



Date: 27.09.2024

H0/09/2024

To,
The Secretary,
Central Electricity Regulatory Commission,
7th Floor, Tower B,
World Trade Centre, Nauroji Nagar,
New Delhi - 110029

Subject: Submission of Comments/ Suggestions on the "Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2024.

Dear Sir,

This is with reference to the Public Notice dated 02.08.2024 with Reference No.L-1 /268/2022/CERC wherein the Hon'ble Commission has sought for the Comments/ Suggestions/ Objections from the stakeholders on the Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2024.

In compliance with the aforementioned, please find the attached Comments/ Suggestions along with Annexures on behalf of The Tata Power Company Limited for its regulated entities, for kind perusal and consideration of the Hon'ble Commission.

Yours Sincerely,

Pankaj Prakash
Head- Regulatory

Encl: As Above

TATA POWER

The Tata Power Company Limited
"Shatabdi Bhawan", B-12 & 13, Sector-4 Noida 201 301 (U.P.)
Tel.: 91 120 610 2000
Registered Office Bombay House 24 Homi Mody Street Mumbai 400 001
Website : www.tatapower.com Email : tatapower@tatapower.com
CIN : L28920MH1919PLC000567

The Tata Power Company Limited's views on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2024

1. Amendment of Regulation 36 of the Principal Regulations

4.1 In the first proviso to clause (d) of sub-regulation (3) of Regulation 36 of the Principal Regulations, the numbers "0.09%" shall be substituted by the numbers "0.12%".

4.2 Following proviso shall be added after the second proviso to clause (d) of sub-regulation (3) of Regulation 36 of the Principal Regulations:-

"Provided that the self-insurance premium shall be transferred to a separate fund for utilization to meet the claims, and the expenditure incurred or utilized from the self-insurance fund shall be made available to the Commission as and when directed."

Our Views and observations

- 1.1. We submit that the climate change related extreme events including cloud burst, floods, heat waves etc. have increased the risk exposure of the transmission and distribution assets compared to previous years. Therefore, the increase of the self-insurance premium to 0.12% of GFA from existing threshold of 0.09% is a welcome change. It may be noted that the threshold of 0.12% is close to threshold level currently followed industry wide.
- 1.2. Also, the increase in the insurance premium is a step towards achieving the higher insurance premium being offered in the International Market in wake of increase in the risk due to climate change related extreme events.
- 1.3. In view of above, we support the amendment proposed by Hon'ble Commission in respect of Self-Insurance Premium.
2. **Amendment of Regulation 70(A) and 70(B) of the principal Regulations**, regarding Normative Plant Availability Factor (NAPAF) and Normative Plant Load Factor (NAPLF), we support the comments of NTPC Limited submitted vide its letter dated 06.09.2024. The comments of NTPC is also enclosed as **ANNEXURE-1** for ready reference.
3. **Insertion of Clause (G) Compensation for the operation of generating station below normative plant availability factor under Regulation 70 of the Principal Regulation:**

"(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.

(2) The compensation for degradation under regulation (1) of this regulation shall be borne by the entity which has caused the plant to be operated at schedule lower than the corresponding Normative Plant Availability Factor.

(3) The compensation for the station heat rate and auxiliary energy consumption shall be worked out in terms of energy charge rate.

(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:-

.....

.....

(7) The financial gains computed, after taking into account compensation, over and above the actual energy charges shall be shared between the generating station and the beneficiaries in the ratio of 1:1. in accordance with the procedure to be issued by NLDC with the approval of the Commission.

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

....."

Our Views and observations

- 3.1. The reference of Plant Availability Factor i.e., Regulation 70(A) in title and in sub clause 1 & 2 of Clause G of Regulation 70 seems in-correct as degradation in Operational Parameters are linked to the loading of the Units which is specified under Regulation 70(B). Accordingly, the reference may be corrected.
- 3.2. It is submitted that the existing part load compensation mechanism emanating from IEGC-2010 (as amended) were applicable for both Sec-62 and Sec-63 projects. However, with the notification of the current draft, the earlier provision of IEGC shall cease to apply. The Hon'ble Commission is therefore requested to clarify the applicability of these regulation on Sec-63 projects.
- 3.3. With regard to clause 70 G(1), it is submitted that Draft (1st Amendment) proposes for compensation in Tariff Regulations on account of deterioration of Heat Rate, increase in AEC and secondary oil consumption due to part-load operation. However, in addition to above, it is further submitted that the frequent start-up/ backing-down/ operating at lower load would increase stress in the machine thereby resulting in higher deterioration (wear and tear) of plant's components. To overcome above issue the generating stations will be required to incur additional O&M expenses to keep the plant operational. Operating Units under such conditions shall also increase the number of tripping as also recognized by CEA in its report on Flexible Operation of coal based thermal power plant. As a consequence, the generating station shall be required to undertake frequent Minor Overhauls of the Units in every 1 or 2 years, which normally undertakes one Major Overhaul in a period of 3-4 years affecting the availability of plant and higher overhaul/maintenance charges.

- 3.4. In view of foregoing, it is suggested that at least the additional O&M Norms as indicated by CEA in its recommendation for compensation methodology for operating a thermal generating Unit below 55% minimum power level may kindly be considered to start with and the same be revisited once actual data for actual impact is available after the control period. The CEA's report was also notified by the Hon'ble Commission as an addendum to the Approach Paper in respect of Terms and Conditions of Tariff for the period commencing from 1st April 2024 vide File No. L-1/268/2022/CERC dated 3.07.2023. The Addendum including CEA's report is annexed hereto as **ANNEXURE-2** for kind reference.
- 3.5. Also, as regard to Additional O&M Expenses for thermal generating stations for operation below 55% loading, we support the comments submitted by NTPC Limited vide its letter dated 06.09.2024 and the same is not reiterated here for sake of brevity.
- 3.6. With regard to clause 70 G (2), regarding the entity causing part load operation, it may be noted that apart from lower requisitions by beneficiaries, loading of Units may further go down on account of various approved schemes proposed, either for efficiency improvement of the power system or for promotion of Renewable Energy like bundling of RE power with thermal as per RE bundling scheme of MoP/ Complying with Renewable Generation Obligation (RGO) etc. Accordingly, impact on Operational Norms for part load operations can be caused either because of beneficiaries of the plant or due to beneficiaries of various ancillary schemes / RE Bundling/ RGO etc. It is, therefore, humbly requested to incorporate the same in the final regulations by modifying clause G(2) as follows:
- (2) The compensation for degradation under regulation (1) of this regulation shall be borne by the entity/ (approved schemes) which has caused the plant to be operated at schedule lower than the corresponding Normative Plant Availability Load Factor.*
- 3.7. With regard to clause 70 G (4), regarding compensation on account of degradation of Gross Station Heat Rate, we support the comments of NTPC Limited submitted vide its letter dated 06.09.2024. In addition to comments of NTPC, it is requested to review the degradation factors for compensation after end of this control period once sufficient data on real impact of part load operation below 55% is available for study. However, in the interim, for granting certain safeguard to generators for excessive loss at loadings below 55% for which OEM even doesn't provide efficiency curves/ HBDs, a provision may be given for the Generators to approach the Hon'ble Commission for seeking appropriate relaxation/ relief for under recovery of Fuel Cost after due prudence check of the Hon'ble Commission.
- 3.8. With regard to clause 70 G (5), regarding degradation of Auxiliary Energy Consumption (AEC) at lower unit loading, it is requested that alike Heat Rate degradation, % degradation in AEC may also be provided in a range of 5% variation in unit loading instead of 10% as proposed in draft, starting from loading of 85%, above which no degradation is admissible.

- 3.9. With regard to clause 70 G (6), regarding specific fuel oil consumption per start-up and additional specific oil consumption for operating below 55% unit loading, we support the comments suggested by NTPC Limited on the draft vide its letter dated 06.09.2024 and the same is not reiterated here for sake of brevity.
- 3.10. With regard to clause 70 G (7), which proposes for computation of financial gains after taking into account compensation, we understand that the operational gain proposed here is the net of energy charges recovered at normative operational parameters plus Additional energy charges recovered through compensation minus energy charges at actual operational performance. The Hon'ble Commission may please provide clarity in this regard. It is further requested that Hon'ble Commission may clarify that Operational gain for the purpose of sharing is to be computed based on annual performance of the Operational Parameters i.e., Operational performance cumulating from 1st April to 31st March of the financial year, subsuming the monthly losses, if any, due to seasonal variations etc. This is also in line with the operational parameters which are specified for generators on annual basis in Tariff Regulations. The annual operational parameters notified in Tariff Regulations are based on annual performance for previous years and thus, subsumes all variations on operational parameter within a financial year. Such clarification is requested to avoid litigations between Generating Stations and distribution licenses as sharing of net gain based annual performance for the year which includes gains/ losses within the year.
- 3.11. With regard to clause 70 G (8), which proposes for reconciliation of the compensation at the end of the financial year with actual weighted average operational parameters. In this respect it may be noted that technically the efficiency of the Generating Units (measured in form of SHR/AUX/OIL Consumption) is significantly affected when plants operate under off-design conditions, particularly at reduced loading. In fact, the degradation in Operational parameters at lower loading is way higher compared to improvement it can have when plant is running at loading beyond 85% to 100%. It is evident from the factors proposed by the Hon'ble Commission that the heat rate increases stiffly as the unit approaches lower load. However, for calculating the compensation, the regulations consider cumulative loading to arrive at the compensation. This however, does not compensate the generator sufficiently for the losses it has incurred at lower loadings as in this methodology, losses at lower load get set-off by corresponding gains at higher loads which is neither justified nor intended.
- 3.12. The following table shows MPL's machine loading depicting that despite operating at lower load, at the end of the financial year the Machine Loading Factor (MLF) is higher than 85% and, hence, it will not qualify for any compensation as an effect of cumulating. Even operating the units at loading below 85% for significant time, it was not able to qualify for compensation for financial year FY 22, FY 23 and FY 24 as can be observed in the table below:

MLF Range	FY 20	FY 21	FY 22	FY 23	FY 24
50%-55%	2.84%	6.54%	0.93%	0.32%	0.19%
55%-60%	22.72%	30.24%	12.04%	3.52%	4.44%
60%-65%	5.42%	5.94%	4.14%	2.23%	3.44%
65%-70%	5.47%	2.97%	3.75%	1.46%	2.41%
70%-75%	5.40%	1.79%	1.66%	1.09%	1.26%
75%-80%	4.70%	1.93%	1.61%	0.88%	1.06%
80%-85%	4.61%	2.09%	1.89%	1.71%	1.30%
85%-100%	48.82%	48.45%	73.95%	88.77%	85.87%
Annual MLF	80%	78%	87%	89%	94%
Applicable GHR (Wt. Avg of degraded GHR at different loadings, with loading as the weight)	2397	2409	2363	2340	2345
GHR @ annual MLF (being allowed)	2375	2396	2326	2326	2326
Actual GHR	2385	2381	2374	2348	2339

- 3.13. As can be seen from the table above, as an effect of cumulation of units' loading, GHR being allowed (i.e. at annual MLF) is lower than the applicable GHR (weighted average of degraded GHR at different loadings, with loading as the weight). Even in the FY 22, FY 23, FY 24; since annual loading was more than 85%, the degradation in the heat rate was not allowed, despite having heat rate degradation almost for 26% of the times in FY 22, 11% of the times in FY 23 and 14% of the times in FY 24.
- 3.14. The error is mainly due to aggregation as it is contrary to basic principle that Heat Rate degradation factor is for particular operating load. In a scenario where there is varying load and where degradation/ improvement in operational parameters is different at different loading, aggregation would completely defeat the process of granting compensation to the generating company.
- 3.15. Therefore, it is requested that the compensation should be calculated in each time block the unit operates at respective low load rather than considering the cumulative load at the year end. Ideally, impact on operational parameters in a time block should not be averaged out with other block in order to clearly quantify the loss for the purpose of compensation which would be just and fair to all stake holders. The time blocks may be segregated into various unit loading ranges at the end of the month/ year. Using the percentage of time blocks in a particular unit loading range as weight and using corresponding degradation factor, the degraded heat rate may be worked out. A sample computation of Applicable GHR (Wt. Average of degraded GHR at different loadings) in excel format with actual 15 min block data for entire financial year is attached as **ANNEXURE-3** for kind reference.

ADDITIONAL COMMENTS

4. Regulation 70 Clause C(b(i)) - Heat Rate of Generating Stations achieving COD on or after 1.4.2009

(b) Thermal Generating Stations achieving COD on or after 1.4.2009:

(i) For Coal-based and lignite-fired Thermal Generating Stations:

For 200-300 MW Sets. : 1.05 X Design Heat Rate (kCal/kWh)

For 500 MW Sets and above: 1.045 X Design Heat Rate (kCal/kWh)

Where the Design Heat Rate of a generating unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero per cent make up, design coal and design cooling water temperature/back pressure.

Provided that depending upon the pressure and temperature ratings of the units, the maximum design turbine cycle heat rate and minimum design boiler efficiency shall be as per the table below:

.....

Provided also that where the boiler efficiency is lower than 86% for Sub-bituminous Indian coal and 89% for bituminous imported coal, the same shall be considered as 86% and 89% for Sub-bituminous Indian coal and bituminous imported coal, respectively, for computation of station heat rate:.....;

Our Views and observations

- 4.1. The GSHR Norm for 500 MW Units have been set under following categories, viz; (i) Stations achieving COD before 01.04.2009; and (ii) Stations achieving COD on or after 01.04.2009. The GSHR for stations having COD before 01.04.2009 are based on their past performances whereas for Stations having COD on or after 01.04.2009 have been linked to their design efficiencies subject to Minimum Boiler Efficiency of 86% for Sub-Bituminous Indian Coal along with operating margin of 4.5% for the period FY 2024-29.
- 4.2. As regard to MPL, it is submitted that it shall fall under the GSHR Norm of 500 MW Units achieving COD on or after 01.04.2009. Tata Power in its earlier comments dated 28.02.2024 to draft 2024 tariff regulations made a detailed comments on the quality of coal being received at MPL from the linked mines compared to design coal and the Boiler efficiency achieved during the PG test for MPL with such actual quality of coal vis-a-vis design coal. The relevant comments are re-enclosed as **ANNEXURE-4** for ready reference. It is pertinent to mention that actual coal quality received for the last 10 years is in the range of 4000 kCal/kg compared to "As billed GCV" of 4900 kCal/kg which is close to design coal.
- 4.3. It is submitted that with design efficiency (i.e. Turbine Cycle Heat Rate of 1945 kCal/kWh & Boiler efficiency of 87.8%) and Operating Margin of 4.5%, GSHR applicable for MPL works out to 2315 Kcal/Kwh (i.e. $1945/87.8\% \times 1.045$) compared to actual SHR of 2365

kCal/kWh (average for the years 2020-2024) resulting in losses with every unit generated. On the other hand, GSHR of 2363.40 (1945/86% x 1.045) would be applicable to Other Generating stations with their Boiler efficiency capped to minimum of 86% i.e., having built a comfortable margin of 1.8% (i.e. 87.8 – 86) in boiler efficiency for poor coal quality).

- 4.4. It is further submitted that the quality of coal received at MPL is unlikely to improve in near future being a universal issue. In view of recurring loss on account of coal grade slippage which is beyond its control, Tata Power humbly requests this Hon'ble Commission to kindly specify following to save MPL from being unduly penalized:
- i. Specify Boiler Efficiency of 86% for MPL which would be consistent with the Minimum Boiler Efficiency stipulated for other generating units of 500 MW.
 - ii. Alternatively, may provide provision for relaxation in Heat Rate at time of true-up after prudence check.

5. Regulation 36 Clause 1(7)

36(1)(7) Any additional O&M expenses incurred by the generating company or transmission licensee due to any change in law or Force Majeure event shall be considered at the time of truing up of tariff:

.....

Provided that such impact shall be allowed only in case the overall impact of such change in law event in a year is more than 5% of normative O&M expenses allowed for the year;

Our Views and observations

- 5.1. We submit that the bifurcation of the Change in law ("**CIL**") events into two categories i.e., CIL event resulting in minor and substantial impact on O&M expenses and, thereby, allowing the case wherein the overall impact of a change in law event(s) is more than 5% of the normative O&M expenses is a gross deviation from the well settled legal principles and MYT Framework. Until the present Regulations, 2024 the principle of economic restitution was duly acknowledged and applied in letter and spirit, while also upholding the rationale of cost plus Regime. To reiterate, the settled principle of restitution in the change in law event requires the entity to be restored to the same economic position as if the change in law event did not take place and it nowhere mentions any limit on the quantum of the relief so ought and leaving no room for any kind of under-recovery. With capping of 5%, the Generator would not be able to recover their genuine costs incurred towards complying with the legal mandate.
- 5.2. Hence, the capping of 5% of the normative O&M expenses in context of the change in law event is in contradiction of the plethora of Supreme Court judgments such as in the case of Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL) v. Adani Power Limited and Others (2019) 5 SCC 325 wherein the Hon'ble Court has pondered upon the meaning of the restitutionary principle, the relevant extract of the judgment is as below-

*“10. Article 13.2 is an in-built restitutionary principle which compensates the party affected by such change in law and which must restore, through monthly tariff payments, the affected party to the same economic position as if such change in law has not occurred. **This would mean that by this clause a fiction is created, and the party has to be put in the same economic position as if such change in law has not occurred i.e. the party must be given the benefit of restitution as understood in civil law.**”*

- 5.3. Therefore, it is respectfully submitted that the capping of 5% of normative O&M expenses may kindly be removed and the principle of restitution may kindly be followed without any deviation/modification thereof in consonance with settled legal principles.

6. Regulation 36 Clause 1(8)

36(1)(8) In the case of a generating company owned by the Central or State Government, the impact on account of implementation of wage or pay revision shall be allowed at the time of truing up of tariff.

Our Views and observations

- 6.1. We submit that permitting the impact of the wage or pay revision for central or state government only is in deviation of the historical approach practiced/ followed by the Hon'ble Commission itself. The Hon'ble Commission in its Explanatory Memorandum for 2009-14 Tariff Regulations has recognized the impact of wage revision to be justifiable for both the government and private entities and had, therefore, continued to provide this uniform and consistent treatment to both the government and private owned entities under its Tariff Regulations from 2009 to 2019. Moreover, the present discriminatory approach of the Hon'ble Commission provides wrongful loss to the private entities and undue advantage to the government entity which upsets the Neutral Regulatory framework in the Power Sector.
- 6.2. Furthermore, there is no intelligible differentia for treating government and private owned generating stations differently rather in the spirit of fair treatment no such discrimination may be continued with. It is a settled law that the 'intelligible differentia' separates a group within that class from the rest and that differentia has to have a rational nexus with the object sought to be achieved. In this regard, reliance is placed on the judgement by Hon'ble Supreme Court in State of Kerala v. N.M. Thomas (1976) 2 SCC 310 held as follows:

*“83. A **classification is reasonable if it includes all persons who are similarly situated with respect to the purpose of the law. In other words, the classification must be founded on some reasonable ground which distinguishes persons who are grouped together and the ground of distinction must have rational relation to the object sought to be achieved by the rule or even the rules in question.....**”*

- 6.3. Therefore, it is proposed to include the impact of wage revision in the O&M norms, available to all the generating station in line with practice followed historically, irrespective of the ownership of the generating Stations being government or private

and hence, there must be fair and equitable treatment to all. The impact of wage revision may be allowed during true-up based on wage revision of CPSUS and such revised O&M Norms may kindly be allowed to all Generators during the truing-up.

7. Regulation 30 Clause 3

30(2) Return on equity for existing project shall be computed at the base rate of 15.50% for thermal generating station, transmission system including communication system and run-of-river hydro generating station and at the base rate of 16.50% for storage type hydro generating stations, pumped storage hydro generating stations and run-of-river generating station with pondage;

.....

Provided that return on equity in respect of additional capitalization beyond the original scope, including additional capitalization on account of the emission control system, Change in Law, and Force Majeure shall be computed at the base rate of one-year marginal cost of lending rate (MCLR) of the State Bank of India plus 350 basis points as on 1st April of the year, subject to a ceiling of 14%;

.....;

Our Views and observations

- 7.1. We submit that the Hon'ble Commission has continued with the existing approach for Additional Capital Expenditure ("ACE") within original scope of work, however, the RoE on ACE beyond original scope, including ECS and due to CIL has been changed to 1 year SBI MCLR + 350 basis points up to a ceiling limit of 14.00% compared to the real cost of equity of 15.5% as determined by the Hon'ble Commission in Tariff Regulations, 2024. It is reiterated that the extant approach has created an artificial distinction between the old and new assets without any cogent reasons resulting into under recovery of cost of equity which is required to be paid by Generating Company to equity investors. It is important to highlight that the Hon'ble Commission until Tariff Regulations, 2019 had provided a single rate of Return of Equity (RoE) equivalent to real cost of equity prevalent then in consonance with Tariff Policy and well established practice for original capitalized project cost as well as for additional capitalization incurred by the Generating Company for ensuring 100% recovery of cost of equity. It may further be noted that the deviation under 2019 Tariff Regulations was challenged by the Petitioner which is sub judice before the Delhi High Court.
- 7.2. Moreover, the Hon'ble Commission in its earlier Order dated 21.12.2000 has itself recognised that returns are to be estimated at company levels and, therefore, there should be no differentiation between old and new assets for providing returns and, thereby, leading to under recovery of cost of equity for the new Assets. It is also noteworthy to mention that there is no justification for a differentiated RoE based on vintage of assets that is old or new assets when no distinction is made in declaring dividend on equity based on the date of infusion of the equity to the company, i.e., equity invested earlier or now. Relevant extract of the Order dated 21.12.2000:

"2.4.7....We also understand that pricing bodies for other industrial products have not made any distinction in the return on account of vintage of assets. In the

circumstances, we consider it appropriate that no distinction need be made in the return on equity on account of vintage of assets.”

- 7.3. Therefore, it is most humbly requested to remove the linkage of Return on Equity for ACE with base rate of SBI (1 Year MCLR + 350 basis point) with a capping of 14% and bring parity between the assets by allowing ROE of 15.5% for ACE as well. Also, this is necessary for regulatory certainty and to continue attracting investment in the power sector.

8. Regulation 31: Tax on Return on Equity

“31. Tax on Return on Equity.

(1) The rate of return on equity as allowed by the Commission under Regulation 30 of these regulations shall be grossed up with the effective tax rate of the respective financial year. The effective tax rate shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the concerned generating company or the transmission licensee by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon.

Provided that in case a generating company or transmission licensee is paying Minimum Alternate Tax (MAT) under Section 115JB of the Income Tax Act, 1961, the effective tax rate shall be the MAT rate, including surcharge and cess;

Provided further that in case a generating company or transmission licensee has opted for Section 115BAA, the effective tax rate shall be tax rate including surcharge and cess as specified under Section 115BAA of the Income Tax Act, 1961.

(2) The rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

(3) The generating company or the transmission licensee, as the case may be, shall true up the effective tax rate for every financial year based on actual tax paid together with any additional tax demand, including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2024-29 on actual gross income of any financial year. Further, any penalty arising on account of delay in deposit or short deposit of tax amount shall not be considered while computing the actual tax paid for the generating company or the transmission licensee, as the case may be.

Provided that in case a generating company or transmission licensee is paying Minimum Alternate Tax (MAT) under Section 115JB, the generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year with the applicable MAT rate including surcharge and cess.

Provided that in case a generating company or transmission licensee is paying tax under Section 115BAA, the generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year with the tax rate including surcharge and cess as specified under Section 115BAA.

Provided that any under-recovery or over recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term customers, as the case may be, on a year to year basis.”

Our Views and observations

8.1. With regard to the above Regulation 31, Tata Power had submitted detailed comments at the time of finalisation of Tariff Regulations 2024. The same are not being repeated herein for the sake of brevity and are attached as **Annexure 5** Tata Power submits there are certain areas which still remain unaddressed and, hence, call for amendments/clarifications in the above Regulation. Relevant extract of our comments is given below:

*“We submit that the Effective tax rate (ETR) may be computed as (Actual Tax Paid) divided by Profit Before Tax (PBT), **without any capping to Normal Tax Rate**. The current formula does not fully capture the tax implications of the company with multiple businesses particularly when other businesses have huge income or losses. This formula needs to capture the effect of change from PBT to Taxable income of regulated business.*

Hon’ble APTEL in its Judgement dated 28.11.2013 in APPEAL NO.104, 105 and 106 of 2012 has held that regulated and other businesses have to be kept in separate watertight compartments so that the regulated business neither subsidises not gets subsidized by other businesses. Relevant extract of this Judgement is as follows:

“52. The Judgment in Appeal No. 251 of 2006 is based on the principle that regulated business in question that is within the jurisdiction of the Regulatory State Commission, should neither subsidise nor get subsidy from other businesses whether unregulated or regulated by the same or different regulator. In other words, the Judgment mandates that the taxable income of the regulated business within the jurisdiction of the Regulatory State Commission should be computed on stand alone basis, irrespective of what is the impact of this business or other businesses on the overall tax liability. There is a possibility of distortion when the impact of regulated business or other businesses on total tax liability is considered or the overall tax liability is allocated for determining the tax liability for regulated business.”

The Judgement as quoted above clearly stipulates that the taxable income of the regulated business must be computed independently, irrespective of the overall tax impact to ensure that regulated business neither subsidizes not get subsidized by other businesses. It is important to note that this Judgement has attained finality and, therefore, holds the field in this matter of law.

*Therefore, even if the actual tax paid is zero due to losses in other businesses (which would not be available for carry forward to those businesses), **either grossing up with applicable tax rate may be allowed or the benefit of lower tax due to other businesses may be allowed to be recovered** subsequently when tax payable on other*

businesses is not lowered due to carry forward of its losses already availed for the benefit of Regulated businesses.

*Accordingly, the Hon'ble Commission is requested to **modify the formula for Effective Tax Rate suitably** to take care of the non-adjustment of current year loss, credit for carry forward losses, unabsorbed depreciation and credit for MAT on other businesses."*

- 8.2. There are two specific issues that we wish to bring to Hon'ble Commissions attention (i) Modification of/clarification on Effective Tax Rate (ETR) computation for specific scenarios like Companies having Regulated and Unregulated Businesses, carry forward of losses/ unabsorbed depreciation and (ii) For companies paying MAT or opting for Section 115BAA, the fixed grossing up rate linked to rate in relevant Finance Act needs certain exceptions for cases where ETR is higher due to application of provisions of Income Tax Act. The anomaly with existing regulations and proposed resolution for these two issues is discussed in the following paragraphs.

Issue 1: For Companies under Corporate Tax Regime, when ETR is less than Corporate Tax Rate or is Zero

9. ETR is defined as $\text{Actual Tax/PBT} = \text{RxTI/PBT}$, which may be less than Corporate Tax Rate (say R) only when $\text{TI} < \text{PBT}$. Since TI is derived after addition/deletion/exemption of income to PBT as per provisions of IT Act, it may finally be lower or higher than PBT. TI may be higher if net addition is +ve and lower if it is -ve. Further, since the company is computing TI as a whole, it may be lower due to tax sops leading to net deletions/exemption of income or addition of deductible expenses for three reasons (i) in the regulated business alone, (ii) in unregulated business alone and (iii) in both the businesses. The Explanatory Memorandum and SOR issued with Draft and Final Tariff Regulations 2024 amply clarify that this lower ETR than Corporate Tax Rate has been specified to pass on the benefit of IT Act provisions to the consumers. This intent is not only laudable but also correct as far as companies having only regulated business with regulated income stream are concerned as any benefit on tax in regulated business needs to be passed on to consumer. Thus, tax is considered only as reimbursement of actual tax expense and no profit is permitted in tax allowance. However, vanilla application of this principle on companies having other businesses or income streams other than regulated income leads to distortions that are unjust and inequitable, which need to be corrected by proper modification/clarification in the regulations. These distortions and possible solutions are given in the following paragraphs.
- 9.1. Tariff Regulations specifies for the true up the effective tax rate for every financial year based on actual tax paid. Accordingly, if the company as a whole pays NIL tax due to huge losses in Other Businesses, the ETR is Zero ($\text{ETR} = \text{Actual Tax/PBT} = 0/\text{PBT} = 0$) and no grossing up shall be allowed. It is true that actual tax outflow for the company is Zero in this particular year and, hence, tax actually paid for either Regulated or Unregulated Business is Zero. Hence, for this year, Tax allowable on cash basis for Regulated Business may be kept Zero inspite of the fact that there is Profit of at least the allowed RoE in Regulated Business. The consumers are benefited and not loaded with any Tax liability

in this year due to set-off of losses of Other Business with Profit of Regulated Business for company as a whole. It is, however, noteworthy that such set-off of current year loss shall not be available to the Other Business, which has borne such loss, in future years and, hence, it would be deprived of set-off of its past loss in future years paying more Tax than is attributable to such Other Business. Thus, consumers of Regulated Business would be benefited at the cost of Other Business, which already is reeling under high losses. It would effectively mean that the regulated business is being subsidized by Other Businesses. This, in turn, shall imply violation of Hon'ble APTEL's Judgment dated 28.11.2013 in APPEAL NO.104, 105 and 106 of 2012 wherein it has been held that regulated and other businesses have to be kept in separate watertight compartments so that the regulated business neither subsidises nor gets subsidized by other businesses.

- 9.2. For the regulated business, which is denied grossing up with the tax rate in a particular year due to losses in other business, it would only be fair to be compensated in the year when there is a taxable income of Other Businesses.
- 9.3. The above anomaly is explained through the illustrations below (excel copy enclosed as Annexure-5.1) with following assumptions:

Assumptions:

*RB= Regulated Business, URB= Un Regulated Business, Tax rate=30% (Presumed),
 PAT = Profit After Tax, ETR = Effective Tax Rate = Tax/PBT,
 RoE = Post Tax Assumed RoE for Regulated Business = Rs. 35 Cr for Year 1 and Year 2,
 PBT=Profit Before Tax = ROE/(1-ETR) for Regulated Business and for Unregulated Business
 Rs. -50 Crore for Year 1 and Rs. 50 Crore for Year 2
 TI = Taxable Incomes
 * at the top of a column shows that values therein are for the company for which Tax Return is filed*

- 9.4. Firstly, let us take a case where both RB and URB are separate businesses under two separate companies. Columns E and F represent Actual values for each company. The effect of Regulations on RB for allowance in Tariff Order is given in Column H for RB only. It may be seen that for cumulative PBT of Rs. 100 Crore, the RB pays cumulative Tax of Rs. 30 Crore for the two years and URB pays NIL cumulative Tax for NIL cumulative PBT under existing Regulatory Regime. In total, both RB and URB pay Rs. 30 Crore for PBT of Rs. 100 Crore. There is no distortion seen here.

Businesses	Particulars	Formula	Actual			Existing Regulations	
			RB*	URB*	Total	RB	
Year	A	B	D	E	F	G=E+F	H
Year:1	PAT (RoE for RB)	a	35.00	-50.00	-15.00		35.00
	PBT=TI	$b = a/(1-d)$ for RB	50.00	-50.00	0.00		50.00
	Tax	$c=30\% \times b$, 0 if -ve	15.00	0.00	15.00		15.00
	ETR	$d=c/b$	30%	0%	0%		30%
Year:2	PAT(RoE)	e	35.00	50.00	85.00		35.00
	PBT	$f=e/(1-j)$ for RB	50.00	50.00	100.00		50.00
	Loss c/f	$g=b$ if -ve	0.00	-50.00	-50.00		0.00
	TI	$h=f+g$	50.00	0.00	50.00		50.00
	Tax	$i=30\% \times h$	15.00	0.00	15.00		15.00
	ETR	$j=i/f$	30%	0%	30%		30%
Cumulative PBT (both Years)		$k=b+f$	100.00	0.00	100.00		100.00
Cumulative Tax (both years)		$l=c+i$	30.00	0.00	30.00		30.00

9.5. The problem, however, arises when both the businesses are carried on by the same company and combined Tax filing is done. In this case, with the same basic assumptions, the combined values are shown in Column C and values allowable as per Existing Regulations is shown in Columns D & E of the following Table:

Businesses	Particular	Actual	Existing Regulations		Proposed Regulations			
		Combined*	RB	URB	RB	URB	Combined*	
Year	A	B	C	D	E	F	G	H
Year:1	PAT (RoE for RB)		35.00			35.00		
	PBT=TI	-15.00	35.00	-50.00	35.00	-50.00		-15.00
	Tax	0.00	0.00	0.00	0.00	0.00		0.00
	ETR	0%	0%	0%	0%	0%		0%
	Subsidy used		35.00	-35.00				0.00
Year:2	PAT (RoE for RB)		35.00			35.00		
	PBT	100.00	50.00	50.00	65.00	50.00		115.00
	Loss c/f	-15.00	0.00	-15.00		-15.00		-15.00
	Subsidy returned				35.00	-35.00		0.00
	TI	85.00	50.00	35.00	100.00	0.00		100.00
	Tax	25.50	15.00	10.50	30.00	0.00		30.00
	ETR	30%	30%	21%	46%	0%		26%
Cumulative PBT (both Years)		85.00	85.00	0.00	100.00	0.00		100.00
Cumulative tax (both years)		25.50	15.00	10.50	30.00	0.00		30.00

9.6. In the 1st year, it can be observed that despite profit in the regulated business (RB), the actual tax paid is zero, due to loss in U-regulated/ other business (URB). The major part of loss in the URB, which otherwise would have been available for carry forward in next year, has been set off against the profit of the RB. Next year, the company pays tax on entire taxable income, including profit on URB, which is deprived of the setting off of

loss in 2nd year, since major part of the loss had been exhausted against the profit of RB in previous year, ending up bearing extra tax burden. This is an anomalous scenario, wherein, the Regulated Business, despite having profit in the 1st year is not allowed any tax and on the other hand, the Un-Regulated Business has to bear tax despite having loss in the previous year. Important point to Note is that now RB pays much less Tax whereas URB pays Tax, for NIL cumulative PBT. This is nothing but URB subsidising RB. Incidentally, total Tax outgo also goes down, thereby causing a loss to the exchequer. Total Tax reduction for consumers of Regulated Business is sum of Tax outgo for URB and Loss to exchequer. Thus, consumers of RB get subsidised at the cost of URB and Government. The subsidy from URB used by the RB in the first year is never returned back to URB.

- 9.7. To address this anomaly, it is proposed that in the first year, no tax be allowed on RB as there is no cash outgo for Tax. However, in the next year, when there is profit in the other business, the loss offset by RB in previous year(s)' post tax RoE should be added to the post tax RoE of RB, to arrive at grossed up RoE allowable on RB. This is depicted in Columns F, G and H under Proposed Regulations in the above Table. Grossing up of additional return of subsidy (income) for tax purposes is required because the Tax on such addition will also attract Tax and so on, which gets addressed by grossing up this addition. As evident from the table, now both the businesses pay cumulatively same tax as if they were separate and there is no loss to exchequer also. There is no extra tax being sought for if cumulative tax for both years in respect of combined business or on RB ass compared with tax applicable for separate businesses. Thus, upholding the principles set by Hon'ble APTEL in the above stated Judgement.
- 9.8. It is, therefore, proposed that an amendment the above Regulation 31 be carried out to give above correction for subsidy/use of carry forward loss by RB in the year when URB pays tax. The cumulative carry forward may be limited to cumulative subsidy utilised by RB and to actual tax paid by URB in a particular year. This will ensure that subsidy used by RB is utilised/returned for URB in the year when it actually pays and to the extent it pays Tax. Hon'ble Commission may devise suitable proviso of amendment in formula of ETR as deemed appropriate in the Regulations or may give an enabling provision for companies to propose such adjustments in tariff filings.
- 9.9. It may also be noted that even for companies strictly doing only the RB, there are income streams such as incentive etc. tax burden for which is borne by the company. Therefore, such income streams should ideally not be included for computation of ETR for RB and, in this sense, even RB companies may be viewed as having Regulated Income and Unregulated/Other Income. Therefore, the above dispensation should be available to them also. In effect, it would mean that the denominator in ETR formula i.e. PBT for RB would be reduced to Pre-tax RoE plus grossed up value of any addition/deletion to PBT to arrive at taxable income as per IT provisions for RB (or grossed up value of (Post Tax RoE + difference between taxable income and PBT). This hinges on the principle that for the purpose of Effective Tax Rate (ETR) calculation, apart from income from businesses other than regulated business, income other than RoE of regulated business should also be excluded.

- 9.10. The *regulation 31 (1)* Prescribes that the ETR shall be calculated by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. Since, the intention of this formulation is to enable the company to recover the entire actual tax paid on regulated business (i.e. excluding actual tax paid on other income streams), it is suggested that any other income, other than ROE, such as incentive/ savings from the regulated business, etc; should be excluded from numerator (i.e. tax paid on such income) as well as from denominator (i.e. gross income or PBT).
- 9.11. This proposition emanates from the very fact that the Hon'ble Commission is grossing up only RoE with ETR and not such "other income from core business". As such, the impact of such "other income from core business" both in PBT and tax paid needs to be removed for further accuracy of the ETR.
- 9.12. In addition, for companies only in RB, there may be partially untied capacities or some capacities under section 63. For such companies there may be cumulative losses or unabsorbed depreciation due to which overall tax liability of the company goes down. These are also cases of the above type as past losses or unabsorbed depreciation are arising due to losses in untied capacity, which is not regulated and, hence, needs similar dispensation as above, treating untied capacity income/loss as Other Businesses. This may also be clarified.
- 9.13. At the cost of repetition, it is submitted that ETR (non-Zero) may be lower than tax rate specified in relevant Finance Act due to tax sops in both RB and URB, and hence, any benefit or subsidy enjoyed by RB due to sops/tax benefits of URB should be returned back to URB. It implies that each year when ETR is lower than stipulated rate, the subsidy used by RB should be separately captured i.e. the Tax computation attributable to RB and URB should be captured separately. This can be done by asking the utility claiming such return of subsidy to provide auditor certified allocation of total Tax Computations in RB and URB, which in any case is must for ETR computation as per prescribed formula.
- 9.14. Further, as elaborated in the enclosed Note, the ETR should not be restricted to the tax rate applicable under relevant Finance Act for reason given above as also in the Note. This may also be kindly clarified.

Issue 2: For companies paying MAT or opting for Section 115BAA, the fixed grossing up rate linked to rate in relevant Finance Act needs certain exceptions for cases where ETR is higher due to application of provisions of Income Tax Act

10. This issue emanates directly from the application of IT Act provisions for companies paying MAT or opting for Section 115BAA. In such cases, in general linking only the fixed grossing up rate to rate in relevant Finance Act is fine when ETR is generally lower than or equal to this fixed rate. This is so because, e.g. in case of companies availing 80IA benefit, the Tax is normally paid at MAT as TI is deemed to be zero being fully exempt for RB and Book Profit is approximately equal to PBT. Therefore, $ETR = MAT/PBT$ is approximately equal to $MAT/Book Profit = MAT Rate$ (say r). Even this payment at MAT

rate by RB is returned back to it after concession period when MAT credit is availed and the same is captured by the ETR formula, which yields lower ETR than applicable Corporate Tax Rate. Thus, on cash basis the payment at MAT rate is justified in such situations.

11. However, the above fixed rate regime needs certain exceptions for cases where ETR is higher due to application of provisions of Income Tax Act. There might be situations where even for application of fixed MAT rate, the Book Profit is required to be enhanced for certain notional incomes or due to other provisions in line with the relevant IT Act provisions. This results in Book Profit becoming much higher than PBT and, hence, MAT outgo is much higher than normally payable on PBT even at the same MAT rate. Thus, the $ETR = MAT/PBT = r \times BP/PBT$ is higher than r as $BP > PBT$. Thus, compensating the company only at MAT rate would not suffice and it is not fully compensated for higher cash outgo of tax for RB. In other words, the company ends up suffering loss due to insufficient tax recovery, which is against the above stated basic principles of tax reimbursement. It would only be fair that in such exceptional cases, the company should be allowed to claim such higher rate for grossing up of RoE in its tariff petition alongwith proper justification.
 12. It is, therefore, proposed that a proviso giving such option to propose higher than stipulated rate for reasons of applicability of relevant provisions of law may be added in Regulation 31.
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List of Annexures

- Annexure-1** Comments by NTPC on 1st amendment draft
- Annexure-2** Addendum to the Approach Paper in respect of Tariff Regulations, 2024 dated 3.07.2023, including CEA Report
- Annexure-3** Excel Copy of sample computation of Applicable GHR (Wt. Average of degraded GHR at different loadings) with actual 15 min block data for entire financial year
- Annexure-4** Comments dated 28.2.2024 on the quality of coal being received at MPL from the linked mines since inception compared to design coal and the Boiler efficiency of 85.5% achieved during the PG test for MPL with such actual quality of coal vis-a-vis design coal.
- Annexure-5** Detailed comments submitted by Tata Power in respect of Regulation 31, at the time of finalisation of Tariff Regulations 2024
- Annexure-5.1** Excel copy in respect of the tax illustrations



Ref No: 01:CC:CD:737-D

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>
<p>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)</p>	<p>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)</p>

- 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:

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

Where,

- i) Annual Extraction Cost is the cost of extraction of coal as computed in accordance with Regulation 43 of these regulations;
- ii) 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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**CENTRAL ELECTRICITY REGULATORY COMMISSION
New Delhi**

File No. L-1/268/2022/CERC

Date: 3rd July, 2023

ADDENDUM

Subject: Terms and Conditions of Tariff for the period commencing from 1st April, 2024 – Approach Paper thereof.

Approach Paper on Terms and Conditions of tariff regulations for the Tariff Period 1.4.2024 to 31.3.2029 has been prepared by the staff of the Commission and published on 26.05.2023 for the suggestions/feedback of stakeholders, electricity industry players, etc.

Under Section 5.7 of the aforesaid approach paper, comments and suggestions are sought from stakeholders on the earlier norms and any changes that may be required to compensate the generators to operate the plants in a flexible manner to support the Grid.

In this regard, the Central Electricity Authority has prepared a compensation methodology for operating a thermal (coal) generating unit below the 55% minimum power level based on the CEA (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023 (copy enclosed).

Comments and suggestions/ feedback from the stakeholders are invited (3 hard copies + soft copy) on the compensation methodology so as to reach the Commission's office by 15th July 2023. Soft copy may be mailed at : tariff-reg@cercind.gov.in

sd/-
(Harpreet Singh Pruthi)
Secretary

Encl: As Above

Compensation methodology for operating a Thermal (Coal) Generating unit below 55% Minimum Power Level

1. Introduction

Penetration of large-scale renewable generation in the grid is bringing a new set of challenges in the power sector. The inconsistency and intermittency of solar & wind power has to be managed by other sources of generation in order to ensure the grid security, reliability and stability. Thus, huge flexible power is required for the balancing of grid from sources like pump storage system, thermal power plants, battery storage system etc. Thermal generation capacity constituting about 54% of total installed capacity is the dominant part of power generation in the country and more than 70% of country's energy demand is being met from thermal generation. Thus, lowering of minimum power load of existing coal-fired power plants along with ramp rate capability (ie flexible operation) is very much essential for handling the instability & intermittency of renewable generation and ensuring security, reliability of power supply. Further, the cost of flexible power from thermal fleet is very less compared to power from battery storage system.

In this context CEA has also notified a Regulation regarding Flexible operation of coal based Thermal Power Generating Units on 30.1.2023.

2. Measures required for achieving lower Minimum Power Load

For achieving minimum power load (40%) and higher ramp rate, Coal based power plants may require few modifications by way of improved control systems etc and also required to be compensated for the loss of life and increased variable cost due to regular part load operation.

The primary focus of the utility shall have to be on the existing control system optimization and improvements in some of the areas like achieving automated control operation which includes proper tuning of operation so as to avoid temperature and pressure excursions. Control optimization shall also include main/reheat steam temperature control, boiler feed water recirculation control, flue gas temperature control. Better combustion control include, optimum fuel to air ratio, fuel to load coordination, furnace pressure control, burner tilt control and proper flame monitoring at low loads are essential. Condition monitoring of boiler and turbine, flame monitoring is crucial from the safety point of view. To reduce the running cost of the unit at low loads, the optimization of auxiliaries is also important. The above measures are essential for a unit and may require an estimated capital investment of Rs 10 crores. In case of very old units which have not upgraded their plant control and instrumentation system previously, the estimated capital investment will be Rs 30 crores depending on the retrofit.

3. Proposed Compensation

The compensation mechanism has been prepared based on the studies carried out by various agencies (CEA's report "Flexibilisation of coal fired power plants" published in Feb 2023). The power plant needs to be compensated for both fixed cost due to infusion of capital investment, increased O & M cost, variable charges due to efficiency loss at part load operation and additional oil consumption due to increased Equivalent Forced Outage Rate (EFOR).

A. FIXED COST

a) Capital Expenditure

One-time expenditure to be incurred in retrofitting of various measures to make the plant capable of low load operation.

- i. In case of old units (commissioned before 01.01.2004) which have not upgraded their plant control and instrumentation system previously, capex requirement may around Rs 30 crores for each unit.
- ii. It is estimated that measures essential, to operate at 40% load may require an estimated capital investment of around Rs 10 crores for each unit commissioned on or after 01.01.2004 and except units covered under para 3(a)(iv).
- iii. Unit will be eligible for increased fixed tariff irrespective of actual operation once measures are implemented and exhibits desired low load operation. Considering five (5) years payback period the impact has been estimated as under **Table-I**.

Table-I

Unit Size (MW)	Recovery period (years)	For units in Para 3(a)(ii)		For units in Para 3(a)(i)	
		Total Capital cost (Rs Cr)	Increase in fixed charge per annum (Rs. Cr.)	Total Capital cost (Rs Cr)	Increase in fixed charge per annum (Rs. Cr.)
200	5	10	2.55	30	7.65
500	5	10	2.55	30	7.65
660	5	10	2.55	30	7.65
800	5	10	2.55	30	7.65

- iv. As per the Regulation 8 (11) of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) notified on 20.08.2010, pulverised fuel combustion-based steam generator shall not require oil support above 40% unit load.
Therefore, measures/ retrofits are not required in these units for operation upto 40% load. However, as per the OEM few measures are required to be implemented for regular 40% load operation of subcritical units though the same (40%) was demonstrated during PG test. Considering above it is proposed a maximum capital investment of Rs.6 crores may be allowed to the **subcritical generating units** where investment approval received on or after 01.01.2011 and the impact is calculated as under Table-II:

Table-II

Unit Size (MW)	Recovery period (years)	For units in Para 3(a)(iv)	
		Capital cost (Rs Cr)	Increase in fixed charge per annum (Rs. Cr.)
200/250	5	6	1.53
500	5	6	1.53
600	5	6	1.53

- v. Power plant may be penalised proportionally (Fixed cost) for not exhibiting low load operation at least 85% of time when asked for.

b) O&M cost due to increased Life Consumption (damage costs):

Flexible operation also leads to a higher rate of deterioration of plant's components. This is observed in increased failure rate and more frequent replacement of components. The impact on life of components increases with increase in number of flexible operation instances and also with number of start stops the unit undergoes in a year. As a result, the operation and maintenance cost are significantly higher in units operated on a daily or weekly start-stop basis. Based on CEA Report "Flexibilization of coal fired power plants" the increase in annual O&M cost has been considered as 9%, 14% and 20% of O&M Cost at 50%, 45%, 40% loading respectively (**Table-III**).

The increase in O&M cost shall be allowed on the basis of plant actual low load operation. Unit will be eligible for full compensation if the unit participated in flexible operation minimum 310 days (85% days) in a year. For less than 310 days low load operation compensation may be calculated proportionately.

Table-III

Capacity (MW)	Loading (%)	Increase in O&M (%)	Proposed increase in O&M cost (Rs Cr.)
200	<55 to 50	9.00	6.58
	<50 to 45	14.00	10.23
	<45 to 40	20.00	14.62
500	<55 to 50	9.00	11.23
	<50 to 45	14.00	17.47
	<45 to 40	20.00	24.97
660	<55 to 50	9.00	13.34
	<50 to 45	14.00	20.76
	<45 to 40	20.00	29.66
800	<55 to 50	9.00	14.55
	<50 to 45	14.00	22.64
	<45 to 40	20.00	32.35

B) VARIABLE COST

- a) **Cost due to increase in Net Heat Rate:** It has been observed that the extent of deterioration in Net Heat Rate depends on the percentage unit loading. Units running minimum power load below 55% shall be additionally compensated in Electricity Charge Rate (ECR) to the extent of Net Heat Rate (NHR) deterioration. Based on the actual study/test conducted at few coal based power plants and Heat Balance Diagram (HBD) reports of major OEMs (BHEL/GE/Siemens) on unit size Net Heat Rate degradation, compensation has been proposed in variable part of tariff considering coal price Rs 2000.00 per ton (estimated average cost of coal at pithead plants), Rs. 3300.00 per ton (estimated average cost of coal at non-pithead plants) and is as in **Table-IV**

Table-IV

Capacity (MW)	Loading (%)	Net Heat Rate increase (%)	Variable Tariff increase (%) at coal price Rs 2000/ton	Variable Tariff increase (%) at coal price Rs 3300/ton	Proposed variable Tariff increase (%)
200	<55-50	10.00	9.88	9.94	9.91
	<50-45	13.00	12.84	12.92	12.88
	<45-40	16.00	15.81	15.90	15.86
500	<55-50	10.90	10.76	10.83	10.80
	<50-45	13.60	13.44	13.51	13.48
	<45-40	16.00	15.81	15.90	15.86
660	<55-50	8.70	8.59	8.64	8.62
	<50-45	11.90	11.75	11.82	11.79
	<45-40	14.60	14.42	14.50	14.46
800	<55-50	8.60	8.49	8.54	8.52
	<50-45	12.00	11.84	11.92	11.88
	<45-40	15.00	14.81	14.90	14.86

The variable cost of any plant has been estimated using the formula given below:

$$\text{Variable Expense (Rs/kwh)} = \text{Coal Cost (Rs/kwh)} + \text{Oil Cost (Rs/kwh)}$$

Coal Cost (Rs/kwh) =

$$\text{Coal Cost (Rs/MT)} \times \left[\frac{\text{Station Heat Rate (kcal / kwh)} - \frac{\text{Oil CV (kcal / l)} \times \text{Specific Oil Consumption (ml / kwh)}}{1000}}{\text{Fuel Calorific Value (kcal / kg)}} \right]$$

$$\text{Oil Cost (Rs/kwh)} = \frac{\text{Oil Cost (Rs / kL)} \times \text{Specific Oil Consumption (ml / kwh)}}{10^6}$$

$$\text{Variable Charge at bus bar (Rs/kwh)} = \frac{\text{Variable Expense (Rs / kwh)}}{\left(1 - \frac{\% \text{ Aux Consumption}}{100}\right)}$$

- b) **Cost due to additional oil consumption for additional EFOR (Equivalent Forced Outage Rate):**Based on Electric Power Research Institute study report the additional EFOR due to regular low load operation of thermal generating units may increase specific oil consumption from 0.5 ml/kWh to 0.7 ml/kWh. Therefore, it is proposed to compensate 1.0 paisa/ kWh on account of EFOR.

Note : EFOR – Equivalent Forced Outage Rate is defined the percentage of scheduled operating time that a unit is out of service due to unexpected problems or failures and can no reach full load capacity due to component/equipment failures.

4. Likely increase in paisa/ kWh on account of proposed compensation

Sample calculation on basis of the compensation mechanism proposed above and various assumptions are given in Annexure-I.:

- i. Total likely increase in tariff considering capital investment of Rs. 30 crores, increase of O&M cost, variable cost and EFOR cost is given in Table-A.
- ii. Total likely increase in tariff considering capital investment of Rs.10 crores, increase of O&M cost, variable cost and EFOR cost is given in Table-B.
- iii. Total likely increase in tariff considering capital investment of Rs. 6 crores, increase of O&M cost, variable cost and EFOR cost is given in Table-C, This is only applicable for subcritical unit's where investment approval received on or after 01.01.2011.

Table-A. Likely Incremental Tariff (Rs 30 crores capital investment)

Unit Size (MW)	Loading (%)	Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	Fixed Tariff increase (Paisa/kWh)		EFOR compensation (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Proposed total tariff (fixed & variable) increase (Paisa/kWh)
		Variable Tariff increase (Paisa/kWh)	Variable Tariff increase (Paisa/kWh)	due to increased O&M cost	due to increased capital cost		Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	
200	<55 to 50	13.68	22.57	6.70	7.68	1	29.06	37.95	33.51
	<50 to 45	17.78	29.34	10.42	7.68	1	36.88	48.44	42.66
	<45 to 40	21.89	36.11	14.88	7.68	1	45.45	59.67	52.56
500	<55 to 50	14.66	24.20	4.57	3.07	1	23.30	32.84	28.07
	<50 to 45	18.30	30.19	7.11	3.07	1	29.48	41.37	35.43
	<45 to 40	21.53	35.52	10.16	3.07	1	35.76	49.75	42.76
660	<55 to 50	11.17	18.42	4.12	2.56	1	18.85	26.10	22.48
	<50 to 45	15.27	25.20	6.40	2.56	1	25.23	35.16	30.20
	<45 to 40	18.74	30.92	9.14	2.56	1	31.44	43.62	37.53
800	<55 to 50	10.65	17.57	3.70	1.92	1	17.27	24.19	20.73
	<50 to 45	14.86	24.52	5.76	1.92	1	23.54	33.20	28.37
	<45 to 40	18.58	30.65	8.23	1.92	1	29.73	41.80	35.77

Table-B. Likely Incremental Tariff (Rs 10 crores capital investment)

Unit Size (MW)	Loading (%)	Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	Fixed Tariff increase (Paisa/kWh)		EFOR compensation (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Proposed total tariff (fixed & variable) increase (Paisa/kWh)
		Variable Tariff increase (Paisa/kWh)	Variable Tariff increase (Paisa/kWh)	Due to increased O&M cost	Due to increased Capital cost		Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	
200	<55 to 50	13.68	22.57	6.70	2.56	1.00	23.94	32.83	28.39
	<50 to 45	17.78	29.34	10.42	2.56	1.00	31.76	43.32	37.54
	<45 to 40	21.89	36.11	14.88	2.56	1.00	40.33	54.55	47.44
500	<55 to 50	14.66	24.20	4.57	1.02	1.00	21.25	30.79	26.02
	<50 to 45	18.30	30.19	7.11	1.02	1.00	27.43	39.32	33.38
	<45 to 40	21.53	35.52	10.16	1.02	1.00	33.71	47.70	40.71
660	<55 to 50	11.17	18.42	4.12	0.85	1.00	17.14	24.39	20.77
	<50 to 45	15.27	25.20	6.40	0.85	1.00	23.52	33.45	28.49
	<45 to 40	18.74	30.92	9.14	0.85	1.00	29.73	41.91	35.82
800	<55 to 50	10.65	17.57	3.70	0.64	1.00	15.99	22.91	19.45
	<50 to 45	14.86	24.52	5.76	0.64	1.00	22.26	31.92	27.09
	<45 to 40	18.58	30.65	8.23	0.64	1.00	28.45	40.52	34.49

Table-C. Likely Incremental Tariff for units where investment approval received on or after 01.01.2011 (Rs 6 crores capital investment)

Unit Size (MW)	Loading (%)	Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	Fixed Tariff increase (Paisa/kWh)		EFOR compensation (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Total tariff (fixed & variable) increase (Paisa/kWh)	Proposed total tariff (fixed & variable) increase (Paisa/kWh)
		Variable Tariff increase (Paisa/kWh)	Variable Tariff increase (Paisa/kWh)	Due to increased O&M cost	Due to increased Capital cost		Coal price Rs 2000.00 per ton	Coal price Rs 3300.00 per ton	
200	<55 to 50	13.68	22.57	6.70	1.54	1	22.92	31.81	27.37
	<50 to 45	17.78	29.34	10.42	1.54	1	30.74	42.30	36.52
	<45 to 40	21.89	36.11	14.88	1.54	1	39.31	53.53	46.42
500	<55 to 50	14.66	24.20	4.57	0.61	1	20.84	30.38	25.61
	<50 to 45	18.30	30.19	7.11	0.61	1	27.02	38.91	32.97
	<45 to 40	21.53	35.52	10.16	0.61	1	33.30	47.29	40.30
660	<55 to 50	11.17	18.42	4.12	0	1	16.29	23.54	19.92
	<50 to 45	15.27	25.20	6.40	0	1	22.67	32.60	27.64
	<45 to 40	18.74	30.92	9.14	0	1	28.88	41.06	34.97
800	<55 to 50	10.65	17.57	3.70	0	1	15.35	22.27	18.81
	<50 to 45	14.86	24.52	5.76	0	1	21.62	31.28	26.45
	<45 to 40	18.58	30.65	8.23	0	1	27.81	39.88	33.85

- No additional capital investment is required in the unit size of 660MW and 800 MW units for operating them at 40% load.

Annexure-I**Assumptions****1. General:**

- i. Auxiliary power consumption (APC): 6.5%,
- ii. Average PLF: 60%,
- iii. PAF: 100%,
- iv. Debt to equity ratio: 70:30,
- v. Return on equity: 15.5%,
- vi. Interest on loan:10%,
- vii. Depreciation rate:5.28%,
- viii. Specific oil consumption: 0.5 ml/kWh,
- ix. Price of oil:- Rs 35/lt,
- x. GCV of oil: 10000 kcal/lt,
- xi. GCV of Coal:3800 kcal/kg.
- xii. Landing cost of coal
 - a) Rs.2000.00 per ton (estimated average cost of coal at pithead plants)
 - b) Rs. 3300.00 per ton (estimated average cost of coal at non-pithead plants)
- ii. Weighted average cost of capital for annuity calculations : 10%

2. Unit size 200 MW

O&M Cost Rs 36.56 lakh/MW, Heat rate 2430 kcal/kWh.

3. Unit size 500 MW

O&M Cost Rs 24.97lakh/MW, Heat rate 2390 kcal/kWh

4. Unit size 660 MW

OO&M Cost Rs 22.47lakh/MW, Heat rate 2280 kcal/kWh.

5. Unit size 800 MW

O&M Cost Rs 20.22 lakh/MW, Heat rate 2200 kcal/kWh.

Annexure-3

Submitted in the form of Excel Copy of sample computation of
Applicable GHR (Wt. Average of degraded GHR at different loadings)
with actual 15 min block data for entire financial year



Date: 28.02.2024

TPCL/05/2024

To

The Secretary,
Central Electricity Regulatory Commission (CERC)
3 & 4th Floor, Chanderlok Building.
Janpath, New Delhi-110001

Subject: Concerns of Maithon Power Limited (MPL) with respect to GSHR Norm for Thermal Generating Stations for 500 MW Units as specified in the draft tariff regulations for the 2024-29 tariff period.

Dear Sir,

The Hon'ble Central Electricity Regulatory Commission ("CERC") in the Draft CERC (Terms and Conditions of Tariff) Regulations, 2024 has specified the Operational Norms of Thermal Generating Stations. It is mostly in accordance with the CEA's recommendations on operational norms for Thermal Power Stations for the tariff period starting from 01.04.2024 issued vide File No. CEA-TH-17-13/1/2019 - TETD Division on 19.12.2023.

The GSHR Norm for 500 MW units have been set under following categories, viz; (i) Stations achieving COD before 01.04.2009; and (ii) Stations achieving COD on or after 01.04.2009. The GSHR for stations having COD before 01.04.2009 are based on their past performances whereas for Stations having COD on or after 01.04.2009 have been linked to their design efficiencies subject to Minimum Boiler Efficiency of 86% for Sub-Bituminous Indian Coal along with operating margin.

The primary reason for capping boiler efficiency to minimum of 86% was to build safeguard for the Units having declared boiler efficiencies lower than 86% post 2009 (i.e., lower than 86% compared to earlier boiler design efficiency of about 87%-88%). In above backdrop, it would be relevant to mention that generators like MPL having designed boiler efficiency of 87%-88% commissioned after 2009 are struggling to perform to achieve stringent target of GSHR with poor quality of coal, though the actual performance of MPL is around 2374 kCal/kWh (average for the years 2019-2023) which is better/ or close to actual performance of other 500 MW units. This is mainly because of poor coal quality which is universal issue and not within the control of generating stations.

TATA POWER

The Tata Power Company Limited
"Shatabdi Bhawan", B-12 & 13, Sector-4 Noida 201 301 (U.P.)
Tel.: 91 120 610 2000
Registered Office Bombay House 24 Homi Mody Street Mumbai 400 001
Website : www.tatapower.com Email : tatapower@tatapower.com
CIN : I 28920MH1919PLC000567



A comparative analysis of the GSHR applicable to Generating Stations having their boiler efficiency capped to minimum of 86% and Generating Stations like MPL, vis-à-vis the actual average GSHR of 500 MW Stations for the period 2018-19 to 2022-23 as per Explanatory Memorandum (EM) to Draft Tariff Regulations, 2024 is as follows:

Actual Average GSHR for 500MW Sets as per EM-2024*	GSHR for GS with their Boiler Efficiency Capped to minimum of 86%	GSHR for GS like MPL with their design Boiler efficiency of about 87-88 % (MPL-87.8%)
2388 kCal/kWh	2352 kCal/kWh ([1945/86%] x 1.04)	2303 kCal/kWh ([1945/87.8%] x 1.04)

Generating Station ("GS"),

*Actual Average GSHR for the period 2018-19 to 2023-24 after correction for lower loading as per Grid Code.

Other generators with post 2009 COD have a comfortable margin of 1.8% (i.e. 87.8 – 86) in boiler efficiency for poor coal quality. Thus, such generators having design boiler efficiency below 86% are being allowed GSHR with 86% minimum level. This has placed generators like MPL with designed boiler efficiency above 86% without considering coal grade slippage in a disadvantageous position. Coal quality issue is universal and is unlikely to improve in the near future, and thus, it would lead to losses with each additional unit of energy generated.

Since, coal quality plays a pivotal role in GSHR of the generating stations, it is requested to factor in such constraints/ dependencies so that some Generating Stations which have based their design boiler efficiency on GCV declared in FSA without considering grade slippage, are not left to suffer on account of poor coal quality while others have built margins for the same.

The above fact is also evident from the data on operational performance submitted by MPL in compliance with Commission's Order dated 29.03.2023, the relevant excerpt related to quality of coal ("As billed GCV" vis-à-vis "As received GCV") for FY 2019 to FY 2023 is reproduced below:

Particulars	(GCV in kCal/Kg)					
	2018-19	2019-20	2020-21	2021-22	2022-23	Average
Weighted Average GCV* (As Billed)	4,989.00	4,936.64	4,763.05	4,858.59	4,991.67	4,907.79
Weighted Average GCV* (As Received)	4,030.00	3,988.00	3,855.00	3,989.00	4,143.00	4,001.00
Difference	959.00	948.64	908.05	869.59	848.67	906.79

*(Domestic+Imported+Spot/e-auction)



As can be seen from the above table, the "As billed GCV" is close to the designed GCV of 4671 kCal/ Kg as against the actual coal quality received in the range of 3900-4000 kCal/ Kg. Such grade slippage in Coal had also been apprised to CEA vide MPL's Letter dated 01.08.2019. Further, the Boiler efficiency achieved during the PG test with similar quality of coal is 85.5% which is close to the Minimum Boiler Efficiency of 86% as set in the regulations. Relevant excerpt from the PG test report and Letter dated 01.08.2019 are enclosed herewith as **Annexure - 1a and Annexure-1b**, respectively, for kind reference.

In view of the above, the Hon'ble Commission is requested as following for kind consideration so as to save MPL from being unduly penalized on account of coal grade slippage which is beyond its control:

- i. In order to protect the Generating Stations from the losses because of poor coal quality in a fair and equitable manner and to pass on the benefits of improved efficiencies, GSHR Norm may kindly be considered as lower of 2388 kCal/kWh and actual GSHR during the year, subject to minimum of the GSHR norm arrived at by the design parameters for Units having COD on or after 01.04.2009.
- ii. Alternatively, Generating Stations like MPL who have declared their Designed Boiler Efficiency in the range of 87-88% like those Generating Stations having COD prior to 2009, may kindly be allowed GSHR equal to GSHR set for Generating Stations having COD prior to 2009. In this regard, it is relevant to mention that the sole reason to have two separate norms was mainly to build safeguard against the declared lower design boiler efficiency (lower than 86%) and has no correlation with the vintage/ or COD of the Generating Stations.
- iii. Alternatively, specify Boiler Efficiency of 86% for MPL which would be consistent with the Minimum Boiler Efficiency stipulated for other generating units of 500 MW.

In addition to the above, it is also to bring to the kind attention of the Hon'ble Commission that with installation of 'In Combustion Modification' in compliance to revised NOx emission level, the unburnt carbon (UBC) shall increase in bottom ash and fly ash. In view of such increase in UBC, all the bidders requested to revise the guarantee limit for UBC heat loss (drop in boiler efficiency) as 0.8% for generating units at MPL. In view of such above practical difficulty, there is a need for relaxation of Normative SHR for sustainable and financially viable operation of De-NOx system by about 1%.

Tata Power has submitted a detailed comment on the issue of the GSHR Norm proposed in the draft Tariff Regulations for 2024-29 tariff period and also on the issue of



degradation of GSHR due to installation of 'In Combustion Modification'. The relevant excerpt of the same has been enclosed herewith as **Annexure-2** for the kind reference.

Yours sincerely,



Ajay Kapoor

Chief (Legal, Regulatory & Advocacy)
Tata Power Company Limited

CC: Chief Engineer, Thermal Engineering & Technology Development Division, Central Electricity Authority.

MAITHON RIGHT BANK THERMAL POWER PLANT

MAITHON POWER LIMITED

**UNIT - 1
2 X 525 MW**

(Customer No. 0656)

BOILER PERFORMANCE GUARANTEE TEST REPORT

VOLUME - I

MARCH 2013



BHARAT HEAVY ELECTRICALS LIMITED

TIRUCHIRAPALLI - 620 014

RESULTS

SL. NO.	PARAMETER	UNIT	GUARANTEED	OBTAINED	COMMENT
1.	Steam Generator Maximum Continuous Rating (SGMCR)	TPH	1700	1710.59	Achieved
2	Auxiliary Power Consumption at 100% TMCR	KW	9072	8329.26 (excluding ESP)	Achieved
3	Steam Generator Efficiency (based on HHV)	%	87.80		
	(a) Efficiency obtained based on as fired coal			85.50	
	(b) Efficiency corrected for design coal			88.00	Achieved
4	Steam Temp at main steam stop valve outlet at 100% SGMCR	°C	540±5	541.97	Achieved
5	Steam Temp at main steam stop valve outlet at 80% SGMCR	°C	540±5	540.36	Achieved
6	Steam Temp at main steam stop valve outlet at 60% SGMCR	°C	540±5	546.73	Achieved
7	Unburnt Carbon in Bottom Ash and Fly Ash (Heat Loss)	%	2.0	1.77	Achieved
8	Duration of Stable operation Minimum load without oil support		40% SGMCR	Demonstrated	Achieved
9	Flue Gas temp at RAPH outlet at 100% SGMCR	°C	137+10	142.19	Achieved
10	NOx Emission at 100% TGMCR at 20% excess air	g/GJ	260	145.08	Achieved
11	TDS in Steam leaving steam drum at 100% SGMCR	ppm	0.05	Demonstrated	Achieved
12	Desuperheating spray water quantity at 100% SGMCR	%	2	Demonstrated	Achieved
13	Desuperheating spray water quantity at 80% SGMCR	%	6	Demonstrated	Achieved
14	Desuperheating spray water quantity at 60% SGMCR	%	6	Demonstrated	Achieved
15	TDS in Steam leaving Final super heater at 100% SGMCR	ppm	0.05	Demonstrated	Achieved

* Design Coal was not available during test.

Ref. No. MPL/FY 20/2008 002

Dated: 01.08.2019

Shri N S Mondal
Chief Engineer- Thermal Project Planning & Development
Central Electricity Authority
Sewa Bhawan, Sector-1, R. K. Puram
New Delhi - 110 066.

Sub: - **Norms of coal consumption in TPPs effective 1st April 2019 - reg.**
Ref: - CEA Letter No: 219/GC/BO/TPPD/CEA/2019/710 dated. 25.07.2019.

Dear Sir,

This is in reference to your letter No: 219/GC/BO/TPPD/CEA/2019/710 dated 25th July 2019 seeking information pertaining to data for Main Steam Pressure (design) and type of BFP. The information in this regard is enclosed in the prescribed format as Annexure-I.

However, in addition to the details mentioned above, we also find it appropriate to bring it to your notice a matter pertaining to difference in quality of coal being actually received by MPL over the last few years w.r.t the quality assigned as per the FSA. We submit that while, as per the FSAs signed between MPL with coal companies, it may be seen that MPL has been assigned coal of D Grade i.e coal having Useful Heat Value (UHV) range of 4200-4940 Kcal/Kg (GCV range of 5089-5587 Kcal/Kg, considering 5% moisture) from BCCL and that of E Grade coal having UHV range of 3360-4200 Kcal/kg (GCV range of 4324-5089 Kcal/Kg, considering 5% moisture) from CCL. It has been noticed that MPL is continuously receiving coal of inferior quality in the range of 3649-4252 Kcal/kg over the last one year which is also evident from the data pertaining to GCV being billed by collieries to MPL. The weightage average billed grade GCV for last year was 5007 Kcal/Kg and the weighted average as received GCV was 4028 Kcal/Kg. The detailed calculation of such analysis has been provided as Annexure-II.

In view of the above, we humbly request you to kindly consider such deteriorated quality of coal being supplied by the coal companies instead of the quality assigned in FSA for working out the additional amount which may be allocated to MPL due to revised coal consumption norms.

We also request you to kindly allow us to meet you in person and provide further clarity (if required) in the matter.

Thanking you,

Yours faithfully,

For Maithon Power Limited


Ramesh Jha

(Chief Executive Officer)



A Joint Venture of **TATA POWER & DVC**

Registered Office : Corporate Center, 34 Sant Tukaram Road, Carnac Bunder, Mumbai 400 009, Tel: 91 22 67171232

Works : Village Dambhui, P.O.Barbindia, P.S.Nirsa, District Dhanbad 828 205, Jharkhand

Tel: +91 6540 278001/50 Fax: +91 6540 278040/ +91 8860075658

Corporate Identity Number (CIN) : U74899MH2000PLC267297, **Website Address** : www.tatapower.com/mpl

Annexure-I

LIST OF POST-2009 POWER PLANTS				
S No.	TPP	Present Capacity (MW)	Main Steam Pressure (design), Kg/cm ²	Type of BFP
1	Maithon Power Limited, Maithon Right Bank TPS Unit-I	525	170	Turbine driven
2	Maithon Power Limited, Maithon Right Bank TPS Unit II	525	170	Turbine driven

Handwritten signature and date: 01/08/20



MAITHON POWER LIMITED

(A Joint Venture Company of Tata Power & DVC)

Registered Office: Corporate Center, 34 Sant Tukaram Road, Carnac Bunder, Mumbai 400 009, Tel: +91 22 67171232

Works: Village Dambhui, P.O. Barbindia, P.S. Nirsa, District Dhanbad 828 205, Jharkhand Tel: +91 6540 2780 19/20 Fax: +91 8860075658

Corporate Identity Number (CIN): U74899MH2000PLC267297, Website Address: www.tatapower.com/mp/

Annexure-II

FY-19	Billed GCV, Kcal/Kg	As received GCV, Kcal/Kg	GCV Difference
Apr	4941	4252	689
May	4980	4183	797
Jun	4962	4000	962
Jul	5003	3702	1301
Aug	5034	3649	1385
Sep	5094	3894	1201
Oct	5088	3983	1105
Nov	5032	4119	913
Dec	4986	4096	890
Jan	4983	4233	750
Feb	5014	4165	849
Mar	5004	4061	944
Total	5007	4028	979

Handwritten signature and date: 01/08/19



MAITHON POWER LIMITED * MAITHON

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Works: Village Dambhui, P.O. Barbindia, P.S. Nirsa, District Dhanbad 828 205, Jharkhand Tel: +91 6540 2780 19/20 Fax: +91 8860075658
Corporate Identity Number (CIN): U74899MH2000PLC267297, Website Address: www.tatapower.com/mpl

**The Tata Power Company Limited's VIEWS ON Draft Central Electricity
Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024**

1. Regulation 70 Clause C sub-clause (b)

70 C(b) Thermal Generating Stations achieving COD on or after 1.4.2009:

(i) For Coal-based and lignite-fired Thermal Generating Stations:

For 200/210/250 MW Sets. : 1.05 X Design Heat Rate (kCal/kWh)

For 500 MW Sets and above: 1.04 X Design Heat Rate (kCal/kWh)

Where the Design Heat Rate of a generating unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero per cent make up, design coal and design cooling water temperature/back pressure.

Our Views and observations

- **Historical Perspective/Tariff Policy to be considered while specifying SHR Norms for Coal based Generating Stations:**

As per the Explanatory Memorandum for 2024-29 Draft Tariff Regulations, the actual average SHR of all 500 MW coal based Generating Stations based on past data for 2018-19 to 2022-23 after taking into account the degradation factor/correction for degradation factor is indicated as 2388 kCal/kWh in Table 47 under para 18.5.1. Thus, the Average Heat Rate of 2388 kCal/kWh basically indicates that current performance level at Unit loading of 85%. The 500 MW units considered for above derivations consist of 500 MW Generating Stations regardless of their vintage/CoD.

"The Commission has reviewed the suggestions and comments received from various stakeholders. The Commission had sought the actual data for FY 2018-19 to FY 2022-23 from Central Generating Stations to assess actual performance vis-à-vis norms. The actual Station Heat Rate data as submitted by the Generating Stations after taking into account the degradation factor allowed for compensating the generating stations for lower loading in accordance with the provisions of Grid Code for FY 2018-19 to FY 2022-23 is given in the table below."

At lower loading/with deterioration the actual average Heat Rate is about 2477 kCal/kWh against corrected average of 2388 kCal/kWh as observed in the EM at Para 18.6.5. Thus, correction of 89 kCal/kWh for degradation of SHR has already been applied by the Hon'ble Commission and, hence the average of 2388 kCal/kWh represents the actual SHR at normative 85% PLF, which should be used for fixing the norm.

"18.6.5 The Commission observes that the average actual SHR has increased to around 2477 kCal/kWh from FY 2018-19 to FY 2022-23 vis-à-vis 2381 kCal/kWh recorded for the period from FY 2012-13 to FY 2016-17. This degradation of actual SHR can be attributable to the increased backing down of thermal generating stations to accommodate the rapid integration of renewable energy."

Therefore, in terms of para 5.11(f) of Tariff Policy, 2016 which stipulates operational norms should be efficient, relatable to past performance, capable of achievement and considering current performance level as stated above, it is most humbly requested to fix ceiling limit of 2388 kCal/kWh for the 500 MW Generating Units regardless of CoD instead of 2375

kCal/kWh as proposed in the draft Regulations. Undoubtedly, considering the actual performance level, the SHR of 500 MW Units shall hover around 2388 kCal/kWh regardless of the vintage and therefore, any further rationalization/reduction in SHR would leave no scope for operational flexibility for thermal generating stations and shall be left to suffer.

This is also the finding of CEA at para 8.8 in its Report of Recommendations on Operation Norms for Thermal Power Stations for Tariff Period 2014-19 submitted with Comments on Draft Tariff Regulation 2014-19 that major factor for better actual SHR, apart from vintage is better O&M practices relevant extract of the same is reproduced below:

“8.8 From Table-7(b), it may be seen that the stations where the deviation is about 5 % are not confined to any specific utility or sector but are fairly widespread covering stations from private sector and state sector utilities. Nor are these stations restricted to any particular age group and include stations where most units are fairly old to stations with middle aged and new units.

Similar analysis carried out by CEA in the year 2004 (while working out norms for the operating period 2004-09) based on 3 years operating data collected from large number of stations also yielded similar results and showed that the deviation of operating heat rate from design showed no correlation with the age or make of the units and old units from some of the utilities showed very low deviations.”

Further, the actual data for 2018-19 to 2022-23 in Table 47 of EM 2024 shows that average actual SHR for Pre-2009 stations is 2378 kCal/kWh whereas, for post 2009 stations the same is 2396kCal/kWh, against average of 2388 kCal/kWh. This also validates the above findings. Therefore, it is only fair that all generating stations are given the same ceiling norm of 2388 kCal/kWh.

Further, with regard to Units Commissioned on or after 2009, SHR Norm have been linked to their design efficiencies. Linking of SHR norm to design efficiency subject to Minimum boiler efficiency of 86% for Sub-Bituminous Indian Coal was mainly to build safeguard against the lower design boiler efficiency (lower than 86% compared to earlier boiler design efficiency of about 87%-88%) as per recommendations of CEA in previous three control periods. The same is evident from the Tabulation below and was done with an intention so that improved efficiencies are passed to end consumers.

S. No.	Generating Stations 500 MW Series	Considering 2009 as base year for COD	Design Boiler Efficiency	Design GCV of Coal	Actual GCV Received as per compensation statement	Normative SHR under 2019 Regulations /Tariff Orders	Actual SHR as per EM2024	Normative SHR-Actual SHR
1	Unchahar TPS, Stage- IV	Post	85.1%	NA	NA	2359	2431	-72
2	Simhadri-II	Post	84.84%	3300	3059	2359	2400	-41
3	Mauda STPS stage I	Post	84%	NA	3036	2359	2459	-100
4	Dadri Stage-II	Post	85.00%	3500	NA	2363	2425	-63
5	Vindhyachal-V (1 X 500 MW)	Post	84.47%	NA	NA	2359	2347	12
6	Kahalgaoon-II	Pre/Post	83.29%	2850	3165	2374	2380	-6

S. No.	Generating Stations 500 MW Series	Considering 2009 as base year for COD	Design Boiler Efficiency	Design GCV of Coal	Actual GCV Received as per compensation statement	Normative SHR under 2019 Regulations /Tariff Orders	Actual SHR as per EM2024	Normative SHR-Actual SHR
7	Korba Stage-III	Post	84.91%	3300	3784	2374	2340	34
8	Farraka Stage-III	Post	83.39%	3000	3716	2374	2453	-79
9	Vindhyachal-IV	Post	84.00%	3600	NA	2359	2352	7
10	Sipat -II	Post	85.85%	3300	NA	2390	2374	16
11	Vindhyachal-III	Pre	85.14%	3700	NA	2390	2375	15
12	Ramagundam-III	Pre	86.88%	3400	3469	2390	2326	64
13	Simhadri-I	Pre	87.27%	3300	3081	2390	2434	-44
14	Vindhyachal-II	Pre	87.77%	3700	NA	2390	2379	11
15	Rihand-I	Pre	86.99%	4000	NA	2390	2340	50
16	Talcher Super Thermal Power Station Stage-I & II (pit-head);	Pre	87.43%	3500	3145	2390	2396	-6
17	Stage: 1 (2 X 500 MW): Stage: 2 (4 X 500 MW)	Pre	85.59%	3300	3207	2390	2394	-4
18	Maithon Power Limited	Post	87.80%	4671	3922	2326	2374	-48

Data Source: EM 2024, Tariff Orders, EMs issued for previous control period and Compensation Statement issued by RPCs for some of the Generating Stations.

It may be evident from the above Table that boiler efficiencies for Units commissioned after 2009 have boiler efficiencies lower compared to boiler efficiencies of Units Commissioned before 2009 except for generators like MPL who have based their design on GCV declared in FSA without any grade slippage. Therefore, in order to build safeguard against the lower design boiler efficiency, boiler efficiency was capped to minimum of 86% for Units having declared boiler efficiencies lower than 86%. Also, it would be relevant to note that generators like MPL having designed boiler efficiency of 87%-88% commissioned after 2009 are struggling to perform to achieve stringent target of GSHR with poor quality of coal though the actual performance, say of MPL @ 2374 kCal/kWh, is better/close to actual performance of other 500 MW units. This is mainly because of poor coal quality which is universal issue and not within the control of generating stations.

For poor coal quality other generators with post 2009 COD have a comfortable margin of 1.8% (i.e. 87.8 – 86) in boiler efficiency as they have already captured coal grade slippage in boiler design efficiency. Thus, such generators having design boiler efficiency below 86% are being allowed GSHR with 86% minimum level. This has placed generators with higher boiler efficiency (without considering grade slippage) in a disadvantageous position, which amounts to discrimination. Coal quality issue is unlikely to improve in the near future and thus would

severely impact generators which is beyond the control. The difference column in the above Tables indicates that barring few most of the stations which are linked to designed parameters and not to their actual performance are incurring losses and such losses shall further increase if current SHR norm is further reduced.

Even blending of imported coal for improving coal quality is also not a viable or cost-effective scenario to meet the design boiler efficiency or design heat rate as energy charges would almost double to achieve design GCV, thereby, penalizing end consumers with higher variable cost.

In this context, it is also relevant to note the observations of CEA that '*even with the same turbine generator, the unit heat rate could vary significantly at two different sites due to large variations in coal quality, cooling water temperature, etc*'. With regard to Heat Rate it has also observed following in the CEA, for the first time, in its recommendations i.e. "Norms of operation for the tariff period 2009-14" are reproduced below:

"4.3 The operation efficiency or heat rate and other performance parameters of a thermal power station depend on a number of factors which can be broadly classified as follows:-

a) Technology and Equipment

b) Ambient conditions

c) Fuel quality

d) Plant operation and maintenance practices.

Thus any benchmarking exercise has to consider these factors for normative operational performance.

..."

In light of above observations of CEA, Coal quality i.e. fuel quality plays a pivotal role in overall heat Rate of the generating stations and therefore, it is very important to factor such constraints/dependencies so that some Generating Stations are not left to suffer on account of poor coal quality, while others have built margins for the same, which is a universal issue and not within the control of Generating Stations. Therefore, to comply with the recommendations of CEA i.e., passing on the benefits of improved efficiencies and, simultaneously, protecting the losses to Generating Stations because of poor coal quality which is fair and equitable, SHR Norm may kindly be considered as lower of 2388 kCal/kWh and actual Heat Rate during the year subject to minimum of the SHR norm arrived at by design parameters for Units having COD on or after 01.04.2009.

This would mean that if actual SHR is between the minimum and ceiling limit of SHR norm, actual SHR shall be considered for the purpose of billing and recovery of Energy Charges. Norms higher than ceiling limit would be penalized and savings if any on account of improved norms compared to minimum SHR norm would be passed on as per existing methodology.

For Units having, COD before 01.04.2009, SHR norm of 2388 kCal/kWh may be specified. Even if it is considered that 2388 kCal/kWh does not factor in the heat rate degradation as in Para 18.5.1 of EM the Hon'ble Commission has stated that, "*The actual Station Heat Rate data as submitted by the Generating Stations after taking into account the degradation factor allowed for compensating the generating stations for lower loading*", there is no basis of doing an ad-hoc adjustment without actual data to reduce the set average.

• **Reduction of Operating Margin from 5% to 4%**

It is observed that the Hon'ble Commission has reduced the operating margin from 5% to 4% based on CEA recommendations. Neither the Hon'ble Commission nor the CEA has elaborated in detail the reasons to reduce the margin from 5% to 4%. As per the Explanatory Memorandum for Draft Regulations at para 18.6.5 the Hon'ble Commission observes the following:

“The commission observes that the average actual SHR has increased to around 2477 kCal/kWh from FY 2018-19 to FY 2022-23 vis-à-vis 2381 kCal/kWh recorded for the period from FY 2012-13 to FY 2016-17. This degradation of actual SHR can be attributable to the increased backing down of thermal generating stations to accommodate the rapid integration of renewable energy.”

In this regard, following are our comments for kind consideration:

- i. In our humble submission RE penetration is mostly visible in the last two years and hence, the impact of such degradation for the entire Control Period would be negligible. Further, as brought out above, the degradation has already been factored in SHR compensation in EM. Therefore, in our view the data represents the ideal loading condition, and, hence, compensation need not be factored over and above it.
- ii. The proposed reduction of the operating margin from 5% to 4% in the CEA's Recommendations appears to be a guesstimate without any detailed elaboration/figures. This is also corroborated from the fact that as per EM at Table 47, the actual average SHR of 500 MW Generating Stations after correction for degradation is indicated as 2388 kCal/kWh whereas SHR norm for typical 500 MW unit if computed with minimum boiler efficiency of 86% and operating margin of 4%, works out to 2352 kCal/kWh $[(1945/86\%) \times 1.04]$. The SHR norm of 2352 is much lower compared to actual performance level of 2388 kCal/kWh. Operating Margin of about 5.6% is required to match it with current performance level of 2388kCal/kWh.
- iii. As per the data published in the EM at Table 47, the operating margin seems to be about 5.54% for 500 MW Units compared to their Normative Heat Rate as Tabulated below for ready reference of the Hon'ble Commission. This further validates our above observation that Operating margin of about 5.6% is required to match the current performance level.

Plants as per Table 47	FY 19	FY 20	FY 21	FY 22	FY 23	Average	Normative SHR	Normative SHR without Margin	Deviation from Normative (Actual SHR w/o operating margin - Normative SHR w/o Operating Margin)/(Normative SHR w/o Operating Margin)					Average
	i	ii	iii	iv	v	Avg	vi	vii	FY 19	FY 20	FY 21	FY 22	FY 23	Avg
Dadri Stage-II	2415	2432	2463	2400	2414	2425	2364	2251	7.29%	8.04%	9.42%	6.62%	7.24%	7.72%
Farraka Stage-III	2503	2434	2400	2504	2424	2453	2374	2261	10.71%	7.65%	6.15%	10.75%	7.21%	8.50%
Kahalgaoon-II	2399	2377	2375	2374	2376	2380	2374	2261	6.11%	5.13%	5.05%	5.00%	5.09%	5.28%
Korba Stage-III	2387	2346	2324	2341	2304	2340	2373	2260	5.62%	3.80%	2.83%	3.58%	1.95%	3.56%
Mouda Stage-I	2490	2504	2490	2430	2382	2459	2359	2247	10.84%	11.46%	10.84%	8.17%	6.03%	9.47%
Ramagundam- III	2352	2324	2327	2339	2286	2326	2390	2276	3.33%	2.10%	2.23%	2.76%	0.43%	2.17%
Rihand-I	2343	2329	2304	2370	2357	2340	2390	2276	2.94%	2.32%	1.22%	4.12%	3.55%	2.83%
Simhadri-I	2439	2445	2436	2439	2411	2434	2390	2276	7.15%	7.42%	7.02%	7.15%	5.92%	6.93%
Simhadri-II	2423	2383	2393	2412	2386	2400	2359	2247	7.83%	6.05%	6.49%	7.34%	6.18%	6.78%

Plants as per Table 47	FY 19	FY 20	FY 21	FY 22	FY 23	Average	Normative SHR	Normative SHR without Margin	Deviation from Normative (Actual SHR w/o operating margin - Normative SHR w/o Operating Margin)/(Normative SHR w/o Operating Margin)					Average
	i	ii	iii	iv	v	Avg	vi	vii	FY 19	FY 20	FY 21	FY 22	FY 23	Avg
Sipat -II	2409	2365	2387	2368	2343	2374	2390	2276	5.83%	3.90%	4.87%	4.03%	2.94%	4.31%
Talcher I	2386	2420	2430	2346	2398	2396	2390	2276	4.82%	6.32%	6.76%	3.07%	5.35%	5.26%
Talcher II	2376	2419	2427	2352	2397	2394	2390	2276	4.38%	6.27%	6.63%	3.33%	5.31%	5.18%
Vindhyacha I-II	2381	2387	2373	2387	2366	2379	2390	2276	4.60%	4.87%	4.25%	4.87%	3.95%	4.51%
Vindhyacha I-III	2376	2387	2361	2385	2365	2375	2390	2276	4.38%	4.87%	3.73%	4.78%	3.90%	4.33%
Vindhyacha I-IV	2376	2358	2334	2355	2338	2352	2359	2247	5.76%	4.96%	3.89%	4.83%	4.07%	4.70%
Unchahar – IV	2411	2436	2465	2427	2418	2431	2359	2247	7.32%	8.43%	9.73%	8.03%	7.63%	8.23%
Vindhyacha I-V	2354	2357	2331	2355	2335	2347	2359	2247	4.78%	4.92%	3.76%	4.83%	3.94%	4.45%
														5.54%

The approach of providing operating margin is to have sufficient operational flexibility and, therefore, tightening of margin further would severely impact finances of generating stations leading to losses with each additional unit generated. With further squeezing of operating margin, the loss is going to get wider for the generating station even after following the state of the art O&M practices. In light of above views, we most humbly request the Hon'ble Commission to at least continue with the existing operating margin of 5% though operating margin of 5.6% is required as elaborated above. Accordingly, operating margin for smaller units may be increased from 5% to 6%.

- **Need for Relaxation of SHR Norms after installation of 'In Combustion Modification' in compliance to revised NOx emission level.**

In Combustion Control System' (Primary Method) for NOx control consists of following major systems:

- Low NOx burner (LNB) / Low NOx Burner tip
- Closed Coupled Over Fire Air (CCOFA) System
- Separated Over Fire Air (SOFA) System
- Combustion Optimization

The Separated Overfire Air (SOFA) System is adopted for air staging & to achieve precise stoichiometric control that is crucial for minimizing NOx emissions. With installation of SOFA System, combustion air staging is done, which shall increase Un-burnt Carbon (UBC) in Bottom Ash and Fly Ash leading to reduction in Boiler efficiency and increase in Unit gross heat rate.

The increase in un-burnt carbon in Bottom Ash and Fly Ash depends on fuel ratio [ratio of fixed carbon to volatile matter in coal]. Higher the fuel ratio, higher will be increase in un-burnt carbon in Bottom Ash (BA) and Fly Ash (FA). Fuel ratio of Indian coal is very high.

Since allowed increase in UBC in BA and FA was very less and not achievable after implementation of 'In Combustion Modification', all Bidders requested TATA Power to

increase this limit to meet the specified guarantee limit for increase in UBC in FA & BA. Considering Bidders inability, Tata Power had to revisit these limits and finally Amendment No. 2 to Technical Specification dated 11th Sept 2019 revised the limit for Un-Burnt Carbon Heat Loss [Drop in Boiler Efficiency] as 0.8% for Units at MPL:

Therefore, in view of above practical difficulty and literature available in this regard, there is a need for relaxation of normative SHR for sustainable and financially viable operations of De-NOx System by about 1%.

Annexure A: Note on Tax on Income

Note on Tax on Income

1. The history and development of Regulatory Jurisprudence on treatment of Tax on Income in tariff has been discussed by Hon'ble Commission in its Order dated 03.03.2015 in Petition No. 534/TT/2014 generally with reference to Tax on Income and specifically Deferred Tax Liability (DTL). Finally, Hon'ble Commission has directed the Petitioner to submit the computation of effective tax claimed conforming to Tariff Regulation 2014. Relevant extracts of this Order are given in Annexure 1. Hon'ble Commission has clarified the following:

- (i) For the period 2001-09, actual tax on income stream from core business was allowed to be recovered directly from beneficiaries and, therefore, credit for carry forward losses and unabsorbed depreciation, refund or additional tax was also to be passed on to consumers.
 - (ii) During the tariff period 2009-14, the incidence of income tax on income of the generating companies or the transmission licensees was not allowed as a pass through, and it was left to the generating companies or the transmission licensees to manage their tax liability. The Commission allowed a grossed-up RoE (rate of RoE grossed up at the applicable tax rate) in tariff. Beneficiaries were not made liable to pay the income tax on the income streams of the generating companies or the transmission licensees unlike the provisions under 2004 Tariff Regulations and the liability of the beneficiaries was only limited to paying a rate of return grossed up at the applicable tax rate. Consequently, the beneficiaries were not required to bear the incidence of deferred tax liabilities created during the period 2009-14. However, if any deferred tax liability which was created during the period up to 31.3.2009 materialized during the 2009-14 period, the same was recoverable by the generating companies or the transmission licensees from the beneficiaries directly.
 - (iii) During the tariff period 2014-19, the income tax was only payable by the beneficiaries to the generating companies or the transmission licensees on the return on equity. **The principle of allowing grossed up RoE during 2014-19 period is the same as was prevalent during the 2009-14 period. The only difference is that the RoE is to be grossed up at effective rate in place of applicable tax rate. The allowable tax has to be worked out by grossing up the base rate of return on equity with the effective tax rate of the respective financial year during the tariff period on the same principles as dealt in tariff period 2009-14.** Further, the effective tax rate is required to be worked out on the basis of the actual tax paid by the generating companies or the transmission licensees for the respective financial year of the tariff period in line with the provisions of the relevant Finance Act. Further, actual income tax paid on other income streams of the company are excluded from the calculation of effective tax rate. The regulation also provides that **the grossed-up rate of return on equity at the end of every financial year shall be trued up based on actual tax paid** together with additional tax demand including interest thereon on duly adjusted for any difference of tax including income received from the income tax authorities during the tariff period **on the actual grossed income of the financial year.**
2. From the above, it is clear that Tariff Regulations 2014 provided for grossing up of RoE with Effective Tax Rate, which effectively does two things (i) Tax on Income is allowed on actual tax paid basis and (ii) Even actual tax paid is restricted to tax on RoE component alone, which automatically excludes tax paid on Other/Non-tariff income from Core/Regulated Business and Other Businesses (either Non-regulated/Regulated by same or different regulator). This essence is captured by Main Regulation 25(1) of Tariff Regulations 2014. Regulation 25(2) and 25(3) give the process of implementation of Regulation 25(1) and 25(2) at the time of initial determination of tariff under Regulation and truing up of tariff after the control period. This is not only clear from the language of these two provisions but also by the above explanation of Regulations given by Hon'ble Commission. Regulation 25(2) clearly says that "t" in the formula for Effective Tax Rate is to be

calculated at the beginning of the year as per estimated profits and income as per provisions of relevant Finance Act. This would mean including provisions relating to Corporate Tax Rate as well as MAT. Then it carves out an exception for MAT paying companies to say that it shall be equal to MAT rate. On the other hand, Regulation 25(3) very clearly deals only with truing up of tariff (obviously in terms of Regulation 25(1) as 25(2) is not applicable at this stage) and it does not mandate considering MAT rate. Thus, the reading of Tariff Regulations 2014 and the above interpretation by Hon'ble Commission both lead to the conclusion that intent of Hon'ble Commission is that at the time of truing-up of tariff, the grossing up is to be done with Effective Tax Rate computed as ratio of Tax Paid to Profit Before Tax for regulated business. This ensures that the company is able to recover the entire actual tax paid on regulated business i.e. excluding actual tax paid on other income streams.

3. It may also be noted that Effective Tax Rate though not defined in Regulation 25(1) has been clarified in the SOR to the Tariff Regulations 2014 as follows and has been used in same sense for initial determination of tariff in Regulation 25(2) for Companies paying tax at rate other than MAT:

“25.5 In order to pass on the benefits and concessions available in income tax, the income tax rate to be considered for grossing up purpose shall be Minimum Alternate Tax (MAT) rate, if the generating company, generating station or the transmission licensee is paying MAT, or the effective Tax Rate, if the generating company or the transmission licensee is paying income tax at corporate tax rate. Accordingly, the Commission has decided to allow pre-tax rate of return on equity which shall be grossed up with the effective tax rate of the financial year or MAT rate and the tax on other income stream will not be considered for the calculation of the effective tax rate.

...

24.8 The term “Effective Tax Rate” has been introduced to compute the tax rate at which the base ROE is to be grossed up and is expected to be lower than the corporate tax rate. The Regulation provides for the computation of effective tax rate. The effective tax rate will be computed by the generating company or transmission licensee on the basis of estimated tax payable and estimated gross income from generation and transmission business, which refers the estimated gross profit before tax. The effective tax rate will be applied on the extent of return on equity admitted by the Commission for tariff purposes.”

4. Therefore, Effective Tax Rate should only be used for grossing up at the time of true-up irrespective of the provisions of Finance Act under which the company is paying tax i.e. MAT rate or Corporate Tax Rate or Reduced Rate under Section 115BAA. The interpretation in the Approach Paper that Effective Tax Rate for companies under MAT regime should be taken as MAT rate is, therefore, incorrect. Further, the Approach Paper incorrectly presumes that Effective Tax Rate under no circumstances can be higher than rate specified under the relevant Finance Act and, therefore, incorrectly proposes to restrict the Effective Tax Rate to applicable Tax Rate. It is also validated from the fact that a company which is under MAT regime will inherently have Effective Tax Rate more than MAT rate or even more than Corporate Tax rate due to very trigger condition specified in section 115JB for applicability of MAT as shown in the following paragraphs.
5. Assuming that MAT rate is “r” and Normal Corporate Tax rate is “R” and historically R has always been more than r. Section 115JB requires that if MAT on Book Profit at MAT rate is more than Tax payable at Normal Rate on Taxable Income (TI), then MAT is payable i.e.

$$\text{MAT} = r \times \text{BP} \quad \text{is payable}$$

$$\text{if} \quad \text{MAT} > R \times \text{TI}$$

$$\text{Or} \quad r \times \text{BP/PBT} > R \times \text{TI/PBT}$$

Or $\text{Effective Tax Rate} > R \times (\text{PBT} - \text{DTI}) / \text{PBT}$ (for companies not under 80IA)

Or $\text{ETR} > R \times (1 - \text{DTI} / \text{PBT})$

Or $\text{ETR} > R \times 0 / \text{PBT}$ Or $\text{ETR} > 0$ (for companies under 80IA as $\text{TI} = 0$)

6. Book Profit is computed by Adding certain Provisions of Expenses/Losses or Notional Expenses and Deducting certain Provisional Incomes/Profits or Notional gains. In a special case of a company having only regulated business, the income stream or PBT is only RoE and Non-tariff income such as incentives/savings in norms and, therefore, the Additions or Deductions are either not there or are very small/negligible compared to PBT. We can, therefore, assume that BP is very close to or say equal to PBT. In general, however,

Effective Tax Rate or ETR = Actual Tax / PBT

For a company under MAT regime,

$\text{ETR} = r \times \text{BP} / \text{PBT}$

Only in a specific case, if difference between Book Profit and PBT is negligible or zero

$\text{ETR} = r \times \text{PBT} / \text{PBT} = r$ i.e. MAT rate or very close to MAT rate

7. In all other cases, where difference between Book Profit and PBT is large, e.g. due to an event of Change in Law requiring notional income to be added or in normal computation of Book Profit or where Assessing Officer adds income in Book Profit, Book Profit may be much more than PBT and, hence, ETR for MAT paying company also shall be higher than MAT rate. Restricting the grossing up only to MAT rate would result in non-allowance of tax on core business (excluding incentives/savings etc.), which will not be in consonance of the intent of allowing actual tax on regulated business particularly when Effective Tax Rate is computed only on regulated business. Further, such restriction will lead to under-recovery of tax on regulated business and, hence, shall go out of allowed RoE resulting in post-tax RoE being lower than assured 15.5%. It may kindly be noted that in the above situations it does not matter whether the company is availing 80IA benefit or not as applicability of MAT provisions due to meeting the above stated trigger condition could be a result of timing difference or 80IA benefit resulting in TI being low or zero but the above facts do not change as ETR is dependent on Book Profit and PBT and not on TI.
8. The MAT rate may work for the purposes of initial determination of tariff to avoid rigour and guesswork for estimating book profit as a provisional measure. However, at the time of true-up actual ETR should be considered.
9. Even for companies paying tax at rates other than MAT, i.e. either Corporate Tax Rate or Special Rate, same argument as in MAT rate companies above holds good. Similar to Book Profit, TI also has certain additions and deductions, primarily Depreciation in Books and IT Depreciation respectively, which is nothing but timing difference in TI i.e. Deferred Taxable Income (DTI) captured by DTL. Thus, the ETR for such companies can be written as:

$$\begin{aligned} \text{ETR} &= R \times \text{TI} / \text{PBT} \\ &= R \times (\text{PBT} - \text{DTI}) / \text{PBT} \\ &= R \times (1 - \text{DTI} / \text{PBT}) \end{aligned}$$

10. Thus, from the first equation, it can be seen that ETR can be less than applicable rate (R) or more than it depending upon whether TI is more than PBT or not. As we know, due to higher rates of depreciation in Income Tax Act, TI is generally lower than PBT (i.e. DTI is subtracted from PBT to arrive at TI in second equation) in initial 7-8 years, whereafter it becomes more than PBT (i.e. DTI is added to PBT) due to said timing difference. Thus, ETR is lower than applicable rate in the initial period and higher than applicable rate in later phase of project life. Since most of the electricity

companies having CoD before 01.04.2017 (when 80IA was withdrawn for future CoDs but for existing companies, benefit was allowed to continue for remaining period) were availing 80IA benefit, MAT was applicable for initial 15 years, whereafter they would come under Corporate Tax regime when TI will always be higher than PBT and, hence, ETR shall necessarily be higher than applicable tax rate. Again, considering the fact that ETR is being computed only for regulated business, to allow full recovery of tax on regulated business there should not be any capping of ETR to applicable rate.

11. Another reason why there should not be any cap on ETR is that TI may be higher than PBT not only because of timing differences but also due to various other reasons such as Change in Law for addition of any notional or actual income, addition of income by assessing officer. Further, a company that has started its operations after 01.04.2017 and has not availed 80IA benefit at all, shall have ETR more than applicable tax rate right after 7-8 years when timing difference becomes negative, and it would be unfair to them to ask payment of tax burden beyond Corporate Tax Rate particularly when they do not have any DTL for period prior to 2009. In view of the above reasons, ETR should not be capped to ceiling of applicable rate. In fact, if such companies are paid at ETR during initial period when DTL gets accumulated it would be unfair if the tax rate is capped to ETR when DTL materializes in future years. Therefore, if ETR is limited to applicable Tax rate, DTL should be allowed for the period FY 14-15 onwards also.
12. Another issue that is important is the necessity to remove distortion in the calculation of the Effective Tax Rate due to income from core business other than RoE i.e. incentives/savings etc. both in the numerator and denominator. Regulation 31(1) of Tariff Regulations 2019 as it reads today excludes only “income from other businesses (i.e. income from business other than business of generation or transmission, as the case may be)” for computation of Effective Tax Rate. Since Hon’ble Commission is grossing up only RoE with Effective Tax Rate for excluding Tax on incentive/savings/other income from core business, it follows that such income should also be excluded from numerator i.e. tax paid on such income as well as denominator i.e. gross income or PBT. Inclusion of this income from core business results in unintended distortion in Effective Tax Rate to be used for grossing up RoE. Thus, the language may be changed to “excluding income other than RoE from regulated business (i.e. business of generation or transmission, as the case may be) and income from businesses other than regulated business”.
13. Yet another issue is with regard to considering tax credit for (i) carry forward losses and unabsorbed depreciation and (ii) MAT on income other than RoE, in the numerator for computing ETR, i.e. Actual Tax Paid. In the years after MAT regime, as brought out above TI would be more than PBT and actual tax payment would depend on the credit availed every year after MAT regime, which would effectively reduce the tax outgo to the level of MAT even though the company is in Corporate Tax regime till the year entire MAT credit is utilized and ETR for such period based on actual tax outgo would work out to MAT rate. However, the credit utilized may be for carry forward of losses/unabsorbed depreciation and tax on Other Income of Core Business, for which no tax would have been allowed in tariff and tax credit available now is for tax borne by the company earlier. In some cases of carry forward of losses/unabsorbed depreciation, the Hon’ble Commission has not allowed any grossing up as no tax has actually been paid due to such loss shown in ITRs. It is not fair to utilize the credit of such losses in ETR when these losses have been borne totally by the company. Therefore, it would be fair and equitable that credit for carry forward losses, unabsorbed depreciation and MAT on Other Income is added back to Actual Tax Paid on regulated business for computation of ETR.
14. Considering credit of MAT for 80IA companies is another concern. There is no denial that 80IA benefit was made available to those investors/assesses who invest in electricity generation/transmission/distribution business. Amongst the available investment options, the investors had chosen this sector with one of the factors being that 80IA benefit that shall be

available to it. It would only be fair to the investor that such benefit is made available to him only as passing on such benefit to consumers in tariff would amount to not implementing the will of Parliament in a special Act viz. Income Tax Act. Since MAT is passed on to the beneficiaries during MAT regime, the credit available for MAT under 80 IA should be added back to Actual Tax Paid so that investor's interest is protected. In fact, this finding has already been given by Hon'ble Commission in SOR for Tariff Regulations 2009 and National Institute of Public Finance and Policy, which is an autonomous research institute under Ministry of Finance, had also proposed to make Tariff Regulations 2014 on the same lines, which is recorded in SOR for Tariff Regulations 2014. Further, it is a settled principle of law that if two special statutes, in this case the income tax act and the electricity act, do not have anything conflicting or an act not having an overriding provision then the subordinate legislation under one special act like regulation cannot make any provision in contradiction to the other special act. It is, therefore, proposed that Hon'ble Commission may allow adding credit for MAT utilized under section 80IA to numerator, Actual Tax Paid, for computation of Effective Tax Rate.

15. Regulations provide for refund/recovery of excess/shortfall in tariff alongwith carrying cost at the time of true-up, which gets added to/reduced from the Taxable Income attracting more/less tax in the year of refund/recovery. Since this refund/recovery of tariff is purely from regulated business, hence, any tax implication should also be allowed as pass through. However, since this additional tax liability gets added to tax liability on RoE in Actual Tax Paid alongwith corresponding addition of Income in PBT in existing regulations, the ETR remains almost unchanged and, therefore, this additional tax is not recovered. To address this anomaly, it is suggested that for computation of ETR, additional tax may be considered in the numerator (Actual Tax Paid), but this excess/shortfall in tariff may be excluded from denominator i.e. PBT.
16. While the above proposition would broadly address the issues of a company engaged in single regulated business, it does not fully capture the tax implications for a company with multiple businesses particularly if other businesses have huge Income or Losses. This issue becomes more pronounced when the company as a whole pays NIL tax solely due to huge losses in other businesses and if Tariff Regulations are read to mean that no grossing up shall be allowed, it would effectively mean that regulated business is being subsidized by Other Businesses. In this regard, Hon'ble APTEL in its Judgement dated 28.11.2013 in APPEAL NO.104, 105 and 106 of 2012 has held that regulated and other businesses have to be kept in separate watertight compartments so that the regulated business neither subsidises not gets subsidized by other businesses. It is important to note that this Judgement has attained finality and, therefore, holds the field in this matter of law. Relevant extract of this Judgement is as follows:

*“52. The Judgment in Appeal No. 251 of 2006 is based on the principle that **regulated business in question that is within the jurisdiction of the Regulatory State Commission, should neither subsidise nor get subsidy from other businesses whether unregulated or regulated by the same or different regulator. In other words, the Judgment mandates that the taxable income of the regulated business within the jurisdiction of the Regulatory State Commission should be computed on stand alone basis, irrespective of what is the impact of this business or other businesses on the overall tax liability. There is a possibility of distortion when the impact of regulated business or other businesses on total tax liability is considered or the overall tax liability is allocated for determining the tax liability for regulated business.***

...

55. However, a careful analysis of the above example with the ratio of the Judgment in Appeal No. 174 of 2009 would reveal that this Judgment is specifying tax allow ability for regulated business only and does not in any manner deal with implications on tax for regulated business due to other businesses. Further, the ratio is with regard to tax liability on the regulatory income, computed with permissible profits and applicable tax depreciation to be considered

as taxable income, and not on the actual taxable income. Hence, any notional or actual income even within regulated business that is not permissible to be considered as regulatory taxable income cannot be allowed as it would amount to allowance of more than warranted regulatory tax liability/profits. **As such, the above example when seen only with reference to the regulated business allows just the real tax payable for regulated business without taking or giving any support from other businesses and, hence, does not amount to making profit from tax. The tax benefit of exemptions/losses in other businesses should only be available to those businesses. In case, the situation would have been reverse in the above example, i.e. the regulated business had exemptions/losses then the tax benefit of such exemptions should have been attributable only to regulated business.** As such, there is no conflict in the above two Judgments and both can be implemented simultaneously with regulated business being treated separately on a standalone basis and tax liability computed as per applicable tax laws for that business only considering notional regulatory taxable income. This concept is followed by regulators for all items of ARR/Revenue which are considered on normative basis, where irrespective of actual expense/revenue normative expense/revenue is considered for tariff purposes. Accordingly, there is no requirement of allocating the overall tax liability on regulated and unregulated businesses.

56. It is also to be noted that for difference in book depreciation and tax depreciation, the tax laws provide for creating Deferred Tax Liability (DTL) which gets amortised with time when tax depreciation becomes lower than book depreciation. However, in regulated business DTL is not considered as it is not the current tax liability. **Thus, in case the benefit of accelerated tax depreciation for one year in regulated business may result in lower overall tax on overall book profit (due to MAT) and may seem to subsidise other businesses. However, in subsequent years the overall tax liability may be more than tax on overall book profit, which would seem to give subsidy from other businesses to regulated business. In both these situations, the methodology of standalone tax computation and allowance would give correct picture.”**

17. It is, therefore, submitted that grossing up with applicable tax rate instead of Effective Tax Rate should be allowed even if actual tax paid is NIL. The arguments advanced above for non-adjustment of credit for carry forward losses, unabsorbed depreciation and credit for MAT on other businesses would squarely apply in this case as well. After taking into account such adjustments, it is possible that the tax liability on regulated business is more than actual tax paid, which may be zero also. Hon'ble Commission is requested to modify the formula for Effective Tax Rate suitably to take care of the above situations.

Relevant Extracts of Hon'ble CERC Order in Petition No. 532/TT/2014 dated 03.03.2015

5. The Commission is of the view that the treatment of deferred tax liability for the purpose of determination of tariff during the 2014-19 period needs to be clarified for the purpose of compliance by the generating companies and transmission licensees whose tariff is regulated by this Commission. Para 9 and 10 of the Accounting Standards (AS) 22 recognize deferred tax liability as under:-

“9. Tax expense for the period, comprising current tax and deferred tax, should be included in the determination of the net profit or loss for the period. 10. Taxes on income are considered to be an expense incurred by the enterprise in earning income and are accrued in the same period as the revenue and expenses to which they relate. Such matching may result into timing differences. The tax effects of timing differences are included in the tax expense in the statement of profit and loss and as deferred tax assets (subject to the consideration of prudence as set out in paragraphs 15-18) or as deferred tax liabilities, in the balance sheet.”

6. The above provision relates to treatment of deferred tax expense in the statement of profit and loss account and treatment of deferred tax assets or deferred tax liabilities in the balance sheet of the company. However, for the purpose of tariff, the Commission has treated deferred tax liabilities differently in different tariff periods which are discussed in brief as under:-

(a) Clause (1) of Regulation 7 of the Tariff Regulations applicable for the period 2004-09 (hereinafter “2004 Tariff Regulations”) provides that tax on the income streams of the generating companies or the transmission licensees, as the case may be, from its core business shall be computed as an expense and shall be recovered from the beneficiaries. Further, fourth proviso to Clause (2) of Regulation 7 of 2004 Tariff Regulations provides that in the absence of any other equitable basis, the credit for carry forward losses and unobserved depreciation shall be given. According to Regulation 10 of the said Regulations, recovery of income tax shall be done directly by the generating companies or the transmission licensees from the beneficiaries without making any application before the Commission.

(b) During the tariff period 2009-14, the incidence of income tax on income of the generating companies or the transmission licensees was not allowed as a pass through and it was left to the generating companies or the transmission licensees to manage their tax liability. The Commission allowed a grossed up RoE (rate of RoE grossed up at the applicable tax rate) in tariff. In this connection, Regulation 15 of the 2009 Tariff Regulations is extracted as under:-

“15. (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% for thermal generating stations, transmission system and run of the river generating station, and 16.5% for the storage type generating stations including pumped storage hydro generating stations and run of river generating station with pondage and shall be grossed up as per clause (3) of this regulation:

x x x x

Further, Regulation 39 of 2009 Tariff Regulations provides as under:-

“39. Tax on Income. Tax on the income streams of the generating company or the transmission licensee, as the case may be, shall not be recovered from the beneficiaries, or the long-term transmission customers, as the case may be: Provided that the deferred tax liability, excluding Fringe Benefit Tax, for the period up to 31st March, 2009 whenever it materializes, shall be recoverable directly from the beneficiaries and the long-term customers:”

It is apparent from the provisions of the 2009 Tariff Regulations that the beneficiaries were not made liable to pay the income tax on the income streams of the generating companies or the transmission licensees unlike the provisions under 2004 Tariff Regulations and the liability of the beneficiaries was only limited to paying a rate of return grossed up at the applicable tax rate. Consequently, the beneficiaries were not required to bear the incidence of deferred tax liabilities created during the period 2009-14. However, if any deferred tax liability which was created during the period up to 31.3.2009 materialized during the 2009-14 period, the same was recoverable by the generating companies or the transmission licensees from the beneficiaries directly.

(c) According to Regulation 25 of the Tariff Regulations applicable for the period 2014-19 (hereinafter “2014 Tariff Regulations”), the income tax was only payable by the beneficiaries to the generating companies or the transmission licensees on the return on equity specified under Regulation 24 of the 2014 Tariff Regulations. **The principle of allowing grossed up RoE during 2014-19 period is the same as was prevalent during the 2009-14 period. The only difference is that the RoE is to be grossed up at effective rate in place of applicable tax rate.** Regulation 25 of the 2014 Tariff Regulations provides as under:-

“25. Tax on Return on Equity: (1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non generation or non transmission business, as the case may be) shall not be considered for the calculation of “effective tax rate”.

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(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below: Rate of pre-tax return on equity = Base rate / (1-t) Where “t” is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), “t” shall be considered as MAT rate including surcharge and cess.

x x x x

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis.”

As per the above provision, tax is payable on the “return on equity” admissible to the generating companies or the transmission licensees under Regulation 24 of 2014 Tariff Regulations. **The allowable tax has to be worked out by grossing up the base rate of return on equity with the effective tax rate of the respective financial year during the tariff period on the same principles as dealt in tariff period 2009-14. Further, the effective tax rate is required to be worked out on the basis of the actual tax paid by the generating companies or the transmission licensees for the respective financial year of the tariff period in line with the provisions of the relevant Finance Act. Further, actual income tax paid on other income streams of the company are excluded from the calculation of effective tax rate. The regulation also provides that the grossed-up rate of return on equity at the end of every financial year shall be trued up based on actual tax paid together with additional tax demand including interest thereon on duly adjusted for any difference of tax including income received from the income tax authorities during the tariff period on the actual grossed income of the financial year.** Regulation 49 of the 2014 Tariff Regulations deals with the treatment of deferred tax liability. The said regulation is extracted as under:-

“49. Deferred Tax liability with respect to previous tariff period: The deferred tax liability before 1.4.2009 shall be recovered from the beneficiaries or the long term transmission customers/DICs as the case may be, as and when the same gets materialised. No claim on account of deferred tax liability arising from 1.4.2009 upto 31.03.2014 shall be made from the beneficiaries or the long term transmission customers/DICs as the case may be.”

7. From the above provision it is seen that the deferred tax liability accruing before 1.4.2009, but materializing during the period 2014-19 are directly recoverable from the beneficiaries of the generating companies or the transmission licensees. It has been made abundantly clear in the said provision that there shall be no claim on account of deferred tax liability arising during the period 1.4.2009 to 31.3.2014. The reason for such a provision is that the management of the income tax on the income stream of the generating companies or the transmission licensees was the responsibility of the respective generating companies or the transmission licensees during 2009-14 period. It is relevant to note that Regulation 49 of 2014 Tariff Regulations does not provide for treatment of deferred tax liability arising during the period 2014-19, which means that the 2014 Tariff Regulations do not recognize the deferred tax liability for the purpose of tariff and as in case of the 2009 Tariff Regulations, the generating companies or the transmission licensees are required to manage their deferred tax liability.

8. An analysis of the provisions of the Regulations relating to tax on income of the generating companies or the transmission licensees during the three tariff periods namely, 2004-09, 2009-14 and 2014-19 reveals the following:-

(a) The beneficiaries were responsible for reimbursement of the tax on the income from the core business of the generating companies or the transmission licensees during the tariff period 2004-09. Accordingly, any deferred tax liability arising during the said period but materializing during the tariff periods 2009-14 and 2014-19 are directly recoverable by the generating companies or the transmission licensees from the beneficiaries in terms of Regulation 39 of the 2009 Tariff Regulations and Regulation 49 of the 2014 Tariff Regulations.

(b) During the tariff period 2009-14, the generating companies or the transmission licensees were entitled to a rate of return to be grossed up at the applicable tax rate. There is a clear stipulation that tax on income stream of the generating companies or the transmission licensees shall not be recovered from the beneficiaries. Consequently, the beneficiaries did not have any liability for payment of deferred tax arising during each of the years of the tariff period.

(c) During the 2014-19 period, the generating companies or the transmission licensees are entitled for a return on equity grossed up at the effective tax rate to be worked out on the basis of the actual tax paid by the generating companies or the transmission licensees. There is no provision in the said regulation that the generating companies or the transmission licensees shall be reimbursed the deferred tax liability arising during each of the years of the tariff period 2014-19.

9. In view of the above discussion, it is clarified that the generating companies or the transmission licensees whose tariff is regulated by this Commission are not permitted to claim in tariff the deferred tax liability arising in each of the years during tariff period 2014-19. Though the generating companies or transmission licensees may account for the deferred tax expense in the profit and loss account and the deferred tax assets or deferred tax liabilities in their balance sheet for the respective financial years during the 2014-19 period as per the provisions of AS 22, they are not permitted to qualify such deferred tax expense or deferred tax assets and deferred tax liabilities with the statement that the same shall be recoverable in through tariff in future years.

10. In view of the above, there is a requirement to examine that the effective tax rate adopted by the generating companies and the transmission licensees for computation of grossed-up ROE conform to the provisions of 2014 Tariff Regulations. We, therefore, direct the petitioner to submit the computation of the effective tax rate claimed..”

Annexure-5.1

Submitted in the form of Excel copy in respect of the tax illustrations