

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**6<sup>th</sup> April, 2016**

**NOTIFICATION**

**No. L-1/18/2010-CERC:** In exercise of powers conferred under clause (h) of subsection (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 as amended from time to time (hereinafter referred to as “the Principal Regulations”).

**1. Short title and commencement:**

(1) These Regulations may be called the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Fourth Amendment) Regulations, 2016.

(2) These Regulations shall come into force with effect from date of publication in Official Gazette except Sub-Regulation 6.3B which shall come into force on such date as the Commission may appoint by notification in the Official Gazette.

**2. Amendment in Regulation 2 of Principal Regulations-** Following new clauses shall be added after clause (iiii) of Sub-Regulation (1) of Regulation 2 of Principal Regulations as under, namely:

“(jjjj) Date of Commercial Operation or 'COD' shall have the same meaning as provided in Sub-Regulation 6.3A.1, 6.3A.2 and 6.3A.4 of these Regulations.

(kkkk) Trial Operation or Trial Run shall have the same meaning as provided in Sub-Regulation 6.3A.3 and 6.3A.5 of these Regulations.

(llll) Technical Minimum Schedule in respect of Central Generating Stations and inter-State Generating Stations shall have the same meaning as provided in Sub-Regulation 6.3B of these Regulations.”

**3. Amendment in Regulation 6.1 of the Principal Regulations-** Following clause shall be added after clause (d) of Principal Regulations:

“(e) Procedure for declaration of commercial operation of Central Generating Stations, inter-State Generating Stations and inter-State Transmission Systems, and technical minimum schedule for operation of the Central Generating Stations and inter-State Generating Stations”

**4. Amendment in Regulation 6.2 of the Principal Regulations –** Following shall be added at the end of first para of Regulation 6.2 of the Principal Regulations:

“This code also provides for the procedure and mechanism for declaration of commercial operation of Central Generating Stations, inter-State Generating Stations and inter-State Transmission System and technical minimum schedule for operation of Central Generating Stations and inter-State Generating Stations.”

## **5. Addition of new Regulations:**

The following Regulations shall be added after Regulation 6.3 of the Principal Regulations:

### **“6.3A Commercial operation of Central generating stations and inter-State Generating Stations**

1. Date of commercial operation in case of a unit of thermal Central Generating Stations or inter-State Generating Station shall mean the date declared by the generating company after demonstrating the unit capacity corresponding to its Maximum Continuous Rating (MCR) or the Installed Capacity (IC) or Name Plate Rating on designated fuel through a successful trial run and after getting clearance from the respective RLDC or SLDC, as the case may be, and in case of the generating station as a whole, the date of commercial operation of the last unit of the generating station:

Provided that:

(i) Where the beneficiaries / buyers have been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries/buyers and concerned RLDC or SLDC, as the case may be.

(ii) Where the beneficiaries / buyers have not been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the concerned RLDC or SLDC, as the case may be.

(iii) The generating company shall certify that:

(a) The generating station meets the relevant requirements and provisions of the technical standards of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 and Indian Electricity Grid Code, as applicable:

(b) The main plant equipment and auxiliary systems including Balance of Plant, such as Fuel Oil System, Coal Handling Plant, 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 sustained basis.

(c) Permanent electric supply system including emergency supplies and all necessary instrumentation, control and protection systems and auto loops for full load operation of unit have been put in service.

(iv) The certificates as required under clause (iii) above shall be signed by the CMD/CEO/MD of the generating company and a copy of the certificate shall be submitted to the Member Secretary of the concerned Regional Power Committee and the concerned RLDC / SLDC before declaration of COD. The generating company shall submit approval of Board of Directors to the certificates as required under clause (iii) within a period of 3 months of the COD.

(v) Trial run shall be carried out in accordance with Regulation 6.3A.3 of these Regulations.

(vi) Partial loading may be allowed with the condition that average load during the duration of the trial run shall not be less than Maximum Continuous Rating or the Installed Capacity or the Name Plate Rating excluding period of interruption and partial loading but including the corresponding extended period.

(vii) Where on the basis of the trial run, a unit of the generating station fails to demonstrate the unit capacity corresponding to Maximum Continuous Rating or Installed Capacity or Name Plate Rating, the generating company has the option to de-rate the capacity or to go for repeat trial run. Where the generating company decides to de-rate the unit capacity, the demonstrated capacity in such cases shall be more or equal to 105% of de-rated capacity.

(viii) The concerned RLDC or SLDC, as the case may be, shall convey clearance to the generating company for declaration of COD within 7 days of receiving the generation data based on the trial run.

(ix) If the concerned RLDC or SLDC, as the case may be, notices any deficiencies in the trial run, it shall be communicated to the generating company within seven (7) days of receiving the generation data based on the trial run.

(x) Scheduling of power from the generating station or unit thereof shall commence from 0000 hrs after declaration of COD.

2. Date of commercial operation (COD) in relation to a generating unit of hydro generating station including pumped storage hydro generating station shall mean the date declared by the generating company after demonstrating peaking capability corresponding to the Installed Capacity of the generating station through a successful trial run, and after getting clearance from the respective RLDC or SLDC, as the case may be, and in relation to the generating station as a whole, the date of commercial operation of the last generating unit of the generating station.

Provided that:

(i) Where beneficiaries have been tied up for purchasing power from the generating station, trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries and concerned RLDC or SLDC, as the case may be;

(ii) Where the beneficiaries/buyers have not been tied up for purchasing power from the generating station, the trial run shall commence after a notice of not less than seven days by the generating company to concerned RLDC or SLDC, as the case may be.

(iii) The generating company shall certify that:

(a) The generating station or unit thereof meets the requirement and relevant provisions of the technical standards of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 and Indian Electricity Grid Code, as applicable:

(b) The main plant equipment and auxiliary systems including Drainage Dewatering system, Primary and Secondary cooling system, LP and HP air compressor, Firefighting system, etc. have been commissioned and are capable for full load operation of units on sustained basis.

(c) Permanent electric supply system 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.

(iv) The certificates as required under clause (iii) above shall be signed by the CMD/CEO/MD of the generating company and a copy of the certificate shall be submitted to the Member Secretary of the concerned Regional Power Committee and concerned RLDC or SLDC, as the case may be, before declaration of COD. The generating company shall submit approval of Board of Directors to the certificates as required under clause (iii) within a period of 3 months of COD.

(v) Trial run shall be carried out in accordance with sub-Regulation 6.3A.3 of this Regulation.

(vi) Where on the basis of the trial run, a unit of the generating station fails to demonstrate the unit capacity corresponding to Maximum Continuous Rating or Installed Capacity or Name Plate Rating, the generating company shall have the option to either de-rate the capacity or to go for repeat trial run. If the generating company decides to de-rate the unit capacity, the demonstrated capacity in such cases shall be more or equal to 110% of de-rated capacity.

(vii) In case a hydro generating station with pondage or storage is not able to demonstrate the peaking capability corresponding to the installed capacity for the reasons of insufficient reservoir or pond level, the date of commercial operation of the last unit of the generating station shall be considered as the date of commercial operation of the generating station as a whole, and it will be mandatory for such hydro generating station to demonstrate peaking capability equivalent to installed capacity of the generating station or unit thereof as the case may be, as and when such reservoir/pond level is achieved:

(viii) If a run-of-river hydro generating station or a unit thereof is declared under commercial operation during lean inflows period when the water inflow is insufficient for such demonstration of peaking capability, it shall be mandatory for such hydro generating station or unit thereof to demonstrate peaking capability equivalent to installed capacity as and when sufficient water inflow is available. In case of failure to demonstrate the peaking capacity, the unit capacity shall be de-rated to the capacity demonstrated with effect from the COD.

(ix) The concerned RLDC or SLDC as the case may be, shall accord clearance to the generating company within seven (7) days of receiving the generation data based on the trial run.

(x) If the concerned RLDC or SLDC as the case may be, notices any deficiency in trial run, it shall be communicated to the generating company within seven (7) days of receiving the generation data based on trial run.

(xi) Scheduling shall commence from 0000 hrs after declaration of COD.

3. Trial Run or Trial Operation: Trial Run or Trial Operation in relation to a thermal Central Generating Station or inter-State Generating Station or a unit thereof shall mean successful running of the generating station or unit thereof on designated fuel at Maximum Continuous Rating or Installed Capacity or Name Plate Rating for a continuous period of 72 hours and in case of a hydro Central Generating Station or inter-state Generating Station or a unit thereof for a continuous period of 12 hours:

Provided that:

(i) The short interruptions, for a cumulative duration of 4 hours, shall be permissible, with corresponding increase in the duration of the test. Cumulative Interruptions of more than 4 hours shall call for repeat of trial operation or trial run.

(ii) The partial loading may be allowed with the condition that average load during the duration of the trial run shall not be less than Maximum Continuous Rating, or the Installed Capacity or the Name Plate Rating excluding period of interruption and partial loading but including the corresponding extended period.

(iii) Where the beneficiaries have been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries and concerned RLDC or SLDC, as the case may be.

(iv) Units of thermal and hydro Central Generating Stations and inter-State Generating Stations shall also demonstrate capability to raise load upto 105% or 110% of this Maximum Continuous Rating or Installed Capacity or the Name Plate Rating as the case may be.

4. Date of commercial operation in relation to an inter-State Transmission System or an element thereof shall mean the date declared by the transmission licensee from 0000 hour of which an element of the transmission system is in regular service after successful trial operation for transmitting electricity and communication signal from the sending end to the receiving end:

Provided that:

(i) In case of inter-State Transmission System executed through Tariff Based Competitive Bidding, the transmission licensee shall declare COD of the ISTS in accordance with the provisions of the Transmission Service Agreement.

(ii) Where the transmission line or substation is dedicated for evacuation of power from a particular generating station and the dedicated transmission line is being implemented other than through tariff based competitive bidding, the concerned generating company and transmission licensee shall endeavour to commission the generating station and the transmission system simultaneously as far as practicable and shall ensure the same through appropriate Implementation Agreement in accordance with relevant provisions of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 or any subsequent amendment or re-enactment thereof. In case the transmission line or sub-station dedicated to a generator is being implemented through tariff based competitive bidding, then matching of commissioning of the transmission line/sub-station and generating station shall be monitored by Central Electricity Authority.

(iii) Where the transmission system executed by a transmission licensee is required to be connected to the transmission system executed by any other transmission licensee and both transmission systems are executed in a manner other than through tariff based competitive bidding, the transmission licensee shall endeavour to match the commissioning of its transmission system with the transmission system of the other licensee as far as practicable and shall ensure the same through an appropriate Implementation Agreement. Where either of the transmission systems or both are implemented through tariff based competitive bidding, the progress of implementation of the transmission systems in a matching time schedule shall be

monitored by the Central Electricity Authority.

(iv) In case a transmission system or an element thereof is prevented from regular service on or before 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 application for approval of the date of commercial operation of such transmission system or an element thereof.

(v) An element shall be declared to have achieved COD only after all the elements which are pre-required to achieve COD as per the Transmission Services Agreement are commissioned. In case any element is required to be commissioned prior to the commissioning of pre-required element, the same can be done if CEA confirms that such commissioning is in the interest of the power system.

(vi) The transmission licensee shall submit a certificate from the CMD/CEO/MD of the Company that the transmission line, sub-station and communication system conform to the relevant Grid Standard and Grid Code, and are capable of operation to their full capacity.

Note: Transmission Licensee referred to in this Sub-Regulation shall include “Deemed Transmission Licensee” as per the provision of the Act.

5. Trial run and Trial operation in relation to a transmission system or an element thereof shall mean successful charging of the transmission system or an element thereof for 24 hours at continuous flow of power, and communication signal from the sending end to the receiving end and with requisite metering system, telemetry and protection system in service enclosing certificate to that effect from concerned Regional Load Despatch Centre.

6. 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 hour of which a communication system or element thereof shall be put into service after completion of site acceptance test including transfer of voice and data to respective control centre as certified by the respective Regional Load Dispatch Centre.

7. In the event of inconsistency between the provisions relating to trial operation and commercial operation as specified in Sub-Regulation 6.3A.1 to 6.3A.6 of these regulations and the provisions of Central Electricity Regulatory Commissions (Terms and Conditions of Tariff) Regulations, 2014 or any subsequent enactment thereof, the provisions of these regulations shall prevail.

### 6.3B – Technical Minimum Schedule for operation of Central Generating Stations and Inter-State Generating Stations

1. The technical minimum for operation in respect of a unit or units of a Central Generating Station of inter-State Generating Station shall be 55% of MCR loading or installed capacity of the unit of at generating station.
2. The CGS or ISGS may be directed by concerned RLDC to operate its unit(s) at or above the technical minimum but below the normative plant availability factor on account of grid security or due to the fewer schedules given by the beneficiaries.
3. Where the CGS or ISGS, whose tariff is either determined or adopted by the Commission, is directed by the concerned RLDC to operate below normative plant availability factor but at or above technical minimum, the CGS or ISGS may be compensated depending on the average unit loading duly taking into account the forced outages, planned outages, PLF, generation at generator terminal, energy sent out ex-bus, number of start-stop, secondary fuel oil consumption and auxiliary energy consumption, in due consideration of actual and normative operating parameters of station heat rate, auxiliary energy consumption and secondary fuel oil consumption etc. on monthly basis duly supported by relevant data verified by RLDC or SLDC, as the case may be.

Provided that:

- (i) In case of coal / lignite based generating stations, following station heat rate degradation or actual heat rate, whichever is lower, shall be considered for the purpose of compensation:

S.No.	Unit loading as a % of Installed Capacity of the Unit	Increase in SHR (for supercritical units) (%)	Increase in SHR (for sub-critical units) (%)
1	85-100	Nil	Nil
2	75-84.99	1.25	2.25
3	65-74.99	2	4
4	55-64.99	3	6

- (ii) In case of coal / lignite based generating stations, the following Auxiliary Energy Consumption degradation or actual, whichever is lower, shall be considered for the purpose of compensation:



Sl. No	Unit Loading (% of MCR)	% Degradation in AEC admissible
1.	85 – 100	NIL
2.	75 – 84.99	0.35
3.	65 – 74.99	0.65
4.	55 - 64.99	1.00

(iii) Where the scheduled generation falls below the technical minimum schedule, the concerned CGS or ISGS shall have the option to go for reserve shut down and in such cases, start-up fuel cost over and above seven (7) start / stop in a year shall be considered as additional compensation based on following norms or actual, whichever is lower:

Unit Size (MW)	Oil Consumption per start up (Kl)		
	Hot	Warm	Cold
200/210/250 MW	20	30	50
500 MW	30	50	90
660 MW	40	60	110

(iv) In case of gas based Central Generating Station or inter-State Generating Station, compensation shall be decided based on the characteristic curve provided by the manufacturer and after prudence check of the actual operating parameters of Station Heat Rate, Auxiliary Energy Consumption, etc.

(v) Compensation for the Station Heat Rate and Auxiliary Energy Consumption shall be worked out in terms of energy charges.

(vi) The compensation so computed shall be borne by the entity who has caused the plant to be operated at schedule lower than corresponding to Normative Plant Availability Factor up to technical minimum based on the compensation mechanism finalized by the RPCs.

(vii) No compensation for Heat Rate degradation and Auxiliary Energy Consumption shall be admissible if the actual Heat Rate and / or actual Auxiliary Energy Consumption are lower than the normative Station Heat Rate and / or normative Auxiliary Energy Consumption applicable to the unit or the generating station.

(viii) There shall be reconciliation of the compensation at the end of the financial year in due consideration of actual weighted average operational parameters of station heat rate, auxiliary energy consumption and secondary oil consumption.

(ix) No compensation for Heat Rate degradation and Auxiliary Energy Consumption shall be admissible if the actual Heat Rate and / or actual Auxiliary

Energy Consumption are lower than the normative station Heat Rate and / or normative Auxiliary Energy Consumption applicable to the unit or the generating station in a month or after annual reconciliation at the end of the year.

(x) The change in schedule of power under the provisions of Central Electricity Regulatory Commission (Ancillary Services Operations) Regulations, 2015 shall not be considered for compensation.

4. In case of a generating station whose tariff is neither determined nor adopted by the Commission, the concerned generating company shall have to factor the above provisions in the PPAs entered into by it for sale of power in order to claim compensations for operating at the technical minimum schedule.

5. The generating company shall keep the record of the emission levels from the plant due to part load operation and submit a report for each year to the Commission by 31<sup>st</sup> May of the year.

6. NLDC shall prepare a Detailed Operating Procedure in consultation with the generators and beneficiaries at RPC forums within 2 months' time and submit to the Commission for approval. The Detailed Operating Procedure shall contain the role of different agencies, data requirements, procedure for taking the units under reserve shut down and the methodology for identifying the generating stations or units thereof to be backed down upto the technical minimum in specific Grid conditions such as low system demand, Regulation of Power Supply and incidence of high renewables etc., based on merit order stacking.

7. The RPCs shall work out a mechanism for compensation for station heat rate and auxiliary energy consumption for low unit loading on monthly basis in terms of energy charges and compensation for secondary fuel oil consumption over and above the norm of 0.5 ml/kWh for additional start-ups in excess of 7 start-ups, in consultation with generators and beneficiaries at RPC forum and its sharing by the beneficiaries.

Sd/-  
(Shubha Sarma)  
Secretary

Note: Principal Regulations were published in Gazette of India, Extraordinary, Part-III, Section 4 at Serial No. 115 on 28.4.2010, the first amendment to the Principal Regulations were published in the Gazette of India, Extraordinary, Part-III, Section 4 at Serial No.60 on 6<sup>th</sup> March, 2012; the second amendment to the Principal Regulations were published in the Gazette of India, Extraordinary, Part-III, Section 4 at Serial No. 08 on 6<sup>th</sup> January, 2014; and the third amendment to the Principal Regulations were published in the Gazette of India, Extraordinary, Part-III, Section 4 at Serial No. 271 on 10<sup>th</sup> August, 2015.