

# **CENTRAL ELECTRICITY REGULATORY COMMISSION**

## **NEW DELHI**

**Dated: 1<sup>st</sup> April, 2020**

### **NOTIFICATION (DRAFT)**

**No.L-1/236/2018/CERC:** In exercise of powers conferred under section 178 of the Electricity Act, 2003 (36 of 2003) read with Section 61 thereof and all other powers enabling it in this behalf, and after previous publication, the Central Electricity Regulatory Commission hereby makes the following regulations, to amend the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (hereinafter referred to as “the Principal Regulations”).

#### **1. Short Title and Commencement**

1.1. These regulations may be called the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2020.

1.2. These regulations, except amendment to Regulation 21 of the Principal Regulations, shall come into force from 1<sup>st</sup> June, 2020 or such other date as may be notified by the Commission.

1.3. The amendment to Regulation 21 of the Principal Regulations shall come into force with effect from 1<sup>st</sup> April, 2019.

#### **2. Amendment to Regulation 3 of the Principal Regulations**

2.1. A new clause, namely, Clause (6a) shall be inserted after clause (6) of Regulation 3 of the Principal Regulations as under:

“(5a) ‘**Auxiliary energy consumption for emission control system**’ or ‘**AUX<sub>e</sub>**’ in relation to a period in case of coal or lignite based thermal generating station means the quantum of energy consumed by auxiliary equipment of the emission control system of the coal or lignite based thermal generating station;”

2.2. A new clause, namely, Clause (15a) shall be inserted after clause (15) of Regulation 3 of the Principal Regulations as under:

“(15a) ‘**Date of Operation**’ or ‘**ODe**’ in respect of an emission control system means the date of putting the emission control system into use after meeting all applicable technical and environmental standards, certified through the Management Certificate duly signed by an authorised person, not below the level of Director of the generating company;”

2.3 A new clause, namely, Clause (20a) shall be inserted after Clause (20) of Regulation 3 of the Principal Regulations as under:

“(20a) “**emission control system**” means a set of equipment or devices required to be implemented in the coal or lignite based thermal generating station to meet the revised emission standards;”

2.4 Clause (48) of Regulation 3 of the Principal Regulations shall be substituted as under:

“(48) ‘**Plant Load Factor**’ or ‘**(PLF)**’ in relation to a thermal generating station or unit thereof for a given period means the total sent out energy corresponding to scheduled generation during the period, expressed as a percentage of sent out

energy corresponding to installed capacity in that period and shall be computed in accordance with the following formula:

$$PLF = 10000 \times \sum_{i=1}^N \frac{SG_i}{[N \times IC \times (100 - AUX_n - AUX_{en})]} \%$$

Where,

IC = Installed Capacity of the generating station or unit in MW,

SG<sub>i</sub>= Scheduled Generation in MW for the i<sup>th</sup> time block of the period,

N = Number of time blocks during the period,

AUX<sub>n</sub>= Normative Auxiliary Energy Consumption as a percentage of gross energy generation; and

AUX<sub>en</sub>= Normative Auxiliary Energy Consumption for emission control system as a percentage of gross energy generation, wherever applicable.”

### **3. Amendment of Regulation 8 of the Principal Regulations**

3.1. In Clause (1) of Regulation 8 of the Principal Regulations, the words “including emission control system, wherever applicable,” shall be inserted in first line after the words “generating station” and before the words “may be”;

3.2. In Clause (4) of Regulation 8 of the Principal Regulations, the words “on submission of the completion certificate by the Board of the generating company” shall be substituted by the words “in accordance with the application filed under 4<sup>th</sup> proviso to clause (1) of Regulation 9 of these regulations.”

### **4. Amendment to Regulation 9 of the Principal Regulations**

4.1. A new proviso, namely, Fourth Provisoshall be added to Clause (1) of Regulation 9 of the Principal Regulations as under:

“Provided also that the generating company shall file an application for determination of supplementary tariff for the emission control system installed in the coal or lignite based thermal generating station in accordance with these regulations not later than 60 days from the date of operation of such emission control system.”

#### **5. Amendment of Regulation 14 of the Principal Regulations:**

5.1. In Clause (2) of Regulation 8 of the Principal Regulations, the words “Supplementary capacity charges for additional capitalisation” shall be substituted with the words “Supplementary tariff consisting of Supplementary capacity charges”.

#### **6. Amendment of Regulation 15 of the Principal Regulations.**

6.1. The existing clause of Regulation 15 of the Principal Regulations shall be re-numbered as Clause (1).

6.2. In re-numbered Clause (1) of Regulation 15 of the Principal Regulations, the words “based on capital cost,” shall be inserted after the words “communication system”.

6.3. A new Clause, namely Clause (2) shall be added after there-numbered Clause(1) of Regulation 15 of the Principal Regulations as under:

**“(2) Supplementary Capacity Charges:** Supplementary capacity charges shall be derived on the basis of the Annual Fixed Cost for emission control system (AFCe). The Annual Fixed Cost for the emission control system based on capital cost shall consist of the components as listed at (a) to (e) of Clause (1) of this Regulation.”

**7. Amendment of Regulation 16 of the Principal Regulations.**

7.1. The words “as per Regulation 43 of these regulations” shall be inserted at the end of the second proviso to Regulation 16 of the Principal Regulations.

**8. Amendment of Regulation 18 of the Principal Regulations:**

8.1. A new clause, namely Clause (6) shall be added after Clause (5) of Regulation 18 of the Principal Regulations as under:

“(6) Any expenditure incurred for the emission control system during the tariff period as may be admitted by the Commission as additional capital expenditure for determination of supplementary tariff, shall be serviced in the manner specified in clause (1) of this Regulation.”

**9. Amendment of Regulation 21 of the Principal Regulations:**

9.1. In Clause (5) of Regulation 21 of the Principal Regulations, the words “either in entirety on in part” shall be substituted with the words “either in entirety or in part”.

9.2. A new clause, namely, Clause (6) shall be added after Clause (5) of Regulation 21 of the Principal Regulations as under:

“(6) For the purpose of Clauses (4) and (5) of this Regulation, IDC on actual loan and normative loan infused shall be considered.”

**10. Amendment of Regulation 23 of the Principal Regulations:**

10.1. A new Proviso, namely, Proviso (iii) shall be added after Proviso (ii) to Regulation 23 of the Principal Regulations as under:

“(iii) where the emission control system is installed, the norms of initial spares specified in this regulation for coal or lignite based thermal generating station as the case may be, shall apply.”

## **11. Amendment of Regulation 29 of the Principal Regulations**

11.1. A new clause, namely, Clause (5) shall be added after Clause (4) of Regulation 29 of the Principal Regulations as under:

“(5) Un-discharged liability, if any, on account of emission control system shall be allowed as additional capitalization during the year it is discharged, subject to prudence check.”

## **12. Amendment of Regulation 30 of the Principal Regulation**

12.1. In the first proviso under Clause (2) of Regulation 30 of the Principal Regulations, the words “excluding additional capitalization due to Change in Law,” shall be deleted and at the end of the said proviso, the words and expressions “or in the absence of actual loan portfolio of the generating station or the transmission system, the weighted average rate of interest of the generating company or the transmission licensee, as the case may be, as a whole, shall be considered;” shall be added.

12.2. A new clause, namely, Clause (3) shall be added after Clause (2) of Regulation 30 of the Principal Regulations, as under:

“(3) The return on equity in respect of additional capitalization due to emission control system shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or in the absence of

actual loan portfolio of the generating station, the weighted average rate of interest of the generating company as a whole shall be considered;”

### **13. Amendment of Regulation 32 of the Principal Regulations**

13.1. A new clause, namely, Clause (5a) shall be inserted after Clause (5) of Regulation 32 of the Principal Regulations as under:

“(5a) The rate of interest on loan for emission control system shall be the weighted average rate of interest of actual loan portfolio of the emission control system or in the absence of actual loan portfolio, the weighted average rate of interest of the generating company as a whole shall be considered.”

### **14. Amendment of Regulation 33 of the Principal Regulations**

14.1. A new clause, namely, Clause (9) shall be added after Clause (8) of Regulation 33 of the Principal Regulations as under:

“(9) The depreciation of the emission control system shall be computed from its date of operation for the balance useful life or extended life of the generating station, as the case may be.”

### **15. Amendment of Regulation 34 of the Principal Regulations**

15.1. A new clause, namely, Clause (aa) shall be inserted after Clause (a) of Regulation 34 of the Principal Regulations as under:

“(aa) For emission control system of coal or lignite based thermal generating stations:

- (i) Cost of limestone or reagent towards stock for 20 days corresponding to the normative annual plant availability factor;
- (ii) Receivables equivalent to 45 days of supplementary capacity charge and supplementary energy charge for sale of electricity calculated on the normative annual plant availability factor;
- (iii) Operation and maintenance expenses in respect of emission control system for one month;
- (iv) Maintenance spares @ 20% of operation and maintenance expenses in respect of emission control system.”

## **16. Amendment of Regulation 35 of the Principal Regulations**

16.1. At the end of the first sentence of first proviso under sub-Clause (6) of Clause (1) of Regulation 35 of the Principal Regulations, the words “and considering the norms of specific water consumption notified by the Ministry of Environment, Forest and Climate Change” shall be added.

16.2. Sub-Clause(7) of Clause (1) of Regulation 35 of the Principal Regulations along with its proviso shall be substituted as under:

“(7) The operation and maintenance expenses on account of emission control system in coal or lignite based thermal generating station shall be 2% of the admitted capital expenditure (excluding IDC & IEDC) as on the date of its operation, which shall be escalated annually at the rate of 3.5% during the tariff period ending on 31<sup>st</sup> March 2024:

Provided that income generated from sale of gypsum or other by-products shall be reduced from the operation & maintenance expenses.”



## **17. Amendment of Title of Chapter 10 of the Principal Regulations**

17.1. The Title of Chapter-10 shall be substituted as “COMPONENTS OF ENERGY CHARGE AND SUPPLEMENTARY CHARGE”.

## **18. Amendment of Regulation 37 of the Principal Regulations**

18.1. The heading of Regulation 37 of the Principal Regulations shall be substituted as “Energy Charges and Supplementary Energy Charges”.

18.2. The words “and Supplementary Energy Charges” shall be added after the words “Energy Charges” in Regulation 37 of the Principal Regulations.

## **19. Amendment of Regulation 41 of the Principal Regulations**

19.1. In Clause (2) of Regulation 41 of the Principal Regulations, the words “notified separately” shall be substituted by the words “as specified in Regulations 49 of these regulations”.

## **20. Amendment of the title of Chapter-11 of the Principal Regulations**

20.1. The title of Chapter-11 of the Principal Regulations shall be substituted as “COMPUTATION OF CAPACITY CHARGES, SUPPLEMENTARY CAPACITY CHARGES, ENERGY CHARGES AND SUPPLEMENTARY ENERGY CHARGES”.

## **21. Amendment of Regulation 42 of the Principal Regulations**

21.1. In the proviso under the formula under Clause (2) of Regulation 42 of the Principal Regulations, the words “or installation of emission control system, as the case may be” shall be inserted after the words “Renovation and Modernisation”.

21.2. Clause (5) of Regulation 42 of the Principal Regulations along with the proviso of the said clause shall be substituted as under:-

“(5) The Plant Availability Factor for a Month (‘PAFM’) shall be computed in accordance with the following formula:

$$\text{PAFM} = 10000 \times \sum_{i=1}^N \frac{DC_i}{[N \times IC \times (100 - AUX_n - AUX_{en})]} \%$$

Where,

$AUX_n$  = Normative auxiliary energy consumption in percentage;

$AUX_{en}$  = Normative auxiliary energy consumption for pollution control system as a percentage of gross energy generation, wherever applicable;

$DC_i$  = Average declared capacity (in ex-bus MW), for the  $i^{\text{th}}$  day of the period i.e. the month or the year as the case may be, as certified by the concerned load dispatch centre after the day is over;

$IC$  = Installed Capacity or (MW) of the generating station;

$N$  = Number of days during the period;

Note:  $DC_i$  and  $IC$  shall exclude the capacity of generating units not declared under commercial operation. In case of a change in  $IC$  during the concerned period, its average value shall be taken.”

## **22. New Regulation 42A to be added in the Principal Regulations**

22.1. A new regulation, namely, Regulation 42A shall be added after Regulation 42 of the Principal Regulations as under:

### **“42A. Computation and Payment of Supplementary Capacity Charge for Coal or Lignite based Thermal Generating Stations:**

(1) The fixed cost of emission control system shall be computed on annual basis based on the norms specified under these regulations and recovered on

monthly basis under supplementary capacity charge. The total supplementary capacity charge payable for a generating station shall be shared by its beneficiaries as per their respective percentage share or allocation in the capacity of the generating station. The supplementary capacity charge shall be recovered under two segments of the year, i.e. High Demand Season (period of three months) and Low Demand Season (period of remaining nine months), and within each season in two parts viz., Supplementary Capacity Charge for Peak Hours of the month and Supplementary Capacity Charge for Off-Peak Hours of the month as follows:

Supplementary Capacity Charge for the Year ( $SCC_y$ ) =  
 Sum of Supplementary Capacity Charge for three months of High Demand Season + Sum of Supplementary Capacity Charge for nine months of Low Demand Season

(2) The Supplementary Capacity Charge payable to a thermal generating station for a calendar month shall be calculated in accordance with the following formulae:

Supplementary Capacity Charge for the Month ( $SCC_m$ ) =  
 Supplementary Capacity Charge for Peak Hours of the Month ( $SCC_p$ ) +  
 Supplementary Capacity Charge for Off-Peak Hours of the Month  
 ( $SCC_{op}$ )

Where,

**High Demand Season:**

$$SCC_{p1} = (0.20 \times AF_{Ce}) \times \left(\frac{1}{12}\right) \times \left(\frac{PAFM_{p1}}{NAPAF}\right) \text{ subject to ceiling of } (0.20 \times AF_{Ce}) \times \left(\frac{1}{12}\right)$$

$$SCC_{p2} = \{(0.20 \times AF_{Ce}) \times \left(\frac{1}{6}\right) \times \left(\frac{PAFM_{p2}}{NAPAF}\right) \text{ subject to ceiling of } (0.20 \times AF_{Ce}) \times \left(\frac{1}{6}\right)\} - SCC_{p1}$$

$$SCC_{p3} = \{(0.20 \times AF_{Ce}) \times \left(\frac{1}{4}\right) \times \left(\frac{PAFM_{p3}}{NAPAF}\right) \text{ subject to ceiling of } (0.20 \times AF_{Ce}) \times \left(\frac{1}{4}\right)\} - (SCC_{p1} + SCC_{p2})$$

$$SCC_{op1} = \{(0.80 \times AF_{Ce}) \times \left(\frac{1}{12}\right) \times \left(\frac{PAFM_{op1}}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AF_{Ce}) \times \left(\frac{1}{12}\right)\}$$

$$SCC_{op2} = \{ \{ (0.80 \times AF_{Ce}) \times \left(\frac{1}{6}\right) \times \left(\frac{PAFM_{op2}}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AF_{Ce}) \times \left(\frac{1}{6}\right)\} - SCC_{op1}$$

$$SCC_{op3} = \{ \{ (0.80 \times AF_{Ce}) \times \left(\frac{1}{4}\right) \times \left(\frac{PAFM_{op3}}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AF_{Ce}) \times \left(\frac{1}{4}\right)\} - (SCC_{op1} + SCC_{op2})$$

**Low Demand Season:**

$$SCC_{p1} = \{(0.20 \times AF_{Ce}) \times \left(\frac{1}{12}\right) \times \left(\frac{PAFM_{p1}}{NAPAF}\right) \text{ subject to ceiling of } (0.20 \times AF_{Ce}) \times \left(\frac{1}{12}\right)\}$$

$$SCC_{p2} = \{(0.20 \times AF_{Ce}) \times \left(\frac{1}{6}\right) \times \left(\frac{PAFM_{p2}}{NAPAF}\right) \text{ subject to ceiling of } (0.20 \times AF_{Ce}) \times \left(\frac{1}{6}\right)\} - CC_{p1}$$

$$SCC_{p3} = \{(0.20 \times AF_{Ce}) \times \left(\frac{1}{4}\right) \times \left(\frac{PAFM_{p3}}{NAPAF}\right) \text{ subject to ceiling of } (0.20 \times AF_{Ce}) \times \left(\frac{1}{4}\right)\} - (SCC_{p1} + SCC_{p2})$$

$$SCC_{p4} = \left\{ (0.20 \times AFCe) x \left( \frac{1}{3} \right) x \left( \frac{PAFMp4}{NAPAF} \right) \text{ subject to ceiling of } (0.20 \times AFCe) x \left( \frac{1}{3} \right) \right\} - (SCCp1 + SCCp2 + SCCp3)$$

$$SCC_{p5} = \left\{ (0.20 \times AFCe) x \left( \frac{5}{12} \right) x \left( \frac{PAFMp5}{NAPAF} \right) \text{ subject to ceiling of } (0.20 \times AFCe) x \left( \frac{5}{12} \right) \right\} - (SCCp1 + SCCp2 + SCCp3 + SCCp4)$$

$$SCC_{p6} = \left\{ (0.20 \times AFCe) x \left( \frac{1}{2} \right) x \left( \frac{PAFMp6}{NAPAF} \right) \text{ subject to ceiling of } (0.20 \times AFCe) x \left( \frac{1}{2} \right) \right\} - (SCCp1 + SCCp2 + SCCp3 + SCCp4 + SCCp5)$$

$$SCC_{p7} = \left\{ \left\{ (0.20 \times AFCe) x \left( \frac{7}{12} \right) x \left( \frac{PAFMp7}{NAPAF} \right) \text{ subject to ceiling of } (0.20 \times AFCe) x \left( \frac{7}{12} \right) \right\} - (SCCp1 + SCCp2 + SCCp3 + SCCp4 + SCCp5 + SCCp6) \right\}$$

$$SCC_{p8} = \left\{ (0.20 \times AFCe) x \left( \frac{2}{3} \right) x \left( \frac{PAFMp8}{NAPAF} \right) \text{ subject to ceiling of } (0.20 \times AFCe) x \left( \frac{2}{3} \right) \right\} - (SCCp1 + SCCp2 + SCCp3 + SCCp4 + SCCp5 + SCCp6 + SCCp7)$$

$$SCC_{p9} = \left\{ (0.20 \times AFCe) x \left( \frac{3}{4} \right) x \left( \frac{PAFMp9}{NAPAF} \right) \text{ subject to ceiling of } (0.20 \times AFCe) x \left( \frac{3}{4} \right) \right\} - (SCCp1 + SCCp2 + SCCp3 + SCCp4 + SCCp5 + SCCp6 + SCCp7 + SCCp8)$$

$$SCC_{op1} = \left\{ \left\{ (0.80 \times AFCe) x \left( \frac{1}{12} \right) x \left( \frac{PAFMop1}{NAPAF} \right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left( \frac{1}{12} \right) \right\} \right\}$$

$$SCC_{op2} = \left\{ \left\{ (0.80 \times AFCe) x \left( \frac{1}{6} \right) x \left( \frac{PAFMop2}{NAPAF} \right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left( \frac{1}{6} \right) \right\} - SCCop1 \right\}$$

$$SCC_{op3} = \left\{ \left\{ (0.80 \times AFCe) x \left(\frac{1}{4}\right) x \left(\frac{PAFMop3}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{1}{4}\right) \right\} - (SCC_{op1} + SCC_{op2}) \right.$$

$$SCC_{op4} = \left\{ (0.80 \times AFCe) x \left(\frac{1}{3}\right) x \left(\frac{PAFMop4}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{1}{3}\right) \right\} - (SCC_{op1} + SCC_{op2} + SCC_{op3})$$

$$SCC_{op5} = \left\{ (0.80 \times AFCe) x \left(\frac{5}{12}\right) x \left(\frac{PAFMop5}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{5}{12}\right) \right\} - (SCC_{op1} + SCC_{op2} + SCC_{op3} + SCC_{op4})$$

$$SCC_{op6} = \left\{ \left\{ (0.80 \times AFCe) x \left(\frac{1}{2}\right) x \left(\frac{PAFMop6}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{1}{2}\right) \right\} - (SCC_{op1} + SCC_{op2} + SCC_{op3} + SCC_{op4} + SCC_{op5}) \right.$$

$$SCC_{op7} = \left\{ (0.80 \times AFCe) x \left(\frac{7}{12}\right) x \left(\frac{PAFMop7}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{7}{12}\right) \right\} - (SCC_{op1} + SCC_{op2} + SCC_{op3} + SCC_{op4} + SCC_{op5} + SCC_{op6})$$

$$SCC_{op8} = \left\{ (0.80 \times AFCe) x \left(\frac{2}{3}\right) x \left(\frac{PAFMop8}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{2}{3}\right) \right\} - (SCC_{op1} + SCC_{op2} + SCC_{op3} + SCC_{op4} + SCC_{op5} + SCC_{op6} + SCC_{op7})$$

$$SCC_{op9} = \left\{ (0.80 \times AFCe) x \left(\frac{3}{4}\right) x \left(\frac{PAFMop9}{NAPAF}\right) \text{ subject to ceiling of } (0.80 \times AFCe) x \left(\frac{3}{4}\right) \right\} - (SCC_{op1} + SCC_{op2} + SCC_{op3} + SCC_{op4} + SCC_{op5} + SCC_{op6} + SCC_{op7} + SCC_{op8})$$

Provided that in case of generating station or unit thereof under shutdown due to Renovation and Modernisation, the generating company shall be allowed to recover O&M expenses and interest on loan due to emission control system only.

Where,

$SCC_m =$  Supplementary Capacity Charge for the Month;

$SCC_p =$  Supplementary Capacity Charge for the Peak Hours of the Month;

$SCC_{op} =$  Supplementary Capacity Charge for the Off-Peak Hours of the Month;

$SCC_{pn} =$  Supplementary Capacity Charge for the Peak Hours of  $n^{th}$  Month in a specific Season;

$SCC_{opn} =$  Supplementary Capacity Charge for the Off-Peak of  $n^{th}$  Month in a specific Season;

$AFC_e =$  Annual Fixed Cost of the emission control system;

$PAFM_{pn} =$  Plant Availability Factor achieved during Peak Hours upto the end of  $n^{th}$  Month in a Season;

$PAFM_{opn} =$  Plant Availability Factor achieved during Off-Peak Hours upto the end of  $n^{th}$  Month in a Season;

$NAPAF =$  Normative Annual Plant Availability Factor.

(3) Any under-recovery or over-recovery of Supplementary Capacity Charge as a result of under-achievement or over-achievement, vis-à-vis the NAPAF in Peak and Off-Peak Hours of a Season (High Demand Season or Low Demand Season, as the case may be) shall not be adjusted with under-achievement or

over-achievement, vis-à-vis the NAPAF in Peak and Off-Peak Hours of the other Season:

Provided that within a Season, the shortfall in recovery of Supplementary Capacity Charge for cumulative Off-Peak Hours derived based on NAPAF, shall be allowed to be off-set by over-achievement of PAF, if any, and consequent notional over-recovery of Capacity Charge for cumulative Peak Hours in that Season:

Provided further that within a Season, the shortfall in recovery of Supplementary Capacity Charge for cumulative Peak Hours derived based on NAPAF, shall not be allowed to be off-set by over-achievement of PAF, if any, and consequent notional over-recovery of Supplementary Capacity Charge for cumulative Off-Peak Hours in that Season.

(4) Normative Plant Availability Factor for “Peak” and “Off-Peak” Hours in a month for the purpose of Supplementary Capacity Charge and Peak and Off-Peak hours shall be considered in the manner specified in Clause (3) of Regulation 42 of these regulations. The PAFM shall be worked out in accordance with Clause (5) of the Regulation 42 of these regulations.”

### **23. Amendment of Regulation 43 of the Principal Regulations**

23.1. At the end of the title heading of Regulation 43 of the Principal Regulations, the words “**and Supplementary Energy Charge for Coal or Lignite based Thermal Generating Stations:**” shall be added.



23.2. In Clause (2) of Regulation 43 of the Principal Regulations, the words “and Supplementary Energy charge rate” shall be added after the words “Energy charge rate (ECR)”.

23.3. The words “**ECR**” shall be inserted at the beginning of the title heading of sub-clause (a) of clause (2) of Regulation 43 of the Principal Regulations.

23.4. A new sub-clause, namely, sub-clause (aa) shall be inserted after sub-clause (a) of clause (2) of Regulation 43 of the Principal Regulations as under:

**“(aa) Supplementary ECR for coal and lignite based thermal generating stations:**

$$\text{Supplementary ECR} = (\Delta\text{ECR}) + (\text{SRC} \times \text{LPR} / 1000)$$

Where,

( $\Delta\text{ECR}$ ) = Difference between ECR with revised auxiliary consumption with emission control system equivalent to ( $\text{AUX}_n + \text{AUX}_{en}$ ) and ECR with normative auxiliary consumption as specified in these regulations and revised;

SRC = Specific reagent consumption on account of revised emission standard  
(in gm /kWh);

LPR = Weighted average landed price of reagent for emission control system  
(in Rs/kg)”.

## **24. Amendment of the Regulation 48 of the Principal Regulations**

24.1. In Clause (1) of Regulation 48 of the Principal Regulations, the words and expressions “supplementary capacity charge, supplementary energy charge,” shall be inserted after the words “energy charge,”.

## 25. Amendments of Regulation 49 of the Principal Regulations

25.1. A new sub-clause, namely, sub-clause (bb) shall be inserted after sub-clause (b) of Clause (E) of Regulation 49 of the Principal Regulations as under:

“(bb) Auxiliary Energy Consumption ( $AUX_e$ ) on account of emission control system of thermal generating stations:

Name of Technology	$AUX_{en}$ (as % of gross generation)
<b>(1) For reduction of emission of sulphur dioxide:</b>	
a) Wet Limestone based FGD system (without Gas to Gas heater )	1.0%
b) Lime Spray Dryer or Semi dry FGD System	1.0%
c) Dry Sorbent Injection System (using Sodium bicarbonate)	NIL
d) For CFBC Power plant (furnace injection)	NIL
e) Sea Water based FGD system (without Gas to Gas heater )	0.7%
<b>(2) For reduction of emission of oxide of nitrogen :</b>	
a) Selective Non-Catalytic Reduction system	NIL
b) Selective Catalytic Reduction system	0.2%

Provided that where the technology is installed with Gas to Gas heater, auxiliary energy consumption specified as above shall be increased by 0.3% of gross generation.”

25.2. A new clause, namely Clause (F) shall be added after Clause (E) of Regulation 49 of the Principal Regulations as under:

**“(F) Norms for consumption of reagent:** (1)The normative consumption of specific reagent for various technologies for reduction of emission of sulphur dioxide shall be as below:

**(a) For Wet Limestone based Flue Gas De-sulphurisation (FGD) system:** The specific limestone consumption (g/kWh) shall be worked out by following formula:

$$[ 0.85 \times K \times SHR \times S ] / [ CVPF \times LP ]$$

Where,

S = Sulphur content in percentage,

LP = Limestone Purity in percentage,

SHR= Gross station heat rate, in kCal per kWh;

CVPF = (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations less 85 Kcal/Kg on account of variation during storage at generating station;

(b) Weighted Average Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, based stations;

Provided that value of K shall be equivalent to  $(35.2 \times \text{Design SO}_2 \text{ Removal Efficiency}/96\%)$  for units to comply with SO<sub>2</sub> emission norm of 100/200 mg/Nm<sup>3</sup> or  $(26.8 \times \text{Design SO}_2 \text{ Removal Efficiency}/73\%)$  for units to comply with SO<sub>2</sub> emission norm of 600 mg/Nm<sup>3</sup>;

Provided further that the limestone purity shall not be less than 85%.

**(b) For Lime Spray Dryer or Semi-dry Flue Gas Desulphurisation (FGD) system:** The specific lime consumption shall be worked out based on minimum purity of lime (PL) as at 90% or more by applying formula  $[0.90 \times 6 / \text{PL}(\%)]$  gm/kWh;

**(c) For Dry Sorbent Injection System (using sodium bicarbonate):** The specific consumption of sodium bicarbonate shall be 12 gm per kWh at 100% purity.

**(d) For CFBC Technology (furnace injection) based generating station:** The specific limestone consumption for CFBC based generating station (furnace injection) at 85% purity limestone (kg/kWh) shall be computed with the following formula:

$$[ 62.9 \times S \times \text{SHR} / \text{CVPF}] \times [0.85/ \text{LP}]$$

Where

S= Sulphur content in percentage,

LP = Limestone Purity in percentage,

SHR= Gross station heat rate, in kCal per kWh,

CVPF = (a) Weighted Average Gross calorific value of coal as received, in kCal per kg for coal based stations less 85 Kcal/Kg on account of variation during storage at generating station;

(b) Weighted Average Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, based stations;

**(e) For Sea Water based Flue Gas Desulphurisation (FGD) system:** The reagent used is sea water, therefore there is no requirement for any normative formulae for consumption of reagent.

(2) The normative consumption of specific reagent for various technologies for reduction of emission of oxide of nitrogen shall be as below:

**(a) For Selective Non Catalytic Reduction (SNCR) System:** The specific urea Consumption of SNCR system shall be 1.2 gm per kWh at 100% purity of urea.

**(b) For Selective Catalytic Reduction (SCR) System:** The specific ammonia consumption of SCR system shall be 0.6 gm per kWh at 100% purity of ammonia."

## **26. Amendment to PART I of Annexure I of the Principal Regulations:**

26.1. In Row 16 of FORM 15 of Part I of Annexure I of the Principal Regulations, the formula "(12+13+14+15)" specified after the words "Total Transportation Charges" shall be substituted by the formula "(12+13-14+15)"

26.2. In FORM 15 of Part I of Annexure I of the Principal Regulations, Column no. (5) shall be deleted and the heading “Domestic Source (1)” under column no. (4) shall be substituted by the words “Domestic Source “. Note 3 under Form 15 shall be substituted by “3. Details to be provided for type of coal i.e. Domestic, Imported and E-auction separately.”

26.3. A new form namely, Form 16A shall be inserted after Form 16 of Annexure-I of Part I of the Principal Regulations.

**(Sanoj Kumar Jha)**  
**Secretary**

Note: The Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 were published in Part III- Section 4, No.144 of the Gazette of India (Extraordinary) dated May 5, 2019.

Annexure -I

PART 1

FORM- 16A

**Details of Reagent for**  
**Computation of Supplementary Energy Charge Rate**

Name of the Petitioner \_\_\_\_\_

Name of the Generating Station \_\_\_\_\_

S. No.	Month	Unit	For preceding	For preceding	For preceding
			3rd Month (from ODe )	2nd Month (from ODe)	1st Month (from ODe)
1	Quantity of Reagent supplied by Limestone supply Company				
2	Adjustment (+/-) in quantity supplied made by Limestone or Reagent supply Company				
3	Net quantity of Reagent Received (1±2)				
4	Amount charged for Reagent supply Company	(Rs.)			
5	Adjustment (+/-) in amount charged made for Reagent supply by the Company	(Rs.)			
6	Total amount Charged (4±5)	(Rs.)			
7	Transportation charges by rail/ship/road transport	( Rs.)			
8	Adjustment (+/-) in amount charged made by Railways/Transport Company	( Rs.)			
9	Demurrage Charges, if any	( Rs.)			
10	Total Transportation Charges (7±-8-9)	( Rs.)			
11	Total amount Charged for Reagent supplied including Transportation (6+10)	( Rs.)			
12	Weighted Average Cost of Reagent during the month	(Rs/Tone)			
13	Purity of Reagent received during the month	(%)			

**(Petitioner)**