The data including base case (peak and off-peak cases) files for carrying out studies shall be provided by SLDC and STU to SPCC.

12.6.2. All Users connected to the grid shall:

a. furnish the protection settings implemented for each element to PCC in a format to be prescribed by PCC;
b. obtain approval of PCC for any revision in settings and implementation of new protection system;
c. intimate to PCC about the changes implemented in protection system or protection settings within a fortnight of such changes;
d. ensure correct and appropriate settings of protection as specified by PCC; and
e. ensure proper coordinated protection settings.

12.6.3. Protection Coordination Committee (PCC) shall:

a. maintain a centralized database and update the same on periodic basis in respect of the State containing details of relay settings for grid elements connected to 132 kV and above. SLDC shall also maintain such database;
b. carry out detailed system studies once a year, for protection settings and advice modifications / changes, if any, to STU and all Users. The data required to carry out such studies shall be provided by SLDC, STU and Users, as the case may;
c. provide the database access to STU and SLDC and to all Users of the State. The database shall have different access rights for different Users.

12.6.4. The changes in the network and protection settings of grid elements connected to 132 kV and above shall be informed to the Protection Coordination Committee (PCC) by STU.

12.7. PROTECTION AUDIT PLANS

12.7.1. All Users shall conduct internal audit of their protection systems and any shortcomings identified shall be rectified and informed to PCC and SLDC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with PCC and SLDC.

12.7.2. All users shall also conduct third party protection audit of each sub-station at 132 kV and above once in five years or earlier as advised by NERPC and PCC. For substations below 132kV connected to the State Grid, the third part audit shall be as per the methodology devised by PCC.

12.7.3. The third-party protection audit report shall be as per the format prepared by PCC in line with IEGC. The protection audit reports along with action plan for rectification of deficiencies detected, if any, shall be submitted to PCC and SLDC within a month of submission of third-party audit report. The necessary compliance to such protection audit report shall be followed up regularly in PCC meetings.

12.7.4. Annual audit plan for the next financial year shall be submitted by the Users to PCC and SLDC by 31st October. The Users shall adhere to the annual audit plan and report compliance of the same to PCC and to SLDC for record purposes.

12.7.5. Users shall submit the following protection performance indices of previous month to PCC and SLDC on monthly basis for Voltage level 132 kV and above system, which shall be reviewed by the PCC:

a. The Dependability Index defined as $D = N_c / (N_c + N_f)$;
b. The Security Index defined as $S = N_c / (N_c + N_u)$; and
c. The Reliability Index defined as $R = N_c / (N_c + N_i)$;

where,

N_c is the number of correct operations at internal power system faults;

N_f is the number of failures to operate at internal power system faults;

N_u is the number of unwanted operations; and

N_i is the number of incorrect operations and is the sum of N_f and N_u.

12.7.6. Each User shall also submit the reasons for performance indices less than unity of individual element-wise protection system to PCC and SLDC and action plan for corrective measures. The action plan will be followed up regularly by the PCC.

12.7.7. In case any User fails to comply with the protection protocol specified by PCC or fails to undertake remedial action identified by the PCC within the specified timelines, PCC / STU may approach the Commission with all relevant details for suitable directions.

12.8. SYSTEM PROTECTION SCHEME (SPS)

12.8.1. System Protection Scheme (SPS) for identified system shall have redundancies in measurement of input signals and communication paths involved up to the last mile to ensure security and dependability.

12.8.2. For the operational System Protection Scheme (SPS), STU/SLDC in consultation with PCC and with reference to the SPS designed by STU/NERPC/NERLDC shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters and functions, at least once in a year. STU/SLDC shall share the report of such studies and mock testing including any short comings to PCC. The data for such studies shall be provided by Users to STU/SLDC and PCC.

12.8.3. The Users and SLDC shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to PCC in the specified format.

12.8.4. The performance of SPS shall be assessed as per the protection performance indices specified in this Grid Code. In case, the SPS fails to operate, the concerned User shall take corrective actions and submit a detailed report on the corrective actions taken to PCC within fortnight.

12.9. RECORDING INSTRUMENTS

12.9.1. All Users shall keep the recording instruments (disturbance recorder and event logger) in proper working condition.

12.9.2. The disturbance recorders shall have time synchronization and a standard format for recording analog and digital signals, which shall be included in the guidelines issued by PCC.

12.9.3. The time synchronization of the disturbance recorders shall be corroborated with the PMU data or SCADA event loggers by SLDC. Disturbance recorders, which are non-compliant shall be listed out for discussion at PCC meeting.

12.10. CALIBRATION AND TESTING

12.10.1. The protection scheme shall be tested at each 400 kV, 220 kV and 132kV substation by STU once in a year or immediately after any major fault, whichever is earlier. Setting, co-ordination, testing and calibration of all protection schemes pertaining to generating units/stations shall be the responsibility of respective Generator.

12.11. PERIODIC TESTING

12.11.1. The periodic testing shall be carried out on power system elements for ascertaining the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

12.11.2. The owner of the power system element shall be responsible for carrying out tests as specified in these regulations and for submitting reports to STU and SLDC for intra-State elements.

12.11.3. All equipment owners shall submit a testing plan for the next year to the STU/SLDC/NERPC by 31st October to ensure proper coordination during testing as per the schedule. In case of any change in the schedule, the owners shall inform STU/SLDC in advance.

12.11.4. The tests shall be performed once every five (5) years or whenever major retrofitting is done. If any adverse performance is observed during any grid event, then the tests shall be carried out even earlier, if so, advised by SLDC or RLDC or NLDC or NERPC

12.11.5. The owners of the power system elements shall implement the recommendations, if any, suggested in the test reports in consultation with STU, SLDC, NERPC, NLDC, CEA and CTU.

12.11.6. The overall co-ordination between Users and STU shall be decided in the meeting of PCC. The PCC shall review the testing and calibration as and when needed.

12.11.7. The following tests shall be carried out on the respective power system elements:

Power System Elements	**Tests**	**Applicability**
Synchronous Generator	1) Real and Reactive Power Capability assessment. 2) Assessment of Reactive Power Control Capability as per CEA Technical Standards for Connectivity Regulations 3) Model Validation and verification test for the complete Generator and Excitation System model including PSS. 4) Model Validation and verification of Turbine/ Governor and Load Control or Active Power/ Frequency Control Functions. 5) Testing of Governor performance and Automatic Generation Control.	Individual Unit of rating 100 MW and above for Coal/lignite, 50 MW and above gas turbine and 25 MW and above for Hydro.
Non synchronous Generator (Solar/Wind)	1) Real and Reactive Power Capability for Generator 2) Power Plant Controller Function Test 3) Frequency Response Test 4) Active Power Set Point change test. 5) Reactive Power (Voltage / Power Factor / Q) Set Point change test	Applicable as per CEA Technical Standards for Connectivity Regulations.
HVDC/FACTS Devices	1) Reactive Power Controller (RPC) Capability for HVDC/FACTS 2) Filter bank adequacy assessment based	To all ISTS HVDC as well as Intra-State HVDC/FACTS, as

Power System Elements	Tests	Applicability
	on present grid condition, in consultation with NLDC. 3) Validation of response by FACTS devices as per settings.	applicable

12.12. CAPACITY BUILDING AND CERTIFICATION

Capacity building, skill upgradation, and certification of the personnel deployed in Generating Stations, Load Despatch Centres, System Protection and EHV Sub-stations shall be done periodically under an institutional framework through accredited certifying agency(ies).

12.13. INSPECTION OF RECORDS

The operational logs and records of the generating stations and transmission licensees connected to the State Transmission System shall be available for inspection and review by the SLDC.

CHAPTER-13
OUTAGE PLANNING

13.1. GENERAL

13.1.1 Outage planning shall be prepared for the grid elements in a coordinated and optimal manner keeping in view the system operating conditions and grid security.

13.1.2 SLDC shall be responsible for analysing the outage schedule given by all Users taking into consideration all the available generation resources, demand estimates, transmission constraints.

13.1.3 To optimize the transmission outages of the grid, to avoid operation getting adversely affected and to maintain system security standards, the outage plan shall also take into account the outage schedule by the Users.

13.1.4 Annual outage plan shall be prepared in advance for the financial year by the STU/SLDC in consultation with Users and also taking into account the outage plan for the State prepared by NERPC and reviewed before every quarter and every month.

13.1.5 Annual outage plan shall be prepared in such a manner as to minimize the overall downtime, particularly where multiple Users are involved in the outage of any grid element(s).

13.1.6 The outage plan of hydro generation plants, REGS and ESS and its associated evacuation network shall be prepared with a view to extracting maximum generation from these sources.

Example: Outage of wind generator may be planned during lean wind season. Outage of solar generator, if required, may be planned during the rainy season. Outage of hydro generator may be planned during the lean water season.

13.1.7 Protection relay related outages, auto–re-closure outages and SPS testing outages shall be planned on a monthly basis.

13.1.8 SLDC shall prepare Load Generation Balance Report (LGBR) for the State based on the data submitted by Users.

13.1.9 SLDC shall make available the final outage plan to all the Users.

13.1.10 SLDC shall prepare the timeline for submission of the proposed outage plan for the next financial year.

13.1.11 Users shall follow the annual outage plan as prepared and finalized by SLDC. If any deviation is required the same shall be allowed only with the prior permission of SLDC.

13.1.12 Users shall obtain the final clearance from SLDC prior to the planned outage of any grid element. The clearance shall be obtained from SLDC.

13.1.13 In case of grid disturbances, system isolation, partial black-out in a State or any other event in the system that may have an adverse impact on the system security due to a proposed outage,

i. SLDC shall have the authority to defer the planned outage;

ii. SLDC before giving clearance of the planned outage may conduct studies again.

13.1.14 To facilitate coordinated planned outages of grid elements, a common outage planning procedure shall be formulated by SLDC in consultation with STU and Users.

CHAPTER-14
MONITORING CODE

14.1 GENERAL

14.1.1. This code deals with (a) monitoring of compliance of these Regulations by various entities in the grid by SGCRC, STU, SLDC or any other person, (b) manner of reporting the instances of violations of these Regulations and (c) taking remedial steps or initiating appropriate action.

14.2 ASSESSMENT OF COMPLIANCES

14.2.1. The performance of all users, STU, SLDC, In-STS, Intra state entity Generating Station and QCA, with respect to compliance of these regulations shall be assessed periodically.

14.3 MONITORING OF COMPLIANCE

14.3.1. In order to ensure compliance, two (2) methodologies shall be followed:

a) Self-Audit

b) Compliance Audit

14.3.2. Self –Audit

a) All users, STU, SLDC, In-STS, Intra state entity Generating Station and QCAs shall conduct annual self-audits to review compliance of these regulations and submit the reports by 31st July of every year.

b) The self-audit report shall inter alia contain the following information with respect to non- compliance:

(i) Sufficient information to understand how and why the non-compliance occurred;

(ii) Extent of damage caused by such non-compliance;

(iii) Steps and timeline planned to rectify the same;

(iv) Steps taken to mitigate any future recurrence.

c) The self-audit reports by users, QCAs shall be submitted to the SLDC.

d) The self-audit reports of STU and SLDC shall be submitted to the State Commission.

e) The deficiencies shall be rectified in a time bound manner within a reasonable time.

f) In the State control area, the monitoring agency for users shall be the SLDC;
The monitoring agency shall track the progress of compliances of users, and exceptional reporting for non-compliance shall be submitted to the Commission.

g) The monitoring agency for STU and SLDC shall be the Commission.

h) The SGCRC shall also continuously monitor the instances of non-compliance of the provisions of these regulations and endeavour to sort out all operational issues and deliberate on the ways in which such cases of non-compliance shall be prevented in future. The SGCRC may also report any unresolved issues to the Commission.

i) The Commission may initiate appropriate proceedings upon receipt of report under sub- clauses (f) and (h) of this clause.

j) In case of non-compliance of any provisions of these regulations by SLDC, STU, In-STS, Intra state entity Generating Station, Users and any other person, the matter may be reported by any person to the Commission through filing of a petition.

14.4 INDEPENDENT THIRD-PARTY COMPLIANCE AUDIT

The Commission may order independent third-party compliance audit for any user, STU, SLDC, and QCA, as deemed necessary based on the facts brought to the knowledge of the Commission.

CHAPTER-15

INTER USER BOUNDARY SAFETY

15.1 OBJECTIVE

The objective of this chapter is to achieve an agreement and consistency on the principles of safety as prescribed in the Indian Electricity Rules 1956 which are in

force for the time being and will be replaced by the rules made under Electricity Act, 2003 when working across the inter user boundary (cross boundary) between one User and another User.

15.2 DESIGNATED PERSONS

STU and all Users shall nominate and notify authorized persons to be responsible for the co-ordination of safety across their boundary. These persons shall be referred to as Designated Persons.

15.3 PROCEDURES TO WORK ON INTER USER BOUNDARY CIRCUITS

1. STU shall issue a list of Designated Persons names, designations and telephone numbers to all Users who have a direct inter user boundary with him. This list shall be updated promptly, whenever there is a change of name, designation or telephone number of any designated persons named in the list.
2. All Users with a direct inter user boundary with STU shall issue a similar list of their Designated Persons to STU. This list shall be updated promptly whenever there is any change of name etc in the list.
3. Whenever any work across an inter-user boundary is to be carried out by the User or the STU, the Designated Persons of the User or STU as the case may be, wishing for Line Clear Permit / Permit to Work (PTW) shall personally contact the other relevant Designated Person. If the Permit to Work cannot be obtained personally, the Designated Persons shall contact through telephone and exchange code word or secrete code to ensure correct identification of both agencies.
4. If the work extends beyond than one shift, the Designated Person shall ensure that the Relieving Designated Person is fully briefed on the nature of the work and the code words in operation.
5. The Designated Person (s) shall co-operate to establish and maintain the precautions necessary for the required work to be carried out in a safe manner. Both the established isolation and the established earth shall be kept in locked position with “Men Working” tag, where such facilities exist, and shall be clearly identified.
6. Work shall not commence until the Designated Person in charge of the work of the User is satisfied that all the safety precautions have been established. This Designated Person shall issue approved safety documentation and work permit (PTW) to the working party to allow work to commence. The Permit to Work in respect of EHV lines and other interconnections shall be issued with the consent of SLDC.
7. When work is completed and safety precautions are no longer required, the Designated Person who has been responsible for the work being carried out shall make direct contact with the other Designated Person to return the Permit to Work and removal of those safety precautions. Return of Permit to Work in respect of specified EHV lines and interconnections shall be informed to SLDC.

8. The equipment shall only be considered as suitable for connecting back to service when all safety measures are confirmed as removed, by direct communication using code word contact between the two Designated Persons, and after ensuring that the return of Permit to Work from the working party has taken place.
9. STU shall develop an agreed written procedure for Inter-User Boundary safety and continuously update it.
10. Any dispute concerning inter-user boundary safety shall be resolved at the level of STU, if STU is not a party. In case STU is a party, the dispute shall be referred to the State Grid Code Review Committee for resolving the dispute.

15.4 SPECIAL CONSIDERATION

1) For inter-user boundary between STU and other User's circuits, all Users shall comply with the approved safety rules, which must be in accordance with IE Rules.
2) Each Designated Person shall maintain a legibly written safety log, in chronological order, of all operations and messages relating to safety coordination sent and received by him. All safety logs shall be retained for a period of not less than 10 years.

CHAPTER-16
MISCELLANEOUS

16.1 POWER TO RELAX

The Commission, for reasons to be recorded in writing, may relax any of the provisions of these regulations on its own motion or on an application made before it by an affected person to remove the hardship arising out of the operation of any of these regulations, applicable to a class of persons.

16.2 POWER TO REMOVE DIFFICULTY

If any difficulty arises in giving effect to the provisions of these regulations, the Commission may, on its own motion or on an application made before it by the State Grid Code Review Committee, by order, make such provisions not inconsistent with the provisions of the Act or provisions of other regulations specified by the Commission and Central Commission, as may appear to be necessary for removing the difficulty in giving effect to the objectives of these regulations.

16.3 REPEAL AND SAVINGS

Save as otherwise provided in these regulations, the Meghalaya State Electricity Regulatory Commission (State Grid Code) 2012 and all subsequent amendments thereof shall stand repealed from the date of commencement of these Regulations.

16.4 ISSUE OF SUO MOTU ORDERS AND DIRECTIONS

The Commission may from time-to-time issue Suo-motu orders and practice directions with regard to implementation of these regulations and matters incidental or ancillary thereto, as the case may be.

16.5 TREATMENT OF THESE REGULATIONS IN CONTRACT

The provisions of these regulations or any amendments thereof shall not be treated under 'Change in law' in any of the agreements entered into by any of the Users covered under these regulations.

(By order of the Commission)

Sd/-

(E. Slong)

Secretary

APPLICATION FORMATS AND APPENDIX

FORMAT- 1

(APPLICABLE IN CASE OF GRANT OF CONNECTIVITY TO GENERATING STATION)

APPLICATION FOR GRANT OF CONNECTIVITY (to be submitted by the applicant to STU)

Application no. and date	< self-generated by the applicant >

A. Details of the applicant

1	Name of the applicant	< name of generating company >
2	Address of registered office	
3	Address for correspondence	
4	Contact detail(s)	
	(a) Prime contact person	
	Designation	
	Phone no. (with STD code)	
	Mobile	
	E-mail	
	(b) Alternate contact person	
	Designation	
	Phone no. (with STD code)	
	Mobile	
	E-mail	
5	Status of the applicant	Captive generator / other than captive generator

B. Details of connectivity requirement

1	Connectivity sought	
	Capacity (MW) for which connectivity is sought	
	Voltage Level (kV) at which connectivity is required	
	Date from which connectivity is required (which should be at least more than two years from the date of application)	
2	Nearest 400/220/132 kV sub-station(s)	
	(a) Sub-station-1	
	Name of sub-station	
	Voltage level(s) available (kV)	
	Name of licensee (Owner)	
	Distance (Km)	
	(b) Sub-station-2	
	Name of sub-station	
	Voltage level(s) available (kV)	
	Name of licensee (Owner)	

	Distance (Km)	

C. Details of existing connectivity

1	Existing connectivity, if any	
	Date of connectivity	
	Capacity (MW)	
	Name of 400/220/132 sub-station	
	Voltage level (kV)	
	Name of licensee (Owner)	
	Distance (Km)	

D. Details of project (for which connectivity is sought)

(Please enclose duly signed supporting documents as considered appropriate)

1	Name of generating station	
2	Whether new or existing generating Station	
3	Entity which owns, operates and maintains	
4	Is it an identified project of CEA?	YES/NO
5	Geographical location of generating station	
	Nearest village/town	
	District	
	State	
	Latitude	
	Longitude	
6	Existing unit(s) (if any)	
	Details of units	< unit-wise breakup of installed capacity (MW) >
	Details of re-rated units	< unit-wise breakup of re-rated capacity (MW) >
7	Additional unit(s)	
	Details of units	< unit-wise breakup of installed capacity (MW) >
	Original date of commercial operation	< unit-wise breakup >
8	Type of prime mover (fuel base)	< hydro turbine/steam turbine(coal/lignite/multifuel)/gas turbine/diesel engine/wind turbine/specify, if any other>
9	Generation voltage (kV)	
10	Step-up voltage (kV)	

11	Existing dedicated transmission line (if any)	
	Single circuit or double circuit	
	Voltage level (kV)	
	Length (km)	
	Conductor	
12	Information specific to captive generating plant	
	Generating unit(s) identified for captive use	
	Generating unit(s) not identified for captive use	
13	Information specific to plant generating infirm power	
	Name of pooling station, if any	
	Whether new or existing pooling station	
	Voltage level(s) available (kV)	

E. Status of project related activities

(Please enclose duly signed supporting documents as applicable)

1. Site identification and land acquisition
2. Environmental clearance
3. Forest clearance
4. Fuel arrangements
5. Water linkage
6. Order for supply of plant and machinery or award of EPS contract
7. Dedicated transmission line
8. Useful life of generating station
9. Commissioning schedule
10. Commercial arrangement(s) for purchase of electricity
11. Information specific to captive generating plant
12. Information specific to plant generating non-firm power
13. Other clearances
14. Any other relevant information required by STU or to be provided by the applicant

In addition to above, the applicant shall also submit concise description of each completed activity with regard to project planning, designing and pre-construction

activities (including all licenses, authorizations, permissions and clearances as required from time to time under the law).

F. Undertaking(s)

I undertake that all the activities of project planning, designing and pre-construction activities (including all licenses, authorizations, permissions and clearances as required from time to time under the law) are completed. All the details given in support of specific actions taken for project preparatory activities (as given under "E") above) are true and correct and nothing material has been concealed thereof.

I further undertake that the technical standards for connectivity specified by CEA in Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 as amended from time to time have been complied with.

Place:

(Signature)

Date:

Authorized signatory of the applicant

Name:

Designation:

Seal:

Enclosures:

1. Documents in support of information (including project related preparatory activities) submitted under clause 2.4 of this procedure read with this format (mention details)
2. Documents in support of existing connectivity with InSTS (including detailed description of 'electricity systems') along with single line diagrams (if existing user of InSTS)
3. If any other

Copy to others as considered necessary:

FORMAT- 1 (A)

(APPLICABLE IN CASE OF GRANT OF CONNECTIVITY TO Distribution Licensee/PREMISES OF A CAPTIVE USER/ AN OPEN ACCESS CONSUMER (Non-Captive)

APPLICATION FOR GRANT OF CONNECTIVITY (to be submitted by the applicant to STU)

Application no. and date	< self-generated by the applicant >

A. Details of the applicant

1	Name of the applicant	< name of generating company >
2	Address of registered office	
3	Address for correspondence	
4	Contact detail(s)	
	(a) Prime contact person	
	Designation	
	Phone no. (with STD code)	
	Mobile	
	E-mail	
	(b) Alternate contact person	
	Designation	
	Phone no. (with STD code)	
	Mobile	
	E-mail	
5	Status of the applicant	< distribution licensee/ captive user/open access consumer >

B. Details of connectivity requirement

1	Connectivity sought	
	Capacity (MW) for which connectivity is sought	
	Voltage Level (kV) at which connectivity is required	
	Date from which connectivity is required (which should be at least more than two years from the date of application)	
2	Nearest 400/220/132 kV sub-station(s)	
	(a) Sub-station-1	
	Name of sub-station	

	Voltage level(s) available (kV)	
	Name of licensee (Owner)	
	Distance (Km)	
	(b) Sub-station-2	
	Name of sub-station	
	Voltage level(s) available (kV)	
	Name of licensee (Owner)	
	Distance (Km)	

C. Details of existing connectivity

1	Existing connectivity, if any	
	Date of connectivity	
	Capacity (MW)	
	Name of 400/220/132 sub-station	
	Voltage level (kV)	
	Name of licensee (Owner)	
	Distance (Km)	

D. Details of project (for which connectivity is sought)

(Enclosed duly signed supporting documents as considered appropriate)

	In case applicant is a captive user (if applicable)	
1	Extent of use of the transmission system	
	Existing Demand	
	Additional Demand	
	Total Demand to be met	
2	Expected growth in demand in subsequent 5 years	
3	Maximum quantum (MW) of power assigned from its captive generating plant	
4	Back up supply from distribution licensee	
	Contracted load	
	Date of contract	
5	Commercial arrangement(s) for purchase of electricity from any source other than local distribution utility	
	Name of supplier	
	Contracted load	
	Duration of contract	
6	Geographical location of premises (i.e. industrial establishment)	
	Nearest village/town	
	District	

	Latitude	
	Longitude	

OR

	In case applicant is an open access consumer	
1	Extent of use of the transmission system	
	Existing Demand	
	Additional Demand	
	Total Demand to be met	
2	Expected growth in year wise demand in subsequent 5 years	
3	Maximum quantum (MW) of power assigned from its captive generating plant	
4	Back up supply from distribution licensee	
	Contracted load	
	Date of contract	
5	Commercial arrangement(s) for purchase of electricity from any source other than local distribution utility	
	Name of supplier	
	Contracted load	
	Duration of contract	
6	Geographical location of premises (i.e. industrial establishment)	
	Nearest village/town	
	District	
	Latitude	
	Longitude	
7	Details of Scheme of Captive Generation and Supply to Captive user	

E. Status of project related activities

(Please enclose duly signed supporting documents as per clause 3.2 of procedure)

1. Site identification and land acquisition
2. Environmental clearance
3. Forest clearance
4. Order for supply of plant and machinery or award of EPS contract

5. Useful life of premises (i.e. commercial or industrial establishment) of captive user or open access consumer

6. Commissioning schedule

7. Other clearances

8. Any other relevant information required by STU or to be provided by the applicant

In addition to above, the applicant shall also submit concise description of each completed activity with regard to project planning, designing and pre-construction activities (including all licenses, authorizations, permissions and clearances as required from time to time under the law).

F. Undertaking(s)

I undertake that all the activities of project planning, designing and pre-construction activities (including all licenses, authorizations, permissions and clearances as required from time to time under the law) are completed. All the details given in support of specific actions taken for project preparatory activities (as given under "E") above) are true and correct and nothing material has been concealed thereof.

I further undertake that the technical standards for connectivity specified by CEA in Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 have been complied with.

Place:

(Signature)

Date:

Authorized signatory of the applicant

Name:

Designation:

Seal:

Enclosures:

1. Documents in support of information (including project related preparatory activities) submitted (mention details)

2. Documents in support of existing connectivity with InSTS (including detailed description of

   'electricity systems') along with single line diagrams (if existing user of InSTS)

3. If any other

Copy to others as considered necessary

FORMAT- 2

On Non-Judicial Stamp paper Rs.50

AFFIDAVIT

In the matter of filing application to Meghalaya Power Transmission Corporation Limited, for grant of Connectivity under MSERC (Terms & Conditions for Open Access) Regulations, 2012.

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 by the Board Resolution dated …… of the above referred Company attached herewith 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 MSERC and Procedures notified thereunder, the company can file the enclosed application.
3. I submit that all the details given in the enclosed application for grant of Connectivity alongwith necessary documents are true and correct and nothing material has been concealed thereof.
4. I shall abide by the provisions of State Grid Code, Indian Electricity Grid Code, Indian Electricity Rules and various standards including Grid Connectivity Standards made by the Central Electricity Authority pursuant to the Act for installation and operation of the apparatus.
5. I also submit that the documents enclosed are original or true copies of their respective originals.

(Signature)

Name of the Applicant

Company Stamp (mandatory)

(To be duly attested by Notary)

(Copy of Board Resolution/ Power of Attorney to be attached)

FORMAT- 3

Intimation for grant of Connectivity/ Connectivity Letter

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 (Captive or other than Captive)

Distribution licensee

Captive User

Open Access Consumer

6 Details for Connectivity

6a. Capacity (MW) for which connectivity is granted

6b. Point at which Connectivity is granted

6c. Tentative Date from which connectivity is granted

6d. Transmission System Required for Connectivity

6e. Implementing Agency for transmission system required for connectivity

6f. Agencies between which agreement is to be signed for implementation of transmission system required for connectivity

7 Transmission Charges Applicable for the dedicated line if additionally applicable (over and above the Open Access Charges)

8 Estimated Amount (in Rupees)

to be deposited by the applicant in advance

9 Location of the Generating Station / Consumer

Nearest Village / Town District

State

Latitude

Longitude

Note:

1. Applicant given intimation for Connectivity to the grid shall have to furnish additional details to STU (MEPTCL) for signing of "Connection Agreement". These details are to be furnished to STU before the expiry of validity of Connectivity letter issued by STU to the applicant, unless otherwise indicated by STU. The Applicants are, however, advised to furnish such details as early as possible for enabling them have lead time for any type of access.
2. The STU will process the above information and will intimate the Connection details as per format given at FORMAT- 5. Pursuant to such Connection details, the applicant shall have to sign "Connection Agreement" with STU prior to the physical inter-connection as per format given at FORMAT- 6. In case the connectivity is granted to the InSTS of an intra-State transmission licensee other than the STU, a tripartite agreement shall be signed between the applicant, the STU and such intra-State transmission licensee, in line with the provisions of the Regulations.

This Connectivity Letter shall be valid for a period of 60 days from the date of issue.

FORMAT- 4

APPLICATON FORM FOR SEEKING CONNECTION TO INTRA-

STATE TRANSMISSION SYSTEM

General Information to the Applicants

1. This application form outlines the information that MEPTCL requires to process an application for connection to Intra-State Transmission System (InSTS).

3. Based on the information provided through this application, MEPTCL shall issue "Connection Offer" to the applicant. The connection offer shall include allocation of "Bay" 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 to grid) Regulations 2007, State 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.

FORMAT- 5

APPLICATION FORM

FOR SEEKING CONNECTION TO INTRA-STATE TRANSMISSION SYSTEM

A. DETAILS OF APPLICANT

	Name of the Applicant Company	
	Details of Grant of Connectivity (a) Connectivity Intimation no. (b) Date	
	Address for Correspondence	
	Contact Person 3.1. Primary 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	
	Status of Applicant Company (Please tick theappropriate box)	☐ Generating Station including Captive generating plant ☐ Captive User ☐ Consumer (other than Captive) ☐ Distribution licensee
	Estimated time of completion of project (Please enclose PERT chart)	

B. MAPS AND DIAGRAMS

1. Provide necessary survey of India topographical sheet clearly marking thelocation of the proposed site. **Schedule – I**

2. Provide site plan (both hard and soft copy in AutoCAD 2000 & above version) inappropriate 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 detailingall significant items of plant. The plan is to be submitted in both hard copy andsoft copy in AutoCAD 2000 & above version **Schedule – III.**

C. DETAILS OF CONNECTION - GENERATION PLANT

1	Type of Generation Plant (Hydro, Thermal, Gas etc)	
2	Rating of Generator Units	**Schedule – IV**
3	Maximum Export Capacity Required	
4	In case of hydro generator, the expected 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	Detailed Planning data for Generation Plant (including Generator Data for Fault / Short Circuit Studies and Dynamic Simulation) (a) For Thermal Generating Stations (b) For Hydro Generating Stations (c) Other Generating Stations	 **Schedule – V** **Schedule – VI** **Schedule – VII**

D. DETAILS OF CONNECTION –Distribution Licensee, Captive User, Open Access Consumer

1	Type of Load (Industrial/Commercial) (a) Urban/rural/industrial- Distribution licensee (b) Industrial/commercial including type of industry, i.e. electric furnace, rolling mills, manufacturing, assembly line, etc.	
2	Peak requirement of load in MVA, MW and MVAR	
3	Peak import required in MVA, MW and MVAR	
4	Month-wise Peak import required in MVA, MW and MVAR	
5	Month-wise Energy requirement in MUs.	
6	Data for Fault (Short Circuit Studies)	Single phase and three phase Fault level

E. DETAILS OF CONNECTION – DATA AND VOICE COMMUNICATION

1	Type Data Gateway: (Remote Terminal Unit/ Substation Automation System Gateway)	(Whether RTU/ Substation Automation System Gateway; and Number of data points)
2	Data Communication Connectivity Standard followed (As per interface requirement and other guideline made available by the SLDC)	(Type of Communication Protocol, i.e.101(serial port) or 104(Ethernet), etc.)
3	Write here the communication media, interface and capacity being targeted for connection for Data and voice	(Communication media: For example, fibre optics, PLCC, etc. Interface: Example RS 232C, G.703) or asper mutual agreement Capacity: Example 600/1200 baud, 64 Kbps,9.6Kbps, etc or as per mutual agreement)

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

Authorized Signatory of Applicant

Name:

Designation:

Seal:

Place:

Date:

Schedule – I: Survey of India topographical 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 columns 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 minimum ambient air temperature (MW)			
5	Maximum (Peaking) Export Capacity at minimum 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 (MW & MVAR): _____

Drawing no. of the Capability

Diagram attachment

Schedule – V: DETAILED PLANNING DATA FOR THERMAL GENERATING STATION

DATA FOR THERMAL POWER STATIONS

1 GENERAL

i. Name of Power Station.

ii. Number and capacity of Generating Units (MVA/MW).

iii. Ratings of all major equipment (Boilers and major accessories, Turbines, Alternators, Generator Unit Transformers etc).

iv. Single line Diagram of Power Station and switchyard.

v. Relaying and metering diagram.

vi. Neutral Grounding of Generating Units.

vii. Excitation control- (What type is used? e.g. Thyristor, Fast Brushless Excitors)

viii. Earthing arrangements with earth resistance values.

2 PROTECTION AND METERING

i Full description including settings for all relays and protection systems installed on the Generating Unit, Generator unit Transformer, Auxiliary Transformer and electrical motor of major equipment listed, but not limited to, under Sec. 3 (General).

ii Full description including settings for all relays installed on all outgoing feeders from Power Station switchyard, tie circuit breakers, and incoming circuit breakers.

iii Full description of inter-tripping of circuit breakers at the point or points of Connection with the Transmission System.

iv Most probable fault clearance time for electrical faults on the User's System (with main and back up protection).

v Full description of operational and commercial metering schemes.

3 SWITCHYARD

(i) In relation to interconnecting transformers:

- Rated MVA.
- Voltage Ratio.
- Vector Group.
- Positive sequence reactance for max., min., normal Tap. (% on MVA).

- Positive sequence resistance for max., min., normal Tap. (% on MVA).
- Zero sequence reactance (% on MVA).
- Tap changer Range (+% to -%) and steps.
- Type of Tap changer. (off/on load).

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	

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	

(ii) In relation to switchgear including circuit breakers, isolators on all circuits connected to the points of Connection:

- Rated voltage (kV).

- Type of circuit breaker (MOCB/ABCB/SF6).
- Rated short circuit breaking current (kA) 3 phase.
- Rated short circuit breaking current (kA) 1 phase.
- Rated short circuit making current (kA) 3 phase.
- Rated short circuit making current (kA) 1-phase.

- Provisions of auto reclosing with details.

(iii) In relation to Lightning Arresters – number and location (line/transformer) – Technical data

(iv) In relation to the Communication - Details of communication equipment installed at points of connections.

(v) In relation to the Basic Insulation Level (kV) -

- Bus bar.
- Switchgear.
- Transformer bushings.
- Transformer windings.

4 Parameters of Generating Units

(i) Rated terminal voltage (kV).

(ii) Rated MVA.

(iii) Rated MW.

(iv) Speed (rpm) or number of poles.

(v) Inertia constant H (MW Sec./MVA).

(vi) Short circuit ratio.

(vii) Synchronous Reactance (% on MVA) Xs.

(viii) Direct Axis Positive Phase Sequence Synchronous Reactance (% on MVA) Xd.

(ix) Direct axis (saturated) transient reactance (% on MVA) Xd'.

(i) Direct axis (saturated) sub-transient reactance (% on MVA) Xd".

(ii) Direct Axis Transient Reactance (Unsaturated) (% on MVA) Xd1'

(iii) Direct Axis Sub-Transient Reactance (Unsaturated) (% on MVA) Xd1''

(iv) Quadrature axis Positive Phase Sequence synchronous reactance (% on MVA) Xq .

(v) Quadrature axis (saturated) transient reactance (% on MVA) Xq'.

(vi) Quadrature axis (saturated) sub-transient reactance (% on MVA) Xq".

(vii) Quadrature Axis Transient Reactance (Unsaturated) (% on MVA) Xq1'

(viii) Quadrature Axis Sub-Transient Reactance (Unsaturated) (% on MVA) Xq1''

(ix) Zero Phase Sequence Reactance (% on MVA) X0

(x) Negative Phase Sequence Reactance (% on MVA) X2

(xi) Direct axis transient open circuit time constant (sec) T'do.

(xii) Direct axis sub-transient open circuit time constant (sec) T"do.

(xiii) Quadrature axis transient open circuit time constant (sec) T‟qo.

(xiv) Quadrature axis sub-transient open circuit time constant (sec) T„'qo.

(xv) Stator Resistance (Ohm) Ra.

(xvi) Neutral grounding details.

(xvii) Stator leakage reactance (Ohm) X1.

(xviii) Stator time constant (sec).

(xix) Rated Field current (A).

(xx) Open Circuit saturation characteristic for various terminal Voltages giving the compounding current to achieve the same.

(xxi) Please provide open circuit magnetization curve.

If this is not available, then please mention "assume" and MEPTCL shall assume magnetic saturation characteristics as per the ***Annexure-I***

5 Parameters of excitation control system:

(i) Type of Excitation.

(ii) Maximum Field Voltage.

(iii) Minimum Field Voltage.

(iv) Rated Field Voltage.

(v) Details of excitation loop in block diagrams showing transfer functions of individual elements using I.E.E.E. symbols.

(vi) Dynamic characteristics of over - excitation limiter.

(vii) Dynamic characteristics of under - excitation limiter.

(viii) 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 MEPTCL. 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 MEPTCL is shown in **Annexure-II**.

Please fill/tick the appropriate box below:

Please assume model ☐

OR

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

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

6 Parameters of governor:

(i) Governor average gain (MW/Hz).

(ii) Speeder motor setting range.

(iii) Time constant of steam or fuel Governor valve.

(iv) Governor valve opening limits.

(v) Governor valve rate limits.

(vi) Time constant of Turbine.

(vii) Governor block diagram showing transfer functions of individual elements using I.E.E.E. symbols.

7 Operational parameters:

(i) Minimum notice required to synchronize a Generating Unit from de-synchronization.

(ii) Minimum time between synchronizing different Generating Units in a Power Station.

(iii) The minimum block load requirements on synchronizing.

(iv) Time required for synchronizing a Generating Unit for the following conditions:

(a) Hot

(b) Warm

(c) Cold

(v) Maximum Generating Unit loading rating for the following conditions:

(a) Hot

(b) Warm

(c) Cold

(vi) Minimum load without oil support (MW).

GENERAL STATUS

(i) Detailed Project report.

(ii) Status Report

- Land
- Coal
- Water
- Environmental clearance
- Rehabilitation of displaced persons

(iii) Techno-economic approval by Central Electricity Authority (CEA)

(iv) Approval of State Government/Government of India.

(v) Financial Tie-up.

CONNECTION

(i) Reports of Studies for parallel operation with the State Transmission System.

(ii) Short Circuit studies
(iii) Stability Studies.
(iv) Load Flow Studies.
(v) Proposed Connection with the State Transmission System.
(a) Voltage

(b) No. of circuits

(c) Point of Connection.

Schedule – VI: DETAILED PLANNING DATA FOR HYDRO GENERATING STATION

DATA FOR HYDRO ELECTRIC POWER STATIONS

1. GENERAL

(i) Name of Power Station.

(ii) No. and capacity of units. (MW/MVA)

(iii) Ratings of all major equipment.

a. Turbines (HP)

b. Generators (MVA)

c. Generator Transformers (MVA)

d. Auxiliary Transformers (MVA)

(iv) Single line diagram of Power Station and switchyard.

(v) Relaying and metering diagram.

(vi) Neutral grounding of Generator.

(vii) Excitation control.

(viii) Earthing arrangements with earth resistance values.

(ix) Reservoir Data.

a. Salient features

b. Type of Reservoir

(a) Multipurpose

(b) For Power

c. Operating Table with

(a) Area capacity curves and

(b) Unit capability at different net heads

2. PROTECTION

(i) Full description including settings for all relays and protection systems installed on the Generating Unit, Generator transformer, auxiliary transformer and electrical motor of major equipment included, but not limited to those listed, under Sec. 3 (General).

(ii) Full description including settings for all relays installed on all outgoing feeders from Power Station switchyard, tiebreakers, and incoming breakers.

(iii) Full description of inter-tripping of breakers at the point or points of Connection with the Transmission System.

(iv) Most Probable fault clearance time for electrical faults on the User's System.

3. SWITCHYARD

(i) Interconnecting transformers:

(a) Rated MVA

(b) Voltage Ratio

(c) Vector Group

(d) Positive sequence reactance for max., min. and normal Tap. (% on MVA).

(e) Positive sequence resistance for max., min. and normal Tap. (% on MVA).

(f) Zero sequence reactance (% on MVA)

(g) Tap changer range (+% to -%) and steps.

(h) Type of Tap changer (off/on load).

(i) Neutral grounding details.

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	

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	

(ii) Switchgear (including circuit breakers, Isolators on all circuits connected to the points of Connection).

(a) Rated voltage (kV).

(b) Type of Breaker (MOCB/ABCB/SF6).

(c) Rated short circuit breaking current (kA) 3 phase.

(d) Rated short circuit breaking current (kA) 1 phase.
(e) Rated short circuit making current (kA) 3 phase.

(f) Rated short circuit making current (kA) 1 phase.
(g) Provisions of auto reclosing with details.

(iii) Lightning Arresters-number and location (line / transformer)-Technical data

(iv) Communications

Details of Communications equipment installed at points of connections.

(v) Basic Insulation Level (kV)
(a) Bus bar.
(b) Switchgear.
(c) Transformer Bushings

(d) Transformer windings

4. GENERATING UNITS

(i) Parameters of Generator

(a) Rated terminal voltage (kV).
(b) Rated MVA.

(c) Rated MW

(d) Speed (rpm) or number of poles.
(e) Inertia constant H (MW sec./MVA).

(f) Short circuit ratio.

(g) Synchronous Reactance (% on MVA) Xs
(h) Direct axis Positive Phase Sequence synchronous reactance Xd (% on MVA).

(i) Direct axis (saturated) transient reactance (% on MVA) X'd.
(j) Direct axis (saturated) sub-transient reactance (% on MVA) X"d.

(k) Direct Axis Transient Reactance (Unsaturated) (% on MVA) Xd1'

(l) Direct Axis Sub-Transient Reactance (Unsaturated) (% on MVA) Xd1''
(m) Quadrature axis synchronous reactance (% on MVA) Xq.

(n) Quadrature axis (saturated) transient reactance (% on MVA) X'q.

(o) Quadrature axis (saturated) sub-transient reactance (% on MVA) X"q.
(p) Quadrature Axis Transient Reactance (Unsaturated) (% on MVA) Xq1'

(q) Quadrature Axis Sub-Transient Reactance (Unsaturated) (% on MVA) Xq1''

(r) Zero Phase Sequence Reactance (% on MVA) X0
(s) Negative Phase Sequence Reactance (% on MVA) X2

(t) Direct axis transient open circuit time constant (sec) T'do.

(u) Direct axis sub-transient open circuit time constant (sec) T"do.

(v) Quadrature axis transient open circuit time constant (sec) T'qo.

(w) Quadrature axis transient open circuit time content (sec) T"qo.

(x) Stator Resistance (Ohm) Ra.

(y) Stator leakage reactance (Ohm) X1.

(z) Stator time constant (sec).

(aa) Rated Field current (A).

(bb) Neutral grounding details.

(cc) Open Circuit saturation characteristics of the Generator for various terminal voltages giving the compounding current to achieve this.

(dd) Type of Turbine.

(ee) Operating Head (Metres)

(ff) Discharge with full gate opening (cumecs)

(gg) Speed Rise on total Load throw off (%).

Please provide open circuit magnetization curve.

If this is not available, then please mention "assume" and MEPTCL shall assume magnetic saturation characteristics as per the ***Annexure-I***

(ii) Parameters of excitation control system:

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 MEPTCL. 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 MEPTCL is shown in **Annexure-II**.

Please fill/tick the appropriate box below:

Please assume model ☐

OR

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

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

(iii) Parameters of governor:

(iv) Operational parameter:
(a) Minimum notice required to Synchronise a Generating Unit from de-synchronisation.
(b) Minimum time between Synchronising different Generating Units in a Power Station.
(c) Minimum block load requirements on Synchronising.

5. GENERAL STATUS

(i) Detailed Project Report.

(ii) Status Report.
(a) Topographical survey
(b) Geological survey
(c) Land
(d) Environmental Clearance
(e) Rehabilitation of displaced persons.

(iii) Techno-economic approval by Central Electricity Authority.
(iv) Approval of State Government/Government of India.
(v) Financial Tie-up.

6. CONNECTION

(i) Reports of Studies for parallel operation with the State Transmission System.
(a) Short Circuit studies
(b) Stability Studies.
(c) Load Flow Studies.

(vi) Proposed Connection with the State Transmission System.
(a) Voltage
(b) No. of circuits
(c) Point of Connection.

7. RESERVOIR DATA

(i) Dead Capacity

(ii) Live Capacity

Schedule – VII: Data for Generators (other than Thermal & Hydro)

Generator Data for Fault (Short Circuit Studies)

All data to be provided on pu machine MVA base

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

Generator Data

All data to be provided on per unit machine MVA base

1	Direct Axis Positive Phase Sequence Synchronous Reactance	Xd	
2	Quadrature Axis Positive Phase Sequence Synchronous Reactance	Xq	
3	Direct Axis Transient Reactance (unsaturated)	Xd’	
4	Quadrature Axis Transient Reactance (unsaturated)	Xq’	
5	Sub-Transient Reactance (unsaturated)	Xd’’	
6	Armature Leakage Reactance	X*l*	
7	Direct Axis Transient open circuit Time Constant (Secs)	Tdo’	
8	Direct Axis Sub transient open circuit Time Constant(Secs)	Tdo’’	
9	Quadrature Axis Transient open circuit Time Constant(Secs)	Tqo’	
10	Quadrature Axis Sub transient open circuitTime Constant(Secs)	Tqo’’	
11	Inertia of complete turbo generator (MWs/MVA)	H	
12	Please provide open circuit magnetization curve Enter number here or mention “assumed” *If this not available then MEPTCL shall assume magneticsaturation characteristics as per the* ***Annexure-I***		

Excitation Data

Please submit Laplace domain control block diagram that represents the generator excitation system in accordance with the IEEE standard excitation model or as otherwise agreed with MEPTCL. 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 MEPTCL is shown in **Annexure-II**.

Please fill/tick the appropriate box below: Please assume model ☐

OR

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

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

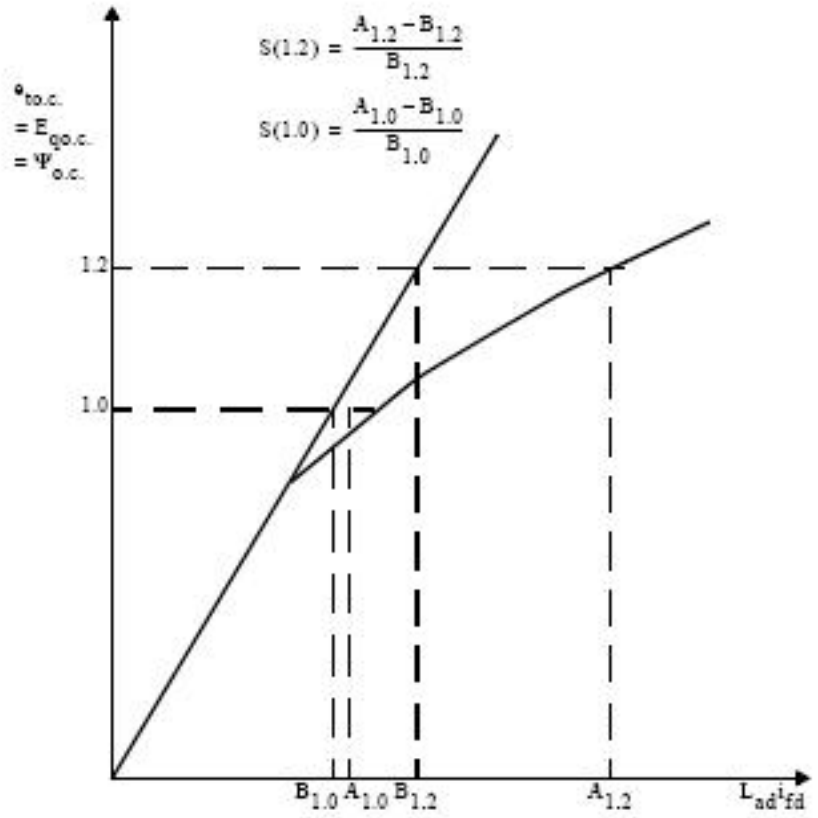
Two Winding Transformer Data

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	

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	

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 MEPTCL

Excitation System Models	
ESAC1A	1992 IEEE type AC1A excitation system model
ESAC2A	1992 IEEE type AC2A excitation system model
ESAC3A	1992 IEEE type AC3A excitation system model
ESAC4A	1992 IEEE type AC4A excitation system model
ESAC5A	1992 IEEE type AC5A excitation system model
ESAC6A	1992 IEEE type AC6A excitation system model
ESAC8B	Basler DECS model
ESDC1A	1992 IEEE type DC1A excitation system model
ESDC2A	1992 IEEE type DC2A excitation system model
ESST1A	1992 IEEE type ST1A excitation system model
ESST2A	1992 IEEE type ST2A excitation system model
ESST3A	1992 IEEE type ST3A excitation system model
EXAC1	1981 IEEE type AC1 excitation system model
EXAC1A	Modified type AC1 excitation system model
EXAC2	1981 IEEE type AC2 excitation system model
EXAC3	1981 IEEE type AC3 excitation system model
EXAC4	1981 IEEE type AC4 excitation system model
EXBAS	Basler static voltage regulator feeding dc or ac rotating exciter model
EXDC2	1981 IEEE type DC2 excitation system model
EXELI	Static PI transformer fed excitation system model
EXPIC1	Proportional/integral excitation system model
EXST1	1981 IEEE type ST1 excitation system model
EXST2	1981 IEEE type ST2 excitation system model
EXST2A	Modified 1981 IEEE type ST2 excitation system model

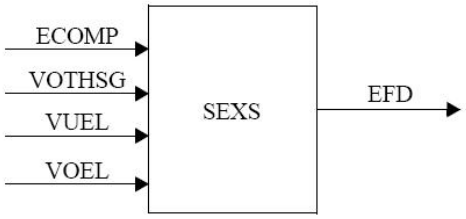
EXST3	1981 IEEE type ST3 excitation system model
IEEET1	1968 IEEE type 1 excitation system model
IEEET2	1968 IEEE type 2 excitation system model
IEEET3	1968 IEEE type 3 excitation system model
IEEET4	1968 IEEE type 4 excitation system model
IEEET5	Modified 1968 IEEE type 4 excitation system model
IEEEX1	1979 IEEE type 1 excitation system model and 1981 IEEE type DC1 model
IEEEX2	1979 IEEE type 2 excitation system model
IEEEX3	1979 IEEE type 3 excitation system model
IEEEX4	1979 IEEE type 4 excitation system, 1981 IEEE type DC3 and 1992 IEEE type DC3A models
IEET1A	Modified 1968 IEEE type 1 excitation system model
IEET1B	Modified 1968 IEEE type 1 excitation system model
IEET5A	Modified 1968 IEEE type 4 excitation system model
IEEX2A	1979 IEEE type 2A excitation system model
SCRX	Bus or solid fed SCR bridge excitation system model
SEXS	Simplified excitation system model

Annexure-III

SEXS – Simplified Excitation System

Model

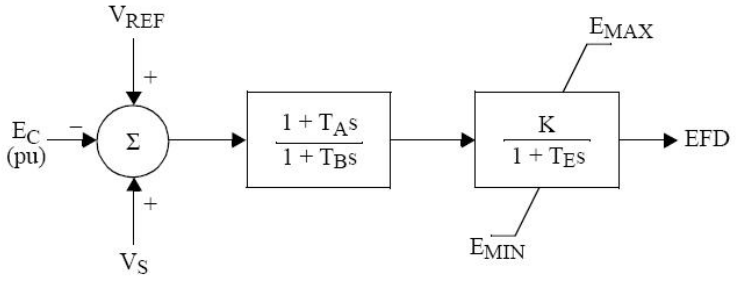
This model is located at system bus #_____ IBUS,
machine #_____ I.
This model uses CONs starting with #_____ J,
and STATEs starting with #_____ K.



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

STATEs	#	Description
K		First integrator
K+1		Second integrator

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



V_S = VOTHSG + VUEL + VOEL

FORMAT- 5

Draft Connection Offer Letter for Connection to the State Transmission Grid

[Name]

[Address of the party]

Subject: Connection Offer letter for connection to the State Transmission Grid.

Dear Sir,

We write with reference to the application No. _____ dated _____ seeking connectivity to the State Transmission System. We have examined your proposal and it is hereby permitted to connect to the grid as per the details given below:

1. Name of the Link
2. Voltage level
3. Type of Link
4. Reactive compensation to be provided
5. Maximum Import Capacity through the Link
6. Maximum Export Capacity through the Link
7. Date of commissioning
8. Bay allocated in the switchyard of connectivity
9. Equipment to be provided by applicant in the allocated bay meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and shall be compatible with the equipment installed at other end.

10 Protection Equipment to be provided by

:

: Bay No. [refer enclosed single line diagram at **Annexure-I**]

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

: [refer **Annexure-II**]

: 400/220/132 kV

: Double Circuit / Single Circuit

: [Specify rating of Line Reactor/Bus Reactor/Series compensation if any]

:

:

: [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.		
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 InSTS network.	:	[refer **Annexure-III**]
12	Details of the modification/alteration to existing facilities for accommodating proposed connection and its estimated cost.		
13	Name of Communication Link for Data and Voice Communication	:	[refer **Annexure-IV**]
14	Communication equipment details upto MEPTCL Data Collection Point		
15	Site responsibility schedule at	:	from [Name of switchyard/substation] – to [Name of switchyard/substation]
		:	[refer **Annexure-V**]
		:	[as marked in the attached GA diagram **Annexure-VI**]

It should be noted by the applicant that all the equipment and systems to be provided by applicant shall have to conform to 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 InSTS, all works associated with bay extension shall be taken- up by MEPTCL on deposit of cost for the same.

Thanking You

Yours faithfully,

Annexure-I

Single line Diagram of the Sub-Station /Switchyard of STU/any other transmission Licensee where connectivity is granted together with details of interconnection facilities

Annexure - II

Equipment to be provided by applicant in the allocated bay meeting the technical standards as per Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007

Serial No.	Name of Equipment	Nos.	Ratings
1.	Circuit Breaker		
2.	Isolators		
3.	Earth Switches		
4.	CT		
5.	CVT		
6.	Wave Trap		
7.	Etc.		

Annexure-III

System recording & SCADA Equipment to be provided by the applicant

Serial No.	Name of Equipment	Nos.	Ratings
1.	Event Logger		
2.	Disturbance recorder		
3.	Fault locator		
4.	Data Acquisition System		
5.	Communication equipment		
6.	Others		

Annexure-IV

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

Annexure-V

Communication equipment details upto MEPTCL Data Collection Point

Annexure-VI

Site responsibility schedule

A. Principle & Procedure:

The responsibility of control, operation, maintenance & all matters pertaining to safety of equipment and apparatus at the connection point shall lie with the owner.

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

Name of Power Station/Sub-Station:

Site Owner:

Site Manager:

Tel. Number:

Fax Number:

Serial No.	Name of Equipment/ Apparatus	Plant Owner	Safety Respon-Sibility	Control Respon-sibility	Operation Respon-sibility	Maintenance Respon-sibility
	___kV Switchyard					
1.	All equipment Including bus bars					
2.	Feeders					
a						
b						
3	Generating Units					
a.						
b.						

C. Site common Drawings:

a. Site layout

b. Electrical layout (SLD)

c. General Arrangement Drawings (GA)

d. Details of protection

e. Common services drawing

Appendix-VII
Reactive Power Compensation

a. Reactive power compensation should ideally be provided locally, by generating reactive power as close to the reactive power consumption as possible. The state entities are therefore expected to provide local VAr compensation or generation such that they do not draw VARs from the EHV grid, particularly under low-voltage condition. To discourage VAr drawals by state entities, VAr exchanges with Intra State Transmission System shall be priced as follows:

   i. The State entity pays for VAr drawal when voltage is below 97%

   ii. The State entity gets paid for VAr return when voltage is below 97%.

   iii. The State entity gets paid for VAr drawal when voltage is above103%.

   iv. The State entity pays for VAr return when voltage is above 103%.

   Where all voltage measurements are at the interface point with ISTS / InSTS.

b. The Reactive Energy Charges shall be fixed by the Commission vide separate order/notification from time to time.

c. SLDC shall issue monthly statement for Reactive Energy Charges to all intra-state entities and shall finalize methodology & procedure for carrying out reactive energy accounting of intra state entities within 60 days of notification of these regulations duly consulting the stakeholders and submit to the Commission for approval.

CONNECTION AGREEMENT

Meghalaya Power Transmission Company Limited
(State Transmission Utility)

Agreement for Connection to the intra state transmission system
(Applicable for one Party / Multi Party Developers requiring dedicated transmission system and system strengthening)

CONNECTION AGREEMENT

For

THE USE OF

Intra-State Transmission System (InSTS)
In
Meghalaya State

Between

(Generation Company including Captive Generation / Distribution Licensee / Power Procurer /Consumer and Others Permitted by State Commission)
(Transmission System User)

And

(Transmission Licensee)

CONNECTION AGREEMENT

This Connection Agreement (the "Agreement") is made on the _____ day of _____by and between:

…… is a ***"****(Generation Company including Captive Generation / Distribution Licensee /Power Procurer/ Consumer/ Others Permitted by State Commission)"* a company incorporated under the companies Act, 1956 having its registered office at ……..

(hereinafter collectively referred to as Long Term / Medium Term/ Short Term Transmission System Customer/ User*) which expression shall unless repugnant to the context or meaning thereof include its successors and assignees as party of the second, third, fourth, ……..and …… respectively*.

And

Meghalaya Power Transmission Electricity Transmission Company Limited (MEPTCL) *Transmission Licensee*, a company incorporated under the Companies Act, 1956, having its registered office at "Lum Jingshai", Short Round Road, Shillong 793001 (hereinafter called "**MEPTCL"** which expression shall unless repugnant to the context or meaning thereof include its successors and assignees);

WHEREAS

A) The Applicant has applied to the STU for connection of the [***mention generating station including a captive generating plant or Bulk consumer as appropriate***] facility to the STU's Transmission System and use of the STU's Transmission System to transmit electricity to and or from the Facility through the Intra-State Transmission System.

B) The STU has agreed to the connection of the [mention generating station including a captive generating plant or Bulk consumer as appropriate] facility to the STU's Transmission and Communication System (via the applicant's Site-Related Connection Equipment) at the Connection Point *(……. Mention details of the connection point, the name of sub-station, name of line which is to be made LILO, etc…..)* using the Transmission and Communication System of the STU or Intra-state transmission licensee other than the STU, as the case may be, to transmit electricity as well as real time data to the State Load Despatch Centre (SLDC) or from the Facility through the STU's Transmission and Communication System.

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 STU for works related to the interconnection, in accordance with the Connection Agreement. In the case of a generating plant seeking connection to the intra-state transmission system not owned by the STU, a tripartite Connection Agreement would be signed between the STU, the Intra-State transmission licensee and the applicant, since the planning of the Intra-State transmission system, insulation coordination, system studies, etc. are the responsibility of the STU. The responsibilities of the three parties would be defined accordingly in the tripartite Agreement.

D) 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 along with all the Annexures, and amendments when ever made, shall be submitted to SLDC & STU.

MEPTCL is a Transmission Licensee under Section 14 of the Electricity Act, 2003 and owns, operates & maintains Intra- State Transmission System in the State of Meghalaya.

Meghalaya State Electricity Regulatory Commission (hereinafter referred to as “MSERC”) has specified the State Grid Code which *inter alia* lays down the minimum technical and design criteria to be complied with by MEPTCL and ……connected to or seeking connection to the Intra-State Transmission System.

As per Connection Conditions specified in the State Grid Code, this Agreement is hereby entered into between MEPTCL and …….. for seeking connection of ……with MEPTCL’s ……..

MEPTCL and …….. are hereinafter individually referred to as “party” and collectively referred to as “parties”.

Now, therefore, in consideration of the premises and mutual agreements, covenants and conditions set forth herein, it is hereby agreed by and between the parties as under:-

Definitions and Interpretation

In this agreement unless the context otherwise requires, the definitions of terms used shall be as follows:

1. 'Act' means the Electricity Act, 2003(No 36 of 2003) including amendments thereto;
2. 'Apparatus' means all equipment in which electrical conductors are used, supported or of which they form a part;
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 Voltage measured at the generator terminals
5. 'British Standards' (BS) means those standards and specifications approved by the British Standards Institution.
6. 'Bulk Consumer' means a consumer who avails supply at Extra High voltage exceeding 33 kV;
7. 'CEA or Authority' means the Central Electricity Authority constituted under Sub - Section (1) of Section 70 of the Act;
8. 'Commission' means the Meghalaya State Electricity Regulatory Commission;
9. 'Connection Agreement' means an agreement setting out the terms relating to connection to and/or use of the intra-State transmission system;
10. 'Connection Point' means a point at which a User's or Transmission Licensee's Plant and/or Apparatus connects to the intra-State transmission system;
11. 'Earth Fault Factor' at a location in a three-phase system means the ratio of 'the highest root mean square (r.m.s) phase-to-earth power frequency voltage on a sound phase during fault to earth (affecting one or more phases)' to 'the r.m.s phase-to-earth power frequency voltage which would be obtained at the selected location without the fault.
12. '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;
13. 'Electrical 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;

14. 'Frequency' means the number of alternating cycles per second (expressed in Hertz).
15. 'Generating Unit' means an Electrical Generator coupled to a prime move 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.
16. 'IEC Standard' means standard approved by the International Electrotechnical Commission.
17. 'Isolator' means a device for achieving isolation of one part of an electrical from the rest of the system.
18. 'Grid Entry Point' means a point at which a generating unit is connected to the Grid;
19. 'Grid Supply Point' is a point of supply from the transmission system to a distribution system or to a Bulk consumer;
20. 'Intra-State Transmission System' (InSTS) 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 transmission licensees in the State;
21. 'Isolating Device' means a device for achieving isolation of one part of an electrical system from the rest of the system;
22. Maximum Continuous Rating' means the normal rated full load MW output capacity of the generating unit which can be sustained on a continuous basis at specified conditions
23. 'Power Factor' means the cosine of the electrical angle between the voltage and current complexors in an AC electrical circuit.
24. '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.
25. '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;
26. 'Reactive Power' means in relation to an AC electrical system, the product of root mean square (r.m.s) voltage, root means square (r.m.s) current and the sine of the electrical phase angle between the voltage complexor and current complexor, measured in voltamperes reactive (VAr).

27. ‘Requestor’ means a person such as Generating Company including captive generating plant or Transmission Licensee (excluding Central Transmission Utility and State Transmission Utility) or Distribution Licensee or Bulk Consumer, who is seeking connection of his new or expanded electrical plant to the grid at voltage level 33KV and above.
28. ‘Site Common Diagram’ means drawings prepared for each Connection Point, which incorporates layout drawings, electrical layout drawings, common protection/control drawings and common service drawings;
29. 'Standards' means "Standards on Grid Connectivity" specified by Central Electricity Authority;
30. ‘Single Line Diagram’ means diagrams which are a schematic representation of the HV/EHV apparatus and the connections to all external circuits at a Connection Point incorporating its numbering nomenclature and labeling;
31. ‘State Grid Code’ means the Grid Code specified by the Commission under Section 86(1) (h) of the Act;
32. ‘State Transmission Utility’ or ‘STU’ means Meghalaya State Electricity Transmission Company Ltd. notified by Government of Meghalaya as such under sub-section (1) of section 39 of the Act;
33. ‘Thermal Generating Unit’ means a generating unit using fossil fuels such as coal, lignite, gaseous and liquid fuel.
34. ‘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 voltage or current harmonics expressed as a percentage of the magnitude of the fundamental.
35. ‘Transmission System’ means a network of transmission lines and sub-stations.
36. Under Frequency Relay’(UFR) means a relay which operates when the system frequency falls below specified limits and initiates load shedding;
37. ‘User’ means a person, including in-State Generating Stations, Distribution Licensees Consumers of the Distribution Licensees directly connected to intra-State transmission system and persons availing of Open Access, who are connected to and/or use the intra-State transmission system.
38. ‘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 and not defined herein shall have same meaning as assigned to them under Act and Regulations.

Compliance of State Grid Code:

Both the parties agree and confirm that they shall be abiding with the provisions of the State Grid Code Regulations 2026 (with amendments thereof) and procedures and operating practices prescribed there under. In the event of any disparities between the State Grid Code and the Indian Electricity Grid Code (IEGC), the provisions of the IEGC shall prevail and for which, both parties shall agree to abide with the related provisions therein. The parties agree to supply the Standard Planning Data and Detailed Planning Data to the State Transmission Utility as may be specified for the purpose of planning and development of intra-State transmission System in accordance with Section of the State Grid Code.

Both the parties agree to abide by the directions and instructions of State Load Despatch Centre issued in discharge of its functions and comply with any procedure and processes prescribed by the State Load Despatch Centre under the State Grid code. The parties confirm that they shall adhere to the system security standards specified under Section 7 of the State Grid Code and operate respective systems in accordance with Section of the State Grid Code.

In case of discrepancy between terms and conditions stipulated in the Agreement and State Grid Code Conditions, the terms and conditions of the State Grid Code shall prevail, or in the event of any discrepancy between the State Grid Code and the IEGC, the terms of the IEGC shall prevail.

Compliance of Central Electricity Authority Regulations

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

General Connectivity Conditions

1. Connection Standards and codes of practice

a) Both the parties shall follow the industry best practices and applicable industry standards in respect of the equipment installation and its operation and maintenance

b) The equipment including overhead lines and cables shall comply with the relevant Indian standards, British Standards (BS) or International Electrotechnical Commission (IEC) Standard or American National Standards Institute (ANSI) or any other equivalent International Standard.

Provided that, whenever an International Standard or International Electrotechnical Commission 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.

c) The effect of wind, storms, floods, lightning, elevation, temperature extremes, icing, contamination, pollution and earthquakes must be considered in the design and operation of the connected facilities.

d) Installation, operation and maintenance of equipment by both the parties shall conform to the relevant standards specified by the Authority under Section 177, and Section 73 of the Act, as and when they come into force.

2. Safety Standards

Both the parties shall comply with the Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations, 2007

3. Commercial Arrangement

The commercial arrangement between the parties relating to evacuation and transmission of power shall be governed by the separate Bulk Power Transmission Agreement entered into by these two parties.

Metering at the Inter-connection Points shall be owned and maintained by Transmission Licensee as per Metering Requirement of MSERC (State Grid Code) Regulations, 2026. The Metering System shall be suitable to measure and store all pertinent parameters at all inter-connection points needed for billing the intra-state energy exchange as per the applicable tariffs and for energy accounting and DSM settlement system as specified by the Commission from time to time.

4. Sub-station grounding

Each transmission sub-station must have a ground mat solidly connected to all metallic structures and other non-energised metallic equipment. The mat shall limit the ground potential gradients to such voltage and current levels that will not endanger the safety of people or damage equipment which are in, or immediately adjacent to, the station under normal and fault conditions. The ground mat size and type shall be based on local soil conditions and available electrical fault current magnitudes. In areas where ground mat voltage rises would not be within 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. Sub station grounding shall be done in accordance with the norms of the Institute of Electrical and Electronics Engineers (IEEE) – 80 standards.

5. Metering Requirements

Metering requirement at the inter-connection points shall be governed by the latest Metering Code approved by the Commission. The MEPTCL and _____agree to abide by the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006.

6. Basic Insulation Level and Insulation Co-ordination

Basic Insulation Level (BIL) of various items of equipment and ratings of surge arresters for generating stations, lines and sub-stations shall be decided on the following order of priority, namely:-

a) Ensure safety to public and operating personnel;
b) Avoid permanent damage to plant;
c) Prevent failure of costly equipment;
d) Minimize circuit interruptions; and
e) Minimize interruptions of power supply to consumers.

Insulation coordination of equipment and lines on connection point belonging to MEPTCL and the grid shall be accomplished and the co-ordination shall be done by the Appropriate Transmission Utility.

7. Equipment at Connection Points

The ……and the MEPTCL confirm that their respective equipment at Connection Point shall comply with minimum technical and design criteria specified in the State Grid Code. Single Line Diagram showing arrangement of equipment belonging to the ……. / or MEPTCL at each connection point are appended with this agreement and also made

available to the SLDC. The parties herein agree that they shall not alter the arrangement of equipment at the connection point without consent of other party.

The …… and the MEPTCL confirm that before physical connection of their systems at the connection points, they shall intimate to the State Load Despatch Centre.

8. Site Common Drawings

Both the parties agree that Site Common Drawings showing layout of equipments, electrical layout drawings, common protection/control drawings and common service drawings shall be prepared at each Connection Point before taking up construction, erection and Commissioning of equipment. The parties herein agree that following drawings as may be necessary shall be prepared for connection arrangement:

a) Site Layout;
b) Electrical Layout;
c) Details of Protection; and
d) Common Services Drawings

9. Inspection, Test, calibration and Maintenance prior to connection:

Before connecting, MEPTCL shall complete all inspections and tests to which its equipment is connected. MEPTCL shall make available all drawings, specifications and test records of the project equipment pertaining to integrated operation to the applicable State Transmission licensee or Generating Station as the case may be.

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 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.

Following information shall be furnished in the Site Responsibility Schedule for each item of equipment installed at the Connection site, namely

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
g) The responsibility for all matters relating to safety of equipment at site

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

11. Capital Expenditure by parties

Both the parties agree that any capital expenditure arising from necessary reinforcement or extension of the system at the connection point shall be dealt in accordance with of MSERC (Multiyear Tariff) Regulations, 2014 (with amendments thereof) and shall be shared by the parties in accordance with the provisions of the said clause or regulatory orders/directions as the case may be.

12. Agreement to Pay Charges & Costs

a. Agreement to Monthly Transmission Tariff

The applicant declares that it shall pay the Monthly Transmission Tariff including NLDC charges, for use of Inter-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 CERC in this regard.

b. Agreement to pay for damages

The applicant declares that it shall pay/ make good damages, if any, caused by the customer to the property of the STU or Intra-state transmission licensee other than the STU, as the case may be, which has been notified by the STU or Intra-state transmission licensee other than the STU, as the case may be, within reasonable time of its occurrence, during the course of control, operation and maintenance of the equipment.

c. Agreement to pay Charges for construction of Bays:

The applicant or Intra-State transmission licensee will execute an agreement with STU for the Erection of equipment of applicant or Intra-State transmission licensee in the substation premises of the STU for construction of bays, if required. For this purpose, the applicant or Intra-State transmission licensee shall pay charges to the STU on mutually agreed terms.

d. Agreement to pay Application fee:

In the event that the connectivity to the intra state transmission sought is for open access, the Application for connectivity system shall be accompanied by a non-refundable fee of Rs two lakhs (Rs 2,00,000/-) only through demand draft in

favour of STU payable at Shillong and other fees and charges to be paid shall be governed by the provisions of MSERC Open Access Regulations, 2012.

13. Conditions Precedent to the implementation of the Commissioning Instructions

The applicant or Intra-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 STU is satisfied (by 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 or Intra-State transmission licensee has demonstrated the voice & data communication facilities to concerned SLDC;
(d) the applicant or Intra-State transmission licensee has obtained necessary approvals like PTCC, Electrical Inspectorate of CEA etc. from competent authority;
(e) the applicant or intra-State transmission licensee has complied with its obligations under the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007.

14. General philosophy and guidelines on Protection:

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

Grid Parameter Variations

General

The parties shall ensure that Plant and Apparatus requiring service from or providing service to the intra-State Transmission System is of such design and construction that satisfactory operation of such Plant and Apparatus will not be prevented by variation in instantaneous values of system frequency and voltage from their nominal values.

Frequency Variation

Rated frequency of the system shall be 50.0 Hz and connected equipment must be capable of operating within the limits specified in Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations 2007 and Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations 2019. The allowable frequency band shall be 49.90 to 50.05 Hz. The User,……. shall adhere to their schedule of injection or drawal, as the case may be, and take such action as required

as directed by SLDC so that the grid frequency is maintained and remains within the allowable band.

Voltage Variation

The variations of voltage may not be more than the voltage range specified in Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations 2007 and Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations 2019.

Protection System

1. Protection System shall be designed to reliably detect faults 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.
2. Every Element of the Power system shall be protected by a standard protection system having the required reliability, selectivity, speed, discrimination and sensitivity. Where failure of a protective relay in the MEPTCL's system has substantial impact on the grid, the MEPTCL shall connect an additional protection as back up protection besides the Main protection.
3. Notwithstanding the protection systems provided in the grid, the MEPTCL shall provide requisite protections for safeguarding its system from faults originating in the grid.
4. Bus bar Protection and Breaker Fail protection or Local Breaker Back-up Protection shall be provided wherever stipulated in the regulations.
5. 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.
6. Periodic Testing of protective relays and Special Protection Scheme for accurate operation during faults has to be carried out once or twice in a year.
7. All mechanical relays to be replaced with numerical relay as it provides significant advantages in reliability, accuracy and multi-function ability
8. Protection co-ordination issues shall be finalized at regional levels by Regional Electricity Board/ Regional Power Committee and for Intra-State lines by STU
9. The MEPTCL shall develop protection manuals conforming to various standards for the reference and use of its personnel.

Sub-Station Equipment

All Extra High Voltage (EHV) sub-station equipments of both the parties shall comply with Bureau of Indian Standards/International Electro technical Commission/prevailing Code 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 shall be controlled by a circuit breaker capable of interrupting dangerous fault conditions (like overload or short circuits) at the connection point, at least the short circuit current without sustaining damages, as advised by State Transmission Utility.

Fault Clearance Times

The fault clearance time for primary protection schemes, for a three-phase fault (close to the busbars) on ……. equipment directly connected to intra-State Transmission System and for a three-phase fault (close to the bus-bars) on intra-State Transmission System connected to MEPTCL equipment, shall not be more than:

a) <= 80 milli seconds for 800 kV class & 400 kV
b) 160 milli seconds for 220 kV & 132 kV

Lower fault clearance times for faults on ……. system may be agreed to but only if, in STU's opinion, system conditions allow this. STU shall specify the required opening time and rupturing capacity of the circuit breakers at various locations for …….directly connected to Transmission System. At generating stations, line faults should be cleared at the generation station end within the critical clearing time so that the generators remain in synchronism.

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 fault by back-up protection on the intra-State Transmission System side.

15. Reactive Power Compensation

Both the parties agree that the reactive Power compensation and/or other facilities shall be provided by ……. / MEPTCL, as far as possible, in the low 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.

The parties agrees that they shall endeavour to minimize the Reactive Power drawal at an interchange point when the voltage at that point is below 95% of rated voltage, and shall not inject Reactive Power when the voltage is above 105% of rated voltage.

Switching in/out of all 400 kV bus and line Reactors throughout the grid shall be carried out as per instructions of State Load Despatch Centre. Tap changing on all 400/220 kV Interconnecting Transformers shall also be done as per the instructions of State Load Despatch Centre only.

16. Communication Facilities

The …….. and MEPTCL agree to provide reliable and efficient speech and data communication systems to facilitate necessary communication and data exchange as prescribed by the SLDC for supervision/control of the State Grid under normal and abnormal conditions at their respective ends at their own cost. The ……. and MEPTCL agree to abide by the guidelines of the State Load Despatch Centre issued under Chapter-7 of the State Grid Code.

17. System Recording Instruments

…….. and MEPTCL agree to provide the recording instruments such as Data Acquisition System/Disturbance Recorder/Event Logger/Fault Locator (including time synchronization equipment) as may be necessary under applicable standards within the time frame specified in the State Grid Code.

Every Generating Station and sub-station connected to the grid at 220 KV or 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.

18. Access to both parties

The parties owning the Connection Site as the case may be shall provide reasonable access and other required facilities to another including the SLDC, whose equipment is proposed to be installed / 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 both entities at the connection site.

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

19. Unintended and Unscheduled back-energisation

Both the parties agree and confirm that they shall take adequate precautions to ensure that no part of the grid is energized by …….. system from another source of supply unless it is requisitioned in writing by the other party as an exceptional arrangement. The switchgear and controls of MEPTCL systems shall be so designed as to prevent back-energisation and the personnel shall be made aware of the need for this precaution.

20. Capacity Limit

a) The user shall not draw electricity though inter-connection point exceeding the maximum import capacity or transmit electricity through the inter-connection point exceeding the maximum export limit except when expressively permitted by MePTCL and as instructed by SLDC.
b) If the maximum import capacity or the Maximum export capacity together along with the tolerable limit is exceeded without consent of MePTCL/ SLDC, MePTCL may give a notice to the user to provide details and remedy of the situation within 10 days with an assurance to MePTCL that the Maximum Import/ Export Capacity shall not be exceeded in future.

The maximum import and export capacity of each user should be explicitly specified along with the tolerance limit in the contract.

21. Decommissioning, Disconnection or Dismantling

a) The user shall give MePTCL not less than three (03) months' written notice of any intention of the user to disconnect, de-commission and dismantle its equipment.
b) If the user gives a notice in accordance with sub-clause (a), the user may on expiry of the period specified in such notice, disconnect, decommission and dismantle its equipment. At the expiry of such period, this agreement shall terminate, provided that this agreement shall not terminate until the user pays any pending or applicable dues under this agreement.

22. Default De-energization for Non-Compliance and Termination

i. Conditions of breach

If the user is in breach of the provisions of this agreement or the Grid Code, then MePTCL shall, as soon as reasonably possible after it becomes aware of the

breach, in good faith notify the user of the breach advising it whether in its opinion the breach can be remedied and specifying the time period required for the remedy and giving sufficient details thereof to the user to enable it to assess the importance of the breach.

If the user fails to comply with the safety and reliability standards set out in the CEA Regulations/ Grid Code and directives of the MSERC, the SLDC of MePTCL on the instructions of SLDC, may de-energise the user's equipment upon the expiry of the period indicated in the written code to the user.

23. Events of Default

The following events shall be considered as the event of default by the user:

a. In a breach referred in clause above has not been remedied at the expiry of 2 months after the date of de-energization, MePTCL by giving a notice in writing to the user, declare that such breach is an event of default.
b. A failure to comply with, or operate in conformity with any provisions of this agreement and such failure cannot be remedied, MePTCL within 30 days of serving notice in writing to the user, shall be considered as event of default.
c. If at any time after the date of commissioning, the user has failed to obtain authorizations, or the approvals or consent required for its operation and is such failure is not remedied within 30 days from the date of service of notice from MePTCL.

24. Termination

a. Once MePTCL has given a valid notice of an event of default pursuant to clause above MePDCL may serve notice for termination to the user whereupon this agreement shall terminate and;

SLDC or MePTCL on instruction of SLDC may give the notice of De-energization and disconnection to the user and shall disconnect all the user's equipment at the inter-connection point.

25. 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 MEPTCL 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 responsible for the correspondence notices etc. in connection with this agreement shall be informed in advance.

26. Settlement of Disputes and Arbitration

All differences and/or disputes between the …….. and MEPTCL arising out of or in connection with these presents shall at first instance be settled through amicable settlement at the level of SE/CE.

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.

27. Force Majeure

Force Majeure herein is defined as any clause which is beyond the control of the STU or the applicant or intra-State transmission licensee 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:

- Natural phenomenon including but not limited to floods, droughts, earthquake and epidemics;
- 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;
- 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 of this agreement.
- 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.

28. Confidentiality

The ……. and MEPTCL 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.

29. Transfer Assignment and Pledge

The …….. or Intra-State transmission licensee shall not transfer, assign or pledge its rights and obligations under this connection agreement to any other person.

30. Term of Agreement & Amendment to the Agreement

This agreement shall remain valid unless both the ……. and MEPTCL with mutual agreement decide to amend/modified in respect of re-allocation of bays, upgradation of voltage level etc. or terminate it.

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

For and on behalf of _ _ _
(User)

For and on behalf of MEPTCL
(State Transmission Utility)

In the presence of

1.
2.

Schedule 1

Grid Connectivity Standards applicable to the Generating Units

The units at a generating station proposed to be connected to the grid shall comply with the following requirements besides the general connectivity conditions given in the regulations and general requirements given in the general connectivity conditions in this document.

New Generating Units

1) The excitation system for every generating unit
    a. shall have state of the art excitation system;
    b. shall have Automatic Voltage Regulator (AVR). Generators of 100 MW rating and above shall have Automatic Voltage Regulator with digital control and two separate channels having independent inputs and automatic changeover and
    c. The Automatic Voltage Regulator of generator of 100 MW and above shall include Power System Stabilizer (PSS)
2) The Short -Circuit Ratio (SCR) for generators shall be as per IEC-34.
3) The generator transformer windings shall have delta connection on low voltage side and star connection on high voltage side. Star point of high voltage side shall be effectively (solidly) earthed so as to achieve the Earth Fault Factor of 1.4 or less.
4) All generating machines irrespective of capacity shall have electronically controlled governing system with appropriate speed/load characteristics to regulate frequency. The governors of thermal generating units shall have a droop of 3 to 6% and those of hydro generating units 0 to 10%.
5) The project of the …….. shall not cause voltage and current harmonics on the grid which exceed the limits specified in Institute of Electrical and Electronics Engineers (IEEE) Standard 519.
6) Generating Units located near load centre, shall be capable of operating at rated output for power factor varying between 0.85 lagging (over-excited) to 0.95 leading (underexcited) and Generating Units located far from load centers shall be capable of operating at rated output for power factor varying between 0.9 lagging (over-excited) to 0.95 leading (under-excited). The above performance shall also be achieved with voltage variation of +5% of nominal, frequency variation of +3% and -5% and combined voltage and frequency variation of +5%. However, for gas turbines, the above performance shall be achieved for voltage variation of +5%.

7) The coal and lignite based thermal generating units shall be capable of generating up to 105% of Maximum Continuous Rating (subject to maximum load capability under Valve Wide Open Condition) for short duration) to provide the frequency response.
8) The hydro generating units shall be capable of generating up to 110% of rated capacity (subject to rated head being available) on continuous basis.
9) Every generating unit shall have standard protections to protect the units not only from faults within the units and within the station but also from faults in transmission lines. For generating units having rated capacity greater than 100 MW, two independent sets of protections acting on two independent sets of trip coils fed from independent Direct Current (DC) supplies shall be provided. The protections shall include but not be limited to the Local Breaker Back-up (LBB) protection.
10) Hydro generating units having rated capacity of 50 MW and above shall be capable of operation in synchronous condenser mode, wherever feasible.
11) Bus bar protection shall be provided at the switchyard of all generating station.
12) Automatic synchronization facilities shall be provided in the MEPTCL's Project.
13) The Reactive demand and Injections shall be in compliance with Clause 39 of the Indian Electricity Grid Code.
14) The station auxiliary power requirement, including voltage and reactive requirements, shall not impose operating restrictions on the grid beyond those specified in the Grid Code or state Grid Code as the case may be.
15) In case of hydro generating units, self-starting facility may be provided. The hydro generating station may also have a small diesel generator for meeting the station auxiliary requirements for black start.
16) The standards in respect of the sub-stations associated with the generating stations shall be in accordance with the provisions specified in respect of 'Sub-stations' under Schedule 2 of these Standards.

Existing Units

For thermal generating units having rated capacity of 200 MW and above and hydro units having rated capacity of 100 MW and above, the following facilities would be provided at the time of renovation and modernization.

1. Every generating unit shall have Automatic Voltage Regulator. Generators having rated capacity of 100MW and above shall have Automatic Voltage Regulator with two separate channels having independent inputs and automatic changeover.
2. Every generating unit of capacity having rated capacity higher than 100Mw shall have Power System Stabilizer.

3. All generating units shall have standard protections to protect the units not only from faults within the units and within the station but also from faults in transmission lines. The protections shall include but not limited to the Local Breaker Back-up (LBB) protection.

Schedule 2

Grid Connectivity Standards applicable to the Transmission Line and Sub-station

The transmission lines and sub-stations connected to the grid shall comply with the following additional requirements besides the general connectivity conditions under these regulations and General Standards for Connectivity to the Grid.

1. Bus bar protection shall be provided on all sub-stations at and above 220 kV levels for all new sub-stations. For existing sub-stations, this shall be implemented in a reasonable time frame.
2. Local Breaker Back-up (LBB) protection shall he provided for all sub-stations of 220kV and above.
3. Two main numerical Distance Protection Schemes shall he provided on all the transmission lines of 220 kV and above for all new sub-stations. For existing substations, this shall be implemented in a reasonable time frame.
4. Circuit breakers, isolators and all other current carrying equipment shall be capable of carrying normal and emergency load currents without damage. The equipment shall not become a limiting factor on the ability of transfer of power on the inter-state and intra-state transmission system.
5. All circuit breakers and other fault interrupting devices shall be capable of safely interrupting fault currents for any fault that they are required to interrupt. The Circuit breaker shall have this capability without the use of intentional time delay in clearing the fault. Minimum fault interrupting requirement need be specified by the State Transmission Utility. The Circuit Breaker shall be capable of performing all other required switching duties such as, but not Ltd. to, capacitive current switching, load current switching and out-of-step switching. The Circuit Breaker shall perform all required duties without creating transient over-voltages that could damage the equipment provided elsewhere in the grid. The short circuit capacity of the circuit breaker shall be based on short-term and perspective transmission plans as finalized by the Authority.
6. Power Supply to Sub-Station Auxiliaries, shall:
   a) for alternating current (AC) supply (Applicable to new sub-stations) 220 kV and above: Two high tension (HT) supplies shall be arranged from independent sources. One of the two high tension supplies shall be standby to the other. In

addition, an emergency supply from diesel generating (DG) source of suitable capacity shall also he provided.

66KV and below 220 kV: There shall be one HT supply and one diesel generating source. 33 kV and below 66 kV: There shall be one HT supply

b) for direct current (DC) Supply (Applicable to new sub-stations): Sub-station of transmission system for 132 kV and above and sub-stations of all generating stations: There shall he two sets of batteries, each equipped with its own charger.
c) For sub-station below 132 kV: there shall be one set of battery and charger.

7. Earth Fault Factor for an effectively earthed system shall be not more than 1.4.
8. Transmission Licensee shall provide line Reactors as may be necessary after carrying out system studies to control temporary over voltage within the limits as set out above.
9. The parties agree that Inter-Connecting Transformer (ICT) taps at the respective drawal points may be changed to control the Reactive Power interchange as per request to the State Load Despatch Centre, but only at reasonable intervals.

Schedule 3

Grid Connectivity Standards applicable to the Distribution Systems and Bulk Consumers

The following additional requirements shall be complied with. Besides the connectivity conditions in these regulations and general Standards for Connectivity to the Grid given in Part-I and those applicable to transmission lines and sub-stations in Part-III

1. Under Frequency and df/dt Relays

Under frequency and df/dt (rate of change of frequency with time) relays shall be employed for automatic load control in a contingency to ensure grid security under conditions of falling grid frequency in accordance with the decision taken in the Regional Power Committee.

2. Reactive Power

The distribution licensees shall provide adequate reactive compensation to compensate the inductive reactive power requirement in their system so that they do not depend upon the grid for reactive power support; the power factor of the distribution system and bulk consumer shall not be less than 0.95.

The Reactive demand and Injections shall be in compliance with Clause 39 of the Indian Electricity Grid Code.

3. Voltage and Current Harmonics

i. The total harmonic distortion for voltage at the connection point shall not exceed 5% with no individual harmonic higher than 3%.
ii. The total harmonic distortion for current drawn from the transmission system at the connection point shall not exceed 8%.
iii. The limits prescribed in (1) and (2) shall be implemented in a phased manner so as to achieve complete compliance not later than five years from the date of publication of these regulations in the official Gazette.

4. Voltage Unbalance

The Voltage Unbalance at 33 kV and above shall not exceed 3.0%.

5. Voltage Fluctuations

i. The permissible limit of voltage fluctuation for step changes, which may occur repetitively, is 1.5%.

ii. For occasional fluctuations other than step changes the maximum permissible limit is 3%.

iii. The limits prescribed in (1) and (2) above shall come into force not later than five years from the date of publication of these regulations in the Official Gazette.

6. Back-energization

The consumer shall not energize transmission or distribution system by injecting supply from his generators or any other source either by automatic controls or manually unless specifically requested by the Transmission or Distribution Licensee.

SITE RESPONSIBILITY SCHEDULE

Format, Principles and Procedure
(Pursuant to Chapter 4 para 4.7.2 of the State Grid Code – Appendix VI)

A1: SITE RESPONSIBILITY SCHEDULE

1. Introduction

Chapter 4 of the State Grid Code relates to Connection Conditions for connectivity with Intra State Transmission System and lays down detailed procedure for establishing or modifying existing arrangement of connection to and/or use of Intra-State Transmission System. A Site Responsibility Schedule for work relating to each connection is required to be prepared detailing responsibilities of each party for ownership, control, operation, maintenance, and safety of any person at Connection Site.

This document describes the format, principles and procedures for preparation of SRS for the works to be carried out for new connections or 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 new connections or modifying an existing connection to and/or use of Intra-State Transmission System.
_ _ _ , forming part of the Intra State Transmission System, MEPTCL, and User of the Intra State Transmission System shall comply with the following requirements at all existing Connection Points.

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 System (Pursuant to Section 4 of the State Grid Code) can be obtained from Nodal Officer of STU as given below:

Chief Engineer (Transmission),
Meghalaya State Electricity Transmission Company Ltd.

"Lum Jingshai", Short Round Road,
Shillong-793001
E-mail: cetranzemeptcl@gmail.com

The copy of application form and the procedure is also available at MeECL web-site www.meecl.nic.in and can be downloaded from website.
The copy of the Format and Procedure can also be obtained from the concerned MEPTCL office with whom …….. seeks connection.

5. Operational responsibility

The Nodal Officer of STU nominated by the MEPTCL 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. Definitions

In this procedure unless the context otherwise requires the definitions of terms used shall be as follows:

1. 'Act' means the Electricity Act, 2003;
2. 'Apparatus' means all equipment in which electrical conductors are used, supported or of which they form a part;
3. 'Bulk Consumer' means a consumer who avails supply at Extra High voltage exceeding 33 kV
4. 'CEA or Authority' means the Central Electricity Authority constituted under Sub - Section (1) of Section 70 of the Act;
5. 'Commission' means the Meghalaya Electricity Regulatory Commission;
6. 'Connection Agreement' means an agreement setting out the terms relating to connection to and/or use of the intra-State transmission system;
7. 'Connection Point' means a point at which a User's or Transmission Licensee's Plant and/or Apparatus connects to the intra-State transmission system;
8. 'Electrical 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. 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;

9. ‘Grid Entry Point’ means a point at which a generating unit is connected to the Grid;
10. ‘Grid Supply Point’ is a point of supply from the transmission system to a distribution system or to a Bulk consumer;
11. ‘Intra-State Transmission System’ means any system for conveyance of electricity through transmission lines within the area of the State and includes all transmission lines, sub-stations and associated equipment of transmission licensees in the State;
12. ‘Isolating Device’ means a device for achieving isolation of one part of an electrical system from the rest of the system;
13. ‘Protection’ means the system whereby abnormal conditions on a system are detected and fault clearance, actuating signals or indications are initiated;
14. ‘Site Common Diagram’ means drawings prepared for each Connection Point, which incorporates layout drawings, electrical layout drawings, common protection/control drawings and common service drawings;
15. 'Standards' means "Standards on Grid Connectivity" specified by Central Electricity Authority;
16. ‘Single Line Diagram’ means diagrams which are a schematic representation of the HV/EHV apparatus and the connections to all external circuits at a Connection Point incorporating its numbering nomenclature and labeling;
17. ‘State Grid Code’ means the Grid Code specified by the Commission under Section 86 (1) (h) of the Act.
18. ‘State Transmission Utility’ or ‘STU’ means Meghalaya Power Transmission Corporation Limited notified by Government of Meghalaya as such under sub-section (1) of section 39 of the Act;
19. ‘User’ means a person, including in-State Generating Stations, Distribution Licensees, Consumers of the Distribution Licensees directly connected to Intra-State Transmission System and persons availing of Open Access, who are connected to and/or use the intra-State transmission system:

The words and expressions used and not defined herein shall have same meaning as assigned to them under State Grid Code.

7. 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.

8. Responsibility for preparation of Site Responsibility Schedule

Site Responsibility Schedule shall be prepared by the MEPTCL with whose system the …….. seeks to connect. The general format of the Site Responsibility Schedule is given in Annexure-1. The Site Responsibility Schedule shall be prepared and finalised by the MEPTCL in consultation and in agreement with the ……. seeking connection with Intra State Transmission System.

At the connection site where equipment of both entities, i.e., the parties are installed, the ……. shall furnish required data to the MEPTCL and the MEPTCL shall prepare Site Responsibility Schedule. At a generating station, the MEPTCL shall furnish the necessary data to the generating company who shall prepare Site Responsibility Schedule.

The Site Responsibility Schedule shall be signed by the authorised person of the MEPTCL and the authorised person of the ……

The Site Responsibility Schedule shall form integral part of Agreement between the concerned parties connected to its system.

9. 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) apparatus,
c. Services and supplies
d. Schedule of telecommunications and measurement apparatus
e. Safety rules applicable to each plant/apparatus.

The Site Responsibility Schedule is necessarily to provide responsibility with regard to the 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.

10. Single Line Diagram

Single Line Diagram shall be prepared by parties for each connection point detailing all equipments 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 a Connection Point. The Single Line Diagram shall incorporate standard numbering nomenclature and labelling of the MEPTCL.

Single Line Diagram shall be furnished for each connection point by the connected …….. or MEPTCL to the State Load Despatch Centre.

In the event of a proposal to change any equipment, the concerned parties shall intimate the necessary changes required to State Transmission Utility and all other Users / MEPTCL. Single Line Diagram shall be updated appropriately by the concerned parties and a copy of the same shall be provided to the State Load Despatch Centre.

11. Site Common Drawings

Drawings at each Connection Point showing layout of equipments, electrical layout drawings, common protection/control drawings and common service drawings shall be prepared at each connection point. These drawings are collectively called as Site Common Drawings.

Site Common Drawings for each Connection Point will include the following information:

a. Site Layout;
b. Electrical Layout;
c. Details of Protection; and
d. Common Services Drawings.

Detailed drawings shall be prepared by MEPTCL and …… in respect of their system/facility at each Connection Point and copies of the same shall be made available to concerned …… and MEPTCL respectively.

In case of any changes in the Site Common Drawings that are found necessary by MEPTCL or ……. 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.

12. Access at Connection Site

The parties owning the Connection Site shall provide reasonable access and other required facilities to another Transmission Licensee or MEPTCL 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 the concerned MEPTCL or ……..at the same time safeguarding the interests of the parties at the Connection Site.

General Format of Site Responsibility Schedule

Annexure-1

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

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 EQUIPMENT FOR CONNECTION AGREEMENT

DETAILS OF METERING SYSTEM FOR BAY CONNECTION

Details of Energy Meters.

Annexure: I-A

Sr.No.	Name of feeder	Type of Meter	Make and Model	Class of Meter	Sr.No. Meter.
1					
2					
3					
4					

Type of Meter

1) **Panel Meter (Import / Export)**
2) **ABT Main and Check Meter**
3) **Billing Energy Meters**

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Capacitive Voltage Transformers (Metering) **Annexure I-B**

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.
1										
2										
3										
4										
5										
6										

Type: CVT / PT & Model No.

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Electro Magnetic Voltage Transformers (Protection) **Annexure I-C**

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.
1										
2										
3										
4										
5										
6										

Type: CVT / PT & Model No.

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Current Transformers (Metering) **Annexure I-D**

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

Type CVT / PT & Model No.

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Current Transformers (Protection) **Annexure I-E**

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

Type CVT / PT & Model No.

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Circuit Breakers **Annexure I-F**

Sr. No.	Name of Line / TF	Make	Type	Model	Breaker No.	Normal Current in AMP	Capacity in KV	Rupturing Current	DC Voltage	Working Pressure

Breaker Type: MOCB, SF6, ABCB etc.

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Isolators **Annexure I-G**

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

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

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of LAs **Annexure I-H**

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

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Details of Coupling Capacitors & Wave Trap **Annexure I-I**

Details of coupling Capacitor (C.C.)

Sr.No.	Name of Line /TF where installed	Make	Type	Voltage	Burden / Value	Sr.No. C.C	Phase
1	Not Applicable						
2							
3							
4							

Details of Wave Trap (W.T)

Sr.No.	Name of Line / TF Where installed	Make	Capacity / Value	Sr.No. of W.T.		
1						
2						

Executive Engineer (T&T)

DETAILS OF ALL EQUIPMENT AND METERING SYSTEM FOR BAY CONNECTION

Annexure I-J

Details of Control & Relay (C&R) Panel

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.
1						
2						

Executive Engineer (T&T)

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