CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 402/GT/2020

Coram:

Shri I.S. Jha, Member
Shri Arun Goyal, Member
Shri Pravas Kumar Singh, Member

Date of order: 20th January, 2023

IN THE MATTER OF

Petition for approval of tariff of Vindhyachal Super Thermal Power Station Stage-III (1000 MW) for the period 2019-24.

AND

IN THE MATTER OF

NTPC Ltd.
NTPC Bhawan,
Core-7, Institutional Area, Lodhi Road,
New Delhi-110003 **…. Petitioner**

Vs

1. Madhya Pradesh Power Management Company Limited
   Shakti Bhawan, Vidyut Nagar, Jabalpur 482008

2. Maharashtra Electricity Distribution Company Limited
   Prakashgad, Bandra (East),
   Mumbai 400051

3. Gujarat Urja Vikas Nigam Limited
   Vidyut Bhawan, Racecourse,
   Vadodara- 390007

4. Chhattisgarh State Power Distribution Company Limited
   P.O Sundar Nagar, Dangania, Raipur- 492013

5. Electricity Department of Goa
   Vidyut Bhawan, Panaji, Goa

6. DNH Power Distribution Company Limited,
   UT of DNH, Silvassa- 396230

7. Electricity Department,
   Administration of Daman & Diu,
   Daman- 396210 **……Respondents**

Parties Present:

Shri Venkatesh, Advocate, NTPC
Shri Ashutosh K. Srivastava, Advocate, NTPC
Shri Tushar Srivastava, Advocate, NTPC
Shri Abhishek Nangia, Advocate, NTPC
Shri Nihal Bharadwaj, Advocate, NTPC
Shri Harsh Vardhana, NTPC
Shri Anurag Naik, MPPMCL
Shri Arvind Banerjee, CSPDCL

ORDER

This petition has been filed by the Petitioner, NTPC Limited for determination of tariff of Vindhyachal Super Thermal Power Station Stage-III (1000 MW) (in short 'the generating station') for the period 2019-24, in accordance with Regulation 9(2) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 (in short 'the 2019 Tariff Regulations'). The generating station with a total capacity of 1000 MW comprises of two units of 500 MW each and the dates of commercial operation of the units of the generating station are as under:

Unit I	1.12.2006
Unit II	15.7.2007

2. The Commission vide its order dated 24.2.2017 in Petition 342/GT/2014 had determined the tariff of the generating station for the period 2014-19. Subsequently, in Petition No. 285/GT/2020 filed by the Petitioner for truing up of tariff of the generating station, for the period 2014-19, the Commission vide its order dated 18.1.2023, had approved the annual fixed charges and capital cost of the generating station as under:

Capital Cost allowed

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Opening capital cost	355879.73	363202.13	366381.96	367228.60	368323.65
Add: Additional Capital Expenditure	7322.40	3179.82	846.64	1095.05	-32.19
Closing capital cost	**363202.13**	**366381.96**	**367228.60**	**368323.65**	**368291.46**
Average capital cost	359540.93	364792.04	366805.28	367776.12	368307.56

Annual Fixed Charges allowed

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	18580.54	18854.80	18962.19	19015.03	19044.66
Interest on Loan	10094.50	8906.09	7580.94	5982.97	4469.34
Return on Equity	21151.79	21564.68	21683.69	21741.09	21831.06
Interest on Working Capital	5955.82	5962.09	5985.31	6115.44	6185.79
O&M Expenses	18928.16	19121.14	19995.35	21231.78	22880.07
Compensation Allowance	0.00	0.00	0.00	100.00	200.00
Total	**74710.82**	**74408.80**	**74207.49**	**74186.32**	**74610.93**

<u>Present Petition</u>

3. The Petitioner has filed the present Petition for determination of tariff of the generating station for the period 2019-24, in accordance with Regulation 9(2) of the 2019 Tariff Regulations and has claimed the following annual fixed charges and capital cost:

Annual Fixed Charges claimed

(Rs in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	9485.37	9520.11	9625.11	9807.64	9895.03
Interest on Loan	3672.06	2932.70	2222.77	1542.56	768.25
Return on Equity	21005.54	21031.60	21096.91	21204.17	21253.23
Interest on Working Capital	4945.24	4983.94	5024.21	5068.79	5108.63
O&M Expenses	25029.88	25962.69	26935.97	27950.62	28997.65
Compensation Allowance	0.00	0.00	0.00	0.00	0.00
Special Allowance	0.00	0.00	0.00	0.00	0.00
Total	**64138.09**	**64431.04**	**64904.97**	**65573.78**	**66022.79**

Capital Cost Claimed

(a) Capital cost eligible for Return on Equity at normal rate:

(Rs in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening capital cost	372462.06	373129.06	373387.06	375166.06	376910.06
Add: Addition during the year/ period	667.00	258.00	1779.00	1744.00	0.00
Closing capital cost	**373129.06**	**373387.06**	**375166.06**	**376910.06**	**376910.06**
Average capital cost	372795.56	373258.06	374276.56	376038.06	376910.06

(b) Capital cost eligible for Return on Equity at weighted average rate of interest:

(Rs in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening capital cost	0.00	0.00	0.00	525.00	525.00
Add: Addition during the year/	0.00	0.00	525.00	0.00	0.00

period					
Closing capital cost	0.00	0.00	525.00	525.00	525.00
Average capital cost	**0.00**	**0.00**	**262.50**	**525.00**	**525.00**

4. The Respondent MSEDCL, Respondent CSPDCL and the Respondent MPPMCL have filed their reply affidavits dated 4.6.2021, 8.7.2021 and 23.7.2021 respectively. The Petitioner has filed its rejoinder to the said replies vide affidavit dated 15.7.2021 and 30.7.2021 respectively. The Petitioner has submitted certain additional information vide affidavits dated 12.5.2021 and 4.6.2021, after serving copy on the Respondents. The Petition was heard through video conferencing on 4.1.2022 and the Commission after hearing the parties, reserved its order, in this petition. Based on the submissions of the parties and the documents available on record and on prudence check, we proceed determination of the tariff of the generating station for the period 2019-24, 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 check, in accordance with this regulation, shall form the basis of determination of tariff for existing and new projects. Clause 3 of Regulation 19 of the 2019 Tariff Regulations provides as under:

> *"(3) 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 modernisation as admitted by this Commission in accordance with these regulations;*
>
> *(d) Capital expenditure on account of ash disposal and utilization including handling and transportation facility;*
>
> *(e) 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 annual fixed charges claimed in the Petition is based on the opening capital cost of Rs.372462.06 lakh, as against the capital cost of Rs. 368291.46 lakh on cash basis (after removal of un-discharged liabilities amounting to Rs. 8487.62 (7478.14 lakh + 1009.48 lakh)) as on 31.3.2019, as allowed vide order dated 18.1.2023 in Petition No. 285/GT/2020. Accordingly, in terms of Regulation 19(3) of the 2019 Tariff Regulations, the capital cost of Rs. 368291.46 lakh, on cash basis, has been considered as on 1.4.2019.

Additional Capital Expenditure

7. Regulation 25 and 26 of the 2019 Tariff Regulations, provides as under:

25. Additional Capitalisation within the original scope and after the cut-off date:

(1) The additional capital expenditure incurred or projected to be incurred in respect of an existing project or a new project on the following counts within the original scope of work and after the cut-off date may be admitted by the Commission, subject to prudence check:

(a) Liabilities to meet award of arbitration or for compliance of the directions or order of any statutory authority, or order or decree of any court of law;

(b) Change in law or compliance of any existing law;

(c) Deferred works relating to ash pond or ash handling system in the original scope of work;

(d) Liability for works executed prior to the cut-off date;

(e) Force Majeure events;

(f) Liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments; and

(g) Raising of ash dyke as a part of ash disposal system.

(2) In case of replacement of assets deployed under the original scope of the existing project after cut-off date, the additional capitalization may be admitted by the Commission, after making necessary adjustments in the gross fixed assets and the cumulative depreciation, subject to prudence check on the following grounds:

(a) The useful life of the assets is not commensurate with the useful life of the project and such assets have been fully depreciated in accordance with the provisions of these regulations;

(b) The replacement of the asset or equipment is necessary on account of change in law or Force Majeure conditions;

(c) The replacement of such asset or equipment is necessary on account of obsolescence of technology; and

(d) The replacement of such asset or equipment has otherwise been allowed by the Commission.

26. Additional Capitalisation beyond the original scope

(1) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts beyond the original scope, may be admitted by the Commission, subject to prudence check:

(a) Liabilities to meet award of arbitration or for compliance of order or directions of any statutory authority, or order or decree of any court of law;

(b) Change in law or compliance of any existing law;

(c) Force Majeure events;

(d) Need for higher security and safety of the plant as advised or directed by appropriate Indian Government Instrumentality or statutory authorities responsible for national or internal security;

(e) Deferred works relating to ash pond or ash handling system in additional to the original scope of work, on case to case basis:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M) or repairs and maintenance under O&M expenses, the same shall not be claimed under this Regulation;

(f) Usage of water from sewage treatment plant in thermal generating station.

(2) In case of de-capitalisation of assets of a generating company or the transmission licensee, as the case may be, the original cost of such asset as on the date of decapitalisation shall be deducted from the value of gross fixed asset and corresponding loan as well as equity shall be deducted from outstanding loan and the equity respectively in the year such de-capitalisation takes place with corresponding adjustments in cumulative depreciation and cumulative repayment of loan, duly taking into consideration the year in which it was capitalised."

8. The projected additional capital expenditure claimed by the Petitioner for the generating station for the period 2019-24 tariff period is summarised and examined below:

(Rs. in lakh)

	Regulation	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Works under Original scope, Change in law etc. eligible for RoE at normal rate						
Ash Dyke Works	25(1)(c) & 25(1)(g)	667.00	258.00	595.00	425.00	0.00
Cycle of Concentration (CoC)	26(1)(b)	0.00	0.00	920.00	0.00	0.00
CLO_2 Package	26(1)(b) & 26 (1)(d)	0.00	0.00	264.00	1319.00	0.00
Works beyond Original scope excluding add-cap due to Change in law eligible for RoE at Weighted Average rate of Interest						
Integrated Security System	26(1)(d)	0.00	0.00	525.0	0.00	0.00
Total Additional Capital Expenditure claimed		**667.00**	**258.00**	**2304.00**	**1744.00**	**0.00**

Ash Dyke Works

9. The Petitioner has claimed projected additional capital expenditure of Rs.677.00 lakh in 2019-20, Rs.258.00 lakh in 2020-21, Rs.595.00 lakh in 2021-22 and Rs.425 lakh in 2022-23 towards Ash dyke raising and related works, under Regulation 25(1)(c) and Regulation 25(1)(g) of the 2019 Tariff Regulations. In justification of the same, the Petitioner has submitted that the additional capital expenditure claimed under this head form part of the ongoing raising work of existing ash dyke, and is within the original scope of work. It has also submitted that as the existing capacity of ash dyke is envisaged to get exhausted, the raising of ash dyke is necessarily required for increasing its capacity, for further disposal of ash generated from the generating station, for sustained operation of the plant.

10. The Respondent MPPMCL vide its affidavit dated 8.7.2021 has questioned the need for ash dyke raising, in light of the requirement of ensuring 100% ash utilization by the generating stations under MOEFCC Notification dated 7.12.2015. The Respondent has also stated that while the Petitioner on the one hand, is charging fly ash transportation cost, it has on the other hand, claimed the expenditure towards ash dyke raising. In response, the Petitioner in its rejoinder has clarified that the issue of ash transportation and raising of ash dyke are two separate issues and have no bearing to each other. It has also stated that while the expenditure on account of ash transportation has been settled by the Commission and the same has been allowed to the generating station, on the other hand, the issue of raising of ash dyke is an operational issue within the plant and the capital expenditure on this account is necessary for its smooth operation.

11. The submission has been considered. In our view, the ash generation and ash disposal are a continuous process to be carried out from time to time, during the operating life of the plant, to ensure the smooth and successful running of the plant. Hence, the claim of the Petitioner for projected additional capitalisation of expenditure towards ash dyke related works is allowed under Regulation 25(1)(c) read with Regulation 25(1)(g) of the 2019 Tariff Regulations.

Cycle of Concentration

12. The Petitioner has claimed projected additional capital expenditure of Rs.920.00 lakh towards Cycle of Concentration (CoC) in 2021-22, under Regulation 26(1) (b) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that the said work has been taken up by the Petitioner towards conservation of water, in line with the guidelines issued by the Central Electricity Authority (CEA), in its report on the minimisation of water requirement, in coal based thermal generating stations, by increasing the operating level of CoC for Cooling/ Circulating water. The Petitioner has further submitted that presently, the COC maintained in the generating station, is in the range of 2.5 to 3.5, however, as per the guidelines of water conservation from CEA, the CoC may be maintained at a level of 5 for the normal sources of raw water. The Petitioner has also submitted that the sustained operation of unit at higher CoC may cause scaling in condenser tubes, and therefore, it needs a comprehensive chemical treatment, on sustained basis, and the requirement of suitable improvement in chemical regime of the circulating water has also been suggested by CEA.

13. The Respondent MPPMCL has submitted that the claim of the Petitioner under this head is highly objectionable and arbitrary. It has also submitted that CEA had issued the said publication in January, 2012 and the proposal of the Petitioner, after a

lapse of 10 years, under the pretext of treating the same as change in law, and that too when the plant has completed 15 years of its useful life, is objectionable and hence the claim of the Petitioner may be disallowed.

14. The submissions have been considered. It is observed that the Petitioner had filed Petition No.509/MP/2020 seeking approval of additional capital expenditure on account of installation of various ECS at the generating station, in compliance to the MoEFCC Notification dated 7.12.2015. In the said petition, the Petitioner, while stating that the generating station of the Petitioner meet the norms in respect of water consumption, mercury and particulate matter as stipulated by the MoEFCC Notification and making no claim thereon, had sought liberty to approach the Commission as and when the generating station is unable to meet those norms and work(s) pertaining to the same are required to be undertaken in future. Accordingly, the Commission by a common order dated 28.4.2021 in Petition No. 335/MP/2020 & batch (NTPC v MPPMCL & ors) decided that the Petitioner's prayer for approaching the Commission for installation of ECS for control of water consumption, mercury emissions and particulate matter, if required, in future, would be dealt as per the applicable laws and regulations. In view of this, the claim of the Petitioner has not been considered in this order. However, the Petitioner is granted liberty to claim the same based on actual expenditure incurred and proper documents, at the time of truing up of tariff.

CLO_2 Package

15. The Petitioner has claimed projected additional capital expenditure of Rs.264.00 lakh in 2021-22 and Rs.1319.00 lakh in 2022-23 towards CLO_2 Package, under Regulation 26(1)(b) read with Regulation 26(1)(d) of the 2019 Tariff Regulations. In

justification for the same, the Petitioner has submitted that at present Chlorine gas is being dozed, from chlorine stored in cylinders/ tonners, directly at various stages of water treatment to maintain water quality and to inhibit organic growth in the water retaining structures/equipment such as clarifiers, storage tanks, cooling towers, condenser tubes & piping etc. Chlorine gas is very hazardous and may prove fatal in case of leakage. In the interest of public safety, the chlorine dozing system is now being replaced by Chlorine Dioxide (ClO2) system, which is much safer and less hazardous than chlorine. In the proposed scheme Clo2 shall be produced on site by use of commercial grade HCl and Sodium Chlorite and accordingly avoids handling and storage risk. It has further submitted that at Kudgi project of the Petitioner, the Department of Factories, Boiler, Industrial Safety and Health, Government of Karnataka, has asked the Petitioner to consider replacement of highly hazardous gas Chlorination system with ClO2 system. Similarly, the SPCB, Odisha, while issuing consent to establish, in case of the Darlipalli Station of the Petitioner, has requested the Petitioner to explore the possibility of installing CLO_2 system, instead of the Chlorine gas system. The Petitioner has submitted that for safety of public, the Petitioner is replacing the Chlorination system with CLO_2 system. The Petitioner vide affidavit dated 4.6.2021 has stated that this is also in line with the duties necessitated for an employer (regarding ensuring that the work place is free from hazards which cause or likely to cause injury and keep working environment safe and without health hazard) at clause 6(1)(a) and 6(1)(d) in "The Occupational Safety, Health and Working Conditions Code, 2020" notified by the Ministry of Law & Justice, GOI.

16. The Respondent MPPMCL has submitted that reliance placed on Regulation 26 (1)(b&d) of the 2019 Tariff Regulations, is highly unjustified, in view of the fact that FGD installation have been mandated by MoEF&CC Notification dated 7.12.2015. It

has further submitted that there is no incidence of change in law or compliance of any existing law, in terms of Regulation 26(1)(b) of the 2019 Tariff Regulations. The Respondent has added that Regulation 26 (1) (d) is applicable only for security and safety related expenses, if advised or directed by statutory authority, for which Petitioner has not submitted any proof and as such the claim is liable to be rejected.

17. We have considered the submissions and the documents on record. The Petitioner has claimed additional capitalization of the expenditure under Regulation 26(1) (b) of the 2019 Tariff Regulations. The Petitioner has submitted that for the Kudgi project of the Petitioner, the Government of Karnataka had directed the Petitioner to replace the highly hazardous gas chlorination system with ClO_2 system. It is observed that the letter dated 23.9.2019 addressed by the Directorate of Factories, Industrial Safety & Health State Government of Karnataka to the GM, NTPC pertains to site clearance of Kudgi Super Thermal Power station of the Petitioner. This letter can in no manner be termed as a change in law event in respect of this generating station warranting capitalization of the expenditure. As regards the claim of the Petitioner under Regulation 26(1)(d) of the 2019 Tariff Regulations, we find no specific direction or advice from any Governmental or statutory authorities as regards the need for this item (chlorine dozing system is being replaced by ClO_2 system for the safety and security of the generating station. In view of this, the projected additional capital expenditure for works relating to CLO_2 system is not allowed.

Integrated Security System

18. The Petitioner has claimed projected additional capital expenditure of Rs.525.00 lakh towards Integrated Security System, in 2021-22, under Regulation 26(1)(d) of the 2019 Tariff Regulations. In justification for the same, the Petitioner has submitted that

MOP, GOI vide letter dated 23.10.2019 has recommended the enhancement and automation of security at the power station, in view of the consistent threat to various vital installations and infrastructure, including power stations, as per reports from external agencies. Accordingly, in view of similar information received earlier, the Petitioner, in collaboration with CISF has prepared a comprehensive multilayer e-security system, to be installed in various power stations across the country. It has therefore submitted that the integrated security system (ISS) is proposed to be installed in the generating station during the period 2019-24, which shall not only enhance the reliability of the security system, but will also help to rationalize the security manpower at the generating station.

19. The Respondent MPPMCL has submitted that this claim is not maintainable under Regulation 26(1)(d), as it is applicable only for security and safety related expenses if advised or directed by statutory authority, for which the annexed document by the Petitioner reveals no such direction by any Appropriate statutory authority. It has also submitted that the Petitioner has not submitted any proof to substantiate its claim and hence liable to be disallowed.

20. We have considered the matter. It is evident from the submissions of the Petitioner that the MOP, GOI vide its letter dated 23.10.2019 has recommended the enhancement and automation of security at the power station, in view of consistent threat to various vital installations and infrastructure, including power stations, as per reports from external agencies. Accordingly, the Petitioner, in collaboration with CISF has prepared a comprehensive multilayer e-security system, to be installed in various power stations across the country. Keeping in view that the projected additional capital expenditure claimed by the Petitioner is towards enhancement of security of the

generating stations, as per recommendations/advise of the MOP, GOI, we allow the same under Regulation 26(1)(d) of the 2019 Tariff Regulations. However, the Petitioner is directed to furnish the copy of the MOP, GOI letter dated 23.10.2019 along with reports of external agencies, if any, in a sealed cover, at the time of truing-up of tariff of the generating station for the period 2019-24, failing which the claim may not be considered.

21. Based on the above, the projected additional capital expenditure allowed for the generating station, is summarized below:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate					
Ash Dyke Works	667.00	258.00	595.00	425.00	0.00
Cycle of Concentration	0.00	0.00	0.00	0.00	0.00
CLO2 Package	0.00	0.00	0.00	0.00	0.00
Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Weighted Average rate of Interest					
Integrated Security System	0.00	0.00	525.00	0.00	0.00
Total Additional Capital Expenditure allowed	**667.00**	**258.00**	**1120.00**	**425.00**	**0.00**

Capital cost allowed for the period 2019-24

22. Based on above, the capital cost allowed for the purpose of tariff is as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Opening capital cost	368291.46	368958.46	369216.46	370336.46	370761.46
Add: Additional capital expenditure	667.00	258.00	1120.00	425.00	0.00
Closing capital cost	**368958.46**	**369216.46**	**370336.46**	**370761.46**	**370761.46**
Average capital cost	368624.96	369087.46	369776.46	370548.96	370761.46

Debt Equity Ratio

23. Regulation 18 of the 2019 Tariff Regulations provides as under:

"18. Debt-Equity Ratio: (1) For a new project, 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 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 modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this Regulation.

24. Accordingly, the gross normative loan and equity amounting to Rs. 257804.02 lakh and Rs. 110487.44 lakh, respectively as on 31.3.2019 as considered in order dated 18.1.2023 in Petition No. 285/GT/2020, has been considered as the gross normative loan and equity, as on 1.4.2019. Further, the additional capital expenditure approved as above, has been allocated to debt and equity in ratio of 70:30.

Accordingly, the details of debt-equity ratio, in respect of the generating station, as on 1.4.2019 and as on 31.3.2024, is as under:

(Rs. in lakh)

	Capital cost as on 1.4.2019 ***(Rs. in lakh)***	**(%)**	**Additional capital expenditure** ***(Rs. in lakh)***	**(%)**	**Total cost as on 31.3.2024** ***(Rs. in lakh)***	**(%)**
Debt	257804.02	70%	1729.00	70%	250333.02	70%
Equity	110487.44	30%	741.00	30%	111228.44	30%
Total	368291.46	100%	2470.00	100%	370761.46	100%

Return on Equity

25. Regulation 30 of the 2019 Tariff Regulations provides as under:

"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 stations 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 excluding additional capitalization due to Change in Law 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:

(i) 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;

(ii) 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;

(iii) in case of a thermal generating station with effect from 1.4.2020:

(a) rate of return on equity shall be reduced by 0.25% in case of failure to achieve the ramp rate of 1% per minute;

(b) 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.

26. Regulation 31 of the 2019 Tariff Regulations provides as under:

"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.

(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.

Illustration-

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

(a) Estimated Gross Income from generation or transmission business for FY 2019-20 is Rs 1000 crore;

(b) Estimated Advance Tax for the year on above is Rs 240 crore;

(c) Effective Tax Rate for the year 2019-20 = Rs 240 Crore/Rs 1000 Crore = 24%;

(d) Rate of return on equity = 15.50/ (1-0.24) = 20.395%.

(2) 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 transmission customers as the case may be on year to year basis."

27. The Petitioner has claimed Return on Equity (ROE) considering base rate of 15.50% and effective tax rate of 17.472% for the opening equity as on 1.4.2019 and the projected additional capital expenditure claimed under original scope of work,

change in law etc. for the period 2019-24 and the same has been considered for the purpose of tariff. Further, for the additional capital expenditure claimed beyond original scope of work (excluding additional capital expenditure due to change in law) the Petitioner has claimed ROE, after grossing up WAROI of 8.2257% in 2019-20, 8.2699% in 2020-21, 8.2981% in 2021-22, 8.3441% in 2022-23 and 8.3090% in 2023-24 with effective tax rate of 17.472%. Regulation 30(1) of the 2019 Tariff Regulations provides for computation of ROE, on the equity base, as determined in accordance with Regulation 18 of the 2019 Tariff Regulations. While clause (1) of Regulation 18 provides for the determination of the debt-equity ratio for new projects, clauses (3) and (4) of the said Regulation provides for consideration/ determination of the debt-equity ratio in respect of the generating stations declared under commercial operation prior to 1.4.2019. Further, clause (5) of the said regulation provides that the admitted additional capital expenditure incurred or projected to be incurred on or after 1.4.2019, is to be serviced in the manner specified in clause (1) of Regulation 18 of the 2019 Tariff Regulations. On the same analogy, Regulation 30(2) of the 2019 Tariff Regulations provides for the computation of at the base rate of 15.50% (for thermal generating stations) while the proviso to Regulation 30(2) provides for computation of ROE in respect of additional capitalization after cut-off date, beyond the original scope, excluding additional capitalization due to change in law, at the weighted average rate of interest on actual loan portfolio of the generating station. It is however noticed that as per clause (1) of Regulations 31 of the 2019 Tariff Regulations (Tax on ROE), the base rate of return on equity, as allowed by the Commission under Regulation 30 of the said regulations, is required to be grossed up with the effective tax rate of the respective financial year. Thus, we are of the view that on a harmonious construction of the provisions of Regulation 18 with Regulation 30 and Regulation 31 of the 2019

Tariff Regulations, the ROE computed at the predetermined base rate of 15.50% and ROE computed at the weighted average rate of interest (WAROI) are required to be grossed up with the effective tax rate of the respective financial year. Accordingly, ROE has been worked out as under:

Return on Equity at Normal Rate

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Notional Equity- Opening	110487.44	110687.54	110764.94	110943.44	111070.94
Add: Addition of Equity due to additional capital expenditure	200.10	77.40	178.50	127.50	0.00
Normative Equity – Closing	110687.54	110764.94	110943.44	111070.94	111070.94
Average Normative Equity	110587.49	110726.24	110854.19	111007.19	111070.94
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Effective Tax Rate for respective years	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)	**20770.54**	**20796.60**	**20820.63**	**20849.37**	**20861.34**

Return on Equity at WAROI

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Normative Equity – Opening	0.00	0.00	0.00	157.50	157.50
Addition of Equity due to additional capital expenditure	0.00	0.00	157.50	0.00	0.00
Normative Equity – Closing	0.00	0.00	157.50	157.50	157.50
Average Normative Equity	0.00	0.00	78.75	157.50	157.50
Return on Equity (Base Rate)	8.2269%	8.2716%	8.3001%	8.3464%	8.3132%
Effective Tax Rate *	17.4720%	17.472%	17.472%	17.472%	17.472%
Rate of Return on Equity (Pre-tax)	9.969%	10.023%	10.057%	10.113%	10.073%
Return on Equity (Pre-tax) - (annualized)	**0.00**	**0.00**	**7.92**	**15.93**	**15.86**

<u>Interest on loan</u>

28. Regulation 32 of the 2019 Tariff Regulations provides as under:

"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.

(2) 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.

(3) 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-capitalization of such asset.

(4) 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.

(5) 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.

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

(7) The changes to the terms and conditions of the loan shall be reflected from the date of such re-financing."

29. Interest on loan has been worked out as under:

i) The gross normative loan of Rs.257804.02 lakh as on 31.3.2019, as considered vide order dated 18.1.2023 in Petition No. 285/GT/2020, has been retained as on 1.4.2019.

ii) Cumulative repayment of Rs.211636.18 lakh as on 31.3.2019, as considered vide order dated 18.1.2023 in Petition No. 285/GT/2020, has been retained as on 1.4.2019.

iii) Accordingly, the net normative opening loan as on 1.4.2019 works out to Rs.46167.84 lakh.

iv) Addition to normative loan on account of additional capital expenditure approved above has been considered.

v) Depreciation allowed has been considered as repayment of normative loan during the respective year of the 2019-24 tariff period.

vi) The Petitioner has claimed tariff considering WAROI of 8.2257% in 2019-20, 8.2699% in 2020-21, 8.2981% in 2021-22, 8.3441% in 2022-23 and 8.3090% in 2023-24, however, after minor corrections in the submission the WAROI of 8.2269% for 2019-20, 8.2716% for 2020-21, 8.3001% for 2021-22, 8.3464% for 2022-23 and 8.3132% for 2023-24 has been considered

30. Necessary calculation of interest of loan is as under:

(Rs. in lakh)

		2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
A	Gross opening loan	257804.02	258270.92	258451.52	259235.52	259533.02
B	Cumulative repayment of loan upto previous year	211636.18	220869.13	230136.84	239461.03	248854.90
C	Net Loan Opening (A-B)	46167.84	37401.79	28314.68	19774.49	10678.12

D	Addition due to additional capital expenditure	466.90	180.60	784.00	297.50	-
E	Repayment of loan during the year	9232.95	9267.71	9324.19	9393.87	9415.18
F	Repayment adjustment on account of de-capitalisation	0.00	0.00	0.00	0.00	0.00
G	Repayment adjustment on account of discharges/reversals corresponding to un-discharged liabilities deducted as on 1.4.2009	0.00	0.00	0.00	0.00	0.00
H	Net Repayment of loan during the year (E-F+G)	9232.95	9267.71	9324.19	9393.87	9415.18
I	Net Loan Closing (C+D-H)	37401.79	28314.68	19774.49	10678.12	1262.94
J	Average Loan [(C+I)/2]	41784.81	32858.23	24044.58	15226.30	5970.53
K	Weighted Average Rate of Interest on Loan	8.2269%	8.2716%	8.3001%	8.3464%	8.3132%
L	**Interest on Loan (J x K)**	**3437.61**	**2717.90**	**1995.73**	**1270.84**	**496.34**

Depreciation

31. Regulation 33 of the 2019 Tariff Regulations provides as under:

"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.

(2) 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.

(3) 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.*

(4) 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.

(5) 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.

(6) 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.

(7) 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.

(8) 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."

32. The cumulative depreciation amounting to Rs. 211939.24 lakh, as on 31.3.2019, as considered vide order dated 18.1.2023 in Petition No. 285/GT/2020, has been considered as on 1.4.2019. The value of freehold land claimed by the Petitioner is 'nil'. Accordingly, the balance depreciable value, before providing depreciation for 2019-20, works out to Rs.119823.22 lakh. As on 1.4.2019, the used life of the generating station i.e., 12.02 years, which is more than 12 years from the effective COD, and hence, depreciation has been calculated by spreading over the remaining depreciable value over the balance useful life of the generating station. Necessary calculations in support of depreciation are as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Average capital cost (A)	368624.96	369087.46	369776.46	370548.96	370761.46
Value of freehold land included above (B)	0.00	0.00	0.00	0.00	0.00

	2019-20	2020-21	2021-22	2022-23	2023-24
Aggregated depreciable value [C = (A-B) x 90%]	331762.46	332178.71	332798.81	333494.06	333685.31
Remaining Aggregate Depreciable value at the beginning of the year (D = C – 'K' of previous year)	119823.22	111006.52	102358.91	93729.97	84527.35
Balance useful life at the beginning of the year (E)	12.98	11.98	10.98	9.98	8.98
Depreciation during the year (F = D/E)	**9232.95**	**9267.71**	**9324.19**	**9393.87**	**9415.18**
Cumulative depreciation at the end of the year (G = F + 'G' of previous year)	**221172.19**	**230439.90**	**239764.09**	**249157.96**	**258573.14**

O&M Expenses

33. Regulation 35(1)(1) of the 2019 Tariff Regulations provides for the following O&M expenses:

Year	500 MW (lakh/ MW)
2019-20	22.51
2020-21	23.20
2021-22	24.12
2022-23	24.97
2023-24	25.84

34. The O&M expenses claimed by the Petitioner are as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Normative O&M expenses claimed under Regulation 35(1)(1) of the 2019 Tariff Regulations **(a)**	22510.00	23300.00	24120.00	24970.00	25840.00
O&M expenses under Regulation 35(1)(6) of the 2019 Tariff Regulations:					
- Water Charges	1679.54	1738.32	1799.16	1862.13	1927.31
- Security Expenses	840.34	924.37	1016.81	1118.49	1230.34
- Capital Spares consumed	0.00	0.00	0.00	0.00	0.00
Total O&M Expenses	**25029.88**	**25962.69**	**26935.97**	**27950.62**	**28997.65**

35. The normative O&M expenses claimed by the Petitioner, in terms of the Regulation 35(1)(1) of the 2019 Tariff Regulations is in order and is allowed for the purpose of tariff.

Water Charges

36. Regulation 35(1)(6) of the 2019 Tariff Regulations provides for claim towards water charges, security expenses and capital spares as under:

> *"35(1)(6) The Water, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately and after prudence check:*
>
> *Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:*

37. The actual water charges claimed by the Petitioner in Petition No. 285/GT/ 2020 for the 2014-19 tariff period and allowed vide order dated 18.1.2023 is as under:

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Water charges claimed for the 2014-19 tariff period	1867.96	1784.93	1671.75	1571.04	1622.74
Water charges allowed for the 2014-19 tariff period	1867.96	1784.93	1671.75	1571.04	1622.74

38. In terms of the above regulation, water charges are to be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The Petitioner has claimed water charges based on actual water consumption of the generating station. The water charges claimed by the Petitioner is as under:

Description	**Remarks**
Type of plant	Coal based Thermal Power Plant
Type of cooling water system	Closed Circuit Cooling System
Yearly allocation of water for VSTPS*	149 MCM
Rate of water charges*	Rs.5.50/m^3
Total water charges paid for VSTPS (2018-19)	1622.74 lakh

39. The Petitioner has claimed water charges for the 2019-24 tariff period on the basis of water charges claimed for 2018-19 with annual escalation of 3.5%, as under:

(Rs. in lakh)

2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
1679.54	1738.32	1799.16	1862.13	1927.31

40. We have examined the matter. It is observed that the water charges for the period 2021-24 has been arrived at, based on the water charges claimed for 2018-19, with an annual escalation of 3.5%. It is also observed that the rate of water charges considered by the Petitioner for the period 2019-24 is the same as those considered for the period 2014-19. Accordingly, we are not inclined to allow the annual escalation of 3.5% as claimed by the Petitioner. For the present, we consider the actual water charges of Rs.1622.74 lakh allowed for the year 2018-19, vide order dated 18.1.2023 in Petition No. 285/GT/2020, and allow the same for each year of the period 2019-24. Accordingly, water charges claimed and allowed is as under:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Water charges claimed	1679.54	1738.32	1799.16	1862.13	1927.31
Water charges allowed	1622.74	1622.74	1622.74	1622.74	1622.74

Capital Spares

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

Security Expenses

42. The security expenses claimed by the Petitioner is as under:

(Rs. in lakh)

2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
840.34	924.37	1016.81	1118.49	1230.34

43. The Petitioner has submitted that security expenses has been claimed based on the estimated expenses for the period 2019-24 and shall be subject to retrospective

adjustment based on actuals at the time of truing up. It is noticed that the Petitioner has not furnished the assessment of security requirement as required under the provisions of the 2019 Tariff Regulations. Accordingly, the Petitioner is directed to furnish the requisite details for carrying out the prudence check of security expenses at the time of truing up. For the present, the projected security expenses claimed for the period 2019-24 has been considered for the purpose of tariff. Accordingly, the security expenses, claimed by the Petitioner, as above, is considered for the purpose of tariff.

Summary of O&M expenses

44. Accordingly, the total O&M expenses, including water charges and security expenses, as claimed by the Petitioner and allowed for the period 2019-24 is summarised below:

(Rs. in lakh)

	2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
Normative O&M expenses claimed under Regulation 35(1)(1) of the 2019 Tariff Regulations **(a)**	22510.00	23300.00	24120.00	24970.00	25840.00
Normative O&M expenses allowed under Regulation 35(1)(1) of the 2019 Tariff Regulations (b)	22510.00	23300.00	24120.00	24970.00	25840.00
Water Charges claimed under Regulation 35(1)(6) of the 2019 Tariff Regulations **(c)**	1679.54	1738.32	1799.16	1862.13	1927.31
Water Charges allowed under Regulation 35(1)(6) of the 2019 Tariff Regulations (d)	1622.74	1622.74	1622.74	1622.74	1622.74
Security Expenses claimed under Regulation 35(1)(6) of the 2019 Tariff Regulations **(e)**	840.34	924.37	1016.81	1118.49	1230.34
Security Expenses allowed under Regulation 35(1)(6) of the 2019 Tariff Regulations (f)	840.34	924.37	1016.81	1118.49	1230.34
Total O&M expenses claimed under Regulation 35 of the 2019 Tariff Regulations (a + c + e)	**25029.88**	**25962.69**	**26935.97**	**27950.62**	**28997.65**
Total O&M expenses allowed under Regulation 35 of the 2019 Tariff Regulations (b + d + f)	**24973.08**	**25847.11**	**26759.55**	**27711.23**	**28693.08**

Additional expenditure towards Fly ash transportation

45. The Petitioner has claimed recovery of additional expenditure of Rs.1091.00 lakh in 2019-20 and 2020-21, subject to truing up, from the beneficiaries on account of ash transportation charges after adjusting the revenue earned from sale of ash. 46. It is pertinent to mention that in Petition 205/MP/2021 filed by the Petitioner for recovery of additional expenditure incurred due to Ash transportation charges consequent to Ministry of Environment and Forest & Climate Change, Government of India Notification dated 3.11.2009 and Notification dated 25.1.2016 on a recurring basis, the Commission vide its order dated 28.10.2022, had allowed the expenditure incurred towards the Ash transportation expenses incurred by the Petitioner for the period 2019-22. The relevant portion of the order is as below:

> *"Petitioner has furnished the details of the distance to which fly ash has been transported from the generating station, schedule rates applicable for transportation of fly ash, as notified by the State Governments along with details, including Auditor certified accounts. These documents have been examined and accordingly, the total fly ash transportation expenditure allowed to the Petitioner generating station wise for the period 2019-22 is as per the table in para 38 above totalling to Rs.309704.03 lakh and the same shall be recovered from the beneficiaries of the respective generating stations in 6 (six) equal monthly instalments. However, the Petitioner is directed to submit details regarding award of transportation contracts, distance to which fly ash has been transported along with duly reconciled statements of expenditure incurred on ash transportation at the time of filing petitions for truing up of tariff for the 2019-24 tariff period of the generating stations."*

46. In view of the above, the claim of the Petitioner has not been considered in this order.

Operational Norms

47. The operational norms considered by the Petitioner are as under:

Normative Annual Plant Availability Factor (NAPAF) (%)	85
Heat Rate (kCal/kwh)	2390
Auxiliary Power Consumption (%)	6.25
Specific Oil Consumption (ml/kwh)	0.50

(a) Normative Annual Plant Availability Factor (NAPAF)

48. Regulation 49(A) of the 2019 Tariff Regulations provides as under:

"(A) Normative Annual Plant Availability Factor (NAPAF)

(a) For all thermal generating stations, except those covered under clauses (b), (c), (d), & (e) - 85%;

xxx."

49. In terms of the above Regulation, the claim of the Petitioner for NAPAF of 85% is allowed.

(b) Gross Station Heat Rate (kCal/kWh)

(c) Regulation 49(C)(a)(i) of 2019 Tariff Regulations provides as under:

"(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)***
2430kCal/kWh	*2390kCal/kWh*

50. In terms of the above Regulation the claim of the Petitioner for Gross Station Heat Rate (GSHR) of 2390 kCal/kWh is allowed.

(d) Specific Oil Consumption

51. Regulation 49(D)(a) of 2019 Tariff Regulations provides as under:

"(a) For Coal-based generating stations other than at (c) below: 0.50 ml/kWh"

52. In terms of the above Regulation, the claim of the Petitioner for secondary fuel oil consumption of 0.50 ml/kWh is allowed.

(e) Auxiliary Power Consumption

53. Regulation 49(E)(a) of 2019 Tariff Regulations provides as under:

"(a) For Coal-based generating stations except at (b) below:

S. No.	***Generating Station***	***With Natural Draft cooling tower or without cooling tower***
(i)	*200 MW series*	*8.50%*
(ii)	*300 MW and above*	
	Steam driven boiler feed pumps	*5.75%*
	Electrically driven boiler feed pumps	*8.00%*

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:

Provided further that Additional Auxiliary Energy Consumption as follows shall be allowed for plants with Dry Cooling Systems:

Type of Dry Cooling System	***(% of gross generation)***
Direct cooling air cooled condensers with mechanical draft fans	*1.0%*
Indirect cooling system employing jet condensers with pressure recovery turbine and natural draft tower	*0.5%*

Note: The auxiliary energy consumption for the unit capacity of less than 200 MW sets shall be dealt on case-to-case basis."

54. In terms of the above Regulation, the claim of the Petitioner for auxiliary energy consumption of 6.25% is allowed.

Interest on Working Capital

55. Sub-section (a) of clause (1) of Regulation 34 of the 2019 Tariff Regulations provides 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;

(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.

*(b) **xxxxx***

Fuel Cost and Energy Charges in Working Capital

56. Regulation 34(2) of the 2019 Tariff Regulations provides that the computation of cost of fuel as part of Interest on Working Capital (IWC) is to be based on the landed price and GCV of fuel as per actuals, for the third quarter of preceding financial year in case of each financial year for which tariff is to be determined.

57. Regulation 43(2) of the 2019 Tariff Regulations provides as under:

> *"(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)*
>
> *(b) For gas and liquid fuel-based stations:*
>
> *ECR = SHR x LPPF x 100 / {(CVPF) x (100 – AUX)}*
>
> *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;*
>
> *(b) Weighted Average Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, gas and liquid fuel based stations;*
>
> *(c) In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio:*
>
> *CVSF = Calorific value of secondary fuel, in kCal per ml;*
>
> *ECR = Energy charge rate, in Rupees per kWh sent out;*
>
> *SHR = Gross station heat rate, in kCal per kWh;*
>
> *LC = Normative limestone consumption in kg per kWh;*
>
> *LPL = Weighted average landed cost of limestone in Rupees per kg;*
>
> *LPPF = Weighted average landed fuel cost of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed fuel cost of primary fuel shall be arrived in proportion to blending ratio);*
>
> *SFC= Normative specific fuel oil consumption, in ml per kWh;*
>
> *LPSFi= Weighted Average Landed Fuel Cost of Secondary Fuel in Rs./ ml during the month:*
>
> *Provided that energy charge rate for a gas or liquid fuel based station shall be adjusted for open cycle operation based on certification of Member Secretary of respective Regional Power Committee during the month."*

58. The Petitioner has claimed the cost of fuel component in working capital and Energy Charge Rate (ECR) based on followings:

(a) Operational norms as per the 2019 Tariff Regulations.

(b) Price and 'as received GCV of coal (after reducing the same by 85 kCal/kWh in terms of above quoted Regulation) procured for the three months of October 2018, November 2018 and December 2018;

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

59. Accordingly, the Petitioner has claimed ECR of Rs.1.597 per kWh and following fuel cost component in working capital as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Cost of coal for 40 days	12007.75	12007.75	12007.75	12007.75	12007.75
Cost of secondary fuel oil for 2 months	313.79	312.93	312.93	312.93	313.79

60. On perusal of Form-15 furnished by the Petitioner vide affidavit dated 29.6.2021, it is observed that the Petitioner has included the opening stock of coal and its corresponding value, while computing the weighted average price of coal for the months of October 2018, November 2018 and December, 2018. However, in terms of Regulation 34(2) of the 2019 Tariff Regulations, the computation of cost of fuel as part of IWC, is to be based on the landed price and GCV of fuel as per actuals, which means that only fuel received during these three months is only to be considered and no opening stock shall be included therein. Accordingly, the opening stock of coal and its corresponding values, have been excluded, while computing the weighted average price and GCV of coal. However, the Petitioner has not furnished revised Form-15 for secondary fuel oil specifying separate details in respect of opening stock for the months of October 2018, November 2018 and December 2018. For the present, the weighted average price and GCV of oil, as furnished by the Petitioner, has been considered and the Petitioner is directed to furnish Form-15, in respect of both coal and secondary fuel oil, only based on fuels received during the respective years of the 2019-24 tariff period at the time of truing up of tariff. Accordingly, the weighted average price and GCV of coal and oil claimed and allowed for the 2019-24 tariff period, subject to truing up is as under:

	Claimed	Allowed
Weighted average price of coal (Rs. /MT)	2231.09	2260.56
Weighted average GCV of coal (kCal/kg) *	3616.24	3604.79

Weighted average price of oil (Rs. /KL)	9829.89	9829.89
Weighted average GCV of oil (kCal/Ltr.)	50432.01	50432.01

* *Weighted average GCV of coal as received net of 85 kCal/kg.*

61. Accordingly, the fuel component in working capital, energy charges and ECR claimed and allowed for the 2019-24 tariff period is as under:

(Rs. in lakh)

	Claimed		**Allowed**	
	2019-20 & 2023-24	**2020-21 to 2022-23**	**2019-20 & 2023-24**	**2020-21 to 2022-23**
Cost of coal for 40 days	12007.75		12204.75	
Cost of secondary fuel oil for 2 months	313.79	312.93	313.79	312.93
Energy charges for 45 days	13740.20		13959.34	
ECR *(Rs./kWh)*	1.597		1.622	

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

Working Capital for Maintenance Spares

63. The Petitioner in Form-O has claimed the maintenance spares in working capital as under:

(Rs. in lakh)

2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
5005.98	5192.54	5387.19	5590.12	5799.53

64. Regulation 34(1)(a)(iv) of the 2019 Tariff Regulations provide for maintenance spares @ 20% of the O&M expenses (including water charges and security expenses). Accordingly, maintenance spares @ 20% of the O&M expenses (including the water charges and security expenses) allowed for the period 2019-24 is as under:

(Rs. in lakh)

2019-20	**2020-21**	**2021-22**	**2022-23**	**2023-24**
4994.62	5169.42	5351.91	5542.25	5738.62

Working Capital for Receivables

65. In terms of Regulation 34(1)(a)(v) of the 2019 Tariff Regulations, the receivables equivalent to 45 days of capacity charges and energy charges is worked out and allowed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Variable Charges - for 45 days	13959.34	13959.34	13959.34	13959.34	13959.34
Fixed Charges - for 45 days	7794.67	7805.34	7804.56	7849.72	7861.61
Total	**21754.01**	**21764.68**	**21763.90**	**21809.06**	**21820.94**

Working Capital for O&M Expenses (1 month)

66. The Petitioner in Form-O has claimed O&M expenses for 1 month in working capital as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2085.82	2163.56	2244.66	2329.22	2416.47

67. Regulation 34(1)(a)(vi) of the 2019 Tariff Regulations provide for O&M expenses equivalent to 1 month of the O&M expenses (including water charges and security expenses). Accordingly, O&M expenses, equivalent to 1 month of O&M expenses (including water charges and security expenses) allowed for the period 2019-24 is as under:

(Rs. in lakh)

2019-20	2020-21	2021-22	2022-23	2023-24
2081.09	2153.93	2229.96	2309.27	2391.09

68. In line with the 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 bps) 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 and 10.50% (i.e. 1-year SBI MCLR of 7.00% as on 1.4.2021 + 350 bps) for the period 2021-24. Accordingly, Interest on working capital has been computed as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Working Capital for Cost of Coal towards Stock - (10 days generation corresponding to NAPAF) (A)	3051.19	3051.19	3051.19	3051.19	3051.19
Working Capital for Cost of Coal towards Generation – (30 days generation corresponding to NAPAF) (B)	9153.56	9153.56	9153.56	9153.56	9153.56
Working Capital for Cost of Secondary fuel oil - (2 months generation corresponding to NAPAF) (C)	313.79	312.93	312.93	312.93	313.79
Working Capital for Maintenance Spares @ 20% of O&M expenses (D)	4994.62	5169.42	5351.91	5542.25	5738.62
Working Capital for Receivables – (45 days of sale of electricity at NAPAF (E)	21754.01	21764.68	21763.90	21809.06	21820.94
Working Capital for O&M expenses - 1 month (F)	2081.09	2153.93	2229.96	2309.27	2391.09
Total Working Capital	**41348.25**	**41605.70**	**41863.46**	**42178.26**	**42469.19**
Rate of Interest	12.0500%	11.2500%	10.5000%	10.5000%	10.5000%
Interest on Working Capital	**4982.46**	**4680.64**	**4395.66**	**4428.72**	**4459.26**

Annual Fixed Charges

69. Accordingly, the annual fixed charges approved for the generating station, for the period 2019-24 is summarized as under:

(Rs. in lakh)

	2019-20	2020-21	2021-22	2022-23	2023-24
Depreciation	9232.95	9267.71	9324.19	9393.87	9415.18
Interest on Loan	3437.61	2717.90	1995.73	1270.84	496.34
Return on Equity	20770.54	20796.60	20828.55	20865.30	20877.21
Interest on Working Capital	4982.46	4680.64	4395.66	4428.72	4459.26
O&M Expenses	24973.08	25847.11	26759.55	27711.23	28693.08
Total	**63396.65**	**63309.96**	**63303.69**	**63669.96**	**63941.07**

Note: *(1) All figures are on annualized basis. (2) All figures under each head have been rounded. The figure in total column in each year is also rounded. As such the sum of individual items may not be equal to the arithmetic total of the column.*

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

Application Fee and Publication expenses

71. The Petitioner has sought reimbursement of fee paid by it for filing the petition for the 2019-24 tariff period and for publication expenses. The Petitioner shall be entitled for reimbursement of the filing fees and publication expenses in connection

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

72. Similarly, RLDC Fees & 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 recovery of statutory taxes, levies, duties, cess etc. levied by the statutory authorities in accordance with the 2019 Tariff Regulations.

73. Petition No. 402/GT/2020 is disposed of in terms of the above.

Sd/-	***Sd/-***	***Sd/-***
(Pravas Kumar Singh)	**(Arun Goyal)**	**(I.S Jha)**
Member	**Member**	**Member**