

## Glossary of Technical Terms

S. No	Technical Terms	Description
1	<b>Availability Based Tariff (ABT)</b>	Financial settlement of energy exchanges across the Grid is carried out through a mechanism called Availability Based Tariff. ABT comprises three components: (a) capacity charge, towards reimbursement of fixed cost of the plant, linked to the plant's declared capacity to supply MWs, (b) energy charge, to reimburse the fuel cost for scheduled generation, and (c) Unscheduled Interchange (UI) charge, a payment for deviations from schedule, at a rate dependent on the system frequency.
2	<b>Alternating Current (AC)</b>	Alternating Current: or AC changes periodically with time.
3	<b>Area Clearing Price (ACP)</b>	Area clearing price is the clearing price for electricity transacted through power exchanges, for the respective bid areas.
4	<b>Available Transfer Capability (ATC)</b>	Available Transfer capability is equal to Total transfer capability minus transmission reliability margin fixed corridor-wise by National Load Despatch Centre to ensure that the interconnected network is secure under a reasonable range of uncertainties in system conditions.
5	<b>Angular separation</b>	The rotors of generators connected to the grid run at the same electrical speed and in case of small disturbances affecting the speed, restorative forces bring back the rotors to the same speed. However, for large disturbances, the restorative forces may be unable to bring all the generators to the same speed. If this happens, the angular difference between the generators goes on increasing (Angular separation) which causes large variations in voltage and power flow in lines.
6	<b>Bottling of power</b>	Any constraint in the transmission chain from generation of power to load leads to a situation where generation has to be backed down. This is referred to as bottling of power.
7	<b>Black start</b>	Building the Grid after a grid collapse is termed as 'black start' of the Grid
8	<b>Bottom up approach</b>	Under this approach used in restoration of power following partial or total grid collapse, black start facility available within the region among hydro, gas and some thermal power stations is used to start producing power, loads are added step by step and blocks of restored areas are built progressively.
9	<b>Congestion</b>	CERC Regulations define congestion as a situation where the demand for transmission capacity exceeds the available transfer capability.
10	<b>Circuit kilometer (ckm)</b>	Product of the number of circuits forming part of a transmission line and the length of transmission line in kilometre.
11	<b>Cascade tripping</b>	Uncontrolled successive loss of system elements triggered by an incident. Cascade tripping results in wide spread service interruption which cannot be restrained from sequentially spreading beyond an area pre-determined by appropriate studies.
12	<b>Central Transmission Utility</b>	Clause 2(10) of the Electricity Act, 2003 defines Central Transmission Utility as any Government company which the Central Government may notify under sub-section (1) of section 38 of the Act. PGCIL has been notified by the Central Government as Central Transmission Utility.
13	<b>Contingency</b>	Unexpected failure or outage of system components, such as a generator, transmission line, circuit breaker, switch, or other electrical element. A contingency also may include multiple components, which are related by situations leading to simultaneous component outages.
14	<b>Direct Current (DC)</b>	Direct Current or DC is steady and does not change with time.
15	<b>Double Circuit (DC)</b>	A double-circuit transmission line has two circuits.

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16	<b>Element</b>	Any electric device with terminals that may be connected to other electric devices, such as a generators, transformer, circuit, circuit breaker, <i>etc.</i>
17	<b>Energy Emergency</b>	A condition when a system or power pool does not have adequate energy resources to supply its customers' expected energy requirements.
18	<b>Feasibility Report (FR)</b>	Feasibility report is a document containing evaluation and analysis of the potential of proposed project based on extensive investigation and research to support the process of decision making.
19	<b>Frequency</b>	The number of complete alternations or cycles per second of an alternating current measured in hertz. The standard frequency in India is 50 Hz.
20	<b>Grid disturbance</b>	A Grid Disturbance (GD) is a state of the power system under which a set of generating units/transmission elements trip in an abrupt and unplanned manner affecting the power supply in a large area and/or causing the system parameters to deviate from the normal values in a wider range.
21	<b>High Voltage Direct Current (HVDC) system</b>	HVDC system comprises of point-to-point lines through which system operators can regulate flow of electricity.
22	<b>Infirm power</b>	Power generated by a power station prior to its date of commercial operation.
23	<b>Inter Regional lines</b>	Lines connecting two regions are called Inter Regional lines.
24	<b>Intra Regional lines</b>	Transmission lines connecting locations within the region are called Intra regional lines.
25	<b>Long Term Access</b>	Long Term Access (LTA) means the right to use the inter-state transmission system for a period exceeding 12 years but not exceeding 25 years.
26	<b>Long tie</b>	Long tie means Transmission link longer in length and tying /connecting two regions.
27	<b>Load Shedding</b>	The process of deliberately removing (either manually or automatically) pre-selected customer demand from a power system in response to a abnormal condition, to maintain the integrity of the system and minimize overall outages.
28	<b>Lighting Up</b>	Lighting up is used in the context of coal fired generating units and refers to the starting up of the boilers using oil (could be either Light Diesel Oil or Low Sulphur Heavy Stock or Heavy furnace Oil) depending on the boiler design. Only after this process is complete, the steam turbine can be rolled and the generator synchronized to the main grid.
29	<b>Load</b>	The amount of electric power delivered or required at any specific point or points on a system. The requirement originates at the energy-consuming equipment of the consumers.
30	<b>Market clearing Price (MCP)</b>	The market clearing price is the clearing price for cleared transactions in the whole market when there is no congestion.
31	<b>MNW</b>	Master Network (MNW) of the projects indicating contract wise dates for start and finish of various activities such as award, commencement of supply/erection, completion of supply/erection, <i>etc.</i>
32	<b>MVA</b>	MVA <i>i.e.</i> , mega volt ampere is a unit of measurement of apparent power in an electrical circuit. This unit of measurement can be used only in AC circuits. Transformers used in power transmission are rated in MVA.
33	<b>Million Unit (MU)</b>	Kilowatt-hour (kWh), <i>i.e.</i> one kilowatt of power expended for one hour of time, is called a 'Unit'. A collection of one million units is called 'MU'.
34	<b>N-1 Criterion</b>	Power system operation is based on a principle called 'N-1 criterion as per which transfer capability is assessed considering outage of the most important element. This ensures that the system remains in secure condition even after loss of the most important generator or transmission facility.

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35	<b>Open Access</b>	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 Appropriate Commission.
36	<b>Open line</b>	Open line means a line taken off the grid through a switching mechanism.
37	<b>Offline Simulation</b>	Power system engineers use a technique called power flow simulation to reproduce known operating conditions at a specific time by calibrating an initial simulation to observe voltage and line flows. The calibrated simulation can then be used to answer 'what if' questions to determine whether the system was in safe operating state at that time.
38	<b>Over drawal</b>	Over drawal means utilizing more than their share of central sector generation by discoms.
39	<b>Outage</b>	The period during which a generating unit, transmission line, or other facility is out of service. Outages are of three types (i) Planned outage: It refers to outage for carrying out maintenance work, construction related activities <i>etc.</i> (ii) Forced outage: a condition in which the element is unavailable due to unanticipated failure. (iii) Emergency outage: the element is taken out of service to carry out urgent repairs <i>etc.</i>
40	<b>Power swing</b>	Rotors of synchronous machines interconnected by AC lines tend to run at the same electrical speed in steady state. When the power system experiences small disturbances, restorative torques bring back the machines to synchronism (i.e. same electrical speed). This response is characterized by an oscillatory behavior since the underlying equations which determine the transient behavior are like those of a spring-mass system. The oscillations are called 'swings' and are seen in practically all parameters including line power flows. The oscillations die down if damping is adequate.
41	<b>Power Utility</b>	The entity that owns or operates facilities for generation, transmission, distribution, or sale of electric energy primarily for use by the public.
42	<b>Rating</b>	The operational limits of an electric system facility or element under a set of specified conditions.
43	<b>Reliability</b>	Reliability refers to the degree of performance of the elements of the bulk electric system that results in adequate and secure delivery of electricity to the consumers. Electric system reliability can be assessed through two indicators <i>viz.</i> , adequacy and security.
44	<b>Reliability Margin (RM)</b>	Reliability Margin (RM) means the amount of margin kept in the total transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions.
45	<b>Right of Way (ROW)</b>	Right of Way (ROW) with reference to transmission projects means right for placing of electric lines for transmission of electricity along the path through which such lines pass through.
46	<b>SCADA</b>	Supervisory Control and Data Acquisition System: a system of remote control and telemetry used to monitor and control the electric system.
47	<b>Single Contingency</b>	Sudden, unexpected failure or outage of a system facility or element (generating unit, transmission line, transformer, <i>etc.</i> ).
48	<b>Synchronization</b>	In an alternating current electric power system, synchronization is the process of matching the speed and frequency of a generator or other source of power to a running network.

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49	<b>Scheduled Power</b>	Power stations and distribution utilities inform their intended quantum of generation and drawal respectively for the next day to LDCs of their control area. LDCs match the generation and drawal of all utilities in their control area with reference to the power transfer capability and prepare the schedule each day, for the next day. For scheduling, a day is divided into 96 time blocks, each of 15 minutes duration. Thus, the 'Schedule' is a program drawn for the generating stations and distribution utilities. Energy exchanges as per the schedule is referred to as scheduled power.
50	<b>Short tie</b>	Short tie means Transmission link shorter in length and tying /connecting two regions.
51	<b>Short Term Open Access</b>	Access provided to a generator or seller of power for transmission of power for a short term period ( <i>i.e.</i> for a period up to one month at a time). POSOCO is the Nodal agency for grant of short term open access under CERC Regulations.
52	<b>Single circuit</b>	A single circuit transmission line has only one circuit.
53	<b>Special protection scheme (SPS)</b>	An automatic protection system designed to detect abnormal or pre determined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components.
54	<b>Transfer Capability</b>	Transfer capability refers to the amount of electric power that can be passed through a transmission network from one place to another having regard to reliability considerations.
55	<b>Transmission Capacity</b>	Transmission capacity is equal to summation of ratings of individual lines.
56	<b>Transmission Corridor</b>	An interconnected group of lines and associated equipment for movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric system.
57	<b>Transient Stability</b>	The ability of an electric system to maintain synchronism between its parts when subjected to a disturbance and to regain a state of equilibrium following the disturbance.
58	<b>Trip</b>	Refers to the automatic opening of the conducting path provided by a transmission line by the circuit breaker. These openings or "trips" are to protect the transmission line during faulted conditions.
59	<b>Total Transfer Capability (TTC)</b>	Total Transfer Capability of a transmission network means the amount of electric power that can be transferred reliably over the inter-control area transmission system under a given set of operating conditions considering the effect of occurrence of the worst credible contingency. Here credible contingency means the likely-to-happen contingency, which would affect the Total Transfer Capability of the inter-control area transmission system.
60	<b>Top down approach</b>	Top down approach adopted in restoration of power following a partial or total grid collapse involves taking power from other regions which remain connected to initiate restoration in the affected region.
61	<b>Unscheduled Interchange</b>	Unscheduled Interchange (UI) is the under Drawal/Over drawal or under injection/over injection when compared to the scheduled power
62	<b>Underdrawal</b>	Under drawal mean taking less than its share of central sector generation by state discoms.
63	<b>Voltage</b>	The electrical force, or "pressure," that causes current to flow in a circuit, measured in volts.