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Date: 06.09.2024

The Secretary
Central Electricity Regulatory Commission,
3rd & 4th Floor, Chanderlok Building,
36, Janpath, New Delhi-110001

Subject: Submission of comments/ suggestions on draft CERC (Terms and Conditions of Tariff) (First Amendment) Regulations, 2024

Sir,

This has reference to the Public Notice No L-1 /268/2022/CERC dated 02.08.2024 seeking comments and suggestions from stakeholders on the draft CERC (Terms and Conditions of Tariff) (First Amendment) Regulations, 2024.

Please find enclosed comments/ suggestions of NTPC on the draft CERC (Terms and Conditions of Tariff) (First Amendment) Regulations, 2024 for your kind consideration. It is also requested that NTPC may be allowed to submit any additional submissions, if required.

Thanking you,

Your faithfully,

(Ajay Dua)
ED (Commercial)

NTPC Comments on Draft 1st Amendment to CERC (Terms and Conditions of Tariff) Regulations 2024

1) Regulation 70(G): Compensation for the operation of generating station below normative plant availability factor

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“(G) Compensation for the operation of generating station below normative plant availability factor

(1) The generating stations whose tariff is determined by the Commission under Section 62 of the Act shall be compensated for degradation of station heat rate and auxiliary energy consumption, consumption of additional secondary fuel oil due to loading below the normative plant availability factor specified under Regulation 70(A) of these regulations.”

NTPC Comment:

- a) Hon'ble Commission has proposed to include compensation in the Tariff Regulations on account of deterioration of heat rate, increase in AEC and secondary oil consumption due to part-load operation.
- b) However, in addition to above, flexible operation of thermal plant with frequent ramping up and ramping down will cause accelerated aging and thus have adverse impact on the plant life. O&M requirement will increase, and availability of plant shall be affected due to increased forced outages. As a result, O&M cost is expected to increase and NAPAFA is expected to reduce due to increase forced outage in case of flexibilization of unit. Hence compensation on account of increased O&M requirement & lower NAPAFA may be included in the Regulations.

Additional O&M Expenses for Coal Stations for operation below 55% loading:

- i) For coal stations, compensation of deterioration in Heat rate and APC & increase in Secondary fuel oil consumption is provided for operating below 55% loading. However, compensation for increased O&M expenses (due increased wear and tear and failure rate) for operating below 55% loading is not provided.

- ii) The existing normative O&M expenses does not include the incremental expenses due to increased wear and tear, for operating below 55% loading.
- iii) Coal based units have been generally designed to operate for base load condition and all the components are accordingly designed for certain creep life and certain fatigue life in terms of number of start-stops / cyclic operation.
- iv) As the operation regime is transitioning from base load operation to cycling load operation due to integration of renewable generation into the grid, the component life shall be consumed at a faster rate.
- v) CEA vide notification dated 25.01.2023 has directed that all thermal generating stations shall achieve uniform technical minimum of 55% within one year and has released a phased plan for achieving uniform technical minimum of 40% by 2030.
- vi) Frequent flexible operation will cause increase in failure rate and more frequent replacement of components such as Superheater & Reheater tubes, Water wall tubes attachment, turbine rotor, turbine valves & casing castings, Air Preheater Cold end, Condenser Tubes, Degeneration of insulation of Generator & Transformers, etc.
- vii) Due to increased and frequent failure of such components, many thermal generating stations end up making losses due to under recovery in Annual Fixed Charges.
- viii) CEA in its report dated 21.02.2023 had also recognized that flexible operation leads to a higher rate of deterioration of components.
- ix) The Addendum to the Approach Paper i.e., compensation methodology prepared by CEA, has suggested an increase in annual O&M expenses of 9%, 14% & 20% of O&M cost at loadings of 50%, 45% and 40% respectively.
- x) At present, increase in O&M cost towards deterioration due to operating below 55%- 40% is difficult to accurately assess.
- xi) Hence, it is submitted that Coal based units / stations operating below 55% to 40% loading may be allowed increased O&M expenses as 9%,**

14% & 20% of normative O&M expenses at different loading of 50%, 45% and 40% respectively as recommended by CEA's compensation methodology in Addendum to the Approach Paper.

Incentivisation for Flexible Operation

- i) In view of energy transition, the delivery of energy is a highly desirable attribute during periods of high demand gains. Similarly stable operation of units at lower loads will be a highly desirable attribute. It is therefore submitted that the approach to flexible operation also needs to include the aspect of incentivization along with the present approach of compensation.
- ii) Providing effective allowance/ incentive would significantly encourage existing coal plants to enhance their technical flexibility & to participate voluntarily in balancing requirements. This would facilitate more and more integration of renewable generation into the grid.
- iii) As per extant Regulations, Hon'ble Commission is providing incentive to the generators for providing generation above normative PLF at 75 Paisa/kWh to support the grid operation during peak hours.
- iv) **In view of above, it is submitted that incentive/ liberal allowance on a similar line i.e. 75 Paisa per kWh may be payable to the generators for operation below technical minimum loading of 55%, over and above compensation allowed for degradation of heat rate and APC.**

2) Regulation 70(G)(6): Additional compensation for secondary fuel oil consumption for Unit Start Stop

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“(G) Compensation for the operation of generating station below normative plant availability factor

(6) The additional compensation for secondary fuel oil consumption shall be permissible over and above seven (7) start / stop in a year for the generating station under Unit Shutdown in terms of Regulation 47 of the Grid Code Regulations 2023. For the purpose of compensation under regulation (1) of this regulation, the secondary fuel oil consumption per start up shall be considered based on the following norms or actual, whichever is lower:-

Unit Size (MW)	Secondary fuel oil consumption per start up (KL)		
	Hot	Warm	Cold
<i>200/210/250 MW</i>	<i>20</i>	<i>30</i>	<i>50</i>
<i>500 MW</i>	<i>30</i>	<i>50</i>	<i>90</i>
<i>660 MW</i>	<i>40</i>	<i>60</i>	<i>110</i>

NTPC Comment:

a) Start-up Oil Consumption for Super Critical Units

(i) Regulations 70 (G) (6) proposed for an additional normative oil consumption per start-up over and above seven (7) start/ stop in a year for the generating station under Unit Shutdown in terms of Regulation 47 of the Grid Code Regulations 2023.

(ii) While Hon'ble Commission in these Regulations has proposed the normative annual fuel oil consumption per start-up for 200/210 MW, 500 MW & 660 MW units, norm for 800 MW units is not specified.

(iii) It is therefore requested that compensatory norm for secondary fuel oil consumption per start up for 800 MW units may be specified.

(iv) Further, in the Regulation 70 (G) (6). Hon'ble Commission has proposed to retain the same norm for start-up oil consumption as specified in CERC IEGC Regulations (4th amendment) 2016.

(v) It is submitted that the oil consumption norms proposed is not adequate especially for Super Critical units.

(vi) The norms of oil consumption for start-up were fixed by Hon'ble Commission in April 2016 during which only few super critical units were in operation & representative data was not available.

(vii) The time taken for start-up in super critical units is much higher as compared to subcritical units. Due to the high start-up time involving boiler light up with oil support and clean-up process prescribed for Super Critical units, the typical oil consumption in Super Critical units is higher as against the start up oil consumption proposed in these Regulations.

(viii) Therefore, fuel oil consumption norm for hot, warm & cold start-

up of supercritical units may be enhanced as per Table given below:

Unit Size (MW)	Secondary fuel oil consumption per start up (KL)		
	Hot	Warm	Cold
660	80	220	400
800	100	250	450

- (ix) Similarly, the start-up oil consumption in the Sub critical units are also higher as compared to the start-up oil consumption proposed in these Regulations. Therefore, fuel oil consumption norm for hot, warm & cold start-up of sub critical units may be enhanced as per Table given below:

Unit Size (MW)	Secondary fuel oil consumption per start up (KL)		
	Hot	Warm	Cold
200/210/250	45	70	150
500	100	110	240

- (x) Further, It is also submitted that the additional secondary fuel oil compensation as submitted above in Point no. (viii) & (ix) may be provided to generating stations for every start-up.

b) Start-up Oil Consumption on normative basis

- (i) As per Regulations 70 (G) (6), compensation for start-up oil consumption will be allowed based on norms or actuals, whichever is lower.
- (ii) This may result in loss to generating company on account of start-up oil consumption. This is because stations consuming less oil than start up oil norm is restricted to actuals while that of stations consuming more oil than the start-up oil norms are restricted to the norm.
- (iii) Further, current dispensation of compensation on account of start-up oil consumption is also not aligned with the Tariff Policy which stipulates that the operating parameters should be at “normative basis” only and not at lower of normative and actuals.

(iv) Hence, compensation for start-up oil consumption may be provided on normative basis instead of lower of normative and actuals. This will align the compensation philosophy for start-up oil consumption with

the compensation proposed by Hon'ble Commission for other operating parameters (Heat rate and APC) on normative basis.

In view of above, following may be considered:

- A) Compensatory norm for secondary fuel oil consumption per start up for 800 MW unit may be allowed as submitted above in Point no. (2) (a) (viii).
 - B) Fuel Oil consumption norm for hot, warm & cold start-up of sub critical & supercritical units may be enhanced as submitted above in Point no. (2) (a) (viii) & (2) (a) (ix).
 - C) Compensation for start-up fuel oil consumption may be provided on normative basis instead of lower of normative and actuals.
- 3) **Regulation 70(G)(6): Additional secondary fuel oil consumption for operating below 55% loading**

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“(G) Compensation for the operation of generating station below normative plant availability factor

(6).....

Additional specific secondary fuel oil consumption of 0.2 ml/ kWh shall be provided for units operating below 55% unit loading:-

NTPC Comment:

- a) While NTPC appreciates the need for additional specific secondary fuel oil consumption to compensate the cost of increase in oil consumption due to outages. some more associated aspects have been elaborated for consideration of Hon'ble Commission in this regard:
 - (i) The Addendum to the Approach Paper i.e. compensation methodology prepared by CEA, has referred to a Study report of the Electric Power Research Institute regarding Equivalent Forced Outage Rate (EFOR). It is stated that as per the study report, additional EFOR due to regular low load operation of thermal generating units may increase specific oil consumption from 0.5 ml per kwh to 0.7 ml per kwh.

- (ii) It is observed that whenever units are operated below 55% load condition, the flame stability reduces significantly and requires oil support.
- (iii) Therefore, in addition to the increase in specific oil consumption from 0.5 ml per kwh to 0.7 ml per kwh due to additional EFOR for operation below 55% loading, Oil support is also required for reliable operation of the unit below 55% generation in which at least one elevation of oil guns will be kept in service. (ex: if a 500MW unit running in 200MW the amount of oil consumed is around 8 kL per hour).
- (iv) In view of above, additional specific fuel oil consumption of 0.2 ml/kwh may not be sufficient. Hence, it is submitted that additional specific secondary fuel oil consumption of 0.4 ml/ kWh may be provided instead of 0.2 ml/kWh to units/ stations which declare themselves ready for taking part for operating below technical minimum loading of 55%.
- (v) Further, in absence of representative data of specific fuel oil consumption for units operating below 55% loading at this moment, it is submitted that the norms for additional specific fuel oil consumption for units/ stations operating below 55% loading may be reviewed after operation of units below 55% load on a continuous & sustained basis.

4) Amendment of Regulation 50: Recovery of Input Charges:

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“6.1 In first proviso to Regulation 50, the words and expressions “based on the notified price of Coal India Limited for the commensurate grade of coal in a month, prior consent of the beneficiary(ies) shall be required to be obtained by the generating company;” shall be substituted by “based on the price of alternate coal available to the station in a given month, the generating company shall obtain prior consent from the beneficiary(ies);”.

6.2 In second proviso to Regulation 50, the words and expressions “based on the notified price of Coal India Limited for the commensurate grade of coal in a month”, shall be substituted by “based on the price of alternate coal available to the station in a given month”.

NTPC Comment:

- a) It is submitted that as per the allotment agreements signed between allottee of the mine (generating company) and the Nominated Authority, Ministry of Coal, GoI, integrated mine(s) are mandated to supply coal to the end use generating plants only. Utilisation of coal in any other plant of the allottee (generating company) is allowed only under special conditions and with the prior written intimation/permission of the Ministry of Coal, GoI.
- b) In view of the above, the only avenue for recovery of the investments made by the generating company in the integrated mines is through supply of the coal to its end use generating plants.
- c) Significant investment(s) required to develop and operate many of the integrated mines have been made prior to the issuance of regulations in respect of integrated coal mines. Any capping on the input price in such mines shall result in severe financial implications for the generating company.
- d) It is also submitted that the input price of coal of integrated mines are transparently determined by the Hon'ble Commission after prudence check and after considering comments of all the stakeholders. Beneficiaries also participate in this process of input price determination.
- e) **Considering that the integrated mines are mandated to supply coal to the end use generating stations only and the input price of coal for such mines is determined by the Hon'ble Commission in terms of the extant Tariff Regulations, comparison of the input price with price of alternate coal available to the station in a given month as ceiling may not be required.**
- f) **Therefore, Hon'ble Commission may be pleased to waive off requirement of prior consent from beneficiaries in case energy charge rate based on input price of coal from integrated mine exceeds by 20% of energy charge rate based on the price of the alternate coal available to the station.**

5) Regulation 51: Adjustment on account of Shortfall of Overburden Removal (OB Adjustment):

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“(1) The generating company shall remove overburden as specified in the Mining Plan.

(2) Where the overburden removed in a year is less than the overburden to be removed as per the year wise schedule of extraction given in mine plan, the adjustment on account of the shortfall of overburden removal (“OB Adjustment”) for that year shall be worked out as under: -

a) If Mine Developer and Operator is appointed: -

OB Adjustment = [Factor of adjustment for shortfall of overburden removal during the year] x [Mining Charge during the year]

b) If Mine Developer and Operator is not appointed: -

OB Adjustment = [Factor of adjustment for shortfall of overburden removal during the year] x [Operation and Maintenance expenses during the year]

Where,

i) Factor of adjustment for the shortfall of overburden removal during the year shall be computed as under:-

[(Annual Stripping ratio as per mining plan) - (Actual Stripping ratio based on the actual quantity of coal and overburden removed during the year)] / (1+Annual Stripping Ratio as per Mining Plan);

ii) Annual Stripping ratio is the ratio of the volume of overburden to be removed for one unit of coal or lignite as specified in the Mining Plan.

iii) Mining Charge is the quoted charge per tonne of coal or lignite paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable, without the OB adjustment as per contract with the Mine Developer and Operator.

iv) Mining Charge and Operation and Maintenance expenses shall be in terms of Rupees per tonne corresponding to the stripping ratio and annual quantity of coal and overburden as per the mining plan.

v) Where the generating company has engaged the Mine Developer and Operator for mining and the OB Adjustment is carried out as per the contract with the Mine Developer and Operator, the net OB adjustment as per this regulation shall be computed on the basis of the difference between the OB adjustment as per

Regulation 51(4) of this regulation and the OB adjustment as per the contract of the generating company with the Mine Developer and Operator:

Provided that if the OB adjustment as per the contract with the Mine Developer and Operator exceeds the OB adjustment as per Regulation 51(4), the OB adjustment shall be treated as NIL.

(3) In case of a shortfall or excess of overburden removal during a year, the generating company shall be allowed to adjust such shortfall or excess, as the case may be, if any, during the remaining years of the tariff period till 31.3.2029.

Provided that –

a) the excess overburden as on 31.3.2029, if any, on account of the reasons not attributable to the generating company, shall be allowed to be carried forward beyond the end of the tariff period at the time of true up of the input price;

b) the generating company shall submit the details of the adjustment of overburden at the end of the tariff period for the purpose of truing up.

(4) The provisions of this Regulation regarding adjustment on account of shortfall or excess overburden removal, as the case may be, shall not be applicable in case of the integrated mine(s) allocated through an auction route under the Coal Mines (Special Provisions) Act, 2015.”

NTPC Comment:

- a) MDO contracts of many of the integrated mines have been awarded through transparent competitive bidding prior to the issuance of the coal mines related Tariff Regulations.
- b) Such MDO Agreements, inter alia, provide for adjustment of mining fee in case overburden removal is less than required in terms of the MDO Agreements.
- c) In case of lower overburden removal, less amount would be paid to MDO and benefit of the same would be passed in the Mining Charge onto the beneficiaries automatically.
- d) **In view of the same, no additional OB Adjustment provision may be required in CERC Regulations for such MDO operated mines as any difference in the OB Adjustment amount arrived based on the Regulations and in terms of**

the MDO Agreement shall result in the unjustified financial loss to the generating company.

- e) It is also pertinent to submit that there is difference in the OB Adjustment formula proposed in the Draft Amendment and the existing MDO Agreements. Same is brought out below:

Factor of OB Adjustment as per <u>Draft Amendment</u>	Factor of OB Adjustment as per existing <u>MDO Agreements</u>
Factor of Adjustment = [(Annual Stripping ratio as per mining plan) - (Actual Stripping ratio based on the actual quantity of coal and overburden removed during the year)] / (1 + Annual Stripping Ratio as per Mining Plan)	Factor of Adjustment = 0.9 x [(Annual Stripping ratio as per mining plan) - (Actual Stripping ratio based on the actual quantity of coal and overburden removed during the year)] / (1 + Average Stripping Ratio as per Mining Plan)

- f) It is submitted that the formula in the MDO Agreements takes into consideration that 10% of the MDO expenses are of fixed nature and shall be incurred irrespective of the quantity of overburden removed.
- g) In view of the mentioned difference, there will be additional financial implications for the generating company if the formula for OB Adjustment is made applicable on the mines for which MDO Contracts are already in place.
- h) Further, the above quoted draft Regulations provides for the carry forward of the excess overburden as on 31.03.2029 but does not provide for carry forward of the shortfall in overburden removal on account of the reasons not attributable to the generating company. In this regard, following are submitted:
- i) Reserve of coal and overburden in mines have been estimated in advance based on the geological studies carried out. Quantities of minerals beneath the earth's surface cannot be known with absolute precision. Reserves are usually categorized as "proven" depending on the degree of confidence which is generally up to 90 % for proven deposit.

- ii) The general scenario across coal mining industry envisages more OB removal in the initial years of operations, which gets stabilised at peak rated capacity (PRC) and declines thereafter steadily till closure of mine.
 - iii) Challenges associated with OB removal are greater in the initial stages of mine, where the mine is more prone to geological surprises and other local challenges that may affect the OB removal pace.
 - iv) Further, the estimation of resources (Coal + OB) in Mining plan is based on estimation. Therefore, the actual extracted quantity in a particular year may vary from the calendar schedule as per Mining Plan.
 - v) Coal mining faces significant developmental & operational risks like huge area of land acquisition, environment clearances, Rehabilitation and Resettlement of huge number of Project affected Persons, law & order issues, geological surprises, exposure to extreme weather conditions like torrential rains, flooding etc.
 - vi) Owing to these uncertainties mining is done as per availability of land and sequence of coal seam exposed in it, which may often have slight variations from the Mining Plan, in such cases it may not be possible to adjust the shortfall in OB removal within a tariff period.
 - vii) In absence of the carry forward of the shortfall in OB removal, the shortfall in OB removal during last year of a control period on account of the reasons not attributable to the generating company shall result in serious financial implications for the generating company even if the generating company has precisely met the OB removal targets for the initial four years of the same tariff period.
- i) **In view of the above, the shortfall in overburden as on 31.03.2029, on account of the reasons not attributable to the generating company may also be allowed to be carried forward beyond the end of the tariff period at the time of true up of the input price similar to the provision of carry forward of the excess overburden removal.**
 - j) **Accordingly, the sub clause (a) of the clause (3) of Regulation 51 may be modified as under:**

“(3) In case of a shortfall or excess of overburden removal during a year, the generating company shall be allowed to adjust such shortfall or excess, as the case may be, if any, during the remaining years of the tariff period till 31.3.2029.

Provided that –

a) the shortfall or excess of overburden as on 31.3.2029, if any, on account of the reasons not attributable to the generating company, shall be allowed to be carried forward beyond the end of the tariff period at the time of true up of the input price;

6) Regulation 70 (G) (4): Compensation on account of degradation of Gross Station Heat Rate (SHR)

a) While NTPC appreciates the need for compensation of degradation of heat rate due to operating below the loading factor of 83%/85%. some more associated aspects have been elaborated for consideration of Hon’ble Commission in this regard:

- i. In Indian context, the primary fuel (coal) quality variation is a major issue. Units flame stability is a major concern due to wide variation of coal quality and unit outage due to flame failure becomes highly unpredictable. Ash quantity percentage is also very high, above 40% and sometimes approaching 50%.
- ii. There shall be additional Forced outages due to loss of flame in these units and thus increased APC also.
- iii. Most of our machines are more than 20 years old and are designed for base load operation and creep damage as primary parameters for design. This flexible operation of the unit from 100% to 40% will incur damage to the equipment due to fatigue loading. Life consumption of the equipment will also increases significantly.
- iv. It is submitted that NTPC fleets are equipped with free standing last stage LP turbine blades will be subjected to stall fluttering which will cause blade failure very frequently in case of running the units at lower loads less than 50% load.
- v. ***In view of above, it is submitted that for coal-based stations, degradation of Heat rate for operating below 55% loading as***

proposed in Regulation 70(G)(4) cannot be validated at this moment as stable and safe operation without secondary fuel oil support on continuous basis have not been demonstrated in this load range.

7) Amendment of Regulations 9 & 10: Substitution of the “1-year SBI MCLR plus 100 basis points” with “Bank Rate”

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“3.1 In sub-regulations (5) of Regulation 9, the words and expressions “at the simple interest rate of 1-year SBI MCLR plus 100 basis points” shall be substituted by the words “at the bank rate”.

3.2 In sub-regulations (6) of Regulation 10, the words and expressions “the 1 year SBI MCLR plus 100 basis points” shall be substituted by the words “the bank rate”.

3.3 In sub-regulation (7) of Regulation 10, the words and expressions “of the rate worked out on the basis of 1-year SBI MCLR plus 100 basis points” shall be substituted by the words “the bank rate”.

NTPC Comment:

- a) It is submitted that Hon’ble Commission has proposed to introduce the Bank Rate as one-year Marginal cost of lending rate as specified by the State Bank of India plus 100 basis points in Sub Regulation 9A of these Regulations.
- b) Accordingly, the words and expressions “the 1-year SBI MCLR plus 100 basis points” appearing in Regulations 9 (5), 10 (6), 10 (7) & 37 (4) in the Tariff Regulations 2024 have been proposed to be substituted with the words “Bank Rate”.
- c) However, it is submitted that the words and expressions “the 1-year SBI MCLR plus 100 basis points” appearing in Regulations 10 (3) is not substituted with the words “Bank Rate”.
- d) **In view of the above, the phrase “the 1-year SBI MCLR plus 100 basis points” appearing in Regulations 10 (3) may also be substituted with the words “Bank Rate”.**

8) Amendment of Regulation 70(A) & 70 (B): Normative Annual Plant Availability Factor (NAPAF) & Normative Annual Plant Load Factor (NAPLF) for Incentive

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“10.1. In Clause (b) of Regulation 70(A), the words “or thereafter” shall be added after the words “as on or after 31.03.2024”.

10.2. In Clause (b) of Regulation 70(B), the words “or thereafter” shall be added after the words “as on or after 31.03.2024”.

NTPC Comment:

- a) It is submitted that as per Regulation 70 A (b) and 70 B (b) of CERC Tariff Regulations 2024, coal based generating stations completing 30 years from COD as on 31.03.2024 will be allowed NAPAF & NAPLF of 83%.
- b) As per existing regulatory framework, useful Life of thermal stations is 25 years from CoD which is considered for various tariff elements (such as, Depreciation of assets, debt servicing, Provision of R&M and Special Allowance, etc.).
- c) Further, these old stations are mostly pithead stations supplying cheaper power to beneficiaries at nominal tariff.
- d) **Therefore, it is submitted that NAPAF and NAPLF of 83% may be made applicable for stations completing 25 years from COD as on 31.03.2024 or thereafter.**
- e) **Further, the amendment proposed in Regulations 70 A (b) and 70 B (b) i.e. “as on or after 31.03.2024 or thereafter” may be substituted to “as on 31.03.2024 or thereafter”.**

9) Regulation 70 (G) (4): Compensation on account of degradation of Gross Station Heat Rate (SHR)

The Draft (First Amendment) to CERC Tariff Regulations 2024 provides as under:

“(G) Compensation for the operation of generating station below normative plant availability factor

.....

(4) For the purpose of compensation under regulation (1) of this regulations, the degradation of gross station heat rate (SHR) over and above the norms specified under Regulation 70(B) of these regulations shall be considered as under:-.”

NTPC Comment:

- a) **It is submitted that the reference of “Regulation 70(B)” indicated in Regulations 70 (G) (4) may be substituted with “Regulation 70(C)”.**

ADDITIONAL COMMENTS:

1) Regulation 36 – Additional O&M Expenses for Gas Stations:

- a) **Change in Operational Pattern** - Gas stations are playing crucial role in meeting the increased peak demand of the country. They are increasingly deployed during peak-hours on daily basis which has resulted in daily start-stop operations. As a result, total number of start-ups in NTPC gas stations have increased multi-folds from 0.4 per station per day in 2019-20 to 1.29 per station per day in 2023-24.
- b) **Equivalent Operating Hours** - As per the specifications / criteria of OEM, the Equivalent operating hours (EOH) of the gas turbine increases by an average of 20 hours during each start-up. Since, Overhaul frequency of gas turbines is determined based on EOH, earlier completion of the allotted EOH leads to shorter overhaul intervals, thereby increasing maintenance costs. The average EOH consumption per unit per year has increased by 3 times.
- c) Presently part-load compensation provides compensation for degradation in heat rate and APC only from 85% to 55% loading. However, there is no compensation mechanism in place to take care of additional O&M expenses due to frequent start-ups of gas stations.
- d) Increase in O&M Expenses due to frequent start-ups:
 - vi. Increased wear & tear leading to increase in O&M expenses.
 - vii. Overhaul frequency of gas turbines is determined based on the Equivalent Operating Hours (EOH), which increases by an average of 20 hours during each start-up.
 - viii. Hence, inspection is required to be done in an interval of 13.5 months instead of 34.5 months, resulting in increase of the maintenance costs.
 - ix. **Hence, it is submitted that additional O&M expenses norm of Rs 2 lakhs per MW may be provided due to increased wear and tear due to frequent start-stop operations.**
- e) **Compensation of Start-up Costs:**
 - i. **Start-up costs in Open Cycle Mode:**

- a) Fuel cost for rolling of machine to 3000 rpm and synchronization.
 - b) Heat rate degradation from synchronization to technical minimum of 55%.
 - c) APC for Gas Turbine (GT) start-up & during / after shut-down.
 - d) The Gas requirement in each start-up of Gas Turbine (in Open Cycle Mode) on account of (a), (b) and (c) above is about **5000 SCM per start-up.**
- ii. **Start-up costs in Combined Cycle Mode:** Normally, start-up costs get absorbed if gas stations remain in operation for longer periods. Presently, with frequent start-ups, start-up costs have become significant and require to be compensated separately.
- a) GTs are run in low load till synchronization of Steam turbine (ST) resulting in extra costs in addition to that incurred in open cycle (due to incremental Heat rate deterioration of GTs at part-load).
 - b) APC of ST auxiliaries during start-up & during / after shut-down.
 - c) The Gas requirement in each start-up of Full Module (in Combined Cycle Mode) on account of (a), and (b) above is about **60000 SCM per start-up.**
- iii. **Considering the impact of cost incurred due to start-up cost, Gas Stations of NTPC are required to be suitably compensated for start-up cost incurred for each start up**
- iv. **In view of above, it is submitted that, start-up costs may be compensated in terms of equivalent cost of Gas consumption at applicable rates on a per start-up basis as under:**
- a) **Start-up Gas in Open Cycle mode: 5000 SCM per start-up.**

- b) **Start-up Gas in Combined Cycle mode: 60000 SCM per start-up.**

2) Regulation 70 (A) –Lower Normative Plant Availability Factor (NAPAF) due to Flexible Operation

- a) Flexible operation is likely to result in increased wear and tear of equipment and accelerated aging of the units. As a result, the number of forced outages is expected to increase.
- b) The present norm of 83%/85% for NAPAF has been fixed based on past data when there was no operation of thermal stations below the technical minimum loading of 55%.
- c) **In view of above, it is submitted that 5% relaxation over and above the current norms of NAPAF may be provided to stations which declare themselves ready for taking part in flexible operation.**

3) Exemption of Super Critical Units from flexible operation

- i. The Super-critical units are designed as highly efficient units suited best for base load operation. These units operate at close to 40% efficiency unlike subcritical units whose efficiency is around 35-37%.
- ii. The efficiency of supercritical units degrades very rapidly at part loads.
- iii. **Super-critical units may be exempted from flexible operation due to following reasons:**
 - a) **Loss of Efficiency and thus higher cost of power to end customer.**
 - b) **Unit comes in wet mode from dry mode. In some machines unit comes out of CMC in wet mode. Operation near Benson point is risky and may lead to tripping.**
 - c) **Variation in MS/HRH temperature increases and causes frequent excursions.**

- d) All auto loops like feedwater, SH/RH spray, BFP Speed control becomes sluggish and require frequent manual intervention.
- e) Causing of Hunting and hammering of Water in separator.
- f) Water Chemistry Parameters are difficult to maintain, and aberrations may cause secondary damages.
- g) Increase in Emissions, NOx parameters etc.

4) Regulation 39(2) – Revision of Run-of-Mine (ROM) Cost Formula by including Actual Production:

CERC Tariff Regulations 2024 provides as under:

39(2): Run of Mine Cost of coal in case of integrated mine allocated through allotment route under Coal Mines (Special Provisions) Act, 2015 shall be worked out as under:

ROM Cost = [(Annual Extraction Cost / (ATQ or Actual production whichever is higher) + Mining Charge] + (Fixed Reserve Price).

Where,

(i) Annual Extraction Cost is the cost of extraction of coal as computed in accordance with Regulation 43 of these regulations;

(ii) Mining Charge is the charge per tonne of coal paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable; and

(iii) Fixed Reserve Price is the fixed reserve price per tonne along with subsequent escalation, if any, as provided in the Coal Mine Development and Production Agreement.

NTPC Comment:

- a) It is submitted that the captive mines are playing a significant role in ensuring fuel security for meeting the rapidly growing power demand in the country. The production from captive mines also helps in reducing the requirement of the costly imported coal.

- b) In many cases the production beyond the Annual Mine Plan quantity (up to peak rated capacity) is carried out to ensure the availability of coal for power generation. Such increased domestic coal extraction lowers the cost of power to Discoms by reducing the dependence on imported coal.
- c) The extractable Coal reserves in a mine are fixed. This Coal may be extracted in a shorter or larger span compared to the mine life mentioned in the Mine Plan depending upon the coal requirement of the end use station or any directions from the GoI for meeting fuel security of the country.
- d) Capital cost of the mine is serviced over life of mine through Annual Extraction Cost (AEC) comprising of depreciation, Interest on loan, RoE, Interest on WC, O&M expenses etc. Considering that the coal reserves are fixed in the mine, without pro-rata AEC recovery, any additional production in a year above the quantity specified in the Mine Plan based on the coal requirement of the end use station or any directions from the GoI shall result in under recovery of AEC over the life of the mine.
- e) **Allowing the recovery of proportionate fixed charges on pro-rata basis for production beyond the quantity specified in the mine plan (up to peak rated capacity) shall act as a stimulus in enhancing the fuel security and prevent the under recovery of fixed charges over the life of the mine.**

In view of the same, the formula of ROM Cost may be revised as under:

ROM Cost = [(Annual Extraction Cost / Coal Quantity) + Mining Charge] + (Fixed Reserve Price)

Where Coal Quantity may be defined as:

ATQ or Actual production, whichever is higher, subject to the ceiling of Annual Mining Plan quantity.

5) Regulation 39(4) – Adherence to the Mining Plan for the extraction of coal up to the Peak Rated Capacity:

CERC Tariff Regulations 2024 provides as under:

“(4) The generating company shall adhere to the Mining Plan for the extraction of coal or lignite on an annual basis and shall submit a certificate to that effect from the Coal Controller or the competent authority:

Provided that deviations from the Mining Plan shall be considered only if such deviations have been approved by the Coal Controller or the revised Mining Plan has been approved by the competent authority.”

NTPC Comment:

- a) As per the Guidelines of Ministry of Coal (MoC), Gol dated 29th May 2020, any modification in Mine Plan for increasing sanctioned Peak Rated Capacity that is in excess of 150% of the sanctioned Rated Capacity requires approval of the Coal Controller.
- b) It is pertinent to mention that there may be variations in the coal quantity extracted with respect to that as per the Mine Plan. Any such variation in coal extracted in excess of the quantity as per the mine plan up to 150% of Peak Rated Capacity are allowed with the approval of Board of the Company as per the above MOC guidelines.
- c) It is further submitted that monthly and yearly coal production statement are being submitted to Coal Controller (CCO)/Ministry of Coal, Gol for information in terms of the Allotment Agreements entered between the allottee/generating company of the mine and the Nominated Authority of MoC.
- d) In consideration of the above, it is submitted that the requirement of submission of approval / certificate from the Coal Controller or the competent authority in respect of adherence to Mining Plan may be made applicable for production beyond the PRC only.
- e) **Accordingly, the above regulation may be revised as under:**

For any deviation in coal production beyond the Sanctioned Capacity of the Mine, generating company shall submit approval / certificate from the Coal Controller or the competent authority.

6) Regulations 42(1) & 42(2): Additional Capital Expenditure:

CERC Tariff Regulations 2024 provides as under:

42 Additional Capital Expenditure: (1) The expenditure, in respect of the integrated mine(s), incurred or projected to be incurred after the date of commercial operation and up to the date of achieving the Peak Rated Capacity may be admitted by the Commission, subject to a prudence check and shall be capitalized in the respective year of the tariff period as additional capital expenditure corresponding to the Annual Target Quantity of the year as specified in the Mining Plan or actual extraction in that year, whichever is higher, on following counts:

- (a) expenditure incurred on activities as per the Mining Plan;*
- (b) expenditure for works deferred for execution and un-discharged liabilities recognized for works executed prior to the date of commercial operation;*
- (c) expenditure for works required to be carried out for complying with directions or orders of any statutory authorities;*
- (d) liabilities arising out of compliance with the order or decree of any court of law or award of arbitration;*
- (e) expenditure for procurement and development of land as per the Mining Plan;*
- (f) expenditure for procurement of additional heavy earth moving machineries for replacement, on completion of their useful life; and*

NTPC Comment:

- a) It is submitted that the Mining Plan is formal document mainly encompassing the provisions for various phases of the life of the mines. Mining Plan provides a broad overview of the Project, Geology, Mining Method, Safety Management, Infrastructure Facilities, Project Area etc. Specific details of the various expenditures required to be made during construction and operational phase of the mine is not part of the Mining Plan.
- b) It is also submitted that procurement and development of land in a typical mining project involves the following:

- (i) Land acquisition (land payments, payment of assets, trees etc.)
 - (ii) Rehabilitation and Resettlement of villages (construction of R&R colony, rehabilitation grants, other benefits in R&R as per approved R&R package)
 - (iii) Community development activities in and around the project area. Such activities can be need-based or can be driven by directions from the Government, Elected Bodies, Elected members etc. for development of the area from time to time.
- c) It is also worthwhile to mention that the process of land acquisition and village resettlement continues even after declaration of COD and achievement of PRC in a typical scenario for opencast coal mines in India.
- d) Such expenditures are not covered under mining plan explicitly as mining plan is only a guiding document. These items are covered at the time of investment approval/revised cost estimates.
- e) It is also submitted that Regulation 42(1) allows for capitalization of the expenditure incurred or projected to be incurred after the date of commercial operation and up to the date of achieving the Peak Rated Capacity, subject to a prudence check. However, the Regulation 42(1)(b) allows for capitalization of the expenditure for un-discharged liabilities recognized for works executed prior to the date of commercial operation.
- f) It is submitted that the expenditure for un-discharged liabilities recognized for works admitted by the Hon'ble Commission after to the date of commercial operation may also be allowed.
- g) Similar provision is required under Regulation 42(2) for allowing the capitalization of expenditure for un-discharged liabilities recognized for works admitted by the Hon'ble Commission after to the date of achieving the Peak Rated Capacity.
- h) **Accordingly, the regulations 42(1)(a), 42(1)(c) & 42(1)(e) may be modified as under:**

.....

a) expenditure incurred on activities as per Mining plan/ Investment

approval;

.....

c) expenditure for works deferred for execution and un-discharged liabilities recognized for works as admitted.

.....

e) expenditure for procurement and development of land as per the Mining Plan/ Investment approval

.....

i) Similarly, the regulation 42(2)(a) & 42(2)(d) may also be revised as under:

.....

a) expenditure incurred on activities, if any, as per Mining plan/ Investment approval;

.....

d) expenditure for procurement and development of land as per the Mining Plan/ Investment approval

j) Further, a new Regulation 42(2)(f) as following may also be inserted:

.....

“f) expenditure for works deferred for execution and un-discharged liabilities recognized for admitted works.”

k) It is further submitted that mining area involve huge land parcel. As the area involved is open and boundary less, mining faces significant challenges for security and safety of its personnel and plant/ machinery.

l) Miscellaneous expenditure on safety and security of the plant/personnel is required to be incurred as per directions of Govt Authorities from time to time.

- m) **In view of the same, Provision for allowing security and safety expenditure as advised or directed by Indian Government Instrumentality may be provided under Regulation 42(1) & 42(2) as under:**

"Provided that expenditure incurred on procurement/works for need of higher security and safety of the plant/ personnel as advised or directed by appropriate Indian Government Instrumentality or statutory authorities responsible for national or internal security, shall be allowed after prudence check;"

7) Regulations 42(1) Additional Capital Expenditure: Provision of MBOA items:

NTPC Comment:

- a) It is submitted that the Miscellaneous Bought Out Assets (MBOA) items are necessarily required for regular operation of mine. There is requirement of furniture, Computer & peripherals, various high end survey equipment and other office equipment which are purchased as MBOA items and capitalized.
- b) Significant no. of these items are procured after COD. As number of employees also increase after COD and infrastructure is established by the time peak rated capacity is achieved.
- c) Such MBOA items may or may not be explicitly mentioned in the Mining Plan.
- d) **Considering that the MBOA items are essentially required for operation of the mine, provision for capitalization of the expenditure on such items up to peak rated capacity after prudence check by the Hon'ble Commission may be provided.**

8) Regulation 44(3) - Rate of Return on Equity for Integrated mines:

The CERC Tariff Regulations, 2024 provides the return on equity for integrated mines at base rate of 14%. In this regard following is submitted:

- a) Return on equity needs to be commensurate with the risks. Mining sector face significant developmental & operational risks like huge area of land

- acquisition, environment clearances, Rehabilitation and Resettlement of huge number of Project affected Persons, geological surprises, direct exposure to extreme weather conditions like torrential rains, flooding etc.
- b) Land acquisition in mining is a continuous process. Land is acquired as and when mining progresses and mining operations carry risk of land acquisition during the entire mine life due to socio-political factors.
 - c) In case of integrated mine, the business risks in thermal generation business also highly affect the mining activities and recovery of cost may be affected if the coal requirement of the linked plant is affected.
 - d) It is submitted that in cases of MDO operated mines, there is lesser investment in the plant & machinery and the level of RoE available with the company is not sufficient to absorb high risks inherent in the mining sector. It will adversely affect further investment in the sector.
 - e) It is worth submitting that the major capital investment in case of Coal Mining is in the form of land (lease hold as well as free hold). In case of free hold land no depreciation is flowing as a part of Annual Extraction Cost, whereas in case of lease hold land amortization is done over the useful life of mine or lease period whichever is less.
 - f) Further, in case of lease hold land amortization is spread over the period of (around 25-30 years). The time recovery of depreciation does not match with the loan repayment period for Bank and Financial Institutions. Consequently, debt repayment must be met out of the return on equity, which results in lower IRR on such investment in coal mining. In consideration of the same, the mismatch in cash flow needs to be addressed by giving higher RoE.
 - g) It is also submitted that the working group in its report on 'Regulatory Framework for Input Price of Coal or Lignite from Integrated Mine' has observed as under:

5.3.1..... The captive mine is also a part of the project of generating station and aimed to serve the electricity produced from that generating station. *The coal extracted from the integrated mine is not allowed to sale for commercial purpose. **The generating company allocate fund to captive mine in the same manner as followed for generating assets.** The approach for consideration of equity for the rate of*

return as followed in case of generating station may also be adopted for the captive mine.

.....

5.3.5 Since the funding mix for mine is proposed to be similar to that of Power generation, the rate of return admissible for power...

- h) It is further submitted that prior to the Second Amendment to the CERC Tariff Regulations, 2019, Hon'ble Commission considered RoE of 15.5% for integrated mines as per the Ministry of Coal guidelines dated 02.01.2015 for 2014-19 period. With the reduced RoE of 14% as proposed under the Draft Regulations, the returns of the coal mining company shall be affected adversely. As an example, with 14% RoE, RoE is only around Rs 47 Cr (6.7 %) of the annual turnover (Rs 700 Cr) in the case of NTPC's Dulanga integrated coal mine.
- i) **It is therefore submitted that the Hon'ble Commission may be pleased to enhance the RoE from the existing 14% to 15.5%, at par with the thermal generating station.**

9) Regulation-52(2): Adjustment on account of shortfall in GCV (GCV Adjustment):

CERC Tariff Regulations 2024 provides as under:

“(1) In case the weighted average GCV of coal extracted from the integrated mine(s) in a year is higher than the declared GCV of coal for such mine(s), no GCV adjustment shall be allowed.

(2) In case the weighted average GCV of coal extracted from the integrated mine(s) in a year is lower than the declared GCV of coal of such mine(s), the GCV adjustment in that year shall be worked out as under:

.....

(b) Where the integrated mine(s) are allocated through an allotment route under the Coal Mines (Special Provisions) Act, 2015:

GCV Adjustment = [(Annual Extraction Cost/ATQ) + (Mining Charge)] X [(Declared GCV of coal – Weighted Average GCV of coal extracted in the year)/(Declared GCV of coal)]

Where,

- i) Annual Extraction Cost is the cost of extraction of coal as computed in accordance with Regulation 43 of these regulations;*
- ii) Mining Charge is the charge per tonne of coal paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable; and*
- iii) Declared GCV of coal shall be the average GCV as per the Mining Plan or as approved by the Coal Controller.”*

NTPC Comment:

- a) It is submitted that quantity and quality of geological coal reserves of the entire coal block are estimated based on the geological studies carried out during preparation of Geological Report of a mine.
- b) Based on Geological report, total extractable coal reserves and weighted average coal quality for the entire mine is estimated in Mining Plan. However, actual coal quality during operational phase varies from year to year depending upon the coal seams exposed. Accordingly, during the operational phase of the mine, supply of coal is based on the quality of the coal declared by the Coal Controller.
- c) It is pertinent to submit that the quality of coal declared by Coal Controller is based on the random sampling carried out in coal seams/sections to be mined in the next financial year. Due to the heterogeneous nature of the coal, Coal Controller declares such quality in terms of grades from G1 to G17, each having a band of 300 kCal/kg.
- d) The grade of the coal declared by Coal Controller is also used for making payment of Royalty and other statutory payments. It is worth mentioning that Coal India (CIL) & SCCL are also pricing the non-coking coals as per the

said grades having different GCV ranges. Therefore, GCV variations up to 300 kCal/kg (i.e. within a grade) is an accepted criterion.

- e) **In view of the above, it is submitted that the GCV variations beyond the band of 300 kCal of the declared grade may only be considered by Hon'ble Commission for quality (GCV) adjustment.**
- f) It is further submitted that during certain years actual quality of coal may be better than the declared coal. If suitable adjustments are not allowed, then the generating company may not be in a position to make up the losses incurred on account of adjustments made for the shortfall in GCV.
- g) It is also worth mentioning that the quality adjustment provision in the Cost-Plus mines of CIL is applicable for both negative as well as the positive variation in the coal quality.
- h) **Therefore, it is submitted that the GCV adjustments may also be allowed for positive GCV variations beyond the band of 300 kCal of the declared grade.**
- i) In consideration of the above-mentioned submissions and also taking into consideration the Run of Mine (ROM) Cost formula provided under the Regulation 39 (2), the GCV Adjustment formula under Regulation 52(2)(b) may be revised as under:

Regulation 52(2)(b): *Where the integrated mine(s) are allocated through an allotment route under the Coal Mines (Special Provisions) Act, 2015, GCV Adjustment shall be allowed in case the actual weighted average GCV of coal extracted in the year is beyond the grade declared by the Coal Controller:*

$$\text{GCV Adjustment} = [(\text{Annual Extraction Cost}/\text{Coal Quantity}) + (\text{Mining Charge})] \times [(\text{Declared GCV of coal} - \text{Weighted Average GCV of coal extracted in the year}) / (\text{Declared GCV of coal})]$$

Where,

- i) *Annual Extraction Cost is the cost of extraction of coal as computed in accordance with Regulation 43 of these*

regulations;

- ii) Coal Quantity shall be:
 - a) ATQ or Actual production, whichever is higher, subject to the ceiling of Annual Mining Plan quantity.
- iii) Mining Charge is the charge per tonne of coal paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable; and
- iv) Declared GCV of coal shall be the average GCV as per the Mining Plan or **the grade approved by the Coal Controller.**

10)Regulation 92: Recovery of the cost of hedging or Foreign Exchange Rate Variation (FERV):

CERC Tariff Regulations 2024 provides as under:

“Regulation 92: Recovery of the cost of hedging or Foreign Exchange Rate Variation (FERV):

(1) Every generating company and the transmission licensee shall recover the cost of hedging and foreign exchange rate variation on a year-to-year basis as income or expense in the period in which it arises.

(2) Recovery of the cost of hedging or foreign exchange rate variation shall be made directly by the generating company or the transmission licensee, as the case may be, from the beneficiaries or the long term customers, as the case may be, without making any application before the Commission:

.....

NTPC Comment:

- a) Regulation 92, as mentioned above, allows Generating Company / transmission licensee to recover the cost of hedging and foreign exchange rate variation.

b) Integrated mine(s) also may take foreign loan for development of mine. Suitable provision in the Regulations is required to recover cost incurred on account of hedging and foreign exchange rate variation for integrated mines on year to year basis.

c) **Accordingly, the Regulation 92 may be modified as under:**

“92. Recovery of the cost of hedging or Foreign Exchange Rate Variation (FERV):

(1) Every generating company, the transmission licensee and Integrated Mine shall recover the cost of hedging and foreign exchange rate variation on a year-to-year basis as income or expense in the period in which it arises.

.....”

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