CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 439/GT/2020

Coram:
Shri Jishnu Barua, Chairperson
Shri Arun Goyal, Member
Shri Pravas Kumar Singh, Member

Date of Order: **14th April, 2024**

In the matter of:

Petition for approval of tariff of National Capital Thermal Power Station Dadri, Stage-I (840 MW) for the period 2019-24.

And

In the matter of

NTPC Limited,
NTPC Bhawan,Core-7, Scope Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003. **.....Petitioner**

Vs

1. Uttar Pradesh Power Corporation Limited,
   Shakti Bhawan, 14, Ashok Marg
   Lucknow- 226001

2. BSES Rajdhani Power Limited,
   BSES Bhawan, Nehru Place
   New Delhi – 110019

3. BSES Yamuna Power Limited,
   Shakti Kiran Building, Karkardooma, Delhi – 110092

4. Tata Power Delhi Distribution Limited,
   Grid Substation, Hudson Road
   Kingsway Camp, Delhi – 110009

5. New Delhi Municipal Corporation,
   Palika Kendra building, Opposite Jantar Mantar,
   Parliament Street, New Delhi – 110001 **...Respondents**

Parties Present:

Ms. Swapna Seshadri, Advocate, NTPC
Ms. Ritu Apurva, Advocate, NTPC
Shri Karthikeyan Murugan, Advocate, NTPC
Shri Sarthak Sareen, Advocate, NTPC
Shri Shiv Bhavan, NTPC
Shri Aditya Ajay, Advocate, BRPL and BYPL
Shri Rahul Kinra, Advocate, BRPL and BYPL
Shri Anand Kumar Shrivastava, Advocate, TPDDL
Shri Shivam Sinha, Advocate, TPDDL
Shri Ashish Tiwari, Advocate, NDMC
Shri Sahib Patel, Advocate, NDMC

ORDER

This petition has been filed by the Petitioner, NTPC Limited, for approval of tariff of National Capital Thermal Power Station, Dadri, Stage-I (840 MW) (in short, 'the generating station') for the period 2019-24, in accordance with the provisions of the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2019 (in short 'the 2019 Tariff Regulations'). The generating station, with a capacity of 840 MW, comprises four units of 210 MW each. The dates of commercial operation of the units of the generating station are as under:

	COD
Unit-I	1.01.1993
Unit-II	1.02.1994
Unit-III	1.04.1995
Unit-IV	1.12.1995
COD of the generating station	**1.12.1995**

2. The Commission, vide its order dated 4.7.2023 in Petition No. 388/GT/2020, had approved the capital cost and the annual fixed charges of the generating station for the period 2014-19, after truing up exercise, as under:

Capital Cost allowed

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Opening Capital Cost	169160.69	169410.90	169834.84	169718.40	169881.07
Add: Admitted Additional capital expenditure	250.21	423.93	(-) 116.44	162.67	758.73
Closing Capital cost	**169410.90**	**169834.84**	**169718.40**	**169881.07**	**170639.80**

	2014-15	2015-16	2016-17	2017-18	2018-19
Average Capital cost	**169285.80**	**169622.87**	**169776.62**	**169799.73**	**170260.44**

Annual Fixed Charges allowed

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	2391.94	2358.32	2405.44	2399.18	2423.22
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	16625.44	16712.55	16706.39	16701.58	16763.97
Interest on Working Capital	9640.43	9708.37	9786.14	10121.78	10190.63
O&M Expenses	20592.37	21488.81	22901.93	25234.74	26310.67
Sub-total	**49250.18**	**50268.05**	**51799.89**	**54457.28**	**55688.49**
Compensation Allowance	630.00	735.00	840.00	840.00	630.00
Special Allowance	0.00	0.00	0.00	0.00	2014.79
Total	**49880.18**	**51003.05**	**52639.89**	**55297.28**	**58333.28**

Present Petition

3. The Petitioner has filed the present Petition for the determination of tariff of the generating station for the period 2019-24, in terms of the provisions of the 2019 Tariff Regulations and has claimed the capital cost and annual fixed charges as under:

Capital cost claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening capital cost	172433.91	172433.91	172433.91	172433.91	172433.91
Add: Addition during the year	0.00	0.00	0.00	0.00	0.00
Closing Capital Cost	172433.91	172433.91	172433.91	172433.91	172433.91
Average Capital Cost	172433.91	172433.91	172433.91	172433.91	172433.91

Annual Fixed Charges claimed

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	2995.20	2995.20	359.42	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	16101.54	16101.54	9715.96	9715.96	9715.96
Interest on Working Capital	8487.76	8547.96	8472.03	8530.46	8594.97
O&M Expenses	29304.32	30469.11	31677.81	32961.63	34300.45
Special Allowance	3990.00	5985.00	7980.00	7980.00	7980.00
Annual Fixed Charges	**60878.82**	**64098.80**	**58205.23**	**59188.06**	**60591.38**

4. The Respondents, UPPCL, vide affidavits dated 18.9.2020 and 24.2.2021, the Respondents BYPL and BRPL, vide affidavits dated 29.11.2022, and the Respondent TPDDL, vide affidavits dated 26.6.2021, 8.11.2022 and 7.12.2022 have filed their replies. The Petitioner has filed its rejoinder vide affidavits dated 27.5.2021 and

29.10.2021 (to reply of UPPCL) and rejoinder affidavit dated 29.10.2021 (to the reply of TPDDL). The Petitioner, vide affidavits dated 11.5.2021 and 23.6.2021, has furnished the additional information after serving copies to the Respondents. The Petition was heard on various dates, and the Commission reserved its order on 22.11.2022. However, in order to seek certain clarification/additional information from the Petitioner, this petition was re-listed and heard on 6.12.2023, and the Commission, after directing the Petitioner to file certain additional information, reserved its order in the petition, based on the consent of the parties. In compliance with the ROP dated 6.12.2023, the Petitioner vide affidavit dated 1.3.2024, submitted the additional information. Taking into consideration the submissions of the parties and the documents available on record, we proceed to examine the claims of the Petitioner on prudence check, as stated in the subsequent paragraphs.

Capital Cost

5. Clause (1) of Regulation 19 of the 2019 Tariff Regulations provides that the capital cost, as determined by the Commission after prudence checks in accordance with this regulation shall form the basis of the determination of tariff for existing and new projects. Clause 3 of Regulation 19 of the 2019 Tariff Regulations provides that the capital cost of an existing project shall include the following:

> *(a) Capital cost admitted by the Commission prior to 1.4.2019 duly trued up by excluding liability, if any, as on 1.4.2019;*
>
> *(b) Additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with these regulations;*
>
> *(c) Capital expenditure on account of renovation and modernization as admitted by this Commission in accordance with these regulations;*
>
> *(c) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
>
> *(d) Capital expenditure incurred towards railway infrastructure and its augmentation for transportation of coal upto the receiving end of generating station but does not include the transportation cost and any other appurtenant cost paid to the railway; and*

(f) Capital cost incurred or projected to be incurred by a thermal generating station, on account of implementation of the norms under Perform, Achieve and Trade (PAT) scheme of Government of India shall be considered by the Commission subject to sharing of benefits accrued under the PAT scheme with the beneficiaries.

6. The Commission, vide its order dated 4.7.2023 in Petition No. 388/GT/2020, after truing up of tariff for the period 2014-19, had allowed the closing capital cost of Rs. 170639.80 lakh, as on 31.3.2019. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations, the capital cost of Rs. 170639.80 lakh as on 31.3.2019 (after the removal of un-discharged liabilities of Rs. 624.13 lakh) has been considered as the opening capital cost as on 1.4.2019, on cash basis, for the purpose of determination of tariff for the period 2019-24.

Additional Capital Expenditure

7. No additional capital expenditure has been claimed by the Petitioner for the period 2019-24.

Capital cost for the period 2019-24

8. As stated earlier, the closing capital cost of Rs. 170639.80 lakh as on 31.3.2019, as approved by order dated 4.7.2023 in Petition No. 388/GT/2020, has been considered as the opening capital cost as on 1.4.2019. As such, the capital cost allowed for the purpose of tariff for the period 2019-24 is as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Opening Capital Cost (A)	170639.80	170639.80	170639.80	170639.80	170639.80
Add: Additional capital expenditure (B)	-	-	-	-	-
Closing Capital Cost (C) = (A+B)	**170639.80**	**170639.80**	**170639.80**	**170639.80**	**170639.80**
Average Capital cost (D) = (A+C)/2	170639.80	170639.80	170639.80	170639.80	170639.80

Debt-Equity Ratio

9. Regulation 18 of the 2019 Tariff Regulations provides as follows:

"18. Debt-Equity Ratio: (1) For new projects, the debt-equity ratio of 70:30 as on date of commercial operation shall be considered. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that:

i. where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:

ii. the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:

iii. any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt: equity ratio.

Explanation-The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.

(2) The generating company or the transmission licensee, as the case may be, shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding infusion of funds from internal resources in support of the utilization made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.

(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, debt: equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2019 shall be considered:

Provided that in case of a generating station or a transmission system including communication system which has completed its useful life as on or after 1.4.2019, if the equity actually deployed as on 1.4.2019 is more than 30% of the capital cost, equity in excess of 30% shall not be taken into account for tariff computation;

Provided further that in case of projects owned by Damodar Valley Corporation, the debt: equity ratio shall be governed as per sub-clause (ii) of clause (2) of Regulation 72 of these regulations.

(4) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2019, but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2019, the Commission shall approve the debt: equity ratio in accordance with clause (1) of this Regulation.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2019 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this Regulation."

10. The gross loan and equity amounting to Rs.85711.24 lakh and Rs.84928.56 lakh, respectively, as on 31.3.2019, were considered in order dated 4.7.2023 in Petition No. 388/GT/2020. Accordingly, the gross loan and equity amounting to Rs.85711.24 lakh and Rs.84928.56 lakh, have been considered as the opening gross

loan and equity, as on 1.4.2019. However, considering the first proviso to Regulation 18(3) of the 2019 Tariff Regulations, equity to be considered for the purpose of tariff as on 1.4.2021, works out to Rs.51191.94 lakh. Accordingly, the gross normative loan of Rs.85711.24 lakh and net equity of Rs.51191.94 lakh, have been considered for the purpose of tariff, as on 1.4.2021. The details of the debt-equity ratio considered are as under:

(Rs. in lakh)

	Capital cost as on 1.4.2019		**Net Additional Capital Expenditure during 2019-24**		**Capital cost as on 31.3.2024**	
	Amount	**(%)**	**Amount**	**(%)**	**Amount**	**(%)**
Debt (A)	85711.24	50.23%	0.00	70.00%	85711.24	50.23%
Equity (B)	84928.56	49.77%	0.00	30.00%	84928.56*	49.77%
Total (C) = (A) + (B)	**170639.80**	**100.00%**	**0.00**	**100.00%**	**170639.80**	**100.00%**

* Since the station *has completed its useful life during 2021-22, in terms of Regulation 18 (3) of the 2019 Tariff Regulations the equity has been restricted to 30% of the allowed capital cost i.e., Rs.51191.94 lakh, for the purpose of calculation of RoE as dealt at para 12 below.*

Return on Equity

11. Regulation 30 and Regulation 31 of the 2019 Tariff Regulations provide as follows:

> *"30. Return on Equity:*
>
> *(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with Regulation 18 of these regulations.*
>
> *(2) Return on equity 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 the storage type hydro generating stations including pumped storage hydro generating stations and run-of-river generating station with pondage:*
>
> *Provided that return on equity in respect of additional capitalization after cut-off date beyond the original scope shall be computed at the weighted average rate of interest on actual loan portfolio of the generating station or the transmission system*
>
> *Provided further that:*
>
> *In case of a new project, the rate of return on equity shall be reduced by 1.00% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO) or Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system based on the report submitted by the respective RLDC;*
>
> *In case of existing generating station, as and when any of the requirements under (i) above of this Regulation are found lacking based on the report submitted by the*

concerned RLDC, rate of return on equity shall be reduced by 1.00% for the period for which the deficiency continues;

in case of a thermal generating station, with effect from 1.4.2020, the rate of return on equity shall be reduced by 0.25% in case of failure to achieve the ramp rate of 1% per minute;

an additional rate of return on equity of 0.25% shall be allowed for every incremental ramp rate of 1% per minute achieved over and above the ramp rate of 1% per minute, subject to ceiling of additional rate of return on equity of 1.00%:

Provided that the detailed guidelines in this regard shall be issued by National Load Dispatch Centre by 30.6.2019."

"31. Tax on Return on Equity. (1) The base 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. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in 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 paid on income from other businesses including deferred tax liability (i.e. income from business other than business of generation or transmission, as the case may be) shall be excluded for the calculation of effective tax rate.

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.

Illustration-

(i) In case of a generating company or a transmission licensee paying Minimum Alternate Tax (MAT) @ 21.55% including surcharge and cess:

Rate of return on equity = 15.50/(1-0.2155) = 19.758%

(ii) In case of a generating company or a transmission licensee paying normal corporate tax including surcharge and cess:

Estimated Gross Income from generation or transmission business for FY 2019-20 is Rs 1,000 crore; Estimated Advance Tax for the year on above is Rs 240 crore;
Effective Tax Rate for the year 2019-20 = Rs 240 Crore/Rs 1000 Crore = 24%;
Rate of return on equity = 15.50/ (1-0.24) = 20.395%.

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 2019-24 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 customers, as the case may be, on year to year basis."

12. The Petitioner has claimed tariff, considering the base rate of 15.50% and the effective tax rate of 17.472% (i.e., MAT Rate of 15% + Surcharge of 12% + HEC of 4%) for the period 2019-24 and the same has been considered. Accordingly, ROE has been worked out as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Notional Equity - Opening	84928.56	84928.56	84928.56	84928.56	84928.56
Less: Adjustment to equity in terms of the 1st proviso to Regulation 18 (3)	-	-	33736.62	33736.62	33736.62
Normative Equity-Opening	84928.56	84928.56	51191.94	51191.94	51191.94
Addition of Equity due to additional capital expenditure	0.00	0.00	0.00	0.00	0.00
Normative Equity-Closing	84928.56	84928.56	51191.94	51191.94	51191.94
Average Normative Equity	84928.56	84928.56	51191.94	51191.94	51191.94
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Effective Tax Rate for respective year	17.472%	17.472%	17.472%	17.472%	17.472%
Rate of Return on Equity (Pre-tax)	18.782%	18.782%	18.782%	18.782%	18.782%
Return on Equity (Pre-tax) annualised	**15951.28**	**15951.28**	**9614.87**	**9614.87**	**9614.87**

Interest on Loan

13. Regulation 32 of the 2019 Tariff Regulations provides as follows:

"32. Interest on loan capital: (1) The loans arrived at in the manner indicated in Regulation 18 of these regulations shall be considered as gross normative loan for calculation of interest on loan.

The normative loan outstanding as on 1.4.2019 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2019 from the gross normative loan.

The repayment for each of the year of the tariff period 2019-24 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalisation of such asset.

Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.

The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest

capitalized:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered;

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing."

14. The cumulative repayment of the normative loan amounting to Rs.85711.24 lakh, as on 31.3.2019, as considered vide order dated 4.7.2023 in Petition No. 388/GT/2020, has been retained, as on 1.4.2019. Since the net normative opening loan as on 1.4.2019, works out as 'nil' and no additional capital expenditure has been claimed/ considered for the period 2019-24, the interest on loan for the period 2019-24, works out to 'nil'.

Depreciation

15. Regulation 33 of the 2019 Tariff Regulations provides as follows:

"33. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system or element thereof including communication system. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units:

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of a transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:

Provided that the salvage value for IT equipment and software shall be considered as NIL and 100% value of the assets shall be considered depreciable;

Provided further that in case of hydro generating stations, the salvage value shall be as provided in the agreement, if any, signed by the developers with the State Government for development of the generating station:

Provided also that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life or the extended life.

Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-I to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

In case of the existing projects, the balance depreciable value as on 1.4.2019 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2019 from the gross depreciable value of the assets.

The generating company or the transmission licensee, as the case may be, shall submit the details of proposed capital expenditure five years before the completion of useful life of the project along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure.

In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services."

16. Cumulative depreciation amounting to Rs.141959.62 lakh and the value of freehold land amounting to Rs.6894.72 lakh, as on 31.3.2019, as considered in order dated 4.7.2023 in Petition No. 388/GT/2020, has been retained for the purpose of tariff, as on 1.4.2019. Accordingly, the balance depreciable value (before providing for depreciation) for 2019-20, works out to Rs.5410.96 lakh. Since, as on 1.4.2019, the used life of the generating station is 22.88 years, which is more than 12 years from the effective station COD of 25.7.1994, depreciation has been spread over the remaining

useful life of the asset for the period 2019-24. Accordingly, depreciation has been worked out and allowed as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Average Capital Cost (A)	170639.80	170639.80	170639.80	170639.80	170639.80
Value of freehold land included in average capital cost (B)	6894.72	6894.72	6894.72	6894.72	6894.72
Depreciable Value (C)= (A-B) x 90%	147370.57	147370.57	147370.57	147370.57	147370.57
Remaining aggregate depreciable value at the beginning of the year (D) = (C – 'H' of preceding year)	5410.96	2858.62	306.28	0.00	0.00
Balance useful life at the beginning of the year (E)	2.12	1.12	0.12	0.00	0.00
Weighted Average Rate of Depreciation (WAROD) (F) = (G/A)	1.50%	1.50%	0.18%	0.00%	0.00%
Depreciation during the year (G) = (D/E)	2552.34	2552.34	306.28	0.00	0.00
Cumulative depreciation at the end of the year (H) = ('H' of preceding year - G)	144511.95	147064.29	147370.57	147370.57	147370.57

O&M Expenses

17. Regulation 35(1)(1) of the 2019 Tariff Regulations provides as follows:

"(35)(1) Thermal Generating Station: Normative Operation and Maintenance expenses of thermal generating stations shall be as follows:

(1) Coal based and lignite fired (including those based on Circulating Fluidised Bed Combustion (CFBC) technology) generating stations, other than the generating stations or units referred to in clauses (2), (4) and (5) of this Regulation:

(in Rs lakh/MW)

Year	**200/210/ 250 MW Series**	**300/ 330/ 350 MW Series**	**500 MW Series**	**600 MW Series**	**800 MW Series and above**
FY 2019-20	32.96	27.74	22.51	20.26	18.23
FY 2020-21	34.12	28.71	23.30	20.97	18.87
FY 2021-22	35.31	29.72	24.12	21.71	19.54
FY 2022-23	36.56	30.76	24.97	22.47	20.22
FY 2023-24	37.84	31.84	25.84	23.26	20.93

Provided that where the date of commercial operation of any additional unit(s)of a generating station after first four units occurs on or after 1.4.2019, the O&M expenses of such additional unit(s) shall be admissible at 90% of the operation and maintenance expenses as specified above;

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Provided also that operation and maintenance expenses of generating station having unit size of less than 200 MW not covered above shall be determined on case to case basis.

18. The Petitioner has claimed normative O&M expenses, in Form 3A, as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
27686.40	28660.80	29660.40	30710.40	31785.60

19. The normative O&M expenses claimed by the Petitioner are in line with Regulation 35(1)(1) of the 2019 Tariff Regulations, and hence, the claim is allowed for the purpose of tariff.

Water Charges

20. The first proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations, provides as under:

> *"(6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:*
>
> *Provided that water charges shall be allowed based on water consumption depending upon type of plant and type of cooling water system, subject to prudence check. The details regarding the same shall be furnished along with the petition;*
>
> *xxxxx."*

21. The actual water charges claimed by the Petitioner and allowed by order dated 4.7.2023 in Petition No. 388/GT/2020 are as under:

(in Rs. lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Claimed	159.12	151.33	139.80	145.77	129.65
Approved	159.12	151.33	139.80	145.77	129.65

22. In terms of the first proviso to Regulations 35(1)(6) of the 2019 Tariff Regulations, water charges shall be allowed separately, based on the water consumption, depending upon the type of plant, type of cooling water system, etc., and is subject to prudence check. The details furnished by the Petitioner, in respect of the water charges, as applicable for 2019-20, are as under:

Description	Remarks
Type of Plant	Coal Based
Type of cooling water system	Closed Cycle
Consumption of Water	4,11,512,400 Cubic feet
Rate of Water charges	Rs 12.48 per 1000 cubic feet
Rate of Royalty	Rs 6 Lakhs per cusec per year
Total Water Charges	Rs 129.65 Lakhs

23. Accordingly, the Petitioner has claimed the water charges for the period 2019-24 as follows:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
131.82	134.55	137.28	140.01	142.74

24. The Petitioner, vide an additional affidavit dated 23.6.2021, has submitted that the actual water charges for the generating station are Rs.93.06 lakh in 2019-20 and Rs. 79.27 lakh in 2020-21. Accordingly, the actual water charges of Rs. 93.06 lakh in 2019-20 and Rs.79.27 lakh in 2020-21 are allowed. For the remaining period, i.e. from 2022-24, we allow the water charges of Rs. 79.27 lakh, as allowed for 2020-21. However, the Petitioner, at the time of truing up of tariff, shall furnish the details of the actual water consumption (in cubic meters), rate (Rs/ Cubic meter) and the power charges separately. The water charges allowed are subject to the truing up, as per the actual water charges paid/incurred, after prudence check. Accordingly, the water charges allowed for the period 2019-24 are summarized below:

(in Rs. lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
93.06	79.27	79.27	79.27	79.27

25. The Petitioner shall, at the time of truing up of tariff, furnish the details of the actual water consumption along with the clarification and declaration that the same is not being used for colony consumption in terms of the proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations. In case it is yes, the Petitioner shall furnish the bifurcation of the total quantum of water supplied to the plant and colony along with the relevant costs.

Security Charges

26. The second proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations provides as under:

> *"6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:*
>
> *Xxxx*
>
> *Provided further that the generating station shall submit the assessment of the security requirement and estimated expenses;*
>
> *Xxx"*

27. The Petitioner has claimed total security expenses of Rs.9523.32 lakh (i.e. Rs. 1486.10 lakh in 2019-20, Rs. 1673.76 lakh in 2020-21, Rs. 1880.13 lakh in 2021-22, Rs. 2111.22 lakh in 2022-23 and Rs. 2372.11 lakh in 2023-24), in terms of the second proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations. The Petitioner, vide affidavit dated 23.6.2021, has submitted that the actual Security expenses incurred at the Dadri Thermal Station (1820 MW) in 2018-19 were Rs 2646.53 lakh, and out of this, the share of this generating station (840 MW) works out as Rs.1221.47 lakh, on a pro-rata basis, of the installed capacity (in MW). It has further submitted that the actual security expenses incurred at the Dadri Thermal Station during the years 2019-20 and 2020-21 are Rs.2928.51 lakh and Rs.2994.00 lakh, respectively and out of this, the share for this generating station, works out to Rs 1351.62 lakh for 2019-20 and Rs.1381.84 lakh for 2020-21, on a pro-rata basis of the installed capacity (in MW).

28. We have examined the submissions. The Petitioner has furnished the actual security expenses incurred for the generating station for the years 2019-20 and 2020-21 and the projected security expenses for the years 2021-22, 2022-23 and 2023-24, respectively. However, it is observed that the Petitioner has not furnished the

assessment for the security requirement, as required under the provisions of the said Tariff Regulations. Accordingly, the Petitioner is directed to furnish the requisite details for carrying out a prudence check of the security expenses incurred, at the time of truing up of tariff. For the present, the actual security expenses for the period 2019-21, as claimed by the Petitioner, have been allowed. As regards the projected security expenses claimed for the period 2021-22 to 2023-24, we are inclined to allow the actual security expenses of Rs.1381.84 lakh incurred in 2020-21, without any escalation, with the direction that the Petitioner shall, at the time of truing-up of tariff, submit the actual bills along with other relevant details in terms of the said proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations. Accordingly, the security expenses allowed are as under:

(in Rs. lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Claimed	1486.10	1673.76	1880.13	2111.22	2372.11
Allowed	1351.62	1381.84	1381.84	1381.84	1381.84

Capital spares

29. The Petitioner has not claimed any capital spares, on a projection basis, during the period 2019-24 and has submitted that the same shall be claimed at the time of truing up of tariff, in terms of the last proviso to Regulation 35(1)(6) of the 2019 Tariff Regulations, based on the actual consumption of spares. Accordingly, the same has not been considered in this order. The claim of the Petitioner, if any, at the time of truing-up of tariff shall be considered on merits after prudence check.

30. Based on the above, the total O&M expenses, including Water charges and Security expenses, as claimed and allowed for the period 2019-24, are summarized below:

(Rs. in lakh)

		2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**

		2019-20	2020-21	2021-22	2022-23	2023-24
Installed Capacity (MW) (A)		840.00	840.00	840.00	840.00	840.00
O&M Expenses under Reg.35(1) in Rs lakh / MW (B)	Claimed	32.96	34.12	35.31	36.56	37.84
	Allowed	32.96	34.12	35.31	36.56	37.84
Total O&M Expenses (in Rs lakh) (C) = (A)*(B)	Claimed	27686.40	28660.80	29660.40	30710.40	31785.60
	Allowed	27686.40	28660.80	29660.40	30710.40	31785.60
Water Charges (in Rs lakh) (D)	Claimed	93.06	79.27	137.28	140.01	142.74
	Allowed	93.06	79.27	79.27	79.27	79.27
Security Expenses (in Rs lakh) (E)	Claimed	1486.10	1673.76	1880.13	2111.22	2372.11
	Allowed	1351.62	1381.84	1381.84	1381.84	1381.84
Total O&M Expenses as allowed (including Water Charges and Capital Spares Consumed) (F) = (C+D+E)	Claimed	**29265.56**	**30413.83**	**31677.81**	**32961.63**	**34300.45**
	Allowed	**29131.08**	**30121.91**	**31121.51**	**32171.51**	**33246.71**

Ash Transportation charges

31. The Petitioner, vide affidavit dated 11.5.2021, has submitted that the generating station has not incurred any additional expenditure during the period 2019-21 towards Ash transportation.

Additional Expenditure on Emission Control System

32. The Petitioner has submitted that it is in the process of installing the Emission Control Systems (ECS) for this generating station in compliance with the revised emission standards as notified by the Ministry of Environment and Forests and Climate Change (MOEF&CC) vide notification dated 7.12.2015, as amended. It is, however, noticed that the Petitioner had filed Petition No. 467/MP/2019 for approval of additional expenditure on the installation of various Emission Control Systems for this generating station, in compliance with the MOEF&CC notification dated 7.12.2015 and the Commission by a common order dated 30.9.2021, had disposed of the said petition, with certain observations. Therefore, the claim of the Petitioner has not been considered in this order and shall be guided by the decision/observations of the Commission in the said order dated 30.9.2021.

Special Allowance

33. Regulation 28 of the 2019 Tariff Regulations provides for Special Allowance for coal-based/lignite fired thermal generating stations as under:

> *"(1) In case of coal-based/lignite fired thermal generating station, the generating company, instead of availing renovation and modernization (R&M) may opt to avail a 'special allowance' in accordance with the norms specified in this Regulation, as compensation for meeting the requirement of expenses including renovation and modernization beyond the useful life of the generating station or a unit thereof and in such an event, upward revision of the capital cost shall not be allowed and the applicable operational norms shall not be relaxed but the Special Allowance shall be included in the annual fixed cost:*
>
> *Provided that such option shall not be available for a generating station or unit thereof for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational performance norms;*
>
> *Provided further that special allowance shall also be available for a generating station which has availed the Special Allowance during the tariff period 2009-14 or 2014-19 as applicable from the date of completion of useful life.*
>
> *(2) The Special Allowance admissible to a generating station shall be @ Rs. 9.5 lakh per MW per year for the tariff period 2019-24.*
>
> *(3) In the event of a generating station availing Special Allowance, the expenditure incurred upon or utilized from Special Allowance shall be maintained separately by the generating station and details of same shall be made available to the Commission as and when directed.*
>
> *The Special Allowance allowed under this Regulation shall be transferred to a separate fund for utilization towards Renovation & Modernization activities, for which detailed methodology shall be issued separately."*

34. In terms of the above Regulations, special allowance has been claimed by the Petitioner as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
3990.00	5985.00	7980.00	7980.00	7980.00

35. Accordingly, in terms of the above regulations, Special allowance has been worked out and allowed as under:

(Rs. in lakh)

Unit	Capacity (MW)	COD	Special Allowance				
			2019-20	2020-21	2021-22	2022-23	2023-24
I	210	1.1.1993	1995.00	1995.00	1995.00	1995.00	1995.00
II	210	1.2.1994	1995.00	1995.00	1995.00	1995.00	1995.00
III	210	1.4.1995	0.00	1995.00	1995.00	1995.00	1995.00

IV	210	1.12.1995	0.00	0.00	1995.00	1995.00	1995.00
Total	**840**		**3990.00**	**5985.00**	**7980.00**	**7980.00**	**7980.00**

Operational Norms

36. The operational norms considered by the Petitioner in Form-3 of the petition are as under:

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Normative Annual Plant Availability Factor (NAPAF) %	85.00	85.00	85.00	85.00	85.00
Gross Station Heat Rate (kcal/kwh)	2430.00	2430.00	2430.00	2430.00	2430.00
Auxiliary Power Consumption %	8.50	8.50	8.50	8.50	8.50
Specific Oil Consumption (ml/kwh)	0.50	0.50	0.50	0.50	0.50

(a) Normative Annual Plant Availability Factor

37. Regulation 49 of the 2019 Tariff Regulations provides as follows:

> *(A) Normative Annual Plant Availability Factor (NAPAF)*
> *(a) For all thermal generating stations, except those covered under clauses (b), (c), (d), & (e) - 85%.*

38. As the Petitioner has considered the NAPAF of 85% for the period 2019-24 in terms of the above regulations, the claim is allowed.

(b) Station Heat Rate

39. Regulation 49(C)(a)(i) of the 2019 Tariff Regulations provides as follows:

> *"(C) Gross Station Heat Rate: (a) Existing Thermal Generating Stations (i) For existing Coal-based Thermal Generating Stations, other than those covered under clauses (ii) and (iii) below:*

200/210/250 MW Sets	***500 MW Sets (Sub-critical)***
2,430kCal/kWh	*2,390kCal/kWh*

40. As the Petitioner has considered the Gross Station Heat Rate of 2430.00 kCal/ kWh, in terms of the above regulations, the claim has been allowed for the purpose of tariff.

(c) Auxiliary Power Consumption:

41. Regulation 49(E)(a)(ii) of the 2019 Tariff Regulations provides for Auxiliary Power Consumption as follows:

> *"49(E) Auxiliary Energy Consumption*
>
> *(a) Coal-based generating stations except at (b) below:*

	With Natural Draft cooling tower or without cooling tower
(i) 200 MW series	*8.5%*
(ii) 300 MW and above	
Steam driven boiler feed pumps	*5.75%*
Electrically driven boiler feed pumps	*8.0%*

> *Provided that for thermal generating stations with induced draft cooling towers and where tube type coal mill is used, the norms shall be further increased by 0.5% and 0.8% respectively:*

42. As the Auxiliary Power Consumption (APC) of 8.50% is applicable to the generating station, in terms of the above regulation, the claim of the Petitioner for 8.50% is allowed for the period 2019-24.

(d) Specific Oil Consumption

43. Regulation 49(D)(a) of 2019 Tariff Regulations provides for the Secondary fuel oil consumption of 0.50 ml/kWh for coal-based generating stations. As the Secondary fuel oil consumption considered by the Petitioner, is in line with the above said regulations, the same is allowed.

Interest on Working Capital

44. Sub-section (c) of clause (1) of Regulation 34 of the 2019 Tariff Regulation provides as follows:

> *"34. Interest on Working Capital: (1) The working capital shall cover:*
>
> *(a) For Coal-based/lignite-fired thermal generating stations:*
>
> *(i) Cost of coal or lignite and limestone towards stock, if applicable, for 10 days for pit-head generating stations and 20 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;*

(ii) Advance payment for 30 days towards cost of coal or lignite and limestone for generation corresponding to the normative annual plant availability factor;

(iii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;

(iv) Maintenance spares @ 20% of operation and maintenance expenses including water charges and security expenses;

(v) Receivables equivalent to 45 days of capacity charge and energy charge for sale of electricity calculated on the normative annual plant availability factor; and

(vi) Operation and maintenance expenses, including water charges and security expenses, for one month."

(2) The cost of fuel in cases covered under sub-clauses (a) and (b) of clause (1) of this Regulation shall be based on the landed fuel cost (taking into account normative transit and handling losses in terms of Regulation 39 of these regulations) by the generating station and gross calorific value of the fuel as per actual weighted average for the third quarter of preceding financial year in case of each financial year for which tariff is to be determined:

Provided that in case of new generating station, the cost of fuel for the first financial year shall be considered based on landed fuel cost (taking into account normative transit and handling losses in terms of Regulation 39 of these regulations) and gross calorific value of the fuel as per actual weighted average for three months, as used for infirm power, preceding date of commercial operation for which tariff is to be determined."

"(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2019 or as on 1st April of the year during the tariff period 2019-24 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later:

Provided that in case of truing-up, the rate of interest on working capital shall be considered at bank rate as on 1st April of each of the financial year during the tariff period 2019-24.

(4) Interest on working capital shall be payable on normative basis notwithstanding that the generating company or the transmission licensee has not taken loan for working capital from any outside agency."

Fuel Cost for computation of working capital

45. The Petitioner has claimed ECR and fuel component in working capital as follows:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
ECR (Rs. /kWh)	3.699	3.699	3.699	3.699	3.699
Cost of coal for 45 days	28799.67	28799.67	28799.67	28799.67	28799.67
Cost of Secondary fuel oil 2 months	242.32	241.65	241.65	241.65	242.32

46. The Petitioner has claimed the fuel component cost in working capital and ECR based on:

a) Operational norms as per 2019 Tariff Regulations.

b) Price and "as received" GCV of coal {after reducing the same by 85 kcal/kWh in terms of Regulation 43(2)(b)} procured for the three months of October 2018, November 2018, and December 2018, and

c) Price and GCV of secondary fuel oil for the three months of October 2018, November 2018, and December 2018.

47. It is observed that the Petitioner, vide additional affidavit dated 23.6.2021, has submitted the revised and audited Form-15, indicating the opening stock of coal and the coal received during the months of October 2018, November 2018 and December 2018 separately. On perusal of the data furnished by the Petitioner, it is observed that the Petitioner in Form 15:

a. while computing the landed cost of fuel, Petitioner has considered the opening stock of coal for the months of October 2018, November 2018, and December 2018 (closing stock of the coal for the previous months). However, in terms of Regulation 39 of the 2019 Tariff Regulations, the computation of ECR and associated fuel components in interest on working capital is based on the landed price and GCV of fuel, which means that the fuel received during the specified three months (October 2018, November 2018, and December 2018) is only to be considered, without the opening stock.

b. In the original Form 15, the Petitioner had claimed amounts of Rs.1144.82 lakh, Rs.875.08 lakh and (-) Rs.959.12 lakh under the head 'Others' (stone picking charges, loco driver's salary, sampling charges etc.)'. It is observed that the Petitioner, in the revised Form 15, has re-adjusted this amount under the head "Adjustment (+/-) in quantity supplied made by Coal Company" without any rationale.

c. In addition, it is also observed that there is a difference of 1000-1700 kCal / kg in the coal "as billed" and on an "as received" basis.

48. It is further observed that the Petitioner vide ROP dated 6.12.2023 was directed to submit the following additional information:

a. The reasons for claiming loss in GCV, between GCV billed and GCV received, around 1000-1700 kCal / kg and actions taken thereof along with supporting documents to address the same, i.e. no. of samples challenged, success rate, correspondence made with CIL, Third party, Railways etc;

b. The annual average 'GCV as billed' and 'GCV as Received' of coal in years 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23.

c. *The GCV of opening stock, GCV of coal as received exclusive of opening stock and GCV of coal as received inclusive of opening stock for each month.*

d. *The detailed computation sheet (excel sheet based on third-party sample reports with links and formulae) in arriving at 'GCV of domestic coal received' claimed in each month along with details of GCV as Received (EM), GCV has received (TM) and Moisture and a copy of all third-party reports pertaining to respective month.*

e. *The reasons for claiming GCV as received on a 'TM basis' instead of 'EM basis'.*

f. *The relevant clauses of FSA associated with grade slippage and excess moisture, including recovery of penalty, challenging sample and the policy of Petitioner company on issues associated with quality of coal. In case no action has been taken, the reasons thereof;*

g. *Month-wise grade slippage and excess moisture of coal received for the subject three months and segregated credit note and debit note received from coal company on account of excess moisture and grade slippage along with supporting documents including bills, bill settlement, etc.;*

h. *The detailed breakdown of adjustment in coal charges claimed of Rs.1144821732.89 in October 2018 and Rs.87507932.63 in November 2018, along with reasons and supporting documents for such claim.*

49. It is observed that the Petitioner has submitted vide affidavit dated 1.3.2024, the additional information sought as above. The Petitioner, with regard to the difference in 'GCV as billed' and 'GCV as received' has submitted that the 'GCV as billed' is done at the loading end on an Equilibrated (EQ) basis, whereas the 'GCV as received' is at the unloading end and on a Total Moisture (TM) basis. It has stated that one of the reasons for the gap is the presence of surface moisture in the coal, as received, leads to the difference in GCV w.r.t. the GCV measured at EQ basis, at loading end. The Petitioner has also submitted that as coal is heterogeneous in nature, the samples collected at the loading end and at the unloading end may differ in characteristics, leading to the difference in GCV. It has also been submitted that in many instances, the GCV received at the unloading end (at EQ basis) has been observed to be more than the GCV measured at the loading end on EQ basis and this is one of the examples of heterogeneity of coal being transported from the mine end to the station end. The Petitioner further submitted that there is the possibility of a loss of

volatile matter in coal during transportation, especially for non-pit head stations where coal is brought from long distant mines, which also causes a reduction in the GCV of coal. The Petitioner has stated that the generating station of the Petitioner is a non-pithead station, and the loss of VM during the transportation is one of the reasons for the gap in GCV. The Petitioner has submitted that presently, the supply and transportation of coal is through entities which are essentially monopolistic, however, the generating company has made all possible efforts to reduce the grade slippage, such as carrying out third party sampling as per GOI guidelines. The Petitioner has, however, submitted that, the grade slippage during transit is beyond the reasonable control of the Petitioner and the commercial settlement for the procurement of coal is based on the declared grade of mines (i.e. GCV of declared grade), as per the terms and conditions of the FSA. The Petitioner has further submitted that the issue of a significant gap in GCV of coal between the loading and unloading end has been raised by the Petitioner with the sampling agency, i.e. CSIR-Central Institute of Mining and Fuel research, which is a constituent laboratory of CSIR, an autonomous government body. It is observed that the submissions of the Petitioner above are not fully justified. However, the Commission has considered the GCV on 'as received basis for the purpose of computation of the fuel cost as per the present petition in accordance with regulation 40(1). Further, the Petitioner is directed to submit the actual details along with justified reasons on the information/queries sought vide ROP dated 6.12.2023 and submit efforts being made to bridge the gap between GCV on 'as billed' and 'as received' basis.

50. Accordingly, the normative cost of coal for a stock of 50 days and Normative Transit and Handling loss of 0.80% have been considered for the calculation of working capital requirements Accordingly, after excluding the opening stock value, we

have worked out the weighted average landed cost and weighted average GCV of coal for working out the fuel component in working capital for the months of October 2018, November 2018 and December 2018 as under:

	October 2018	**November 2018**	**December 2018**
Claimed and Allowed (Rs/kg)	3821.00	3797.00	3756.00

51. The Petitioner has further submitted the annual average 'GCV as billed' and 'GCV as received' of coal in 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23, along with opening stock GCV, GCV of coal as received exclusive and inclusive of opening stock for each month and detailed computation in arriving at GCV of domestic coal claimed in each month along with details of GCV as Received (EM), GCV as received (TM) and Moisture, vide affidavit dated 1.3.2024. The Petitioner has submitted the reason for claiming GCV as received on a TM basis instead of an EM basis as follows:

> *" It is submitted that the GCV at 'Total Moisture' basis provides the heat value for coal, as being used for generation, whereas the GCV at 'Equilibrated basis' provides the GCV of coal is measured in controlled condition (60% RH & 40 deg C temp.). As far as GCV 'As received' is concerned, it is the GCV of coal at unloading end (i.e. at generating station end), and its heat value has the relevance as the energy available to generate electricity. It is GCV of coal at 'TM' basis which is actual energy input available for electricity generation, by conversion of its chemical energy into thermal energy, subsequently to mechanical energy in Rankine cycle to generate electricity. The heat value of coal at Equilibrated basis shall not be the actual heat value at energy ingate for electricity generation, as it will not be having the surface moisture, which is actually available in coal. Therefore, the GCV at 'EM basis' will be a misnomer, in view of the energy conversion, as the consumption of coal (in quantity terms) and/or specific coal consumption shall depend upon the actual heat available per kg of fuel. We can understand the difference in heat value of coal measured on 'TM' basis as well as 'EM' basis as below:*
>
> *Comparison of GCV at TM vs EM basis*
>
> *As per IS-1350, Proximate analysis of coal is as below (assume)*
>
> | *Constituent* | *Percentage (%)* | *Constituent* | *Percentage (%)* |
> |---|---|---|---|
> | *EM* | *6* | *TM* | *13* |
> | *Ash* | *26.74* | *Ash* | *24.75* |
> | *VM* | *28.1* | *VM* | *26.01* |
> | *Fixed Carbon* | *39.16* | *Fixed Carbon* | *36.24* |
> | *100* | | *100* | |
> | *GCV (Kcal/Kg)* | *3900* | *GCV (Kcal/Kg)* | *3610* |
>
> *Equivalent % of Ash/VM & FC in coal at TM basis*
> *Percentage on EM basis x (1-TM%)/(1-EM%)*

The above analysis of coal depicts that when coal is used with total moisture, the constituents of coal like Ash, Fixed Carbon, VM get prorated for 100%. It means the effect of VM & Fixed Carbon on calorific value (Kcal/per kg) of coal shall be less in this case of Total Moisture wrt that on EM basis. In the above illustration of GCV on 'EM' basis and corresponding GCV on 'TM basis', it is evident that if GCV at 'EM' basis shall be considered for the basis of energy input, approx. 290 Kcal/kg of additional heat value will be considered for coal, which is not available for coal being used for generation in its actual form. Further, the specific coal consumption and total coal consumption shall lead to less than actual values, causing loss to the generator in recovery of coal cost through tariff.
In view of the same, for reasonable recovery of fuel cost and Interest on working capital through tariff, GCV should be considered on 'TM basis', and not on 'EM basis'.

13. It is further submitted that the normative Station Heat rate of the instant station (for 210 MW units) has been decided based on past years data of actual Heat rate of the station/unit(s). The actual heat rate is dependent on the coal, as fired to the boiler (with Total Moisture). Accordingly, the GCV to be considered for Energy Charge rate needs to be on TM basis.

14. With the introduction of the 'as received GCV' (i.e. GCV at unloading end) in the regulatory framework (in CERC Tariff Regulations-2014), the energy ingate for the power generation has been shifted from the burner tip to the plant boundary, and GCV 'as received' has been considered for computation of Energy Charges rate as well as for Working Capital. This itself indicates that the 'as received' has been considered on the same platform as that of 'as fired' GCVs, and that can be nothing but on 'Total Moisture' basis.

15.Regulation-43 of CERC Tariff Regulations-2019 provides as below:

'43. Computation and Payment of Energy Charge for Thermal Generating Stations

(1) The energy charge shall cover the primary and secondary fuel cost and limestone consumption cost (where applicable), and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the energy charge rate of the month (with fuel and limestone price adjustment). Total Energy charge payable to the generating company for a month shall be:

Energy Charges = (Energy charge rate in Rs./kWh) x {Scheduled energy (exbus) for the month in kWh}

(2) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae: (a) For coal based and lignite fired stations: ECR = {(SHR – SFC x CVSF) x LPPF / (CVPF + SFC x LPSFi + LC x LPL} x 100 /(100 – AUX)
xx
Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

(a) For coal based and lignite fired stations ECR = {(GHR – SFC x CVSF) x LPPF / CVPF+SFC x LPSFi + LC x LPL} x 100 / (100 – AUX)
xx
Where,
AUX =Normative auxiliary energy consumption in percentage.

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

Further, as per Regulation- 10(31) of CERC Tariff Regulations-2019:

"(31) 'GCV as Received' means the GCV of coal as measured at the unloading point of the thermal generating station through collection, preparation and testing of samples from the loaded wagons, trucks, ropeways, Merry-Go-Round (MGR), belt conveyors and ships in accordance with the IS 436 (Part-1/ Section 1)- 1964:"
Provided that the measurement of coal shall be carried out through sampling by third party to be appointed by the generating companies in accordance with the guidelines, if any, issued by Central Government:
Unquote
It is submitted that IS-1350, Part-II provides for analysis of coal sampled as per the methodology provided in IS 436. As per IS-1350, the computation of 'as received' GCV is provided as below:
Q1= Qx(100-M1)/(100-M),
Where,
M-percentage of moisture on Air-dried basis,
M1- percentage of moisture on ' As received basis',
Q- Calorific value on Air dried basis, and
Q1- Calorific value on 'As received basis'.

Accordingly, the 'as received' GCV as per the BIS IS-1350 is to be calculated on 'Total moisture' basis, making correction in GCV measured by 'EQ/Air dried' basis.

16. It is also submitted that the Hon'ble Commission has prescribed the formula, similar to as provided in IS-1350, to arrive at GCV at TM basis, in various tariff orders for moisture correction while determining the tariff of 2014-19 period on projected basis, quoting as below:
Quote
"…….the Commission has decided to compute fuel components and the energy charges in the working capital by provisionally taking the GCV of coal on as "billed basis" and allowing an adjustment for total moisture as per the formula given as under:
GCV X (1-TM)/(1 – IM)
Where: GCV=Gross Calorific value of coal,
TM=Total moisture IM= Inherent moisture."

(e.g. Simhadri Stage-I (order dated 27.6.2016 in Petition No. 270/GT/2014), Vindhyachal STPS Stage-II (order dated 6.2.2017 in Petition No. 327/GT/2014), Mauda Stage-I (order dated 11.2.2017 in Petition No. 328/GT/2014), Ramagundam Stage-I & II (order dated 24.1.2017 in Petition No. 292/GT/2014), Kahalgaon stage-II (order dated 21.1.2017 in Petition No. 283/GT/2014), Rihand STPS Stage-III (order dated 6.2.2017 in Petition No. 372/GT/2014) etc.

This way, Hon'ble Commission has also recognised the fact that the GCV of coal for Working Capital is to be considered on 'total moisture' basis.
7. Regulation-34 of CERC Tariff Regulations 2019 provides for cost of primary fuel (Coal) as under:
"34. Interest on Working Capital:
(1) The working capital shall cover:
(a) For Coal-based/lignite-fired thermal generating stations:
(i) Cost of coal or lignite and limestone towards stock, if applicable, for 10 days for pit-head generating stations and 20 days for non-pit-head generating stations for

generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;"
Unquote
As per the above said regulation, the working capital shall comprise the coal as stocked and to be used for generation. It relates the cost for heat value of coal (primary fuel) as present in stock and as used for generation. As the primary fuel being kept in stock and/or as used for generation do not have GCV excluding surface moisture, but it is in its 'as is' form, the corresponding heat value shall be depictable by Gross Calorific Value on Total Moisture basis, and not on the lab derived GCV i.e. on equilibrated moisture basis.
17. It is submitted that the efficiency of Steam generator/Boiler is guaranteed by the OEM on the basis of loss method considering the calorific value of coal, as fired i.e. depending upon the energy input of the fuel at the firing point/burner of the boiler, and not based on the Equilibrated/Air dried GCV.

18. Hon'ble Commission has. therefore, rightly adopted the methodology for allowing the GCV after moisture correction (i.e. on TM basis) for allowing the working capital in various stations. Some of these orders are:

a. Simhadri Super Thermal Power Station Stage-II (decided on 11.01.2022) in Petition No. 293/GT/2020,
b. Simhadri Super Thermal Power Station Stage-I (decided on 22.02.2023) in Petition No. 292/GT/2020,
c. Farakka Super Thermal Power Station, Stage-I & II (1600 MW) (decided on 17.04.2023) in 698/GT/2020,
d. Korba STPS Stage-I&II (2100 MW) (decided on 16.04.2022) in 451/GT/2020,
e. Feroze Gandhi Unchahar Thermal Power Station Stage-I (420 MW) (decided on 01.10.2022 & 23.11.2023) in 302/GT/2020 read with 04/RP/2023.

19. It is also submitted that for Dadri-II station as per the order dated 21.05.2022 in Petition No. 190/GT/2020 read together with order dtd. 25.10.2023 in review petition no. 1/RP/2023 for 2014-19 control period and as per order dtd. 01.06.2022 in 02/GT/2021 for 2019-24 control period, Hon'ble Commission was pleased to determine the tariff considering GCV of coal on 'Total Moisture' basis for allowing the Working Capital. Therefore, it is humbly submitted that Hon'ble Commission may be pleased to allow the GCV on TM basis for computation of IWC for the instant station"

52. As regards grade slippage, the Petitioner has submitted that the grade slippage and excess moisture in coal are measured at the loading point as governed by the FSA. Consequently, the financial settlements vis-à-vis grade slippage and excess moisture are made at the loading point. Further, as per the FSA agreement, credit/debit note is applicable if the grade difference is there from the declared grade and the monthly weighted average surface moisture in coal exceeds seven per cent (7%) during the months from October to May and nine (9%) during the months from June to September. It has been submitted that the values indicated in the landed cost in the auditor's certified Form-15 is inclusive of adjustment, if any, on above counts.

Further, it is observed that the Petitioner has also re-adjusted the amount of Rs.1144.82 lakh in October 2018 and Rs. 875.08 lakh in November 2018 from “Others (stone picking charges, loco driver's salary, sampling charges etc.)” in the original Form-15 of the petition to “Adjustment (+/-) in amount charged made by Coal Company” in the revised Form-15. Therefore, the Petitioner was directed to submit the detailed breakdown of adjustment in coal charges claimed of Rs.1144.82 lakh in October 2018 and Rs. 875.08 lakh in November 2018, along with reasons and supporting documents for such claim. In response, the Petitioner has provided the following details:

(Rs. in Lakh)

	October 2018	**November 2018**
Quality Adjustment	1126.25	786.87
Sampling charges	0.00	19.75
Unloading Charges	18.57	68.46
Total	**1144.82**	**875.08**

53. It is observed that the Petitioner has not provided proper details and justification on the information/queries sought vide ROP dated 6.12.2023. However, the Commission has considered the said amount for the purpose of computation of fuel cost in the present petition. Further, the Petitioner is directed to submit the actual details with justified reasons on the information/queries, sought vide ROP dated 6.12.2023 at the time of truing up of tariff.

54. The revised GCV is further reduced by a margin of 85 kcal/Kg towards Storage losses, and the revised price of landed cost of coal and GCV of oil, as furnished, has been considered. Accordingly, the fuel components in working capital have been allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of Coal for stock (20 days generation corresponding to NAPAF)	11499.53	11499.53	11499.53	11499.53	11499.53
Advance towards the cost of Coal for generation (30 days generation corresponding to NAPAF)	17249.29	17249.29	17249.29	17249.29	17249.29
Cost of Secondary fuel (2 Months generation corresponding to NAPAF)	242.32	241.65	241.65	241.65	242.32

Energy Charge Rate (ECR)

55. The Petitioner has claimed ECR (ex-bus), based on the weighted average price, GCV of coal and oil procured and burnt for the preceding months of October 2018, November 2018, and December 2018 as under:

	2019-20	2020-21	2021-22	2022-23	2023-24
ECR (Rs. /kWh)	3.699	3.699	3.699	3.699	3.699

56. The ECR, as worked out, based on the operational norms specified under the 2019 Regulations and on "as received" GCV of coal for the preceding three months, i.e., October 2018 to December 2018, have been considered for allowing two months of energy charge in working capital, as under:

Description	Unit	2019-24
Capacity	MW	840.00
Gross Station Heat Rate	Kcal/kWh	2430.000
Auxiliary Energy Consumption	%	8.50%
Weighted average GCV of oil	Kcal/lit	9822.09
Weighted average GCV of coal	Kcal/kg	5000.64
Weighted average price of oil	Rs/KL	3706.61
Weighted average price of Coal	Rs/kg	5128.49
Rate of energy charge ex-bus	Rs/kWh	3.692

Working capital for O&M Expenses (1 month)

57. O&M expenses for 1 month claimed by the Petitioner for the purpose of working capital (including water charges and security expenses) are as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2442.03	2539.09	2639.82	2746.80	2858.37

58. Regulation 34(1)(a)(vi) of the 2019 Tariff Regulations provides for the O&M expenses, including water charges and security expenses for one month. Accordingly, the O&M expenses (1 month) component of working capital is allowed as follows:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2427.59	2510.16	2593.46	2680.96	2770.56

Working capital for Maintenance Spares

59. Regulation 34(1)(a)(iv) of the 2019 Tariff Regulations provides for the maintenance spares @ 20% of the O&M expenses, including water charges and security expenses. Accordingly, maintenance spares have been allowed as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
5826.22	6024.38	6224.30	6434.30	6649.34

60. The difference between the O&M expenses for 1 month' and Maintenance spares claimed by the Petitioner and those allowed as above, is only on account variation in the water charges and security expenses claimed by the Petitioner and those allowed in this order.

Working capital for Receivables

61. Regulation 34(1)(a)(v) of the 2019 Tariff Regulations provides for Receivables for 45 days. Accordingly, after taking into account the mode of operation of the generating station on secondary fuel, the receivable component of working capital is allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Energy charge for 45 days	26049.82	26049.82	26049.82	26049.82	26049.82

	2019-20	2020-21	2021-22	2022-23	2023-24
corresponding to NAPAF)					
Fixed charge for 45 days corresponding to NAPAF)	6896.65	6973.42	5963.91	6060.71	6314.09
Total	**32946.47**	**33023.24**	**32013.74**	**32110.53**	**32363.91**

62. As per Regulation 34(2) of the 2019 Tariff Regulations, the cost of coal shall be based on landed fuel cost (taking into account the normative transit & handling losses) in terms of Regulation 39 of the 2019 Tariff Regulations and the gross calorific value of fuel, as per actual weighted average for the third quarter of the preceding financial year. Hence, the Petitioner is directed to furnish the details of the quantity of coal, as per Regulation 34(2) of the 2019 Tariff Regulations, at the time of truing up of tariff. The Petitioner is also directed to submit the details, as provided in the Forms/ Annexures enclosed in the 2019 Tariff Regulations.

63. The Petitioner shall compute and claim the energy charges from the beneficiaries on a month-to-month basis, based on the formulae given under Regulation 43 of the 2019 Tariff Regulations.

Rate of Interest on working capital

64. In accordance with Regulation 34(3) of the 2019 Tariff Regulations, the rate of interest on working capital is considered as 12.05% (i.e., 1 year SBI MCLR of 8.55% as on 1.4.2019 + 350 basis points) for the year 2019-20, 11.25% (i.e. 1 year SBI MCLR of 7.75% as on 1.4.2020 + 350 bps) for the year 2020-21, 10.50% (i.e. 1 year SBI MCLR of 7.00% as on 1.4.2021 / 1.4.2022 + 350 bps) for the period 2021-23 and 12.00% (i.e. 1 year SBI MCLR of 8.50% as on 1.4.2023 + 350 bps) for the year 2023-24. Accordingly, interest on working capital is allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for Cost of Coal for Stock (20 days generation corresponding	11499.53	11499.53	11499.53	11499.53	11499.53

	2019-20	2020-21	2021-22	2022-23	2023-24
to NAPAF)					
Working Capital for Cost of Coal (30 days generation corresponding to NAPAF)	17249.29	17249.29	17249.29	17249.29	17249.29
Working capital for Cost of Secondary fuel Oil (2 months generation corresponding to NAPAF)	242.32	241.65	241.65	241.65	242.32
Working Capital for O&M expenses (1 month of O&M Expenses)	2427.59	2510.16	2593.46	2680.96	2770.56
Working Capital for Maintenance Spares (20% of O&M Expenses)	5826.22	6024.38	6224.30	6434.30	6649.34
Working Capital for Receivables (45 Days)	32946.47	33023.24	32013.74	32110.53	32363.91
Total Working Capital	**70191.41**	**70548.26**	**69821.97**	**70216.26**	**70774.94**
Rate of Interest	12.05%	11.25%	10.50%	10.50%	12.00%
Interest on Working capital	**8458.07**	**7936.68**	**7331.31**	**7372.71**	**8492.99**

Annual Fixed Charges for the period 2019-24

65. Accordingly, the annual fixed charges approved for the generating station for the period 2019-24 are summarised below:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	2552.34	2552.34	306.28	0.00	0.00
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	15951.28	15951.28	9614.87	9614.87	9614.87
Interest on Working Capital	8458.07	7936.68	7331.31	7372.71	8492.99
O&M Expenses	29131.08	30121.91	31121.51	32171.51	33246.71
Total	**56092.77**	**56562.21**	**48373.97**	**49159.09**	**51354.57**
Special Allowance	3990.00	5985.00	7980.00	7980.00	7980.00
Total annual fixed charges	**60082.77**	**62547.21**	**56353.97**	**57139.09**	**59334.57**

66. The annual fixed charges approved as above, is subject to truing-up in terms of Regulation 13 of the 2019 Tariff Regulations.

Filing fees and Publication charges

67. The Petitioner has sought the reimbursement of the fees paid by it for filing of the tariff petition and for publication expenses and has submitted that the reimbursement of the same is in accordance with Regulation 70(1) of the 2019 Tariff Regulations. In accordance with Regulation 70(1) of the 2019 Tariff Regulations, the Petitioner shall be entitled to reimbursement of the filing fees and publication expenses in connection

with the filing of this petition directly from the beneficiaries, on a pro-rata basis, in accordance with Regulation 70(1) of the 2019 Tariff Regulations.

68. Similarly, RLDC Fees and charges paid by the Petitioner, in terms of the Central Electricity Regulatory Commission (Fees and Charges of Regional Load Dispatch Centre and other related matters) Regulations, 2019, shall be recovered from the beneficiaries. In addition, the Petitioner is entitled to recover statutory taxes, levies, duties, cess, etc., levied by the statutory authorities in accordance with the 2019 Tariff Regulations.

69. Petition No. 439/GT/2020 is disposed of in terms of the above.

Sd/-	***Sd/-***	***Sd/-***
(Pravas Kumar Singh)	**(Arun Goyal)**	**(Jishnu Barua)**
Member	**Member**	**Chairperson**